Compendium of
Selected e-Governance
Initiatives in India - 2013
This compendium presents a selection of e-Governance initiatives in India which competed for the coveted CSI–Nihilent e-Governance awards for the year 2012–13.

The primary objective of this compendium is to bring to the attention of National and global audience, a small selection of the inspired effort of a number of e-Government functionaries in the Country who strive to bring to the Citizens of India, the best that e-Governance has to offer.

The awards to winners were presented by the Computer Society of India's Special Interest Group on e-Governance (CSI-SIGeGov) during the 48th Annual Convention of the Computer Society of India held at Visakhapatnam on 14 December 2013.

—Editors
Compendium of Selected e-Governance Initiatives in India - 2013

Harish P. Iyer
K.S.Vijaya Sekhar
Sridevi Ayaluri
Dr. Piyush Gupta
Formed in 1965, the CSI has been instrumental in guiding the Indian IT industry down the right path since its formative years. The CSI has 70 chapters all over India, 418 student branches, and more than 90,000 members including India’s most famous IT industry leaders, brilliant scientists and dedicated academicians.

The mission of the CSI is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community. The CSI is also working closely with other industry associations, government bodies and academia to ensure that the benefits of IT advancement ultimately percolate down to every single citizen of India.

The CSI adopts the mechanism of Special Interest Groups (SIGs). SIGs are organized on selected domains of significant academic, research, industry and societal importance. It is as part of this structure that the Special interest group on e-Governance [SIG eGov] conducts the annual CSI-Nihilent e-Governance Awards.

For more information, please visit www.CSI-India.org

Nihilent is a global consulting and solutions integration company using a holistic and systems approach to problem solving. Headquartered in Pune, India, Nihilent has extensive experience in international consulting, IT outsourcing and IT services. Nihilent’s operations span North America, Europe, Africa and Asia. Nihilent mission Change for Performance encapsulates its commitment to make change happen systemically in terms of people, process, technology and knowledge for achieving sustained performance for it's clients.

For more information please visit www.nihilent.com
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Iyer is the founder director of Singapore based Fast Forward Technologies Pte Ltd which specialises in Financial Risk Management solutions to the Banking and Insurance sectors. He is associated with the academia and is invited to teach courses at IIM and IIT.

Iyer's first introduction to computerisation of Government processes dates back to 1988 when he was the Project Manager for Singapore's ecomnet project. He has been actively associated with the domain of e-governance for over two decades now.

K S Vijaya Sekhar  holds M Com, MCA, MBA, MSW and is currently pursuing his PhD in eGovernance. His interest areas include Public Delivery System and Citizen Services. He has over 20 research papers to his credit in International and National conferences. He is currently with International Institute of Information Technology [IIIT], Hyderabad and has over 23 years of work experience. He was earlier associated Centre for Economic and Social Studies, Administrative Staff College of India, and ICRISAT.

He is Life member of Computer Society of India [CSI] and a member of Hyderabad Management Association. He is the recipient of the coveted 'CSI Service Award' for the year 2011-12 for his significant contribution to e-Governance at National Level.

He has been associated with CSI-Nihilent e-Governance Awards since its very inception in 2002 and with CSI, Special interest Group on e-Governance [CSI SIGeGOV] from 2007.

Sridevi Ayaluri  has fourteen years of rich experience in the domain of e-Governance. Presently she is working as Deputy General Manager in Capacity Building & Knowledge Management vertical at the National Institute for Smart Government. She is spearheading prestigious and main stay GoI initiatives like Chief Information Officers and Specialized Training
Programmes in e-Governance. Sridevi has played a key role in national and international Institutional collaborations. She led the e-Governance one year educational program being taught at post Graduate Diploma level programmes at various prestigious Institutes in India.


Dr. Piyush Gupta has more than 30 years of experience in areas of ICT and e-Governance. Since 2004 he is with the National Institute for Smart Government working on e-Governance as Associate Vice President, Capacity Building & Knowledge Management.

Piyush is involved in strategic planning and implementation of various capacity building initiatives under the National e-Governance Plan of Government of India, like the eGov Champion, CIO and other professional training for Government officials. Piyush has been instrumental in designing and conducting e-Governance Leadership workshops over the years for more than 300 Ministers and MLAs across states in India. He has also been the architect of a full time one year e-Governance course, run by management institutes like IIM-Indore and TAPMI Manipal. He has also developed a framework for the e-Governance and Capacity Building Roadmap that is being used by all the States in India. In his earlier assignments he led the IT groups for ERP implementation, software development and intranet solutions.

He is also a speaker at National/International conferences and training institutions, and has number of published papers to his credit and edited four books on e-Governance case studies. Piyush did his doctorate in the area of e-Governance project assessment under faculty of management studies from JNTU Hyderabad.

Dr. Piyush is a Certified Training Need Analysis expert and his key areas of competencies include Strategy planning to address Capacity Building, Institutional partnerships and collaborations, Change Management methodology and processes, Training content and design, e-Government project assessment and Program Management.
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Megh Sushrut, Rajasthan
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Dr R.K. Bagga
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This book “Compendium of selected e-Governance initiatives in India 2012-13” owes its existence to the CSI-Nihilent e-Governance Awards 2012-13 and to the kind concurrence given by authorities of various Government bodies in India to publish edited details of e-Governance initiatives introduced by them. Since the very aim of this book and all the books in the CSI-Nihilent e-Governance awards series is to serve as a repository of knowledge, we applaud and thank them for supporting our goal.

The Awards would not be what it is without the support of the most eminent members of the Selection committee drawn from the industry, the Government and the Academia. Shri Lalit Sawhney, Shri Mohan Datar, Shri Satish Babu and Wg Cmr A. Srinivas gave the Awards a specialist, industry focus. Shri Ajay Sawhney IAS, Dr. Mahesh Chandra, and Shri D. K. Dwivedi provided a Government perspective. Dr. Nityesh Bhatt, Prof. Bipin Mehta, Prof. M. P. Gupta, Dr. Saji Mathew, Prof H. R. Vishwakarma, Prof Sanjiv Vaidya, Prof M.L.Saikumar and Dr. GP Sahu are eminent academicians. We are extremely grateful to all of them for guiding the awards in the right direction.

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Shri L.C. Singh, the President and CEO of Nihilent Technologies is a visionary industrialist who has selflessly espoused the cause of e-Governance as few in the Industry have. The eponymous Awards is privileged and grateful to have both his personal and and Nihilent's corporate involvement. We would like to thank Shri Ravi Teja, Shri Anoop Bharadwaj and Shri Shailabh Haldule of Nihilent Technologies for their active involvement.

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The overwhelming response with which 11th anniversary of the Awards was greeted only augurs well for this humble initiative of Computer Society of India’s special interest group on e-Governance.

Harish P. Iyer, K.S. Vijaya Sekhar, Sridevi Ayaluri, Dr. Piyush Gupta
Editors
Message

President and CEO, Nihilent Technologies

*e-Governance: An imperative of the information era*

Alvin Toffler, the American writer and futurist observed in his seminal book 'Third Wave' that much of the world has transitioned to the information era. To be clear, Toffler in his book theorizes that 'First Wave' encompassed the agrarian societies in which people were predominantly occupied with agricultural produce, while the 'Second Wave' saw the rise of industrialization characterized by mass production, distribution and consumption. The 'Third Wave' is really a post-industrialist society and an age in which economies are driven by information, and consequently ICT (Information and Communications Technology). India, one of the brightest lights among the emerging economies can well be regarded as a prominent rider of the 'Third Wave'.

The Indian success story in the information age is but legendary now. That India is the world's second largest software exporting country is a clear testament to our prominence in the global IT landscape. However, what is remarkable is the adoption of IT by individuals and institutions across the length and breadth of the country. The fact that Software Technology Parks of India (STPI), the premier software exports agency under the aegis of the Ministry of Communications and Technology, has set up units in cities like Imphal and Shillong indicates a strong leaning towards IT even in areas hitherto regarded as the hinterland of India. Earlier this year, a Kashmiri girl developed 'Dial Kashmir', an Android application that has over 500 contacts of Government and state departments, making it the first Kashmir centric software to be developed in the state.

As we step into the second decade of the CSI-Nihilent E-Governance awards, it is indeed heartening to note that the participation in this exercise has been phenomenally high this year, in fact the highest till date. It is a clear indicator of the growing cognizance of E-Governance as an imperative to national and regional development and transparent functioning of the Government machinery. More significantly this year, the huge number of applications for the coveted awards has included representation from the
distant corners of the country like Jammu and Kashmir, and the seven sister states in North East India. Departments across the country are increasingly realizing the importance of leveraging ICT for providing more effective governance, and the day when we are a truly e-enabled country doesn't appear too long away. The 'Third Wave' is indeed sweeping across the country.

The CSI-Nihilent E-Governance Awards, while being the gold standard for excellence in E-Governance in India, has also continued to evolve in the eleven years of its existence. The team behind the initiative continually deliberates on enhancing the quality and probity of the awards, especially in the face of severe competition. Quality E-Governance being a continuous endeavor and never a one-time affair, the think tank at CSI have most appropriately introduced a new category of the Award, namely 'Sustainability' of the award winning initiatives of previous years. This way, CSI and Nihilent reconnect with past award winners and also recognize the people whose efforts continue to impact the country positively.

Nelson Mandela once said that 'the time is always right to do right'. If we have done well in e-Governance as a nation, it is time to do better. The winners of this year's awards are truly deserving of the recognition and hold tremendous promise for the future. At the same time, all these initiatives inspire us at CSI-Nihilent to take the awards a notch higher each passing year and be equipped to identify the most deserving of initiatives that strive for all-round and inclusive governance.

L C Singh
President and CEO
Nihilent Technologies
Message

Chairperson, CSI SIGeGov

The Computer Society of India, Special Interest Group on e-Governance (CSI-SIGeGov) is one of the core bodies under CSI at the national level in India, which recognizes e-Governance initiatives spread across length and breadth of the country. SIGeGov instituted the e-Governance awards in association with industry (Nihilent Technologies), in the year 2002. Since the time the group has formulated a significant evaluation process and recognized around 184 e-Governance initiatives. Since 2002, more than 1,324 nominations have been deliberated upon as part of the award evaluation process. The award drives its value from the rigorous and systematic evaluation process, with significant experience coming from volunteers who are part of the core group of evaluation team.

The evaluation process has also been significantly improvised over the years since the time it was first instituted in the year 2002. The process also gained acknowledgement from the nominees as they found value in adopting a structured evaluation framework, adopted for the purpose. The process starts by inviting nominations from various governments at national and state levels, and this requires documenting the initiative under the Result-Enabler framework. This framework has gained significance due to its focus on outcomes rather than outputs. The key component of the evaluation process is the field visit of the shortlisted eGov initiatives, to meet and discuss the outcomes with relevant stakeholders of the projects. This involves significant time and effort of the CSI-SIGeGov volunteers out of their busy schedules. Subsequent to these visits, presentations are made by the shortlisted nominees to the full house of selection committee members in Hyderabad. At the end of this humongous exercise, a few get selected for the awards. The experience gained by the core team over years of evaluation, has brought these awards to a respectful level and recognition by the governments.

One of the underlying objective of the CSI-SIGeGov, focuses on knowledge sharing of e-Governance experiences of all the stakeholders. In this direction, two important interventions by SIGeGov include publications and knowledge sharing summit. The annual publications coming out of the vast documentation of the e-Governance awards helped us to come out with seven publications till now. These publications are
extremely useful to the e-Governance practitioners, government officials, industry and academia. The publications till now include over 460 initiatives spread across India. All the publications are available in public domain at http://www.csi-sigegov.org/publications.php, for the purpose knowledge sharing.

The second initiative in the direction include, knowledge sharing summit (KSS). These are being conducted with the support of the state governments for the benefit of all those associated with designing and implementing e-Governance initiatives. Over the years, the CSI-SIGeGov has conducted four KSS. These two initiatives have added tremendous value for the e-Governance community in understanding the good practices and avoiding re-inventions.

I am grateful to all the conveners of previous and this year’s CSI Nihilent e-Governance Awards, who have made major efforts to benefit the society, with rich contents on e-Governance. The present publication has further improved on the quality of documentation for the year 2013-14. It required enormous efforts to collect, compile, edit and include the latest trends in e-Governance to make the present volume extremely useful. I am sure all stakeholders including researchers of e-Governance and government officials will find the publication very useful, thereby spreading the much needed awareness of the e-Governance initiatives in the country.

As Chairman of CSI-SIGeGOV, I would like to record our appreciation for Shri LC Singh, CEO, Nihilent Technologies and Prof. S. V Raghavan, President, CSI who have made the present publication possible by their support and contributions. I also extend my heartiest congratulations to this year award convenors Mr. Harish Iyer and Mrs. Sridevi Ayaluri for their efforts. A special mention needs to be made here of all the hard work put in by the members of the selection committee and others who joined the team for the field evaluations.

Congratulations to all the award winners, for their efforts and contribution towards the e-Governance movement a reality in India.

4 November 2013

Dr Piyush Gupta
Chairman,
CSI Special Interest Group
on e-Governance (CSI SIGeGOV)
CSI-Nihilent e-Governance Awards, an annual event since 2002, has been a pioneering initiative for two reasons. Not only has it played a key role in recognising the inspiring efforts of officials from all corners of India who have strived to improve the quality of governance through a judicious use of ICT, it has also served as an important forum for exchange of knowledge relating to the domain of e-Governance. Over its eleven year journey, the CSI-Nihilent e-Governance Awards [the Awards, in short] must have received and reviewed over 1,000 nominations. With a view to ensuring that such a rich source of knowledge on the growth and evolution of e-Governance in India finds permanent record, the Award committee has been publishing in the form of annual compendium, selected initiatives from the year's nominations. Since 2006, seven such books have already been published. The current volume is eighth in the series.

This volume, titled Compendium of selected e-Governance initiatives in India-2013, contains, in edited form, information received from forty six nominations which were visited on the field by a team of experts and with whose key personnel, in-depth interactions were had.

Though forty six were shortlisted for follow-up in the form of field visits, finalist presentations etc, for the year 2012-13, over 200 nominations in the form of detailed write-ups were received for the Awards. These write-ups from over twenty five States in the Country are a rich source of information which, individually and taken together, are able to contribute much to understanding the e-Governance landscape of the Country.

For instance, one study of the detailed write-ups received for 2012-13 revealed that only 31% of nominations [out of a sample size of 85 ] were using an open source database [PostgreSQL, for instance] in their project [Figure-1]. At 65%, the number using proprietary databases [Oracle, Microsoft SQL Server etc] were more than double. Some initiatives were not database oriented. On the Operating system front too, the figures were not very different. It was only with respect to Web servers, there appeared to be a measure of balance with 36% preferring open source alternatives [Apache, for instance] to 44% who preferred proprietary solutions [Microsoft IIS etc]
Such findings are significant and revealing given that there is always a debate whether a Government should invest in proprietary ICT tools when open source alternatives have their merits.

As a requirement of nomination, an important information sought from the nominees was a written description of the challenges they faced in their effort at Capacity building connected to their e-Government initiative. An analysis of the key words the nominees had used to describe the challenges is shown in Figure-2. The analysis is based on a sample of 15 nomination forms.
As can be inferred from the relative sizes of words in the word cloud shown, *resistance* from own *officials* [and stakeholders] were cited as among the prominent challenges faced. But quite revealing was the mention, by a majority in the sample, of *varied* requirements [of *stakeholders*] as an issue. While no single e-Government solution can satisfy every stakeholder need, there may perhaps be a case for introduction of advanced capacity building programs aimed at e-Government champions themselves on how best to prepare projects for obtaining early buy-in.

Figure-3

**Domain-wise breakup of the e-Gov initiatives included in this publication [in % terms]**

As shown in Figure-3, though a bulk of the nominations included in this Compendium – about 26% of them – belong to the category of Citizen Service, many other categories such as community amenities, social protection etc too find representation. This was quite heartening because taking the domain diversity of nominations to the Awards as a fair proxy for the domain diversity of e-Governance initiatives on the larger pan-India landscape, one might reasonably conclude that in India, the practice of e-Governance is not narrowly focused and finds well dispersed presence and acceptance.

This compendium carries two invited articles too. Mohan Datar’s paper takes an interesting and yet a not uncritical look at how many sectors –
Government included – are viewing the new, social media through blinkers placed by behaviours learnt from the more traditional ones of the print, voice etc. In a similar vein, Suresh Anantpurkar, in his paper on mobile governance, stresses the need for establishing common standards and platforms so that not every new initiative in this area will needlessly spend 'cycles' reinventing and rediscovering fundamentals.

The analysis shown in this preface are but a small sample of the kinds of studies to which the nomination details submitted to participate in the Awards can be subjected. The structured format in which nomination details are required to be submitted for participation in the Awards – the result of painstaking efforts of Dr.Ashok Agarwal, Dr.R.K.Bagga and Dr.Piyush Gupta and of continuous refinements brought out over the years by other eminent members of the Awards committee- renders such analyses quite feasible. Such information as is being published through this compendium [more of which from previous years is freely available for download from the CSI SIGeGOV website] when subjected to formal studies and research, is fully capable of guiding India towards a position of pre-eminence in e-Governance.

After having pioneered, established and applied most stringent standards for assessing e-Governance projects over a eleven year period, the CSI-Nihilent e-Governance Awards attracts highest quality of nominations and is considered by many as a benchmark. Therefore, suffice it to say, the published volumes of selected nominations papers of the CSI-Nihilent e-Governance Awards – including this compendium - are a treasure trove of knowledge and learning for all who have the domain of e-Governance as their focus.
Section I

Invited Papers

The views expressed in the invited papers are those of the authors and do not necessarily represent the views of, and should not be attributed to the CSI, CSI’s SIGeGOV or CSI-Nihilent e-Governance Awards.
A lot is written in praise of the social media and the revolution it has already brought and continues to bring in the cyberworld as well as the real world. Significantly, it has provided a global platform for freedom of expression, unparalleled in human history. Instant Messenger and Twitter have helped millions during distress and calamities. Facebook has made a phenomenal contribution in strengthening friendships and relationships. Today, it is perhaps the best search tool for finding any person around the world. Everyone knows all these and many other contributions of the social media. The “Arab Spring” in Egypt and how Facebook helped it; the live coverage of the Boston bombing through Twitter are stories that will be quoted for many years. So great is its impact that recently 'Tweet' has been accepted formally as a verb in the English language.

However, it is not yet clear to businesses and governments, how they can leverage the social media for furthering their goals. Technology and business gurus exhort them to embrace the social media or face the prospect of extinction. The situation today reminds me of a lecture I was privileged to attend in the early 1990s. I think it was Prof. Yashpal’s lecture. He said that soon a time will come when if something does not exist on the Internet, it will be presumed that it does not or did not exist. He was emphasising the importance of putting information about Indian Vedic history, literature and knowledge on the Internet. Today, perhaps, the technology gurus perceive a similar threat with respect to the social media. The Y-generation has definitely started forming their worldview through the lens of the social media.

Current Status

The Internet or the World Wide Web has taken firm roots in our lives. We use it to seek information, to communicate with each other via emails, as well as to perform personal or business transactions such as railway reservations, e-commerce and banking transactions. We get directions to reach a place
using map based services. Technology vendors use it to keep tabs on the licensed and unlicensed use of their products as well as for providing automatic updates to licensed users – we no longer have to bother about keeping our anti-virus software or our operating system up-to-date. These facilities of the web are termed as web 1.0. The social media additions and their usage are called web 2.0. e-Government systems which use web 2.0 tools are labelled as e-gov 2.0.

Today, every business and government agency is being urged to create its footprint on web 2.0. This reminds me of a similar phase about fifteen, twenty years back when governments and businesses were advised to build their websites. In the same vein, today they are urged to build their FB pages and open their Twitter accounts. Just as businesses and governments used to struggle with issues related to websites (look and feel, ease of use, content, content management etc), today they are struggling with their social media footprints (content, security, monitoring user responses, attracting traffic to their portals, avoiding the nightmare of user responses going viral etc). The latest story making rounds in this connection is about the disastrous condom campaign of Durex. Allan Farnham reported the following story on June 8, 2013:

“Durex recently asked its Facebook followers to pick which city they thought should get Durex SOS Condoms, which, according to the company’s website, are provided on a rush basis to customers via a smartphone app.

According to Durex’s website, London (with 594 votes) did not win. Nor did Paris (688), New York (363), or Kuala Lumpur (1,420). Tuscaloosa wasn’t even in the running. Pranksters, according to Bloomberg, swung the vote to Batman (1,731), capital city of a conservative Muslim province in Turkey, where condoms are unwelcome.

These days, say experts, any brand that wants to remain engaged with its audience has to have a social media marketing campaign. But such campaigns, they say, are opportunities for abuse.”

In India, according to an article published in The Hindu Business Line on June 6, 2013, ICICI Bank is leading all banks in its use of social media. India’s largest private sector bank, ICICI Bank, has got over 2.1 million ‘likes’ on its official Facebook page. HDFC Bank has about 1.5 million likes
(1.7 million on 12/10/2013) on its official Facebook homepage and Axis Bank has more than 1.2 million likes (1.6 million as on 12/10/2013). But in most cases, its stock response to any communication from social media users is to request them to visit their formal business portal for any information or services. For instance, a customer called Sameer Wagh wanted to know why his ICICI account was inactive and he posted this in the comments of a quiz posted by the bank. The bank replied asking the customer to message his contact details to receive a call back. According to N. S. Kannan, Executive Director and Chief Financial Officer, ICICI Bank, “The social media platform offers us great opportunity to manage customer expectations and experience. All customer grievances are integrated at the back end with the customer relationship management modules built especially for Twitter and Facebook. We have created a separate form to capture queries from the social media platform.”

HDFC Bank’s FB page shows only marketing posts from the bank and does not have any posts from viewers. In case of Axis Bank, the posts are invariably abusive and critical towards the bank. Here again all such posts receive the stock response from the bank making the site full of repetitive messages. The notice on top of the ICICI bank FB page is quoted below:

“Welcome to ICICI Bank’s official Facebook page. We are glad you are here! Please do not post any customer service requests on this page. For a quick resolution, write to care@icicibank.com”

While this helps in ensuring protection from potential business and reputation losses, it also builds an image which many may perceive as unfriendly.

A review of government pages on Facebook from India shows that e-gov 2.0 is in its infancy. The following table shows the state of affairs in India and in USA and UK:
<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>State Govt.</th>
<th>FB Page</th>
<th>Likes</th>
<th>Contents</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maharashtra</td>
<td>Govt. of Maharashtra</td>
<td>903</td>
<td>No government content</td>
<td>Last update 07/12/2012</td>
</tr>
<tr>
<td>2</td>
<td>MTDC</td>
<td>23,506</td>
<td>Mostly marketing posts</td>
<td>Being updated regularly. Last update 03/10/2013</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MIDC</td>
<td>6,548</td>
<td>Mostly photos</td>
<td>Last update 13/05/2013</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Gujarat</td>
<td>Bhuj</td>
<td>8,817</td>
<td>About tourism</td>
<td>There is no FB page for the government.</td>
</tr>
<tr>
<td>5</td>
<td>Andhra</td>
<td></td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Karnataka</td>
<td></td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Kerala</td>
<td></td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Tamil Nadu</td>
<td></td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>West Bengal</td>
<td></td>
<td>133</td>
<td></td>
<td>Last update 07/08/2012</td>
</tr>
<tr>
<td>10</td>
<td>Rajasthan MP</td>
<td></td>
<td>1 or 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jharkhand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Orissa Goa</td>
<td></td>
<td>No presence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>USA</td>
<td>Dept of state</td>
<td>3,97,870</td>
<td>Very useful and contemporary</td>
<td>Last update 17 hrs before</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>content</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>UK</td>
<td>Parliament</td>
<td>17,602</td>
<td>Tourism oriented content</td>
<td>Last update 22 hrs ago</td>
</tr>
</tbody>
</table>

We can see that e-gov 2.0 has achieved some levels of respectable usage only in USA. however, even there, this is limited to a couple of departments of the Federal government.

Another option available for exploiting web 2.0 is through paid advertisements. This amounts to using yet another channel for promotion available to businesses. Like all other channels, this channel also has its
advantages and disadvantages. In addition, being a new medium, everyone, including digital marketing consultants and strategists are struggling with the issue of measurements and metrics to determine the effectiveness and real impact of this channel on the sales growth of businesses. The biggest problem, in my opinion, is the monopolistic situation prevailing today. Google and Facebook have almost total monopoly on this channel. Google’s advertisement revenues (USD 43 billion in 2012), exceed GDPs of several countries in the world. The AdSense model developed by Google is a technological marvel. The model enables corporates to post their advertisements free of cost—they need to pay only when a user clicks on their advertisement link. This payment is also miniscule, amounting to a few cents per click. However, Adsense decides which advertisement will appear in which place through an auction in real time. For more details of how these auctions work, I recommend reading an article by Latanya Sweeney in Communications of the ACM, May 2013 issue.

Still, businesses understand the economics of advertising and so, can handle this aspect of web 2.0 with much more confidence. But they are all groping in the dark when it comes to the first aspect of doing business on web 2.0. There is another flip side to online advertisements. Bodies like CERT (Computer Emergency Response Team) are issuing advisories to users that this channel is also being used for propagation of spyware and malware.

Going back to the future

In this scenario, it will be interesting to see the research findings about the growth of e-government. Today, e-government is fairly established in many countries across the world. Some countries, such as Singapore, Finland etc, have achieved near 100% implementation of e-government systems. The roll out of e-government systems started in the early 90s. Since they were all green field ventures and since they have a huge impact on the lives of every citizen, the e-government projects were of great interest to academicians. As a result, thousands of research papers have been published on this field. Taking a cue from the academicians, all top consulting companies and technology companies have also published research papers or white papers on the subject. There are many papers which deal with the topic of 'Evolution of e-government systems'. Some often sited ones are by Gartners 20000, Capgemini Ernst andYoung, Layne and Lee, World Bank, CMM for e-government etc). The interesting fact is that almost all papers agree that e-government systems evolve (or evolved) through four phases or stages. Various researchers have chosen to name these stages differently, as can be seen in the table below
Essentially the four phases can be described as below:

Phase 1: Making your presence felt on the Internet or web1.0. During this phase, the general advice from consultants and strategists was to build a website. So a large number of websites got created.

Phase 2: Launching some partial services or one-way services, such as 'Forms download' or 'Payment collections' etc. The consultant's advice during this phase was, 'Static websites are passé. You must provide some useful service to citizens'.

Phase 3: Launching 'end-to-end' services. The general workflow involves forms filling – forms submission – scrutiny – decision – communication to citizen. The consultants, during this phase strongly recommended 'end-to-end' nature of service delivery which would enable 'dis-intermediation' and result in direct communication between citizens and the government.

Phase 4: Consolidation. This phase saw the evolution of portals, the concept of 'one-stop government'. It saw the replacement of thousands of e-gov websites of different departments and government agencies by a single portal. Now the consolidation continues at the physical level of government offices and staff. The current buzzwords are cost saving and right sizing.

Conclusion.
I have taken the liberty to describe the four phases in detail in order to demonstrate similarities between the web 1.0 exploitation over the last twenty years and what is currently unfolding in the realm of web 2.0. The phase 1 in Web 1.0 was fully driven and totally controlled by the technology companies and consultants. The governments' role was limited to just being a project sanctioning authority and a funding resource. Are we witnessing a similar situation with respect to web 2.0 or e-gov 2.0 today?

Technology companies were in the driver's seat in phase 1, but the situation was totally different during the next three phases. If one looks at any successful e-gov project falling in phase 2, 3 or 4, one will see that:

a) At every stage of this evolutionary path, the governments had to first re-engineer their processes and implement administrative reforms.

b) This had to be accompanied by strong and consistent efforts at change management.

c) The institutionalisation was achieved through well planned executed strategy for capacity building.

d) And finally, sustainability was achieved through proper technical and financial strategies for maintenance and change request management.

I feel, we can look forward to the evolution of the use of the social media in a similar way. It is not possible for me to predict the next phases or the type and nature of new services and ways of engagements that will emerge. However, I am pretty certain that it will follow the same path as described above. Research papers and models always succeed reality. And reality is always unpredictable. However, a few recommendations and/or predictions can be made for short-term future plans. These are based on current experiments of banks such as ICICI, HDFC, etc. and some innovative aspects of RBI initiatives.

Some short-term recommendations.

In India, ICICI Bank is experimenting with some new services which can be delivered only via web 2.0 and are targeted at gen Y. It is called 'Pockets' and currently provides the following services:

1. Buying movie tickets for a group of friends and intimating them instantly.
2. Sharing the expenses with all members of the group.
3. Sending money to a friend.
4. Recharging prepaid mobiles.

The site says that the Pockets App has 3,700 users. The app is certainly innovative and suited for the web 2.0 paradigm. It will be interesting to see how it grows. The first recommendation is to think on these lines and innovate.

The second recommendation is based on RBI initiatives. In the Indian scenario, four aspects of the 'financial inclusion' strategy of RBI will spearhead the changes:

a. The no frills accounts.
b. Micro ATM
c. M-banking for the no frills accounts
d. AEPS (Aadhaar enabled payment system)

The no frills accounts already surpass the normal savings accounts by a ratio of 2:1. The gap is only going to grow further. The current focus of banks in their social media explorations are solely focussed on Gen Y. I feel that this will not yield much business outcome for the banks—they may gain a few brownie points. This current exercise can be described in the same way as 'democracy'; “by Gen Y, for Gen Y”. What is the point in claiming so many million followers on Twitter or number of 'Likes' to the bank’s FB page, unless it translates into tangible business growth? This situation can change dramatically if some new technology innovation enables doing banking transactions extremely securely via FB or Twitter. But while waiting for such innovation, if banks focus on the no frills account holders, let us call them Gen Z, both parties may reap rich dividends. The Gen Z customers are new to banking. At the same time, they have leapfrogged in terms of technology, directly to m-banking. They use 3rd generation identification methods, viz., Aadhar based authentication. So Gen Z customers are technologically better positioned than Gen X or Gen Y customers. In addition to this, a huge amount of government funds has already started moving through AEPS and the volume is going to grow in the near future. So, in all respects, this should be the focus area for banks, including their experiments with the social media.

What the Gen Z customers lack is 'financial education'; the 'dos and donts', 'best practices', 'various financial products available to them',
'various loans and advances available to them' etc etc. The social media with its advantage of personal attention and speedy responses could create a wonderful ecosystem for these customers. A major constraint in achieving this will be the ability to provide these services in regional languages. But banks can surely overcome this barrier with the help of available products and tools as well as thousands of 'Ap developers' who will be only too willing to pitch in. Similarly, as e-governance moves forward on the path of inclusive growth and financial inclusion, the new or emerging challenge will be 'end user or citizen education'.

The third recommendation is that banks should first build proper processes, systems, resources and infrastructure to monitor social media for protecting the bank’s reputation, before embarking upon any social media based activities. Banks should not rely only on software based monitoring. They must also have adequate human resources and infrastructure to take stock and respond quickly to any fire fighting situation that may arise any time due to the current nature of the social media.

According to a survey conducted by Wipro Technologies and European Financial Marketing Association (EFMA), and released on June 6, 2013, one of the weakest areas for banks is the ability to have a real time single customer view of products and transactions integrating all channels, although most banks surveyed expect to have this capability within the next 5 years. Other areas of weakness the survey found are in the limited use of test and learn processes, and the lack of measurement of return on marketing investment in digital channels. So, the third and final recommendation is to keep trying out delivery of real banking transactions, either partially or fully through the social media for the benefit of Gen Y customers. What will click and what will fail can be known only through trial and error.

The fourth recommendation is for e-gov 2.0 aspirants. Grabbing domain names and then selling them at a profit is a regular business in web 1.0. Similarly, making FB pages and then selling them could happen in web 2.0. In case of domain names, an independent body exists which can arbitrate and help in restoring the rights to the genuine party. At present, similar structures do not exist in web 2.0. So, building your official FB page at the earliest is recommended.
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   http://www.soravjain.com/25-indian-social-media-marketing-case-studies
8. Financial inclusion and financial literacy, by Dr Deepali Pant Joshi, Executive director, Reserve Bank of India.
9. Frequently asked questions by banks about Aadhaar enabled payment systems, by NPCI.
15. Evolution of e-government, CMM for e-government by Okot-Uma, Rogers Wo

Mohan Datar is a Fellow of Computer Society of India, a member of executive steering committee of SIG-eGov of CSI and a member of program committee of European conference on e-governance (ECEG). He has extensively worked in the business domains of e-government, Electricity Generation and Distribution, Banking, Insurance and hospitality. He has over 38 years of experience in IT. He works as an independent consultant and trainer email:mrdatar@gmail.com
Availability of mobile connectivity and penetration of mobile technology in India has opened up significant opportunities for businesses and government entities to improve citizen service delivery.

Financial institutes are using mobile technology to provide timely alerts via SMS or outbound calls to customers of any activity in their account. Similarly, most banks have launched mobile banking applications which enable banking on the mobile. Education institutes are using mobile to keep parents informed of the progress of their child and other activities in the school.

This transition from manual service delivery to mobile service delivery is significant and revolutionary. Another interesting aspect of mobile technology is the ability to help enable service delivery in the local language (ex. Voice based services, SMS in local language, Mobile application in local language).

Citizens, Business and Government employees (called CITIZENS) avail the services provided by the Government but more importantly, it is also critical to let citizens know of their rights and the role of Government in the society. Manual and IT Enabled services have succeeded in achieving the objective to a certain extent, but Mobile based information and service delivery can bring governance at the fingertips of the CITIZENS.
Mobile Governance – Service Categories

The services can be broadly categorized as follows

Information Service (Push & Pull)

Push

- Status of birth certificate
- Status of marriage certificate
- Re-evaluation of mark-sheet
- Status of PF withdrawal request
- Status of on PAN card, Passport, Birth Certificate, Income Certificate
- Notification to Govt. employees upon generation of pay slip
- Notification to pensioners upon depositing pension in bank account
- Notification to the bidders on the status of the bids they are participating in

Pull

Stakeholders use the mobile device to query for the status of the service they have applied for

- Student / Parent queries the status of the re-evaluation of the mark-sheets
- Citizen queries the status of the birth / marriage / income certificate by entering the application id
- Bidder queries the status of the bid by entering the unique bid id
- Govt. employees checks the leave balance by entering his / her employee id
- Govt. employee checks for the status of leave application
*MSP – Managed Service Provider (also known as PPP Vendor)

Payment Service

- Payment of utility bills
- Payment of taxes
- Payment of fines
- Payment for services offered by Government (i.e. driving license, birth certificate etc...)

Payment request initiated

Payment details sent to the concerned department

Payment receipt delivered to citizen

Payment status update sent to MSP

Payment authorization response
Request for a Service

- Request for improving road condition in the locality
- Request for providing basic amenities in the area
- Request to improve garbage collection mechanism with ideas from citizen
- Application for issuance of birth certificate
- Application to renew driving license
- Government Employee – requesting for leave to the authorities

Delivery of Service by Government Authorities

- Inspection of road condition by Government Authorities
- Inspection & Reporting of Garbage collection in the city
- Inspection of Land / Business Premises for granting certain permissions
- Inspection of progress of Rural Housing Development Scheme

*MSDG – Mobile Service Delivery Gateway (Mobile Governance Platform)*
Potential of Mobile Governance Initiative

Apart from providing convenience of anytime – anywhere service delivery, mobile governance also helps eliminate the need to have intermediaries for information and service delivery. Each of the above categories of services if implemented effectively can have significant positive impact on the quality of life and governance.

In order to achieve the objective of anytime – anywhere – any mobile device service delivery available to all and more importantly accessible by all, a well thought out mobile governance initiative need to be undertaken.

Due to the diverse nature of our society in which people use various categories of mobile devices having significantly different usage patterns, language preferences and literacy levels a mobile governance platform to cater to all is that much challenging.

An effective communication strategy in predominantly urban area would include a downloadable mobile application with various options but the same strategy may not work in the semi-urban and rural areas due to the lack of awareness and willingness to use data services and the preference towards regional language to communicate.

Another factor which plays an important role in the effective implementation is the common mobile governance platform initiative at the state level. Instead of each department embarking on the mobile governance initiative of its' own, state government must look at creating a common platform as a shared service for every department to connect to for providing service to the citizen. A well defined and implemented common / shared platform can result into significant benefits of scale, technology innovation, time-to-market and shared learning.

As citizens need to interact with Government at various levels, one of the quickest ways to popularize and create awareness about mobile governance is to enable citizen centric Push information and Pull information services. But, the significant benefits of mobile governance platform can be realized only if Mobile Payment, Citizen Grievance Redressal and G2G services (i.e. Govt. depts. using mobile technology to improve the governance) are implemented by the state.
The G2G (Government to Government) services can help bring transparency, accountability and efficiency in the overall governance provided the implementation is focused on capturing the data at the point of origin which otherwise was not possible due to the restrictions imposed by technology and cost. Whereas, the mobile payment services (self and agent assisted) can help save significant amount of citizens time.

The Citizen Grievance Redressal system can provide a platform for citizens to voice their concerns and track it to completion using mobile application. Mobile Governance initiative can also help Government create a large number of mini citizen service centers by enabling the local “Kirana” Shops as trusted agents to provide the necessary services to the citizens (mobile phone with an application – ex. Payment of utility bills, request for re-evaluation of marksheet, request for certificates where no additional documentation is required).

**Standardization And Framework**

Implementation of a common mobile governance platform requires creation of standards and frameworks. The managed services provider and the IT department of the state implementing mobile governance need to work together to create

- An API standards document for various departments to integrate with the platform for services
- Security Guidelines for departments to follow
- Data Privacy to be implemented at the platform level
- Guidelines for enabling agent based payment
- Payment Reconciliation process document for mobile based payment transactions
- G2G Services - Mobile Device Security Implementation guidelines
- Service on-boarding and Customer Support process

This is an indicative list; various other uses of the platform like use of the platform for marketing and communication, use of the platform for promoting innovation etc… are not discussed here.
Conclusion

Though various state governments have started using mobile to interact with citizen, a comprehensive mobile governance initiative is yet to take place. The benefits a common mobile governance platform offers are immense but realizing those benefits requires careful planning as well as buy-in from all the departments from the state.

Suresh Anantpurkar is a consultant working with Government of Karnataka on Mobile Governance Initiative. He has helped define the mobile governance strategy and implementation plan for the state. He is also an adviser to startups working on products in the mobile technology area. Earlier Suresh worked as the President of mChek, a pioneering company in Mobile Banking and Payments area. He is an Engineer with Management Degree from Indian Institute of Management, Bangalore (IIM-B) with a special focus on Strategy. Email: sanantpurkar@yahoo.com
Section II

State and Sustenance Initiatives
For the CSI–Nihilent e-Governance Awards team, the State award occupies a position of eminence and efforts are continuously made to identify key parameters that distinguish e-Governance promotion indicators (Enablers) from measurable outcomes (Results) in the process of selection. While all States drive their ICT investments based on a common set of broad guidelines and priorities, providing effective citizen services continues to be a priority item of service delivery for all of them.

An abridged version of the details provided by the Award winning State – Himachal Pradesh - is presented below:

**Award of Excellence - Himachal Pradesh -State Nomination**

The Government of Himachal Pradesh is using Information Technology to usher in an era of e-Governance aimed at simplifying processes, bringing in transparency, accountability, providing need based, quality and timely information to all the citizens of the State. Towards this goal, the Government has implemented several e-governance initiatives in various Departments of the State – as shown in Table-1

The vision of Department of Information Technology is to:

<table>
<thead>
<tr>
<th>Himachal State Wide Area Network (HIMSWAN)</th>
<th>Capacity Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Services Centres (also known as LMK)</td>
<td>E-District</td>
</tr>
<tr>
<td>Mini State Data Centres</td>
<td>HIPA Video Conferencing</td>
</tr>
<tr>
<td>State Services Delivery Gateway</td>
<td>IT Park</td>
</tr>
<tr>
<td>Aadhar</td>
<td>E-Pass</td>
</tr>
<tr>
<td>Agrisnet</td>
<td>Mobile Services Delivery Gateway</td>
</tr>
<tr>
<td>NeGP – Agriculture</td>
<td>Integrated Community Service Centre (i-CoSC)</td>
</tr>
<tr>
<td>e-Peshi</td>
<td>Jan Seva Kendra</td>
</tr>
</tbody>
</table>

Table-1
• Promote Information Technology Penetration in the State
• Provide better Government-to-Citizen Service Delivery

The data in the following table provides some of the performance parameters which have helped in accelerating the growth and use of Information Technology.

Result Indicators HIMSWAN Project:

**ENABLER INDICATORS:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Planned</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Outlay (GIA+ACA) (Rs. Cr)</td>
<td>95.88</td>
<td>88.04</td>
</tr>
<tr>
<td>Expenditure GIA (till 31st Mar-2013)</td>
<td>40.08</td>
<td>40.08</td>
</tr>
<tr>
<td>Expenditure ACA (till 31st Mar-2013)</td>
<td>16.85</td>
<td>16.85</td>
</tr>
<tr>
<td>PoPs established</td>
<td>132</td>
<td>132</td>
</tr>
<tr>
<td>Horizontal Offices Connected</td>
<td>1350</td>
<td>1350</td>
</tr>
</tbody>
</table>
The other details provided by the State in its nomination paper described

Process Re-Engineering-HIMSWAN Illustration

<table>
<thead>
<tr>
<th>Security</th>
<th>Enterprise Management System</th>
<th>Helpdesk Management System</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HIMSWAN Security Policy (HSP) document which contains overall security framework, including Intrusion Prevention System, Firewall and Anti-virus. All equipment in the network uses the HSP as a checklist for security audit</td>
<td>EMS has been deployed at HIMSWAN NOC, to manage and monitor the entire HIMSWAN Network components (including Routers, Switches, links, etc.), Servers and applications at State Data Centre round the clock basis. This helps in proactively diagnosing and resolution of any technical hindrance for smoother HIMSWAN operations. In addition of fault detection, these tools are capable in providing reports for network availability, link utilization, network device performance, Server statistics and performance, SLA reports, which are required for analysis and future capacity building</td>
<td>As HIMSWAN is the core IT platform of e-Governance for Government of Himachal Pradesh (GoHP) it becomes necessary to have reliable services available on 24 x 7 basis. These services are provisioned across the State using various components such as routers, switches, security devices, modems, lease lines, ISDN/dial-up lines, LAN, application servers, e-mail, information and utility portals, workstations, and Internet of course. Heighlights of Helpdesk systems are:</td>
</tr>
<tr>
<td>• HIMSWAN is created with security in context. The guidelines of ISO 27001 are being followed to address the comprehensive security needs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The HIMSWAN has been setup using three-tier architecture. The Points of Presence (PoPS) have been created at three levels, i.e., at State/ District/ Tehsil or Block Headquarter level, to provide connectivity to various government offices across the State. The HIMSWAN connectivity is available to all the GoHP offices across the State from the nearest POP. The Network Operating Centre (NOC) is at State Headquarter Level, i.e. SHQ. All the 12 District Headquarter level PoPs (DHO) are connected to SHQ using MLLN links of varying bandwidth from 6 to 20 Mbps. The Tehsil/ Block/ Sub Division level PoPs (THQ) are connected to DHO level PoPs using 2 Mbps MLLN. The network architecture of HIMSWAN is designed on proven standards and technologies and a secure, reliable, accessible, configurable and scalable, high performance, high-bandwidth network.
several other features of its e-Governance road map - such as those pertaining to its Citizen Service Centers, SSDG etc - in some detail.

Understanding the role of a State machinery in the promotion of e-governance within its borders is a complex task. Prior to 2011-12, for participation in the CSI-Nihilent e-Governance awards under the State Category, a fairly elaborate but mostly descriptive nomination form and related assessment criteria were in use. This has since been simplified and rendered crisp and focused.

Given the premier position that the State Government Awards holds within the CSI–Nihilent e-Government Awards hierarchy, exercises in reformulating the template for assessment of performance of states is expected to be an ongoing task.

Prabhu Gollamudi was the co-convener of the CSI-Nihilent e-Governance Awards for two years from 2010. Having been associated with National Institute for Smart Government, CMC etc, he belongs to the pioneering group of experts in the field of e-Governance. He is currently consulting Robert Bosch Engineering & Business Solutions Ltd (RBEI) on Government Business.
Since its formal inception in 2002, the CSI-Nihilent e-Governance Awards (CNEA) has recognised several hundred e-Governance initiatives in the Country. As early as in 2004, CNEA emphasised – through institution of an award - that in addition to focusing on year-on-year efforts, the e-Gov practitioners need to pay attention to initiatives, processes and controls that contribute to long term survival and growth of projects. Or, stated differently, to sustainability of projects.

Sustainability in the e-Governance sense may viewed – if not as a state of balance, then at least as a reasonably well managed state of dynamics - where preparedness for future [plans for functionality growth, funding arrangements, ICT enhancements and stakeholder involvement etc] co-exists with focus on the present – the form and number of services, the degree of convenience etc.

With a view to better understanding the e-Governance initiatives from the point of view of sustainability – and, in fact, with a view to understanding how sustainability itself should be defined and viewed from e-Governance perspective – a detailed study was conducted as part of CSI-Nihilent e-Governance Awards 2010-11. The study was chaired by Dr.AshokAgarwal [Adjunct Professor, BITS] and assisted by Prof SanjivVaidya [Professor, IIM Kolkata] and K.S.VijayaSekhar [Life member CSI]. The result of the exercise was published in the CNEA annual compendium of 2010-11. In order to give a formal shape to such an emphasis on sustainability, CNEA decided in 2010 that past winners of CSI-Nihilent e-Governance awards should be revisited, re-evaluated and re-awarded should such a follow-up action suggest appreciable efforts at sustainability.

Building on this pioneering effort, a new template was designed for the current year – the CSI-Nihilent e-Governance Awards of 2012-13 and winners of project category of CNEA awards of 2007-08 were invited to submit nomination using this new template. In addition to describing how their projects had evolved over the five year period from 2007-08 to 2012-13, the nominees were required to provide such information as whether the original initiators of the project and the original ICT team continued to be associated – even after five years – with the initiative, and if not, how had the
team composition changed over the years, how many times etc. The nominees were also required to specify how the functionality had grown and how the ICT components too had kept pace with the changes during a five year period.

It is heartening that this effort resulted in gathering of significant amount of information which helped improve CNEA’s understanding of Sustainability in the domain of e-Governance.

The following five projects winners of CNEA 2007-08 who participated in the exercise using the revised template, were eligible for Award of Sustenance for the year 2012-13.

1. Integrated Workflow System for Paperless Admissions to AICTE approved Courses in Haryana, Haryana (Ghan Shyam Bansal, DDG & SIO, NIC Haryana sio-hry@nic.in & Susheel Kumar, TD-NIC, Haryana, susheel.kumar@nic.in)

2. Gram Vishwagram Project, Gujarat (A K Rakesh, Member Secretary and Development Commissioner administrator@egram.co.in & Punamchand Parmar, Chairman & Principal Secretary, secprh@gujarat.gov.in)

3. Digital workflow using MESSAGE in Government of Kerala, Kerala (P Balakiran, IAS Director, KSITM director@keralaitmission.org & Ajit S, Head-eGov, ajith@keralaitmission.org)

4. Property Tax Self Assessment Online, New Delhi (M S A Khan, IRS mshahidakhan@yahoo.com, anc-ndmc@mcd.gov.in & P K Gupta, IAS, Commissioner commissioner-ndmc@mcd.gov.in)

5. e-Procurement, Chhattisgarh (A M Parial, CEO, CHiPS, ceochips@nic.in)
Section III
CSI-Nihilent e-Governance Awards 2012-13
Selected Project Entries
“MeeSeva” in Telugu means ‘At your service’, i.e., service to citizens. It has been conceptualised and planned with the objective to provide universal and non-discriminatory delivery of all government services using information and communications technology. MeeSeva is providing faster, easier and transparent access to various G2C services through more than 7000+ kiosks. All documents rendered in MeeSeva are digitally signed and electronically verifiable making them tamper proof. The kiosks are run by self-employed youth in the remote corners of the state. MeeSeva was launched with a seed investment of Rupees 9 Crores; the user fee model and 2.6 Crore transactions allowed it to more than recover the investment. With more than 1.5 Lakh transactions /day, rising up to 2 Lakh transactions /day, annual savings to citizens could be whopping Rs. 6000 Crores. More than 99% of the transactions have been delivered within the promised citizen charter time limits.

RESULT INDICATORS

1. Key Performance

ICT Based Services

MeeSeva currently has 157 high impact services. Category A (high volume, high impact services are delivered across the counter) and the services involving workflow and field verification are categorized as Category B with strict citizen charters. Twenty Six Services belong to Category A [service delivery within 15 minutes] and remaining 131 services are Category B [service delivery as per citizen charter]. Besides this, the project also delivers more than 20 crore transactions every year for other services like bill payments and a big range of B2C services making it the country's biggest one stop e-governance shop.
Current Stakeholder Benefits And Implementation Coverage

MeeSeva which is operational across all the districts of Andhra Pradesh for a population of 90 million people has truly made service delivery very convenient for the citizen. Prior to the launch of MeeSeva project, applicants used to visit the respective departments to avail services, and many a times required multiple visits. After the implementation of MeeSeva, approx. 33% of the applicants are able to get their certificates within one visit. In other cases, applicants need to visit the MeeSeva Center only two times to avail the services. 33% category A services delivered across the counter, remaining category B are delivered as per the citizen charter through more than 7000 kiosks reducing logistics cost and eliminating role of agents/brokers/touts etc. 10% of total number of kiosks are managed by women operators thereby providing direct employment to over 700 women.

Benefits to Government have accrued in the form of improved inter-departmental co-ordination and connectivity, transparency in the provision of services, removal of redundant manual processes, and drastic reduction in overall cost and time of service delivery. The Service providers too have benefited from automated electronic funds transfer, clear definition of service levels and citizen charters and reduced interaction with Government offices.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

MeeSeva is seen as a realization of the direct and manifested will of the citizen. The political leadership channelized the demand generated by the people into the effective delivery of citizen-centric services. It also allowed a relook into age-old archaic procedures, which were no longer relevant. The reengineering of the business processes of the departments became both the prerequisite as well as the byproduct of MeeSeva. The efficiency levels of departments have also increased as IT deployment drastically reduced their avoidable workload.

Innovative Ideas Implemented

- **Integrated Service Delivery Model** to provide a single entry and exit point for a wide range of services
- **Legal framework**, “Andhra Pradesh Information Technology Rules (Electronic Service Delivery), 2011” to provide legal sanctity to digitally signed certificates.
- State electronic certificate repository (SECR) to store issued certificates in the public domain for verification using unique application number.
- Secured stationery with 8 security features to eliminate fraud.
- Customized SMS for administrative officers and citizens informing pendency of applications.

Levels Of Integration

MeeSeva has been integrated with several external/internal Government ICT systems. Centralized CARD for Registration Department, WEBLAND for Revenue Department, ISES certificates (for caste, income and nativity) and Universal Birth & Death Certificate for Municipality & Panchayats and Centralized CDMA system (Commissioner & Director of Municipal Administration); software applications were created eliminating traditional inefficient departmental processes. This was done by incorporating advanced technology for automating the services and redesigning existing workflows to optimize efforts.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

MeeSeva initiative has taken a holistic view of Government procedures, paying more attention to Government process re-engineering to increase operational efficiency and citizen satisfaction. MeeSeva has enabled the procedural changes in various front and back office processes to enable faster delivery of services, optimization of operational cost and improvement in quality of service delivery. MeeSeva now has integrated front and back office processes; where many of the earlier front office processes have now been shifted to back office. The GPRs were identified in various dimensions including technology, human resources, organization procedures etc. MeeSeva services are now delivered through kiosks, where kiosk operator receives citizen application, captures details of application in frontend-software system. Front end - delivery channels like eSeva centers, CSCs etc. are established to cater to citizens' service requests. Wherever there is any shortfall, new CSCs are established.
Through centralization of databases, digitization of records and digital signatures, the back office processes have been drastically reformed and the citizens—especially those from disadvantaged sections of the Society—have been spared the ignominy of remaining as mute spectators.

Challenges Faced In Implementing Process Changes

- **Administrative Control and Establishment of CSCs:** Establishing the CSCs needed institutionalisation in implementation to ensure that the service delivery was prompt and no disappointment was caused to the citizens.
- **Parallel Issuance of the Services:** Though citizen centric services from various departments were identified and are being offered through MeeSeva, many government officials resorted to the traditional methods of delivering the services.
- **Distribution of Digital Signature and Renewal:** Digital signature distribution and renewal posed a challenge as initially there was only one centre for issuance and renewal of their digital signatures.
- **Implementation of Citizen Charter & SLA:** The MeeSeva project has to bring in strict adherence to citizen charter time limits.

Lessons Learnt From The Process Re-engineering Exercise

The biggest key learning of the initiative is just a reiteration of the adage, that "where there is a will, there is a way".

- **Transformative Leadership** exhibiting the realities of purposeful, progressive and visionary governance is a critical driver to implement changes.
- "**If you cannot measure it, you cannot manage it**": Evaluating the progress of the implementation of GPRs, needs constant monitoring and surveying.
- "**Learning to hear and be heard**": The theme of communications is critical to implement GPRs and remains a key factor in overcoming challenges of implementing and sustaining the re-engineered processes.
- **Shared vision & common direction:** MeeSeva has taken a collaborative approach by engaging various stakeholders (Government Departments, SCAs, Citizens) in the implementation process.
2. Change Management and Capacity Building

Leadership Support

IT&C department played a key catalyzing role in the entire process. It evolved the concept, became the main implementer and technology partner. It collaborated with the Institute of e Governance (IEG), Hyderabad to organize trainings to kiosk operators and department officials on MeeSeva services.

Change Management And Capacity Building Strategy

IT&C department has adopted a strategic approach to train government employees through repetitive and interactive training sessions to use the system without reducing their perceived importance in the entire administrative set up. Further kiosk operators were provided on-field training by MeeSeva capacity building team and an independent feedback mechanism (1100, MRTS etc.) were established to solicit regular feedback from the citizens.

Government departments have put life and breath into successful implementation of the project. The participating departments worked overtime in bringing and delivering their services through MeeSeva, organising the trainings to their staff and following up with the progress of MeeSeva and adhering to the timelines. Monthly training calendar is prepared and communicated to government offices and kiosk operators, who can attend the training as per the schedule.

Project Management

PMU MeeSeva: Project Management Unit at IT&C department, AP Secretariat addresses every single issue (citizen grievance report, change request etc.), received through unique email id (pmu.meeseva@gmail.com), coordinates with service providers and concerned government department(s) to resolve the issue and provides timely issue resolution (status report/feedback to kiosk operators/citizens). The following Problem Resolution techniques have been adopted in MeeSeva.

MeeSeva Request Tracking System (MRTS): MRTS has been introduced for automatic tracking of requests.

1100: Customers can call this number and register their complaints or seek information.
Online Discussion Forum with FAQ:
“(http://MeeSeva.gov.in/APSDCDepartment/User Interface/DiscussionPage.aspx)”: This forum is open to the MeeSeva Users, kiosk operators etc.
Help Desk email ID: (http://MeeSeva.gov.in/APSDCDepartment/User Interface/Help-Desk.html): e-mails can be sent directly to this helpdesk mail Id for suggestions, complaints and grievances.
Field Surveys: The feedback from the beneficiaries is being obtained periodically by teams visiting the centers

Financial Model

MeeSeva works on public–private partnership (PPP) mode wherein MeeSeva Centres are maintained, operated and run by authorised agents (AAs) who are appointed and managed by authorised service providers (ASPs). These ASPs and AAs are government approved agents mandated with proper terms and conditions for delivering the service.

Efforts At Sustainability

Economic Sustainability: The user fee model extensively designed considering financial requirements and operational expenditures of the MeeSeva takes care of economic sustainability of the initiatives.
Capacity Building: IT&C Department has collaborated with IEG, Hyderabad to organise trainings to kiosk operators and department officials on MeeSeva services.
Infrastructure: MeeSeva brings in a digital PKI enabled integrated architecture through multiple service delivery points by fusing in various pre-existing state initiatives with mission-mode projects like State Data Centre (SDC), State Wide Area Network (SWAN) and common service centres (CSCs).

Challenges Faced In Change Management And Capacity Building

Low ICT Awareness among the key stakeholders was a significant challenge to begin with. In publicizing MeeSeva till the rural level, media has played a very important role. Posters, hoardings, advertisements, pro-active reporting have all played a role in stabilizing this initiative. MeeSeva also made extensive use of social media like Face book / Twitter in taking the message around. Determining logistical challenges for capacity building early has been critical with changing dimensions like increasing number of services, their user manuals, latest citizen charters, secured stationary and hands-on training needs of both government officials and kiosk operators.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

Efficacy of Capacity building - Monitoring the performance of Kiosk transactions: Capacity building has become dominant subject with the advent of MeeSeva. It was learnt from past experience that domain experts, too, play a vital role in making the exercise a complete success. Hence the criteria of involving domain experts was identified and applied to enhance the effectiveness of the capacity building initiatives.. In addition to this, report card system was adopted in order to obtain feedback from the stakeholders on training imparted.

Capacities of the Kiosk operators with respect to the Citizen requests: The most common criticism was the lack of knowledge and awareness due to the increasing number of services. A handbook on the MeeSeva services was provided to all operators which acted as a ready reference and not only helped them meet the demand of the citizen queries but also increase the awareness and hence transacting all the services launched through MeeSeva.

3. Technology

ICT Solution Adopted

The entire solution is hosted in a state-of-art state data centre with a robust infrastructure.

The n-tier web-based solution was developed along with PKI Engine and payment processing systems. The maintenance of the application software is performed by System Integrators (APOnline, HP) as part of their contract and NIC (department applications). The server maintenance is done by SDC team.

Compliance With Standards

At the application level, MeeSeva application has been security-audited initially by a Cert–in certified agency and by STQC and the deficiencies rectified.

Security And Confidentiality Standards

All the data is located in co-located departmental servers in a highly secured environment in SDC, where all the security policies are under implementation. NMS is in place and firewalls are functional.
The MeeSeva Portal is integrated with PKI components such as Form Signer and Form Signer Pi to authenticate the respective individual for accessing the portal as well as to process the requests through digital signatures. MeeSeva Portal uses standard Web technologies and techniques such as secure sockets layer (SSL), HTTP redirects, cookies, JavaScript, and strong symmetric key encryption to deliver the single sign-in service. The sign-in, sign-out, and registration pages are centrally hosted in the MeeSeva Portal.

- All critical servers accessible via internet are being protected by a router or firewall approved by the information technology and communications department.
- All internet commerce servers including payment servers, database servers, and web servers are protected by firewalls in a demilitarized zone.
- All connection between APSDC internal networks and the internet are through an approved firewall and related access controls.
- Intrusion detection systems are installed at the firewall to monitor external hacking attempts and to monitor changes within the firewall itself.
- All systems within APSDC have static IPs.
- All suspicious network activities are monitored and blocked.
- Bandwidth utilisation reports are generated and logged.
- The gateway is integrated with the antivirus wall.

**Disaster Recovery And Service Continuity**

Considering the potential threat to established application and database servers, a temporary DR site has been created at the NIC Hyderabad. The goal of the DR site is to minimise any negative impacts to MeeSeva operations. Arrangements are being made to setup a DR site at NIC Delhi.

**Technology Related Challenges Faced**

- Providing services through multiple SCAs (service centre agencies) under single window.
- Integrating with various heterogeneous systems used by different departments using single sign-on.
- Providing multiple real-time transaction status reports at various levels.
- Transfer of service charges/statutory charges to the respective departments.
• Issuing certified copies (stored tiff images) in Category A mode
• Managing huge transaction volumes, i.e., more than 1.5 lakh per day.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Thorough preparatory work is important to avoid mishaps or breakdowns in service delivery, availability and updating of accurate data, adherence to service delivery timelines, monitoring the performance and dynamic evaluation from time to time. Following are some of the lessons learnt during MeeSeva implementation:

• Maintaining/Tracking Application Changes: Due to high volume of frequent changes occurring in various services, issue tracking has become difficult over a period of time. Hence an online change history management system is deployed, where all the changes and its details (including the person requesting, request date, scanned copy of request, implementation date etc.) are maintained and is accessible to all the stakeholders.

• Managing Department and User Charge Transfers: Electronic fund transfer system (integrating with bank system) was developed to transfer funds electronically to all the service providers and SCAs to ensure near perfect reconciliation.

• Request data is being updated after completion of transaction (posting through batch mode with single connection) to avoid high traffic on client server, which has reduced transaction time and transaction failures.

• Temporary tables were used to avoid load on the server while accessing various MIS reports by officials. This avoids accessing live tables for report generations.

• Web-services have been deployed to connect departmental database, instead of using costly ISDN/leased line.

• Online issue tracking system is deployed to manage entire stakeholder issues in a transparent and easy manner.

• Component for SCA payment integrations was developed to support easy plug-ins for newly developed services. Otherwise SCAs payment web-service had to be added in every new service.

• Uploads have been restricted to only pdf files to avoid virus infections to the system.
VALUE INDICATORS

Digital Inclusion

MeeSeva is an all-inclusive programme, and has vastly benefitted all sections of the society, and especially the poor section who rely heavily on welfare schemes for their well-being. Following are the specific steps taken to address digital inclusion:

- Universal access to physical ICT infrastructure through distributed network of CSCs.
- Promoting awareness of the benefits of the initiative through multimedia promotions.
- Enabling environment and policies for the development of ICT
- Capacity building by providing system training to department officials and kiosk operators.
- Access to system through internet or other networks to kiosk operators and department officials
- Incorporating innovative methods of communication: Online forums, social media, video conferences etc.
- Fostering the development of a knowledge based society and bridging the digital divide
- Appropriate access to system through access to local language

Green e-Governance

Centralized architecture eliminating the requirement of huge hardware establishment at regional levels has saved lots of power consumption and e-waste. All the services are online, served through MeeSeva kiosks, saving the papers used for government approval process for delivery of various services. Government of Andhra Pradesh as part of its green governance and social responsibility initiatives recycles all the e-Waste available in various government departments.

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ELECON software, winner of 11th National e-Governance Award (Silver Medal) 2008, is a workflow based application system (Process diagram given below) which has now improved by leveraging spatial and textual data to generate various MIS reports. ELECON is the first software in the country to extensively use ICT in the election processes. The software is used to bring transparency and fairness in the poll practices, maintain data secrecy, and implement mechanisms to weed out any kind of bias. ELECON's latest release has been strengthened through multi-layered randomisation and security in the workflow environment where database is in central repositories to enable service delivery electronically.

RESULT INDICATORS

1. Key Performance

ICT Based Services

G2G Services:
- Identifying each designated polling staff by an unique serial number, i.e., personal identification number (PIN) valid for the entire state
- Deployment of two tiers of random number generation techniques for polling party formation and its deployment (booth tagging) with zero bias
- Standardised application for parliament and assembly elections with capability to support local elections to Nagarpalika, Panchayat (local bodies election) etc.
- Supports simultaneous elections to parliament and assembly
- Deployment of forces through randomisation
- Deployment of EVM machines
- RO/ARO level counting
- Monitoring of election poll progress
- Monitoring of poll preparations
- Facility for on-line verification of Commission’s criteria for staff deployment in polling party and its deployment
- Automatic application/data integrity checking before commencement of processing
- Generation of appointment letters with photo features
- Online reporting of election related events

**G2C Services**
- SMS alert to voters
- Enquiry of voter list
- Helpdesk facility for voters
- Result publication and counting details
- SMS monitoring of polling party and polling events including hourly poll percentage
- Live web casting from large scale booth across the state.
- Helpdesk and online search facility for voters
- Online request for voter ID card
- Online E-PIC management
- GIS mapping of election booth and integration of election rolls with booth for enquiry

**G2E**
- Online submission of personnel profile
- Appointments for election through SMS
- SMS alert for training
- Online enquiry for posting on booth

**Current Stakeholders Benefit**

ELECON deploys random number generation techniques and eliminates all the biasness of the manual process. Employees on election duty do not know where they will be posted or who their colleagues will be until 72 hours before elections. As the party formation process is automated, employees cannot favour anyone even if they wish to. Screen based validation has been provided in ELECON to verify the correctness of ECI guidelines in deploying staff in the party to the satisfaction of the observers. Observers can carry out the process of randomisation as many times as they wish before locking the data. Only they have the authority to unlock the data for re-processing, if required.
According to the Peoples Representation Act, once the election date is declared, all employees of the district, irrespective whether they are of the state or central government, come under the direct control of the District Magistrate. Communication may be sent to notify personnel for attaining election related trainings or receipt of appointment letters, receipt of election materials or receipt of tour advances of staff for duty etc. All this is handled with ease by ELECON.

Implementation Coverage

The system has been implemented across 38 districts of Bihar consisting of 534 blocks, 243 assembly segments and 40 parliamentary segments of the state of Bihar.

Efficiency And Improvement Initiatives

Time And Cost Efficiency

Election activities are time-bound processes. Resource requirement for these activities in terms of man, money and material are very large. There is an increasing trend of expenses in each and every election. In addition to preparing appointment letters, other resources like trained typists, supporting staff, supervisors, refreshment for the staff on duty, preparation of registers polling staff wise, photocopiers etc. are few of the activities that are self indicative of the resource intensive nature of the process. ELCON helps in reducing the resource requirement substantially.

Levels Of Integration

Interfacing has been done with voter ID database, SMS gateway, GIS national database. The online ELECON application is hosted at NIC data Centre. The application is accessible at the block level through Bihar SWAN. CSC operators have been trained to access the application so that anyone can apply from the Panchayat itself. The application is being integrated with the e-district project after clearance from ECI. The web GIS module has been integrated with the state GIS framework developed by NIC. SMS services as been integrated with NIC SMS gateway.
ENABLER INDICATORS

1. Change Management And Capacity Building

Management and Capacity Building Strategy

Management
NIC Bihar and the Election Department, Government of Bihar has nominated officers as project members of the Bihar Core Project Team. This also have members from the NIC team from Delhi, who advises and assist during project implementation. This team is assisted by officers looking after different segments of election management. They all work under the overall supervision of the Chief Electorate Officer cum Principal Secretary, Election Department, Government of Bihar and State Informatics Officer, Bihar. Nodal officers have been identified at the district and block level to coordinate for data at the district level. District officials dealing with data have been trained and equipped both for uploading data, data standardization. They can also use GIS as a tool for decision making. The district level computerisation is under direct supervision of the District Election Officer.

Workshops have been conducted for various stakeholders of the project to make them understand the available technologies and best practices

Capacity Building Strategy

Around 18,500 officers and staff have been trained for capturing data on a day-to-day basis.

Financial Model

The entire funding for the project is done through the Chief Electorate Officer, Bihar and NIC, Bihar. Project funding has been done at regular interval in terms of manpower, H/W resource, software support etc.

Challenges Faced In Change Management And Capacity Building

- Enforcing ECI guidelines through software
- Convincing political parties for transparent processes
- Convincing observers of software functionality
- Implementing software functionality within a very small time period
- Standardisation of processes during elections.
- Facilitation of ICT infrastructure for application
- Implementation of software in a large number of locations.
- Training a large number of operators and stakeholders
- Issuing challans to police forces

2. Technology

ICT Solution Adopted


Compliance With Standards

The software has been developed using latest available tools and follows e-government standards. Concepts such as SOA, XML SOAP etc. have been used.

Security And Confidentiality Standards

Based on practical considerations, such as ease of implementation, database support, and processing needs, ELECON has been developed to allow view-based access control. Users of the database system are able to access predefined sets of views, based on their authorisations. The views are built from a multi-level database and may be updated according to the users' privileges.

Disaster Recovery And Service Continuity

The system has a DR site at Hyderabad connected through 34 MBPS leased line. A DR centre is also being made operational at Vaishali district.

Technology Related Challenges Faced

- Generation of SMS for large number of voters
- Processing of huge database of voters
- De-duplication of voter's information
- Removal of non-existent voters
- Voter card with photo cards
- On-line enquiry of voter’s information through helpdesk from remote locations
- Webcasting from a large number of booths for transparency
- Securing polling person database
- Conducting re-poll in very less time
- Online processing and delivery of voter ID
- Managing force deployment and issuing online deputation list in a very short span of time
- Updating databases from remote locations
- Delivering software patches to districts
- Incorporating digital signature for updating electoral rolls

VALUE INDICATORS

1. Green e-Governance

- The project has tried to popularise its motto of “THINK BEFORE PRINT - save trees” among stakeholders and citizens.
- Special care has been taken to reduce the number of maps which can be printed.
- Special training sessions are being conducted for participants on green ICT and its impact.
- Settings of IT systems have been adjusted to save power when not in use for short periods.
- Tasks that need computer processing are scheduled to be done in a block of time
- For printers that have duplex capability, default is set to duplex and grey scale to reduce the amount of electricity, paper, ink and toner used.
- Printing files are avoided if reading the same on the monitor will suffice.
- Computers, printers and other IT equipment are operated with proper ventilation.
- Virtualization are used on servers, when available, to allow multiple operating systems to run on each machine.
- e-mail is used when possible rather than fax to save on paper and energy used.
GIS MAPS printing require plotters and extensive printing. Web GIS application reduce printing requirements as most of the dynamic map requirements can be serviced through the application itself.
In an effort to modernise the existing system of management of land records, Government of Goa has undertaken a business process remodeling exercise with the help of Goa Electronics Ltd and private industry participation, under the project named LRIS.

The initiative was not just to computerise information, but to change the way records are managed and delivered to stakeholders, leading to accurate and secure storage, faster delivery and easy and quick updation processes.

Subsequently, the department initiated Project Dharnaksh to enable web based service delivery to the public. The name Dharnaksh is derived from two words, Dharani, meaning Earth and Naksha, meaning map. Total transparency of information is achieved by hosting entire maps and record of rights data online and providing access to certified records from anywhere. Public can view records free of cost or make an online payment to receive certified copies sitting in the comfort of their home, from anywhere in the world.

RESULT INDICATORS

1. Key Performance

Some of the quantifiable outcomes of the project are listed below:

a) 100% computerisation of maps, records of rights and the business process workflow has been achieved.

b) Earlier norm for issue of a copy of certified land parcel extract was 15 to 45 days from the date of application. After computerisation, the department issued copies within a day using the GIS platform; for applications from the public involving small extracts, sometimes the response time was as low as 30 minutes.

c) Earlier, the public could request for records of an area only in a limited number of offices. Now members of public can request for
any record of the state from any of the survey offices of the state and also from privately managed kiosks. Viewing of information is free for any web portal user.

d) Mutation of both textual record of rights and map data is now an online process. For map mutation, earlier, update onto master records used to be done after a few months. Now map mutation is a continuous process and is done within days of receiving data update from the field survey. Any mutation in land parcel or record of rights becomes instantaneously available on the web upon completion of departmental processes and authentication.

e) With the integration of RoR and map data, public is given the option of obtaining only certified land parcel extract or land parcel extract along with RoR/land conversion/partition and land acquisition details.

f) Goan land records are now available online and can be viewed/printed anywhere in the world.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Departmental business processes are automated thereby reducing time and cost for operations and Corrupt practices are reduced / eliminated as information transparency is achieved.

Innovative Ideas Implemented

- Maintaining the survey framework and norms of manual processes that are 30–50 years old even in automation and ensuring Survey records have a legal sanctity.
- Data archival - Department has to maintain a history of all changes/transactions on any land parcel. No old record can be discarded as disputes may arise decades later also. A software based data archival and versioning process was incorporated.
- Switching the entire team of draftsmen, surveyors, mamlatdars, tehsildars and Inspector of Land Records to use computer tools for their day-to-day operations required a capacity building exercise of massive proportions and on a recurring basis.
Levels Of Integration

The Settlement and Land Records Department is now servicing inter-departmental requests for land parcel, PT sheet or village maps rapidly by providing them with software generated copies. Such requests frequently come up for activities such as land acquisition, planning etc.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Front and back end process changes
The entire land records of the state, both graphical (maps) and alphanumeric (record of rights) are 100% computerised and being managed by use of software technologies that are tailored to handle the department's business process and workflows. Issue of records to any applicant - land owner, prospective buyer, planner, financial institutions, government agencies etc - is now possible from any of the offices of SLR across the state.

The necessary legislation changes for payment collection, authenticity of computer generated record and authorisation to issue certified land records by private kiosk operators have already been carried out. The required government notifications for online (web based) payment collection, pricing of data product and information dissemination through web services have been framed and issued.

Back end process changes

(i) Software based secure and auditable maintenance of land records
(ii) Online web based dissemination of information and audit

2. Change Management And Capacity Building

Leadership Support

The Govt. itself, right from the Hon’ble Chief Minister of the State, Secretaries of IT and Revenue, departmental heads and Survey/Revenue
Department functionaries worked in a synchronized manner to achieve this massive task of creating the necessary physical and e-infrastructure, coordinating the developments and taking the benefits to the public.

State NIC extended its excellent support with the development of workflow application for textual RoR data management and helped in technically coordinating the activity of setting up of network connectivity and web servers in the State Data Centre.

**Change Management And Capacity Building Strategy**

Trained department staff and also staff holding various authorities in the computerised business process workflow are prone to transfers or superannuation. This aspect is taken care of in policy definition for user management by the administrator in the enterprise GIS/LIS in the state-wide network.

**Capacity Building Plan And Its Implementation Status**

Various training programmes were held for individual and group training of various users of the land information system. The training was at different levels – computer operators, draftsman, surveyors, Talatis and ILRs. A resident engineer of the implementing agency is deployed who imparts need based support and training to new inductees. Presently, all survey offices have trained personnel handling spatial and non-spatial data and performing normal business operations.

**Project Management**

Dharnaksh project has reached a stage of maturity where all concerned department officials are already trained. The Dharnaksh program is being managed and monitored by Director of Settlement and Land Records with the support of Technical Director, NIC State Unit, Engineers of Goa Electronics Ltd. and Technical and Maintenance Support from Visionlabs.

**3. Technology**

Standardisation of indigenous technology was done after evaluating various GIS software. The same software suite serves the needs of Netbook Computer based field operations, state-wide intranet based desktop operations and web server for web based delivery of services.
Goa Electronics Ltd. coordinated the implementation of computerisation and workflow relating to map data. They partnered with a vendor who had earlier successfully carried out the pilot project.

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In Goa many welfare schemes have been launched by the government to help citizens coming from financially poor backgrounds. Some of the major schemes include Dayanand Social Security Scheme (DSSS) of the Directorate of Social Welfare for supporting senior citizens, physically/mentally challenged and widows/single women. Laadli Laxmi Scheme was launched to reduce the financial burden on parents/guardians of a girl child during marriage thereby addressing the undesirable tendency of female foeticides, and helping to arrest the declining female sex ratio in the state. Similarly, Griha Aadhar Yojana is another financial assistance scheme for a household woman with a family income below Rs.3 lakhs per year. After the closure of mining activities in Goa and to support the mining dependent citizens, Mining Affected/Impacted Relief Scheme was introduced by the government.

The Government had a vision and wanted to implement the above and many more schemes on one common platform which would enable the citizens to avail the benefits of these schemes easily. As many of the schemes fail due to complicated application procedures and reporting mechanism, an information technology based solution was thought for effective rollout of the schemes.

Schemes management framework (SMF) is a common framework to manage all kinds of schemes across various departments on a common platform. It is a framework where any beneficiary is uniquely identified across all schemes. The application status is informed to the applicant through an automated SMS system at each level of processing. The application has a built-in MIS reporting structure which generates reports from each stakeholder prospective. Direct cash transfer happens to the beneficiary's bank account through electronic clearing system (ECS)/national electronic fund transfer (NEFT), once the application is sanctioned by the department. SMF has a provision to reconcile the disbursements and any failure towards non-deposits is intimated to the applicant.
In future, if the same department plans to initiate more schemes, the applicants need not submit all the documents, he/she can give the unique registration numbers of previously availed schemes and the framework will make the documents and details available for the new scheme. SMF builds a central repository of all the documents of each beneficiary.

An information outlet in the public domain has been provided where citizens can check the application status online by entering the unique application or registration number. All queries regarding any schemes are registered and solved online.

RESULT INDICATORS

1. Key Performance

ICT Based Services

The initiative caters to the entire cycle of transaction from Application receipt, entry, verification and recommendation, sanction, disbursement and reconciliation. Verification is conducted against the eligibility criteria as specified in the scheme notification document. All approved applications with positive remarks are allotted a unique sanction ID for generation of sanction orders and based on the scheme type, release of funds to the beneficiary is handled.

Status of all the applications can be tracked and monitored with unique IDs like Aadhar No, Voter ID No or acknowledgement number. Unique identification of applicants helps in identifying bogus/duplicate beneficiaries across and within the schemes.

Current Stakeholder Benefits

Beneficiary

- Faster processing of scheme applications
- Transparent process with status available at each level
- Multiple provision to check and monitor application status such as SMS/email/helpdesk
- Central repository of all the documents is maintained so beneficiary does not have to submit same documents across schemes to avail benefits under any new schemes
Department
- Identification of beneficiary across the schemes
- De-duplication and identification of bogus beneficiary across the schemes.
- Analysis and reporting provision
- Efficient fund flow management
- Micro to macro level MIS assists in efficient analysis and decision making
- Lesser manpower and resource utilisation

Financial Institutions
- Easy access to data at any point of time for identity verification
- List of disbursements in compiled standard NEFT and ECS templates.
- Efficient reconciliation mechanism

Implementation Coverage
Geographical area: Entire State of Goa excluding forest areas
Stakeholders: Citizens, financial institutions, Department of Women & Child (DWCD), Department of Social Welfare (DSW), Department of Mines and Geology, Department of Finance.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Time Efficiency
- With built-in intelligence for verification, total time period for processing each application has reduced
- Reduced time for reconciliation of funds
- With formation of central repository of documents, time for furnishing of documents for every scheme is reduced for the beneficiaries

Cost Efficiency
- De-duplication leads to cost reduction as bogus beneficiaries are weeded out automatically
- Saves the cost of travel to department offices for citizens as the complete status is available online.
- Saves cost of manpower and paper in verification of application forms for department.
- SMS and email based system reducing the use of paper for sending letters.
Innovative Ideas Implemented

- Online funds allotment made possible which helps in tracking department funds and their accurate allotment.
- Auto recommendation on the application based on the rules specific to the scheme enabling speedy action.
- Identification of duplicate applicant details helped in identifying bogus beneficiary across both inter and intra departments.
- Central repository of all the documents of each beneficiary

Levels Of Integration

- Department and banks: The Scheme Management Framework web services have an online connection with applicant data and various banks which use this data for disbursement. Therefore, the applicant has a provision to check the disbursement status at real-time basis.
- Intra department: Web services pull data of the applicant from various departments based on the unique identification number like Aadhar, Voter Id, Account No etc. enabling document fetching and also helping in proving authenticity of the applicant.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Front End Processes

- Aadhar card made compulsory resulting in viewing of application status of various schemes from anywhere using a computer or smart phone based connected devices by any member of the public free of cost
- Documents upload and scheme specific rule based verification and recommendation process made online verification possible to see if the application is either complete, incomplete or not eligible
- Compulsion of bank details made fund flow management and direct cash transfer possible
Back End Process

- Integration of bank, department and applicant details and its availability on the centralised server
- New processes for management of documents and their reusability
- New processes for handling of online comments/suggestions/complaints from the public

Challenges Faced In Implementing Process Changes

- Motivating citizens to use the website to track and monitor application status
- Lack of strategic planning for execution and formulation of guidelines/procedures for schemes
- Lack of procedures for sharing data between citizens and all other stakeholders
- Poor knowledge of ICT operations

Lessons Learnt From The Process Re-Engineering Exercise

- Make data available in the public domain to improve transparency and as such acceptability of the IT system
- Maximum utilisation of mobile governance

2. Change Management And Capacity Building

Leadership Support

The Secretary to Women & Child Department and the directors of departments implementing various schemes have actively participated and interacted with department staff and the implementation agencies on various training sessions on the new technology and business processes. Training has been imparted in multiple rounds to functionaries from all the department offices from directors down to computer operators on use of the system and on the new business processes.

Change management and Capacity building strategy

All the process changes that were envisaged have been successfully implemented. Since its implementation, each department has sanctioned more than 100,000 applications using the scheme management framework structure.
Project Management

There were three stakeholders involved in the scheme management framework project. Each department acted as the prime beneficiary of the system and its project management team led by the directors of each departments who guided the system integrators and software developers in understanding the domain and requirements and in monitoring and testing the results.

M/s. Goa Electronics Ltd were the prime system integrator and its team has coordinated with various departments (scheme related information), NIC and state data centre.

Financial Model

The project was implemented with state government funding.

Efforts At Sustainability

This web based application is currently audited by independent government approved and empanelled web security auditors and all their recommendations are implemented successfully. Also being related to welfare schemes, the application got feedback from political as well as bureaucratic leaders.

Challenges Faced In Change Management And Capacity Building

Lack of effective knowledge management practice is the key challenge for storage and retrieval of information for supporting continuous change management. The poor levels of ICT operations by ground level staff is also a major challenge faced in change management.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

Deliberate efforts will improve in managing a change and make sure that schemes are implemented successfully. Capacity building can move beyond being viewed only as a process to being understood as a valuable objective as well. With sufficient focus and commitment to monitoring, evaluation, and reporting of impact, capacity building can be successfully implemented and can potentially lead to a sustainable and far-reaching e-governance initiative.
3. Technology

ICT Solution Adopted

It is a 3-tier centralised web based application developed using ASP.NET with C#(3.5 Framework) and SQL Server 2008. Windows and web based applications are used to scan and upload the documents attached to each application, which in turn are stored on the central server, thus building a central repository of data. System built intelligence does the scrutiny of the data supplied by the applicant and gives the recommendation about the eligibility of the application. Scheme specific rules if modified can be accommodated according to the changes required by the department.

Security And Confidentiality Standards

Transaction Logs: Transaction logs along with IP details are maintained in a secured storage with need based limited access to them. Firewall is implemented to block unauthorised access while permitting authorised communications. User passwords are encrypted using a hashing algorithm and maintained securely in the database.

Disaster Recovery And Service Continuity

Daily backups are maintained at server and development end. DBA constantly does the load analysis to ensure that all schemes use a healthy pool of resources. Transaction logs are maintained for rollback and correction of all scheme related data.

Technology Related Challenges Faced

e-government processes demands of having the same standing as paper-based processes which tends to change more often. Secondly, updating back data where department are still operating on manual systems rather than implementing a e-governance programme. Thirdly, there is still a large difference in the level of access to the Internet in departments and therefore ability to benefit from e-government

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

It is just the initial period when it seems that integration and implementation becomes a bottleneck. Once pushed, it starts moving automatically and no further human interference may be required.
VALUE INDICATORS

Green e-Governance

SMS and email based system eliminates the use of paper for sending intimation letters. Scheme management framework connects applicant data with their documents, hence online reusability of documents is possible across schemes and departments.

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DESCRIPTION OF THE PROJECT

Government e-payment system is a secure payment delivery system for direct credit of dues from the Government of India into the account of beneficiaries using digitally signed electronic advice (e-advice) through the 'Government e-Payment Gateway' (GePG). This system enables the successful delivery of payment services from Pay & Accounts Offices (PAOs) for online payment into beneficiaries' accounts in a seamless manner under a secured environment. GePG serves as middleware between COMPACT (Computerized Payment and Accounts) application at PAOs and the Core Banking Solution (CBS) of the agency banks/RBI to facilitate paperless transaction, reducing overall transaction cost and promoting green banking.

This system has expedited direct payments from central paying units relating to existing and retired Government employees, contractors and other entities receiving payments. The digitally signed e-advices is pushed by the PAOs on GePG, which are then consumed by the concerned banks to credit the beneficiaries' accounts through CBS/NEFT/RTGS. The e-payment system effects payments without involving conventional payment instruments such as cash, cheques and demand drafts, and thus save time and constraints of manual deposit. The system facilitates online reconciliation of transactions and efficient compilation of payment accounts. By this initiative, the Controller General of Accounts expects to bring about increased transparency and promote good governance in the public sector.

Electronic Payment Systems accounts for 41% of the total volume of transactions while it represents 90% of the total value of transactions. Introduction of electronic payment products such as Electronic clearing service and electronic funds transfer, which over the years have metamorphosed into National ECS and National EFT and RTGS have ushered in new ways of payment processing. The need for an e-payment system has been acutely felt by the Government of India with technology being one of the major movers and enablers for a secure and efficient means of payments which would enable faster payment delivery systems to beneficiaries and agencies in far flung areas where conventional modes of
payments viz. Cheques / Drafts takes substantial time. It would also facilitate transaction wise prompt reconciliation and near real-time settlements.

This system will bring the government expenditure on to the e-mode, a further step to the e-receipt mode which has already been introduced in government sector. In e-Payment system, a G2C initiative, payments to the beneficiaries are made through an e-advice addressed to the accredited banks using digital signatures through a secured communication channel.

Immediate benefits that are envisaged would include convenience and privacy, efficiency of payment transactions, lowering of transaction costs, just in time availability of funds - reduced cost of carry and reduction of frauds. With over 90,000 bank branches currently enabled for e-payments, it has become feasible to transact electronically for government payments cutting across geographic divides.

The government e-payment system comprises two sets of application, one being COMPACT, the core application running in the pay and accounts offices (PAOs) which has been made interoperable with the middleware, the government e-payment gateway (GePG). COMPACT has the facility to process payments through cheques as well as through digitally signed e-payment advices. Government e-payment gateway (GePG) is the key enabler to the successful delivery of payment services from PAOs for online payment transactions. The system has been implemented in all central government civil ministries/departments in a phased manner.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- Registration of digital certificates of signatories through a workflow in COMPACT and GePG (over 3202 signatories registered – 2157 activated and 1010 deactivated)
- Registration of participating banks in GePG (22 banks along with their nodal officers)
- Processing of bills pertaining to e-payments to beneficiaries which include retired and employed government employees, vendors, contractors and others receiving government funds, through an end-
to-end workflow in COMPACT (7,30,418 bills, totalling (INR) 4,94,996.12 crores)

- Generation of digitally signed e-payment advices (over 28,38,816) and pushed into GePG for payments
- Over 28,18,401 successful transactions reported by participating banks
- Reissue of 20,415 transactions which had failed.
- Reconciliation and accounting for all payments.
- About 30 lakh cheques eliminated from the system so far (savings of 1.5 crores to the public exchequer)
- Tracking of each and every e-payment transaction of the government of India in the system for pay and accounts officers.
- SMS alerts generated for bank nodal officers when PAO pushes e-payment advices to GePG; SMS alerts sent to beneficiaries when bank submits scroll (payment response) into GePG (Over 1,26,570 SMSes sent to bank nodal Officers and over 28,38,829 SMSes sent to beneficiary informing them of credit made into their accounts)
- MIS reports to financial managers (controllers) in different ministries as well as for the Ministry of Finance
- Bill status information for drawing and disbursing officers
- Exception reports showing bank performance indicating 'not payable before' (NPB) violations, pending payments, scrolls, failed payments, etc.

Current Stakeholder Benefits

- Saving in time and efforts due to online fund transfer using digitally signed unique e-authorization ID
- Secured mode of payment: Digital signature based payment system is security compliant
- Transparency in payment procedures: A tool for good governance and reduction of corruption
- Elimination of physical cheques and their manual processing: Helps protect the environment by eliminating paper based physical payment instruments and scrolls; can eliminate almost 2 crores cheques which would bring in a saving of 10 crores per year
- Elimination of constraints of manual deposit of cheque by the payee into his bank account: Reduces the beneficiary’s dependency on the government and its employees to receive their dues/payments
- Enhancement of overall payment processing efficiency
• Online auto-reconciliation of payments: Improves efficiency of payment system by facilitating faster payments, quicker receipt of scrolls and hassle free reconciliation
• Efficient compilation of accounts
• Complete audit trail of transactions at all levels

Implementation Coverage

• The key stakeholders of this project are as follows:
  • The pay and accounts offices of the government of India (currently 355 PAOs) of different ministries and departments (currently 50) spread over 140 geographical locations all over the country.
  • The principal accounts offices of different ministries and departments (currently 50)
  • Private sector and public sector banks (currently 22)
  • The office of the Controller General of Accounts, Department of Expenditure, Ministry of Finance.
  • The drawing and disbursing offices of different ministries and departments (~ 8000 offices) spread all over the country covering 886 geographical locations.
  • Government payment recipients viz. employees, vendors, etc. (currently over 18 Lakh)

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

• The payment life cycle has shrunk to 5.21 days (March, 2013) from the bill preparation date to the beneficiary account credit date as against an average of 20.07 days in the cheque based mode of payments before the introduction of e-payments.
• About 30 lakh cheques eliminated from the system so far (which means a savings of 1.5 crores to the public exchequer).
• e-Payment advices reduce the payment process by five stages.
• There is a reduced requirement of branch offices to transact government business, thus saving on manpower and resources at agency banks.
• A tool for good governance and reduction of corruption. Process efficiency - free of discretion and bureaucratic delays.
• Improves efficiency of the payment system by facilitating faster payments, quicker receipt of scrolls and hassle free transaction wise reconciliation.
• Reduction of failed transactions from 4.67% to 0.36%.

Innovative Ideas Implemented

Previously, payments were made through manual cheques. The writing, signing, issue, and dispatch of cheques were all manual. Now, GePG ensures online fund transfer using digitally signed unique e-authorization ID. Earlier vendors and beneficiaries had no way of knowing when they will receive their payments. Now, GePG informs beneficiaries via SMS alerts with the payment details. Overall, GePG offers transparency, improved payment efficiency, and good governance. GePG is now gearing up to make fertilizer, kerosene, LPG subsidy directly to beneficiaries.

Levels Of Integration

• The GePG application is integrated with COMPACT, an end-to-end workflow treasury application running in the pay and accounts offices.
• The e-payment gateway is also integrated with all the banks systems through web services for effecting payments and submitting payment responses (scrolls).
• The system is integrated with NIC’s SMS services for sending SMS to beneficiaries and bank nodal officers.
• It is also integrated with the e-mail server of NIC (NICEMAIL) for SMTP services.
• The e-payment gateway exchanges data for checking digital signature revocation lists with the NIC certifying authority.
• Data exchange formats have been standardized for external applications to use GePG. Department of Space, Department of Posts, Ministry of Defense are in the process of developing interfaces with GePG.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Cheque processing: The complete cheque process which includes cheque memo preparation, cheque number allotment, cheque printing, cheque review, cheque issue and cheque delivery which on an average requires 2–3 days has been done away with. Necessary changes in the accounting procedure made.

DDO process: The process where the cheque is collected by the DDO and then disbursed is now not required as the payment is directly credited into the beneficiary's account.

Payment model: The government receipt and payment rules were modified to accommodate payments through digitally signed e-payment advices in addition to cheques, demand drafts or cash.

Mandatory e-payments for Rs 25,000/- or more: The Ministry of Finance passed a regulation mandating that all governmental ministries to make payments above Rs 25,000 electronically, replacing cash and cheques with transfers direct to recipients' bank accounts.

Payment settlement of agency banks with the Reserve Bank of India: Operating procedure for e-payment through COMPACT and government e-payment gateway (GePG) finalised and passed.

Challenges Faced In Implementing Process Changes

The development of this new e-payment system posed many challenges. As there were diverse departments, banks and other stakeholders, the system had to have sufficient flexibility and needed to fit into the generic framework. Security and capacity building were major challenges because of the level of IT awareness and capability of working with IT systems available in government offices.
Lessons Learnt From The Process Re-Engineering Exercise

The CGA IT systems have not been implemented in the typical project mode and the bulk of the initiatives follow the internal need driven IT systems development approach. However, recent initiatives are following the project mode. Individual application developments have internal timelines to monitor and there have been cases of changes in the desired timeline due to various reasons like changing user requirements, hardware acquisition delays, etc. Expansion in scoping and integration of all systems has been gradual. Introduction of e-payments through digital signatures requires that a lot of capacity building and sensitisation workshops needs to be conducted, which need to be planned in advance.

2. Change Management And Capacity Building

Leadership Support

- The Office of the Controller General of Accounts has provided the necessary impetus and commitment in driving the project right from its inception to its present full blown status.
- The project was inaugurated by the Hon'ble Finance Minister Shri Pranab Mukherjee on 31-10-2011 and is being monitored at the Secretary (Expenditure) level on a fortnightly basis.
- The status of e-payments is also monitored at the Controller General of Accounts meetings and necessary follow up and change management issues are dealt with.
- E-Payment is also reviewed in bank steering committee meetings.

Change Management And Capacity Building Strategy

Change management is well defined with a dedicated cell headed by a senior officer who coordinates with the Technical Advice Section and Reserve Bank Deposits Sections of the Office of the CGA each of which is headed by a Deputy CGA level officer.

Capacity building and status: Training programmes have been conducted by the Institute of Government Accounts and Finance (INGAF), New Delhi and its regional training centres at Kolkata, Chennai and Mumbai. In all, around 50 programmes have been conducted so far to train 350 pay and accounts offices and their staff.
- Workshops on COMPACT - Lekha best practices and e-payment sensitisation.
- Training videos of e-payment processes distributed to all stakeholders.

**Project Management**

- Constitution of a cell for implementation of the e-payment system
- Monitoring at the level of Principal Accounts Offices of Ministries is done on a day-to-day basis by the respective Chief Controller of Accounts; at the level of Secretary (Expenditure), Ministry of Finance, GoI, it is done on a fortnightly basis.
- Initiation of a centralised helpdesk for centralised reporting, monitoring of bugs related to problems and issues and end user support to all stakeholders.

**Financial Model**

The financial impact was diffused and staggered over time. The respective ministries/departments provided the necessary budget for procurement of hardware and software at their pay and accounts offices. The source of funds for the data centre and disaster recovery centre was provided by the Office of the Controller General of Accounts from its own budget.

**Efforts At Sustainability**

The project is envisaged to run perpetually but may need to be augmented from time to time to meet scalability requirements as more ministries/state governments join the system. Steps are already being carried out to augment scalability at the National Data Centre at Hyderabad and Pune where the GePG application is hosted. The system is also being tuned for enabling Aadhar based payments and NECS in addition to the existing modes.

**Challenges Faced In Change Management And Capacity Building**

Several challenges were faced in change management and Capacity building. The resistance to change – moving from a cheque based payment mode to a paperless digitally signed e-payment advice – needed to be overcome. The mindset of the staff of the pay and accounts offices whose level of IT awareness is very low, needed to be changed. They needed to have the level of confidence in the system required to bring in such a change.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

For several processes, computerizing requires business processes in accounts offices to be re-engineered to achieve the benefits of automation. These process re-engineering are undertaken whenever required and is an ongoing activity, which however consumes a lot of time. The CGA's IT strategy includes strategies for effective change management. However change management is considered as an operational issue of a project and is an ongoing exercise.

3. Technology

ICT Solution Adopted

COMPACT Architecture At The Pay And Accounts Offices
Microsoft Windows Server Standard with varying versions (2008 / 2008 R2 /2012) and Microsoft SQL Server Standard with varying versions (2008 R2 /2012) are installed at different locations in the Server. Microsoft Windows XP/Vista/Windows 7/Windows 8 operating system is installed in the client machines. A module has been added for facilitating digital signatures using a .NET DLL. Database mirroring is implemented at every PAO location, on a per-database basis, and works only with databases that use the full recovery model, for ensuring zero data loss.

GePG Architecture At The National Data Centre (ndc) At Dc And Dr Sites
The government e-payment gateway (GePG) middleware web-based application consists of 2 web servers in network load balancing along with 2 SQL server reporting services connected to two high end database servers (in an active passive failover cluster). It is developed on Windows Server 2008 R2, ASP.NET, Microsoft SQL Server 2008 R2, Microsoft SQL Server mirroring technology and system centre products.

The GePG application is integrated with an SMS server for sending alerts through SMS to beneficiaries and to the bank nodal officer. It is also integrated with the NIC email services of NIC for SMTP services.

Hardware Used
For the COMPACT server: Intel Xeon E 5310, 1.6 GHz 2 Processor Quad Core (to be supplied with one Quad Core processor as standard) 8 MB L:2 cache

For COMPACT clients: Intel Core 2 Duo E4600, 2.4 GHz, 2 MB L2 cache and 800 MHz FSB.
Compliance With Standards

- Information Technology Act 2000 Compliant: Section 5 of the Act gives legal recognition to digital signatures based on asymmetric cryptosystems.
- Compliant with the Guidelines for Usage of Digital Signatures in e-Governance Version 1.0 (December 2010) with e-government standards notified/recommended by the GOI.

Security And Confidentiality Standards

- High security standards and system logs of transactions.
- Digitally signed e-payment authorization along with itemized tracking of each e-payment authorization and automated reconciliation.
- Public key cryptography standards # 7 for signing e-payment authorizations has been adopted which offers the highest level of security.
- All digitally signed authorisations provides for (a) accuracy and authenticity, (b) security, (c) protection from unauthorised access, (d) is tamper-resistant, (e) protection from intentional fraud and (f) credibility in judicial proceedings.

Disaster Recovery And Service Continuity

The GePG application is integrated with an SMS Server for sending alerts through SMS to beneficiaries and to the Bank Nodal Officer. It is also integrated with the NICemail services of NIC for SMTP services. The DC and DR Sites are replicated using Asynchronous Mirroring technology of Microsoft SQL Server 2008 R2. Zero data loss solution is implemented across the PAO locations with a secondary mirrored server using Microsoft SQL Server Database Mirroring technology. DC and DR is well architected and deployed at NDC, Hyderabad and NDC, Pune.

Technology Related Challenges Faced

- Running SQL Server databases at over 350 PAO locations without a DBA is in itself a big challenge. We have built all required DBA operations and database management tasks like taking a backup, restoring from a backup, setting up mirroring of the two databases, through front end utilities. The database is locked at the time of
installation by the application at the back end. All health parameters like log file size, database size, etc. are passed on from different COMPACT databases to a central server e-Lekha at the End-of-the-Day (EoD) operation and are monitored by the support team. The support team attends to the problems remotely over the Intra-CGA MPLS VPN and resolves issues.

- We were faced with implementing Digital signatures on the existing COMPACT application which was developed in VB6. A .NET DLL was included to the native application for creating the signature, getting the number of certificates in the store, displaying details of the certificate, or removing the signature and also insertion of digital signed documents to the Microsoft SQL Server database.

- Deploying Upgrades and patches over 350 locations is also a herculean task in itself. Here also we have leveraged on the EoD operation to check whether all COMPACT locations are updated with the latest patch and if not the user is forced to upgrade before he can resume using the COMPACT application.

- The GePG data is hosted in the Data Centre at NDC, Hyderabad and Disaster Recovery at NDC, Pune. The administration, maintenance and housekeeping tasks are managed and performed through remote management services from the Accounts Informatics Division, NIC, New Delhi.

- In order to overcome data loss risk at 350 decentralised database locations a Zero data loss solution was implemented across the PAO locations using Microsoft SQL Server Database Mirroring technology.

**Lessons Learnt From Technology Choices And Implementation Strategy Adopted**

- A completely centralised architecture would have been a better choice subject to availability of network connectivity at all PAO locations.

- Making it mandatory for digital signature certificates of pay and accounts offices to be issued from the NIC Certifying Authority helped in checking the validity of certificates with respect to root certificates and checking against certificate revocation lists.
VALUE INDICATORS

Digital Inclusion

Cultural, language and demographic differences do not apply here as payment is basically a banking operation and is conducted mostly in English. The beneficiaries also get SMSes in English from the GePG system stating the nature and amount of transaction. The stakeholders are all government functionaries and carry out most of their payment and accounting functions in English.

Green e-Governance

Government e-payment systems in itself is a paperless environment friendly initiative - a big leap towards green banking and is expected to remove 2 crore cheques from the system which not only gives a savings of 10 crores per year, but also helps in reducing huge amounts of paper. Besides, the system also eliminates paper based bank scrolls which were earlier the norm. Digitally signed e-scrolls not only reduce huge amounts of paper from the system, but also provide a clean environment in the pay and accounts offices. Already since its inception, the system has helped reduce 30 lakh cheques and about 1.5 lakhs paper scrolls from the system. The system also facilitates electronic bills (invoices) into COMPACT for making payments which will further reduce the usage of paper. Monitoring and MIS for different stakeholder’s viz. DDO, PAO, PrAO are also available online and will further reduce huge amounts of paper used for transacting government business.

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The Government of India provides domestic LPG at heavily subsidised rates. It is provided in 14.2 kg cylinders by OMCs at their doorsteps through a LPG distributor network. The total subsidy burden in the year 2012–13 was Rs. 39,558 crores, which is around 25% of the overall fuel subsidy burden of Rs.161,029 crores. As of today, each cylinder costs approx. Rs 1000 each but is being actually billed for at less than half the price. This has led to an illegal secondary market of LPG which uses the domestic subsidised LPG for uses other than cooking/domestic purposes such as auto LPG and cooking fuel in hotels by ghost connections and diversion of unutilised connections into the commercial market. The monopoly structure of the LPG market, coupled with the absolute lack of visibility to the LPG supply chain, which while exacerbating the diversion also created no incentives for better service to consumers. Thus it was imperative to use technology in the LPG supply chain to achieve the twin objectives of reduction in diversion and a transparent supply chain. These initiatives were launched as part of project “Lakhsya” as follows:

(a) **Transparency portal:** Creating a web based portal which can be accessed through the official website of the Ministry of Petroleum and Natural Gas: www.petroleum.nic.in

(b) **Prevention of multiple connections:** Identifying and blocking multiple LPG connections in the existing LPG database and preventing new LPG connections in households where LPG connections already exists by instituting a KYC (know your consumer) process.

The project was planned in June 2012, and the substantive part was completed by March 2013.
RESULT INDICATORS

1. Key Performance

ICT Based Services

The services offered to various stakeholders are as follows:

**Consumers**
- View LPG usage pattern, booking status, refill history and other information
- Make a request for surrender of his/her connection
- View subsidy availed/ transferred to bank account for DBTL consumers
- View rating of their distributors and rate them with respect to cylinder delivery time
- Communicate with distributors and OMCs (oil marketing companies)
- View Aadhaar linking status
- Apply for portability of connection (in Chandigarh on pilot basis)

**OMC and OMC Distributors**
- View consumption pattern of consumers
- View their own consumer rating compared to peers and their star rating based on delivery

**Civil society**
- View suspected multiple connection list
- View high consumption consumers
- Track connection and refill release information.

**Current Stakeholders Benefits**

a. Transparent and visible LPG supply chain system providing 3 million cylinder delivery data to 15 crore consumers on a near real time basis.

b. Significant drop in subsidised LPG sales partly due to reduction in diversion

c. Empowerment of the consumer: Initiatives such as online surrender, rating of distributor on perceived service levels and portability have helped consumers raise their voice and exercise their choices.
d. Induced competition in a monopoly market. Star rating distribution has improved substantially since its launch.

<table>
<thead>
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<th>Rating#</th>
<th>If 85% of deliveries made</th>
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<tr>
<td>***** Excellent</td>
<td>&lt;= 2 days</td>
</tr>
<tr>
<td>**** Very Good</td>
<td>&lt;= 4 days</td>
</tr>
<tr>
<td>*** Good</td>
<td>&lt;= 6 days</td>
</tr>
<tr>
<td>** Average</td>
<td>&lt;= 8 days</td>
</tr>
<tr>
<td>* Below Average</td>
<td>&lt;= 10 days</td>
</tr>
<tr>
<td>No star Poor</td>
<td>&gt; 10 days</td>
</tr>
</tbody>
</table>

# since the rating has been changed from 6 to 5 categories

1. Efficiency And Improvement Initiatives

The transparency portal hosted several utilities and features that enabled measurement of and thereby improvement of the service levels, as an effective medium of communication with the consumers and acted as a channel to see their entitlement, subsidy, and consumption pattern. With the launch of direct benefit transfer scheme (DBTL) it has become an important tool to see the Aadhaar seeding status in LPG/banks and the actual subsidy transferred into their bank accounts.

Duplicate connection detection was attempted in phases. Every duplicate connection detected and blocked leads to a saving of Rs.3500 subsidy saving per annum.

**Savings in subsidy:** 67 lakh connections have been blocked so far leading to a recurring savings in subsidy of Rs.16 billion per annum (@ Rs.450 subsidy per cylinder and average consumption of 5.3 cylinder per connection).
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- Databases of three OMCs were changed to accommodate the KYC format.
- Duplicate connections detected were hosted on the transparency portal for the information of the consumers to know that KYC process had to be completed, failing which the connections would blocked.
- New connection release process was changed to be preceded by an intra-company de-duplication check with existing consumers.
- Delivery efficiency of each distributor was captured and published on the portal through a 5 star rating programme.
- Consumers were allowed to surrender connections online and its consummation was tracked by the OMCs.
- Portability was implemented in the new connection process of each company

Challenges Faced In Implementing Process Changes

Transparency Portal
Institutionalisation of data update in real-time basis was the major challenge in creation of this portal.

There was resistance from distributors initially partly due to vested interests and partly due the learning involved to understand the software interface. Education/training and hand holding in the new practices helped in bringing stakeholders on board.

Another challenge was bringing about the nearly “same” functional interface across the three OMCs, since each had a different background business process/database. This was ensured through coordination by the Ministry of Petroleum and Natural Gas.

Multiple Connection Detection
The sheer scale and size of the database and legacy nature of the records was a daunting challenge. Sheer volume of data prevented visual inspection or door to door inspections, while legacy data prevented easy software
detection, on account of poor data quality. A software exercise to detect duplicate connections was thus prone to errors. However, due to the extreme sensitivity of LPG as a cooking medium, one could possibly live with allowing actual duplicate connections but false positives needed a process to ensure that genuine consumers are not blocked. The strategy followed comprised of:

a. Introduction of KYC to ensure data standardisation/completeness for all suspect and new consumers.
b. De-duplication based on name/address pair to generate a list of suspects.
c. Updating existing database of the OMCs of suspect consumers before regularising them
d. All new LPG connections to fill up KYC and are de-duplicated prior to connection release.

As part of KYC, consumers now have to provide proof of identity (POI) and proof of address (POA), and some basic information such as their full name, date of birth, name of father, mother and spouse, address, telephone number and e-mail id if any.

**Lessons Learnt Form The Process Re-Engineering Exercise**

- Data capture process must be tightly specified (strong KYC a must), otherwise a lot of rework has to be done and it leads to diminished capacity for policy action.
- Effective communication to the consumer is quite a challenge and multiple modes are required to cover the entire gamut of consumers. Sufficient time should also be given to reach out to consumers/citizens.
- Policies need to be flexible to account for local variations in a country like India and account for possibility of data entry errors in case decision making is based on electronic databases.

**2. Change Management And Capacity Building**

Change management and capacity building was tackled through internal resources of the OMCs. The strategy was crafted by the dedicated project management group (PMG) which comprised of IT and functional personnel from the three OMCs, personnel from the Ministry. The PMG met regularly and interacted with external and internal stakeholders to decide on issues and take action. The team was assisted by dedicated project consultants
hired through NIC. These initiatives, especially the de-duplication, have been institutionalised by government orders. As they are part of the business processes, they will not have any sustainability issues. The transparency portal hosted by the OMCs will be sustained using in-house resources or outsourcing.

**Transparency Portal:** Portal development and hosting was done in a short span of time. The features were improved continuously based on feedback from consumers through 146 focus group discussions in 118 places participated by 5199 consumers.

**Consumer data cleaning:** The procedure for connection blocking, KYC collection and related actions were communicated in detail to the distributors, being the primary data entry source into OMC database. Extensive education of the consumer was done through advertisements. OMC officials were extensively trained in the philosophy of the de-duplication exercise so that they remained sensitive to local variations and exceptions.

### 3. Technology

#### 3.1 De-duplication

In the first phase, all connections were de-duplicated within companies using simple string matching algorithm after removal of special characters. In the second phase, all pending connections were checked for both inter and intra company duplicates. NIC then de-duplicated both at the inter and intra company level for each district based on a more sophisticated algorithm which was done on PARAM in a parallel processing environment. The cleaning-up of existing database required four sub processes as shown in Fig. 1. Out of the four processes, the Duplication detection sub-process can further be divided into four processes as shown in Fig. 2.
**Phase I and II de-duplication logic**

Consumer name and address is concatenated into two single character strings. The concatenated character strings are checked for special characters and all the special characters are removed from the string. Further, the list of pre-defined commonly occurring constants like SECTOR-NO, SEC-, SEC NO are converted into a single value, for example, SEC. These constants are replaced in the concatenated character string. The KYC data of waitlisted consumers in concatenated form is then compared with the concatenated character strings of the address fields of the existing consumers. If the data matches with existing consumer data, the required is marked as “Suspect” and all other cases are updated as “Cleared” for new connection. This process is scheduled every alternate night to account for new consumers.

**Phase I and II Hardware**

**BPCL:** Microsoft window server 2008 R2(64bit) having 96 GB RAM and 8 core processors running on VM Ware Virtualize server (Dell Poweredge M910 hardware) Disc storage capacity is 3.15 TB.

**IOCL:** Linux Based Oracle-RAC (11G) setup loaded in 2-blade servers (with 12 core processors each) with total 96 GB RAM as database. Informatica Real-Time Version 9.5.1 as middle-tier (business layer) is running with VM Ware Virtualize server (12 core processors). Disc storage capacity is 3.5 TB on SAN. Data warehouse and reporting is achieved through Sybase IQ 15.1 and Actuate Reporting Tool.
**HPCL:** Windows 2008 R2 Enterprise 64 bit as OS with Quad Core 2 CPU [Intel(R) Xeon(R) CPU E5520 @ 2.27GHz] processor with a memory space of 48 GB. Server is Dell PowerEdge R710 Server. Disc storage capacity is 2 TB on SAN and local disc has 700 GB capacity. Database: SQL server (SQL Server 2008 Enterprise Edition) in cluster mode (active/passive). Data is replicated to Mumbai (DR site) location via 45Mbps link using SQL server log shipping process for redundancy. Local replication of data for reporting purpose on central server is setup via SQL server transactional replication.

**Phase III de-duplication by NIC**
Intercompany connection de-duplication process was entrusted to NIC using textual and demographic de-duplication (TDD). The aim was to de-duplicate based on name and address matching with more refined methods.

**Phase III Hardware for De-Duplication by NIC**
De-duplication algorithm is run by NIC on C-DAC’s HPC PARAM YUVA supercomputer after pre-processing the same in NIC VMs.

**Specification of HPC PARAM YUVA:**
- **Configuration:** 48 nodes (each nodes 16 CPU’s)
- **Model name:** Intel(R) Xeon(R) CPU: X7350 @ 2.93GHz
- **Operating system:** Red Hat Enterprise Linux
- **Cache size:** 4096 KB
- **Address sizes:** 40 bits physical, 48 bits virtual

**3.2 Transparency Portal**
The ICT technologies adopted for the transparency portals of three OMCs are given under:

**IOCL:** The access to the transparency portal is through a web-browser (viz. IE, Mozilla, Google Chrome, Safari, etc.) The website is hosted behind a WAF (web application firewall) device (F5 – best of its kind in the world) on SSL/HTTPS (128-bit encryption) on “spandan.indianoil.co.in” which has been provided with Enhanced Extended Validation Certificate by GeoTrust. The server is hosted behind firewall. Traffic from Internet to the web-server is restricted to only specific selected port (Port 80) by utilising the reverse-proxy feature of WAF (F5). Linux level firewall protection is also enabled at the web-server level. The web-site is in the public domain and hence no authentication screens have been provided. Firewalls intercept the traffic to and from the web-server, screens malicious content and drop such content before it travels to the destination.
HPCL: The portal runs on the latest version of .Net framework for web applications, i.e., ASP.Net 4.0 running on IIS 7.5 web server. System has strong validations against all user inputs and uses stored procedures to protect against any security threats. Query string parameters with distributor and consumer numbers are strongly encrypted with dynamically changing keys. Only requests originating from the transparency portal are served; any requests directly trying to access data are blocked.

BPCL: Transparency portal is behind firewall and communication is allowed only on 80 (HTTP). BPCL has IDP solution to prevent DOS attack. Application is hosted on J2EE complaint application server. Transparency portal is intended to provide visibility of distributor data to public. Hence, no authentication and authorisation mechanism is implemented. All interfaces of transparency portal have strong validations as per OWASP (open web application security project) guidelines to protect against web attack.

VALUE INDICATORS

1. Digital Inclusion

The transparency portal is in English currently but it will be translated into local languages. It is expected that citizen service centres will bridge the gap due to lack of internet or language barrier.

2. Green e-governance

Reduction in diversion of LPG for commercial sales due to the above initiatives has restored the price balance in use of LPG leading to reduction in domestic demand and fuel conservation thereby reducing the carbon footprint. Many processes such as surrender of connection, filing of complaints, and communication to consumers in case of duplicate connections have been enabled by the portal thus saving precious paper / resources which would be a drain on the environment. These initiatives significantly contribute towards green e-governance.

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WePMIS is a web based interactive tool for planning and monitoring the Saakshar Bharat scheme launched in 2009 across the country, through the National Literacy Mission Authority (NLMA), Department of School Education and Literacy, Ministry of Human Resource Development, Government of India. It is a scheme for adult literacy, continuing education and inclusive growth for the age group of 15+ years who have failed to benefit from formal education.

The system has been developed by the National Informatics Centre, Department of Electronics and IT, Government of India as a work flow based application, networking the major stakeholders of the scheme. The progress of each individual adult learner towards achieving literacy, performance of volunteer teachers and coordinators (Preraks) up to Gram Panchayat level are also tracked online.

RESULT INDICATORS

1. Key Performance

ICT Based Services

Gram Panchayat (GP)/Block (BP)/District (ZP)/State (SLMA)
- Database of functionaries of State Level Committees.
- Consolidation and submission of state level physical and cost plan to the NLMA.
- Allocation of activities to the districts, blocks and GPs (in case state has opted for centralised mode of allocation of activities).
- Generation of bank authorisation letters for each ZP, BP and GP (in case state has opted for centralised mode of allocation of activities).
- View of activities allocated at respective levels.
- Tracking of the teachers training of volunteer teachers, master trainers, resource persons and Preraks (coordinators).
• Updation of physical and financial progress (activity wise) regarding establishment and functioning of the adult education centres (AECs), basic literacy learning centres on a monthly basis.
• Monitoring of the activities at ZP level.
• Consolidation of monthly progress report of all the ZPs.

National Literacy Mission Authority (NLMA)
• Setting-up, revision and state wise allocation of physical targets for each slot/phase.
• Grant calculation and sanctioning of funds to each state.
• Bank authorisation letters for each state.
• Facility for viewing reports of national, state and disaggregated levels
• Overall monitoring of the scheme at national/state levels.

Implementation Coverage

Implementation of the application has been carried out for all the required states: 26 States, covering 410 districts (the districts where the female adult literacy rates were below 50% as per 2001 census data). The categories covered in the application are also as per the scheme requirements, covering SCs, STs, minorities and others. All the GPs and blocks of each of these districts are covered

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

• Automatic calculation of GP/BP/ZP/state/national level physical and financial plans based on survey data results in time saving as the states need not carry out manual calculation. Since the lower level plans are submitted online to higher levels, it again saves the time and cost of consolidating the state plans.
• Grant calculator and authorisation of funds are carried out online; this again helps in time/cost saving of manual calculations and physical transfer of funds.
• The application is developed on open source technologies and therefore provides use of the latest technologies at minimum costs for a project of such large scope and coverage.
Innovative Ideas Implemented

- State plans are generated automatically thus the physical plan is realistic and accurate and not adhoc.
- Work flow based grant calculator has helped to ease out the computations of the installments to be given to the States down to the GPs.
- Bank authorisation letters are also automatically generated
- Online monitoring of the AECs and the learners by their names

Levels Of Integration

The WePMIS system works in conjunction with two external systems to form a complete end-to-end solution for the Saakshar Bharat Scheme

- Funds and accounts management system, which tracks the expenditure incurred by the implementing units
- The assessment and certification of the beneficiaries are carried out by another system

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Since Saakshar Bharat was a complete revamp of the earlier total literacy campaign programme of adult literacy, there was a lot of flexibility to implement major new process changes (both ICT and non-ICT)

- Almost the whole business process has been made online and where required, it is work flow based.
- The plans are generated online with almost no inputs/understanding of the system by the GP/BP level functionaries except the uploading of survey data.
- Funds and authorisations are made online, calculated and generated by the system.
- To facilitate this, a non-ICT change was brought about, namely, that the concerned banks were made to open special Saakshar Bharat Accounts with the main account and subsidiary accounts. Each implementing unit had to open a subsidiary account in the same bank as the main a/c.
Monitoring of the activities and progress of individual beneficiaries, individual educators, individual co-ordinators helps in getting a real ground picture and a complete view of the country wide situation and therefore can result in timely corrective measures where required.

Public access to the budgets and expenditures and other progress monitoring reports are provided on the web.

Impact analysis and future planning can also be carried out based on the enormous database made available at all levels/stages of the scheme.

Challenges Faced In Implementing Process Changes

- State education departments were not geared to carry out these processes with respect to logistics.
- Survey, its digitisation and uploading and corrections to generate GP plans was a very difficult task
- GP to district mapping was not available in all states
- The system of authorising funds to the implementing units and not just to the state a/c was met with resistance
- Opening of (over 2 lakh) bank a/cs for all the levels up the GPs was a gigantic task, with lot of issues from the user and bank ends
- Filling up of monitoring forms for each adult education centre, progress reporting of each beneficiary and functionary has also been met with resistance

Lessons Learnt From The Process Re-Engineering Exercise

- Networking of stakeholders through the system.
- Availability of internet connectivity at block and GP levels, national optical fibre network (NOFN) will be useful.
- Capacity building of the functionaries and computer literacy from state to district to block and GP levels
- Business process was evolved for the scheme with numerous interactions with the stakeholders.
- Survey related activities were outsourced by the states to computer literate companies
- Opening of bank accounts of each implementing unit up to the GP level was carried out with a lot of support from bank and capacity building of users
- Involvement of Panchayati Raj functionaries in the implementation of the scheme as committee members etc. for inclusive growth.
2. Change Management And Capacity Building

Leadership Support

The implementers of the highest levels visit the states and carry out orientations for the functionaries and education department officials.

Change Management And Capacity Building Strategy

The strategy of capacity building has been to orient and change the mind sets of all the functionaries etc. towards the advantages of the new system. The ease of working with the automated systems of WePMIS was explained in addition to the advantage of literacy for inclusive growth. These were carried out by planning and organising numerous programmes, workshops, conferences, kal jatthas, involving PRI institutions at the GP levels and also states and centre. Workers/functionaries, learners etc. were rewarded with certificates, awards, recognition etc.

Project Management

Full time project management and monitoring was carried out by the NLMA (National Literacy Mission Authority) for the implementation at the centre and corresponding agencies at the state level (SLMA), district level and BP/GP levels have been formulated. These are provided with the master training regarding the scheme and application and further train the master teachers etc. NIC was handed over the charge to completely develop the application and provide user manuals and training at the resource person's level.

Financial Model

The scheme is centrally sponsored with 75% centre share and 25% state share (90–10% for NE States).

Efforts At Sustainability

This is a time bound scheme extended in the XII plan period. All the processes of the scheme are incorporated in the application, WePMIS, hence sustainability of the project is ensured during the plan period if not beyond.
Challenges Faced In Change Management And Capacity Building

- Resistance to the new scheme and usage of ICT
- Uploading of survey data was a very slow process
- Opening of bank accounts (specific with one time activity restrictions) for all the implementing units, again was challenge

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Plan for capacity building in a cascade model
- Computer literacy
- Funds to be provided in time to retained the trained co-ordinators at all levels.
- Provide refresher trainings on WePMIS application

3. Technology

ICT Solution Adopted

WePMIS application has been developed on LINUX 6.4 (64 bit), JAVA (JBOSS 5.1) and PostgreSQL (9.2.4) open-source technologies.

High end web and database servers (Intel 16 Core 2.13 GHz E7430 CPU with (12 MB x 16 = Total 192 MB) cache and 64 GB RAM, 150GB HDD storage, standard rack-mounted server machines) are being used in Active, High availability cluster format. In this setup, a single disk failure will not cause the cluster to fail..

Compliance With Standards

e-Governance standards for the conformity assessment standards in process design and implementation, quality assurance procedures, SRS, its approval, testing and UAT, documentation etc. have been followed

Security And Confidentiality Standards

- User password during transit state is protected by encryption. Web access and physical direct access to server is limited to authorised users only. User access is defined as per their authorised roles.
- Database and web application are not stored on the same machine.
- DNS aliases are used for user application access. The server name is
not used in user access. Web account uses a dedicated account that is not a default database account. This a/c does not have administrative privileges on the database.

- User passwords are stored in database in encrypted form to enhance security.
- Two layer security has been implemented in direct database access one at OS level and second at database level.

Disaster Recovery And Service Continuity

- Two database and two web servers are configured in a manner that if one goes down then the other will take the load of all the services. Regular automated backups are taken using scripts and these are transferred to a separate server.
- In case all four servers go down, DR server can be started within a couple of hours.
- Replication has been implemented in database.

Technology Related Challenges Faced

- Lack of load and performance testing affected the prediction and impact on existing CPU utilisation.
- Data and test cases used in performance and load testing did not reflect the real world traffic and business processes.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- There a need for rigorous load and performance testing for applications and database
- Open source DB, PostgreSQL was found to be successfully able to cater to such large size of data and handled it without any issue.

VALUE INDICATORS

Digital Inclusion

The application has been developed for Saakshar Bharat scheme which is a centrally sponsored scheme and has a single version taking care of all the districts covered under the scheme.
Green e-Governance

Since most of the activities are online the scheme implementers have been able to do away with physical movements of forms, data, personnel etc. which in turn results in savings of enormous amount of paper and travel cost and energy.
DESCRIPTION OF THE PROJECT

Exam Results Online
A web based software system has been developed to publish exam results online. Along with state-of-the-art infrastructure, a complete solution was set up at NIC DataCentre at Delhi (http://results.gov.in). Today, almost all education boards as well as many other examination bodies are publishing their results over the Internet, thus making the life simpler for anxious students, their parents as well as for schools.

Counselling Online Project Since 2004
Seeing the success story of the software for exam results, in 2004, decision was taken to host the online counselling projects as well. The NIC developed system was first deployed for the Central Counselling AIEEE (All India Engineering Entrance Examination) for admissions in engineering courses. Today, counselling for various professional courses like Diploma (Engineering/ Pharmacy/ Hotel Management), B.Ed., B.E./B. Tech, M.Tech, MBA, MCA, Hotel Management, Medical(UG,PG) etc. are being successfully run for various counselling boards (central as well as state) which includes MCC (Medical Counselling Committee for UG & PG) , NCHMCT (National Council for Hotel Management & Catering Technology), UP, Haryana, Punjab, UK, AP, Gujarat, Orissa, WB etc.

RESULT INDICATORS

1. Key Performance

ICT Based Services

Primarily, the project falls in the government to citizen (G2C) category, as by this service all students, their parents and teachers are directly benefited. But it is also a government to government (G2G) application as examination boards and counselling boards are also using it to manage
publishing of exam results, other associated activities and to achieve the service delivery in an efficient and effective manner, be it admit cards downloading, counselling, results declaration or admission to institutes etc.

Current Stakeholder Benefits

1. Today almost all the education boards as well as examination bodies are publishing their results over the Internet thus making the life simpler for anxious students and their parents. Schools and examination boards are also immensely benefitted by this initiative.
2. Students can obtain online application forms, admit cards, mark sheets and online counselling for admissions to professional colleges at the all India level.
3. Indirect beneficiaries of the whole exercise turn out be the common service centre (CSC), district/village level cyber/internet access centre owners as their business gets a tremendous boost whenever the results are declared on the Net or online counselling commences. Mobile based services are also being used equally for exam results in addition to the web.

Implementation Coverage

The exam results are published for the following boards: CBSE, CA, Goa, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, MP, Orissa, Rajasthan, Chattisgarh, Tamil Nadu, Tripura, Uttara Khand, Uttar Pradesh, West Bengal, Jharkhand etc. Counselling of various central and state boards includes CCB/AIEEE, Hotel Management (NCHM), Andhra Pradesh, Rajasthan, Chandigarh, Delhi, Haryana, Gujarat, Orissa, Punjab, Uttar Pradesh, UK, West Bengal.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Earlier exam results were compiled and printed in newspapers. Now it is simply published on the Web. Students, teachers, parents all can access their results within 5–10 minutes of its publishing on the net. It has also saved a lot of effort on the part of exam boards and have helped them be far more efficient in delivery of their services.

Besides newspapers, the results were sent to schools all over India by post which involved cost and time lag, specially for school in remote parts of
country. Results were then displayed on school notice boards. Students, teachers and parents had to go to school to know the results. Now, as mentioned before, students, teachers, parents all across India can access results within 5–10 minutes of its publishing on the net, irrespective of its locations. Most results are also available through mobile, which further enhances accessibility and reach of service rendered by this project.

Innovative Ideas Implemented

Project has introduced innovation at two levels: Technology and process

Technology Innovation
In terms of technology, a great degree of optimisation is introduced by sharing resources across all state boards. Considering the kind of peak exam results need, i.e., every one wants to access his/her result in the first 5 minutes, setting up infrastructure dedicated for each result would have wasted a lot of resources. Commissioning, decommissioning of machines frequently for different results was also not possible as results are generally announced one after another. Infrastructure virtualisation technology was deployed for the first time in the government. This helped achieve a very high order of efficiency of IT infrastructure as well as needing a smaller team to manage the complete exercise of all exam results and counseling which spans for almost 6 months. The same technology was introduced in counseling.

Process Innovation
The whole process of publishing exam results is automated and highly agile. It is not needed for anyone from the board or NIC office to travel to the data centre.

Levels Of Integration

Encouraged by the success of the initiative of publishing exam results on the net, examination boards have introduced online services to exams right from online filing of exam application forms, admit cards to online distribution of mark sheets. This has led to a close integration of ICT systems at boards.

Online Counseling for admissions to professional colleges at all India level has also led to the integration of disparate systems into a connected or completely unified system.
ENABLER INDICATORS

1. Process Re-Engineering

This project is basically designed
   - to deliver exam results online over the Internet across the country/world
   - To provide a common platform for students across India to know all announcements pertaining to admit cards, exam dates, exam results, waiting list, admission to various colleges through professional exams
   - to enable online counselling by students for admission to a number of professional courses, without travelling to far flung areas. These services must have surely led to process re-engineering at the respective boards level. The boards faced a lot of challenges and learnt a few lessons in the process. However, that is out of the scope of this project.

2. Change Management And Capacity Building

Project is operational and delivering services in a flawless and seamless manner for over 10 years now. However to maintain high quality and the ever increasing expectation of the public, the NIC Exam Results Online Project team has to work very hard for almost six months every year. Highly experienced, skilled and committed officers constitute the core project team. They are in turn assisted by ICT professionals hired on contract to provide 24x7 operations during six months every year (April to August).

Capacity building is an ongoing exercise. Every year in the month of January/February all aspects of project technology, software, cyber security, skill upgrade is reviewed and appropriate actions are taken to deliver best quality service to citizens

3. Technology

The project uses Microsoft technology stack for development of software system (ASP.NET technology) as well as for ICT infrastructure along with virtualization using Microsoft Windows, IIS Web Server, Directory Servers as front end servers and MS SQL Server as back end database servers.
Server infrastructure created here works on a multi-tier application architecture model having multiple web/application servers configured on load balanced clustering as front end servers and database servers on high availability/mirroring clustering as backend servers.

The complete services is designed to be in high availability (HA) mode. It exists not only within the data centre but also across the geographically separated data centres. Regular mock drills are conducted to ensure the 100% continuity of the service.

NIC's national data centres used for hosting this application are NDC Delhi and NDC Hyderabad. The application uses NIC's own nationwide high speed network, i.e., NICNET which interconnect all the national as well as state data centres of NIC spread across the country and is also connected with the Internet on redundant high speed gateways.

**VALUE INDICATORS**

**Digital Inclusion**

Publishing exam results and online counseling has led to digital inclusion in the true sense.

Now students from urban cities, small cities, district and villages are all able to access their exam results at the same time – earlier, in the hilly terrains of Uttarakhand, and Northeastern states, there was over a month's lag. As a result these children used to miss a lot of opportunities for admission to higher colleges as well as employment.

Online counseling has narrowed the gap between students from information privileged/ high level academic institutions to small schools in districts and villages of India. With the complete process of counselling online, and with 24×7 helpdesk support, it has become possible for aspiring children and their parents to not only know about possible colleges for admission for higher education, kind of scholarships available, but also choose their options of subject and college from the comfort of their homes or close by community, common service centres or cyber cafes. Anxious students and parents are no more required to travel to apply for admission. Thus a lot of money and trouble I saved on the part of students and parents.
Green e-Governance

Server infrastructure deployed for this project uses virtualization technology for resource consolidation and better management. Server consolidation which was carried out some time back has helped in removing the number of physical servers and consolidating them into a few high end server clusters with optimised servers resources redistribution. Various ad hoc requirements of servers platforms like testing of applications, trainings to end users etc. were met with allocating the virtual machines temporarily during the activity and then releasing it afterwards for another purpose.

Server virtualisation has helped in using the resources CPU, RAM, storage, network etc. efficiently and effectively, reducing the physical components required and thus saving the power consumption and cooling requirement by almost 30–40%.

In the tradition scenario of counselling process, a lot of paper work was involved like keeping the document copies of student records, various receipts of process acknowledgements at board and student level. This paper work has all reduced drastically after having the online system introduced. Also, this project does not require any internal or outside distribution of CDs/DVDs to its end users during the process so it is fully safe from any kind of e-waste.

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DESCRIPTION OF THE PROJECT

Nuclear Power Corporation of India Limited in its constant endeavor to amalgamate the advantages of information technology implemented Purchase Automation System at NPCIL Head Quarters at Mumbai and across all NPCIL sites across the country in MISSION MODE. The vision is to move towards a paperless office. Use of Information Technology promotes the aims of open, non-discriminatory and efficient government procurement through transparent procedures. A series of Presentations were held with the various service providers for understanding the solutions available in the market. After detailed study, the operating model was decided as 'Application Service Provider' mode with complete control of all the 'core tendering activities' within NPCIL. For having maximum vendor participation in NPCIL e-tendering, it was decided at the tendering stage that no charges shall be collected from the vendors for support and registration on NPCIL e-tendering portal either by ASP or by NPCIL. The ASP is also bound contractually to comply with all CVC circulars & DIT Guidelines, issued from time to time. A trained team of NPCIL HQs visited each NPCIL location and provided training to both NPCIL users and Vendors community. Here a model of train the trainer was successfully followed as both NPCIL users and Vendors were more receptive of NPCILs trained team. A trainer of ASP was stationed at each location for a period of three months for resolving day to day issues faced by the Users and Vendors. To give a boost to Vendor participation “Vendor Melas” were organized at various Locations.

Due to dedicated efforts of NPCIL team the project was made live from year 2010 and the journey involved a lot of learning and refinements. This initiative has not only enhanced transparency in tendering process and convenience for bidders but also resulted in substantial savings for the Corporation. Approximately 8000 vendors are enrolled in the portal who regularly access the site for tender related information. Till date more than 12500 tenders have been published on this portal. Online Payment gateway for collection of Tender Fee has made the application more user friendly. The application is meeting the objective of transparency with user friendliness.
There has been a reduction of 10 days in tender cycle with the implementation of Purchase Automation System.

As NPCIL sites are very remote and not easily accessible, a need was felt to utilise the e-tendering application for generating higher level of competition. The old tendering process was time consuming as tender dispatch and bid receipt lead time had to be considered. The problem of overwriting, incorrect submissions, late bids, mixing of bids, unsolicited offers were widespread. A project to replace the existing manual tendering system with an online tender was envisaged and was made live from 2010 onwards. The initial implementation of e-tendering application was extended to cover the remaining purchase processes viz. purchase order, bank guarantees and indent management.

RESULT INDICATORS

1. Key Performance

A total of 12,665 tenders have been floated successfully using the NPCIL e-tendering system.

<table>
<thead>
<tr>
<th>Total Tender Floated Year Wise</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
</tr>
<tr>
<td>160</td>
</tr>
</tbody>
</table>

- An Average of 3.5 quotations has been received for each tender processed through Purchase Automation System.
- All Limited tenders have been converted to Public Tenders by administrative decision.
- Online Pre-bid meeting has been appreciated by all the vendors as they don’t have to travel to NPCILs remote locations and all queries and NPCIL responses are available instantly.
- The vendors once confident about the system are very supportive of the application.
- Online collection and management of the Tender Fee has resulted in seamless tender opening.
- The tender opening results are shared online with participating bidders which not only increased their confidence in the system but also reduced RTI Queries.
A total of 1,892 Online Purchase Orders have been issued after GO LIVE of Purchase Order Module in April 2013.

The system generated email messaging has speeded up the information flow.

As no charges are to be paid by the bidders for registration and support, small vendors are keen in participation and taking benefit of the system.

The Purchase Orders are also shared in public domain leading to increased confidence and transparency.

The Online vendor registration has eliminated the need of circulation of physical files to various committees and NPCIL QA offices across the country thus leading to a reduced processing time.

The portal has been modified to meet the compliance requirement of the Central Public Procurement Portal with the provision of uploading the XML files of Tenders and Purchase Orders in the CPP portal.

**ICT Based Services**

The various services covered under this initiative are as follows: Floating of tenders in online mode, workflow approval, issuance of corrigendum, online pre-bid meeting, online tender submission, online tender opening, online issuance of purchase orders, online acceptance of purchase orders, issuance of purchase order amendments, online management of bank guarantees, online vendor registration, online indent management, online tender fee collection, MIS generation, email messaging.

**Benefits Obtained From These Services By Each Category Of Stakeholders**

- With the use of this application, 90% of tenders are issued in e-mode.
- Vendors are benefited as they need not come to remote NPCIL locations for bid submission; they get a receipt of bid submission and postal delays are eliminated.
- Bid rejection due to overwriting and incomplete bid submission has been eliminated.
- Vendors can prepare and submit bids at the time of their choice as the system allows bid submission 24x7.
- The usage of the system has resulted in maximum competition for NPCIL tenders. An average of 3.5 quotations has been received for each tender processed through the purchase automation system.
- Due to online pre-bid meeting, the time spent by suppliers in travelling to NPCIL locations and also the cost involved thereof has
been eliminated; they get point to point reply of their queries at their desktops.

- With the usage of the system, NPCIL could comply 100% to the requirement of Central Public Procurement Portal.
- A large vendor base of approximately enrolled on NPCIL e-tendering website.
- Online submission of tender fee or uploading MSME certification for tender fee waiver (as applicable) benefiting both small and large vendors.
- Purchase orders can be accessed by all from the home page making the purchase process more transparent.
- Low cost to company for procurements benefiting NPCIL.
- There are no separate charges applicable to bidders/vendors.

**Implementation Coverage**

The application has a pan-India user base and vendors from almost all states are registered on the portal.

**Efficiency And Improvement Initiatives**

**Time And Cost Efficiency**

A reduction of 10 days for all types of tenders by eliminating the postal lead time.

<table>
<thead>
<tr>
<th>E-tendering</th>
<th>Traditional tendering</th>
<th>Tender type</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 days</td>
<td>21 days</td>
<td>Limited tender</td>
</tr>
<tr>
<td>35 days</td>
<td>45 days</td>
<td>Public tender</td>
</tr>
<tr>
<td>7 days</td>
<td>15 days</td>
<td>Single tender</td>
</tr>
</tbody>
</table>

**Innovative Ideas Implemented**

- Online pre-bid meeting, which becomes very important for an organisation like NPCIL where a manual pre-bid meeting requires the vendors to pass through a series of security checks.
- Facility of XML generation which has made the porting of NPCIL tenders and purchase order in Central Public Procurement Portal hassle free with a single point intervention.
Levels Of Integration

The purchase automation system is concentrated in the public domain area of NPCIL.

**ENABLER INDICATORS**

1. Process Re-Engineering

**Major ICT And Non-ICT Changes**

**NON ICT:**
- Limited tenders have been replaced with public tenders by administrative decision.
- More tender fee slabs have been introduced.

**ICT:**
- Online issuance and receipt of tenders.
- Online pre-bid meeting are conducted.
- Online issuance of purchase orders.
- Online issuance of purchase order amendments.
- Online tender fee collection and management.

**Challenges Faced In Implementing Process Changes**

- Remote locations of NPCIL.
- Vendors were more comfortable with the old manual mode.
- Users were change resistant.
- Less level of competition during initial launch.
- Making vendors participate.

**Lessons Learnt From The Process Re-engineering Exercise**

- The system has to be user friendly and adaptable to changing business environment.
- The support to the user is the most important ingredient for success of the project.
2. Change Management And Capacity Building

Leadership Support

The project enjoys complete support and guidance of CMD NPCIL. The Chief Vigilance Officer is always available with his valuable inputs and constantly monitors the implementation of the solution to the fullest. The C&MM Unit heads have lead the implementation and execution of the project from various NPCIL sites under the guidance of Associate Director (C&MM), NPCIL. The leadership and vision of the Associate Director (C&MM) has been the most crucial aspect for the success of this project.

Change Management And Capacity Building Strategy

- The users were given adequate training to diffuse change resistance.
- The project was implemented in a phased manner to increase adaptability.
- User manual for both NPCIL users and bidders have been provided in the system.

Project Management

- ASP provided support as per the service level agreement.
- NPCIL nodal officers are responsible for coordination with ASP.
- Core tendering activities are done by NPCIL officials.

Financial Model

- The project is in application service provider (ASP) mode where NPCIL pays the ASP on usage basis.
- There are no charges levied on the bidders for registration and support on NPCIL e-tendering website.

Efforts At Sustainability

- The training given to both vendors and NPCIL officials has resulted in optimum utilisation of information and communication technology in NPCIL procurement activities.
- The site is easy to navigate and user manuals have been provided for working without intervention of support staff.
- The system has been made more user friendly by incorporation of the
online purchase order module which not only complements the e-
tendering but also gives a higher level of transparency.

**Challenges Faced In Change Management And Capacity Building**

- Supplier resistance as they were more familiar with the old manual system.
- Making small vendors participate in NPCIL e-tendering.
- Compliance to CPPP guidelines.
- Infrastructure issues due to remote location of NPCIL sites.

**Lessons Learnt From Change Management And Capacity Building Exercise[s]**

- The phased execution model is the best suitable for introduction of new system.
- Timely and precise administrative decisions are required to give the necessary impetus to the project and go a long way for project success.

3. **Technology**

**ICT Solution Adopted**

- The project has been executed under application service provider mode with complete control of all the core tendering activities within NPCIL.
- Front end: Java,
- Back end: Mysql,
- Application uses PKI framework,
- Application uses SSL certificate (256 bit SHA2 algorithm) for data transfer between client machine and server through secured channel.

**Compliance With Standards**

- The contract has been designed in such a way that the application service provider is bound to comply with all government guidelines issued from time to time.
- The solution has got certification of EQDC working under STQC programme, DIT, Ministry of IT, Govt. of India for compliance to e-governance standards, IT Act and amendments, and CVC circulars.
Security And Confidentiality Standards

- All users have to go through a dual check process first being their login ID and password and second being a digital certificate together with session time outs etc
- ASP is an ISO 27001 certified company that ensures digital information security.
- PKI complied product (use of digital certificates for signing /encryption).
- SSL enabled website which ensures secure transmission of data between user's machine and server.
- Strict access control policies, rights management.
- Audit trail is maintained.

Disaster Recovery And Service Continuity

- Dedicated servers and disaster recovery site/server are in place.
- Quarterly back-up of the system is maintained.

Technology Related Challenges Faced

- Adapting to the changing security requirements.
- Making the vendors aware of the usage of digital signature certificate.
- Internet connectivity issues in remote locations of NPCIL.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- The system should be user friendly for easy adaptation.
- The support to users is the most critical for success.
- The vendors respond positively if the change from one system to other is gradual.

VALUE INDICATORS

Digital Inclusion

To increase vendor participation, NPCIL has taken the initiative of organising “vendor melas” across India where the advantages of online
processes were explained along with familiarisation to actual processing using the NPCIL e-tendering demo site.

**Green e-Governance**

The manual system required the issuance of printed tender document sets to the vendors which resulted in lot of wastage of papers. With online tendering, the tenders are issued online resulting in saving of the paper. The system has an inbuilt feature where the bidders can see the bids submitted by them for future references thus eliminating the need for keeping a paper copy of bids submitted to NPCIL. The courier requirement has been eliminated with the use of e-tendering application.

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Main objective of Nirmal Bharat Abhiyan (NBA) is to eradicate the open defecation and to bring an improvement in the general quality of life in the rural area. This programme was known as Total Sanitation Campaign (TSC) till XIth five year plan. To accelerate the progress of sanitation in rural areas, Government of India has designed a paradigm shift in Total Sanitation Campaign (TSC) which is now called the Nirmal Bharat Abhiyan (NBA), in the XIIth Five Year Plan. The objective of NBA is to achieve sustainable behavior change with provision of sanitary facilities for the entire community in a phased, saturation mode with "Nirmal Grams' as it's outcome. The new strategy is to transform rural India into 'Nirmal Bharat' by adopting community saturation approach. NBA goal is to achieve 100% access to sanitation for all rural households by 2022. So far, 607 projects have been sanctioned.

To add vigor to its implementation, GOI launched an award based Incentive Scheme for fully sanitized and open defecation free Gram Panchayats, Blocks, Districts and States called “Nirmal Gram Puraskar” (NGP) in October 2003 and gave away the first awards in 2005 as a component of its flagship scheme Total Sanitation Campaign (TSC). So far NGP has been awarded to 28002 GPs and 13 districts. Sikkim state has been declared as fully nirmal in 2008.

The online monitoring system of NBA is a comprehensive web-based information system. User can enter the data in various modules, and can view the regular and query based reports in text, graphical and thematic maps formats. The online system enables the centre, state, district, block and Panchayat to monitor the progress of the coverage of toilets for individual households, schools and Anganwadis. It can also monitor financial aspects (funds released by the Ministry of Drinking Water and Sanitation, States, beneficiaries and monitoring of utilisation of released fund). Previously, in the manual system it was extremely difficult to ascertain whether toilet facility was made available to rural citizens, in particular Gram Panchayats.
Reports on different indicators are generated on a monthly and yearly basis and are used by all the districts / states / MDWS and other departments / ministries of GOI. Besides these, the system provides a separate module to capture the details of baseline survey. It also facilitates the generation of ID cards of all the Swachhata Preraks.

RESULT INDICATORS

1. Key Performance

ICT Based Services

NBA-MIS is a G2G and G2C application.

G2G: Data is captured at state, district and Gram Panchayat level and the same is made available in various report formats with flexible selection options to be used in the decision making process of the governance.

G2C: All information captured are accessible to all citizens of the country through the report sections of the system. A citizen can gather information of sanitary coverage in their locality and other details such as BPL and APL beneficiaries.

Current Stakeholder Benefits

- Physical coverage of sanitation in the household level can be monitored at the state, district, block, Gram Panchayat level on monthly / quarterly basis. (G2G)
- Can monitor sanitary coverage of rural schools and Anganwadis (G2G)
- Corrective measures are being taken based on this monitoring reports (G2G)
- All reports generated by the project can be downloaded to the users' machine. Data can also be exported to Ms-Excel/Word/PDF formats (G2G and G2C)
- Non-governmental organizations, the Planning Commission of India and agencies like World Bank, WSP, UNICEF etc make use of the data available in NBA-MIS
- Information of 1.5 lakhs field level motivators (Swachata Doots) available in MIS allows the ministry to gather first-hand information of toilet usage and also to motivate people to use toilets and thereby adopt behavioural changes (G2G, G2C)
Implementation Coverage

NBA-MIS is successfully implemented in 2.5 lakhs Gram Panchayats of the country covering 28 states and 2 UTs. Stakeholders include officials at the Gram Panchayats, districts, state and central (Ministry of Drinking Water and Sanitation) level. There are 7500 users IDs issued to blocks, district and state level users with passwords. More than 500 concurrent users can log in and use the software.

Efficiency and Improvement Initiatives

Time And Cost Efficiency

Previously, the Ministry monitored the progress of implementation of Nirmal Bharat Abhiyan (NBA) in the various districts, manually. This method was time-consuming and heavily reliant on the person dealing with the data. Also there was widespread mismanagement of funds. The online monitoring system for NBA brought about the following changes.

1. Field level data is readily available as and when data is entered at district/GP level.
2. Availability of funds with implementing agencies (state) is readily available. It helps in avoiding parking of funds
3. Annual Plan process has become more efficient with the availability of data of previous year; thereby enabling the ministry to focus on uncoverd areas.

Innovative Ideas Implemented

NBA-MIS helped the ministry to find out year-wise coverage trends and the slow progress observed, gave birth to the idea of incentivising the Gram Panchayats on becoming fully open defecation free and to sustain the status. Nirmal Gram Purashkar (NGP) was thus instituted.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Earlier, the Ministry used to monitor the programme taking abstract number figures at district level but after implementation of the IT system (initially, the system was in stand-alone mode and later, it was converted into a web based system and implemented), information is available in databases and can be tracked down up to the beneficiary level, i.e., name of beneficiary, location name, toilet construction period, amount spent etc. Since the photograph of the toilet is uploaded, it can easily be found out what type of toilet was built. Since information at ground level is available in the database, planning can be done prioritising SC/ST/minority affected/ Naxal affected etc parties. Since information is in the database, it can be viewed by all citizens.

2. Change Management And Capacity Building

Change Management And Capacity Building Strategy

For successful implementation of the MIS, the Ministry has earmarked separate fund towards capacity building and also brought institutional level change by setting up CCDU (Community and Capacity Development Units) at both state and district level.

State and district level officials responsible for online data entry have been provided with extensive training to undertake this job. Regular orientation trainings are also being provided. So far more than 2000 users have been given training on NBA-MIS and these trainees are further used as ToTs (trainer of trainers) for blocks and Gram Panchayats. Training is being imparted at national as well as state level. There is also a helpline number to provide day-to-day support to all the officials involved in use of MIS

Project Management

One full fledged NIC team is working towards management of the project. Joint Secretary and Programme Director of the Ministry constantly guide the NIC team in terms of changes and sustainance of the MIS
Financial Model

It is fully funded by the Ministry of Drinking Water and Sanitation.

Efforts At Sustainability

The system has become fully sustainable over the years. It has been running successfully since 2003 with gradual and periodical enhancement with new technologies and new modules according to changes in programme guidelines.

Challenges Faced In Change Management And Capacity Building

The initial years of implementation of the system saw strong resistance from the users of the Ministry as well as the states. They feared that it would cause extra burden of work on top of their existing paper works. This resistance gradually declined after the users saw the benefit of the use of the software and easily available information. At present, the users are fully dependant on the system.

Lessons Learnt From Change Management And Capacity Building Exercise

Capacity building should be a continuous process. Refresher training should be held on a periodic basis.

3. Technology

ICT Solution Adopted

Front-End Tool: VisualStudio.Net IDE
Architecture: ASP.Net version 3.5; SQL Server 2008 R2

Compliance With Standards

NBA uses the LGD Directory maintained by the Ministry of Panchayati Raj which is fully compliant with the e-governance standards recommended by GoI.
Security And Confidentiality Standards

Open Web Application Security Project (OWASP) standard was used to conduct web application security audit of the application.

Disaster Recovery And Service Continuity

Service continuity: SQL server clustering is used for best high availability solution. As part of this solution, there are two physical servers which share the common storage in such a way that SQL Services will automatically failover to other available nodes if a hardware failure or a software failure occurs on the first node.

Native SQL backups are used for disaster recovery in the SQL server. Data can be backed on local disk, network storage and even on a USB device.

Technology Related Challenges Faced

Initially, software was developed in classic ASP using VB Script and Java Script on the client side with MS-SQL Server 2000 as the backend database, on a client–server web technology.

Major challenges were faced while using the classic ASP.

- Process isolation
- Multi-language support in webpage are not available
- Interpretation is there but no compilation
- No debugging tools
- Threading issues
- Validation and browser scripting capabilities

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

To overcome these major issues, the project was moved to ASP.Net technology with MS-SQL server 2008 R2 as the backend database.
VALUE INDICATORS

Digital Inclusion

Special focus is given to SC/ ST, minority dominated/NE states and Naxal Affected areas by generating special reports with different data sets. Special training are also conducted to help people in these areas use the MIS.

Green Governance

Since 2005, paper based reporting has been completely replaced by paper less reporting in the Ministry which has reduced the use of power and paper consumption drastically. It has helped towards green e-governance. SMS through the mobile; emails; and the Letters and Circular Section of the Ministry website replaced the old system of communication through papers. NBA-MIS is currently hosted in cloud hardware infrastructure, which is also extendable based on the requirement. The concept of obsolete hardware no longer exists which is also a green e-governance initiative.
Government of India is administering the National Rural Drinking Water Programme (NRDWP) to support States and UTs with financial and technical assistance in providing potable drinking water supply in all rural habitations. The Integrated Management Information System (IMIS) is a web based application developed for monitoring of the National Rural Drinking Water Programme of Ministry of Drinking Water & Sanitation in collaboration with the National Informatics Centre. This programme was launched in April 2009 and since then the programme guidelines have undergone several changes. Accordingly, the IMIS has been modified to suit the needs of the programme. Now this Management Information System has evolved as one of the largest data banks in the world related to Rural Water Supply (approximate data volume is 50GB). It has transformed into a comprehensive monitoring web mechanism where all aspects related to the Rural Water Supply is being monitored on a continuous basis.

After the introduction of the online IMIS, the monitoring of the programmes at State level, district level and even at block level is undergoing is a vigorous exercise and this has resulted in improving the programme delivery of the National Rural Drinking Water Programme. Transparency of the programme implementation was one of the key objectives in setting up the online IMIS and the same has been achieved. The IMIS is an open domain website and can be accessed by anyone at http://www.indiawater.gov.in. The main purpose of the open domain reporting is to ensure transparency in programme implementation and wide usage after giving due acknowledgement to the Ministry.

Now the IMIS contains water supply coverage information about 16.91 lakh rural habitations in about 2.50 lakh Gram Panchayats in the country. As on date IMIS contains data of 56 Lakhs rural water supply schemes in the country, including piped water supply schemes, hand pump schemes, sustainability structures etc. As on date, the IMIS contains list of 88 Lakh rural water sources of the country, including water supply scheme sources, public/private sources and drinking water delivery points/public stand.
posts. Testing details from 1,941 Water Quality Labs and Field Test Kits are available online. Financial information about allocation, release, expenditure of funds amounting to about 11,000 crore for 2013-14 from 28 States and 3 UTs is being reported on IMIS. This data is dynamic and changes whenever data is updated by States.

Even though huge amount of money has been invested in the rural water supply sector, substantial achievement has gone unreported. Formerly, approach towards monitoring and evaluation of the rural water supply programme was based on field level visits and subsequent reporting of the status. But in a vast country like India, with low staff number capacity, the department could do little justice to the monitoring and evaluation aspect of the programme. A big gap in information management was identified in this period and in order to overcome the issue, the concept of an online integrated management information system evolved. The introduction of this system strengthened the monitoring mechanism and ensured transparency. The IMIS is an open domain website and can be accessed by anyone at http://www.indiawater.gov.in.

RESULT INDICATORS

1. **Key Performance**

   **ICT Based Services**

   G2G: Data from the subdivision, division and state headquarter level and the water quality testing laboratories at the district and state levels is seamlessly integrated across the country and is readily available with all programme implementers.

   G2C: Citizens can access this system to find out the water supply schemes proposed in the area of residence/interest. They can easily see the investments done or proposed to be done, by the government towards water supply projects, in that area. Citizens can locate the nearest testing laboratory and get their drinking water samples tested. Academia can access this information to conduct research studies. NGO and other civil body organisations can use this site to carry out their activities very effectively.

   G2B: Business houses dealing with manufacturing and supply of water treatment equipments can locate the water quality affected
areas along with the type and extent of contaminations thereby gaining sufficient knowledge about the business prospects in those areas.

Current stakeholder Benefits

Various stakeholders derive the following benefits from the system.

- **General Public**: They can access the water quality profile of the village, coverage status and schemes implemented in their villages. Citizens can also find the location of the nearest water quality testing laboratory and test their own water samples for assessing potability of water.

- **People's representatives**: The system facilitates preparation of the village water security plans and supervision (reporting non-functionality / malfunction of drinking water sources / delivery points, to concerned authority).

- **Community Based Organisations and Non - governmental Organisations**: For research as well as community empowerment process.

- **Planning Commission**: For plan preparation as well as monitoring of the activities of the Ministry

- **State Departments**: For perusal and reporting to other line ministries and departments.

- **Research Agencies**: In order to analyze the trends regarding drinking water,

- **Media Houses**: For information sharing with the public as well as for other purposes.

- **Central Government Ministries**: For convergence issues related to their portfolios.

- **Multilateral Institutions**: Agencies like UNICEF, WSP, World Bank, WHO, JICA, ADB etc. make use of the data available in IMIS for sanctioning projects and evaluating previous investments.

Implementation Coverage

IMIS has been implemented across 28 states and 3 Uts. Stakeholders include officials at the subdivision/block, division/district, state, central (ministry) level and water quality laboratory staff at the subdivision, division and state levels. There are approximately 1700 user IDs and passwords issued to officers and staff at all these offices.
2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

i. Maintaining drinking water quality has become much more time and cost efficient

ii. Public can view the profile of the habitations as well as verify the schemes implemented in their villages. This promotes social audit.

iii. The system supports decision making and is also used for communication within the organisation. This has reduced the cost and time of the decision making process and conventional mode of postal communication.

iv. Honest public disclosure of the status of development programmes improves the service delivery of government funded programmes, reducing the leakages and making all the stakeholders more responsible and constantly vigilant

Innovative Ideas Implemented

- This system enables the centre, states, districts, blocks and panchayats to monitor the progress of coverage of rural habitations, schools and anganwadis.

- Progress of sustainability schemes which tackle the depletion of the ground water aquifers and schemes for tackling quality affected habitations can also be monitored.

Levels Of Integration

Linking of the habitations with the census villages, on the IMIS platform, has been completed. This has enabled cross domain inter-operability of the software and integration of the database with other related sectoral databases like health, education etc.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- Survey of water supply status of rural habitations was conducted every 10 years. Due to this long gap between two consecutive surveys, the policy and planning in a sector which involves high field dynamics, was always dependent on back dated information. Now, the IMIS enables the state governments to update the status of habitations annually. The concept of a survey every 10 years has been done away with. Data is updated as and when there is a change, hence making up-to-date information available for decision making and planning.
- The habitation-wise rural water supply assets and sources are available on a real time basis.
- Monitoring is now done in terms of habitation names and assets created thereby doing away with the older method of reporting in terms of numbers of habitations where there was scope for manipulation of these numbers to claim higher entitlement of funds from the central government.
- Information on PRI involvement in management of rural water schemes and the O&M of sources/systems is available on this system. This enables the Ministry to provide incentive funds to genuine states after field visits, based on this data, which otherwise was not possible in a vast country like India.
- Comprehensive information on water quality status of all villages is available on the system. Pre and post monsoon water sample laboratory test results are uploaded regularly on the site. This has enabled mitigation of water quality problems and prevention of outbreak of water borne diseases.
- The annual action plans of the state line departments are now devised with the bottom up approach.

Challenges Faced In Implementing Process Changes

Initially there was some resistance from the implementing agencies as there was a general feeling that the gamut of information that had to be provided to the central government was actually not necessary at the Ministry level.
There were gaps in the data entry from the states due to non-availability of staff in the state and low expertise of the staff in the states.

Sensitive areas like the Naxal affected regions and insurgency affected areas of NE region were unwilling to provide this data as it was displayed on the public domain and the sanction of funds was visible to all including extortionists.

Lessons Learnt From The Process Re-engineering Exercise

- Transformation of paper reporting to paper less reporting is a gradual and time consuming process.
- Action plan prepared for a nation-wide transformation of reporting may be unsuccessful when there is non-cooperation from even a few districts.
- Institutional mechanism should be in place for smooth flow of data from the field to the point of data entry
- Capacity building has to be a continuous process due to the frequent transfers of people at the field level.
- Dedicated funds should be provided for data entry personnel till all the staff and officers are fully trained.
- It was observed that changes in policy and subsequent changes in the software sometimes led to confusion at the field level. Therefore, the government should be very prompt in disseminating the information on the changing dynamics of the domain/policy to programme implementers at grassroots who often remain disconnected.

2. Change Management And Capacity Building

Leadership Support

Training programmes for capacity building of the field level staff is an ongoing process in the Ministry of Drinking Water & Sanitation. The programmes are also attended by senior officials. The senior management has invested sufficient time towards these activities and funds have been earmarked specially for training activities.

Change Management And Capacity Building Strategy

The training modules are designed and delivered to the states, based on continuous feedback/queries received from the implementing agencies. District, state, regional and national workshops are held regularly for the
implementing agencies, in which a hands-on-training on the IMIS is a compulsory activity. Apart from this, video conference based trainings are also held between Delhi and the needy state/district.

**Project Management**

- A fully fledged NIC wing under the leadership of Sr. Technical Director is in charge of the integrated management information system. Hardware and software professionals from NIC are working in this technical division. In addition, few outsourced staffs are also deployed for the purpose of maintenance of code etc.
- The programme director is in charge of the management information system of the Ministry.
- One consultant also guides the technical team

**Financial Model**

IMIS is fully funded by the Ministry of Drinking Water and Sanitation.

**Efforts At Sustainability**

The Annual Action Planning Process of the Ministry is a decentralized, i.e, bottom up planning process, using automatic data. Hence as long as this planning process for allocation of funds to states exists, the use of IMIS will be automatically enforced.

This system has been completely developed by an in-house team of domain experts, nodal officers from state line departments and IT experts from NIC. It requires minimal maintenance and is not dependent on any external sources for either technological inputs or data updation. Hence it is completely cost effective and a sustainable initiative.

**Challenges Faced In Change Management And Capacity Building**

Doing away the traditional method of paper reporting was a challenge in the first phase. But by constant capacity building and encouragement, the Ministry has been able to ensure that the officials in the state line departments change the age old methods of record keeping, planning, monitoring and reporting, and move into the paperless form of working.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Change management should be an enterprise wide effort and planned well ahead.
- Changes should be accompanied by rigorous training which should be a continuous process.
- Participation of senior programme managers in the capacity building exercise has a strong impact on field level staff and helps managing the change efficiently.

3. Technology

ICT Solution Adopted

The environment hosted is based on two web servers with load balancers and two database server in failover mode. IMIS is a web application developed in ASP.net with 3 tier approach. The backend database is MS-SQL 2005. It is built on a rich user interface with drill down approach to last level. It gives the facility to export data into Excel and Word. Recently, IMIS has switched on to cloud based architecture and this has helped to improve the response time during peak hours.

Compliance With Standards

The efforts for compliance to existing standards are still on. The Ministry is striving to make the IMIS fully compliant with the Land Region Codification MDDS issued by DEITY. Presently, the Ministry is working on the MDDS document for the rural water and sanitation domain. Also, several entities have been adopted from the Panchayati Raj MDDS which is in the final stages of preparation.

Security And Confidentiality Standards

Security: IMIS web application follows Open Web Application Security Project (OWASP) security standards

Confidentiality:
- Salted MD5 encryption is used to store user credentials. No one other than the user can have access to his credentials. Admin can only reset the credentials.
- IMIS is a role based application. It is designed in such a way that the
user can have access only to data which he has been authorised to view/update. Permissions are maintained at database level.

**Disaster Recovery And Service Continuity**

**Service Continuity:**
Two web servers and two database servers on cloud VMs are being used to provide 24×7 availability of the application. Data is stored on the SAN. All the servers are at the National Data Centre Shastri Park, New Delhi.

**Disaster Recovery:**
There are two disaster recovery sites, one is placed at the National Data Centre, Shastri Park and other one is at the Data Centre at Hyderabad. With some manual intervention and time lag, disaster recovery is maintained at the data centre level.

**Technology Related Challenges Faced**

There were two big challenges faced
- Optimal use of hardware that became idle while providing the service continuity using active–passive mode.
- Reports became very slow and some times, page timeout occurred.

**Lessons Learnt From Technology Choices And Implementation Strategy Adopted**

- To tackle slow response of reports, there are separate databases for reporting and data entry so that table locks and concurrent access on the table is avoided. SQL Sever Integration Services (SSIS) are being used to create this reporting database at night with a time lag of 12–24 hrs. Data is being fetched at night from the OLTP database using SSIS and transferred to the reporting server.
- For proper utilisation of hardware, active–active clustering has been used, instead of the conventional active–passive clustering,

**VALUE INDICATORS**

**Digital Inclusion**

- With successful implementation of the IMIS, citizens from any corner of the country have access to the information irrespective of his or her socio-economic status.
- Ministry has successfully monitored water supply projects in SC/ST dominated, minority dominated areas which have traditionally suffered from poor drinking water coverage.
- The IMIS also helps in pinpointing locations which require special attention, areas where disparity in delivery of drinking water exists and areas where repeated interventions have been made to satisfy influential people.

**Green e-Governance**

- The Ministry has stopped the manual reporting process and thus there is no paper reporting from the states. This has resulted in environment friendly reporting in which no paper is wasted thus saving a lot of carbon. Further, for the printing of these reports, a lot of power was required as well as printing ink at the state level. However, after the launch of IMIS, it is assumed that a lot of electricity as well as printing ink are saved at the state level thereby protecting the depletion of natural resources. In addition, wastage of paper in the form of reports which are to be thrashed after stocking for sometime is also avoided now. Hence there is a lot of savings in the form of natural resources such as paper, electricity etc.
- IMIS is hosted on the cloud at the National Data Centre maintained by NIC. This saves lot of power and hardware junk that is created if individual servers are maintained at the Ministry.
- Specific directions are given to states not to send hard copy of the reports; the Ministry has decided to accept only the online reports available in the integrated management information system.
- Hardware procurement for hosting IMIS application and database has been stopped. All new requirements are met from the National Data Centre resources.

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DESCRIPTION OF THE PROJECT

I-Introduction: eBRC (Electronic Bank Realization Certificate) project launched on June 5, 2012, created an integrated platform for receipt, processing and subsequent use of all Bank Realization related information by exporters, banks, central and state government departments.

II-What is a BRC: A BRC is issued by bank after it realizes Foreign Exchange sent by foreign buyers in exporters’ account as payment for goods exported. BRC is subsequently used by many central and state government departments for grant of benefits, refunds to exporters. Over 50 Lakhs of BRCs are issued every year by banks.

III-Need for Change: Processes for BRC issuance and subsequent utilization were largely manual and department centric. Exporters suffered most as they had to run to banks and government departments many times for claiming benefits.

IV-Core BPR philosophy: BPR focused on taking an exporter centric as opposed to agency (individual banks or government departments) centric approach. This led to development of a centralized eBRC repository at DGFT, which could be accessed by all stakeholders. Changes were also carried out at department level. For example no of eBRC related steps at banks came down to 2 from 6 and at DGFT to 2 from 3.

V-Results: The project reduced transaction time and cost of operations and improved productivity of all stake holders. Project’s success can be recognized from the figures. So far Tens of thousands branches of 88 Major banks have uploaded over 49 Lakhs of eBRCs onto the DGFT servers. Estimated annual saving for all stakeholders exceed Rs. 2000/- crores.
RESULT INDICATORS

1. Key Performance

ICT Based Services And Stakeholder Benefits

Thus far, 5.2 millions of eBRC (100% of BRCs issued in India) have been uploaded on to the DGFT server by banks. This is the key indicator, signifying complete switch from manual to electronic system. Other parameters are user convenience, enhanced productivity of all stakeholders and cost effectiveness. Exporters save time and money resulting from reduced visits to Banks, DGFT and other Government Departments. Banks save money as they just have to digitally transfer the information which is already available in their core banking software on to the DGFT server. They do not have to certify exporters' information or store a physical copy of the BRCs issued anymore. DGFT officers and staff save time as the calculations are automated and documents are from verifiable sources received directly. For all stakeholders put together the saving is estimated to the tune of Rs. 20,000 Million (400 million US$) annually.

Innovative Practices

Since the e-BRC information is to be shared with large number of organisations, DGFT took a decision to use platform independent system. This ensured that user departments do not have to invest in a new hardware or software or manpower for implementing the system. Now all stakeholders ie DGFT, banks, state governments exchange digitally secure Information in standard platform neutral XML using Service oriented Architecture.

Levels Of Integration

DGFT has so far signed MoUs with four state governments (Maharastra, Odisha, Delhi and AP) for sharing of eBRC data through electronic message exchange in a service oriented architecture. It is expected that within a year all state governments and relevant central government departments will be assessing this data for quick processing of exporters' claims.
ENABLER INDICATORS

1. Process Re-engineering

Major ICT And Non-ICT Changes

Major changes can be grouped under two heads:

Use of new and standardised processes replacing existing manual processes

<table>
<thead>
<tr>
<th>Process</th>
<th>Earlier</th>
<th>Now</th>
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<tbody>
<tr>
<td><strong>Issue of eBRC by Banks</strong></td>
<td>After realisation of money in exporter’s account, the bank informs exporter; exporter fills predefined BRC format and submits request for issuance of certified BRC to the bank; bank verifies details and sign and stamp the BRC. Minimum: 2–3 days</td>
<td>Physical BRC has been replaced with eBRC which exporter may verify or take print from DGFT server, if needed. After realisation of money, bank generates e-BRC in predefined format (XML) and uploads it on DGFT server. The eBRC certificate is digitally signed by the bank, eliminating the chances of misuse. Zero wait, zero visits to banks for exporters</td>
</tr>
<tr>
<td><strong>Automated calculation of benefits by DGFT</strong></td>
<td>Manual data entry&lt;br&gt;Manual calculation of benefit&lt;br&gt;Verification of details of BRCs by writing to banks&lt;br&gt;Storage of all BRCs in safe custody</td>
<td>All relevant information is available in electronic format at DGFT server&lt;br&gt;Benefits are calculated at DGFT regional office automatically&lt;br&gt;Standard exchange rates published by the Central Board of Excise and Customs (CBEC)</td>
</tr>
<tr>
<td><strong>Sourcing and use of eBRC by other stakeholders</strong></td>
<td>Earlier exporters had to pay money to the bank and get additional copies of eBRCs issued for submission to government departments</td>
<td>Exporters merely need to take details from the DGFT website and submit the information to the relevant department.</td>
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</table>

Challenges Faced In Implementing Process Changes

The major bottleneck of the system was the apprehension and fear of unknown. The community partners also had concerns regarding privacy of data. The system also had to work under the constraint of inadequate quality technical manpower.
Lessons Learnt From The Process Re-Engineering

Appropriate technology which is platform independent, easy to implement and capable of integrating everybody without imposing any financial or technical burden should be chosen.

All stakeholders had to be made to feel important and a sense of ownership of the project should be instilled in them by regular consultation.

1. Change Management And Capacity Building

Management And Capacity Building Strategy

Since eBRC was a new concept, education, training and capacity building efforts were directed towards all stakeholders. These included DGFT, banks, exporters and other government organisations. A team of DGFT and NIC officials organised large-scale exporter outreach programmes across the country with the help of the Federation of Indian Exporters Organisations (FIEO), CII etc. Training material was also put on the DGFT website. A dedicated helpdesk was created at all major business cites by DGFT to help exporters. Regular meetings were held with banks to understand individual processes and concerns. DGFT has 36 regional offices spread across the country. Select DGFT official posted at regional offices was given short training in understanding and implementing the system.

Other government agencies: Not much of training was required for other government agencies. The data is available on the DGFT website and the same was to be accessed and utilised by these agencies. With basic computer knowledge this was possible.

3 Technology

Initially it was felt that since BRC is a bank subject it would be better if banks take up the project under the guidance and leadership of RBI and Indian Bank Association (IBA). Due to large number of banks and its branches dealing with foreign exchange, clash of commercial interest between them and non uniformity in selection of a third party technical solution provider project could not take off for quite some time. DGFT stepped in to own and implement the project. A decision was taken to get the project completed using in house technical resources. NIC was selected as technology partner
as they possessed both domain and technical knowledge required for the project.

**Selection of appropriate technology:**
Bank branches issuing BRC were running into ten of thousands in number. All these banks and even branches had diverse practices and different level of automation for issuance of BRC. Number of registered exporter was more than 6,00,000 and consumers of BRCs were DGFT, Customs, Sales tax authorities in unspecified large numbers. The technology should have been platform independent, easy to implement and capable of integrating everybody without imposing any financial or technical burden. Keeping the same in mind:

- Digital Signature Certificate (DSC) signing and verification utility was provided by DGFT
- Interface with Banks, Exporters, other Govt. Agencies was kept in XML
- Service Oriented Architecture was selected for all interfaces. This ensured that the maintenance requirement of the system was minimum.

**Software development methodology:** Agile software development methodology was adopted where requirements and solutions evolved via collaboration between cross-functional teams.

**Project architecture:** The project was implemented in service oriented architecture (SOA) with provision for XML based interface. This ensured that the maintenance requirement of the system was minimum.

**Database:** DB2 9.7

**Front end:** Java

**Compliance With Standards**

Following standardised codes (especially developed by UN/CEFACT or other international standard organizations) were used in the system
UN LO Codes for country
UN LO Codes for ports
UN Codes for unit of measurement for international trade
Indian Financial Services Codes (IFSC) for banks
Standard Importer Exporter Code for trading community
VALUE INDICATORS

Green e-Governance

Thus far, 5 million eBRCs have been uploaded on to the DGFT server by banks. Converting the manual process into eBRC has saved a lot of trees, time and stress. The eBRC system enhances the productivity of all stakeholders.
The Department of Scientific and Industrial Research (DSIR) essentially focuses on enabling Indian industry to reach state-of-the-art innovation excellence and competitiveness through research and technological interventions.

The Information Technology and e-Governance (IT-eG) group within DSIR has developed and implemented an IT enabled work environment and enterprise resource planning (ERP) application to automate all the operations of DSIR and link it to providing online services to the industries and relevant stakeholders.

The system has resulted in effective work culture, minimisation of overheads in administering programmes. More importantly, DSIR is able to achieve enhanced quality of engagement with industries and stakeholders and provide effective services online to industries for technology development, R&D innovation and effective industry operations, while adhering to the government of India rules, regulations and policies.
RESULT INDICATORS

1. Key Performance

ICT Based Services

The following schematic shows the services being delivered by DSIR through ERP solution to their clients viz. industry, in-house R & D, individual innovators, SIROs, PFRIs.

Current stakeholder Benefits

Department of Scientific and Industrial Research (DSIR) has evolved a highly productive and user-friendly, electronic knowledge-based workplace that offers effective B2G and G2B services ensuring enhanced quality of services to industries, minimising hardships for industries requiring solutions, facilitating interactions and collaborations to avail services that are required in the course of technology development / acquisition through evaluation, planning, carrying out operations for indigenisation / manufacturing. Incidental benefits include reduction of costs/efforts in seeking and obtaining information and services.

Automating the activities of DSIR has also led to transitioning to an effective performance focused work culture, minimisation of administrative overheads and enhanced quality of engagement and services to industries.
Implementation coverage

The companies/organisations recognised by DSIR and other stakeholders in various schemes are spread all over the country. There are no specific geographical areas covered.

1. Efficiency and Improvement Initiatives

Time and Cost efficiency

The average time-frame for key activities of DSIR is as per the Citizen’s Charter.

Innovative Ideas Implemented

- Online submission of applications by industries, SIROs and PFRIs in a web-enabled form and Online processing of applications within DSIR involving stakeholder/industry.
- Provision of entering legacy data into the system.
- Analytics and decision support to discern performance gaps and develop appropriate action plans for industry engagement.
- Design description, SRS, user documentation, quality assurance and various reports as per the IEEE standards for the purpose of maintenance and management, trouble shooting, compliance with protocols and standard operation procedures.
- The applicant has the flexibility of knowing the status of his application, making the process of scrutiny, decision making more transparent and making the officers more accountable for performances and results.
- The outcome/decisions made are automatically generated from the ERP solution and communications are auto-dispatched as emails avoiding word processing, communication delays etc.
- Electronic transfer of funds to the applicant is made upon approval and sanction.
- Required hardware and ICT infrastructure is IPv6 compliant.
ENABLER INDICATORS

1. Process Re-Engineering

The design and implementation of a portal was to engage the strategic sector, industrial R&D and R&D institutions in order to enhance innovative indigenous product manufacturing capacity of nation. It aims at experience sharing of new entrants, startups, and industries at various stages in the value chain from ideation to design and through manufacturing and sustainable operations and encouraging activity in the unorganised sector to move to the organised sector and avail opportunities which contribute to the national economy by providing a platform for recognition and collaborations.

Major ICT And Non-ICT Changes

The goal of the transformation project was to improve and streamline processes, which typically require reengineering of current processes. It has helped put the resources of the organization to the best possible use. In keeping pace with a progressive mandate, several key initiatives have been taken up for implementation at DSIR within an aggressive time frame aiming at 'transforming DSIR' to an organisation embracing a 'performance culture leveraging process, redesigning, automation of administrative and business procedures, enhancing collaboration/networking, team performances, workplace learning and mentoring, augmentation of skills, knowledge sharing, implementing electronically enabled work places, electronic self-services, transparent mechanisms for decision support / enhanced efficiency at all levels.

Challenges Faced In Implementing Process Changes

Varied Platforms and Servers: The goal of the web application is to be platform independent on the client side wherever possible. Therefore, the web applications were to be implemented to run on the server side as much as possible. Also, it was required to test the application using different platforms, connection speeds, screen settings, colours/graphics, and browsers.

Resistance to change: Undoubtedly, implementing services online brings changes in the way in which operations are carried out, which may not be easily accepted by users. Users are reluctant to change their work related behaviours, which requires relentless efforts in educating the
employees and clients on the usage, making them more familiar and encouraging them to embrace an electronic work culture.

Learners' capabilities: Sometimes users lack basic computer skills and they do not have the confidence to adapt and embrace new technology/work culture.

Lessons Learnt From The Process Re-Engineering Exercise

- A generic provision has to be made in the configuration module and process modeler to alter the order of process steps or delete/modify process steps according to the contingencies of the situation.
- Rigorous efforts are needed to integrate the business rules relating to variants, visualise alternative flows, and validation checks.
- It is necessary to visualise and integrate new processes and repertoire of new activities for proactive engagement of industries and stakeholders.
- Initiatives for which processes had to be automated required to factor in innovative pathways to elicit participation, involve and collaborate with stakeholders. For example, it was necessary to visualise the role of academic institutions, communities and civil societies for S&T interventions that targeted at societal impact.

2. Change Management And Capacity Building

Change Management And Capacity Building Strategy

A number of training/workshops were conducted to bring about change management and capacity building in both RFP1 and RFP2.

Project Management

As there was extensive involvement of different stakeholders, many groups were set up.

Domain experts and nodal officers: They provided inputs for various functional requirements, facilitated the documentation of such requirements, and validated the solution at various points in time.

Core technical team: They (a) acted to translate inputs from the project leader and steering group to the consultant agencies, (b) coordinated with
various labs and users to elicit their views, compiling feedback and issues that require to be addressed.

Project champions and Implementation Teams: They engage the users
A project monitoring and evaluation committee for the ERP project has been constituted with the approval of the Joint Secretary (Admn.) DSIR.

Financial Model

Expenses for the ERP solution are allocated from the budget outlay made for the Plan programme of DSIR with a total cost expenditure of Rs. 5,62,83,159. In Phase II of the project, it is proposed to develop a pilot portal for the manufacturing sector funded by the NMITLI programme of CSIR under the auspices of INAE and CSIR-URDIP.

Efforts At Sustainability

1. To ensure sustainability of the e-governance initiative, a maintenance service support (MSS) including end-user support for 4 years after warranty has been agreed upon
2. This ERP solution is a bespoke application which has been built using internal capacity giving the ownership to DSIR itself unlike SAP or ORACLE solution products where the organisation is dependent on external source. All portal operations are built in-house with specific services for ICT hardware infrastructure with the data centre secured as external services.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

One of the significant lessons learnt is the strategic advantage that comes from the efforts to design, develop and implement a bespoke application. Since all aspects of the software features, capabilities are designed and addressed in-house, it becomes easier to track issues, fix faults, make improvements, scale up or configure the software to enhance its usefulness. Dependency on the vendor is also significantly reduced.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Challenges Faced in Change Management and Capacity Building exercise[s]</th>
<th>Lessons Learnt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clarity of deliverables usually evolves over a period of time during roll out with progression in the project lifecycle. Hence, at the stage of contracting for services with the development team/ vendor the nuances and details of implementation are less clear.</td>
<td>1) Extensive efforts are required to intensify the interactions among all participating individuals and teams 2) It is desirable to have a measurable exit criteria defined corresponding to every milestone. 3) Document all the ambiguous points/risk and issues at the time of proposal and focus thereafter on these areas</td>
</tr>
<tr>
<td>2</td>
<td>There were frequent changes in the requirement and requirements were communicated through various modes like telephone, e-mail, discussion etc</td>
<td>1) Technical analysts should be involved in requirement gathering 2) Frequent demos with the customers 3) Requirements gathered from the customer require to be documented in the form of story points by business analysts for quick release. 4) Sufficient buffer must be accounted for at the start of the project</td>
</tr>
<tr>
<td>3</td>
<td>The ERP software had to be integrated and modules had to interface and exchange information across NIC developed software</td>
<td>Interoperability requirements had to be envisaged in advance with considerable foresight</td>
</tr>
<tr>
<td>4</td>
<td>In transitioning to an electronic work culture, it is often difficult to wean away the employees from paper based conventional work culture.</td>
<td>The Software developed had integrated inbox, outbox, role centric work desk GUI with relevant links to emulate an electronic workplace.</td>
</tr>
<tr>
<td>5</td>
<td>Government organisations are often complex and adopt processes and practices that are difficult to address in an automated environment.</td>
<td>The software solution requires to be advanced</td>
</tr>
</tbody>
</table>

### 3. Technology

**ICT Solution Adopted**

(i) Front end windows server 2008, 32 bits R2, MOLP, media  
(ii) Back end Microsoft .Net 2.5 Microsoft .Net; SQL Enterprise 2008, MOLP and Media; Office Share point 2007 with Media; Office Communication Server 2007; Exchange Server 2007, MOLP and media and service agreement  
(iii) Hardware requirement data
Lessons Learnt From Technology Choices And Implementation Strategy Adopted

The deployment scenario had to be planned to cater to increased number of concurrent users. This meant that load balancing on the basis of rational IP distribution, session management to prevent overuse of computational resources, security features to detect and prevent intrusions, boot log in, scaling up or cluster implementation to enhance response times were necessary.

The sequence of operations had to be revisited to enable quick loading of ERP software and progressive loading of details to prevent overload. Administrative overheads and system overload require has to be anticipating and catering to with appropriate strategies for enhanced performance. Disaster recovery, replication for backup and associated synchronisation were required to be planned with foresight and implemented.

VALUE INDICATORS

Digital Inclusion

In case of the twelfth plan ongoing PRISM scheme of DSIR, agencies (TOCICs) are being created to undertake various activities of the scheme. These centres assist applicants in small geographic area for promotional activities related to innovation/entrepreneurship and advertisements in regional languages as per the advertisement material provided by DSIR. These TOCICs will also coordinate for submission of reports, utilisation certificates etc and using external interfaces provided in the ERP application.
Green e-Governance

DSIR clients vary from in house R & D centres (1750), SIROs (600), PFRIs (620) and FIs (900). Each year for renewal of recognition, these clients used to submit two copies of applications that have now become online, leading to less paper consumption. Similar is the case with all other twelfth plan ongoing schemes of DSIR such as PACE, PRISM and A2K+ wherein the applicant submits all the applications online which are screened, processed and evaluated leading to generation of sanctions online.

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DESCRIPTION OF THE PROJECT

The Commissioner of Transport, Gujarat (COT) is computerising its systems in a phased manner. It is planned to have an automated driving test track in place to achieve the objective of checking the driving skills of an applicant for driving license and to ensure transparency while issuing driving licences at all the regional transport offices (RTO) of Gujarat.

The track has electronic sensors which work on automated electronic system - this helps provide on-the-spot grading of a driver's skill and knowledge. All movements of the vehicle driven by an applicant on the track are recorded for post verification and preservation of the record.

The new initiative also ensures that a significantly higher bar is set for checking the driving skill of a prospective license holder.

RESULT INDICATORS

1. Key Performance

   ICT Based Services: Government to citizen
   Current Stakeholders Benefits: Citizens of Gujarat who wish to avail driving license for 2, 3, or 4 wheeler vehicles will be benefited by this initiative.
   Implementation Coverage: Knowledge test has already started at every RTO/ARTOs, and Automated Driving Test Track is functional at 5 RTOs viz. Gandhinagar, Ahmedabad, Rajkot, Mehsana and Sabarkantha and work is in progress at other levels
2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- **Queue Management**
  Automatic driving test track has advantage of taking the driving test at citizens' convenient time. Now, RTO has a portal which provides facility to citizens for taking prior appointment online. Citizens can book time slot from morning 09:00 hrs to 18:00 hrs as may be convenient to them from the portal and on any given date. On the designated date & time, they can arrive at the test facility to give the test. This has decreased manual queuing system or a manual queue in the old system. The waiting time is very less for giving the test and they can take the test within 15 to 20 minutes. The test results are given instantaneously on completion of the Test, thus the applicant doesn't need to wait..

- **Speed and Efficiency**
  The manual test had limited capability since an RTO inspector is needed to take the test. With the completely automated system, 40 two-wheeler tests and 24 four-wheeler tests can be taken in an hour. This is very efficient and it satisfies the requirement of daily test at all the major cities and metros of Gujarat.

**ENABLER INDICATORS**

1. Process Re-Engineering

**Major ICT And Non-ICT Changes**

i. **Advance Appointment System**
   It has decreased manual queuing system. The waiting time is very less for giving the test and applicants can take the test within 15 to 20 minutes

ii. **Automated Tests**
   The automated tests have the following features such as fully
automated special designed tracks, wireless sensor based weather proof system, secure computer system integrated with SARATHI, automatic video recording of all tests, Capture of photograph of drivers in mid driving test, elimination of impersonation, and immediate announcement of results.

Challenges Faced In Implementing Process Changes  Aspirants who feared failure after introduction of this system stopped coming for tests, and hence aspirants appearing for tests decreased for some time initially.

Lessons Learnt From The Process Re-Engineering Exercise: Office has taken great efforts to reduce aspirants’ fear. Various channels were used to educate the aspirants. Videos, pictures were prepared and displayed at RTO waiting lounges, on web sites, social media, etc.

2. Change Management And Capacity Building

Leadership Support

The Commissioner of Transport took the initiative and is the guiding force behind the whole project. The project was conceptualised and discussions were held with different stakeholders by the Commissioner. Once the project was broadly conceptualised, discussions were held in the government at various levels. The Commissioner also held discussions with department officials and staff at the grass root level; and conducted field visits. During the field visits, discussions were held with driving schools, associations and agencies involved in road safety work at the district level. These forums were used to invite suggestions that helped conceptualise and implement the project effectively.

Change Management And Capacity Building Strategy

In order to handle change management of various processes involving stake holder was a mammoth task. A great care was taken for various changes:

- **Legal**: The requirement of skill test is mandatory in CMVR. A circular was issued to ensure that the entire mandatory test is conducted as per the scheme of ADTT.
- **Financial**: The driving test is preceded by payment of fees for this purpose. It was decided that the fee for driving test will not
be changed at the system. The whole financial model was design in a PPP method. In this model the cost of civil construction and land to given of front by the Govt. the Agency is paid on per test basis whereas the fee collected goes to the exchequer.

- **Public Awareness**: Various channels such as Display boards in waiting lounges, videos, Social media etc are used for public awareness:

- **Man Power**: All stakeholders were sensitized and oriented towards new system and clear lines of communication were kept for continuous flow of ideas and exchange of views.

- **Change management team**: A core team worked as the change Management Team and interacted on all aspects of the Project. A special technical group was constituted to monitor and review technical aspects of the Project.

### Project Management

The project was closely observed from the Commissioner of Transport Office level. Project plan was defined at the macro-level and divided further to every RTO office. Milestone wise activities were monitored and corrective actions were taken, if required. Individuals were identified from local office and from agency level for day to day activities. Monitoring and periodic meetings were held to assess the developments against planned.

### Financial Model

The financial model was designed in a PPP method. The cost of civil construction and land was given up front by the government. The agency is paid per test basis whereas the fees collected goes to the exchequer.

### 3. Technology

#### ICT Solution Adopted

**Systems, Sensors And Network**

- A sensor, which is digitally addressable for sensing any movement of the vehicle beyond the drive path. The sensor detects and sends a signal to the computer.
- A sensor is fixed for sensing start and stop time of a vehicle in a
particular track. The sensor sends out an infra red beam, which is interrupted when the vehicle crosses the line. The interruption is transmitted to the computer.

- The heart of the sensor electronics is a micro-controller. When it receives the signal from the sensor, it sends the sensor number over a serial link to the controlling PC.

- Power and data cables laid under the track provide the power and data connectivity between the control room and the sensor electronics located in the field.

- A PC with web camera is used to capture the photo of the candidate at half time during the driving test. This photo is stored in the server as part of the candidate's record for any future reference. The same system provides the print out of the result of the test.

- A separate PC controls each track. It monitors the test, captures the test results and forwards the same to the server.

- Server controls all the track PCs. It stores all candidates' data as well as the test results. The test results are printed from this system. A LAN network connects the server and the PCs.

- CCTV: The closed circuit television cameras fitted on the driving test tracks are used to record and monitor the driving test.

Software:

**Operating System:**
- Microsoft Windows 2008 for Server
- Windows XP Professional for clients

**Website:**
A website was developed by the agency to provide online appointment to the candidate for the driving test. The candidate enters his/her learning license number in the website and gets the date and time for the driving test. The website is compatible and may be integrated with SARTHI software provided by NIC at all RTOs / ARTOs. Results of the driving test can also be seen online in the website soon.
Video-Player:
Video player application is provided to play the stored videos from the video server with provision for checking videos for a particular candidate by entering candidate ID and the track to view.

<table>
<thead>
<tr>
<th>Automated Driving Test Track: Control System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
</tr>
<tr>
<td>Programming language</td>
</tr>
<tr>
<td>Database</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Automated Driving Test Track: Registration System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
</tr>
<tr>
<td>Programming language</td>
</tr>
<tr>
<td>Database</td>
</tr>
</tbody>
</table>

Security And Confidentiality Standards

Data is stored on SARATHI server and only required data is used during the automated test track, for each location, individuals are identified and assigned responsibilities.
VALUE INDICATORS

Digital Inclusion

All citizens are part of the project and benefit from the project.

Green e-Governance

Office has tried to minimise consumption of power and paper.

<table>
<thead>
<tr>
<th>Change</th>
<th>After</th>
<th>Before</th>
<th>Key result area</th>
<th>Sr.#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving of 12 pages per application resulting in annual saving of 12 million pages approximately</td>
<td>8 pages submitted once</td>
<td>10 pages per application submitted twice</td>
<td>Attachment by applicants</td>
<td>1</td>
</tr>
<tr>
<td>Saving of almost 1.2 million pages every year along with saving in manual effort involved in writing</td>
<td>All in electronic format</td>
<td>Maintenance of paper bound registers and books</td>
<td>Paper works by Department</td>
<td>2</td>
</tr>
</tbody>
</table>

JP Gupta, IAS, Commissioner of Transport, Ports and Transport Department, Govt. of Gujarat. Email: commi-trans@gujarat.gov.in

D H Shah, GAS, OSD to Commissioner of Transport, Ports and Transport Department, Govt. of Gujarat
Gujarat Pollution Control Board (GPCB) was established in 1974 as a regulator to prevent and control pollution. The conventional approach adopted since then was “command and control”. The working methodology of the board was manual and paper based which could not match with the pace of rapid industrialisation in the state, adversely affecting the main focus of pollution control and environment preservation. To overcome not only the constraint of manpower but also to bring about speedy and transparent working, the board decided to switch over to e-governance which is unique in its nature for a regulatory authority and a step forward to eliminate red-tapism.

XGN adopted under the e-governance initiative is a web based application jointly developed by NIC (National Informatics Centre Gujarat) and the Gujarat Pollution Board to provide an IT solution aiding the GPCB in effective and qualitative implementation of the environmental laws for air, water and hazardous waste including rules for management of plastic, bio-medical and municipal waste etc. It was implemented from April, 2008 and is ongoing.

The core of XGN lies in providing hassle free, 24 × 7 anywhere e-access to businesses through a unique ID to perform GPCB related various activities like making online applications, its tracking, filing returns and statements prescribed under the acts/rules, to obtain online permissions and other communications from GPCB as well as to facilitate reuse / recycle of wastes.
RESULT INDICATORS

1. Key Performance

ICT Based Services

(a) All transactions between GPCB and stakeholders are through electronic means.
(b) Work flow of various applications towards obtaining NOC, consents, authorisations, assessment orders etc. are through online mode right from acceptance, querying, e-replies, processing at field offices, approvals at regional offices, movement of e-file to head office, processing by HO staff and unit heads and final actions by member secretary/chairman.
(c) Database is electronic/digitized.
(d) Service delivery is electronic

Services Incorporated For Citizens

- Citizens can lodge environmental pollution related complaints online
- Statistics of the various actions taken by the Board including CTE/CCA order granted, rejected, closure issued, closure revoked, water cess return filed etc. is visible on home page
- Provides a platform for social services to general public like information of blood availability, access of information regarding the vacancy of jobs at different industries in the state - job seekers can upload their resumes so as to enable concerned industries to search amongst them

Current Stakeholder Benefits

(1) Transparent, expeditious and sound decision making as well as instantaneous communication with businesses

(2) Platform for waste exchange - facilitating use of waste as fuel and/or raw material
   For example, the module facilitated cement industries to utilise database generated by other businesses of Gujarat for identifying/accessing region/district wise waste generation with their waste disposal facilities. The cement industry subsequently interacted with other businesses that generate such wastes through XGN for purchase of their wastes and by-products so as to use it as raw material or for co-processing at their facility.
(3) **Platform for environmental consulting firms**

One of the latest features in the XGN application is providing a platform for environmental consulting firms to enable them to perform various online tasks on behalf of their client businesses.

**Implementation Coverage**

The project is implemented over 25 regional offices, 9 laboratories, 4 vigilance branches of GPCB in various districts, 25000+ industries and 31000+ healthcare units (hospitals/clinics) spread all over the state of Gujarat. Additionally, 27 TSDFs (hazardous waste handlers towards treatment and disposals) and captive plants, 29 common effluent treatment plants and 14 common bio-medical waste collectors and treatment operators are also delivery centres for XGN.

After having been implemented in Gujarat since 2009, XGN is successfully implemented in other states like AP, MP, HP, Goa, Uttarakhand, Karnataka.

**2. Efficiency And Improvement Initiatives**

**Time And Cost Efficiency**

- 85 % of the online applications are disposed off, within 41 days against the mandatory prescribed period of 120 days.
- Concept of bulk notices in all modules has resulted in increased and speedier compliances.
- Monitoring free mechanisms have enhanced the productivity of the management.
- Alert for pending work is given by the system itself which leads the industry to be timely compliant.
- Availability of statement of analysis results for the samples collected in a given time period.
- Facility of payment through RTGS has virtually ensured collection of application at the time of inspection.
- Ranking screens, performance charts has created a constructive competitive culture amongst the staff; the system aids the regional heads in taking up and setting up of various priorities.
- Final delivery mechanisms or for that matter, the conveyance of final actions are speedily and effectively conveyed to stakeholders through e-outwarding of documents.
- All information required for a decision at any level, is displayed to Users in one-screen, thus leading to speedier and accurate disposals.
Innovative Ideas Implemented

- Introduction of multiple monitoring-free mechanisms at various stages through performance grading.
- All transactions, location of e-file details or even status of various returns are preserved in the e-Box. e-Communication module i.e. SMS, e-talk, e-message box and timely alerts is the core of XGN.
- Final delivery mechanisms have been fine tuned along with e-outwardings resulting in eradication of physical files.
- Physical notices to end-users have been done away with. Instead e-LOCKs are used, virtually forcing them to carry out compliances of any violations / defaulting status.

Levels Of Integration

XGN, GPCB e-governance initiative has been well integrated with other external ICT systems such as that of the Commissioner of Health, the GEER Foundation, cement sector industries, JPAL (International NGO), environmental consultants and auditors.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT changes

In the course of implementation of the initiative, sixteen processes were re-engineered. The top three of them are detailed below:

<table>
<thead>
<tr>
<th>It mandates online submission of application for various permissions replacing age old methodology of physical forms. e-File movement replaces physical file movement for decision making, this provides transparent and speedy disposal.</th>
<th>1. Online application and e-file movement from inward by business to final disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total 38 various transactions are communicated through automated SMS on the registered mobile number. Each order about CTE, CCA and legal orders are e-outwarded and available online.</td>
<td>2. Conveyance of decisions to business and e-delivery mode mechanism</td>
</tr>
<tr>
<td>Hazardous waste as per the rule is to be transported and disposed off through a manifest system which includes six copies for its seamless tracking. Now, through this process, business can generate online manifest which is available to all concerned resulting in smooth and easy tracking of hazardous waste till its destined disposal.</td>
<td>3. Online hazardous waste tracking system</td>
</tr>
</tbody>
</table>

Challenges Faced In Implementing Process Changes

- Average age of the staff in the organisation was around 50 at the time of implementation of initiative; staff was not computer savvy
- Non-availability of infrastructure especially web connectivity
- Due to the e-governance initiative being implemented, pending work surfaced; to cope with this enormous visible pending work and the increased workload subsequently posed a big challenge.
- Initially there was resistance from consultants and businesses which were more accustomed to the manual system; transparency of the system killed monopolistic practices which was resented by some parties
- The initiative had teething problems as it was the first of its kind in the nation
- GPCB has no in-house IT specialist staff
The Lessons Learnt From The Process Re-Engineering Exercise

- With the same manpower, the organisation could cope with the higher level of work load
- Information about waste which had the potential of being a raw material or fuel that was otherwise not known earlier
- Two parallel systems, i.e., ICT based and manual system cannot exist
- Age and language are not barriers for implementing such ICT based solution or initiative especially when there is a strong focus and approach towards the issues.

2. Change Management And Capacity Building

Leadership Support

Ever since the project has been started there has been a very strong support from the leadership. Personal interest has been taken at all the levels for not only developing but also strengthened the module from time to time.

Change Management And Capacity Building Strategy

There is a core committee where the brainstorming sessions are conducted on different components to achieve the objectives. An IT committee has also been constituted. Regular sessions are conducted for staff at all levels to educate them with respect to added features and to take feedback for need of re-engineering the processes or smoothening the entire work flow management.

Financial Model

The entire programme is supported by the Gujarat Pollution Control Board. A specific budget for IR is earmarked by the Board in each of the financial year since the project has been commissioned.

Efforts At Sustainability

To ensure the sustainability and security of the e-governance initiative, security audit is conducted at regular intervals by third party auditors and the recommendations are implemented.
Challenges Faced In Change Management And Capacity Building

- At the initial phase of implementation of the initiative, the staff was not sufficiently computer literate. Each of the staff members has been provided with computer training; exams were also conducted and the same were linked with their promotions.
- Before the e-governance initiative, compliance and progress monitoring was statement and report based. Hence to move from that approach was a challenge internally.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Before the implementation of the initiative, the system within the organisation was ministerial staff centric; now the staff has almost been spared now and their attention can be diverted towards their core functions like administration, accounts, establishments etc.
- There was a myth that too much transparency will come in the way of regulatory functions. However it has been observed that transparency instead facilitates functioning which has paved way for the decision to further strengthen efforts for more transparency and e-governance.

3. Technology

- XGN is a web enabled application in Intranet as well as Internet.
- It is based on the multi-tenancy concept - having a single application pointing to separate databases for various states
- It follows the basic principles of cloud computing features.
- XGN has acquired third-party security auditing clearance (every 2 years)
- Appropriate firewall technologies have been utilised in an effective manner.
- DR backups in NDC Hyderabad and other incremental/full backups everyday as per SDC policies along with transaction-to-transaction mirroring.
VALUE INDICATORS

Digital Inclusion

It is a web based application and easily accessible. It can be accessed from the any part of the world where internet connection is available. Further, it is user friendly, very convenient to use, menu driven, and does not require high computer skill to operate. However, to increase the ease of the user, detailed guidelines are placed with screen shots.

To enhance accessibility, the concept of a helpdesk has been put in place at each regional office of the Board. The industry / HCU or any other stakeholder may walk in with details for assistance in the case of any difficulty. This service is rendered by the Board free of cost.

Further, to reach the stakeholder at its door step, endeavours are made so that 'help node' are opened in industrial clusters (where there is a presence of micro and small scale industry) at their offices of the Industries Association.

Green e-Governance

- The implementation of the e-governance initiative especially at the Head Office is in a green building which is fully self-sufficient for electricity needs; the same is generated by the solar panels on the roof top.
- The organisation has moved towards a less paper office (since paperless is practically not possible in the government sector due to legal constraints) after this initiative; whatsoever paper waste is generated is sent for recycling to paper mills.
- All the training programmes conducted within the Board have a session to develop the culture of switching off monitors and electric gadgets to reduce electricity consumption.
- The cooling system in computer rooms has emphasis to use BEE Five Star rated systems only.
- There is a practice of refilling print cartridges as far as feasible before disposing them to maximise the use of print cartridge.

Hardik Shah, Member Secretary, Gujarat Pollution Control Board, Gandhinagar. Email:msgpcb@gmail.com
DESCRIPTION OF THE PROJECT

Gujarat State Civil Supplies Corporation (GSCSC) is a wholly owned government company working under the Food, Civil Supplies and Consumer Affairs Department, Government of Gujarat (FCS&CAD). The primary activity of the corporation is to procure, transport, store and distribute essential commodities to the beneficiaries through an established channel under various community welfare schemes of the Government.

This initiative addresses the processes relating to lifting/procurement of stock from FCI godowns, transportation of the same to GSCSC godowns, receipt of stock at GSCSC godowns and issue of stock to FPSs from GSCSC godowns. Inventory management is the core task in such systems. It was observed that real time inventory management system needs recording of various transactions like lifting of goods, receipt of goods, issue of goods etc. online. It was decided to introduce programmable HHT to be able to address a range of administrative issues like missing of trucks, late receipt of trucks at godowns, unnecessary deployment of man power at FCI godowns etc.

National Informatics Centre (NIC), Gandhinagar was assigned the task of system analysis, system design, programming and training. The modular approach for total computerization was adopted.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- Generation of transport pass (TP) using HHT for lifting of goods from FCI (lifting data sent to central server)
- Receipt of goods at GSCSC godowns (i.e., confirmation of receipt of goods issued from FCI – capturing data generated through HHT)
• Generation of online delivery challan and gate pass for issue of goods to FPSs (fair price shops)

Current Stakeholder Benefits

Benefits to GSCSC Office
• Day-to-day monitoring of lifting of stock from FCI made easy.
• Day-to-day basis time gap analysis makes transporters more vigilant regarding the stock movement and it resulted in reduction of instances of diversion of stock from FCI.
• Tracing of lifting inspector who has been assigned duty at a particular FCI godown.
• The physical presence of the lifting inspector (the lifting inspector's finger print is compulsory to print the transport pass) provides added advantage of monitoring of quality of food grains received from FCI and makes the lifting inspector accountable.
• As RO detail is already available in the designated HHT, the time required to prepare the transport pass is reduced.
• Reduction in man power deployment at lifting points.
• The details of completed RO, current RO and pending quantity of lifting is easily available.
• The time taken for reconciliation of RO wise lifting with FCI has also reduced.
• GSCSC godown manager's presence is mandatory for any issue to FPS because of finger print authentication. It ensures accountability.
• As soon as a truck along with the TP generated through HHT reaches the GSCSC godown, the concerned godown manager enters the TP ID into the PDS system and thus information related to the RO as well as quantity transported is shown by the system. This also saves time for the preparation of the receipt of stock.
• No one can issue / deliver excess stock than the permissible limit.
• Assessment of issue to FPS from the godown in the given time limit ensures and reduces events of diversion of stock while lifting.
• Monitoring of lifting of stock by the doorstep delivery transport contractor.
• Due to online delivery chalan system, there has been reduction of instances related to diversion of stock from GSCSC godown.
• Ensuring delivery to FPS via SMS.
• Precise monitoring of lifting and delivery of stock at various places.
• Can handle the increased quantity of turnover with the same staff.
• Submission of separate statements or information for the delivery of stocks to FPS are not required
• Monitoring of timely lifting and reconciliation with FCI.
• Saving on TA/DA bill of lifting inspectors
• Support system in fulfilling the objective of supplying essential commodities to FPS (in turn beneficiaries) in time.
• Monitoring of issue of stock in late schedules which may ultimately result in diversion.
• Direct monitoring of stock movement, transport problems, labour problems, godown maintenance problems, godown space problems etc.

Benefits to FCI Office:
• Time required for RO wise day-to-day reconciliation of stock with GSCSC has reduced
• Settlement of accounts with GSCSC made easy

Benefits to District Transport Contractors:
• Time required to prepare transport pass has reduced
• Monitoring of transport activity made easy
• Reduction in tension due to alert in case of possible incidents of theft of PDS stock
• Preparation of transport bill will become easy

Benefits to Taluka (DoorStep Delivery) Transport Contractors:
• Time required to prepare gate pass has reduced
• Monitoring of transport activity made easy
• Tension will be reduced due to confirmation by FPSs via SMS for receipt of stock
• Preparation of transport bill will become easy

Benefits to FPSs
• Reduction in hassle of permit procedure
• Reduction in carrying records for lifting of stock from GSCSC godowns
• Settlement of accounts with GSCSC made easy
• Tension will be reduced due to e-payment procedure
• Month wise commodity wise scheme wise lifting of stock from GSCSC godown will be easily available
Benefits to FCS&CAD Office

- Summary of lifting of stock from FCI will be easily available
- Summary of month wise district wise taluka wise FPS wise commodity wise scheme wise lifting of stock by FPSs from GSCSC godown will be easily available. This will help in overall monitoring of timely availability of stock for distribution to beneficiaries
- Assessment of scheme wise distribution will help in planning of stock for next month.

Implementation Coverage

- With a transaction volume of 3,52,250 for FY 2012-13 (April to March), the initiative covers the entire State of Gujarat.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- Generation of transport pass (TP) using HHT takes less time than manual process
- Preparation of various reports including MIS reports has become easy and time saving.
- Time required for RO wise stock reconciliation with FCI has reduced
- Due to less number of deployment of employees at FCI godowns, TA/DA has reduced
- Early reconciliation of stock with FCI leads to early settlement of accounts and savings.
- Online delivery chalan to FPSs leads to exact advance payment to GSCSC, which leads to early settlement of accounts and savings in time.

Innovative Ideas Implemented

- Introduction of programmable HHT for preparation of transport pass
- Integration of HHT data with central server.
- Preparation of online delivery chalan required for lifting and transport of stock from GSCSC godown to FPSs.
Levels Of Integration

The system is fully integrated with the main web based system developed for public distribution system.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Before initiative</th>
<th>After initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO assignment</td>
<td>No fixed method or procedure to assign RO to a particular lifting inspector</td>
<td>RO was assigned to lifting inspector with finger print authenticity</td>
</tr>
<tr>
<td>Confirmation of receipt of stock at GSCSC godown</td>
<td>No fixed method</td>
<td>Programmable HHT having connectivity with central server is used to prepare transport pass</td>
</tr>
<tr>
<td>Monitoring of issue of goods to FPSs</td>
<td>Not possible to monitor on a day-to-day basis</td>
<td>Introduction of generation of online delivery challan and gate pass for issue of goods to FPSs in PDS module has addressed this issue</td>
</tr>
</tbody>
</table>

Challenges Faced In Implementing Process Changes

- FCI godowns are usually located in remote places where computer installations and connectivity with FCS&CAD servers are not feasible. So HHTs with SIM card facility were used.
- Integration of HHT with PDS main application
- Training lifting inspectors who were more than 45 years to use HHT
- Resistance from employees for introduction of finger print authentication.
- Training 200 godown managers on online delivery challan and gate pass printing
Lessons Learnt From The Process Re-Engineering Exercise

- In case of big applications, it is advisable to start implementation of various modules and programmes in a phased manner with sample testing and parallel testing, rather than waiting till all areas are fully developed and tested.

1. Change Management And Capacity Building

Leadership Support

- The initiative was supported by all superiors at all levels – starting from MD to Hon.CM.

Change Management And Capacity Building Strategy

- For the proper implementation of HHT, training programmes were conducted through e-learning sessions as well as practical sessions at the head office and district offices.
- Hands on training was given to godown managers and operators.
- Training modules were prepared in the local language (Gujarati) for better in-depth understanding of the process for those involved directly.

Project Management

- GM (MIS) of GSCSC worked as a project leader.

Financial Model

- Own fund

Efforts At Sustainability

- As it happens with all technologies, the programmable HHTs which are used in the system are easily available and as time passes by, it will become cheaper and cheaper.
- For the purpose of issue to FPS, a simple computer and related equipments are used with connectivity to a central server. These computers are quite commonly available in the market and getting cheaper day by day.
All exercises are done with the help of NIC and in house supporting staff. So there is not much expenditure or human resource engagement on the implementation aspects.

Mostly, before real implementation of any module, hands on exercise is carried out not only at pilot locations but towards the state for a period of at least one month. This gives an opportunity to modify the solution to map the actual requirement of the end users. This also gives confidence to the end users for successful implementation of the module.

Challenges Faced In Change Management And Capacity Building

- Training lifting inspectors who were more than 45 years, to use HHT
- Resistance from employees for giving biometric information (fingerprints).
- Training 200 godown managers on online delivery challan and gate pass printing
- Frequent change of person for lifting of stock.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- It is advisable to make small groups say 5 to 10 employees for training rather than making a group of 20 or more.

2. Technology

ICT Solution Adopted

- Use of programmable HHT (with SIM card) with warranty of one year and fixed maintenance for another two years
- Use of simple PC (with 5 years warranty) at godowns with printer, UPS, fingerprint device, bar code reader etc. with pre-installed OS (Windows) and anti-virus software.
- Connectivity at major locations: GSWAN-VPNoBB
- Connectivity at 13 locations where BSNL landline is not available: through VSAT.
- Software/programme development: VB.Net
- Database: SQL
Security And Confidentiality

- Application is accessible only on VPN connectivity and Users who have rights to enter/update data can access application with user ID, password and biometrics (finger print) authentication.

Disaster Recovery And Service Continuity

- Backup server has been installed for disaster recovery
- In case, BSNL lines are not working properly and there are connectivity issues, then dongles given with fixed IP address can be used by districts/godowns.

Technology Related Challenges Faced

- Unavailability of BSNL land lines at certain places
- Speed of various networks

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Integration with two different technologies takes more time; lots of technical as well as human hassles needs to be solved
VALUE INDICATORS

Digital Inclusion

- Front end language used: Gujarati (local language)
- Demographic area: State of Gujarat only.
- At field level, mostly only numeric figures are required to be entered. Most of the data/choices are made available from central database.

Green e-Governance

- HHTs are working on batteries
- Authorities other than end users can merely see reports. Printing is allowed as per requirement.

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DESCRIPTION OF THE PROJECT

Many children have been reported missing. Some of them end up in the streets or with various child care institutions (CCIs). It becomes extremely difficult to reintegrate the children if they are unable to tell their address properly. Initially, there was no authentic source of information on the number of children staying at various CCIs as well as data on missing children. There was a need to develop an all India databank of the children residing in CCIs under the Juvenile Justice (JJ) Act. The child's information needs to be recorded systematically so that re-integration with their families becomes easier.

The child tracking system is a web portal named www.Trackthemissingchild.gov.in consisting of a management information system for creating a database of children within the purview of the Juvenile Justice Act for children in need of care and protection (CNCP) and children in conflict with law (CCL).

The objectives of the system are:

1. To create a software to enable child welfare committees (CWCs), Juvenile Justice Boards (JJBs), State Project Support Unit (SPSU), child care institutions (CCIs) under the JJ system who directly deal with children to enter and update information about children in their care/custody and to generate reports and information for the purpose of their action.
3. Immediate and on-line reporting of missing/recovery of children.
4. To generate and analyse information of all children within the JJ system for the purpose of planning, programming, monitoring and policy making.
5. Increasing of awareness and parent advocacy and integration of the community into the recovery and rehabilitation.
The Social Justice and Empowerment Department (SJED), Government of Gujarat took the initiative to meet the challenge of shortage of accurate data and to restore missing children to their families. Gujarat is the first state to roll out the Child Tracking System since May 2012. It was developed by MWCD and NIC Delhi under ICPS with the support of UNICEF Gujarat.

RESULT INDICATORS

1. Key Performance

ICT Based Services

The software has features to generate reports based on parameters like category of the case, gender, age group, district, institutions, status of case, time period of case, etc at different levels with any combination for further analysis on various parameters. Monthly reports have been generated for planning and programme advocacy. The MIS software has the element of tracking progress of case profiles of children and has the scope to generate reports on a regular basis for the benefit of key decision makers. Moreover, this is considered to be an effective way to record the case history of each child as soon as they seek the support of the juvenile justice (JJ) system and build the case profile as the case progresses.

With the tracking register in place, the storage, classification and analysis of information on the child enabled the child protection system to deliver justice in time for juveniles in conflict with the law and provide care and protection to children in need of care and protection (CNCP). Extensive recording of physical features, special identification marks, deformities for better matching of each child, automatic matching of “missing” children data with those of “found” children, local language interface, alert messaging, integration of public interface has also helped in identification.

Current Stakeholder Benefits

1. Police Stations: Live database of missing and found children and online tracking facility with the database of child care institutions.
2. Child Care Institutions: Live database of children residing in child care institutions and tracking the progress of each child in terms of the need and development progress of each child.
3. Citizen's corner and Parent's corner: A facility to enter details of missing and found children in the website, to access the details about the services available; parent's corner has information on do's and don't with child and what to do during an emergency.

**Implementation Coverage**

**Social Justice & Empowerment Department Stakeholders**
- 52 Child care institutions covered in the state.
- 26 District Child Protection Units Trained for monitoring the implementation of the track child system in districts.

**Home Department Stakeholders**
- 95 Police stations in 4 cities, 473 police stations in 29 districts, total 568 police stations covered in the state.

**2. Efficiency And Improvement Initiatives**

**Time And Cost Efficiency**

The system provides timely dissemination of information amongst all stakeholders to simulate synchronised “community” response, thus ensuring earliest care to the child in immediate need of care and protection. It has resulted in improvement in efficiency.

**Innovative Ideas Implemented**

- Convergence among stakeholders like public/community, police, NGOs.
- Immediate feedback from concerned agencies on missing children and rehabilitation of CCI children.

**Levels Of Integration**

The SJED, Government of Gujarat has started the process of integrating the website for geo informatics systems (GIS) and Gujarat State Wide Area Network (GSWAN). The MWCD, Delhi and NIC Delhi have been requested to share and allow access to the central database for integration with GSWAN and the process to obtain clearance is ongoing.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

National Informatics Centre at New Delhi in coordination with MWCD had developed the “Missing Children Tracking Portal”.

Non-ICT process changes were planned by SJED and the Home Department to implement the system in the state by stakeholder sensitisation and capacity building of the allied stakeholders. The department also translated data entry forms into vernacular language. Photo resize software was included which was not there earlier. Filtration of data with different options at CCI and district level was also implemented.

Challenges Faced In Implementing Process Changes

The key challenge faced in implementing non-ICT process changes was mainly language of the system related to data entry for users.

The Lessons Learnt From The Process Re-Engineering Exercise

There is a need to incorporate regional language into the system to increase the use of the system by allied stakeholders.

2. Change Management And Capacity Building

The Child Tracking System is popularised through various event based interventions, mass events, thematic and targeted advocacy and networking with allied stakeholders. GSCPS also used social media to create awareness on Child Tracking System.

Change Management And Capacity Building Strategy

The GSCPS with the support of UNICEF Gujarat has developed session modules for all the stakeholders and organised sensitisation workshops among stakeholders of government departments, child care institutions, NGOs, etc and also capacity building workshops organised for police and child care institutions and district child protection units in cascade mode.
Under this project in the state of Gujarat, 52 child care institutions (CCIs) (48% of the state coverage and 80% of the institutionalised children under the JJ Act) and 568 police stations (100% of the State coverage) were selected and trained on data entry of missing and found children as well as children residing in CCIs. All the participants were provided a copy of the user manual in electronic and hard copy versions. The trainings were organised in vernacular language for all the allied stakeholders.

**Project Management**

A help desk comprising state level team and consultants supported by UNICEF, Gujarat created at the state level monitored the quality and quantity of the data entered by child care institutions and police. Monitoring and action plans were developed for the police and child care institutions by district officials. There were frequent field visits to implementation sites for monitoring and on-site support. The monitoring mechanisms developed by the state and district level team for tracking progress and development of each case profile of children residing in child care institutions was enhanced.

**Financial Model**

The Child Tracking System is being implemented by the state under ICPS.

**Efforts At Sustainability**

The various components under ICPS have been periodically evaluated by the National Commission for Protection of Child Rights (NCPCR), Gujarat State Commission for Protection of Child Rights (GSCPCR), MWCD officials, and bilateral agencies like UNICEF, academic organisations and civil society organisations.

**Challenges Faced In Change Management And Capacity Building**

The challenge faced in change management and capacity building was mainly the language of the data entry form which is in English as developed by NIC, Delhi for the users at SJED and the police.

**Lessons Learnt From Change Management And Capacity Building Exercise[s]**

- The data entry forms for SJED users and Home Department users should be translated into the vernacular language and submitted to
MWCD, Delhi and NIC, Delhi for incorporating the forms into the system.
- The manuals for different stakeholders provided by NIC Delhi has to be translated into vernacular language
- The report generated based on the data entry should also be in vernacular language.

3. Technology

ICT Solution Adopted

MWCD, Delhi and NIC Delhi has adopted the system based on
- The database of this system is based on PostgreSQL.
- Operating system on which the database mounted is Linux.
- The web server of the system is Apache.

Security And Confidentiality Standards

NIC Delhi has developed this system in such a way that complete privacy of child data is ensured. Data is secured and accessible to only authorised users. The users of SJED and the Home Department have been provided user ID and passwords. The policy for the password is as mentioned below:
- Password minimum length: 8
- Password must contain the following
  - Minimum one uppercase letter (A–Z)
  - Minimum one lowercase letter (a–z)
  - Minimum one digit (0–9)
  - Minimum one special character (for example, @# & etc)

Disaster Recovery And Service Continuity

Helpdesk team reports to MWCD, Delhi and NIC Delhi for any query related to technical issues of the Child Tracking System. An email ID, nic.cts@gmail.com, has been generated by the helpdesk team, SJED, Gujarat specifically to raise the query related to the Child Tracking System for district team.

Technology Related Challenges Faced

The technology related challenges faced initially by the state were many such as homepage was not opening, server was down, data entered by CCIs and
police were shown missing from their respective home page, etc. The helpdesk at state level have shared the challenges with NIC Delhi for the solution.

**Lessons Learnt From Technology Choices And Implementation Strategy Adopted**

To have a support system at State NIC level which NIC, Delhi has extended by training all the State NIC officers and providing operation assistants.

**VALUE INDICATORS**

**Digital Inclusion**

The major challenge faced was language and computer literacy as all the data entry forms for SJED and the police were in English which initially resulted in the system not been fully utilized by all stakeholders.

The SJED took the initiative to translate all the data entry forms for SJED and the police into vernacular language and submitted them to NIC Delhi to be integrated into the website. Gujarat is the first state to have the website for data entry of missing/found child in the vernacular language.

**Green e-Governance**

The system has reduced paper work and resulted in an electronic database for each and every child with health progress, BMI chart and overall progress of the child. The department has issued government orders/circulars to child care institutions and police for application of green computing practices under the Child Tracking System. The following points have been included to improve the work habits of computer users to minimise adverse impact on the global environment through the government circulars.

- Power down the CPU and all peripherals during extended periods of inactivity.
- Try to do computer-related tasks during contiguous, intensive blocks of time, leaving hardware off at other times.
- Power up and power down energy-intensive peripherals such as laser printers according to need.
- Use the power-management features to turn off hard drives and displays after several minutes of inactivity.
- Minimise the use of paper.
- Use the hibernate or sleep mode when away from a computer for extended periods.
- Turn off computers at the end of each day.
- Refill printer cartridges, rather than buying new ones.

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Many a times, especially in rural areas, even after a project/benefit/scheme is over, the beneficiary does not know the details of the scheme. So, to inform/educate the public at large in almost no time, a unique system was implemented, which is named e-Mahiti Shakti (e-Broadcast).

e-Mahiti Shakti aims to bring transparency in the system, inform and educate people, reduce time in the delivery system, build capacity among rural/urban target groups and strengthen e-governance in a cost efficient manner by using information and communication technology.

A dedicated server along with GSM software has been installed at district level. All village panchayats are recipients and a display LED panel is placed there. There is a modem in which an outgoing barred SIM card is kept. This SIM receives messages being sent from district headquarters and then forwards it to the interface card which first verifies the code and displays the message on the LED Panel.

B.) RESULT INDICATORS

1. Key Performance

ICT Based Services

Information related to government, PSUs, APMCs, banks and even private players can be displayed. Disaster (cyclone, heavy rain etc), agriculture (APMCs market prices), education, health, DRDA, watershed, civil supply, MGNREGA, election, Gram Sabha related information can reach the target groups within seconds.
Current Stakeholder Benefits

**Government Departments**

Agriculture Department’s APMC: Earlier, there was no system in place for APMCs to make farmers know about latest price of commodities. Farmers also used to visit APMC without any information about latest price of their agri-products and if price did not suit them, they had to return without selling it. With the new system, farmers get to know about the prices a day before and only go there if prices suit them.

Education Department’s Mission Gunotsav / Shala Pravetshotsav: After broadcasting of messages highlighting the benefit of Mission Gunotsav and Shala Pravetshotsav, it has increased performance of students and found improvement in gradation of schools.

Health Department: To educate people about health related issues and timely treatment, messages about date and time of Pulse Polio Vaccination Programme, School Health Programme along with information about disease and treatment were broadcasted regularly. It has achieved remarkable results.

Police Department: Police department can use this system to take adequate safety measures and to ensure law and order situation among the rural mass.

**Government Programmes and Schemes**

GRAM SWAGAT: This is a village level grievance redressal programme. It is receiving more and more applications of grievances due to the continuous broadcasting of the benefits of the scheme through the e-Mahiti Shakti.

e-Gram: Before this initiative, only a small number of ROR were being issued from e-gram villages. After launching of e-Mahiti Shakti, messages regarding the facility of getting ROR from the e-gram centre were broadcast and as a result, farmers have taken maximum benefit of ROR services.

Samras Gram Panchayat: During a Gram Panchayat election, information and benefits about Mahila Samras Gram Panchayat Scheme was broadcast in 355 villages.
Sadbhavna Mission: Messages regarding Sadbhavna Mission programme were broadcast through this system.

Banks and PSUs: Banks and PSUs used this system to convey information about loan to farmers in villages.

Disaster Management: People can be informed against a disaster like situation within a fraction of a second. For example, on September 14, 2011, the earthen bund of Thebi dam had broken and Gate no. 2 was damaged. The water had to be released from the dam as a precautionary measure. Using ICT, messages were conveyed with sound alert to the 15 villages downstream so that people could be transferred to a safe place and damages to human lives prevented.

Implementation Coverage

The entire district is the coverage area. The project has been designed in such a way that in every village, people can get benefited at their doorstep.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Time: Earlier, minutes of meetings, important instructions of the government, useful information to stakeholders like BPL, SC / STs, women, Anganwadis, schools etc. reached the concerned in days, weeks or even months. Now with this ICT, all those above reach within seconds.

Cost: Earlier, the delivery system is in such a way that expense is in the form of stationary papers, post, vehicle, fuel etc. While by introducing this ICT, cost will reduce to only 0.7 paise per message which is immensely cheaper.

Innovative Ideas Implemented

The whole notion of putting a display unit based on GSM is itself a unique innovative idea.
Levels Of Integration

The initiative has broadband connectivity and a PC installed at each village level Panchayat office. It is also planned to integrate this ICT system with e-Mamta, disaster and APMC website so that the information generated from the respective site can be broadcasted across villages directly through e-Mahiti Shakti.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- Instead of passing information by means of paper, departments send information through messages which will be broadcasted in all villages.
- The system motivated farmers to use e-gram centres for getting records of right instead of visiting Talukas.
- Before this system was in place, there was no instant communication system for sending alerts during a disaster like situation. This system has been a boon at the time of disaster.
- Generation of various reports like department wise, month wise of sent messages from district headquarters is a distinct possibility.
- History of messages sent with reports.
- There is a set time limit for messages which are displayed in LED panel after which messages will automatically disappear.
- It is planned to have a webcam / message reader which will automatically save and deliver it easily

Challenges Faced In Implementing Process Changes

- There was very little fund in the contingency fund of district and village panchayats.
- There was severe resistance from some of the village panchayats and politicians.
- Media created hurdles without understanding the project.
Lessons Learnt From The Process Re-Engineering Exercise

Support from leaders are needed

2. Change Management And Capacity Building

Leadership Support

The Chief Minister of Gujarat personally appreciated the district team and this ICT innovation. The Sarpanchs of all Gram Panchayats tendered their zealous support. Senior officers like the Commissioner, Principal Secretary Panchayat continuously provide guidance and support.

Change Management And Capacity Building Strategy

Till now whatever changes are implemented are requirement basis. The staff, at the district as well as village level, is well trained. It has been planned to train them on a 6 monthly basis as per the requirement.

Project Management

This project is important in district Amreli and managed to a great extent by the district headquarters. A skilled dedicated team at the district headquarters manage the software which includes a class 1 Statistical Officer, a DLE and two data assistants. At the village level, one VCE operator takes care of the device. Day-to-day messages are monitored automatically by the software itself. Financial management/hardware requirements are being managed manually. AMC will be tendered out as per the financial principles. System is over all being supervised by an IAS officer.

Financial Model

1) This ICT is financially self sustainable. Initially, this has been funded by the state government but later on it will generate income on its own. A message costs only 0.7 paise. This will be borne by the respected department which is sending it. The money collected is deposited in a nationalised bank from which interest is gained. Various banks like Dena, IDBI, Bank of Baroda act as sponsors.
Efforts At Sustainability

To ensure sustainability of the initiative, following actions has been taken.

- **Income**: As mentioned before, the ICT is financially self sustainable.
- **Human Resource Management**: There are already trained staff at the district as well as village level. It is planned to train them on a 6 monthly basis as per the requirement.
- All LED Panels are heat/weather proof and under amc.

Challenges Faced In Change Management And Capacity Building

Many government departments were not interested in using this system for sending information across villages of the district.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

A series of meetings of officers have been conducted and the shareholders have become convinced about the benefits of ICT.

3. Technology

**ICT Solution Adopted**

The ownership is purely vested in the District Panchayat Amreli. In the first year, it was under warranty services which was rendered by the installing agency. After that, AMC will be tendered out. The funding money will be taken out of the bank account of this project.

**Compliance With Standards**

Key priority areas have been identified for standardisation. The Indian language related issue is resolved by providing a facility of broadcasting in the local language, Gujarati. Network and information security standards also fulfilled and it ensures sharing of information and seamless inter-operability of data.

**Security And Confidentiality Standards**

Message can only be sent from district headquarters or from state headquarters. Village level SIM has only incoming facility (outgoing
facility barred) so that no one can misuse this SIM card. Likewise, SIM card has DND facility also which forbids/protects display panels to display any private or commercial messages. E-Mahiti Shakti project is fully secured because it is user ID and password protected and at the village level, a micro controller (which is placed inside the device) will verify first that a particular message is sent from where. It will only display those messages which are sent from the district headquarters.

Disaster Recovery And Service Continuity

Steps taken for ensuring service continuity:

- At the district level, backup of all messages is being taken regularly.
- At village panchayats (which are recipients), a LED panel is installed in the front conspicuous line and at a sufficient height in the village panchayat office - there is very less risk of damages during disastrous conditions
- The LED panels are heat and water proof.
- To ensure constant power supply, all LED panels are connected to a solar unit too.

Technology Related Challenges Faced

- Amreli is located a little away from the state capital and not much technical expertise is available. Due to network problem in remote villages, panels had to be installed only at appropriate places. There was a limitation of 200 messages per SIM card; to overcome this problem, three SIM cards have been used. Although it was not possible to broadcast 600 SMS, TRAI has been requested to give exemption from the capacity of 200 SMS/day/SIM. The matter was considered by the competent authority and the issue was resolved.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Careful planning and appropriate choice of technology are needed to get measurable gain.
VALUE INDICATORS

Digital Inclusion

- This ICT is available in vernacular language as well as in English and Hindi; so persons who do not speak English are also included.
- The services are available at the village level in fact at the doorstep, that is why mobility related issues are addressed to specially senior citizens and women.
- Even for illiterates, we have put an alarm (sound alert) system so that they can also see what information is being sent. It is planned to put a message reader so that they can hear the information.

Green e-Governance

The LED panels which are installed at village level are connected with a solar unit for power consumption.
**DESCRIPTION OF THE PROJECT**

The sex ratio of a given population is a strong indicator to ascertain social health. Gujarat registered an increase in sex ratio at birth by 6 points between 2010 and 2011 SRS. As a part of concerted efforts, the State of Gujarat has developed a comprehensive web portal named "http://www.betivadhaao.gujarat.gov.in", to intensify effective monitoring and implementation of the PC and PNDT Act. This project was launched in January 2013.

The objective of this web portal is to enable implementing authority to be well informed through online submission of Form F. It enables

- Hassle free filing of online Form F.
- Real time reflection of Form F detail summary to appropriate authorities.
- Planning, monitoring and implementation of PC and PNDT Act through web based application.
- Use of analytical application in identifying suspected clinics / hospitals indulging in illegal activities like sex selection and sex determination under the aegis of "Save the Girl Child" Campaign.
- Centralised directory of registered sonography units, directory of contact details of administrative authorities.
- Monitors cross-border violations of the Act.

This ultimately helps to locate wrong doers and book them under the PC and PNDT Act. The example thus set will lead other wrong doers to refrain from illegal activities. This ultimately will lead to reduction in the incidence of sex selective elimination of a girl child and improvement of the sex ratio at birth (SRB).
RESULT INDICATORS

1. Key Performance

ICT Based Services And Current Stakeholder Benefits

The primary goal of this initiative is to achieve the goal of healthy sex ratio and healthy social environment with safety for women. By permitting recording and preserving of data on central servers, by facilitating on-demand analysis, and by helping administrators identify culprits through various cross sectional analysis, the beneficiaries of this initiatives include the Health and Family welfare department of the Government of Gujarat, the doctors from Sonography centres and the Society.

The number of on-line Form –F recorded through the initiative during 2012-13 [April – March] was 25,247 and the transactions recorded during 2013-14 [April to August] was 378,624.

Implementation Coverage

This initiative is intended for all the registered USG clinics/bodies/hospitals all over the Gujarat.

2. Efficiency And Improvement Initiatives

- Smooth and simple filing of online Form F
- Real time reflection of Form F and its detailed summary to appropriate authorities
- Planning, monitoring and implementation of PC and PNDT Act through web based application
- Use of application for identifying suspected clinics/hospitals to save the girl child
- Centralised directory of registered sonography units
- Creates defined auto generated reports which help different appropriate authorities in policy decision.
ENABLER INDICATORS

1. Process Re-Engineering

Challenges Faced In Implementing Process Changes

- Implementation of this project was challenged in the court of law by different stakeholders which were overcome by legal process.
- Converting physical Form F into electronic format which was overcome by holding multiple meetings with NIC Gujarat and State PC and PNDT cell officials and experts.
- Train and sensitise stockholders to use the online system through workshops at district and sub-district level.
- To collect the raw data in prescribed format for application: This was overcome with the help of the District Appropriate Authority.
- To complete the project in time bound manner: This was done by teamwork and leadership

2. Change Management and Capacity Building

All the appropriate authorities were trained with experts from the NIC team and State PC and PNDT Cell Officers.

VALUE INDICATORS

- Green-e-governance initiatives: Physical analysis replaced by software analysis of several reports under the programme and sharing leading to less consumption of papers and time

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According to the census of 2011, about 2.13% of population are disabled in India. The prevalence of disability in Gujarat state is 2.1% according to which the estimated population of Persons with Disability (PwDs) in the Gujarat state would be around 12,68,257 Lakhs.

PwDs are one of the most marginalized segments of society when it comes to service delivery. Earlier, the Department of SJ & ED and Health & Family Welfare, Gujarat was not having a system of comprehensive database on total number of Persons with Disability (PwDs) identified and issued disability certificate in the State. Although these services were being rendered at respective levels but a comprehensive database at state level was yet to be created, managed and maintained as an integral part of the system for disable friendly governance. This e-Governance initiative of the Department of Health & Family Welfare, Gujarat application aims at registering all disabled people of Gujarat and creating a centralised data repository at the state level which in turn will streamline the process of disability assessment and certification and enable persons with Disability (PwDs) to exercise their rights and avail entitlements.

Ability Gujarat is an online web based application developed for data collection of Person with Disability (PwD) and to issue computer generated Disability Certificate up to PHC level. Any PwD can get himself registered in the system by his own or through NGO/Government on www.abilitygujarat.in. The data bank can be used for resource mobilization according to the distribution of type of disability up to village level.

The application is accessible through the link www.ability.gujarat.gov.in over the internet.
RESULT INDICATORS

1. Key Performance

ICT Based Services

- Different types of reports can be generated from the Ability portal (education wise, age wise, employment status wise, gender wise etc). A specially designed query module identifies the location and type of disability of PwDs which in turn makes it easy to organise camps for certificate issuance to PwDs.
- PwDs now have easy access to registration / assessment / certification process which is one of the biggest achievements.
- Ensuring better resource mobilisation by the Health Department through identifying gaps between service providers (SJ & D, Education Department, NGO, Commissioner of PwD) and PwDs
- Easy to track the location of PwDs which makes it easier for state authorities to reach to him/her
- Duplication and fraudulent activities have reduced as the application keeps track of information given by PwD at the time of registration and assessment.

Current Stakeholders Benefits

<table>
<thead>
<tr>
<th>After “Ability Gujarat” Implementation</th>
<th>Prior to “Ability Gujarat” Implementation</th>
</tr>
</thead>
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<tr>
<td>Information at state level</td>
<td>Information at district level</td>
</tr>
<tr>
<td>Digital online reporting - reliable reports</td>
<td>Manual reporting - reliability issue</td>
</tr>
<tr>
<td>Digital certificates on web portal downloadable form.</td>
<td>Paper certificates issued at district level</td>
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<tr>
<td>Real time day-to-day information online</td>
<td>Data collation from manual records took weeks</td>
</tr>
<tr>
<td>Digitally extracted information - exhaustive MIS with slicing and dicing as per requirement</td>
<td>Missing MIS : No. of PwD certificates issued, disability type wise, district and gender wise, age wise counts.</td>
</tr>
<tr>
<td>Beneficiary wise reports are viewed digitally at the state and district level</td>
<td>Beneficiary wise report of services at the state/district level not available - only count</td>
</tr>
</tbody>
</table>

Implementation coverage

The application is on the public as well as government network GSWAN for
easy connectivity at all the government public health institutes. During FY 2012-13, over 500,000 transactions have been recorded through the system. The web site has seen a hit count of 181,359 up to FY 2012-13.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- Multiple options for registration (online, post and manual) resulting in faster registration of PwDs across state.
- Easy to locate defined group of disabled through state repository which makes it easy for state authorities to reach to him/her which was earlier not possible.

Innovative Ideas Implemented

- Establishment of State Disability Cell for addressing the queries of PwDs in case there are issues related to registration, assessment and issuance of disability certificate
- Method to be used for assessment and issuance of certificates through the system by doctors. The GMC number of each doctor was used as the base and unique identification so that assessment and issuance of certificate can be easily tracked.
- There is a specially designed query module to identify the location and type of disability of PwDs which makes it easy to organise camps with target result

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- Creation of centralised database of all PwDs of the state along with type of disabilities which is very useful for providing rehabilitation and the appropriate basic services
- A unique identification code has been given to each government doctor to issue online disability certificates from any facility locations (GMC No.)
- The registration process allow PwDs to submit any one proof of
identity from the listed 7 different options which is one of the reasons for its success as previously only ration card was allowed.

Non-ICT process changes

- Establishment of a State Disability Cell for addressing the queries of PwDs in case of any issues related to registration, assessment and issuance of disability certificate.

Challenges Faced In Implementing Process Changes

- Difficult to trace the total number of disabled across the state as data was scattered
- Incorporation of key validations as per PwD Act at the time of PwD assessment for various forms like Form 2, Form 3, Form 4 and Form 5
- Method to be used for assessment and issuance of certificates through the system by doctors.

Lessons Learnt From The Process Re-engineering Exercise

- There should be a set of predefined administrative and technical guidelines before implementing any change in the existing process.
- Need to prepare effective ppts, videos and other IEC material well in advance regarding using different functionalities of Ability Gujarat because this helps in increasing the overall usage and acceptability
- Try to reduce free text while capturing data and replace it with defined lists so that it is easy to generate statistical and analytical reports for effective decision making

2. Change Management And Capacity Building

Change Management And Capacity Building Strategy

For effective implementation, regular review meetings were conducted on a monthly basis by the State Disability Cell, preparation of IEC material regarding Ability Gujarat, prepared administrative and technical guidelines and constant monitoring of the current status compared to planned goal are done.

For capacity building, adequate training was given to all the users. Apart from this, a drive for orientation and awareness was organised in the whole
state to increase usability. Train the trainer approach was used for effective capacity building.

**Project Management**

For effective overall management and monitoring of the project, a separate State Disability Cell was set up. The cell comprised of a dedicated team with each representative having defined roles and responsibilities who constantly worked towards fulfilling the project objectives.

**Financial Model**

Government department project – Self-financed initiative

**Efforts At Sustainability**

- Involvement of regular staff from state, district, block and PHC
- Scientific assessment of the disability based on guidelines and formulae which is accepted by all (users as well as PwDs)
- Use of open source technology (no licensing cost involved)
- Provision to introduce SMS alerts to PwDs to easily update him/her about the nearest health facility where he/she can go for PwD assessment which enables PwDs to accept the new approach and service provided.

**Challenges Faced In Change Management And Capacity Building**

**Change management**

Introduction of multiple options for PwD registrations instead of the single manual process led to a lot of multiple entries, lack in clarity for PwDs at village level and confusion over existing certificates that the PwDs already held.

**Capacity building**

Imparting training to the end user like (M&E assistant) as they did not get any direct benefit; bringing about awareness about the project at PHC, sub-centre and block level and assisting NGOs and PwDs to use online portal for performing tasks like PwD registration, viewing PwD certificate etc.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

Process execution should be ready otherwise the change management process will lead to several queries and issues which are difficult to address resulting in uneven data generation from the system.

The acceptability of application by majority of users has to be increased. To do so, train the trainer concept was adopted, champion users were prepared and they further imparted the training. Along with this, several flow based ppts and videos were made available for downloading, assisting users. This approach helped a lot in increasing the overall usage and acceptability.

3. Technology

ICT Solution Adopted

The portal is built on open source technology using JAVA JSP as front end and MySQL as back end for database. The portal is deployed at the SDC (State Data Centre) and is updated and maintained by TCS. Apart from this, the overall monitoring of servers and connectivity is looked after by the SDC team located at the site.

Disaster Recovery And Service Continuity

Application and database are hosted at the State Data Centre which is monitored and maintained by the Department of Science and Technology, Government of Gujarat.

Technology Related Challenges Faced

The first deployment of the portal was done on BSNL broadband having a dedicated leased line but the overall bandwidth available was not enough which led to sessions being expired; performance related issues when a huge number of users connected to the portal. Later, the portal was moved to SDC where high bandwidth was available. Several patches were deployed on the live portal to improve the overall performance of the application on a time to time base to increase user acceptability and increase overall uptime.
Lessons Learnt From Technology Choices And Implementation Strategy Adopted

One of the major learning from this implementation was that any application that is made available on the internet should be easily accessible to its entire user at any point of time. The application has to be developed on open source platform as it is easy to replicate with limited costs.

VALUE INDICATORS

1. Digital Inclusion

The Ability Gujarat portal was made available in both English as well as Gujarati language keeping in mind local users as well as national users.

2. Green e-Governance

- Provision to generate e-disability certificate online from any location reducing use of paper
- Workflow based assessment of PwDs enables doctors to generate the disability certificate only after entire assessment is completed. So if a PwD has applied for low vision and locomotor disability then the certificate will be generated only after both the disabilities are assessed by specific specialties.

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DESCRIPTION OF THE PROJECT

IntraGov Haryana is aimed at providing a single point gateway which integrates government transactions and services within and across various departments as well as those between the government and its employees. The project brings together previously independent developed functions and systems under a single framework. The main objectives of IntraGov Haryana are:

- To provide single point access to various G2G and G2E services with single sign on (SSO)
- Unified View of Data: Consolidation of existing data from different sources within/across the department and provision of a single consistent view.
- Content and Document Management: A module which enables employees to create their own content and submit for publication on the portal.
- Archival and e-Record Management: A common repository for all the common government circulars/notifications, manuals, acts, rules etc instead of maintaining them in various locations.
- Electronic Communication: Building a sound internal infrastructure to facilitate electronic communication, information sharing and interaction.
- Work flow automation: To reduce the paper movement to a large extent. Enable controlled circulation of information within department and inter department administration. Enhance the ability and effectiveness of employees to perform their jobs. Eliminate redundant data entry throughout the organisation.
- Identity and Access Management Role: Personalised, role-based, secure access to office information for employees.
RESULT INDICATORS

1. Key Performance

ICT Based Services

G2E services:

- Description of current GPF, previous GPF statements, missing GPF credit, missing schedule, final payment
- Loan repayment details, loan NDC
- Salary slip, pension case status
- New admission to GPF, annual salary statement
- Service book details, employee directory, superannuation

G2G processes:

- Centralised file movement and tracking information system (CeFMaTIS)
- Content management system
- Web enabled RTI-MIS with G2G and G2C interface
- Library automation system (e-Granthalya)
- Work flow based leave and tour management system
- Court cases monitoring system
- Web enabled MIS for projects, issues, proposals monitoring (CSPMIS)
- Web enabled vigilance cases MIS (e-Vigil)
- Disciplinary cases monitoring system

Current Stakeholder Benefits

- Employees get information about their personal details like GPF, salary, missing credits, service book, loan, loan NDC etc
- Government of Haryana uses various e-Office services to improve their working like centralised file movement and tracking information system, court cases system, disciplinary cases monitoring system, RTI etc.
- Common repository for all the common government circulars/notifications, manuals, acts, rules etc instead of maintaining them in various locations helps Government and citizen
Implementation Coverage

More than 2,23,000 employees have registered so far and they have been provided user password to get their personal serves and statements. G2G services are provided as default after registration.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- Existing computer hardware and software is being used for the project.
- Data entry operator is used only for historical data. Later on, existing staff is trained for their respective work.
- State will save a lot of time and money by making available comprehensive information at single spot.
- By using the e-mail as a major communication medium, the state has been able to save considerable amount of time and money which it earlier used to spent on photocopying, faxing and postal charges.
- Employees are able to see their various information like GPF details, salary slip, service book on line and ultimately save their time; hence efficiency.

Innovative Ideas Implemented

- Many G2G and G2E services are integrated on the portal. These applications are on different platforms and hosted on different servers. Officials/officers are provided access to various applications according to their role in these applications on a single sign on basis. Now they need not remember different user/ password and websites for different applications.
- A work flow based leave and tour approval system is developed which ultimately update the service book of the employees; no need to update it later on.
- Email and SMS is also integrated where needed.

Levels Of Integration

The portal is designed in such a way that all G2E and G2G services can be accessed with a single sign on and one can share data across applications and departments. Common applications have already been integrated and any
application specific to a particular department can be integrated with minor customisation.

**ENABLER INDICATORS**

1. **Process Re-Engineering**

**Major ICT and Non-ICT changes**

Various e-governance initiatives were developed and were working independently in different offices. There was replication of data and efforts. There was no integrated view of data. Moreover, employees had to remember many passwords to avail the benefit of the ICT for using different information system.

<table>
<thead>
<tr>
<th>Process</th>
<th>Before initiative</th>
<th>After initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employees Personal Services</strong></td>
<td>Employees come to know about incompleteness of missing credits of GPF, loans only at the time of the retirement.</td>
<td>With computerisation of GPF and service record, employees can now see their GPF, loan details using internet and take remedial action on time.</td>
</tr>
<tr>
<td><strong>Employee Directory</strong></td>
<td>No single directory of the employees of the state. Very difficult to get estimate of requirement of different post. Very difficult to make posting / transfer as per requirement at different location. No unified view of the employee data of the state.</td>
<td>Employees directory created covering all the 2,79,810 employees, having information post wise, posting place wise.</td>
</tr>
<tr>
<td><strong>Office transactions</strong></td>
<td>Maintained manually or on individual desktop applications</td>
<td>Centralised</td>
</tr>
<tr>
<td><strong>Files Management</strong></td>
<td>Maintained manually Difficult to track the papers and monitor the work</td>
<td>Centralised file movement and tracking system</td>
</tr>
<tr>
<td><strong>Documents Contents (Acts, rules, notifications etc) Management</strong></td>
<td>Instructions were not available for ready reference. Difficult to address the huge volume of RTI applications.</td>
<td>Role based content management system is developed for uploading and publishing the documents. Public domain portal for the Chief Secretary office (<a href="http://www.csharyana.gov.in">www.csharyana.gov.in</a>) has been launched so the citizen and employees can access the latest information on policy matters</td>
</tr>
</tbody>
</table>
Challenges Faced In Implementing Process Changes

- Acceptability of change from manual to electronic system.
- Mindset of officials for not disclosing or opening the system.
- Non-availability of employees having working knowledge of computer

2. Change Management And Capacity Building

- Extensive training programme for basic computer literacy and application specific training has been provided to branch officials and e-champions who are working as nodal officers for the respective branches. More than 2000 employees are trained for various applications under IntraGov in the last two years.
- Trainings are arranged for different departments for specific G2G services as per their requirement.
Financial Model

IntraGov Haryana Project is funded by the Department of Administrative Reforms, Government Of India, New Delhi

3. Technology

System is developed on Microsoft Technology. .Net and SQL server is used for developing web based solution for the portal. Other G2G applications integrated on the system may be on any platform.

Security And Confidentiality

- Authentication: All the employees have been provided user/password on their mobile or email. The user can register with the portal and get user/password. Users are authenticated with passwords to gain access to the system. They can access all the G2G and G2E service provided on the portal with single sign on (SSO).
- Role based Authorisation: Restriction of views and permissions based on role and rights. Administrative module for providing permission to the users has been developed. Two levels of role assigning authority is created – one for the whole state and the other for departmental level. Users can access the services, upload the content and publish the contents as per their authorisation.
- Portal has been hosted on central servers in NIC Haryana State Data Centre at Haryana Civil Secretariat. Backup of the data is taken daily.
VALUE INDICATORS

Digital Inclusion

- All employees have been provided user/password on their mobile/email; all G2E services are provided to all registered users.
- G2E applications have some bilingual facilities.

Green e-Governance

- Existing network and computer, printers are used for the system; no extra infrastructure is created.
- System saved papers which were used for various G2G and G2E services.

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Government of Haryana has been emphasizing that efficient and timely delivery of services to citizens is a cornerstone of good Governance. Every citizen has a right to claim delivery of services from the Government in a prompt, efficient and time bound manner. The state Government, has decided to implement a scheme for provision of 15 sets of 36 identified services to the citizens in a time bound manner, in the first instance. The notification was issued by the Administrative Reforms department vide No. 7/8/2011-3AR dated on 07th June, 2011. Following directions were issued to all government functionaries across the state:

1. Preparation of a check list of documents / other pre-requisite for making an application for grant of each service
2. Designating specific officers for receiving self-checked /assessed applications
3. Verification of received application for its completeness and issuing a receipt indicating that service will be delivered by the target date.
4. Put-in place internal systems so as to ensure that services shall be delivered in prescribed time frame
5. Adding timely delivery of services as one of the criterion for evaluation of performance of officers/officials in this regards.

For the purpose of streamlining of the processes of service delivery to the citizens, a Service Delivery Review Committee had been constituted under Chairpersonship of Chief Secretary Haryana. To assist this committee, a Task Force headed by the then Commissioner, Rohtak Division was constituted to review the existing processes and to suggest changes in the processes/ forms /monitoring mechanism, among other things. The Dy. Commissioners of Yamunanagar, Rohtak, Kaithal, Mahendergarh, Hisar were members of Task force. The SIO NIC - Haryana State Centre and DIO NIC - Yamunanagar were special invitees to the meetings of the state
level Committee as well as Task force. The Taskforce held extensive consultations with the departments, at districts and state capital and made recommendations on following of Components for each identified service delivery department.

1) **Forms Standardization & Approvals:** Standardized the service request forms for adoption across the state.

2) **Work flow Processes:** Customized/Re-engineered service delivery workflow process for each service and approval process and finalized checklist of documents and procedure for availing the service.

3) **Fee Structure Standardization & Approval:** Standardized fee structure (a. Government fee, b. Computerization service charges, c. CSC (Common Service Centre)/ other service charges) and recommended uniform fee structure across the state.

4) **Designate Nodal officials & Accountability:** Recommended designating Nodal officers for facilitation of services, approval, verification, delivery of services, and authorized nodal officers/officials for collection of fee, physical files, and deposit of fee in respective heads of treasury & service charges.

The recommendations of Task force, pertaining to different departments were deliberated by State level Apex Committee and subsequently approved by Hon’ble Chief Minister Haryana, on 13th December, 2011 after detailed deliberations on each recommendation. Some of the service delivery departments have already issued necessary Government Orders and others in the process of issuing GOs, for different services.

The NIC Haryana State Centre (NIC-HrSC) was assigned the responsibility of developing and establishing a workflow based effective monitoring mechanism (MIS) in the state for effective delivery of services to the citizen through electronic mode. The Yamunanagar district was chosen for pilot implementation of the workflow MIS and thereafter, it was rolled out across the state of Haryana. The web portal www.jansahayak.gov.in was designed, developed and hosted at Haryana State Data Centre. Downloadable e-forms along with checklists, procedures, instructions, and workflow and fee structure have been made available on this portal. The portal facilitates filling of application forms on the web and generation of computer generated complete file, along with checklists of documents, necessary fee and instructions.
RESULT INDICATORS

1. Key Performance

ICT Based Services

The Government to Citizen Services provided as part of this initiative include Issue of new/ duplicate ration card and related services such as inclusion and deletion of family member names, Issue of SC/BC/OBC certificate, Issue of resident/domicile certificate, Issue of Tapriwas / Vimukt Jaati certificate, Issue of income certificate, Registration of property / land (HALRIS related services), Sanction of mutation of land, Issuance/renewal of learner’s/permanent/ duplicate/ conductor driving license (Sarathi related services), Providing new water and Sewarage connection etc.

Current Stakeholder's Benefit

The MIS application Software is a front-end application for receiving the application/file from citizen for identified services and monitoring the service delivery as per time lines fixed by the government. The following Services/Facilities are Provided by MIS

1) Facility to import all data of computer generated file into MIS using form unique file number
2) Facility to enter requisite details from the downloaded / manually filled form
3) Generation of a unique receipt number (computer generated) for each application, printing of receipt along with number of days/date when service shall be delivered to the citizen
4) For service request applications related to services having front-end and back-end software, a provision has been made for importing of data from these software systems into MIS software and thereafter, updating of the delivery status by the authorised officials into the MIS software, using his/her secure user ID and password
5) Role based access to MIS application has been provided for different categories of users, like a) authorised official at ESDP (Electronic Service Delivery Point), b) document approving, issuing/signing authority, c) Deputy Commissioner for applications related to his/her district, for monitoring / reviewing service delivery of all departments across all districts.
6) Facility for updating of status in MIS by service delivery authority / dealing official
7) Generation of various MIS reports for monitoring and review by higher authorities
8) Viewing of status of his/her application by the concerned citizen through the web

Implementation Coverage

These services are implemented in the state of Haryana, especially in Sirsa, Kurukshetra and Yamunanagar.

2. Efficiency and Improvement Initiatives

Time And Cost Efficiency

With the implementation of www.jansahayak.gov.in for various services, the government efficiency has significantly improved. Applications are collected at e-Disha centres, where target date and computer generated number is provided in the receipt. The service requests files which are found incomplete because of absence of mandatory document at the time of submission. This reduces the number of total files to be processed by the concerned department on one hand and the number of visits of the citizens to ESDP. A scheme wise list of these total files mentioning details of all individual applications like name, father name, eligibility criteria, whether eligibility criteria are fulfilled, is generated daily for each department (i.e., initial scrutiny is done by the software itself, which saves a lot of time). As each and every application's status is to be updated by the concerned department, the applications which are pending can be monitored effectively.

Innovative Ideas Implemented

The Jansahayak project places several services at one place, where a citizen can easily get all information regarding the required service. The citizen can find the status of his or her application to the issuing authority through www.jansahayak.gov.in. If the citizen has given his/her mobile number before submitting the application, the status can be obtained through the mobile phone.
Levels Of Integration

Jansahayak is fully integrated with other internal systems as it imports data from various existing services through the Web. Connectors have been created to integrate existing services to this service. Through these connectors, all applications can be received from various services on a daily basis.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Status is being updated by authorized user only by using interface of status updation. Various types of status reports like scheme wise, issuing authority wise, Nodal Officer wise, Department wise are being generated in the software. Now status wise report in the form of Pie and Bar Chart are also being generated. In place of affidavit, a self-declaration is allowed to be obtained.

Web services and connectors were developed and integrated between Jansahayak web portal and the departmental application software to transfer data to Jansahayak from existing applications.

In the Food and Supply Department, advance verification / attestation of Sarpanch / MC / Gazetted Officer will be done away. Three different forms (D1,D2,D3) instead of one single form will be used. In the Revenue Department, all deed writers will use standard templates. The application for sanction of mutation will be submitted at the Tehsil e-Disha Counter and computer generated receipt will be given to the applicant. In the Public Health Engineering Department, a standard application form is used for water/sewerage connection.
Change Management And Capacity Building

Leadership Support

The State Department of Administrative Reforms is the nodal department for the Jansahayak web portal. The Dy. Commissioners provide full support to implement the project. NIC Haryana provides all technical support and capacity building services as the technical arm of the state/central government.

Management And Capacity Building Strategy

1) A common e-DISHA (electronic Delivery of Integrated Services of Haryana) centre is functioning at Districts, sub-divisions and Tehsils in the state. This common facility has been identified, to be used as Electronic Service Delivery Point (ESDP) in the first Instance, till each service delivery department is equipped with requisite ICT infrastructure.

2) A technical workshop of all DIOs of NIC-HrSC was organized and trainers training were provided. Capacity Building of various stakeholders is being done at different levels. The process of creation of role based user-Ids & Passwords for various stakeholders is on. A centralized monitoring cell with technical and administrative resources is being established at Department of Administrative Reforms, Haryana.

3) Citizens are also facilitated to track the status of their applications, through website, using the unique computerized receipt number. Citizens Awareness campaigns, media campaigns and workshops (Sammelans) of Sarpanches (Panchayati Raj Institutions) have been organized in Yamunanagar to educate the citizens about their rights and time bound delivery commitment of the government. Coloured pamphlets too have been distributed for awareness of the delivery monitoring system.

Project Management

The program management team includes the following:

(a) Department of Administrative Reforms, Haryana is the nodal department of the Jansahayak project, providing administrative support
(b) **NIC Haryana** is the technology partner of the project, providing all technical activities, resources for implementation of the project.

(c) **NIC Yamunanagar** provides application software and implementation support.

**Financial Model**

The project is fully funded by NIC Haryana and district IT/e-gov societies. No additional fund is raised, only existing resources are used.

**Efforts At Sustainability**

Government has fixed service charges for each e-service.

**2. Technology**

**ICT Solution Adopted**

ASP.Net and C# for front end, Sql server is for back end and SSRS is used for reporting.

**Security And Confidentiality Standards Planned And The Level Of Compliance**

Security standards as provided by NIC has been implemented and security audit is done.

**Disaster Recovery And Service Continuity**

Data is available at State Data Centre so maintenance and recovery plans are implemented as per state data centre policies.
VALUE INDICATORS

Green e-Governance

The application is hosted centrally on the State Data Centre. The service delivery authorities and the citizens require only simple desktop PCs with SWAN/internet connection. Complete e-workflow at various levels as service delivery is automated. Proper care is being taken to reduce power consumption. Monitors, printers are set on standby mode if idle for more than 5 minutes. Air conditioners are being used only in server rooms.

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DESCRIPTION OF THE PROJECT

The main objective of the inter-operable criminal justice system (ICJS) was to provide an online integrated management information system by inter-linking data from courts, police, prisons and forensic laboratories to improve the justice delivery system. All the stakeholders were provided online and instant access to data available in different software applications, which reduced the time, normally consumed in manual exchange of documents/information amongst related departments.

To ensure standardisation and replicability of the iCJS across the country, standard software applications developed and implemented at the national level were used at the core level – the Kanoon Vyavastha, implemented in all police stations, the case information system software for the district and subordinate courts, the standard ePrisons software application for prisons and eFSL, a new software for the state forensic laboratories.

RESULT INDICATORS

1. Key Performance

ICT Based Services

G2G services

i. Transfer of case parcel information online by police to FSL
ii. Online FSL report and Online access to arms licenses, driving licenses, vehicle database and land records of the state for investigation purposes
iii. Online data exchange between police prisons and courts
iv. Case hearing/cause list dates availability to police and prisons from courts
v. Automatic SMS/email/software alerts
vi. Mobile based vehicle challans
vii. Prisoner movement information to police stations of
crime/residence while prisoner is on parole/furlough/hospital
treatment
viii. VC based interrogation of prisoners by investigating officers (IO)
of police
ix. VC based presence of under-trials in prisons

**G2C services**

- Online VC of prisoners with their relatives
- Online complaint filing in police
- Prisoner dossier in public domain
- Citizen access to statistical data in police/prison/FSL/court
domains
- Publishing of information related to habitual offenders, missing
persons, bodies found, wanted persons/proclaimed offenders on the
public portal for citizen feedback/alerts
- Court judgements/daily orders/hearing dates/cause lists of all 100
district/subordinate courts in the state

**Current Stakeholder Benefits**

G2G Benefits: Savings in time/cost/availability/alerts/reminders/RTI info/
statistical and historical data to government department of police, prisons
and FSL (Home) and to the district subordinate courts
G2C Benefits: Online services available along with speedier delivery of
justice which is the basic benefit for citizens and society alike.

**Implementation Coverage**

- Courts: 38 in 6 districts (all 100 courts to be linked by end of
  September 2013)
- Police stations: 114 out of 114 (Common Integrated Police
  Application)
- Forensic laboratories: 3 (100%)
- Prisons: 14 (100%)
2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Improvement in delivery time of services: Filing of complaint in police, complaint through SMS, action on complaint, sending parcels to the forensic laboratory, copy of FIR and FIR details pertaining to court case and availability of forensic report which earlier took any time ranging from a day to week and sometimes depended on the vagaries of the police were all done instantly or within 24 hours.

Better beneficiaries feedback: Citizens can now provide feedback online. Cost incurred by relatives in visiting prisoners in jails was saved with VC facility. Citizens have access to crime data/statistics

Simplified procedures: Online complaint filing, automatic conversion of online complaint into FIR, VC based presence of under-trials in courts, facility of online interrogation of under-trials through VC, access to online databases, mobile based traffic challans, geographical information system linkage have simplified procedures.

Socio Impact Parameters: The system has improved the image of the police. By the online VC/online complaint filing, citizens do not have to face the social stigma attached to visiting police/prisons

Innovative Ideas Implemented

- First initiative of its kind in the country
- Mobile based vehicle challans introduced
- Online VC request by prisoners' relatives is a unique initiative, first of its kind, to be implemented from the citizen services centres
- Integrated information enables viewing of all data from different applications in a single report with graphical representation of data

Levels Of Integration

The iCJS initiative is the result of integration of four related components—police, prisons, FSL and courts. In addition, it is also integrated with the vehicles, driving licenses, land records, arms licenses database; and with the mobile based challaning system and NIC VC.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Front Office Process Changes
- Process to convert an online complaint into an FIR at police station level
- Process to transfer crime scene parcel information from police station to FSL laboratories online
- Booking of online VC request with prisoner by relatives/ IOs in police stations

Back Office Process Changes
- Online FSL report against crime scene parcels sent by police
- FIR data made available directly to the courts from police stations
- Court orders/judgements directly available to prisons and police stations
- VC based presence of under-trials in courts
- Online availability of FIR in FSL laboratories
- Automatic SMS/email/software alerts

Challenges Faced In Implementing Process Changes

- Diverse software platforms: The four applications use two different OS, three databases and scripting technologies. Using symmetric DS technology, data integration was achieved and a new central software interface developed for MIS purposes.
- Departmental officials were afraid to link their data; intervention from the highest levels in the departments ensured that a pilot was approved to gain confidence of employees.
- Resistance to ensuring complete data entry related to other domains: Court officials were not interested in entering police related data. Only after demonstrating that such data will eventually be useful to all stakeholders, could all data entry be ensured.
- The number of employees to be trained on the SW was large and was achieved by involving NIC District Centre and creating a pool of master trainers.
- Coordination among stakeholders was the greatest challenge as different stakeholders had varying objectives in using domain
specific applications. Intervention from the top was required to achieve synergy.

**Lessons Learnt From The Process Re-Engineering Exercise**

- Legislation change (government orders/notifications) must be done immediately along with the proposed solution otherwise stakeholders will not take the initiative seriously
- There must be real value addition in the initiative for the stakeholders, otherwise a very good/innovative technology change may fail
- Users must be advised about the change of process before hand and sufficiently trained to handle/operate in the changed scenario.

2. Change Management And Capacity Building

**Leadership Support**

The top level has been directly involved in this initiative, right from the Hon'ble Minister of Communications and IT, Secretary (Deity) GoI, Hon'ble Chief Justice of Himachal Pradesh High Court, Director General NIC, State Informatics Officer NIC Himachal Pradesh, Director General of Prisons, Director General of Police, Director SFSL.

**Efforts At Sustainability**

The model is self-sustainable as the project execution has been carried out by NIC State Centre with minimum investment, 24 ×7 technical support, thereby incurring no extra cost to any of the stakeholder organisations.

**Challenges Faced In Change Management And Capacity Building**

i. Extensive training of all stakeholders users (covering the whole state with 114 police stations, 14 prisons, 3 FSL labs, 100 courts)
ii. Effecting process changes related to data usage without the need to print
iii. Convincing the stakeholders that the end product will improve their efficiency beside meeting the objective of speedier justice delivery
Lessons Learnt From Change Management And Capacity Building Exercise[s]

i. Government servants oppose change for the sake of resisting any kind of change, initially
ii. Involvement of top brass, senior officers is a must for any initiative to succeed.
iii. Training must be imparted to all officials whether they are part of the initiative, directly or indirectly.

3. Technology

ICT Solution Adopted

The core iCJS is a web-enabled software that has been developed under Windows platform with Postgre SQL at the back end and .Net technology at the front end. The individual SW applications of ePrisons, court information system and common integrated police application (not web-based) use diverse technologies and databases. The data from individual applications is replicated in almost real-time, subject to the availability of connectivity, at a central server for the iCJS application.

Security And Confidentiality Standards

All the SW applications and the core module are cyber security audited by DIT empanelled vendors. Any addition of modules is audited at an interval of every 6 months. The confidentiality aspects are strictly implemented, as names of rape victims are not in the public domain. The prisoners' VC with their relatives, although recorded, is not made public, but is for internal usage only.

Disaster Recovery And Service Continuity

The iCJS core application and databases are all hosted on NIC web servers with SAN, with DR site assigned at NIC Pune DR in Maharashtra (for DR) and all sectoral databases are replicated from local applications to the near DR site at Shimla. Therefore, for the services to completely fail, the local hosting platform (police stations in 114 locations, courts in 38 court complexes, FSL labs in 3 locations and 14 prison locations) of all applications should fail simultaneously. And even in that case, the DR site at Pune (where data is replicated daily at night-time) will be able to provide continuous service (with minimum data loss in the worst case).
Technology Related Challenges Faced

The challenge has been to integrate the diverse platforms, both development and databases. The issue was tackled by deploying technology experts from each platform to provide seamless data transfer, its integration after transfer and the development of the new iCJS SW.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- All the software applications are hosted on a robust NIC web server with scalable databases. Disaster recovery scheme is implemented at NIC DR sites having virtual servers to handle extreme traffic loads.
- Access to online applications is through NICNET/Himachal State Wide Area Network which has high up-time and reach in the difficult terrain of the state.
- The software application is web-based and security audited to handle a number of transactions simultaneously without hampering the performance in any way. Presently, the Kanoon Vyavastha, eFSL and ePrisons software applications are working on 100% capacity state-wide without any issues.
- The three individual software applications are already implemented in different states of the country and are able to handle large number of transactions at present, which is the actual load for iCJS also. The data exchange between SW applications takes place once the data is stored in the database of individual SW applications.
- Cloud computing is proposed to be implemented for future scalability requirements.

VALUE INDICATORS

Digital Inclusion

The online complaint filing facility and video conference of prisoners relatives are two specific process changes implemented in this initiative which address the digital inclusion aspect. Himachal Pradesh is predominantly a state where 90% people live in rural areas. Earlier citizens had to travel long distances, involving both costs and time, to file any police complaint or meet their relatives lodged in one of the 14 prisons of the state. Now they can visit any common service centre (CSC-named LokMitra) in their Panchayat (3244 Panchayats) for these purposes. This facility is solely aimed at digital inclusion of the less privileged rural population.
Green e-Governance

The initiative facilitates online transactions between departments by enabling release of case property in online mode, and availability of judgments/orders without the need to print these. Such features help in the improvement of carbon credit rating by reducing the usage of paper.

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DESCRIPTION OF THE PROJECT

Court case monitoring system (RCMS and LMS) is a web portal developed by the IT Department of Himachal Pradesh to enhance the online filing and management/monitoring of revenue cases/departmental cases at different levels across the State. RCMS has been implemented in all the revenue courts of Himachal Pradesh whereas all government departments use the LMS portal for daily updation/status of their cases. The RCMS and LMS serve as a citizen friendly tool through which citizens can not only know the status of the revenue court and departmental cases but can also download interim as well as final orders, thereby reducing the need to frequently travel great distances to access such information from these courts. Not only has the citizen been benefited from the software, but it has also reformed the functioning of the revenue courts as well as the government departments.

RESULT INDICATORS

1. Key Performance

Using this software, administrators/HoDs can easily monitor the status of court cases such as number of pending cases, timely filing of replies, present status of case(s), if personnel presence is required in the case etc. System generates following reports for MIS purposes:
   - Cases instituted, listing (in duration)
   - Aggregated case status reports (drill down)
   - Case list - with stay order / pending / decided / reply filled after due date etc

2. Efficiency And Improvement Initiatives

The portal has had the following impact on all revenue courts and government departments across the states:
Better citizens services:
- Online access available to check current status of cases
- Online availability of court-wise cause list
- Online availability of copy of judgments
- Online availability of summons
- Better management and effective monitoring of revenue cases
- Checking the status and maintaining the history of cases
- Easy updation of case status
- Generation of various administrative reports

There is separate interface for the citizen to have access to such modules as Case detail, interim order, judgements etc

Implementation Coverage: A total of 237 courts use the RCMS software.

ENABLER INDICATORS

1. Process Re-Engineering

Challenges With The Existing System

- In the existing system, the concerned revenue court have to maintain a peshi register for day-to-day entries
- Have to make cause list manually
- Have to search case file in the bastas of stakeholders and only thereafter can officials provide them case status
- The whole process is time consuming
- Stakeholders have to come to the respective offices to get the case status of their case
- Advocates have to come to the respective court to check the cause list of cases at least one day before as they have to prepare the case for arguments if the case is fixed for final hearing
- It was difficult to locate the case file
- Status Tracking of Cases: After appellants/respondents file the case in the revenue court, they had no means to check the status of the case unless they visit the concerned office.

The system has been re-engineered so as to meet all these challenges.
LMS
- Advocate General have been given powers to view the case wise progress of all the departments
- Dashboard has been designed for instant view of the cases status
- Status is available on the web
- Information related to cases is available online and can be accessed by the citizens using the internet at homes/ cyber cafes/ CSCs (at the Panchayat level).
- Automatic generation of the letters through software for respective appellant/ respondent
- Automatic delivery of court case status, i.e., listing of new case, hearing of case etc., through e-mail or via SMS to Ads/ HoDs/ nodal officers of LMS
- Saving of money and time of stakeholders, i.e., government, citizens, advocates

RCMS
- Supervisory courts have been given the powers to view the case wise progress of its subordinate courts
- Dashboard has been designed for instant view of the revenue cases status
- Dependency on the lawyer to know the status of the revenue court case has reduced
- Status is available on the web
- Information related to cases is available online and can be accessed by the citizens using the internet at homes/cyber cafes/CSCs (at the Panchayat level)
- Citizens can download cause list, interim orders and judgments, summons etc. through RCMS software
- Advocates now get more time for preparing their case for final hearing through this on-line services
- Saving of money and time of stakeholders, i.e., Government, citizens, advocates

2. Change Management And Capacity Building

Necessary trainings have been imparted to the officers/ officials/ nodal officers of all the revenue courts and all government department of the government of Himachal Pradesh from time to time. More than 300 officers/ officials/ nodal officers/ data entry operators at each revenue court and government department have been imparted training till date.
3. Technology

The court case monitoring system is a web based application developed in-house by the state IT department for monitoring and maintenance of the cases of the revenue courts as well the departmental cases using Windows Operating System and Microsoft Sql Server 2005/2008 database.

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Dudu Basantgarh is one amongst the most remotest and inaccessible sub-divisions in Jammu and Kashmir state.

The initial driving force behind creation of this website was to provide basic information to the inhabitants of the sub-division regarding contact details of officers/officials/panches/sarpanches, ongoing developmental activities, government orders/circulars, application forms, etc. and at the same time, opening up a window to the outside world about the virgin natural beauty of Dudu Basantgarh in the form of greens, meadows, waterfalls, mountainous treks, hilly terrains, view-points, enchanting picnic/excursion spots, etc..

The most important feature of this website is that it was launched as the first official website with the domain name gov.in in the state and the first official website of a sub-division in Jammu and Kashmir.

The main objective was to keep the website as simple as possible so that anybody can easily access it at the click of a button. It should carry interoperability features which can easily integrate with other applications in a smooth manner in the shortest possible time.

RESULT INDICATORS

1. Key Performance

ICT Based Services, Stakeholder Benefits And Process Changes

(i) Smooth flow of basic information such as contact details, numbers, locations, designations, etc. of all govt. functionaries;

(ii) Easy access to application forms for the purpose of applying for basic services in various departments which was earlier a big
challenge for residents as they had to visit and collect such forms manually from the counters located at district headquarters;

(iii) Provision of detailed information about incentive schemes of various departments such as agriculture, horticulture, sericulture, rural development, social welfare, etc. which was almost extinct before the launch of this website;

(iv) Very novel mechanism of filing complaints about shortcomings, misuse, non-performance, deviations, etc. in sub-division so that prompt redressal of the same can take place with the usage of all ICT tools which was earlier a major challenge in this vast spread-out sub-division;

(v) More participation and involvement of residents in public meetings, awareness camps, cultural and sports meets, integration camps, etc. through timely dissemination of venue, date and time details on this website;

(vi) Direct connectivity established between all stakeholders and sub-division administration which was earlier lacking due to non-availability of any such ICT medium in the past;

Implementation Coverage

The website www.dudubasantgarh.gov.in has a global reach.

Innovative Ideas Implemented

With the provision of detailed information (ICT enabled services) about Dudu Basantgarh, the natural beauty of the sub-division has been publicised and has led to an increase in tourism awareness of this lesser-known area of the state.

ENABLER INDICATORS

Challenges Faced In Implementing Process Changes

A. Non-availability of requisite funding and manpower;
B. Non-availability of requisite infrastructure;
C. Resistance amongst government officials regarding creation of such an ICT tool which they feared would act as a watchdog upon them;
D. Slackness on part of developers due to distance-related challenges and own service prioritisation;
E. Computer literacy graph of the residents was pretty low and the same was applicable towards adoption/adaptability rates for the same amongst them;
F. Exposure-level was lacking amongst the public/beneficiaries/officials and all the stakeholders due to which the initial period after launch was very challenging.

Lessons Learnt From The Process Re-Engineering Exercise

A. Public education and awareness was a major challenge, especially in the case of any ICT-based change activity;
B. One should never close the scope-sheet when planning and implementing such an ICT initiative as the nature of scope changes at every level of process development, beginning from the conception till the launch;
C. Special emphasis should be laid on getting audit permissions from the central government agencies involved in its launch such as verifying, authenticating and pilot testing before launch;
D. Even after the launch, proper awareness drives have to be carried out amongst various sets of stakeholders so that the transition from manual to automated systems takes place smoothly and successfully.

1. Change Management And Capacity Building

Leadership Support

Initially, there was a challenge in mustering sufficient support from top leadership but when the authorities were apprised of the advantages of this proposed website, total support including logistics support was extended for its successful creation, development and launch.

Change Management And Capacity Building Strategy

Change management has taken place with constant review and feedback mechanisms in-place with locals, system administrators, operators and policy makers. The staff working on it gets regularly trained through various workshops and on-site sessions.

Project Management

For now, Dudu Basantgarh has been conceptualised purely as an informative website; therefore, it has limited role for project management
and monitoring work to be done which led to the occasional or part-time role for the routine IT staff of the sub-division.

Challenges Faced In Change Management And Capacity Building

It took extra-sessions and special teamwork to develop skills and train non-IT officials for becoming a part of this e-governance initiative as they considered it as a threat to their very existence and routine activities.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

A specific point worth mentioning regarding capacity building here is that proper schedules need to be drawn to cover all officials under such IT-enablement exercises. After completion of training sessions, proper hands-on exercises should follow so that the respective teams of all departments are able to prepare themselves for the upcoming major roles in website management and operationalisation in their respective domain areas.

2. Technology

ICT Solution Adopted

Web Solution for Dudu Basantgarh website was developed using HTML, CSS and Photo Gallery Maker. Technology standards were used as per the National Informatics Centre (NIC) Standards for website creation and all possible measures were taken to ensure that there was no deviation from e-government standards notified/recommended by GoI. Security audits were conducted by a third party which is a pre-requisite for creation of such sensitive government websites. The security audit team cleared the e-security audit well-before the launch of the Dudu Basantgarh website.

As the website is hosted on NIC web servers under URL www.dudubasantgarh.gov.in, the mirror server is maintained by the NIC for disaster recovery and service continuity.

Technology Related Challenges Faced

A. Non-availability of network connectivity; this was countered with the usage of a technology which was very simple and basic, so that the front/main page could be opened in less time and with much ease by the users.
B. Technology divide between the users and implementers; it had to be plugged-in by holding seminars / workshops / random hands-on sessions with the public and government officials from time to time.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

A. Being the first official website of a sub-division being launched in Jammu and Kashmir, such a website had to be as simple as possible;
B. Technology should be user-friendly, easy to adopt and later modifiable as per the growing needs and requirements of the users/stakeholders;

VALUE INDICATORS

Digital Inclusion

- There was a huge digital divide in the sub-division, not only in terms of e-literacy but also in terms of linguistic, cultural and demographic barriers and the same needed to be addressed at the earliest.
- Proper publicity was done to cover all such culturally and linguistically divided lot, especially with a mega-launch of this website at the district headquarters.

Green e-Governance

Website was launched with the basic intent of replacing the traditional paper/pen model, thereby, adding to green attributes of the sub-division

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Karnataka One Project is an initiative to deliver citizen services of government and private organizations through electronic channels like, computerised centres, portal, mobile etc in an efficient and transparent way.

Project Objectives:

- To provide government services in a convenient and efficient manner through Karnataka One centers and portal
- To provide private services
- To enhance accountability, transparency and responsiveness to citizens needs
- To provide cost-effective methods of service provision to departments
- To provide efficient and online MIS and EIS to departments
- To enable government departments and agencies to focus on their core functions

RESULT INDICATORS

1. Key Performance

ICT Based Services

Government to Citizens:
Electricity bill payment, Water bill payment, BSNL land/mobile phone bill payment, Property tax, Application for photo copy/ re-evaluation / re-totalling of answer scripts for PUC students, Payment of fee for distant education courses of Bangalore University, KSRTC ticket booking, Issue of RC extract of vehicles (Transport Department), Issue of forms and collection of fee for police verification services, Vehicle enquiry report,
Permission for using amplifier sound system (Police Department), Sale of bus passes (Road Transport Corporations), collection of initial deposits for e-auction (Procurement Cell of CEG), Name inclusion / deletion / modification / transposition in electoral rolls (Office of Chief Electoral Officer), Online registration of ration card applications, Online filing of passport application for walk in applicants, Issue of e-Adhaar Letter (UIDAI)

**Business to Citizens:**
Mobile and land phone bill payment of Airtel, Mobile bill payment of Vodafone, Idea, Life insurance premium payments of ING Vysya, Registration for government job alerts (Namasthe Media), Collection of renewal fee of subscription for SMS alerts on water distribution schedule Next Drop)

**Current Stakeholder Benefits**

**Citizens:**
- Services of multiple government departments and private companies available under one roof (one stop service) and hence saves time and costs
- Each centre has 6-10 counters; services are available from 8.00 AM to 8.00 PM all days at any centre, any counter
- Citizens have choice of pay modes: Cash / cheque / DD / credit/debit card
- Quick service
- Citizen friendly ambience
- No service charges
- Services through internet: A few services are delivered through Karnataka One Portal (Internet)

**State /Central Government Organizations / Private Companies delivering services through Karnataka One**
- No upfront investment from departments
- “Pay as you use model” – Very economical
- Increased loyalty of the customers
- More accountability and transparency
- Saves resources
- Transaction data is secured
- Banking partner reduces the resources required for accounting
- MIS : Real time and user defined
- Flexibility of integration of services
Private Partners

**Operations Partner and Software Partner:** Increase in the revenue with increase in the number of transactions

**Banking Partner:** Bank gets float of 2 days on the entire collections of Karnataka One. Increase in collection volumes will increase the revenue to the Bank.

**Implementation coverage**
Karnataka One is being implemented to replicate Bangalore One in other cities of Karnataka. Currently, the project has been replicated in 9 cities viz., Bellary, Belgaum, Davanagere, Gulbarga, Hubli-Dharwad, Mangalore, Mysore, Shimoga and Tumkur. Centres set up at each city are named after the city as Bellary One, Belgaum One and so on. Currently 30 services pertaining to 23 departments are being delivered through Karnataka One Centres

**2. Efficiency And Improvement Initiatives**

**Time And Cost Efficiency**

1. Operation of multiple counters in a centre reduces waiting time significantly
2. Availability of services from 8 AM to 8 PM on all days helps to distribute the load on the centers
3. Ajax based application makes the application more responsive and the transaction time is reduced significantly
4. There is single sign on by the operators for all services and all the applications have the same look and feel, thus navigation is easy and simple.
5. Data entry by operators is kept to as minimal as possible.
6. Continuous trainings to enhance the skills of the staff has resulted in time and cost efficiency
7. All the services are over the counter services (OTC), hence multiple services are not required for availing the same service.
8. SLAs are being monitored to ensure timely delivery of services.
Innovative Ideas Implemented

1. Operation of centers on 12×7, 365 days
2. Customised role based MIS Reports
3. AJAX (asynchronous JavaScript and XML) based application:
4. EQMS (electronic queue management system) is adopted in all Karnataka One centres to give service on first come first serve basis and also to capture the waiting time for citizens
5. Redundancy of the entire infrastructure
6. Automation of various processes:

Levels Of Integration

The following three different integration models are adopted based on the IT readiness of the Departments for each of the services in different cities:

- **Direct access of already developed application**
  The integration of Karnataka One and Department will be seamless as department takes care of its services. Karnataka One will act as a gateway in such a case. In this case, Karnataka One user should be authenticated to access department existing application directly and commits the transaction at the department end. The entire transaction cycle follow the logic as per department application.

- **Using web service on SOA principle**
  The major benefit of this architecture is that Karnataka One proposed application generally acts as the presentation layer and integrating department houses the business logic layer. Thus, the native call to department database is handled by department.

- **Hybrid model**
  Under this mode, Departments provide the Master Data. Master Data is stored in Karnataka One Data Center through which Karnataka One Application can retrieve the information with search parameter.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- Centralised fund transfers and reconciliation module for monitoring fund transfers:
  Collections done at all the centres of the respective city are credited to the respective city bank account. Transfers to different departments of all cities are done centrally at Bangalor (already implemented)
- Automation of banking process (ready for implementation)
- Delivery of services on jurisdiction free basis (already implemented)
- Single interface for operators of Karnataka One Centres (already implemented)
- Loading of master data of departments (consumer data with static fields) at Karnataka One servers wherever there is no online integration (already implemented)
- Enabling of multiple pay modes (ready for implementation)
- 12×7 operations on 365 days (already implemented)

Challenges Faced In Implementing Process Changes

- Capacity building of various stakeholders
- Getting the incremental master data in the required format in time from departments
- Closure of accounts by departments within the office hours especially on the last day of the month forces Karnataka One also to disable the services in a few departments
- Delays in providing IPG and EDC machines through third party as the bank does not own the same

Lessons Learnt From The Process Re-engineering Exercise

- Buy-in from all the stakeholders is a must
- Appropriate communication to all stakeholders involved is very essential
- Training is a very important part of process re-engineering
Better to have end to end integration with departments for delivery of services

2. Change Management And Capacity Building

Leadership Support

Directorate gets involved in capacity building. Through PMO, it imparts training to the Karnataka One staff on domain knowledge of services, processes etc. Directorate also organises trainings through the department officials

Change Management And Capacity Building Strategy

Each city has a co-ordinator who is also a master trainer for his/her staff. Master trainers are trained by the software team on any change in the software (application). Operations team trains the master trainer on all aspects of operations and also on changes.

Bank has presence in all cities and they conduct trainings at one of the Karnataka One centres of their respective city.

Project Management

Project management office has been set up at the Directorate of EDCS for management and monitoring. The team works on the project, full time under the Director.

Financial Model

- PPP model with BOOT
- Setting up of centre with the required IT infrastructure and UPS by the government of Karnataka
- Providing of centralised computing infrastructure for hosting K One application and database at SDC by the government of Karnataka
- Transaction charges based model
- Revenues based on volumes and kind of service
- Outflows to operations partner and software partner
- Inflows from departments and banking partner
Efforts At Sustainability

**In terms of Technology**
- Government of Karnataka owns the IPR of software developed and deployed for Karnataka One.
- Software licenses of operating system, database etc are procured by the government of Karnataka and hence can be upgraded as and when required.
- Technology adopted is scalable, reliable and secured.

**In terms of Organisation**
- Best practices for change management are being adopted
- Regular trainings are being conducted.

**In terms of Financial Sustenance**
- Transaction based revenue model which drives all the partners to deliver the best
- The entire CAPEX is from the government of Karnataka to ensure that the private partners break even as early as possible
- Closure of departmental counters and discouraging of opening of new centres of departments.

Challenges Faced In Change Management And Capacity Building

- Multiple stakeholders
- Lack of IT maturity among the stakeholders
- Geographically scattered locations
- Varied working culture and organisational behaviour
- Varied requirements of stakeholders

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Communication is very crucial
- Buy-in of all the stakeholders is to be ensured
- Capacity building in local language is very essential
3. TECHNOLOGY

ICT Solution Adopted

Microsoft .NET framework v2.0 with Atlas AJAX edition using ASP.NET and VB.NET / C# for application development and MS SQL Server 2005 as database management system.

Compliance With Standards

Karnataka One has adopted major standards guidelines / recommendations by the GOI for e-governance applications covering interoperability, version Management and security.

Security And Confidentiality Standards

Five levels of security measures are implemented in K1: Authentication of the user interface, Limited access to the departmental databases, Maintenance of audit trails, Encrypted storage of important information and Implementation of PKI infrastructure for ensuring non-repudiation.

Disaster Recovery And Service Continuity

In case of any failure of the K1 data centre, a disaster recovery site will take charge and perform the responsibilities of the centre. To make the K1 DR site work under any unprecedented circumstances, a replication engine has been prepared which keeps on working and replicates the data from the K1 data centre database to the DR database in a regular period.

Technology Related Challenges Faced

1. All the features or enhancements of the latest technologies functionalities are disabled as upgradation to new technologies is cost effective.
2. Sometimes, even though software is ready for upgrade, dependencies on hardware prevents upgradation.
Lessons Learnt From Technology Choices And Implementation Strategy Adopted

.net brings with it a lot of advantages like rapid application development in an easy manner, but proprietary products will create dependencies of using such features free of cost. In this context, using open source is more appropriate provided there is a continuous technology support with no cost.

VALUE INDICATORS

1. Digital Inclusion

- In some services, online submission of forms is done, for example, forest recruitment facilitation services
- Services delivered cut across all the sections of the society
- The executives manning the citizen service centres are from the respective area; they communicate in the local language and hence interactions are very friendly.

2. Green e-Governance

- All transactions are done electronically, hence huge savings of paper
- Transaction data is sent in electronic format, hence huge savings of paper
- Communication between stakeholders mostly happens through e-mails
- Since services available at Karnataka One Centres are on a jurisdiction free basis, travel by citizens is significantly reduced and as a result of which pollution is reduced
- Since multiple services of various government and private organisations are available under one roof, travel by citizens is significantly reduced and as a result of which pollution is reduced
- Since all the services are being delivered on over the counter basis, multiple visits are not required, hence travel by citizens is significantly reduced and as a result of which pollution is reduced
- Online MIS reports have been provided to all the stakeholders of the project. Hence a huge amount of ink, power and paper is saved which otherwise would have been used in generating hard copies
Availability of services on holidays and beyond peak traffic hours would have resulted in reduction in pollution as the travel time on holidays and non-peak hours is relatively low.
DESCRIPTION OF THE PROJECT

Prior to the introduction of an online tendering platform, procurement in Government departments were done through manual tendering process. The system was highly cumbersome and suffered following deficiencies:

(i). Discrimination amount suppliers  
(ii). Cartel formation  
(iii). Threat to bidders  
(iv). Lack of security and document tampering  
(v). Human interface  
(vi). Lack of transparency

e-Procurement project is a Mission Mode Project (MMP) under National e-Governance Plan (NeGP) of Government of India (GoI). It is web based solution aimed at enhancing transparency and efficiency in Government procurement process. Government of Kerala has implemented the e-Government Procurement system to enhance transparency, confidentiality & efficiency in Public procurement activities and monitor the same on a real-time basis. Kerala State IT Mission is the implementing agency for e-Procurement system across the State with support of NIC.

The e-Procurement project was launched on 07th December 2011. Till date 13 Departments and 45 Public Sector Undertakings (PSUs) have adopted e-Procurement system and number is counting. Kerala is probably the first state to launch an e-Payment mechanism with automatic and online refund mechanism. The e-Payment system for e-Procurement project was launched on 17th April 2013.

In order to have a smooth transition and following the common practice, initially the high value tenders have been brought under the purview of e-Procurement system. Accordingly, Government has directed to adopt e-Procurement system for all tenders above Rs. 25 lakhs.
RESULT INDICATORS

1. Key Performance

ICT Based Services

Services to Departments:
(i). Centralised view of all suppliers registered/blacklisted
(ii). Online tender box for bid submission, bid opening, evaluation, short listing, approvals, award of contract
(iii). Automatic tender document fee settlement with government treasury and EMD refunds to unsuccessful bidders

Services to Bidders:
(i). Online centralised and one-time bidder registration on the website
(ii). Free tender document download from the e-Procurement website. Only interested bidders bidding for the respective tender are required to pay the tender document fees
(iii). No restriction on availability of tender documents/information
(iv). Online bid preparation, using templates, bid submission, payment facility for tender document fees
(v). Automatic and online refund of EMD amount
(vi). Transparent bidding process since the bidder can submit his bid from anywhere in the world
(vii). Real-time/ live bid opening details/ bid status available to the bidders
(viii). Email and SMS alerts to bidders
(ix). Storage space to bidders for storing non-sensitive documents
(x). An e-procurement cell cum helpdesk established for users to get technical assistance via telephone or walk-in

Current Stakeholders Benefits

Benefits to Government:
1. Promotes higher competition resulting in competitive price
2. Saves administrative cost as no tender copies are required for selling
3. Saves department official’s time as no tender document sale from office
4. Eliminates chances of discrimination among bidders as no human intervention
5. Allows utilisation of government officials for other productive work, etc.
6. Removes the hassles of collection and remittance of amount from bidder to government treasury/bank account
7. Department officials do not have to initiate any additional process for triggering the EMD refunds.
8. No additional storage space required for storing physical tender documents as unlimited storage space is provided online
9. Bid opening can be done from anywhere which saves officials time as no travelling is required to the bid opening place
10. Faster decision making and finalisation of contracts
11. Centralised view of all suppliers registered/blacklisted

Benefits to Bidders:
1. Online payment of tender document and EMD amount
2. Timely and automatic refund of EMD amount after an unsuccessful bid attempt
3. 24x7 availability of free tender documents for viewing and download till stipulated date
4. Tender document fees to be paid by eligible and interested bidders only. Tender document fees to be paid only at the time of bid submission
5. Anytime and anywhere bid submission and no human interface promotes equal and fair opportunity
6. Live bid opening feature eliminates need to be present during bid opening process
7. Online centralised and one-time bidder registration on the website
8. Online bid preparation, using templates, bid submission and bid withdrawal
9. Transparent bidding process since bid submission
10. Real-time opening details/status available to the bidders
11. Email and SMS alerts to bidders
12. Storage space to bidders for storing non-sensitive documents
13. An e-procurement cell cum helpdesk established by the IT Mission for users to get technical assistance via telephone or walk-in

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Time Efficiency

Online payments and automatic refunds: Department officials do not have to spend their productive time in collection and remittance of amount
collected from bidders to Treasury. Treasury officials are also relieved of collecting such payments as the system does it automatically.

**Tender processing time:** Reduced from a couple of months to an average of 25 days

**Cost Efficiency**

**For Government**

a) With introduction of online payments and refunds, the price quoted against tenders are coming down as bidder is getting refunds faster. Also, since there is anonymity in bidding, cartel formation is eliminated and thus offered quotes become competitive.

b) Man-hours and associated costs involved in tender preparation, making multiple copies for distribution, newspaper advertisements, etc are minimized.

c) Indirect cost and time savings to government as department officials need not bother about the collection and storage of tender document fee and EMD amount as the same gets automatically settled.

**For Bidders:**

a). Online documents can be downloaded and reused any number of times as the same is free to download.

b). Bidder saves on administrative cost by avoiding numerous visits to TIA office either for bid opening or for getting EMD refund which also results in time savings.

**ENABLER INDICATORS**

1. **Process Re-Engineering**

   **Major ICT And Non-ICT Changes**
<table>
<thead>
<tr>
<th>Process</th>
<th>Before ICT solution</th>
<th>After ICT solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment and EMD refunds</td>
<td>Bidder had to send the tender document fees and EMD through demand draft along with</td>
<td>Online payment facility available. EMD of all unsuccessful bidders are automatically reversed to the account from which it was received.</td>
</tr>
<tr>
<td></td>
<td>the bid</td>
<td></td>
</tr>
<tr>
<td>Department specific registrations</td>
<td>Bidders had to separately register for tenders from different departments</td>
<td>A single window registration wherein a bidder, once registered, can participate in any tenders published online.</td>
</tr>
<tr>
<td>Tender notice and advertisements</td>
<td>Public relations department / newspaper before the tender release have to be notified</td>
<td>Any department's tender information and document is visible and available across the globe.</td>
</tr>
<tr>
<td>Sale of tender documents</td>
<td>Bidders had to purchase tender documents</td>
<td>A bidder can download any tender document free of cost.</td>
</tr>
<tr>
<td>Secrecy</td>
<td>Participating bidders are known as soon as bidders submit their tender document fees</td>
<td>Online payment system provides secrecy</td>
</tr>
<tr>
<td>Bid submission</td>
<td>Bidders had to make manual submission of technical and commercial bids. This provided</td>
<td>Bids can be submitted online from a place of convenience. This enhances fair chance to all bidders, competition and competitive pricing.</td>
</tr>
<tr>
<td></td>
<td>the opportunity for cartel formation, discrimination among bidders, mis-placing of documents, etc.</td>
<td></td>
</tr>
<tr>
<td>Bid opening and evaluation</td>
<td>Bidders had to be present in the office of TIA to witness the bid opening process to</td>
<td>“Bid opening Live” feature allows the bidder to witness/monitor the process as well as bid documents of other bidders on a real-time basis anywhere.</td>
</tr>
<tr>
<td></td>
<td>assure him that there are no malpractices</td>
<td></td>
</tr>
<tr>
<td>Comparative Statement</td>
<td>Department officials had to physically evaluate and prepare a comparative statement to arrive at a lowest (L1) bidder.</td>
<td>The system automatically generates a comparative statement</td>
</tr>
<tr>
<td>Award of Contract</td>
<td>The department will send manually send communication to the successful bidder</td>
<td>Automatic communication to the successful bidder</td>
</tr>
<tr>
<td>Signatures</td>
<td>Manual signatures by bidder on tender documents, preliminary agreements, undertakings</td>
<td>Digital Signature Certificates</td>
</tr>
</tbody>
</table>
1. Change Management And Capacity Building

Management And Capacity Building Strategy

For better management, implementation and continuous monitoring, Kerala State IT Mission has the following infrastructure:

a). Project Management Unit (PMU): A dedicated PMU functions inside the IT Mission for managing the implementation and day-to-day project activities of e-Procurement.
b). e-Procurement Support Desk: A training cum helpdesk facility with a seating capacity of 20 users is available in IT Mission.
c). Train the trainers: Around 4200 users have been trained in 465 different training sessions. 3 state-wide bidder workshops have been scheduled in each of the 14 districts of the state.

Financial Model

e-Procurement project implementation is funded by the state government. Only hardware and software have been provided and managed by NIC.

Challenges Faced In Change Management And Capacity Building

a). Resistance to change: This was and is being minimized by way of continuous trainings and hand holding support
b). Lack of awareness in suppliers: Over a period of around 2 years and with regular workshops and trainings, the participation has gradually increased
c). Large user base for training: As the government has decided to implement the project in all departments/boards/PSUs, the user base to be covered is huge. IT Mission has taken the initiative to address this requirement by introducing the “train the trainer” concept, online tutorials and establishment of regional support centres.
2. Technology

ICT Solution Adopted

The system is developed using Open Source tools with the following components:

- Operating system : Linux
- Web server : Apache Tomcat
- Database : PostgreSQL
- Front end : Java/J2EE

The back end server hardware, software and disaster recovery infrastructure is being managed by NIC and the main server is hosted in New Delhi. The application is audited by STQC.

Security And Confidentiality

(i). Two-factor authentication along with digital signature signing
(ii). Encryption
(iii). 128 bit SSL encryption
(iv). Role-based access
(v). Time stamping
(vi). Regular data backup
(vii). Disaster recovery site

Technology Related Challenges Faced

(i). Security and authentication: As financial transactions were involved, department officials were reluctant and apprehensive about the system's capability to deliver secrecy and security. These are being eliminated by explaining the work flow of e-Procurement system, its secrecy, security and transparency features which uses dual factor authentication, digital signatures, role based access, etc.

(ii). Authenticity of documents: Department users were apprehensive about the accountability and authenticity of documents submitted by bidders. These are being minimised by informing them about the features of PKI infrastructure.

(iii). IT readiness: Though major departments like PWD, Forest, etc are well equipped for any major e-governance initiatives, the implementation got delayed in smaller departments due to lack of sufficient IT infrastructure.
VALUE INDICATORS

Digital Inclusion

The e-Procurement website is in English. However, a fully functional bi-lingual helpdesk cum training centre, with 8 support staff, is established by Kerala State IT Mission to address user queries in local language. Users can call; send email or walk-in to this centre for training and support. Further, two regional training cum support centres are being established to cater to the increased need of department users and bidders.

Green e-Governance

e-Procurement implementation contributes in the following way towards less paper consumption:

a). No physical print-outs required for tender documents
b). No physical document submission required from bidders
   No physical records to be maintained by government officials as details like bid registers, bids, etc are available online for 24/7 access
DESCRIPTION OF THE PROJECT

The primary objective and purpose of the initiative was to transform the conventional administrative set up to a more efficient and transparent organisation eliminating delays and huge amount of paper work. e-Office aims to support governance by using more effective and transparent inter and intra-government processes, in turn, improving the governance and the service delivery.

e-Office (paperless office) has been implemented in Sindhudurg (Sindhudurg district is the first district in the country to have implemented a paperless office setup and integrated the entire revenue administration from the tahsil level to the collectorate) with effect from December 24, 2012.

RESULT INDICATORS

1. Key Performance

ICT Based Services

The e-Office project has different modules: e-file, KMS, e-leave and appointment scheduler

The most important of the modules is e-File (file management system). e-File is a work flow based system that involves the handling of files with a more efficient electronic system. This system involves all stages including the diarisation of inward receipts, creation of files, movement of receipts and files and finally the archival of records.

With e-file system, the movement of receipts and files has become seamless and there is more transparency in the entire process as each and every action is recorded electronically. Also, it is very easy to trace and track any file or letter and give information readily to citizens, which is the core of transparent governance.
The knowledge management system enables the administration to have a central and permanent easily accessible and readily available repository of knowledge required for efficient functioning in the system. It includes all the rules, regulations, office memoranda, orders from the courts of law, government resolutions etc. The various office orders can also be placed on the notice board for ready reference and quick dissemination of information. In short, every employee has an encyclopedia of knowledge on his desktop. The availability of BPR (business process re-engineering) enables the employee to know the flow of work; it can be used for continuous self training.

The leave management system enables the administration in quick and efficient monitoring of the leave of the employees and also keeps a permanent record of the leave taken.

The appointment scheduler is used for the planning of the entire schedule on a daily basis and the sharing facility ensures that there is no clash in the schedules and time can be utilised effectively.

**Current Stakeholders Benefits**

The e-Office has resulted in various advantages which includes the following:

- Workflow automation including standardisation and automation of processes/work flows
- Knowledge management, including creation of institutional memories and efficient record management
- Improvement in the accountability due to close follow up being possible.
- User friendliness and cost-effectiveness
- Saving in stationery, space and time and thereby contributing to green governance.
- The concept of administration from anywhere has been made a reality thereby reducing delays and inefficiencies in the system.
- Benefit to the employees by reduction in the drudgery of maintaining heaps of registers.
- The files being dealt only by the concerned employees and the fast movement has resulted in secured transactions increasing the transparency in the system.
The business process re-engineering (BPR) has revolutionised working by making it more effective and error free. Such has been impact of the BPR that it has virtually eliminated too much travel of the file as the employees have a clarity of procedures and the work flow along with the requisite references needed available at a click.

**Implementation Coverage**

This project has been implemented in Sindhudurg district of Maharashtra. Sindhudurg District is spread over approximately 5500 square kilometers. It has been implemented at the collector office, eight taluka offices and two SDO offices. All revenue employees of the district have been brought under the ambit of this project. The project coverage is exceptionally huge.

**2. Efficiency And Improvement Initiatives**

**Efficiency Enhancement**

The initiative undertaken has increased the systemic efficiency and resulted in faster delivery of services within the most important department of the government, i.e., the Revenue Department.

*Efficiency in the overall system*, from the external perspective, has improved as efficient individuals and efficient organization have resulted in speedy services to citizens and other departments. Number of interaction points for a file has reduced eliminating non-productive movement.

*Organizational efficiency* has improved by means of speedy communication between departments/sections/locations, generated collaborative work environment and optimal utilisation of resources.

*Individual efficiency* is improved by means of speed in decision making and by generating error free output. e-Office is an easy to use, trusted digital environment that reduces efforts to retrieve files. This allows remote functioning and eases the administrative activities such as leave balance maintenance etc.

**Cost effectiveness**

The total time taken to work on files/administrative activities has reduced by nearly 50% since the implementation of e-Office. The cost involved in obtaining digital signatures or working on the e-office system is significantly lesser than the cost involved in maintaining a paper based file management system (including cost of maintaining large store rooms for files).
The intervention has resulted in cost effectiveness because it basically covers the time value of money in the most effective manner. The man hours and man days that are saved are tremendous and this in turn ensures better work output and quality output.

**Innovative Practices**

In this era, redefining the entire working of the Revenue Department and taking it into a newer era with intensive use of technology coupled with refining the processes by a generic, exhaustive and complete business process re-engineering is undoubtedly an innovative initiative of mammoth proportions. More lustre is added to the innovativeness of the approach by the fact that the initiative is not limited to one standalone office but involves total integration of the entire revenue administration from District Collector Office down to Tahsil level. It is the first and largest complete and end-to-end implementation of e-office anywhere in the country.

**ENABLER INDICATORS**

1. **Process Re-Engineering**

**Major ICT And Non-ICT Changes**

At Sindhudurg, before starting with the implementation of eOffice, we realized the need of process reengineering to eliminate any inefficiencies in the system and to ensure a robust new system which does not carry any unproductive administrative processes.

To overhaul the entire system, BPR/GPR was undertaken and the following tasks were carried out effectively.

- Filing system was improved on the lines of the Central Secretariat Manual of Office Procedures.
- Identified more than 2300 subjects being handled by the District Collector office and graded them into basic, primary and secondary processes.
- Record classification and record room improvement: Over 25,000 files with lakhs and lakhs of pages were classified and moved into record rooms thereby improving the overall environment of the office. This provided the office a better look, more space and also the much required quantum of the scanning load needed for the migration of physical files into e-office.
Digitisation of old records for integrating in e-office: The remaining files that were current and required for day-to-day work were identified for scanning and moved into the e-office system.

Challenges Faced In Implementing Process Changes

1. Huge infrastructure gaps in terms of network connectivity, availability of personal computers.
2. Human resource gaps
3. Inadequate technical manpower and support team.
4. Need for huge amount of training, capacity building and change management and the availability of change managers.
5. Pending record classification for over 10 years and resulting lack of space in the offices.
6. Over 2,350 subjects being handled by Collector Office and the need for the business process re-engineering. This was a major challenge as well as a mammoth task.
7. Massive scale of scanning and digitisation of existing records/files. Inter-operability with the other offices which still retained their physical work environs.
8. A fear of the unknown in the employees.

Lessons Learnt From The Process Re-Engineering

The office had a terrible shortage of computers, scanners and also internet connectivity. These gaps were identified and through constant planning and resource management, the gaps were plugged to create an ideal environment for the switch over to total electronic governance. Over 350 employees were provided with new computers; all offices were provided with heavy duty scanners and were connected with internet and LAN. The micro level desk-to-desk monitoring was carried out in the initial phase of the implementation to ensure that all the employees have the requisite resources to operate without problems being encountered.

There was a very strongly felt need for state-of-the-art training centres at all levels and the same was met out. Now, state-of-the-art training cum data entry centres are available in all offices.

A detailed strategy was planned to bridge the human resource gap.
2. Change Management And Capacity Building

MANAGEMENT AND CAPACITY BUILDING STRATEGY

The slow and steady march towards creating the best governed office was not easy if change management was not effectively tackled and this was done by following a strategy of training continuously and motivating people to work ceaselessly for achieving the aims. e-Office champions were selected and they were the people who managed the change over by training and personal example. The effective use of STAMP model of change management was done.

S - Stay and supervise personally.
T - Train, test and re-train
A - Attitudinal change
M - Motivation (through success in short-term goals)
P - Performance analysis periodically

All employees were trained initially on the use of computers, typing in Unicode, use of email and different aspects of office working and then slowly on the e-office application. The training was designed to be handled in a stage-wise manner.

- Initially large group training to bring everyone on the same platform.
- Preparing master trainers
- Small group trainings by the master trainers and identification of resource persons at each level by the master trainers.
- Use of identified resource persons for desk-to-desk training and hand holding.

More than 80 mass training sessions and almost daily, desk-to-desk training to produce a pool of well-trained and motivated lot to make the change over possible.

Project Management

A core team and project champions were identified and given special training to help in driving the project. The project implementation architecture included:

- Project Core Committee under the chairmanship of the District Collector.
- Nodal officer for the entire project to act as a single point of contact for the control, coordination and the supervision.
Nodal persons for each branch and subordinate office to act as a support mechanism for the implementation.

The Project Core Committee also defined the duties and responsibilities for the nodal officers and nodal persons in a detailed manner leaving no scope for confusion. This planning and the overall framework played a pivotal role in project implementation.

**Financial Model**

Financial provision for the upkeep and upgradation of the system whenever required is through SETU funds.

**Efforts At Sustainability**

Sustainability is an important issue in any project and cannot be left untouched. The following measures were taken to make the project sustainable.

- Creation of a resource pool of trained manpower.
- Institutionalising the concept of Tech Saturdays to ensure that the continuity in training remains and a platform for discussions is available to all.
- e-Buddy system in all offices.
- Provision of funds for routine maintenance as well as contingent expenditure.
- The business process re-engineering document has been made available to all employees.
- The role and responsibilities for the updation of the knowledge management system have been defined.
- The offices have done with any kind of physical work; now it is almost unlikely to look back.
- The system is designed to reduce the drudgery of the employees and this reality is now realised by all; therefore now it is a team driven project rather than top driven.

**3. Technology**

ICT solution adopted: The software has been developed by NIC Delhi and uses Postgress SQL database, Red Hat Enterprise Linux operating system and the Tomcat web server.
Compliance with standards: The development of the entire system is by a government agency, i.e., NIC New Delhi and meets all the national e-governance standards.

Security and confidentiality: Multi level security by use of passwords and PIN.

Disaster Recovery and Service continuity: Near and far DR suitably maintained at the State and National Data Centre along with daily taped physical back up being stored.

VALUE INDICATORS

Digital Inclusion

Offers bilingual support (Marathi and English), thus making it easier for users to use the system.

Green e-Governance

All revenue offices made completely paperless. Any paper coming in gets scanned centrally and then sent as a soft copy to the concerned officials.

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DESCRIPTION OF THE PROJECT

e-Governance Training and Certification (http://egovtraining.maharashtra.gov.in) is the first and only online certification course in e-governance in India, managed by the Directorate of Information Technology (DIT), Government of Maharashtra. It is open to all, at the national and international level. This unique certification program tests an individual's skill and knowledge on e-governance. The program aims to facilitate learning of basic and fundamental concepts of e-governance with practical scenarios. Its objective is to test the fundamental/practical knowledge grasped by the candidate, rather than learning by heart of definitions.

As part of this unique initiative, reading material and links of important sites are also provided on the website which would facilitate learning of basic and fundamental concepts of e-governance with practical scenarios. Apart from the reading material available on this page website, links for additional reading material are mentioned in the online question paper (in-line links).

Another unique feature of this certification program is that it is an open book test. The participants are free to read and search on the net, but are expected to articulate the responses in their own words.

Reward Process

All successful candidates are awarded a Certificate of Achievement for the course. Mentor title is granted to exceptional candidates as described above. Mentors and Distinction candidates are awarded with cash prize too, from DIT, Government of Maharashtra.
RESULT INDICATORS

1. Key Performance

ICT Based Services

G2X (open to everybody: G2C, G2B, G2G): Provides training and certification to citizen / system integrators / government employees / students etc.

Current Stakeholder Benefits

- Immense improvement in knowledge base of participating candidates
- Improvements in quality of the project work being executed by successful candidates, due to better knowledge dissemination
- Early and effective adaptation of newer technologies in some of the e-governance projects of Government of Maharashtra

Implementation Coverage

The project has no geographical boundaries as the examination process is online. Anybody interested in the e-governance domain can apply.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- It has saved time and effort for identification/selection of e-governance resources within government departments as candidates with “e-Gov certification” can be selected right away, as DIT has done the “testing”
- Improvements in quality of project work being executed by successful candidates, as their knowledge base has increased.
- Early and effective adaptation of newer technologies in many e-governance projects of the Government of Maharashtra, due to wide variety of subjective/topics chosen for drafting of question papers.
Innovative Ideas Implemented

- It is the first online certification course in e-governance in India, which is available free of cost to participating candidates.
- This project has earned another distinctive feature: Google search Top Ranker in keyword "egovernance training and certification"
- Another distinctive feature is the “open-book online evaluation” process. Participants are free to read and search on the internet while giving the examination, but are expected to articulate the responses in their own words. Sufficient time is given to participants to read, re-read and attempt the questions in parallel.
- With this innovative idea and modular design of course material, different modules and paper sets can be made available for different categories of candidates. Thus, it can also be replicated in universities, training institutes etc.

Levels Of Integration

It is open to all, at national and international level. It has been made mandatory for all DIT staff, consultants and software developers working with the government of Maharashtra.

This certification is also strongly recommended for all stakeholders working on e-governance projects anywhere in India.

The programme shall become an integral part of the virtual IT cadre initiatives of the government of Maharashtra. Study material and tests would be offered for different levels of candidates/employees for their induction to Virtual IT Cadre.

ENABLER INDICATORS

1. Process reengineering

The approach in this project/training process is radically different from traditional e-governance courses being offered elsewhere.

The following important processes related to conventional e-governance training were re-engineered for this project:
Challenges Faced In Implementing Process Changes

As such, there were no technical challenges faced for implementing the above changes, as the right kind of tools and technologies were selected. The changes were also easy to accept.

Lessons Learnt From The Process Re-engineering Exercise

It was learnt that the standard courses available for the topics of “e-Governance” were of theoretical type. They did not have the practical edge that is required to work practically in the e-governance domain at the state/central government level.

1. Change Management And Capacity Building

Leadership Support

This project has full support from leadership of all stakeholders. Secretary (IT), who has created the blue-print of the project, monitors the project on a regular basis.

<table>
<thead>
<tr>
<th>Description</th>
<th>Process</th>
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<tbody>
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<td>paper.</td>
<td></td>
</tr>
<tr>
<td>The registration process and online examination process (test attempts,</td>
<td>Use of cloud services</td>
</tr>
<tr>
<td>evaluation, results etc) is done using cloud services.</td>
<td></td>
</tr>
<tr>
<td>All candidates with excellent understanding of e-governance principles and</td>
<td>Use of mentors</td>
</tr>
<tr>
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<tr>
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<tr>
<td>• Mentors also guide prospective candidates.</td>
<td></td>
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<tr>
<td>• They take part in the evaluation process.</td>
<td></td>
</tr>
<tr>
<td>• They also build and expand the question bank</td>
<td></td>
</tr>
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Rather than classroom style training, here, reading material and links of important sites are also provided on the website, which would facilitate learning of basic and fundamental concepts of e-governance with practical scenarios. Apart from the reading material available on this page website, links for additional reading material is mentioned in the online question paper.

The registration process and online examination process (test attempts, evaluation, results etc) is done using cloud services.

All candidates with excellent understanding of e-governance principles and domain knowledge, who score very high as per the grading criteria, are selected as mentor. A team of “mentors” is built in this process, as project progresses, thus helping DIT, to further propagate and enhance the project.

- Mentors also guide prospective candidates.
- They take part in the evaluation process.
- They also build and expand the question bank.
Change Management And Capacity Building Strategy

The team of mentors, created during the project process, become part of the capacity building exercise and further propagates the project.

Project Management

No elaborate project management effort is required; mentors take care of the candidate evaluation.

Financial Model

This project is self-funded (i.e., funded by DIT). Due to use of cloud services, the infrastructure cost is negligible.

Efforts At Sustainability

As described above, the team of mentors makes the project sustainable. The process is institutionalised within DIT, GoM.

Challenges Faced In Change Management And Capacity Building

No major challenges faced as all stakeholders have the same vision for the project and participated with full strength.

2. Technology

ICT Solution Adopted

The project uses cloud technology for major modules of the examination process. It uses a third-party cloud solution for registration of candidates and a very popular MOOC platform www.classmarker.com for online assessment, grading, results etc.

Compliance With Standards

As such no compliance levels were required.
Security And Confidentiality Standards

All information is secured and confidential, including papers etc through use of proper login credentials of classmarker platform.

Disaster Recovery And Service Continuity

The cloud service provider (MOOC platform) has DR and service continuity arrangements.

Technology Related Challenges Faced

- As such, the project did not face any technology related challenges.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- The choice of technology and the implementation strategy was perfect fit for success of this project.

VALUE INDICATORS

1. Digital Inclusion

This project aims to bridge the digital gap by providing quality training about e-governance in online method so that everybody can learn about e-governance.

2. Green e-Governance

This project does away with conventional (paper consuming) method of examination assessment using paper and pen/pencil. Everything is online. Even the certificate to each successful candidate is sent online in PDF form (print copy is not given).

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The Maharashtra State Excise Department (MSED) functions with the primary statutory objective of collecting excise duty on alcoholic products and regulating the trade of these products.

- Maharashtra state levies the highest excise duty on excisable products as compared to neighbouring states; there is a large arbitration opportunity for bootleggers; hence the dire need to have a strong control and regulation mechanism.
- Lack of data to support analytics based decision making
- Combating excise duty evasion – Tracking excise duty evasion by generating a 360 degree profile of the licensee was not possible.
- Maharashtra is the largest manufacturer of liquor in the country – Great opportunity for the manufacturer to evade tax as the duty paid constitutes major part of the liquor cost.

In the beginning of 2011, MSED was at the lowest level of computerisation with almost zero IT infrastructure availability. This project is essentially a system to obtain better control and regulation. It is intended to assist excise officers in performing their duties efficiently and provide certain e-facilities to the licensees.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- e-Payment of license fee and excise duty: Introduction of online payment has simplified the payment process for excise duty and other charges.
- Online submission of complaints/grievances: Citizens can lodge
complaints anonymously on the grievance portal thus helping the department in control and regulation of illegal activities.

- Online returns submission: Manufacturers are filling details of opening stock, production and issuance of liquor on a monthly basis in the system.

**Current Stakeholder Benefits**

- Licensees are being offered e-services for performing key activities like excise duty payment, transport pass generation, returns submission online etc. This has made the process of compliance convenient and transparent for the licensee.
- Citizens are provided with services like online grievance redressal system.
- Better control and regulation: Using the data collected through all the excise modules, business intelligence unit has been instrumental in establishing trends to monitor and regulate liquor movement within the state.

**Implementation coverage**

This project covers all stakeholders in the excise value chain in the state of Maharashtra. The state has a strength of:

- Number of manufacturers: 111
- Number of distilleries: 188
- Number of wholesalers: 455
- Number of retailers: 18,581

**Year-wise wise transaction volumes for various services**

<table>
<thead>
<tr>
<th>Key success indicators</th>
<th>FY 2010-11</th>
<th>FY 2011-12</th>
<th>FY 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (in INR Crore)</td>
<td>5,961</td>
<td>8,621</td>
<td>9,471</td>
</tr>
<tr>
<td>Sales (In bulk litres '000)</td>
<td>7,82,030</td>
<td>7,51,657</td>
<td>8,05,467</td>
</tr>
<tr>
<td>Monitoring of illegal activities (Breach cases)</td>
<td>21,583</td>
<td>30,191</td>
<td>1,30,104</td>
</tr>
<tr>
<td>Excise Duty collection from e-Payment (in % age)</td>
<td>0</td>
<td>29.69%</td>
<td>90.55%</td>
</tr>
<tr>
<td>Total number of computers</td>
<td>0</td>
<td>412</td>
<td>712</td>
</tr>
</tbody>
</table>
2. Efficiency And Improvement Initiatives

Time And Cost efficiency

- Maharashtra State Excise Management System (MSEMS): Availability of MS1–MS9 forms online to be filled by excise officers and manufacturers resulting in a single click accessibility of the information for senior management.
- Maharashtra State Excise Business Intelligence System (MSEBIS): Collating and analysing the requisite data using BI tools for timely strategic decision making
- Maharashtra State Excise Video Conferencing System (MSEVCM): Electronic audit logs of transactions in manufacturing units to control and monitor the movement of liquor resulting in better efficiency.
- Maharashtra State Excise Licensee Tracking System MSELTS: 360 degree profiling of all excise licensees
- Maharashtra State Excise Brand Management System (MSEBMS): 360 degree profiling of all the manufactured and imported brands within the state.

Innovative Ideas Implemented

Free flow of information has been encouraged by adoption of modern communication techniques such as:
- Maharashtra State Excise BI (MSEBIS) to enable data analysis so as to enable proper tracking of performance of various units and better use of resources.
- Maharashtra State Excise Video Conferencing System (MSEVCM) to enable officials to organise online meetings without the need to travel thereby saving time and cost
- Maharashtra State Excise Bulletin Board (MSEBB), an online blog to enable officers to share their ideas, views and queries online and collaborate amongst each other.
- Maharashtra State Excise Texting System (MSETS), a desktop based SMS alert system to enable excise officials to quickly exchange information, especially when urgent uniform message needs to be communicated.
- Maharashtra State Excise Grievance Monitoring System (MSEGMS) is made available for public to communicate their concerns anonymously.
Levels Of Integration

- GRAS (Government Receipt Accounting System): Daily monitoring of real time excise duty collected through challans submitted in the GRAS system of the finance department
- Provisioning to share data with the State Economic Intelligence Unit (EIU) and UID database
- Integration with NSDL (Pan number) and RTO (driving license) for issuing online drinking permits

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

- MSEMS: Revenue, sales, and criminal cases related information used to be captured manually resulting in inconsistency of information. Use of MS1–MS9 forms online has enabled timely collection of required data
- MSELTS: Database of licensees contains entire history of license holder. An advanced search feature allows excise officers to locate licensees as per their criteria.
- MSEBMS: Database of brands establishes a linkage between licensee and the brands registered by him.
- MSEBI: Control over the movement of liquor and generation of revenue are the primary focus areas for the excise department.
- Maharashtra State Excise Duty Payment System (MSEDPS): Real time information about the revenue collected, arrears and payment dues etc. is now available. This has enhanced visibility considerably thereby helping officials take policy decision based on data analytics.

Challenges Faced In Implementing Process Changes

- Zero computerisation to comprehensive transformation of the department
- Resistance to change resulting from the business process reengineering
- Scalability: Providing ICT tools to all manufacturing unit excise officers and field offices
Lessons Learnt From The Process Re-engineering Exercise

- Focus on revenue leakage
- Suggestions can be invited from all quarters
- Adoption of Business Intelligence tools: Unless the power of analytics is adopted, data analysis has limitations. The Excise Department understood this need early in its computerisation and adopted a business intelligence solution from a leading solution provider.
- Training: Periodic training programmes conducted by a system integrator has increased the awareness among officers helping them in using various modules

2. Change Management And Capacity Building

Leadership Support

Commitment from Leadership (Nominee for the project)
The Commissioner was deeply involved in the project since its inception and has personally conceptualised the entire initiative.

On Ground leadership
At the division level, each Divisional Deputy Commissioner (DDC) is in charge of his/her respective division. The DDC has been bestowed with the responsibility of roll out and implementation of the project in his/her division. Each DDC was ably supported by the Superintendent of the district to ensure the timely roll-out of the initiative to all district officers. An elaborate training plan was developed and implemented to train an army of officers at the level of inspectors, sub-inspectors and manufactory officers. A special focus was given on identification of master trainers and inculcating an exhaustive training to these set of individuals who were ultimately responsible for providing future training.

Change Management And Capacity Building Strategy

- Discussion and support from the higher management was obtained and clearly communicated.
- Commissioner held meetings with key licensees to take them on board. And motivated team members and now several senior excise officers have taken the ownership of various modules
Department conducted 11 training programmes for DDC, SP, inspectors, sub inspectors and manufactory officers.

Master trainers from MahaOnline delivered trainings at all 6 divisional offices (Thane, Pune, Kolhapur, Aurangabad, Nashik, and Nagpur).

Trainer from the Directorate of Information Technology gave Lync 2013 training over a video conference. Totally, 551 officers and staff are trained on various application modules.

Project Management

- Project Management Consultant: The department has appointed a global consultancy firm – Ernst & Young LLP – to prepare a DPR, BPR and IT roadmap. Consultants are currently deployed full time at the Excise head office. To assist the department in rolling out various modules and also monitoring the performance of the system integrator.
- System Integrator: Responsibility of development of the system was entrusted with MahaOnline Limited (a joint venture between the government of Maharashtra and Tata Consultancy Services).
- Department Core Committee and Nodal Officers: A Departmental Core Committee, chaired by the Joint Commissioner has been formed to facilitate the implementation of the project.

Financial Model

This project has been funded from the budget made available to the department for the computerisation of its initiatives. This is in line with the e-governance policy of the government of Maharashtra.

Efforts At Sustainability

- Simplicity is the key virtue: The entire system was developed in modular fashion and was flexible enough to accommodate such expansion.
- It pays to have set rules: In the excise department, all processes are defined by law. The software, too, is developed in accordance to the system as defined by law. There is no local variation possible. Hence, the software can be used in all licenses immediately after development and testing. The model is easily scalable to the whole state.
Challenges Faced In Change Management And Capacity Building

- IT Infrastructure at rural areas: The department had to overcome the challenge of lower bandwidth, interrupted Internet connectivity and interrupted power supply at rural areas.
- Capacity Building: Imparting training and capacity building was a major challenge for the department. Staff members were used to the manual way of working. Skill sets required to handle IT systems were limited.

2. Technology

ICT Solution Adopted

Technology used:
- For MahaExcise Web-based modules: Windows server 2012 Operating system Microsoft .Net 4.0 Development environment, MS SQL server 2012 Database IIS 8 2012 Webserver:
- For Business Intelligence: MS SQL Server 2012 database, Share Point 2013, SQL Server reporting services, Performance point services (PPS) and powerview

Compliance With Standards

- All modules are deployed after testing for security compliance; they are developed as per the guidelines mentioned in the e-Governance Policy 2011.
- Excise portal is being redesigned to comply with GIGW, WCAG guidelines.

Technology Related Challenges Faced

- With rapid advancements in technology, the department is keen on keeping the value of the BI system intact in dynamically changing business needs.
- Department is facing difficulty in evaluating the large amount of information collected through various modules.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- Use of Shared Government Infrastructure: Excise department has
decided to extensively use infrastructure built by the Directorate of Information Technology, Government of Maharashtra.

**VALUE INDICATORS**

**Digital Inclusion**

- To ease the acceptance and implementation of e-governance initiatives, the department has developed all modules in a bilingual mode (Marathi and English).

**Green e-Governance**

- **Automation of existing processes (MIS, BI etc.):** With automation of the above process, the department has been able to achieve the primary objective of making the processes simpler. Thus imitating the use of paper because of seamless electronic collection of data. Mapping of licensees has resulted in saving of enormous amount of fuel and time.

- **Modern Communication tools:** Adoption of modern Communication tools vis a vis video conference tool, SMS gateway, blog posts has improved communication among excise officers and reduced the need for use of paper for communication and travel for meetings.

- **Digitisation of Old Records:** Department has finalised a vendor for scanning old records at the head office. As per the estimates, around 13 lakhs pages would be scanned and stored digitally.

- **Maharashtra e-Tendering Portal:** As per the guidelines from the state government, the Excise Department has adopted e-tendering and all tenders are floated through the e-tendering website of the government of Maharashtra. Henceforth no paper based tender will be published for the department.

Online Services: To avoid paperwork and save time and energy of citizens, the Department has launched online premise registration and online drinking permit. Thus the applicant shall receive an email with approved license PDF document.

Dr. Sanjay Mukherjee, IAS, Commissioner of State Excise Department, Maharashtra State Excise Department, Mumbai, Maharashtra, Email: drsanjaymukherjee@yahoo.com
SADM is a web-based software application that allows a scientific assessment of disabilities and is used for issuing of Disability certificates in Maharashtra. The Social Justice Department & Public Health Department felt that lot of people take undue advantage of the benefits reserved for PWD’s (Person with Disability). Hence, it was requested to look into a solution where the Bogus beneficiaries can be weeded out. DIT (Department of IT) took the initiative by taking up the project and by assisting the Departments in implementing the same.

The objective was to bring in transparency and objectiveness in calculation of the Disability percentage by minimizing the subjectivity and discretion element of Doctors during assessment. The objective was also to have a standardized process and format of Disability certificates throughout the state. In this approach, the doctors are instructed to enter only the parameters of the person into the system, following which the software automatically assesses the percentage of disability of that particular individual. Accordingly, a computer-generated disability certificate with a unique ID is issued to the concerned person. Scientific assessment of degree of the disability is done on the basis of methods and formulas prescribed in the Gazette 2001 issued by the Ministry of Social Justice and Empowerment, Govt. of India. During the Registration the photo of the individual is captured through a webcam and all the document proofs are scanned and uploaded.

There are five modules in the software i.e. Visual, Hearing, Physical, Mental Illness and Mental Retardation. The entire Workflow is divided into two parts
a. Patient Registration (After capturing personal details, a unique 13 digit Token id is generated)
b. Doctors Assessment (Certificate generation after entering assessment parameters)
RESULT INDICATORS

1 Key Performance

ICT Based Services

- Scientific assessment of degree of the disability is done on the basis of methods and formulas prescribed in the Gazette 2001 issued by the Ministry of Social Justice and Empowerment, Government of India.
- Generation of a computer based disability certificate with unique ID
- Automatic Rejection Notes for persons whose disability comes out to be less than 40%
- Duplication check: Applicants once registered/issued certificate from one hospital cannot go to other hospital for re-assessment.
- Centralised database of all disabled individuals
- Centralised database of doctors/specialists in the state who are part of any medical board
- Linkage to Aadhaar (UID): On entering UID number, system automatically captures details like photo, name, date of birth, address.
- Transparency and tracking: Name, designation and registration number of medical board is directly captured on the output certificate
- Real time reports. The system maintains the disability data as per various categories (for example, area wise, disability wise etc)

Current Stakeholders Benefits

- As assessment of the degree of the disability is done by the system, the element of subjectivity and discretion is minimal.
- Process has become standardised.
- A person whose disability comes out to be less than 40% gets a Rejection Note automatically, which was not the case before.
- Bogus cases will be weeded out.
- Government and NGOs can avail the data for planning policy making and implementing projects, schemes and benefits.
- The database is hosted in the public domain to enable service providers to reach out to the disabled persons.
Implementation Coverage

More than 37,000 applicants have been registered. 42 Hospitals throughout Maharashtra are using this application. Name, registration number and designation of more than 600 doctors have been maintained.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

**Duplication check:** Previously, if a person was not happy with the disability percentage given in one hospital, he or she would go to some other hospital and get another certificate according to his will. Now, applicants once registered/issued certificate from one hospital cannot go to other hospital for re-assessment. He/She will be flagged. Hence bogus cases will be weeded out.

**Bogus beneficiaries check:** Another challenge for authorities was identification of real persons with disabilities. Previously, anyone could get a disability certificate by other means. Now since the certificate is computer generated, a person whose disability comes out to be less than 40%, automatically gets a Rejection Note.

**Scattered records/ No central repository of PWDs:** Previously it was difficult for authorities to reach the beneficiaries as there was no proper centralised record available at any time. The entire process was manual and the records of every hospital were kept only in the respective hospitals registers. Now, a centralised database of all disabled is maintained. Centralised database of doctors/specialists in the state who are part of any medical board is also maintained.

**Lack of awareness of GOI guidelines:** There was lack of awareness among the medical professionals regarding the use of GOI guidelines for calculation of disability especially for locomotor cases. Most of the time, doctors would ascertain the disability of the person based on their discretion. There was an element of subjectivity involved. Now, scientific assessment of the degree of the disability is done by entering only the parameters for calculation. The element of subjectivity and discretion is minimal.
2. Change Management And Capacity Building Strategy

Management And Capacity Building Strategy

Training of all the doctors was held in Mumbai and Pune for 3 days in November 2012. The pilots were done at Thane Civil Hospital, JJ Hospital, AIIPMR (Haji Ali) and other such hospitals. The user acceptance signoff was taken at Arogya Bhavan (St. George Hospital) by calling specialists, for example, Opthal, ENT surgeons etc, and they certified the respective modules after testing all types of cases.

Financial Model

It is a state government funded project and moreover does not aim to generate profits.

Efforts At Sustainability

   1. Application hosted at Maharashtra State Data Centre
   2. Number of servers/RAM can be easily increased in case it is needed.
   3. Addition of new hospitals, doctors, operators etc can be easily done.
   4. Source code is with the Government of Maharashtra, which can be easily shared with other state/central governments.

3. Technology

   Front end : Java, J2EE, Spring, Hibernate
   Back end : MySQL 5.5.27, .NET4.0
   Web server : JBOSS 7.1
   Operating system : Windows

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DESCRIPTION OF THE PROJECT

The objective of the Project is to provide an overall picture of the web-based Integrated Management Information System, covering the e-Payment of Taxes under VAT, in the Office of the Commissioner of Taxes, Government of Meghalaya at its head quarters as well as in its Circle Offices and Check Gates. The web-based architecture will provide authenticated and authorized access to the central database of the Taxation Department at the NIC State Centre.

E-payment or Electronic Payment of Tax is an additional mode of payment in addition to the conventional method offered by the Taxation Department with SBI to Trading community. This scheme facilitates anytime, anywhere payment and an instant cyber receipt is generated once the transaction is complete. It provides the convenience of making online payment of Taxes through the e-Payment portal of the Taxation department along with the Bank's Internet banking service.

The e-Payment facilities use the core banking/ internet banking feature of the bank along with the Information and Communication Technology tools to transfers the tax amount from the Dealer’s account to the Government account. The service is simple, transparent and is accessible from anywhere. It is also ensure online transaction which is secured and safe.

To facilitate e-Payment, the Taxation Department, Government of Meghalaya had a tie up with NIC and the State Bank of India (SBI) which is the lead bank in Meghalaya. The process involves the integration of the e-payment portal of the department along with the online portal of the SBI.
RESULT INDICATORS

1. Key Performance

2. ICT Based Services And Current Stakeholder Benefits

This service is G2C and G2B in nature where Tax payers registered with Taxation Department are the key beneficiaries. Other agencies like the Finance Department, Treasury, Banks etc which too are involved in the Government Revenue Collection also benefit from the system.

| FY 2012-13 [April to March] | Rs. 835,507,178 |
| FY 2011-12 [April to March] | Rs. 186,889,386 |
| FY 2010-11 [April to March] | Rs. 38,089,108 |

3. Efficiency And Improvement Initiatives

- Service is accessible anytime, anywhere on 24x7 basis.
- On-line filling of Challan form and payment of taxes (No more queues and waiting)
- e-Receipts can be printed once payment is confirmed
- Service is free of charge.
- System is eco-friendly. It uses less paper and help in reducing the consumption of fuel (petrol/diesel) as dealer does not have to travel to the Taxation office and the Bank to make payment.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

For implementation of the e-Payment System, the Finance Department, Government of Meghalaya has adopted a number of measures that will enable Tax Payer to transact government payment online. One such process re-engineered is to make necessary legal change in the Meghalaya VAT Act.
2003 allowing the dealer to pay the Taxes Online. An electronic receipt which is printable from system without the signature of the Tax Officials was introduced. A cyber treasury that compiles and monitors the Government Receipt through internet was set up in the Directorate of Accounts & Treasuries. The Manual Challan Receipt was modified accordingly to conform to the electronic Challan Receipt which is printable by the citizen.

**Challenges Faced In Implementing Process Changes**

There were a number of challenges including acceptance by the citizens. The dealers were not readily accepting the changes as the level of confidence was low in the initial stages. Through a number of sensitization workshops and programmes and interaction with the dealers, confidence was created. After 3 years of operation, the number of dealers who avail the facility has increased manifold.

**The Lessons Learnt From The Process Re-engineering Exercise**

To implement new system, one has to build the confidence of the end users (i.e. the citizens) and this can be achieved by sensitizing the citizen through workshops, training and capacity building and even to the extent of imparting training at the premises of some potential dealers.

**2. Change Management And Capacity Building**

The project is supported by the Taxation Department when it comes to capacity building and sensitization. A number of workshop programmes have been conducted throughout the State to educated the dealers and encourage them to adopt the new system. Necessary legal changes have been made in the Meghalaya VAT Act 2003 to accommodate the e-Payment System.

**Project Management**

The software application is being maintained by NIC Meghalaya with administrative support from the Taxation Department. The Project e-Gov Mission Team (PeMT) has been constituted with members from Taxation Dept. and NIC to monitor the progress of the implementation of the e-Payment System from time to time.
Financial Model

The project is funded by the Taxation Department, Govt. of Meghalaya with technical support from NIC Meghalaya

Challenges Faced In Change Management And Capacity Building

There is a need to encourage more and more people to use the system. As many dealers do not having a bank accounts / internet banking facilities, the state government should make an effort to request the banks and introduce friendly schemes which ordinary citizen can make use and avail the e-service.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

Simplify the interface between the dealers and the Taxation department in Tax Collection System.

3. Technology

ICT Solution Adopted

e-Payment is a web-based application developed and implemented using Java Technologies (jsp, java beans, javascript etc) with Oracle 10g as the backend database and deployed and published in Tomcat web-server. A centralized database architecture has been adopted for implementation where the application and database is hosted at NIC Data centre and the dealers can access the application from internet.

Security And Confidentiality Standards

The system has been audited by the 3rd Party Vendor empanelled by NIC Hqtr. New Delhi and conform to all the security aspects and parameters laid down by Govt. of India.

Disaster Recovery And Service Continuity

The application is being hosted in the State Data Center and the DR site has been identified by the State IT Dept. for replicating the data on day to day basis.
Technology Related Challenges Faced

Upgradation of Oracle database from the present version to the latest version is a challenge in term of cost and hardware compatibility.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Oracle being a secure RDBMS is no compromise when it comes to data security. Java being Open source tool which is supported by various communities is ultimate choice development the front-end interfaces.

VALUE INDICATORS

Digital Inclusion

A large number of dealers from different part of the country are adopting the new system as there is no barrier in language, demographic and Cultural. People are who are used to the conventional payment method readily accepted the system as it is hassle-free. More and more business community are availing the system either through the Chatter Accountants of through the Facilitation Centre which aids them, especially those who do not have the ICT infrastructure in their business premises.

Green e-Governance

The System is eco-friendly system. The dealer does not have to travel to the Tax Offices, Treasuries and Banks to make payment to the Government. In the conventional system, the dealer would have burn large amount of fuel (Petrol/Diesel) to travel to these offices. And one man-day is wasted in making payment transaction however small the transaction may be. The e-Receipts are available in electronic format (soft copy) so, the Government does not have to invest crores of rupees to print the blank challan form.

Timothy Dkhar, Sr. Technical Director & SIO NIC,
Email: sio-megh@nic.in
As one of the activities related to citizen-centric services of the Transport Department, the Government of Meghalaya, launched the scheme for 'online registration of vehicles from car dealers showroom with payment of vehicle registration fees and taxes' in August 2012. This service enables the car dealer to initiate the vehicle registration process by entering all the vehicle and owner details and subsequently, make online payment of vehicle registration fees and road tax using net-banking facility with the State Bank of India (mandatory).

**Procedure for online Registration of Vehicles**

All vehicles purchased from the dealers located in Shillong and which are to be registered in the office of the District Transport Office, Shillong, now have the facility of registration of the vehicle from the dealer's showroom. Activities related to vehicle registration, such as entry of vehicle details, entry of owner details and subsequently online payment of registration fee, hypothecation fee (if any) and road tax is done by the dealer through the net-banking facility with the State Bank of India for all the car owners. An e-receipt is generated by the system along with Form 20 (for vehicle registration). The car dealer will then hand over Form 20, the e-receipt and the sale letter from the company to the owner after which the owner will remit the aforesaid amount to the dealer. It is also required that the owner should present all documents such as vehicle insurance and address proof to the car dealer. On completion of this process, all the relevant documents are to be furnished at the District Transport Office, Shillong during the time of obtaining the Registration Certificate.

DTO Shillong is the first RTO in the country to achieve 100% implementation success where all the car dealers register all the new vehicles, viz., private, commercial, government and even non-transport vehicles.
RESULT INDICATORS

1. Key Performance

ICT Based Services

The services provided are government to citizen and government to government.

Current Stakeholder Benefits

Benefits to the Government
- All the applications are workflow based. This prevents any illegal transaction thus offering better transparency.
- Online services have reduced the footfall and work pressure at the Transport Office.
- Increased revenue generation as no transaction is allowed without payment of fees.
- Efficiency in the system.

Impact on the Citizen:
- The citizen is saved from the agony of making several visits to the RTO; each time standing for several hours in long queues waiting for their turn to make payments or have their vehicle inspected.
- Service delivery to the citizen has improved considerably in terms of time taken and accuracy, since data entry and payment is completed at the showroom. Only verification, approval and registration number generation is now done at the RTO.
- The transport department can access in real time, and monitor the revenue collection and the number of vehicles registered. It has also benefitted the Treasury Department, as it can now verify the figure online for every single transaction

Benefits to the Car Dealers: Car dealers have received a boost in their sales.

Implementation Coverage

The District Transport Office, Shillong, Meghalaya has been selected as the pilot site for implementation of this project. With successful implementation
of this project in the pilot site, this facility will now be extended to other district offices also.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

The citizen need not come to the RTO several times for vehicle registration since the process is now initiated at the showroom itself. Both the citizen and the department staff is relieved of the agony of long queues and huge crowds at the office. This has enhanced cost efficiency for both the department and the car buyer.

Innovative Ideas Implemented

All registration processes such as data entry of the vehicle owner and vehicle details are completed at the showroom itself. Implementation of this scheme has brought about an increased efficiency in the mode of service delivery to the citizen by the Transport Department.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

One of the major ICT plan implemented is payment integration. Payment is integrated through online banking with State Bank of India. All registration fees and road tax are now paid online from the car dealer's showroom. This is directly consolidated at the State Treasury. Prior to implementation of this project, cash payment was to be done at the district transport office.

One of the major non-ICT process re-engineering done is to have the vehicle inspection process by the Motor Vehicle Inspector carried out at the stock yard of the car dealer prior to purchase of the vehicle, instead of the inspection being carried out at the office premises thus reducing the agony of the car buyer.
Challenges Faced In Implementing Process Changes

As is the case with implementation of most new projects, a lot of resistance was felt from car dealers and motor vehicle inspectors.

2. Technology

ICT Solution Adopted

Platform : Web based application
Software : J2EE, Tomcat 6.0.32, PostgreSQL
Database: PostgresSQL as backend database.
Hosting : Tomcat 6.3 web Server with SSL Certificate

Compliance With Standards

Follows the standards prescribed in https://vahan.meg.nic.in/vahan.

Security And Confidentiality Standards

The server has been security audited and the application has all the data encryption for sending secured data to the bank. The encryption is also enabled as per the required standards.

Disaster Recovery And Service Continuity

Proper backups have been scheduled and stored at various places.

Technology Related Challenges Faced

Data replication was a major challenge faced.

VALUE INDICATORS

Digital Inclusion

The application used is in English and as such does not pose any difficulty as the official language of the state is also English.
Green e-Governance

Since the vehicle registration process is done from the car dealer's show room, the office is able to conserve energy towards this. Effort is on to further 'go green' by enabling online submission of Form 20 for vehicle registration from the car dealer to the RTO office.

Timothy Dkhar, Sr. Technical Director & SIO NIC,
Email: sio-megh@nic.in
The cooperative movement in India owes its origin to agriculture and allied sectors. Towards the end of the 19th century, the problems of rural indebtedness and the consequent conditions of farmers created an environment for chit funds and cooperative societies. Farmers generally found the cooperative movement an attractive mechanism for pooling their meagre resources to solve common problems relating to credit, supplies of inputs and marketing of agricultural produce.

e-Cooperatives is an attempt to automate the various functions of the department and citizen services with the help of ICT. The application facilitates G2G and G2G services. It is 24×7 web enabled application, Unicode compliant with various role based logins.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- Society registration – Email and SMS Alert – G2C
- Court cases – G2G
- Establishment – G2G
- Complaints and investigation – G2G
- Monthly progress reports – G2G
- Dissemination of letters/circular – G2G
- Agriculture information – G2G
- IT Budget – G2G
- Reports/dashboard – G2G
Current stakeholder Benefits

- Society registration – Hassle free registration
- Court cases – Fast retrieval of information
- Establishment – Transparency
- Complaints and investigation – Improvement in the quality of services
- Monthly progress reports – Quick and accurate data, postal charges and travelling cost reduced
- Dissemination of letters/circular – Fast info, postal charges and travelling cost reduced
- Agriculture information – Quick and accurate information
- IT budget – Information at a glance
- Reports/dashboard

Implementation Coverage

- Department of cooperation, head office
- 20 sections of the Department of Cooperation Madhya Pradesh
- All 10 divisional offices
- All 50 districts offices

Year-wise wise transaction volumes for various services [For Apr to Mar 2012-15, 2011-12, 2010-11, subject to the project being operational during this period]

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49,469</td>
<td>25,208</td>
<td>15,302</td>
</tr>
</tbody>
</table>

1. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Online society registration facilitates the citizen to avoid frequent visit to the offices and in turn saves time and money

Dissemination of departmental letters/circulars – SMS alerts

Instantly disseminates important information throughout the state, saves money and time in fax/post/telephone etc.
Monthly progress reports
- Paperless
- Time saving
- Information at a glance

Innovative Ideas Implemented

Selective dissemination facility of notice/circular through HQ with SMS alert

Levels Of Integration

- Integration with the computerised PDS system (future enhancement)
- Integration with the Agriculture Department system (future enhancement)
- Integration with payment gateway (future enhancement)

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Online society registration changes the frontend process
Online society registration provides time saving and paperless instant service to the citizen. Thus the citizen need not approach the office.

Online society registration changes the backend process
Manually, society registration requires documentation, communication channels (telephonic, post etc.) and record keeping (register entries). All of these are eliminated by online society registration.

Establishment
Employee detail is online and they find all information in one place, for example, service records, confidential reports, immoveable property details, promotions, transfers, notice, service verification.

Society Functionality
Society election detail, audit detail, inspection report, liquidation,
revival, deregistration, custom hiring centres, all type of information is computerised.

**Procurement**
Agriculture inputs, fertilizer, seed, culture

**IT Budget**
The IT section budget is computerised and now there is no need for record keeping. All information is available at one place and accurate results can be obtained.

**Monthly Progress Reports**
All information related to societies, budget, video-conferencing, establishment, public grievance, Vidhansabha, notice board etc. All are available at a single click in a proper manner and in statistical view.

**Dissemination of departmental letters/circulars**
An sms alert is sent when any new circular or notice is published by the department.

**Challenges Faced In Implementing Process Changes**

- Communication gap
- Data is unstructured
- Time consumption to study cooperative domain
- Several modes of operations (head office, division office, district office)
- Unwillingness of the user to change the system
- Delay in information gathering and dissemination
- Less computer savvy staff
- No transparency in the system
- Inconsistency in the data

**Lessons Learnt From The Process Re-Engineering Exercise**

- Always study functionality in both manners - top-to-bottom and bottom-to-top
- Make a number of meetings with clients
- User involvement during development
- Explain process reengineering benefits to the user
2. Change Management And Capacity Building

Leadership Support

Various levels of training organised on the basis of their understanding level

Change Management And Capacity Building Strategy

The capacity building programme organised time to time by categorising the users

Project Management

Monitoring is done by the IT Cell.

Financial Model

Managed by the department

Challenges Faced In Change Management And Capacity Building

Difficult to train old staff

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Staff should be categorised by their level of knowledge
- Proper monitoring by the department

3. Technology

ICT Solution Adopted

- Prototype model had been adopted
- The system is 24×7 web enabled.
- Technology MS SQL Server 2008 R2
- ASP.NET 2.0
- JavaScript
- CSS
- DHTML
- Jquery
Disaster Recovery And Service Continuity

DR Data Centre Hyderabad, India

Technology Related Challenges Faced

- Integration with other systems
- Technology migration issues

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Technology providers should be the same

VALUE INDICATORS

Digital Inclusion

Unicode compliant system

Green e-Governance

- Paperless dissemination of departmental letters /circulars using application.
- SMS alert to the user through SMS gateway does not require telephonic or postal services
- Paperless monthly progress reports
- Paperless record keeping
- No need of conveyance for new society registration; online registration system can be used

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Financial Transparency and Accountability are important aspects of Financial Reforms initiated by the Government of Madhya Pradesh. Accordingly, tracking of audit compliances is one of the most important monitorable indicators of performance of scheme. Various types of Audits such as CAG Audit, LFA, Chartered Accountant Audit, Departmental Audit, and Concurrent Audit by CA etc. are on board to check the financial performance. For achieving this tune of work, Madhya Pradesh State Employment Guarantee Council, under P&RD Department has developed web enabled software for online monitoring of Audit and Financial Management. This software is a humble step for tracking the sanctity of audit procedure as a whole. The same has been welcomed by MoPR, GoI, New Delhi.

This initiative [URL: http://www.nregs-mp.org/MGNREGS_ldms/SelectModule.aspx] is implemented in all the 50 districts along with implementing agencies of MGNREGS-MP.

The software ignites the spirit of public money accountability and as the Audit issues consist of the scheme and its implementation aspects, this software projects deep inside in whole of the affair, which is analysed, designed and developed at the council level. Vide its DO. No. M-11013/14/2007-trg/P&J (Vol V) dated 2nd March 2012 of Joint Secretary, MoPR, Government of India expressed its welcome for the Audit Software and intended the same to adopt as per demand of other states. MoRD has also consented a space for the linkage of this software from its GoI portal.

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a legislation passed by the Indian Parliament guaranteeing 100 days wage employment and is an employment generating and poverty eradication ambitions scheme. The Audit and electronic fund management [e-FMS] envisaged in this e-Governance initiative act as a bridging tool to MGNREGS and financial inclusion.
1. RESULT INDICATORS

**ICT Based Services**

- The concept of “e-audit” compliance
- Proactive information of audit on public domain with the spirit of RTI.
- Transparency and Accountability of “audit”
- Government-Citizenship relationship for “audit” issues.
- Quickly locates transaction errors, detects irregularities, and maintains compliance with accounting and financial propriety
- Quickly creates an audit trail that allows tracing the history of auditors, objections, transaction, etc.
- Financial year wise different type of reports can be generated through software and planning of future budgeting can be done

**Current Stakeholders Benefits**

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Before the implementation of the initiative</th>
<th>After the implementation of the initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key performance indicators</strong></td>
<td>No facility to maintain G2G, G2C and G2B relationship on public domain</td>
<td>G2G, G2C and G2B relationship is maintained and that too on public domain</td>
</tr>
<tr>
<td>Nature wise analysis of audit objections was not possible.</td>
<td>Tabular analysis of different types of audit objections is possible.</td>
<td></td>
</tr>
<tr>
<td>Tiring job to compile financial year wise different types of audit reports.</td>
<td>Financial year wise different type of reports can be generated through software and planning of future budgeting can be done</td>
<td></td>
</tr>
<tr>
<td>A lot of paperwork was required.</td>
<td>Has reduced the paper work, correspondence and telephonic expenses and undue human interventions</td>
<td></td>
</tr>
<tr>
<td>Confusion while planning and decision making for next year projections.</td>
<td>Better planning and decision making system</td>
<td></td>
</tr>
<tr>
<td>More irregularities in payments</td>
<td>Reduced irregularities while making payments</td>
<td></td>
</tr>
<tr>
<td>Heap of complaints regarding audit issues.</td>
<td>Reduction of complaints regarding audits.</td>
<td></td>
</tr>
</tbody>
</table>
Implementation Coverage

This initiative has implemented in 50 districts of Madhya Pradesh. 24000 Agencies including PRIs.

1. Efficiency And Improvement Initiatives

Time and Cost Efficiency

- Has reduced the paper work, correspondence and telephonic expenses and undue human interventions
- Financial Year wise different type of reports can be generated through software and planning of future budgeting can be done.

Innovative Practices

Till now there was no online audit para tracking system in MGNREGA comprising all the different types of audits. This software can provide a platform for interaction between different auditee and auditors as well.

Levels Of Integration

- The Government of Madhya Pradesh has adopted concurrent auditing of NREGA, a pioneer step for auditing. The heavy volume of concurrent auditing will also be captured and shall also be sustainable on the same platform of software.
- The software can be re-engineered in “open source technology” and can be given to other organisations of state, if they desire.
ENABLER INDICATORS

1. Process Re-Engineering

**Major ICT And Non-ICT Changes**

1. The auditing software helps quickly in locating transaction errors, detects irregularities, and maintains compliance with accounting and financial propriety that was not possible in pre project mode.
2. Quickly creates an audit trail that allows in tracing the history of auditors, objections, transaction, etc. that was not possible in pre project mode.
3. Managers are able to monitor quickly the entire audit process and a copy of every type of audit can be saved. Knowing which, the feed entry in the software from different levels can be viewed and monitored, that was not possible in pre project mode.
4. Auditing software provides automated processes on financial data to locate and identify potential errors or instances of handling of Govt. transaction money etc, was not possible in pre project mode.
5. Auditing software includes sophisticated security with password protection and role-based access to ensure that data remains secure, was not possible in pre project mode.
6. Has reduced the paper work, correspondence and telephonic expenses and undue human interventions, that was not possible in pre project mode.

2. Change Management And Capacity Building

**Project Management**

A full-time programme management team is in place

**Financial Model**

The Centre and the State share the financial burden

3. Technology

The entire application is developed in an N-tier architecture where front end is made in ASP.net using C#. In the backend, SQL server is used as database with all its different objects/utilities for developing the application and
The audit and financial management system has undergone security audit and has cleared all the levels of web enabled security audit done by an empanelled company of NIC. Disaster recovery, service continuity and the level of compliance is done by maintaining the backup of the database.

**VALUE INDICATORS**

**Digital Inclusion**

The e-governance system developed can be fed in and viewed in bilingual language, i.e., Hindi and English. The software is versed with conversion tool, which can easily be operated online for conversion of language.

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Comprehensive service delivery is the basic objective of any government. Even after various acts and rules have been enacted in this regard, monitoring of service delivery is the key issue for measuring performance. In order to monitor the time bound delivery of services, the e-SLA monitoring system was developed.

Before the implementation of the system, citizens had to face many problems to avail public services, for example, delay in delivery of services, lack of any mechanism for status tracking, uncertainty about the delivery of services, lack of awareness about the process, many visits to government offices, wastage of time and money of citizen, cumbersome departmental processes, non-value adding steps in processing etc.

The e-SLA monitoring system was implemented in 2011 with 32 services of 14 departments/organisations. The objectives of the system are as follows:

1. Effective implementation of the Delhi Right of Citizen to Time Bound Delivery of Services Act, 2011
2. To streamline service delivery by developing an adequate service delivery monitoring mechanism
3. To encourage an attitudinal change among service providers by providing them with adequate human, infrastructural support and incentives.
4. To empower citizens by creating various tools for making service delivery procedures citizen friendly.

1. Key Performance

ICT based services

Currently, 116 services of 24 departments are covered under the e-SLA
monitoring mechanism. The list of 116 services covered under the system is available on www.delhi.gov.in. These services include the major public services, for example, water connection, birth and death certificate, electricity connection, driving licenses, registration of vehicles, income certificate, ration card and other welfare schemes. These pertain to citizens and businesses.

**Impact on the government:** The e-SLA monitoring software has facilitated the development of a centralised platform that defines various departments' responsibilities and encourages efficient and time bound delivery of services. This online monitoring system easily generates various reports and evaluations which empowers department officials and other higher authorities to keep a check on the functioning of their respective departments and their compliance to a vital public legislation. Most importantly, e-SLA reflects a strong administrative will to better service delivery processes and is driving public service delivery towards becoming responsive to citizens' needs. e-SLA is creating a transparent and accountable government. Central monitoring software makes it possible to compare performances of various departments by making data readily available. It is assisting in process reengineering by making redundancies in service delivery easily identifiable.

**Impact on citizens:** Through e-SLA, citizens have been empowered to enjoy their right to timely service. It is an easy to use and access web based application that citizens can use for tracking their application status. By presenting an online interface, the e-SLA software is saving citizens' time which is otherwise spent on visiting concerned departments time and again to check the progress of their application status. Now citizens can simply log in and track their service application to several departments at a single point.

**Current Stakeholder Benefits**

**i. Reduced time for application disposal:** There is a major reduction in time taken by departments to dispose or process the applications. For example, the average numbers of days taken to issue Domicile Certificate in last two years are shown below:

- Year 2011 – 49 days
- Year 2012 – 20 days

**ii. Reduction in Pendency:** Percentage of active applications pending with departments has also reduced drastically.
Percentage of Applications disposed beyond time limit in Revenue Department

- Year 2010 – 47%
- Year 2011 – 27%
- Year 2012 – 5%

iii. Miscellaneous indicators: MDI, Gurgaon had conducted an impact assessment survey. It found that the number of visits of citizens to government offices have reduced from 4 (before implementation of the system) to 2 (after implementation). This had led to substantial saving in travel time and associated costs.

Implementation Coverage

The entire Delhi is covered under the service delivery mechanism. All citizens can access the web portal www.esla.delhi.gov.in and check the status of their application disposal with their unique application id. A total of 64 lakhs applications related to 116 services of 24 departments have been received and monitored.

2. Efficiency And Improvement Initiatives

Indicators of efficiency (as mentioned by MDI in its study) are mentioned below:

<table>
<thead>
<tr>
<th>Prior to implementation</th>
<th>After implementation</th>
<th>S.N.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency of service delivery</td>
<td>1.98</td>
<td>a)</td>
</tr>
<tr>
<td>Compliance to committed time framework to deliver services</td>
<td>3.89</td>
<td></td>
</tr>
<tr>
<td>Mechanism for problem resolution and exception handling</td>
<td>2.04</td>
<td>b)</td>
</tr>
<tr>
<td>The delivery time of service is predictable</td>
<td>3.82</td>
<td></td>
</tr>
<tr>
<td>1.83</td>
<td>3.68</td>
<td>c)</td>
</tr>
</tbody>
</table>

Cost benefit is estimated as under:-
- Reduction in number of visits = 2
- Total number of applications received = 64 lakhs
- Time spent for each visit = 3 hours
- Average wage per hour = Rs.50
- Savings per application = 2×3×50 = Rs.300
- Total savings for citizens = 64 lakhs × Rs.300 = Rs. 192 crores
**Innovative Ideas Implemented**

A centralised monitoring mechanism based on inter-operable e-SLA system capturing transaction dates for all notified re-engineered services of different departments. It has proved a big deterrent for inefficiencies in service delivery.

**Levels Of Integration**

e-SLA system is a system of systems wherein systems are departmental systems. It is inter-operable and loosely coupled with departmental systems by leveraging the communication system. Data is shared on a centralised system in a fixed format/semantics.

**ENABLER INDICATORS**

1. **Process Re-Engineering**

   Process re-engineering was carried out in each department. Departments were asked to define the service time and document the same. They were not forced to define the duration of services. However, the workflow was examined for cutting down non-value added processes. Redundant activities were identified.

   While developing the e-SLA monitoring system, the crucial factor was to monitor delays in service delivery. Hence a very simple software was designed to capture data regarding those components of service delivery that are able to reflect any sort of delay in service provision. These components include applicants name and address, application in date and out-date.

**Challenges Faced In Implementing Process Changes**

The roll out of the e-SLA system was not a huge task technologically since the IT infrastructure required was already in place. However, the challenges pertained to (i) initial bureaucratic resistance, (ii) multiplicity of authorities leading to difficulties in bringing departments on board, (iii) the process of data integration from the localised software to the central software and (iv) shortage of officers.
Lessons Learnt From The Process Re-Engineering Exercise

(i) Bureaucratic resistance can be overcome by showing the benefits of the proposed change to the government servants
(ii) Open end technology can make the process change sustainable, scalable and interoperable
(iii) Good change management strategies are necessary for successful process change and
(iv) Departmental automation is not a pre-requisite of a good monitoring system

2. Change Management And Capacity Building

Leadership Support

Top leadership has always offered due support to this project, for example, (i) passing of legislation for sustainability, (ii) taking the initiative to the public through the public participation programme of the Hon’ble Chief Minister of Delhi, (iii) special interest of the Chief Secretary Delhi in convincing departments to integrate their services on e-SLA.

Management And Capacity Building Strategy

In order to bring various departments on board, high level meetings are held with senior officials to convince them about the need to be a part of the e-SLA system. Once departments give their consent and show a degree of preparedness, sensitisation programmes and technical sessions are conducted to familiarise the concerned department with the e-SLA software, its requirements and its operation. Each department’s technical team is explained the complete process of data integration.

The software is very easy to operate and hence departments are easily able to learn the process of data integration. Since many departments are now a part of the monitoring system, other departments are able to replicate it easily as they have many precedents. For any sort of trouble shooting, departments can contact the Department of IT which provides them with constant assistance. If need be, NIC is contacted to advise and train concerned departments. In order to sensitise citizens about their entitlements under the Delhi RTS Act and their ability to track the status of their applications online, various publicity mediums were used.
Advertisements were posted on the radio, newspapers and magazines and on bus queue shelters.

**Financial Model**

Since the system leverages Delhi’s existing IT infrastructure, it did not require any major investment for its technological components. Costs incurred relate mainly to human resources and training.

**Efforts At Sustainability**

The notification of an enabling act and rules thereunder have provided a legal basis for sustainability of this e-governance initiative. The Chief Secretary personally reviews the inclusion of services under the act for time bound delivery and monitors the disposal/delay of the application in respect of services already notified. This initiative is not dependent upon any private system integrator. Implementation through NIC has ensured continuous support over the long run. Data centre facilities are provided by NICSi which takes care of the hardware related aspects over the long run.

**Lessons Learnt From Change Management And Capacity Building Exercise[s]**

i. Change is inevitable and government servants can be persuaded to usher in change by convincing them that change is in their interests.

ii. Culture of service delivery can be brought about without enforcing penal mechanism.

iii. Change in attitude is more important than procurement of infrastructure etc.

iv. Technology can be a great enabler and force multiplier.

v. Leadership support is a sine qua non for providing direction for any initiative.

vi. Strategy for change management and capacity building should be prepared in detail before launching any change management programme.

**3. Technology**

**ICT Solution Adopted**

The e-SLA software utilizes SQL server at the front end and a Dot Net
framework at the back end. It is hosted on GNCTD's server at www.delserv.nic.in.

Connectivity to departments is through DSWAN. Branch offices of some departments do not have integration with central software. In such cases, they were given the facility of uploading the daily status through Excel files. Every day when departments receive applications for service delivery, they upload the application details on their internal/localised software. Every department under the SLA's are given a login ID and password, which they use to transfer relevant data required for monitoring from their internal software to the central e SLA monitoring software hosted at www.delserv.nic.in.

Some departments use an automatic scheduler to push data to the central software daily at a fixed time. When the data is pushed to the central software, it is placed in a transit area. A synchronizer at the central software level takes this data every evening after 11:30 PM, checks it for repetition and inconsistencies and then places it in a fixed table format. The data from this table is used to generate detailed reports about the status of service applications in various departments.

The data centre of NICSI is utilised for various e-governance applications. All standards, security aspects, disaster recovery issues and service continuity issues are handled through NICSI.

**Technology Related Challenges Faced**

Infrastructure was not a major issue in implementing the system. However, the clerical level staff had to be educated for effectively utilising the software for data upload. Senior officers had to be persuaded to monitor the status of disposal of the applications in the departments through the web enabled software. Citizens were educated about the use of the monitoring mechanism at www.esla.delhi.gov.in through Bhagidari workshops, advertisement campaigns and video films.

**Lessons Learnt From Technology Choices And Implementation Strategy Adopted**

(i) Open end technology can make the process change sustainable, scalable and interoperable

(ii) Procurement of costly ICT infrastructure is a not a pre-requisite for e-governance initiatives
(iii) Proper training and awareness is a must for successful implementation of e-governance initiatives
(iv) Departmental automation is not a pre-requisite of a good monitoring system

VALUE INDICATORS

1. Digital Inclusion

The literacy rate is very high in Delhi and the problem of digital inclusion is not significant. However, help desks were set up in all departments to facilitate filling up of forms by applicants. Information Boards were also displayed at prominent places in all departments. Advertisement campaigns through media were carried out to educate citizens about the rights and procedures involved. Video films were prepared for guidance of the citizens.

Mobile based monitoring of application status has been introduced for some services as all citizens do not have access to internet. The process involved in monitoring the application status through mobile devices was also explained in advertisements issued in various newspapers.

2. Green e-Governance

Centralised database management has ensured that individual departments are not required to procure servers or other costly equipment for this e-governance initiative. The data centre at NICSI was utilised. This also ensured that the best green practices adopted by NICSI are followed. There is minimal paper consumption as concerned departments upload the daily updates of data from their respective computers connected through DSWAN. Even those departments, who do not have broadband access in some of their branches, upload their data through nearby cyber cafes etc. In no case is data obtained in physical (paper) format. All senior officers have user IDs and passwords to monitor the status of applications received and disposed, i.e., no print outs are generated. The Chief Secretary reviews the progress in monthly Head of Departments meetings and no print out of the minutes are prepared; these are sent by emails.

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Revenue Management System - Delhi Jal Board, New Delhi

B. S. Jaglan

DESCRIPTION OF THE PROJECT

The Delhi Jal Board of the Government of National Capital Territory (NCT) Delhi is entrusted with the responsibility of procurement and distribution of water and treatment and disposal of sewerage in Delhi.

For effective management of the water supply and sewerage in the NCT of Delhi, the Delhi Government reconstituted the Delhi Water Supply and Sewerage Disposal undertaking into the Delhi Jal Board (DJB). Delhi Water Supply and Sewage Disposal undertaking was a part of the Municipal Corporation of Delhi (‘MCD’) till 1998, when it was reconstituted by Delhi government as the Delhi Jal Board (DJB). DJB is responsible for water resources management, monitoring the pollution of water and the treatment and supply of potable water. Wastewater collection, conveyance, treatment and disposal facilities are also the responsibility of DJB. It is responsible for all the above services in the Municipal Corporation of Delhi (MCD) area. Further, in case of NDMC and Delhi Cantonment Board areas, DJB provides bulk water supply and collect share cost of water and share cost of sewerage.

The headquarters of DJB is located at Varunalaya Phase II, Jhandewalan, Delhi - 110005. Its annual revenue from water supplies is around Rs. 1000 Crores and is collected by the Revenue Department through its network of field offices spread throughout Delhi. The present level of water supply is around 800 MGD and DJB makes available supplies of piped water through more than 20 lakh connections. As of date, DJB serves around 20 lakh consumers in the Delhi region. Billing of the consumers for the water supply is based on a defined tariff. The billing cycle varies from one month in case of bulk consumers e.g. large industrial & two to three months in case of non-bulk consumers. On an average DJB generates about 1 Crore water charges bills in a year, against consumers under different categories namely domestic, commercial and industrial. The expansion of billing network is taking place at around 45,000 connections per year which is expected to go further higher in the years to come.
The Revenue Department at DJB is responsible to ensure that revenue is collected for all the water generated and supplied by DJB. For the purpose of revenue collection the MCD area is divided over 35 zones, and zonal office is the smallest revenue unit.

The main responsibilities of the department are:

- Installing water and sewerage connections
- Ensuring all water being supplied is metered and billed
- Revenue collections from the consumers in Delhi - Collection of water / sewerage charges from its consumers
- Enhancing of consumer base in the city and maintaining the database of existing consumers
- Disconnection and Regularization of water connections
- Metering including Meter Management
- Grievance Redressal (for grievances related to Revenue Department)

DJB Challenges:
The objectives of implementing a revenue management system at DJB are:

- To deliver services at consumer's doorstep
- To increase billing and collections efficiency by using state-of-the-art technology
- To widen the coverage of billing and collection
- To augment revenues by reducing 'metre to bill' and 'bill to cash cycles'
- To ensure the timely completion of the billing as per DJB's billing cycle (i.e., monthly for bulk consumers and bi-monthly for domestic consumers)
- To support decision-making by making information and knowledge readily available and accessible
- To empower employees with necessary information so as to inculcate service and customer orientation
- To ensure cost-effectiveness of IT interventions so as to achieve optimal return of investment
- To ensure the enhancing of consumer base in the city and maintain the database.
- To generate MIS reports for the management for better monitoring and decision making.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- 24x7 services for consumers through e-portal (new connection, disconnection, re-opening, mutation etc)
- Spot billing and collection at consumer doorstep through handheld application
- New modes of collection introduced – net banking, credit cards, debit cards and e-kiosks
- Interfaces built with several collection agencies to reduce consumer rush at cash counters
- SMS alerts for consumers (for due date, bill amount etc)
- Customer care for voice and non-voice grievances
Current Stakeholder Benefits

Consumer: Online new connection, online mutation, reopening, disconnection, multiple payment options including 24x7 online payment facility, billing, online bill view, grievance logging and status tracking, SMS alert at all important events such as bill generation and payment etc.

DJB employee: System based process handling, real time integration of processes, detailed overview of consumer financial transactions, metre replacement and billing, data collection from field and support etc.

DJB management: 360 degree view of the system through MIS reporting covering detailed analysis of demand generated / collection / pending dues, process tracking at each level, meeting revenue targets, strategy planning

Delhi Government: Integration with e-SLA for 100% transparency in processes, MIS reporting for implementing new schemes for consumer welfare, implementation of various citizen schemes (rebate scheme) etc.

Implementation Coverage

<table>
<thead>
<tr>
<th>Bills generated</th>
<th>Payment Collected (No. of counts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Year 2012-13 – 4,249,619</td>
<td>Through DJB Counter</td>
</tr>
<tr>
<td>Financial Year 2013-14 – 3,405,679</td>
<td>Financial Year 2012-13 – 856,035</td>
</tr>
<tr>
<td>(up to 11 Sept.2013)</td>
<td>Financial Year 2013-14 – 759,940</td>
</tr>
<tr>
<td></td>
<td>(up to 11 Sept.2013)</td>
</tr>
<tr>
<td>New Consumers Acquired – 58,834</td>
<td>Online</td>
</tr>
<tr>
<td>Financial Year 2012-13 - 21400</td>
<td>Financial Year 2012-13 - 84,827</td>
</tr>
<tr>
<td>Financial Year 2013-14 – 37,434</td>
<td>Financial Year 2013-14 - 127,073</td>
</tr>
<tr>
<td>(up to 11 Sept.2013)</td>
<td>(up to 11 Sept.2013)</td>
</tr>
<tr>
<td>Total no of hits on RMS Citizen Portal</td>
<td>3rd Party Agencies (Banks, Jeevan, E-Kiosk)</td>
</tr>
<tr>
<td>Financial Year 2012-13 – 5,704,584</td>
<td>Financial Year 2012-13 – 1,355,820</td>
</tr>
<tr>
<td>Financial Year 2013-14 – 6,396,567</td>
<td>Financial Year 2013-14 – 802,054</td>
</tr>
<tr>
<td>(up to 11 Sept.2013)</td>
<td>(up to 11 Sept.2013)</td>
</tr>
</tbody>
</table>

1. Efficiency and Improvement Initiatives

Benefits to citizen:
- Online services for new connection, mutation, disconnection etc.
- Online bill view facility
- Online payment facility
- More payment outlets
• More accurate billing
• More frequent billing

Benefits to DJB and State Government
• Reduction in number of complaints
• Better business intelligence
• Unified process across zones
• Increase in revenue

Innovative Ideas Implemented

• Real time integration of hand held devices to reduce meter to bill and bill to cash cycle
• Customer realignment to enhance the billing efficiency of the system
• Two factor authentication for all users to ensure high security

Levels Of Integration

• Integration with payment gateway
• Integration with SMS gateway
• Integration with e-mail server
• Integration with external banks
• Integration with kiosk

ENABLER INDICATORS

1. Process Re-Engineering

A wide range of functions including new connection, mutation to billing, collection and reconciliation were the subject of process reengineering undertaken.

2. Change Management And Capacity Building

Leadership Support

Comprehensive change management and capacity building plan was chalked out in discussions with Director Revenue, zonal revenue officers and leadership team (Member Finance and CEO). Necessary approvals
were provided by the leadership team for arranging necessary infrastructure in terms of conference room, PCs, projector, hand-outs and refreshments etc.

Change Management And Capacity Building Strategy

Over 500 officials were nominated and trained on new processes and technology in class-rooms followed by Hands-on sessions. Adequate hand holding support ensured in the initial phases so that end users would be comfortable in day-to-day functions using new RMS system.

Project Management

The project management team comprised of senior officials of DJB (client organisation) and Tata Consultancy Services (implementation partner) who provides end to end services for the entire duration of the project (six years). Participants were asked to fill up feedback forms which covered all important aspects of change management workshops. Measurements were taken at regular intervals to improve upon and adopt refinements as required.

Financial Model

Fixed cost project

Efforts At Sustainability

a. Audit and periodic reviews are undertaken at regular intervals. Besides, DJB had appointed E&Y as a part time consultant who is reviewing project deliverables and progress on a periodic basis. All technical validations are facilitated by the project consultant apart from the implementation partner who has very stringent quality checks and reviews in place to ensure CMM compliance.

b. Replacements of staff getting transferred to other departments or retired are also being trained at regular intervals.

c. Also, there are social programmes being organised with help from RAWs (such as Bhagidari) to educate citizens appropriately and address their grievances and issues on the spot.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

Trained manpower move on to different departments or leave organisation due to retirement so there is a continuous need for workshops. Refresher courses are necessary after few months to reinforce concepts.

3. Technology

ICT Solution Adopted

- State-of-the-art utilities solution from Oracle, Weblogic portal, two factor authentications
- 100 % Compliance of the technology adopted with e-government standards notified / recommended by the GOI
- Security standards followed as per the guidelines of STQC
- State-of-the-art data centre located in different geography for business continuity
- Payment gateway services
- SMS gateway services

Technology Related Challenges Faced

- Real time connectivity with RMS servers as some partners or collection agencies are not so technologically advanced.
- Finding the appropriate hand held device as per the specifications floated in RFP because of fast technological advancement
- Unavailability of non-relational data from the legacy system for migration to relational database

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Given the size and scale of the DJB organisation (35 locations) and breadth of RMS functions, big bang approach was perceived as a risk and implementation strategy was tweaked to gradually add new components so that end users get enough time to adapt to the new system.
VALUE INDICATORS

Digital Inclusion

RMS services are accessible to consumers from all walks of life. One needs just basic facilities such as PC with a browser and internet connection. Those who do not have internet connection can also walk into DJB offices, e-kiosks and Jeevan centres to avail RMS services. Some RMS services can also be initiated/tracked through the phone.

Green e-Governance

- Two crore pages pertaining to water connection files of consumers digitised and uploaded to document repository
- Application forms (such as new connection, mutation etc) are being filled online
- Complaints are also being taken online and/or over phone and thus, paper consumption is reduced
- Bills can be sent through emails to reduce paper/stationery requirement
- Bills and payment receipts can be saved on computers rather than printing
- Approval workflow automated within DJB offices so as to minimise file movement and stationery requirements
- MIS available at the click of mouse so there is no need to print and preserve reports/outputs

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Within a portfolio of 1,500 Higher secondary and Junior colleges, the students faced lot of problems in college starting from admission to examination to placement. There are over 200,000 matriculates who seek admission to these 1500 colleges in the state. The admission process comprises of five stages namely (1) Application Stage (2) Processing Stage (3) Intimation Stage (4) Admission Stage (5) Administration Stage. Each of these stages included a lot of printing material, huge volumed manually entered data, more than 3 times to-fro travelling of parents and students, enormous consumption of time, cost and resources and last but not the least meagre transparency and reliability. In such a bleak scenario, it was thought that something should be done to improve the services provided to the students. SAMS is one of the outcomes of such thinking.

Student academic management system (SAMS) is an integrated academic management system and comprehensive tool for students / parents, administrators at colleges and government as well, to overcome the challenges in the process of college admissions and post-admission processes. It has two parts - e-Admission and e-Administration. The former provides a transparent, flawless and uniform platform for college admissions consuming lesser time while the former brings forth several services to students in the colleges post-admissions. The system was launched on October 12, 2008.

Objectives of the Project
- Ensure single window system for admission through e- Admission process.
- Make the admission process economical for the applicants / parents.
- Reduce anxiety among applicants / parents regarding selection by making the admission process (from application to admission) transparent.
- Reduce the work load of colleges by developing several modules of administration using the database of admission process and thereby improve services to the students.
RESULT INDICATORS

1. Key Performance

ICT Based Services

Services that are currently being delivered using ICT can be categorised as government to citizens/employess/students. They are explained as under:

- Single platform for students to apply (common admission calendar with common application form (CAF) and common prospectus (CP)) in multiple colleges and stream from any location
- Five unique modes of sending intimation of selection
- A formidable database of students and colleges alike to utilise for student and parent empowerment with the broader goal of enhancing quality of education
- Fully automated and transparent pre- and post-admission process
- Real-time information dissemination to all stakeholders
- Standardised admission/academic routine for all colleges
- e-Admission helpline with 155335 as toll free number to provide information to the students/parents and even college personnel

Current Stakeholder Benefits

- Decrease in delivery time for admission process (students)
- Improvement in delivery of service; use of 5 modes of receiving intimation of selection has reduced anxiety and uncertainty for students/parents (students)
- CAF reduced the cost of application and the need to travel to several colleges (students)
- Pressure on college authorities to admit ineligible applicants was totally eliminated (teachers)
- Workload of college functionaries reduced drastically due to the use of IT in both admission and academic administration processes (teachers)
- SAMS ensured the start of academic session for all government and private colleges in a fixed date (all stakeholders)
- Availability of SAMS database helped government. in planning for new colleges and courses (government)
- The aforementioned database enabled the government to discern fake colleges (government)
Implementation Coverage

SAMS has a comprehensive reach across the entire state of Odisha. Its gamut covers all the junior colleges numbering 1303 located in 30 districts of the state covering all subdivisions (58) and about 100 other block HQs. It also includes 680 degree colleges of the state for +3 admissions and 1400 junior colleges for +2 admissions.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Decrease in delivery time for admission processes:
Timely completion of the e-Admission exercise according to the government fixed timeline of 8 weeks from publication for SAMS colleges have been ensured in the last three years.

Improvement in delivery of services
Use of five modes of receiving intimation of selection has reduced anxiety & uncertainty for students/parents. There is better beneficiary feedback with no major complaints.

Innovative Ideas Implemented

One of the key ingredients for the successful implementation of SAMS was the development of a unique 8 digit code for each college. This code was based on geographic location, source of funding and the type of college. The common application form (CAF) and common prospectus (CP) are also innovative ideas which serve as a single source of admission for applying to various colleges and as a source of administration information which can be accessed by the general public.
Levels Of Integration

- The common admission form (CAF) was also used in the Odisha Staff Selection Committee e-Recruitment application software.
- Result database of different colleges are integrated with SAMS.
- A way forward can be one time upload of caste certificate, sport certificate or any certificate in the SAMS database by the student so that all concerned colleges can refer to it whenever needed.

ENABLER INDICATORS

1. Process R-Engineering

Major ICT And Non-ICT Changes

- Earlier all individual colleges had their own form and prospectus and also their own intimation process. The project ensured that a standardised format could be used for all forms and prospectus irrespective of the college ensuring that information from different colleges could be consolidated without much difficulty. The students did not have to buy 5 forms for 5 different colleges any longer.
- Centralised merit list removed confusion over selection and also simplified the entire admission process to a great extent
- The intimation to the students was done in five ways:
  - e-mail
  - website
  - SMS
  - college notice board
  - Sanjog helpline
- The intimation process was made instantaneous through the use of ICT solution and also cancelled any kind of erroneous delivery of information
- Earlier, the date of admission/selection/result declaration was not fixed resulting in sleepless nights for the students and guardians. The ICT solution provided ensured that the date of admission/selection/result declaration was now fixed well before hand and the concerned parties had the information with enough time at hand to prepare themselves for the same.
- Sliding system ensured auto escalation of choices made by a candidate to the next higher level in case there was a vacancy.
Challenges Faced In Implementing Process Changes

- The sliding system created a new problem. Although incorporated to ensure simplified process of admission, the system made auto escalation to the next higher level mandatory, thereby creating problems for candidates in cases where a candidate did not want to be admitted in the college in the next higher level. The sliding system was modified and the candidates' choices were also taken into account.
- Initially, the project was not conceptualized with the entire gamut of activities to be performed under SAMS. During implementation, as more and more different types of colleges and courses are being brought into SAMS fold, new challenging problems are cropping up necessitating instant redressal. Most of the time this requires additional software modules to ensure better monitoring.
- Although, OCAC has been entrusted with this work, OCAC has outsourced M/s CSMPL for implementation of the project. Engaging huge manpower and development of new modules each academic year involve huge financial investment. Due to procedural difficulties/constraints, this may pose a problem in outsourcing the job to the original software developer i.e. M/s CSMPL every year.

Lessons Learnt From The Process Re-engineering Exercise

- There was no common factor among the colleges as far as admissions are concerned.
- Due to unavailability of online CAF in the pilot phase, applicants filled in the CAFs manually and submitted them at the college which again someone (a data entry operator (DEO)) had to key in to the system. This created a big hole in the system which left few students deprived of taking admissions. It was suggested to launch online CAF in the next session.

2. Change Management And Capacity Building

Change Management And Capacity Building Strategy

Administrative personnel of the District Nodal colleges are trained regarding modus operandi of the software at a central laboratory. The
trained personnel impart the same training to induct the SAMS Resource Centres (SRC) at their respective districts. The capacity building technique applied is largely based on the 'train the trainer' model.

**Project Management**

For better monitoring and smooth and timely implementation of the project, district level PMU and state level PMU are formed for a period of four months during the admissions. Consultants and programme managers in the district PMU monitor and follow up for timely completion of various activities and provide administrative assistance through mobile support engineers. Consultants in the state PMU monitor overall activities of the district PMU.

**Financial Model**

The project runs in a PPP mode. Initially monetary assistance from the 12th Finance Commission Grants was taken for two continuous two phases of implementation, i.e., 2009–10 and 2010–11. Subsequently, the project has become self-sustaining through selling of common application forms (CAF).

**Efforts At Sustainability**

The only source of revenue in this project is option fees charged against each choice/option opted in a CAF. Since the SRCs have been authorised to receive and verify the CAFs, the revenue collection centres are the SRCs of a given academic session. The SRCs in remote areas cannot generate much revenue and hence for sustenance need monetary assistance. For this, cross-subsidisation is done after completion of admissions for a given year where the colleges having surplus revenue contribute to the SRCs having less than required revenue collected.

**Challenges Faced In Change Management And Capacity Building**

- Aligning capacity building programmes with organisational structures and culture
- Establishing a detailed monitoring and evaluation framework to ensure a return on investment
- Keeping up with technological advancements
- Diversifying the workforce
- Integrating all the dispersed configuration data in order to analyse and empower optimal decision making
Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Assemble the right team of experts
- Create strong (and integrated) working relationships
- Assign dedicated project management, change management and communications resources
- Start planning early and continually integrate all efforts
- Avoid calling everything a priority at all times, as staff need clear priorities when caught in the daily demands of heavy workloads

3. Technology

ICT Solution Adopted

This project is designed as web based application with a 3 tier client-server architecture.
Technology used:
- OS: Windows 2008
- Language: ASP.Net 3.5 with VB.net
- Scripting language: Java script, VB Script
- Framework: .net 3.5
- IIS 7.0 version
- Database: SQL Server 2008

Disaster Recovery And Service Continuity

- As SAMS (Student Academic Management System) is a critical and real time project, a robust disaster recovery strategy has been designed and implemented for failover purpose and service continuity. An action plan document has been created which describes all those strategies and a detailed escalation procedure if the service becomes unavailable. It is documented with employees, responsibilities, time frames, event sequence, vendors and processes.
- Connectivity redundant: For continuity of services without interruption, the application is facilitated with redundant network infrastructure. Two major ISP with failover concept is configured.
- Server redundant: Infrastructure for production server and remote server has been built for this project. The production server hardware is configured in load balancing mode, which provides the failover provision for the application.
- Data backup: Real time auto backup system is established to
generate the backup on regular intervals. Online data synchronisation between the production server and remote server has been configured. A dedicated connectivity has been established between these two environments.

- **Manpower backup**: 24×7 monitoring facility is established for SAMS. Both server environments are closely monitored by the dedicated team. Proper escalation matrix is designed for addressing the tasks and issues.

### Technology Related Challenges Faced

- Initially, data entry operators faced difficulty in using the application which was subsequently resolved
- Internet facility was not available in remote areas
- The servers were getting overloaded and overheated very quickly due to extreme volume of usage
- The combo system used of offline - online usage was creating more problems than it solved as the update of the relevant and required information was not up to the mark - it was never on time and the validation and correctness of the information could not be verified.

### Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- Distributed architecture for the servers was adopted. The server was optimised for performance and load balancing was done to handle the high volume of usage.
- The entire system was centralised but the application itself was decentralised for better efficiency and effectiveness. The de-centralised system in itself reduced the load on central servers while the centralised system ensured data consistency, avoidance of data redundancy and duplicacy.
- The earlier combo system of offline–online usage was stopped and the entire system was made online to streamline the activities, making them efficient and effective. The update of the database was instantaneous and ensured no lagging.
VALUE INDICATORS

1. Digital Inclusion

The project has all the facilities to ensure the incorporation of local language if and when the need is required. It can facilitate the CBTs to be given in the local language. The trainings are already been given in the local language.

Culture:
- In the first phase of SAMS, online–offline mode was used. This was helpful for people who were new to internet and its uses
- There was a separate team appointed for data entry and validation. It was very helpful for officials who were not so conversant with working on data in the computers and were prone to making mistakes.
- Various notices and advertisements were provided in all local and Odisha National newspapers to enhance awareness about the project and its workings.

Demographic:
- Steering committee was set up to get the buy-in of stakeholders to ensure that all the processes and understandings were clear from the beginning
- College staff and authorities were induced to lots of capacity building workshops to get their buy-in and acceptance
- 24×7 call centre helpline to accommodate all issues related to students and their guardians. This service was also extended to colleges and their functionaries to eliminate doubts.

2. Green e-Governance

- effectively putting to use what still has life in it or could be made usable
- designing/formulating the best disposal techniques for maximum value recovery and then executing the project in the most cost effective process.
- Less creation of paper waste due to innovative ideas like CAF and CP

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**DESCRIPTION OF THE PROJECT**

Odisha e-Municipality Services is a centralized integrated application which provides "Single Window" services to citizens on anytime, anywhere basis. TCS has implemented the project centrally from central data center and support center located at Bhubaneswar. E-Municipality project seeks to automate the tasks undertaken by the Municipal bodies of Odisha. In the first phase, the project has been implemented in 44 out of 103 ULBs of the state. Hand Holding Support Officers have been deployed at the 44 ULBs. The uniqueness of the project lies in the fact that it has been designed for use by ULB officials themselves.

**RESULT INDICATORS**

1. **Key Performance**

**ICT Based Services**

e-Muncipality Application Portal (Mandated by JNNURM) is a medium of interface between ULB and all its stakeholders like Citizens, Government and non-govt. organizations. The ULBs are also given the facility to upload various information related to the ULB on the customized portals of the respective ULB. This Stakeholder interface system enables the ULB to provide more transparent, efficient, citizen centric services.

The other components of the system include Revenue Management system, Civic Services management system, and Financial management system. The services covered by these systems include handling of Property/Holding Tax, trade licenses, building permissions, Water connection and charges, and Birth and death registration, Solid Waste Management, Welfare Schemes Management, accounting related activities including the major functionalities like defining of account heads with
groupings and sub-groupings of account heads are handled by the system. In addition, the Municipal Management Information System acts as an electronic repository of data pertaining to all departments and functions of the ULB with a dashboard facility designed for the Secretaries to the Government and other officials. e-Municipality has been integrated with other applications like Odisha Online in order to facilitate online citizen payment. Features such as Digital signatures, bar coded certificates, and SMS and e-mail facilities to officials and citizens are all important features of the system.

Current Stakeholder Benefits

Benefits to Citizen:
- Opportunity for greater participation in decision making and improved interaction with municipal governance at different levels
- Better delivery of services and information
- Quick service delivery at a decentralised level
- Simplification of procedures
- Improved communications
- Streamlining of approval process
- Quick redressal of grievances
- Single window to access various services of ULBs
- Track the progress of ULBs
- Transparency and accountability in functionality of ULB

Benefits to ULB:
- Common information base across departments on a single integrated platform
- Improved cross-agency coordination
- Improvement in revenue collection
- Creation of effective management information system
- Objectiveness in decision making
- Efficient citizen grievance redressal
- Better mobilisation and utilisation of resources
- Overall improvement in governance, delivery of services and citizen interface

Benefits to Government:
- Availability of on time, standardised and meaningful MIS across all departments
- Appropriate and timely analysis and decision support system.
- Ability to monitor and track programmes, services, revenues effectively in time.
Implementation Coverage

The Odisha e-Municipality Services is a centralized integrated application which provides “Single Window” services to citizens on anytime, anywhere basis. The scope of the project includes all functionalities of 104 ULBs of Orissa. However, the application can be accessed from all over the world. It caters to all demographics of the population. The vital focus of this application lies in the customized portals that has been designed and incorporated in each ULB. It is in use at the ULBs (Municipal Corporations, Municipal Councils and NACs) of the state of Odisha.

2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

- Direct Registration of Births and Deaths from Health Institutions: Hospitals were provided login credentials to register birth and death events directly. This has reduced the total time for registration by more than 80%.
- Implementation of Digitally Signed and Bar Coded Certificates: Lower time required and higher level of security.
- Mass Approval of Requests: Mass Approval of requests for Birth and Death, Trade License, Property / Holding Tax etc. has ensure faster approval cycles thereby, reducing the workload of ULB officials and increasing their efficiency.
- Maintenance of 100% uptime of application

Innovative Ideas Implemented

1. Direct health registration by health institutions:
2. Digital Signature and 2D & 3D Barcode in citizen Certificates:
3. Mass approval for various approval flows like trade license and water connection.

Levels Of Integration

Integration of Odisha Online with e-Municipality has ensured that the citizens of the state can pay their dues from their nearest citizen service centers.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Hospitals were provided login credentials to register birth and death events directly. This has reduced the total time for registration by more than 80%. Digital signature and bar coded certificates have been implemented in the certificates to induce lower time required and higher level of security. Mass approval of requests has ensured faster approval cycles thereby, reducing the workload of ULB officials and increasing their efficiency.

Challenges Faced In Implementing Process Changes

- **Requirement Gathering**: Requirement Gathering has turned out to be a major challenges as the rift was huge between the system oriented architecture and the current process. The volatility of the requirements was augmented due to the bleak computer literacy of the end-users
- **Data Migration**: Data needed to be migrated from a variety of sources varying from legacy systems to registers. Verification has also been a challenge owing to lack of pre-defined standards.
- **Training**: Training ULB officials and hand holding support staff across the ULBs had been a huge challenge owing to the geographical distance and dialect issues
- **Usage**: Motivating the end-users to migrate from the current offline system to the e-Municipality online application has also been a hurdle because of end-user inflexibility, unavailability of basic infrastructure like electricity and internet connectivity

Lessons Learnt From The Process Re-engineering Exercise

- **Requirement Gathering**: Associates from the project visited the various diverse locations and assimilated requirements from the end users themselves
- **Data Migration**: Data Entry was outsourced to local vendors
- **Training**: 44 ULBs were divided into various homogeneous groups who separately were invited to Bhubaneswar for centralised training.
• **Usage:** e-Municipality Hand Holding Support Officers coordinate the usage at the site.

# 2. Change Management And Capacity Building

## Change Management And Capacity Building Strategy

A unique feature of e-Municipality is that it has been designed such that the officials of the ULB can use the application on their own. In order to achieve the same, simplicity of use and simple procedures and workflows have been incorporated. More than 1600 officials have been trained on e-Municipality application after basic computer training by OCAC/OeSL. Hand Holding Support Officers have been deployed at all the ULBs in order to assist the officers in their tasks.

## Project Management

Orissa e-Governance Services Limited Bhubaneswar (OeSL) a SPV of OCAC, on behalf of Housing and Urban Development Department, Government of Orissa plans for the implementation of an integrated Municipal e-Governance application Software System in all ULBs of Government of Orissa' along with integration with the existing software applications. This project called Orissa e-Municipality Services has been implemented in 103 ULBs in the state of Orissa. The 103 urban local bodies (ULBs) in Orissa, categorized as Municipal corporations (3), Municipalities (34) and Notified Area Councils (66). The Objective of this project is the implementation of an integrated Municipal e-Governance application Software System in all ULBs of Government of Orissa' along with integration with the existing software applications.

## Financial Model

It is an Odisha Government initiative and is funded by the state. The ownership of this project lies with the Housing and Urban Development Department, Govt. of Odisha.

## Efforts At Sustainability

A Project Review Committee consisting of H&UD Department, OCAC (IT Directorate of Govt. of Odisha), OeSL (Consultant) and TCS (System Integrator) conduct Weekly Meetings for effective implementation of the Project. A Project Steering Committee with due representation from
Government and TCS to meet at least once in a month to overcome the roadblocks and resolve strategic and operational issues.

**Challenges Faced In Change Management And Capacity Building**

Training to the ULB officials and hand holding support staff across the ULBs had been a huge challenge owing to the geographical distance and dialect issues. Motivating the end-users to migrate from the current offline system to the e-Municipality online application has also been an hurdle because of end-user inflexibility to move to a new system and other third party issues like unavailability of basic infrastructure like electricity and internet connectivity.

**3. Technology**

**ICT Solution Adopted**

e-Municipality has been designed on the Open Source Framework owing to which the application is one of the most sustainable initiative of the country.
Compliance With Standards

While designing the application, 100% compliance to all e-governance standards have been strongly complied to.

Security And Confidentiality Standards

All applications go through the security / access control layer which determines what applications and resources the user can access and the type of access rights. The security framework follows Open Web Application Security Project (OWASP) guidelines and TCS Security Best Practice which is based on ISO 270001 standards. The Authentication module is designed in such a way that it can validate credential against multiple configured user repositories (RDBMS, LDAP). All user passwords are stored in an encrypted format. Further, inclusion of digital signature and barcodes on the certificates to be issued to the citizens ensures no duplication.

Disaster Recovery And Service Continuity

- Daily Backup is taken for the complete application. The backups are stored on tape drives which are subsequently stored at an alternate location.
- Redundancy has been taken care of in the architecture in order to provide fail safe mode of propagation

Technology Related Challenges Faced

- Technological Handicap: Because of technical handicap, e-Municipality had to be designed in such a manner so as to include all the essential features with special emphasis on end user usability and interact ability.
- Resistance to Change: With the advent of e-Governance, a phenomenal change has come about in the system of governance for the staff who have been employed since multiple decades.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- The application needs to be so designed so that each and every user can reap the benefits of the system instead of focusing on elite few.
- Implementation of any e-governance system requires widespread
awareness amongst the citizen and within the ULBs so that the government and citizens can reap the maximum benefits from the system.

VALUE INDICATORS

Digital Inclusion

1. Demographic Training: During the centralised training of more than 1700 ULB officials, the trainings were arranged in such a manner so as to get together homogeneous language and geographical zones.

2. Customized Portals for every ULB: e-Municipality Application has been developed on a heterogeneous model where as part of the portal management, customised portals have been designed for all the ULBs.

3. Bi-lingual Support on the Application: Visualisers of the system ensured the inclusion of bilingual support for both Odia and English on the application.

Green e-Governance

1. Online File Processing: All files for the various departments of the urban local bodies of the state are now processed electronically. Hence, it has brought about huge savings in terms of paper usage.

2. Direct Registration of Birth and Death Events from Health Institutions: The process of direct registration of birth and death events from health institutions has incapacitated the need for submission of hard copies to ULBs, hence reducing the usage of paper and fuel.

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DESCRIPTION OF THE PROJECT

E-District Project aims at electronic delivery of identified high volume citizen centric services, at District, Tehsil and Block Level to improve citizen service delivery. The Government of Punjab had initiated the e-District pilot project in two districts- Kapurthala and SBS Nagar in August 2010. Total 47 high-volume citizen services were envisaged to be implemented in both the pilot districts. Before the implementation of eDistrict Project, all these 47 services were delivered manually through SUWIDHA Center (Urban Front end service delivery channels) established by Government of Punjab. Compared to the earlier manual system, the e-District Project has been envisioned to ensure a faster, simplified, cost effective, timely, convenient and over the counter delivery of services. The connectivity has been provided to more than 200 offices across these 2 districts including connectivity with Punjab Wide Area Network. More than 300 Digital signatures have been issued to designated officials for approval of certificates/Outputs. Currently all the 47 Services under the scope of the project are Live in both the pilot districts.

The citizens are the ultimate beneficiaries of the e-district project. The new system has raised the level of transparency and quality of governance.

RESULT INDICATORS

1. Key Performance

ICT Based Services

I. Total 47 G2C high volume Services are being delivered from e-district project. It covered complete back end solution with maximum coverage. Services provided include:

Current Stakeholder Benefits

Benefits to Citizens
- Citizen will only have to travel 1–3 kilometers for application submission and final delivery of services.
- Availability of application status online
- SMS is sent to all applicants on submission of application and also on approval/rejection of application. Citizen can also sent a PULL SMS to know the status of his/her application
- Computer generated application acknowledgement receipt is given to citizens with tentative delivery date mentioned on it.
- Citizen trips to government offices are reduced after effective government process re-engineering has been done in services like pensions, health etc.
- Contact details of district officials and helpdesk number of each Suwidha centre have been provided on eDistrict portal for citizens

Benefits to State Government Officials
- Officials have access to eDistrict application from anywhere
- Common computing centres are available to access the applications.
- Use of digital signatures to approve the output/certificates has resulted in faster citizen service delivery
- Reduction in time and effort spent on preparing MIS
- Reduction in time spent on fulfillment of verification requests sent by various agencies like universities/embassies
- Automatic escalation mechanism for delay in service delivery has resulted in better monitoring of citizen service delivery.
Implementation Coverage

The Government of Punjab had initiated the e-District pilot project in two districts - Kapurthala and SBS Nagar. 47 high-volume citizen services were implemented in both the pilot districts through Suwidha centres. More than 95000 citizen service requests have been processed electronically in both the pilot districts. Digitally signed certificates have been issued to the citizens.

2. Efficiency and improvement initiatives

Time And Cost Efficiency

- Citizen trips to government offices are reduced
- Reduced costs to a significant degree with simplified application processes for the citizens.
- Reduction in time spent on (a) fulfillment of verification requests, (b) tracking the status of service request after the facility of Status checking at eDistrict portal, © application approvals, (d) preparing MIS

Innovative Ideas Implemented

- Creation of digital repositories of birth / death registration records has resulted in across the counter delivery of birth / death certificates from Suwidha centres.
- Mandatory photograph of all citizens for all the services has resulted in elimination of fake applicants
- Automated FPS Depot allocation
- Digitally signed ration card are printed on stickers and then pasted on ration card booklets (a very unique initiative of e-District Punjab). This has resulted in creation of digital repositories of ration cards in the state.
- Inclusion of UID number during the data entry of all the services. All the output formats under the project have UID field on it.
Levels of integration

- Integration with Suwidha Database/System especially Arms Licenses databases, Agriculture Licenses databases
- e-District Punjab application is well integrated with e-Taal which has been developed by DeitY GoI for monitoring of e-transactions across the country.
- Usage of fair price shops (FPS) depot codes used in PDS (public distribution system) to facilitate future integration of eDistrict with PDS.
- Future integration to be done with state service delivery gateway (SSDG), public grievance system, e-Office, UID etc

ENABLER INDICATORS

1. Process Re-Engineering

All the steps in workflow of service delivery have been ICT enabled. As an example, the process changes for Registration of Birth is shown diagrammatically.
Challenges Faced In Implementing Process Changes

- Introduction of digital signatures and digital signature management.
- Reluctance on the part of government officials to get digital signatures.
- Approval of government orders by respective departments.
- Difficulty in getting support from state line departments for project inputs and approvals, thus causing delay in timelines and poor quality inputs.
- Different service delivery processes and output formats being followed in the two districts.
- Lack of project ownership due to non-appointment of nodal officers in departments and non-formation of DeGS.
- Training and poor turnout of officials for the training being provided.
- Non-availability of master data related to number of officials and offices.
- Lack of resources at the district level for project coordination.
- Lack of formal project reviews at districts.
- Delay in handover of sites for group computing centres. Poor ownership and mishandling of hardware being installed at offices.
- Due to poor interest being shown initially, incomplete information was shared w.r.t. service processes.
• Absence of basic furniture and electrical points for hardware installation
• Error prone data digitisation process

**Lessons Learnt From The Process Re-engineering Exercise**

- Nodal officers to be appointed in state line departments and districts for proper coordination.
- Service workflows as well as output formats to be standardised with approval from concerned state line departments.
- All process with scenarios to be freezeed at the time of implementation.
- Input forms and output should be well captured at the time of study.
- Process steps to be reduced wherever possible.
- Changed workflow and process to be adopted by all officials.

**2. Change Management And Capacity Building**

**Leadership Support**

The project is being reviewed at the state level by the Principal Secretary Governance Reforms Punjab every week. Director Governance Reforms reviews the project on a daily basis. It is being monitored at the highest level and the Deputy commissioner and ADC (nodal officer) act as leaders to support the training and change management activity at district level.

**Management and Capacity Building Strategy**

Workshops are being conducted at various districts under the Chairmanship of Principal Secretary Governance Reforms. More than 1500 official users have been trained during the implementation of the Project. Training included basic computer training and application specific training. The Suwidha Managers at both the districts were trained to manage the implementation of the e-District Project.

**Project Management**

The system integrator of the project has deployed full time manpower at district level for project management, technical support and continuous training of the government officials.
Financial Model

e-district project is being funded by DEITY under MMP project.

Efforts At Sustainability

The revenue collection has improved after the implementation of eDistrict project because of the following reasons.

- Across the counter availability of birth/death certificates has resulted in more citizens availing this service.
- As Suvidha centres have become application submission points of all services (mandatory), the number of applications have increased.
- New services have been added to Suvidha centres.

Challenges Faced In Change Management And Capacity Building

- Limited availability of officials in training programme due to involvement in other assignments.
- Initial resistance to adopt the new IT enabled system.
- Resistance to accept the new process after GPR.
- Willingness to learn new skills especially employees who are about to retire.

Lessons Learnt From Change Management And Capacity Building Exercise

- Buy-in from Deputy Commissioners/Head of Departments at state level/district level is required for successful capacity building.
- Inclusion of basic computer training apart from application training in the overall training plan or capacity building plan.
- Incentive / award programmes may be arranged to motivate the officials.
- Refresher courses for updating the skills required at regular intervals.
- Interactive and online training programmes for regular skill upgradation and interest generation.
- Training to be imparted in local language also for better learning by field officials.
2. Technology

Technology Related Challenges Faced

- Non-aAvailability of SDC; currently application is hosted at a temporary data centre. This has resulted in a few downtimes of the application.
- Introduction of digital signatures: Limited understanding of the use of digital signature by the government officials has resulted in delay in service delivery at times.
- Connectivity issues hampered the access of online application; limited SWAN connectivity of the field offices; broadband connections have lower reliability.
- No document management system was provisioned in the project resulting in slow application performance.

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- SDC/ Data centres to be ready for deployment of application.
- Hardware specifications may be designed according to future technology requirement.
- High end availability of hardware and connectivity to sustain the project.
- Availability of high speed SWAN connectivity at all field offices.
- 24 × 7 Support for technical problems and quick resolution of field issues.

VALUE INDICATORS

Digital Inclusion

- All the inputs forms are bi-lingual (in English and Punjabi). Data entry is done in both English and Punjabi for all the 47 services under the scope of the project.
- All the output certificates/formats have been standardised and are bi-lingual.
- The e-District portal is also bi-lingual.
- Helpdesk: Dedicated helpdesk has been established at all the
Suwidha centres for problem resolution and query handling of the citizens.

**Green e-Governance**

- As manual files do not move from desk to desk for service delivery, a lot of paper which was utilised for taking printout/file making has been saved.
- All the paper work involved in the physical verification has been reduced.
- As all MIS reports of all these services are online, the paper work/file work involved in preparing the MIS reports has reduced.
- As all original documents of citizens are scanned, the paper used by citizens for photocopying documents is also saved resulting in green e-governance.

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DESCRIPTION OF THE PROJECT

The very notion of an integrated financial management system (IFMS) was based on the sole necessity to strengthen the backbone of the government functioning by providing efficient and easy government services to all its departments, subordinates and co-functionaries, employees and citizens.

The objectives of the project are mentioned below.

- To enable the government to monitor the outputs and outcomes of various schemes run by the state government
- Savings in printing and stationery especially accounts stationary, treasury cheques
- Storing of all the information at a central place
- Availability of information on various development schemes to the general public through RTI
- Total transparency and high responsiveness in public financial management
- Networking of all stakeholders of proposed system for sharing financial and performance information and facilitating convergence of service delivery
- Comprehensive information systems and database to assist decision support in development ventures and day-to-day management / administration of public spending
- Enhancing returns and value of benefits to people from development schemes by eliminating misuse/misappropriation of public funds

RESULT INDICATORS

1. Key Performance

ICT Based Services

- Budget preparation / budget distribution
- Bill preparation and submission
- Bill processing / disbursement
- Accounting and reconciliation
- Fund management
- Real-time expenditure monitoring

| Number of transactions effected through the system (Financial Year Wise) |
|------------------------------------------------|----------------|----------------|----------------|
| Financial Year                              | 2011-2012 | 2012-2013 | 2013-2014 |
| Particular | Count | Count | Count |
| Bill Inwarded | 436,761 | 899,026 | 252,584 |
| Cheque Prepared | 207,019 | 293,707 | 2,263 |
| EMD RECEIPT | 6,368 | 6,033 | 1,637 |
| EMD PAYMENT | 4,292 | 5,810 | 1,467 |
| Cheque Reconciliation (Paid cheque posting) | 555,372 | 789,357 | 188,872 |
| Voucher Posting [direct] | 101,762 | 159,424 | 46,680 |
| Challan Posting | 1,767,323 | 4,337,188 | 1,296,830 |
| LC Cheque Posting | 8916 | 14527 | 0 |

Current stakeholder Benefits

After its implementation, the conditions changed drastically for the Punjab government. Some of the features along with benefits are listed below.
### 1. Efficiency And Improvement Initiatives

Following key initiatives were taken during this project-

- **e-Budget Preparation** The service has led to avoiding paper trails, calculative and time overheads.
- **Online Bill Processing**
- **E-Disbursement and Automatic Accounting:** The service of electronic clearance system aided automatic accounting and reconciliation, which in turn has led to a fast, transparent and precise service for DT&A, AG and payee banks. It has enabled the government to provide the benefit direct to the beneficiary (citizen, employees, departments, contractors/external agencies) removing the middle man in the process.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Pre-deployment</th>
<th>Post-deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Finance Department</td>
<td>No integrated module for Planning, Manual budget books consolidation, No validation regarding availability of budget</td>
<td>Integrated modules for district &amp; state plan along with subsequent generation of draft/final plan books, Automated generation of budget books, Real-time monitoring of the receipts and expenditure</td>
</tr>
<tr>
<td>Directorate of Treasury and Accounts</td>
<td>Cheque based payment system</td>
<td>ECS has reduced the need for cheques and the time lag between creation of bill and deposition of amount in party account.</td>
</tr>
<tr>
<td>Departments (ADs, HODs, DDOs)</td>
<td>No mapping between the budget head of accounts and the departments, Non-availability of the bill processing status</td>
<td>Online bill preparation with inbuilt auto-validation checks, Minimised data entry, hence the reduction in the scope for errors, Integration with other systems.</td>
</tr>
<tr>
<td>Accountant General Office</td>
<td>No provision to sent the Treasury accounts in electronic form to AG Office</td>
<td>Provision to send Treasury accounts to AG office in electronic form Workflow based sub-head approval, Availability of DSS reports</td>
</tr>
<tr>
<td>Citizen, Tax Departments and external agencies</td>
<td>No service delivery mechanism, Manual scrolls from banks, Manual reconciliation of vouchers at treasury level</td>
<td>Cyber Treasury Portal, Processing of the payments and receipt files by banks and departments, A one-stop shop for all stakeholders</td>
</tr>
</tbody>
</table>
Online challan/tax payment: The taxpaying portal service provided by the Cyber Treasury Portal has served tax payers as their one-stop, easy tax paying service and has also aided treasuries with automatic reconciliation with departments.

- Workflow based Sub head approvals
- Discontinuation of Treasury Cheques
- Minimal Data entry
- Error free schedules of NPS

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

<table>
<thead>
<tr>
<th>Process</th>
<th>Before IFMS</th>
<th>After IFMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan formulation and budget preparation</td>
<td>Manual budget estimates, No workflow based system, Manual data entry by the planning and the finance department</td>
<td>Budget estimates are sent online, Workflow based system</td>
</tr>
<tr>
<td>Disbursement and receipts</td>
<td>Disbursements: Manual grant proposals from the HODs to FD followed by the manual release of funds by the FD to the HOD and Subsequent release of funds from HOD to DDOs and submission of bills to treasury by the DDO. Receipt: Manual challan posting by Treasury of challans given by bank</td>
<td>Disbursements: Online proposals from HOD to FD followed by the online sanction from FD to HOD and grant distribution from HOD to DDO Receipt: All payments / receipts done online</td>
</tr>
<tr>
<td>Letter of Credit</td>
<td>The FD sanctions a lump sum amount in form of LOC to the departments Funds were withdrawn by department and subsequently payment of work was made to contractors</td>
<td>The department raises the bill only after the completion of milestones. The amount gets credited to the beneficiary’s account through ECS</td>
</tr>
<tr>
<td>Debt &amp; Investments</td>
<td>Manual system to capture the debt and investment related data</td>
<td>A discreet and a robust system</td>
</tr>
<tr>
<td>Tracking of GoI Funds</td>
<td>No automated system to capture the funds from the GOI</td>
<td>Automated system to capture the GOI funds</td>
</tr>
</tbody>
</table>
Challenges Faced In Implementing Process Changes

<table>
<thead>
<tr>
<th>People</th>
<th>Process</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited and inadequate knowledge of IT (use of computers and accessories)</td>
<td>Manual file processing for Budget preparation, distribution and bill processing</td>
<td>Standalone applications for different finance functions</td>
</tr>
<tr>
<td>Resistance to adoption of new system</td>
<td>Physical file movement between multiple actors and line departments</td>
<td>No connectivity within / between departments</td>
</tr>
<tr>
<td>Lack of process awareness</td>
<td>Delays in decision making due to non-availability of information in time Delay due to manual retrieval of records, i.e., receipt and expenditure Multi-layer processing to get desired results</td>
<td>Inadequate IT infrastructure</td>
</tr>
</tbody>
</table>

Lessons Learnt From The Process Re-engineering Exercise

It is a good practice to estimate the network requirement in advance and to keep necessary approval in advance which might be required at a later stage of the project because in projects of this magnitude where coordination among various departments and also with GoI to a certain extent is required, it takes longer than usual to get approval / decisions.

A governance mechanism would help bringing all the stakeholders on the same platform and also provide clear directions and helped in speedy implementation.

Handholding support has proved to be an essential part of the project and has helped in rapid implementation of the project and also useful for repetitive user training throughout the project

1. Change Management And Capacity Building

Change Management And Capacity Building Strategy

Various steps like basic computer training, application training, handholding etc were taken for capacity building. Both 'classroom training' and 'train the trainer' approach were followed. Class room trainings were
not limited to in-person sessions but web based trainings were also imparted to the users time to time as per the need. Change management workshops were also part of deliverables. Toll free helpdesk was set up as part of the support apart from the technical coordinators provided at each district treasuries for handholding purposes.

**Project Management**

A well-structured governance mechanism was devised and followed to avoid miscommunication and in order to bring all key stakeholders on board. Three committees were set up for this purpose - the steering committee, the project review committee and the core committee.

**Financial Model**

This is a self-financed initiative of the Punjab government.

**Efforts At Sustainability**

IFMS is a highly sustainable product and the following shows that the framework solution provided by TCS is robust and has the capacity to withstand future changes and requirements:

- Technologically Independent: IFMS architecture is based on Java EE (Java Platform, Enterprise Edition) open standards with web based platform independent technologies.
- Integrated with other In-house applications
- Identity Management and Access Manager: - IFMS has robust identity management and access management which identify individuals in a system (such as a country, a network, or an organization) and controls access to the resources in that system by placing restrictions on the established identities of the individuals.

**Challenges Faced In Change Management And Capacity Building**

- Limited and inadequate knowledge of IT (use of computers and accessories)
- Resistance to adoption of new system
- Lack of process awareness
- Language / environment related issues
Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Simpler processes, which makes the execution easy for involved users
- Gradual implementation with close interaction with all levels of users
- Flexible system which should have the capability of adaptation (to a possible extent)
- Communication / support in understandable language

2. Technology

ICT Solution Adopted

- IFMS is based on inter-operable, open standards, platform independent technologies using Java Platform, Enterprise Edition (Java EE). It is a component based solution with Service Oriented Architecture (SOA) principals.
- The centralised solution has an n-tier architecture
- The remote users of the IFMS (like the district treasuries and sub-treasuries) are connected to the centralised computing facility through the Punjab State WAN (PAWAN).
- The applications has inbuilt SMS facility; apart from the periodic updates, the application also triggers SMS at important events in the process

Security And Confidentiality Standards

Security framework, which provides a framework for efficiently securing all business functionality, follows Open Web Application Security Project (OWASP) guidelines and TCS Security Best Practice which is based on ISO 270001 standards. Additional security features present in IFMS include

- Form based authentication:
- PKI based authentication:
- Concurrent User Access:
- Authentications event logged:

All user sensitive data is stored in encrypted form. Data centres are well protected to prevent unauthorised access both in terms of physical security and data security.
Disaster Recovery And Service Continuity

There is a disaster recovery facility which ensures that the system remains up and running even during any unpredictable and unfortunate incident which may otherwise result in the disruption of normal business activities.

Technology Related Challenges Faced

- Stand alone applications for different finance functions
- No connectivity within / between departments
- Inadequate IT infrastructure

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

- Proper infrastructure gap analysis should be done
- Technology should be robust, which should be capable to support the system in case of user increase
- Technology should be secure and cost effective

VALUE INDICATORS

Digital Inclusion

The complete project was divided among four phases. Two of the 21 treasuries were taken on a pilot basis in Phase II and implementation was done in those two treasuries first. Later the gaps / lesson learnt during that implementation were bridged and the remaining 19 treasuries were covered in Phase III. Similarly, direct credit (ECS) facility was also rolled out in a phased manner. This approach helped in managing client expectation with utmost satisfaction.

Greene-Governance

The major initiative taken in this regard was the discontinuation of treasury cheque. This saves a lot of paper as now there is no need to issue physical cheques.

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DESCRIPTION OF THE PROJECT

e-Mitra is an ambitious e-Governance initiative of the government of Rajasthan (GoR) which is being implemented in all 33 districts of the state using the public–private partnership (PPP) model. Citizens can conveniently avail various services of the government and private sectors under a single roof at their doorsteps using an e-platform. The services are delivered via counters known as CSC (common service centre) kiosks in rural areas and e-Mitra kiosks in urban areas and also online via www.emitra.gov.in. Hence, these counters provide services related to various departments in an integrated and easily accessible manner to people residing in rural as well as urban areas without any need for running around in government offices.

The project started in 2005. Initially it was functioning through a client server based application software developed by the Department of IT&C. In 2010, the old client server application migrated to a web-based online e-Mitra application across all the 33 districts.

RESULT INDICATORS

1. Key Performance

ICT Based Services

- More than 50 (G2C and B2C) services of around 22 line departments have been covered throughout the state from the e-Mitra portal and kiosk network.
- End-to-end service delivery of digitally signed certificate services through complete digitised workflow.
Current Stakeholder Benefits

a. More than 20 Lacs citizens are being served through eMitra per month collecting revenue of about Rs 200 Crores

b. The Government of Rajasthan is focused towards encouraging women empowerment by employing more and more women entrepreneurs with self-sustained kiosk model (with a minimum income of Rs. 5000–6000 in rural areas and Rs. 10000–12000 in urban areas).

c. Number of transactions effected through the system

<table>
<thead>
<tr>
<th>FY 2012-13 [April to March]</th>
<th>2,17,65,907</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2011-12 [April to March]</td>
<td>2,24,25,036</td>
</tr>
<tr>
<td>FY 2010-11 [April to March]</td>
<td>1,70,15,278</td>
</tr>
</tbody>
</table>

d. The citizens can now avail services for various departments either online through e-Mitra portal or under one roof through well distributed kiosks near their doorsteps, thus saving their time and cost incurred in running around several far-off government offices and going through age-old manual processes, thereby facilitating more and more government outreach to citizens.

e. Free of cost digitally signed certificates are being provided to the citizens, the service charges of which are borne by the DoIT & C.

Implementation Coverage

The delivery of services is available through approx. 6000 kiosks at district HQ, municipal towns, tehsil HQ, Panchayat Samiti HQ, Gram Panchayat level in far-flung areas. In addition to this network, citizens can also avail the services online through internet at their homes without the need to visit any CSC/ e-Mitra kiosk.

1. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Cost to user - Maximum services are provided free of cost (no charge) to public.
Distance required to travel - e-Mitra provides the facility of availing various services either online through eMitra portal or through well distributed kiosks across the state under one roof.

Comprehensiveness of information provided - The information is provided in Hindi as well as English language. As most of the kiosk owners are locals, it helps to overcome the barrier of local language.

Ease of transaction - Time to time guidelines for kiosks and public users are issued for availing each service. Comprehensive, real-time MIS reports are available to verify the status of their applications through e-Mitra portal.

Innovative Ideas Implemented

Innovative ideas include Online Fund transfer, Online payment gateway, SMS alerts, Time bound service delivery under Rajasthan Guaranteed Delivery of Public Services Act 2011. Self-sustained kiosks are encouraging more and more women entrepreneurs. The User can create new services on the fly without any external interference through the modules given in the application. Award schemes have also been instituted for best performing district e-governance societies on a monthly basis.

Levels Of Integration

e-Mitra portal is integrated with the State Service Delivery Gateway (SSDG) so that citizens can be provided with outlets where they can access the services of 22 departments under a single interface mechanism in the form of the portal. Integration of e-Mitra portal with Rajasthan Guaranteed Delivery of Public Services Act 2011 (RGDPS) and Right to Information (RTI) Applications are in the final phase. Integration of e-Mitra portal with CSC SPV application is also in progress for enhancement of service basket.

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

The number of government processes reengineered is 16. The top 3 process changes affected are:
1. Online Payment Gateway: Integration of online payment gateway with e-Mitra portal for enabling citizens to make anytime anywhere payment for availing various services through the portal.

2. Online Fund Transfer: This enables real-time flow of money to destination accounts, real-time release of credit limit to the kiosk owners/ LSPs/ SCAs and online reports for complete fund flow. It has led to a simpler and transparent accounting process.

3. End-to-end digitised and centralised Service delivery of Digitally Signed Certificates: Complete digitised workflow for the delivery of digitally signed certificates.

<table>
<thead>
<tr>
<th>Benefits - Post deployment</th>
<th>Situation: Post-deployment</th>
<th>Situation: Pre-deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>These services have become more accessible to the general public as they are closer to their home</td>
<td>Digitally signed certificate services being provided through more than 2,700 CSC and e-Mitra kiosks.</td>
<td>Manual process: Citizens to visit far away Tehsil or district level offices to avail the services.</td>
</tr>
<tr>
<td>Unique token number to trace the application status.</td>
<td>Citizens get a computerised receipt with date and unique token number when they avail of services through the CSC and e-Mitra network.</td>
<td>Citizens were provided an acknowledgement slip at Tehsil / district level offices to enable them to track the application status as per the provisions of the citizen’s charter.</td>
</tr>
<tr>
<td>Standardised form and processes across districts in the state.</td>
<td>Same application throughout state</td>
<td>Discrete processes across districts</td>
</tr>
<tr>
<td>Better tracking of pending applications with reduced number of footfall at various government offices</td>
<td>SMS alerts/online tracking of application status</td>
<td>Manual tracking of application status/ multiple visits to concerned office for application status</td>
</tr>
<tr>
<td>Easier verification process</td>
<td>Online application verification</td>
<td>Manual application verification</td>
</tr>
<tr>
<td>Paperless offices, easier archiving process, MIS reports for review</td>
<td>Online storage of applications</td>
<td>Difficult record keeping of all physical documents attached</td>
</tr>
<tr>
<td>Easier process for duplicate application</td>
<td>Reprint facility available for the unique token number/ Application ID</td>
<td>Complete process to be repeated for duplicate certificate</td>
</tr>
</tbody>
</table>
1. Capacity Building

Management And Capacity Building Strategy

- Various circulars have also been issued to disseminate information to all the concerned authorities and sensitise field level officers to give recognition to the digitally signed certificates.
- Computer literacy related trainings
- Mandated clause for training to each kiosk holder at least once in a quarter in the service level agreement.
- Sensitisation and awareness training sessions are conducted for all stakeholders [over 3,066 training programs have been conducted]
- Operational and functional trainings are being organised through video conferencing for all district nodal officers and other stakeholders
- Massive efforts towards advertising and sensitisation through newspapers, regular interactions with departments concerned and print material for all stakeholders
- Motivational and incentive schemes

Financial Model

The scheme focuses on creating effective market mechanisms for demand-driven delivery of services in a PPP (public–private partnership) framework. There is a provision for providing both minimum revenue assistance from departments and self-sustaining model based on per transaction service charges. Continuous efforts are being made by DOIT & C to strengthen the service basket by adding more and more services for various government departments and other B2C services in order to ensure financial sustainability of the kiosks through which such services are being delivered.

2. Technology

Online Application:
Web-based e-Mitra portal (www.emitra.gov.in) is hosted at SDC, Yojana Bhawan, Jaipur. All the G2C services at the kiosks are being delivered through this portal. All the participating departments and service counters hook-on to this portal for their day-to-day transactions.
The application is based on Java platform using J2EE technology with Hibernate and Linux operating system platform. Server farm comprises of hardware for directory service, antivirus software, DNS and DHCP service, backup service and server for enterprise management suite.

The existing State Data Centre, connected to the State Wide Area Network (SWAN), is providing access to the e-governance applications and services to government employees through intranet and to the citizens through public internet/e-Mitra / CSCs etc. The SDC facilitates consolidation of services, applications and infrastructure. The State Data Centre provides many functionalities and some of the key functionalities are central data repository, secure data storage, online delivery of services, citizen information/services portal, state intranet portal, disaster recovery, remote management and service integration.

Disaster Recovery And Service Continuity

Real time backup facility available at Jaipur SDC and DRP with National Informatics Centre (NIC), GoI is under process.

Lessons Learned From Technology Choices And Implementation Strategy Adopted

Since the initiation of this eMitra project, several learnings have emerged out of this project. The key ones are:

1. Citizen centricity is the success key for any e-governance project.
2. Understanding the ground realities and practical difficulties towards implementation of the project at the grassroots is the basic challenge. So, every step of process re-engineering and addition of a new service to the service basket of e-Mitra is a learning process in itself.
3. Maintaining a strong and cohesive relationship with all stakeholders is a necessity for successful roll out of the project.
4. Sensitisation and awareness about the scheme, services being delivered and other initiatives is of paramount importance.
5. Structured BPR is of most importance for success of any project.
6. Well-defined roles and responsibilities, down to the grass roots level are essential. This was achieved through state level workshops and intensive trainings for bringing about changes in the attitude among departmental staff.
7. With all well-defined administrative processes, systems should have a strong data back-up mechanism. In order to protect data from physical threats like fire or calamities, backing up of data was done by way of online replication.
8. If benefits to citizens are real and substantial, projects become sustainable.

**VALUE INDICATORS**

**1. Digital Inclusion**

- The application software has a user friendly interface. The labels and the data entry on the form are bilingual (Unicode based), wherever required, i.e., in Hindi as well as in English. Also the digitally signed certificates are issued both in English as well as Hindi format.
- The kiosk owners are trained in public dealing and customer-orientation aspects, particularly while dealings with citizens and giving special consideration to old, infirm, handicapped and women. Such training is a mandate given to the kiosk roll-out partners by the state government.
- The state government has also issued guidelines to choose only women as the kiosk owner in order to promote women entrepreneur. However, in case, no eligible woman entrepreneur is available, the district collector/ chairman of the District e-Governance Society may allow the selection of a male entrepreneur.

**2. Green e-Governance**

Issuance of digitally signed certificates is another step towards the “Green Initiative”. It has features like SMS gateway integration for providing application status updates to citizens eliminating the process of filling in various applications to track the application status. Online report and certificate viewing facility is also available from the e-Mitra portal.

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DESCRIPTION OF THE PROJECT

To ensure that Public Services are delivered to the citizens by all State Departments in a transparent, efficient and responsible manner, Government of Rajasthan enacted the Rajasthan Guaranteed Delivery of Public Services Act, 2011. As a Right to obtain service, it has been mandated that the concerned officer shall provide service to eligible person within stipulated time limit. If the same is not done without a suitable reason, there are provisions of penalties to be imposed on the said officer in the Act.

For the effective implementation of the Rajasthan Guaranteed Delivery of Public Services (RGPDS) Act, the Government of Rajasthan envisaged to develop an ICT enabled service tool which shall monitor the progressive implementation of the Act and provide quantified data for overall real time monitoring and analysis of actions taken pertaining to the act.

Following are the primary objectives of the project:

- Bring accountability and enhance the performance of government departments
- Assurance to citizens for delivery of services in the stipulated time limit
- Easier, real time, transparent reporting, monitoring and tracking at every officer hierarchy level.

The project serves the need to reach to the section of the society which has remained tangential to the government sphere due to multiple reasons. It serves the much needed diffusion of e-governance to reach out to these peripheral sections in the society. The RGDPS portal www.rgdps.rajasthan.gov.in - improves upon the "time-to-public" and "time - in - public" for delivery of services and hence justifies its 3 I's - importance, ingeniousness and impact on and for the society.
B) RESULT INDICATORS

1. Key Performance

ICT Based Services

A total of 487 government to government and government to citizen services and sub-services are catered covering 18 government departments.

Current Stakeholders Benefits

Benefits for Government: The portal provides mechanism for review of following reports:

- Online / manual application receipt register
- Department / office / district / service wise summary reports of pending, disposed of and rejected applications/appeals
- Status of the applications is displayed for the given duration - service wise, office wise, Tehsil wise and district wise
- Online and manual application assigned to user for the given duration
- Duration-wise tendency of the application
- Aging summary report of all online pending applications
- Online submission of the applications through kiosks/online
- Department wise all applications assigned to their first appellate officer / second appellate authority

Benefits for Citizens: The portal has ensured the much needed citizen belief in delivery of services by government departments. The portal provides an absolutely transparent and effective means of review and monitoring of delivery of services at all levels. Real time tracking of applications is possible by the citizens, and moving one step ahead - the department has developed a free android mobile application for overall access and use of the services provided by the portal. SMS response and status check facility is also made available via the portal. A citizen can in real time monitor the status of her/his application with every detail and hence the government ensures its responsibility of time bound delivery of services to all citizens at all times.
Implementation Coverage

The figure below shows the phenomenal success of the portal, clearly depicted by the department-wise no. of application received since inception. The project is running across the state of Rajasthan, and it is compulsory for all the concerned departments to provide necessary details and tracking information in real-time on the portal.

1. Efficiency And Improvement Initiatives

Time And Cost Efficiency

The best way to explain the time and cost efficiency is mapping with the impact on both the fronts.

Temporal efficiency and impact:
- The project has proved to be high impact, in terms of monitoring and control of service delivery to beneficiaries within time limit and achieving the envisioned goals of the act.
- Reporting audit for tracking application actions is available as a feature to reduce the service delivery time and improve beneficiary satisfaction and trust in government functioning.
- Reduction in repetitive official file work
- Reduction in travel time, elapsed time for service, delivery, multiple visits to offices for beneficiaries as well as officials.
- Time to time notifications for the service is a benchmark being followed.
- Information flows over a telephone / mobile network which has a much larger penetration, and real-time quick access.
• Improved and quick record maintenance ensures accuracy, consistency, security and disaster recovery.
• Enhanced basket of services (number of new services added within this financial year) has added to timely delivery, its efficiency and resultant impact.

Financial efficiency and impact:
• Reduction in paper cost for officers.
• Enhanced revenue/benefits to government.
• Reduction in repetitive official file work.
• Reduction in travel costs, costs of multiple visits to offices for beneficiaries as well as officials.
• Reduction in cost and time in keeping official documents/papers in terms of space saving due to digitalisation of data.

Innovative Practices

• Pendency Checker: Pendency can be tracked office-wise for any department and all its hierarchy levels.
• Dynamic dashboard feature for individual user role type.
• Provisioning of inbox and alerts according to the user role type.
• Web service for SMS gateway integration with encryption method; auto SMS notification facility.
• Auto email notification with attachment (system generated on defined frequency)
• Application tracking (status, remark trail) on the fly by few clicks.

Levels Of Integration

The portal is completely integrated with 2 predominant internal e-Governance systems in Rajasthan, which are: e-Mitra: The widest network of common service centers across Rajasthan, through which the end beneficiary can directly file an application with the help of the manned kiosk. State Service Delivery Gateway: This application will go live in the state very soon, providing end-to-end single point functionality and delivery of services through a much wider network.

Both these integrations have been kept on priority, which clearly indicates that the RGDPS portal is not just extremely efficient but also very important for the state.
ENABLER INDICATORS

1. Process Re-Engineering

Major ICT and Non-ICT changes

Non-ICT process changes:
- Compulsory maintenance of register for RGDPS applications and RGDPS slip to every applicant
- Time bound review and monitoring at every hierarchy level individually for each application
- Compulsory time stamping by every official dealing with an application
- BPR for service orientation, streamlining, standardisation, information management, partnerships, enabling technology, continuous improvement of services, monitoring and evaluation
- Designation of appellate authority for grievances redressal
- Six Sigma approach for reengineering was used with the following elements:
  - Proven set of statistical tools and methods to eliminate variation
  - Data driven design or improvement
  - Use of scorecards, dashboards, metrics and baselines
  - Stage-gating to ensure initial assumptions are valid while maintaining vigilance for changes
  - Elimination of waste - time, effort or resources
  - All efforts are linked back to the 'Voice of the Citizen', the strategy and the objectives

ICT process changes:
- Admin Module is available to enable user creation, post creation and mapping with users, role based access control, audit trails, reports etc.
- User screen is available for master data creation facility, mapping to designation with services etc.
- User management facility is available to create departmental users, eMitra/kiosk users etc.
- Provide interface and standard application form to enable various users (department nodal officer / CSC / kiosk users etc.) in filing applications for the relevant services and facilitate application submission, rejection and dispose-off
• There is provision to edit / update services and facilitation to add enclosures to a service
• There is facility to print the acknowledgement of the application submission against any service availed
• Provision to check status for application associated with any service based on acknowledgement number/token number etc.
• Authorised designated post/officer can change the status of an application to “submitted”/ “in-process”/ “rejected”/ “disposed-off” etc. for better tracking and monitoring of the application entries
• Role based selective view of MIS dashboard/graphical snapshots. System generates alerts related to expiry of service delivery date, application pooled by 1st/2nd appellate authority

Challenges Faced In Implementing Process Changes

Perhaps the most critical challenge was in the area of risk-taking. Historically, the culture of the government has been to avoid risk. Also, end beneficiaries could not be chosen. It was perceived by officials that their jobs are under threat from the transformation. Legislation, accountability, competition for funding and resources, as well as partnerships with departments at state and local level was the first and prior challenge during the implementation.

Lessons Learnt From The Process Re-engineering Exercise

The major lesson learnt was that the requirements for improved service levels in basic public services necessitated a focus on methods and tools for higher efficiencies and better performance.

2. Change Management And Capacity Building

Leadership Support

A massive training programme has been launched by the Department of IT&C to train the officers. Nearly 2749 users are trained under “train the trainers” programme. This has started yielding the desired results as a number of offices have started entering vital statistics related to the implementation of the act. After the trainings, the portal is being fully utilised giving a unified view of the implementation status while providing data for corrective action in case of long pendency of applications.
Change Management And Capacity Building Strategy

An extensive training and capacity building strategy was envisaged with multiple workshops and trainings organised at multiple hierarchy levels. Such trainings have been organised at the state and districts levels, where technical and administrative capacity of the department officials have been enhanced.

Project Management

A full time project management unit has been established under the portal to ensure delivery of the services via the portal with complete efficiency. The PMU, in addition to the State e-Governance Mission Team and department officials is an integral part of the portal, ensuring the organisation of capacity building sessions, trainings, workshops and other capacity building initiatives. The same is regularly reviewed by Secretary, DoIT&C.

Financial Model Adopted

The project is a totally state-owned and funded model ensuring the delivery of envisioned objectives under the act, and is turning itself into a financially self-sustainable model.

Efforts At Sustainability

Through transactions on the portal, the initiative is on the path of turning itself into a self-sustainable project. Integration to e-mitra as well has paved the way via transactions through the CSCs, altogether making this innovative time bound service delivery and monitoring mechanism sustainable financially and operationally. The portal has achieved strong cost effective mechanisms and has proved to be a very efficient system, hence ensuring its sustainability.

Challenges Faced In Change Management And Capacity Building

The only major challenge faced in change management was the mindset of some officials that the act and portal coming into existence would be a threat to their jobs. With understanding and capacity building sessions, the same was overcome completely, and the system was accepted with open hands by the officials.
Lessons Learnt From Change Management And Capacity Building Exercise[s]

The portal has been in a favourable condition as it is a mandatory service to be catered under the act. The addition to a grievance redressal mechanism and appellate authority also helped. Major emphasis should be made for system acceptance at every level irrespective of the hierarchy to ensure absolute success of the project.

3. Technology

ICT solution Adopted

The technology used include MS VS 2010, .net framework 3.5, MS SQL Server 2008, Web service provisioning, MS chart dll, RC4 third party dll for login, and Reusable CSS, HTML, User controls. Absolute adherence to security standards as defined by the GOI is followed.

Disaster Recovery And Service Continuity

Risk management metrics adopted:

<table>
<thead>
<tr>
<th>Risk mitigation and risk control</th>
<th>Risk</th>
<th>Risk area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bug management system is utilised for defect tracking and root cause analysis / prevention techniques adopted with periodic release</td>
<td>Ticket / bug / defect / CR</td>
<td>Functional</td>
</tr>
<tr>
<td>1. Testing adopted, load testing in timely manner by the J-meter tool with concurrent 2800 users. 2. Code review audit by senior technical resources from performance front.</td>
<td>Performance degradation due to excessive concurrent user load/less bandwidth, sudden hike in server, i.e., CPU utilisation</td>
<td>Non-functional</td>
</tr>
<tr>
<td>Application vulnerability testing with the automated tool before hosting. Security standards adoption as per OWSAP guidelines.</td>
<td>Application security breach. Due to hacking or SQL injection or network hijacking.</td>
<td></td>
</tr>
<tr>
<td>Load balancing through application level clustering mechanism</td>
<td>Non-availability of the application</td>
<td></td>
</tr>
<tr>
<td>Database backup and restoration policy of RSDC and audited on timely manner.</td>
<td>Database failure</td>
<td>Infrastructure</td>
</tr>
</tbody>
</table>
Technology Related Challenges Faced

- Integration of application with other initiatives
- Accessibility of portal at low bandwidth
- Hardware integration

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

Successfully deploying information technology requires executive-level support, a structured decision-making process, and a strategy based on an understanding of vision and its enterprise architecture.

VALUE INDICATORS

1. Digital Inclusion

Achieving digital inclusion of citizens is central to individually and collectively embracing the opportunities and imperatives of this rapidly evolving world and the same is ensured through the RGDPS portal. Since the delivery of services under RGDPS is also provided via e-Mitra/CSC, it enables extensive wide network channel already established to be utilised by the citizen, irrespective of knowledge, IT enablement, language, demographic or cultural differences. With an extended grievance redressal mechanism, the portal also proves its existence to be all for one and one for all. A 24×7 helpdesk has been established accessible by all, managed by a non-government agency, which ensures that transparent and honest opinion and help shall be provided to every citizen irrespective of any differences. Through RGDPS portal:

- People have acquired the confidence, motivation and competencies that allow them to utilise the service delivery more easily through digital technologies, reducing their isolation and social exclusion;
- New opportunities have opened up for people to contribute and participate in society and the economy.
- Citizens can have service delivery more easily and more cheaply,
particularly helping families with low income and individuals on benefits;
- Citizens having the opportunity for greater democratic participation;
- For the Government, we have utilised the potential efficiencies in public service delivery as well as economic benefits from the digital economy.

2. Green e-Governance

- Paper consumption: has been reduced to a huge extent with the overall process of service delivery turning electronic. Also, varied file movement and corresponding documentation has also been reduced to a huge extent with automation, and it ensures that the wastage of paper is to a minimum, hence contributing to the cause.
- Fuel and power consumption: The existence of RGDPS portal has ensured that the number of visits to the offices and travel of the officials as well as the beneficiaries is turned down by a huge extent, hence saving greatly on fuel and power consumption.
- Sharing of resources: The application and database for RGDPS portal are shared with other applications and portals at the Rajasthan State Data Centre, which provides optimum utilisation of resources.
- Disposal of e-waste: The technical team regularly monitors and ensures that disposal of e-Waste should be kept on a priority.
- Energy efficient technology usage: The state ensures that redundant technology consuming more power and resources will be replaced with energy efficient technologies and hence the same is being taken care of by the RGDPS team as well.

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Megh Sushrut, Rajasthan

Dr. B.K. Murthy

DESCRIPTION OF THE PROJECT

Megh Sushrut, an ERP solution for health delivery, is the first such initiative in the country by C-DAC (Centre for Development of Advanced Computing), developed to provide a hospital management information system (HMIS) using the emerging cloud computing and software as a service (SaaS) paradigm. It is being implemented across government hospitals in Rajasthan and Delhi.

The beneficiary hospital uses the hospital management information system (HMIS) as a service and does not need to undergo the challenges posed by technology, administration and implementation in computerisation.

RESULT INDICATORS

1. Key Performance

ICT Based Services

Megh Sushrut is launched as a software as a service (SaaS) model where different Megh Sushrut modules like patient registration, out patient management, in patient management, patient billing, system and EMR are deployed as service.

The modules of Megh Sushrut can be classified into three major groups—core clinical modules, back office and support modules.
Current Stakeholder Benefits

Benefits to the patients:

- Patient can walk into any hospital anytime without medical records
- Reduction in waiting times in queues for OPD registration, examination, investigations, pharmacy, and IPD admission
- No need to go back to collect the investigation reports
- Improved quality of treatment due to availability of past electronic medical record (EMR)
- Unit chief (doctor) will be able to review all the IPD patients daily irrespective of their condition. Today only the critical cases are reviewed daily by the unit chiefs
- In case of emergencies, patient can be posted for procedure immediately without wasting precious time of patient because the EMR will be readily available
- Current treatment and health status can be monitored daily
- Patient entitlements such as clean linen, diet, drugs and so on can be tracked methodically
- Birth and death certificates can be issued instantaneously at the hospital itself
- Unique identification of the patient across hospitals will reduce unnecessary repetition of tests, duplicate issue of medicines etc. Through this process, patient information needed for doctors,
nursing staff and other support services personnel from different locations will become ubiquitously available from any other member hospital within the state.

Benefits to the hospital:

- Reduction in manual data entry for the same patient at multiple locations in a hospital during a hospital visit or admission
- Incorporation of standard treatment guidelines for patient treatment
- Easy access to EMR of patients where most illiterate patients do not bring medical records
- Improvement in the quality of diagnosis due to availability of past records in EMR
- Better inventory management of drugs, consumables and disposables
- No need to enter demographic details of any patient who enters a hospital
- Quick retrieval of patient reports in cases of emergencies
- Easy referral of patients within the hospital and to other hospitals
- Data analysis will lead to better disease surveillance, research, observing referral linkages, introduction of focused interventions in the community and health care planning

Implementation Coverage

Megh Sushrut is being implemented across the hospitals in Rajasthan under the project “Rajasthan Arogya Online” (RAOL). It has also been implemented in Guru Gobind Singh Government Hospital (GGSGH), Delhi under the project “HIS – BOOT” (Build – Own – Operate – Transfer). Across Rajasthan, CDAC has covered a total of 15 district hospitals and 6 medical colleges and their associated hospitals. The computerisation covers a total of 20 districts in the state.

1. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Infrastructure Sharing and cost reduction: Multiple hospitals can share infrastructure at the data centre (hardware with high end servers, licenses for operating system/database etc). This sharing increases utilisation and results in cost reduction.
Focus on Core Competency: C-DAC takes over the responsibility of patching, upgrading, fixing, scaling, software and hardware and managing data security and backup. Cloud allows the health providers to focus less on managing IT and more on delivering better care.

Electronic Medical Record (EMR) Creation: With cloud hosted EMR, access to state wide medical information of the people, across the country will be a reality. This facilitates analysis of the patterns of illness and mitigation plans.

Reduced Effort and Time to Roll out: The use of cloud computing will help in eliminating the time and efforts needed to roll a healthcare IT application in a hospital.

Innovative Ideas Implemented

Megh Sushrut, is the first such initiative in the country. The C.R.No of every patient is mapped to the multi-purpose-national identification number. Using the unique C.R.No, patients will be able to avail the services from any member hospital within the state effortlessly.

Levels Of Integration

The HMIS system is integrated with the following:

- Drug Warehouse (DWH) application, More than 20 medical equipments, The Blood Bank and Various equipments like Barcode, Bio Matrix, Digital tablet, Smart Card etc

ENABLER INDICATORS

1. Process Re-Engineering

Major ICT And Non-ICT Changes

Unique Centralised Registration (CR) Number

Each patient is assigned a unique C.R. number. Using the unique C.R. number, patients will be able to avail services from any member hospital within the state effortlessly. It will reduce unnecessary repetition of tests, duplicate issue of medicines etc. This feature also enables the state to maintain patient centric electronic health records (EHRs) that serves as a major decision making aide for the state government.
Registration Counter Queuing through Queue Management

To reduce the patient queue time and avoid unnecessary standing, queue management was introduced in GGSGH. Pre-printed token numbers were provided to patients who want a registration card or a visit stamping. Token numbers are different for different categories, i.e., general, senior citizen, VIP etc. Running token number is displayed on counters. According to the turn, patient goes to the counter for his/her registration card; till then he/she may be seated on chairs provided in the waiting hall.

Scanning Prescription

CDAC introduced scanning system in GGSGH in order to avoid the following cases;
- Patients forgot their prescriptions.
- Due to rush, doctors were unable to record OPD prescriptions as part of EMR.
- No authenticity at the time of drug distribution.

With scanning of prescriptions, patients can get their older prescription at any point of time. With scanned prescriptions, MRD department captures most of the prescription contents like diagnosis, complaints etc. The drugs are issued to patients only if the prescription is scanned. Therefore, the supervisor can audit the drug distribution in reference to scanned prescriptions.

Biometrics Impression at Donor Registration

To spot professional blood donors in Rajasthan, biometrics was introduced at the time of donor registration.

Challenges Faced In Implementing Process Changes

Service Provider for Backbone Connectivity: Getting a proper service provider for MPLS VPN connectivity.

Initial Teething Troubles: Any implementation of this nature will have a number of teething troubles. Ensuring that this does not happen was a major challenge.

Buy-in from Hospital: There has been reluctance towards moving away from the legacy system.

Operational Staff: The operational staff faced different problems at different times, many of which are not envisaged in the Operating Manuals and other
documentations. Ensuring that they could still perform the activity without disrupting the critical activities of the hospital was a major challenge.

**Lessons Learnt From The Process Re-engineering Exercise**

- **Service Provider for Backbone Connectivity:** This was solved by partially going for 2 service providers. This ensures that at least one of them is operational all the time and both of them are working most of the time.
- **Initial Teething Troubles:** The complete team was motivated with special training to ensure that all the problems are solved within a period of few hours.
- **Buy-in from Hospital:** This was overcome by conducting user acceptance trials and direct interactions with the hospital staff at all levels to ensure that they accept the system.
- **Operational Staff:** This was overcome by intermixing developers along with the operational staff for some period of time so that quick solutions are found at the place of operation itself and they are implemented by the developers in the system without wasting any time.

2. **Change Management And Capacity Building**

**Change Management And Capacity Building Strategy**

**Training**
- Provided to all concerned users to ensure smooth implementation.
- Done in a structured and time bound manner.
- CDAC keeps a log of training provided and also has a feedback and evaluation mechanism for improving the training.
- Multiple training sessions are conducted for the end users to make them familiar with the applications.

**Operationalisation**
To ease the operationalisation, group wise module implementation is planned. The end users are given user acceptance trials to familiarise them with the application and get their acceptance. During this phase, the hospital along with the CDAC technical team provides all the technical support required by the end users.
Project Management

The following schematic shows how the project is managed.

Financial Model


RAOL: Funded by the Government of Rajasthan.

Efforts At Sustainability

As the centralised data centre has moved from the hospital to a remote place, there is no need to deploy highly skilled professionals at the hospital premises to look after and manage high end server systems. So after installation and acceptance, the hospital will be able to manage and sustain the HMIS systems over the years without having the responsibility of maintaining them as an essential service at the hospital.

Challenges Faced In Change Management And Capacity Building

- Developing user specific training content along with related timelines.
- Validation of the training materials
- Oversee and monitor CB and CM trainings being conducted
- Plan for refresher trainings and training for transferees and new recruits.
- Monitoring the effectiveness of trainings delivered.
- Track and report training SLAs
- Collect baseline/end line date for evaluation
- Provide feedback based on the monitoring plan, so as to incorporate scope for continuous improvement.
- Implementation of the communications plan (part of the change management plan)

Lessons Learnt From Change Management And Capacity Building Exercise[s]

- Extensive Training to the End-Users
- Support of Top Management Required

3 Technology

ICT Solution Adopted

The solution is a state-of-the-art modular, integrated, scalable, GUI based networked hospital management information system. The following are in use - JDK 1.5, JS, J2EE, Struts, Windows / LINUX operating systems, and Oracle 11g

The solution architecture is designed to operate between two sites – viz. - Data centre at C-DAC and Intranet of systems set up in the beneficiary hospitals at Rajasthan.

Compliance With Standards

- Standard Code Sets - ICD 10, SNOMED, LOINC, HL-7, NACO, NABH, GFR, CIMS, DICOM

Security And Confidentiality Standards

- Clinical Abstraction Framework: To maintain patient confidentiality, Megh Sushrut has implemented an abstraction framework which displays selective information as per the configuration of the end user.
- User Accessibility and Transparency: The users are given unique usernames and passwords respectively. Each user is assigned a privilege level and this decides the information that the user can access and the operations that he/she can administer through the HMIS application.
- Encryption of Important Data
Disaster Recovery And Service Continuity

The disaster recovery site is CDAC Hyderabad and the disaster recovery type is cold disaster recovery. The disaster recovery and business continuity plan will be initiated if network/systems become unavailable for 12 hours.

Technology related challenges faced

Maintenance of a centralised data centre that needs to ensure more than 99.9% availability of services

Lessons Learnt From Technology Choices And Implementation Strategy Adopted

The system servers are hosted on the cloud and in case of higher through-put requirement, more resources can be added to the cluster with load balancing to ensure that the required load is available at all server stations. In order to ensure uninterrupted availability of network, CDAC Noida maintains a primary and secondary connectivity for dual redundancy. A local copy of the database would be available at the hospital end which is being replicated from the SDC database server with some latency as per defined SLA.

VALUE INDICATORS

Green e-Governance

- **Less Power Drain**: The HMIS application can be operated through a smart phone or a tablet that consumes much less power as compared to conventional PC based systems.
- **Paperless Technology**: Going paperless can help hospitals save money, space, and give time to think about increasing productivity, while automating the process both internal and external.
- **Reduction in huge paper archival**: With computerised electronic health record there is no need to store the paper records.

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DESCRIPTION OF THE PROJECT

Government hospitals are the key institutions in providing relief against sickness and diseases for the aam aadmi. The work load on government hospitals is increasing day-by-day along with the population increase and the priorities of union and state governments to make healthcare services accessible to the common man. Ignoring ICT which would reduce this workload is not affordable. What is needed is an HMIS (hospital management information system) suite which is robust, inter-operable and integrated with medical vocabularies conforming to global standards (HDF).

e-Hospital@NIC, an integrated hospital management information system (HMIS) product from NIC, had the following broad objectives.

- to improve patient care;
- prompt delivery of health care services;
- to reduce turnaround time – treatment cycle-wise;
- cost savings and effective administration;
- adoption of standard medical vocabularies;
- to streamline the management, planning and monitoring mechanism in government hospitals;
- to improve the quality and management of clinical care and hospital management in the areas of clinical processes;

RESULT INDICATORS

1. Key Performance

ICT Based Services

e-Hospital@NIC is a generic application which addresses all the major functional areas of a hospital. It is a combination of G2C, G2G, G2E and
G2S application and is patient-centric rather than a series of add-ons to a financial system.

The system consists of more than sixteen core modules that covers major functional areas of a government hospital, viz., outpatient department, inpatient department, casualty, ward management, operation theatre management, birth and death certificate, path. laboratory, radiology, blood bank, medical records, stores and inventory, billing and accounts, students management and related MIS reports etc.

**Current Stakeholders Benefits**

- Reduced the patient’s 'waiting time' in queues at the counters for registration, cash payment, laboratory, consultation etc,
- Hospital wide streamlined operations
- Controls the registration of patients by not issuing new identification number to repeat patients and follow-up visits
- Helps doctors to retrieve relevant information related to patients, diseases, investigations, diagnoses, prescribed medicines, past history etc. whenever required
- Better control over stock maintenance and possible inventory reduction
- Proper billing and up-to-date accounts
- Statistical reports which give information on common diseases prevalent in certain areas, the catchment areas of the hospital
- Various MIS reports (billing related, MRD related, consultant related, inventory related) which help management to monitor and plan

**Implementation Coverage**

e-Hospital@NIC product is made available at eGov Apps Store (http://apps.nic.in) for dissemination of product features and demo access. DeitY has identified e-Hospital Suite as a rapid roll-out candidate which can be used across the country and already sanctioned rapid roll-out in two hospitals in Karnataka during FY2013–14.

It has been successfully steered and deployed in a large number of hospitals in the shortest span of time.
2. Efficiency And Improvement Initiatives

Time And Cost Efficiency

Clinical quality starts with infrastructure to deliver quality services towards the patient. eHospital@NIC has provided a standard way for safe and effective patient care in government hospitals through such means as Barcode implementation in patient card, order slip & specimen tube etc. The initiative also provides the benefits of streamlined operations, enhanced administration control, improved response to patient care, cost control and improved productivity. It has reduced patient’s waiting time by smooth flow of information and provided house keeping of medical records such as patient’s history, diagnostic details, diagnosis details and prescriptions by doctors. The initiative also help bring in efficiencies through automated transfers of test results, clinical information, and prescriptions among health insurers, physicians’ offices, hospitals, laboratories, imaging facilities, pharmacies, and public health agencies.

Innovative Practices

e-Hospital@NIC is free from proprietary software/ technology thus it reduces overall cost of ownership of HMIS and is free from vendor-lock issue. There is no need to pay software license cost/ royalties to any agency or agencies.

Levels Of Integration

e-Hospital@NIC is integrated with following systems using HL7 protocol:
1. Third party PACS systems for MRI, CT scan, USG etc
2. Auto blood analysers (Uni-directional and bi-directional)
3. Third party LIS (laboratory information system)
4. Third party radiology information system
5. Third party endoscopy system
6. Third party pharmacy database
ENABLER INDICATORS

1. Process Re-Engineering:

Major ICT And Con-ICT Changes

Manual maintenance of healthcare records and processes in a traditional hospital setup resulted in inefficiency, delays and long queues at various healthcare service points. There was almost no reporting and compilation of data from hospitals.

Productivity enhancement of operational and para-medical staff is needed to utilise them optimally.

Some of the stumbling blocks for this optimisation are negligible use of medical vocabularies and inefficient and loosely defined processes being practiced by most healthcare service providers.

e-Hospital@NIC provided the benefits of streamlined operations, enhanced administration control, improved response to patient care, cost control and improved productivity.

Challenges Faced In Implementing Process Changes

There were nil or negligible HR capacity to adopt HMIS. Training as a part of capacity development was not optimally used. From the analysis, it was observed that even though the training being provided is of good quality, not enough/quality time was given for it. There were many other specific issues and multi-layered risks in HR readiness which included access to medical vocabularies, investment requirement and overall ICT penetration in the health-sector as a whole Non-availability of operational staff for capacity building (CB) during normal working hours resulted in longer duration (batch-wise) training programmes. Hence, deployment was unnecessarily delayed.

Clinic process standardisation: Implementation of computerised physician order entry (CPOE) which involved physicians, nurses, pharmacists, and ancillary staff was a major challenge. Since CPOE often involves an increase in physician time spent on order entry, physician acceptance can be a critical barrier to overcome.
Data misinterpretation due to lack of the right capacity was a problem which was experienced in all stages of implementation. Connectivity and ensuring dataflow requirements for planning prompt delivery of healthcare services between various medical departments physically isolated from each other was a major challenge.

HL7 compatibility: Integration with blood auto-analysers and PACS using HL7 protocol was a challenging job, as most of the third party vendors were not aware of HL7.

**Management And Capacity Building Strategy**

- Comprehensive requirement gathering, system study was done prior to design, development and pilot implementation at AGMC & GBP Teaching Hospital;
- Some of the developers underwent HL7 Standard courses;
- A core product team of 20+ members, who are highly skilled IT professionals of NIC was formed;
- Respective hospital management representatives were taken on-board from beginning and played a pivotal role;
- IT savvy doctors/ para-medical staff were taken on-board for continuous feedback;
- Hospital level 'sensitisation' programmes were undertaken to establish 'ownership' by the respective hospitals;
- Training for operational staff and trainers' training were conducted for overall capacity building (CB) within hospitals and to sustain efforts through outsource agency;

**Efforts At Sustainability**

The initiative is already operational in many hospitals. NIC is targeting to replicate it in another 7–10 large size hospitals by the end of this year. It is to be mentioned that the deployed e-Hospital@NIC systems in each of the locations are fully operational and managed by respective hospitals. NIC is only taking care of e-Hospital@NIC upgrades and change requests (CRs) received time to time.

**2. Technology**

e-Hospital@NIC is built over HL7 Development Framework (HDF), a standard framework for hospital processes and services. It is ISO/IEC 9126
certified and fulfils minimum dataset requirements of EMR/EHR standards prescribed by the Ministry of Health and Family Welfare.

It is built on open source software tools and technologies (Linux-JBoss-PostgreSQL-JSP). Most of the user interfaces (UIs) and reports formats are configurable which makes roll-out/deployment much easier and remarkably faster. e-Hospital@NIC has been designed for cloud infrastructure. Its multi-tenancy feature is the key which makes it possible for multiple hospitals to use the same instance of e-Hospital@NIC. As e-Hospital@NIC is UTF-8 compliant, it is capable of accepting data in other Indian languages too. It is ready for deployment over cloud infrastructure (hosted AM). A single version control mechanism using open source Apache subversion (SVN) tool is put in place and version control is managed centrally. MantisBT is used to manage large scale deployment and change requests (CR).

Security And Confidentiality

Transaction log/ trails are maintained for auditing purposes. Contents created are encrypted and not accessible to un-authorised users.

Disaster Recovery And Continuity

The project is scalable and the small data center in the hospital can be upgraded to act as a mini-data center and push data in regular intervals to state data centres (SDCs) for repository of electronic medical records (EMR), research activities as well as disaster recovery (DR) services.

Technology Related Challenges Faced

Initially challenges were faced as high level technology management activities at on-site operations (OM&M) lack high level operational skill-sets with respect to OS hardening, application server (AS), DBA. Capacity is being built through OTC-Chennai (a DeitY project for CB on OSS stacks)
VALUE INDICATORS

1. Digital Inclusion

e-Hospital@NIC suite is Unicode (UTF-8) compliant capable of accepting any Indian language. In addition, several user interfaces (UIs) are bi-lingual (English–Hindi) by default and have transliteration facility to some extent while capturing content into e-Hospital platform.

2. Green e-Governance

e-Hospital@NIC is a workflow based integrated HMIS. Reports are accessible on-line to physicians at healthcare points resulting in significantly paperless activities. Through e-Hospital@NIC, PACS APIs, findings or radiology images are retrieved directly from blood analyzer or from diagnostic equipments pushed into e-Hospital@NIC platform.

Automated transfers of test results, clinical information, and prescriptions among health insurers, physicians' offices, hospitals, laboratories, imaging facilities, pharmacies, and public health agencies save money on manual paper transfers.

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The ICDS (Integrated Child Development Services) had a system of information management which was designed to suit generating macro level statistics for the project, district, state or country as a whole. However, the data always moved up from the ICDS centre to the central government via each level of hierarchy and there was no system of giving feedback downward up to the facility level so that the functionaries concerned know their success, failures and weaknesses for guiding their works.

The Nutrition Surveillance System (NSS) has vastly improved monitoring of input, process and outcome of ICDS through automatic analysis and display of results in coloured thematic maps in the web. The NSS has several other advantages like automatic compilation of reports, easy retrieval, preparing reports for each ICDS centre and comparison of performance across time and across different projects and ICDS centres. All these facilities have substantially helped to improve performances of the ICDS in Dhalai district.

RESULT INDICATORS

1. Key Performance

ICT Based Services

1. Analysis of spatial and temporal variation of performance of each ICDS centre and aggregated performance of all ICDS centres within any Panchayat/project. Easy visualisation of all analysis and easy identification of pockets of malnutrition by field worker, supervisory officer, Panchayats for appropriate interventions in improving implementation of ICDS.

2. Automated generation of different monthly and annual reports through compilation of around 300 fields on which data is collected
every month. That substantially reduces the time and resources required for compilation of reports. The reports are also free from computation errors.

3. Feedback to lower tiers for guiding the performance up to Anganwadi worker.

**Current Stakeholder Benefits**

a) Easier and timely compilation of monthly performance reports (MPR) which benefits the Anganwadi workers, supervisors, the project officers and programme managers.

b) Generation of thematic maps showing performances of each ICDS centre and projects, which benefit all supervisory officers and which has led to much improved monitoring.

c) Compilation of Panchayat wise reports which helps the Panchayats to understand the status of malnutrition in their districts and to take appropriate measures.

d) The GIS allows every citizen to see and identify each ICDS centre and know its performance which improves transparency of functioning of this important flagship programme.

e) Feedback of performance to all stakeholders including Panchayats / ADC village for community action.

f) Improvement in delivery of services by the ICDS centres will benefit thousands of children of the district by improving their status of nutrition as well as improving substantially on morbidity and mortality of the children of the district. Dhalai is a high priority district as assessed by the GOI because of relatively higher incidence of child mortality. The child mortality scenario is expected to improve faster with support of the NSS.

**Implementation Coverage**

- Six blocks of Dhalai district involving all children up to 6 years and pregnant and lactating mothers who receive services from the ICDS centres of the district. Functionaries of ICDS (Anganwadi worker, supervisors, child development project officers (CDPOs) and District Inspector of Social Education (DISE), district administrators and planners of Dhalai District. All Panchayats and even ordinary citizen can access the website and get benefitted.

- Around 3.15 lakh data fields are compiled every month and annual data volume handles works out to be around 38 lakhs. A total 4,18,243 hits have been counted to the initiative's web site till date.
2. Efficiency and Improvement Initiatives

Time And Cost Efficiency

(i) Electronic compilation of all nutrition related data up to ICDS centre level, which makes retrieval and processing of data easy and instantaneous

(ii) Data is captured and compiled on time and huge resources in terms of man-days previously used for compilation of reports is saved

(iii) Accuracy of compiled data is assured since all mathematical operations are done using computer

(iv) NSS provides precise knowledge as to which ICDS centres/Gram Panchayats/ICDS sector/projects are the worst performers so that limited resources may be concentrated on the areas of failure instead of evenly distributing the same in the absence of such knowledge.

Data transaction volume is 300 data fields X 1051 ICDS centre = 3,15,300 data fields per month. There is one-time cost of developing the system and hosting in the website. Recurrent cost is very little and lower than 10% of the capital cost. Savings in manpower in manually compiling the ICDS data from around 1100 ICDS centres involving around 51,000 children and 8,000 mothers every month in format having more than 300 data fields is much more than the cost of developing and subsequent maintenance of the system.

Innovative Ideas Implemented

Nutrition surveillance using web-enabled GIS is quite unique and innovative in the sense that one can disaggregate nutrition and related data up to the ICDS centre to determine the performance of each ICDS centre and to take specific measures. There is more efficiency and economy in the monitoring and supervision related to implementation of the ICDS using the NSS.

Levels Of Integration

The system may be integrated with ICT based MIS related to mother and child services of the Health & FW Department for which support of NIC will be necessary.
## ENABLER INDICATORS

### 1. Process Re-Engineering

**Major ICT And Non-ICT Changes**

<table>
<thead>
<tr>
<th>After</th>
<th>Before</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports from each ICDS centre is entered in the web-enabled system with GIS backbone which compiles ICDS centre wise and age and gender specific information</td>
<td>Handwritten reports with multiple levels of aggregation and losing, in the process, many ICDS centre specific data</td>
<td>Reporting system on services delivered by the ICDS centres.</td>
</tr>
<tr>
<td>Dashboards make it easy to check delay in submission of reports and compilation is done correctly by using the computerised NSS.</td>
<td>It took a long time to collect and compile data and mistakes in compilation were common.</td>
<td>Time for processing and correctness</td>
</tr>
<tr>
<td>All data up to ICDS centre level are easily accessed by officials and ordinary citizen; that may be seen on thematic maps using dashboards.</td>
<td>Performance indicators were not available in the website for the citizen/civil society.</td>
<td>Access to performance indicators on delivery of services</td>
</tr>
<tr>
<td>Progress of weighing efficiency, nutrition outcome etc. are automatically analysed and displayed in thematic maps</td>
<td>No analysis could be made easily</td>
<td>Analysis of data for decision support</td>
</tr>
<tr>
<td>Spatial analysis is easily possible which helps to compare performances of projects within districts, GPs/sectors/ICDS centres within each project.</td>
<td>No spatial analysis was possible.</td>
<td>Spatial analysis of performance of ICDS</td>
</tr>
<tr>
<td>Spatial and temporal analysis and easy retrieval of data from the web-enabled system help every worker/supervisor to know about their performances, learn from well performing projects/centres</td>
<td>No arrangement of feedback to the field officials was possible</td>
<td>Feedback of performance to field officials.</td>
</tr>
<tr>
<td>The GIS based system show disaggregated data up to ICDS centre showing location of ICDS centres along with the location of related institutions for better appreciation of all the factors leading to failure or success of the programme</td>
<td>The data could not be easily analysed showing geographic areas with higher failures</td>
<td>Locating geographical areas with poor performance</td>
</tr>
</tbody>
</table>
Challenges Faced In Implementing Process Changes

Rolling out such a robust project to all the ICDS centres in 6 ICDS projects of the district was an uphill task initially, particularly for master data collection and entry. Capacity building of all field level functionaries in using ICT and poor electronic connectivity even at project offices were major challenges.

Lessons Learnt From The Process Re-engineering Exercise

It is possible to augment capacity of even ordinary workers to adopt ICT based system and GIS based system

1. Change Management And Capacity Building

Leadership Support

A two days training of ICDS functionaries was imparted on the use of the system for their regular monitoring, followed by refresher training and all of them were provided with helpline support.

No extra staff had to be hired and all the existing employees were trained. The menu-driven and easily handled NSS does not require much training, except for some initiation on the new way of monitoring using ICT and GIS tools. Since all the employees have been well trained on the system there is no problem of sustainability in using the system.

Change Management And Capacity Building Strategy

1. There has been general improvement in motivation and enthusiasm of the workers to precisely know the results of their efforts and to improve the same, which has been possible through the disaggregated analysis and feedback being given from the NSS.

2. All the children in the ICDS centres are to be weighed. Many children are not weighed due to administrative failures or the children migrating out etc. The goal is to take the weighing efficiency to 100% so that weight gain of all children is recorded and scrutinised. Better monitoring has resulted in gradual improvement of weighing efficiency. One also knows the improvement required to be made for the district, for each project as well as each ICDS centre, which helps to take appropriate interventions.
3. One very important indicator is the incidence of severely malnourished children. Incidence of severe malnutrition in the first one year declined substantially in the second quarter but marginally increased. It may be mentioned that incidence of malnutrition in the first year depend substantially on the incidence of low birth weight babies and it is difficult to reduce the same over a shorter period. For the age group 1 to 3 years, there has been a steady decline of incidence of severely malnourished children. Improved monitoring using the NSS has substantially contributed in addressing the issue.

Project Management

The system allows ICDS project-wise monitoring making each CDPO lead the team in improving performance of all the ICDS centres. In this process, specific responsibilities is given to every ICDS worker and feedback on her performance makes her accountable as well as take ownership of improving the performance of her centre.

Financial Model

The project was funded by the government of Tripura and a small component was borne by the implementing agency Riddhi Foundation (previously RiddhiUddalak), which is a non-profit organisation working in ICT-based governance and in the use of GIS for improving governance.

Efforts At Sustainability

The system is being used for generating monthly reports of ICDS for all projects and the district. The system is thus sustainable as long as the ICDS project will continue.

Challenges Faced In Change Management And Capacity Building

Poor ICT infrastructure was a challenge to be overcome initially.

Lessons Learnt From Change Management And Capacity Building Exercise[s]

Sustained monitoring and good quality training followed by handholding can overcome the problems.
2. Technology

ICT Solution Adopted

Nutrition surveillance system has been developed and customised on WhizMap® platform. It is one of the fastest web based platform for GIS. Government of India's (Office of the Registrar General of India) prestigious web GIS application, Census GIS India, runs on WhizMap®.

Web server end requirement is very minimal with Linux operating system, MySQL as back end database and Tomcat/JRE support. The application is easy to replicate in any part of the nation.

Security And Confidentiality Standards

Map Security Issues: Riddhi was the GIS partner for Government of India, Department of Home Affairs for Census 2001 (http://www.censusindia.gov.in/maps/censusgis/Census_GIS/maps.htm) Same security measures have been taken in the system where no latitude–longitude or height value is shown in the map.

Confidentiality: Stakeholders can access the system through their respective user IDs and passwords. The stakeholders are district magistrate, DISE, CDPOs, and ICDS supervisors etc.

Disaster Recovery And Service Continuity

Because the system is web-enabled, adequate measures have been taken at the server end for disaster recovery.

VALUE INDICATORS

1. Digital Inclusion

The major stakeholders being employees associated with the ICDS and they being used to the reporting formats in English, the language used in the system is English.
Green e-Governance

The NSS has resulted in substantial reduction of use of paper and power consumption. There is no problem of e-waste management in the near future. No serious problem is in sight right now, because computers are used only at the project level, which is quite low.

Shri Abhishek Singh (IAS), DM & Collector Tripura.
Email:dmdhalai@gmail.com
Section IV

A note on CSI's Special Interest Group on e-Governance [CSI- SIGeGov]
A note on CSI's Special Interest Group on e-Governance [CSI-SIGeGov]

Dr. R. K. Bagga - Past Chairman, CSI-SIGeGov

BACKGROUND

Computer Society of India (CSI) has implemented the concept of “Special Interest Groups” to promote activities and research in major focused areas. Special Interest Group on e-Governance (SIGeGov) has been formed in Hyderabad during 2006-2007 with Dr Ashok Agarwal (Adjunct Professor BITS Pilani; Chairman, EWB India & Past Chairman, CSI-SIGeGOV) as Chairman with support from CSI HQ and CSI Hyderabad Chapter. The basic perceived objective has been to focus on an important area where Information Technology can be leveraged and bring likeminded professionals together to add value by bringing out recommendations relevant to various stakeholders. CSI is the only professional society covering individual users and citizens as members and is most appropriately suited to focus and add significant value to the successful implementation of e-Governance initiatives in our country. Because, e-Governance has the capacity to take our country to next generation as developed nation and mission of CSI-SIGeGov is to play an important role, in that process.

OBJECTIVES

CSI-SIGeGov objectives include knowledge sharing with all stakeholders through holding conferences, Knowledge Sharing Summits (KSS) and recognizing e-Governance initiative by giving CSI Nihilent eGovernance Awards (CNEA). CSI has instituted Nihilent e-Governance Awards and SIGeGOV is expected to organize these awards and implement judging process; SIGeGov also act as Secretariat for e-Governance awards and maintain updated databases of all relevant stakeholders in this area; Support research in selected areas like Assessment Framework and Implementation Strategy for e-Governance Projects; Participate in the processes for evolving standards in Technology, Processes and Databases; Conduct
National and International conferences in e-Governance individually or by joining hand with other reputed institutions; Interact with international bodies like IFIP and SEARCC to benefit India by sharing our experiences with other nations.

**ACTIVITIES**


CSI-SIGeGOV has instituted a series of awards by recognizing contributions made in the field of e-Governance in the country. This exercise is being sponsored by Nihilent Technologies, Pune. The awards are given for recognizing the efforts made in e-Governance area, specifically for State, Department, District and Project levels. There is active participation for these awards from State and Central Government establishments, Departments, District authorities and many Undertakings, research establishments. Participation by many of these Central and State level organizations have made these Awards an awaited event, every year since 2002. Concept of field visits and Analytical Hierarchy Process (AHP) was implemented to make the award process transparent and acceptable to government officials. Publication of all nominations in the form of a book is another feature for wider circulation and knowledge sharing.

**II. Knowledge Sharing Summit** ([www.csi-sigegov.org](http://www.csi-sigegov.org))

The National level e-Governance Knowledge Sharing Summit (KSS) is an annual event organized by CSI-SIGeGOV. The summit aims to provide a forum for policy makers, practitioners, industry leaders and academicians to deliberate, interact and develop an actionable strategy for transparent and good governance. To grow rapid and successfully, there is a need to respond proactively to the changing environment. This essentially calls for strengthening the capabilities, seizing and exploiting the opportunities. There is an inherent need to explore and share success stories, best practices and achievements spread across the country for better implementation of e-Governance initiatives. The KSS intends to provide a forum for discussion on e-Governance initiatives of Government of India, implementation strategies and challenges and to share learning from national best case studies in the area of e-Governance. SIGeGOV launched a website to act as knowledge portal for all e-Governance initiatives in India. In 2009, the first KSS was held at Hyderabad with support from Government of Andhra Pradesh. In 2010, second summit was held in Bhopal with support from Government of Madhya Pradesh. In 2011, third summit was held in Gujarat with support from Government of Gujarat. As a special gesture during KSS-2011 CSI conferred on Mr. Narendra Modi, Hon’ble Chief Minister of Gujarat its first e-Ratna award recognizing unique leadership using ICT in
state of Gujarat for providing better citizen service over the years. All major activities including e-Governance awards database is maintained and updated, regularly. In 2012, KSS was held at Raipur with support from Government of Chattisgarh. Shri Raman Singh, Hon'ble Chief Minister was conferred as e-Ratna award for the year 2012.

The KSS of 2013 was held at Visakhapatnam as an extension of CSI-Nihilent e-Governance Awards 2012-13.

III. International Conference on e-Governance (www.iceg.net)

International Conference on e-Governance (ICEG) was founded at IIT Delhi in 2003 to address the growing need for furthering our knowledge in e-governance. It is organized under the umbrella of International Congress of e-Government (ICEG) which is a forum for the advancement of knowledge in eGovernance and to promote various government levels across the globe. ICEG is to serve as a premier global organization where various stakeholders (academics, government officers, industry, professionals, NGO, citizens, government and international agencies) can participate and share ideas and resources for the knowledge creation, skill development, networking and spread of e-government at various levels. It became a beacon for eGovernment policymakers with its very first conference in 2003 when the then Hon'ble President Dr APJ Abdul Kalam guided the conference as Chief Guest. SIGeGOV jointly organized ICEG series at University of Hyderabad in 2008; at IIT, Delhi in 2009; at IIM, Bangalore in 2010; at NIRMA University, Gujarat in 2011; and at SCMS, Kochin in 2012.

IV. CSI SIGeGOV Books Publications

The following seven publications covering research case studies on Governance, were released during Annual Conventions of CSI and are available free to download at www.csi-sigegov.org/publications.

7. eGovernance Case Studies (eds) Dr Ashok Agarwal Published by Universities Press (2006).

V. CSI Hyderabad Chapter (http://www.csihyderabad.org)
CSI was born in Hyderabad in 1965. CSI Hyderabad Chapter (http://www.csihyderabad.org) is one of the largest Chapters in India with many senior members and large number of student branches. It has been a vibrant chapter since the inception with many programs and conventions conducted on regular basis. The team at Hyderabad chapter has a blend of Members from Industry and Academia with a mission to bridge the gap between industry and academics. Hyderabad chapter is the only chapter in the country which has its own Social Networking website (http://www.csihyderabad.ning.com). CSI-SIGeGOV has an office located in CSI Hyderabad chapter premises and has been interacting on regular basis to assist the Chapter Office and affiliated Student Branches in supporting their activities. CSI Hyderabad has tied-up with corporate organizations to provide in-depth training and executing live projects for students in the final year engineering colleges, as a part of their curriculum. The program starts off with an intensive training program that is customized based on live projects, covering programming languages, platform, database management, software development life cycle, project management, documentation, team work and soft skills etc. CSI Hyderabad Chapter is hosting Golden Jubilee Convention (CSI-2014) at Hyderabad.

VI. CSI Students Branch (CSISB) at IIIT, Hyderabad (http://csi.iiit.ac.in/)
CSI has large number of student branches with over one lakh members including India’s most famous IT industry leaders, brilliant scientists and dedicated academicians. The mission of the CSI Student Branch at IIIT-Hyderabad is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community. Based on recommendations of a SIGeGOV, a syllabus on e-Governance suggested for Universities / Engineering colleges. As a pilot, successfully introduced at IIIT Hyderabad, four courses on e-Governance have been completed.

CSI SIGeGOV Secretariat, International Institute of Information Technology, Gachibowli, Hyderabad 500 032, Andhra Pradesh, India. Tel: +91 40 6653 1119. Fax: +91 40 2300 0044.
### List of Acronyms and abbreviations

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAA</td>
<td>Authentication, Authorisation and Accounting</td>
</tr>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AMC</td>
<td>Annual Maintenance Contract</td>
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<tr>
<td>APMC</td>
<td>Agricultural Produce Market Committee</td>
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<td>APSDC</td>
<td>Andhra Pradesh State Data Centre</td>
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<td>APL</td>
<td>Above Poverty Line</td>
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<tr>
<td>AJAX</td>
<td>(asynchronous JavaScript and XML)</td>
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<tr>
<td>AIEEE</td>
<td>All India Engineering Entrance Examination</td>
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<tr>
<td>BEE</td>
<td>Bureau of Energy Efficiency</td>
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<tr>
<td>BPL</td>
<td>Below Poverty Line</td>
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<td>BPR</td>
<td>Business Process Reengineering</td>
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<td>CAPEX</td>
<td>Capital Expenditure</td>
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<td>CBS</td>
<td>Core Banking Solution</td>
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<tr>
<td>CCA</td>
<td>Consolidated Consent and Authorisation</td>
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<td>CCI</td>
<td>Child Care Institution</td>
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<td>CCL</td>
<td>Children in Conflict with Law</td>
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<td>CGA</td>
<td>Controller General of Accounts</td>
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<td>CIMS</td>
<td>Current Index of Medical Specialties</td>
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<td>CMVR</td>
<td>Central Motor Vehicle Rules</td>
</tr>
<tr>
<td>CNCP</td>
<td>Children in Need of Care and Protection</td>
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<td>CSC</td>
<td>Common Services Centres / Citizen Services centres</td>
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<tr>
<td>CTE</td>
<td>Consent To Establish</td>
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<td>DBTS</td>
<td>Direct Benefit Transfer Scheme</td>
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<td>DGFT</td>
<td>The Directorate general of Foreign trade</td>
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<tr>
<td>DDO</td>
<td>District Development Officer / Drawing and Disbursement office</td>
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<tr>
<td>DICOM</td>
<td>Digital Imaging and Communication</td>
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<tr>
<td>DPR</td>
<td>Detailed Project Report</td>
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<tr>
<td>DR</td>
<td>Disaster Recovery</td>
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<tr>
<td>DRDA</td>
<td>District Rural Development Agency</td>
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<tr>
<td>DSC</td>
<td>Digital Signature Certificate</td>
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<td>eBRC</td>
<td>Electronic Bank Realisation Certificate</td>
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<td>EDCS</td>
<td>Electronic Delivery of Citizen Services</td>
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<td>ECI</td>
<td>Election Commission of India</td>
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<td>ECS</td>
<td>Electronic Clearing Service</td>
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<td>EFT</td>
<td>Electronic Fund Transfer</td>
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<tr>
<td>EMD</td>
<td>Earnest Money Deposit</td>
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</table>
EQDC : Electronics & Quality Development Centre
EQMS : Electronic Queue Management System
ERP : Enterprise Resources Planning
EVM : Electronic Voting Machine
FIR : First Information Report
GFR : General Financial Rule
GIS : Geographic information System
GOI : Government of India
GP : Gram Panchayat
GPF : Government Pension Fund
GPR : Government Process Re:engineering
HL-7 : Health Level 7
HHT : Hand Held Terminal
ICD 10 : International Classification of Diseases
ICDS : Integrated Child Development Services
ICT : Information and Communication Technologies
INGAF : Institute of Government Accounts and Finance
IPD : In-Patient Department
IPR : Intellectual Property Rights
ISDN : Integrated Services for Digital Network
JICA : Japan International Cooperation Agency
JJB : Juvenile Justice Board
KSRTC : Karnataka State Road Transport Corporation
KYC : Know your Consumer / Customer
LED : Light Emitting Diode
LFA : Legal and Forensic Audit
LIS : Land Information System
LDAP : Lightweight Directory Access Protocol
LOINC : Logical Observation Identifiers Names and Codes
LPG : Liquefied petroleum gas
LSP : Local Service Providers
MGNREGS : Mahatma Gandhi National Rural Employment Guarantee Scheme
MIS : Management Information System
MMP : Mission Mode Project
MMOC : Massive Open Online Course
MSME : Micro, Small, Medium Enterprises
NACO : National AIDS Control Organization
NABH : National Accreditation Board For Hospitals and Health Care Providers
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>NEFT</td>
<td>National Electronic Fund Transfer</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organizations</td>
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<td>NIC</td>
<td>National Informatics Centre</td>
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<td>NLMA</td>
<td>National Literacy Mission Authority</td>
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<td>NMITLI</td>
<td>New Millennium Indian Technology Leadership Initiative</td>
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<tr>
<td>NMS</td>
<td>Network Management System</td>
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<tr>
<td>NOC</td>
<td>No Objection Certificate</td>
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<tr>
<td>NOFN</td>
<td>National optical fibre network</td>
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<tr>
<td>OMC</td>
<td>Oil Marketing Companies</td>
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<tr>
<td>OTC</td>
<td>Over the Counter</td>
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<tr>
<td>PAO</td>
<td>Pay and Accounts Office</td>
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<tr>
<td>PCPNDT Act</td>
<td>Pre-Conception and Pre-Natal Diagnostic Techniques Act</td>
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<tr>
<td>PDS</td>
<td>Public Distribution System</td>
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<tr>
<td>PFRI</td>
<td>Public Funded Research Institutions</td>
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<tr>
<td>PIN</td>
<td>Personal Identification Number</td>
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<tr>
<td>PKI</td>
<td>Public Key Infrastructure</td>
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<tr>
<td>PMU</td>
<td>Project Management Unit</td>
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<tr>
<td>PPP</td>
<td>Public:Private Partnership</td>
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<tr>
<td>PrAO</td>
<td>Principal Accounts Office</td>
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<tr>
<td>PSU</td>
<td>Public Sector Undertaking</td>
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<tr>
<td>PT</td>
<td>Plane Table</td>
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<tr>
<td>PWD</td>
<td>Person With Disability / Public Works Department</td>
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<tr>
<td>RDS</td>
<td>(Rolling Deposit Scheme)</td>
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<tr>
<td>ROR</td>
<td>Record of Rights</td>
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<tr>
<td>RO</td>
<td>Revenue Officer</td>
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<tr>
<td>RTGS</td>
<td>Real Time Gross Settlement</td>
</tr>
<tr>
<td>RTO</td>
<td>Regional Transport Office</td>
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<tr>
<td>SaaS</td>
<td>Software As A Service</td>
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<tr>
<td>SCA</td>
<td>Service Centre Agency</td>
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<tr>
<td>SDC</td>
<td>State Data Centre</td>
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<tr>
<td>SIRO</td>
<td>Scientific and Industrial Research Organisations</td>
</tr>
<tr>
<td>SNOMED</td>
<td>Systemised Nomenclature of Medicine</td>
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<tr>
<td>SJED</td>
<td>Social Justice and Empowerment Department</td>
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<tr>
<td>SLA</td>
<td>Service Level Agreement</td>
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<tr>
<td>SOA</td>
<td>Services Oriented Architecture</td>
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<tr>
<td>SOAP</td>
<td>Simple Object Access Protocol</td>
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<tr>
<td>SPV</td>
<td>Special Purpose Vehicle</td>
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<td>SRB</td>
<td>Sex Ration at Birth</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>SSO</td>
<td>Single Sign On</td>
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<tr>
<td>STQC</td>
<td>Standardisation Testing and Quality Certification</td>
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<tr>
<td>SWAN</td>
<td>State Wide Area Network</td>
</tr>
<tr>
<td>TA/DA</td>
<td>Travelling Allowance / Daily Allowance</td>
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<tr>
<td>TSC</td>
<td>Total Sanitation Campaign</td>
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<tr>
<td>UIDAI</td>
<td>Unique Identification Authority of India</td>
</tr>
<tr>
<td>ULB</td>
<td>Urban Local Body</td>
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<tr>
<td>UNICEF</td>
<td>The United Nations Children's Fund</td>
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<tr>
<td>VC</td>
<td>Video Conference</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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<tr>
<td>WSP</td>
<td>Water and Sanitation Program</td>
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<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
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<tr>
<td>ZP</td>
<td>Zila Parishad</td>
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</table>
The subject of Governance – given its complex nature - does not easily lend itself to any single and widely accepted definition covering its form and format. It is therefore to be acknowledged that its electronic manifestation, the e-Governance, too must be characterized by a certain liminal state in which individual enabling factors are yet to find their level and where, through a process not unlike that of metalepsis, e-Governance at once shapes and is shaped by its own outcome.

This acknowledgment points, importantly and with considerable urgency, to an obligation for obtaining an in-depth understanding and knowledge of at least a minimum set of technological, financial, and ethical factors which ought to influence and shape an e-Governance solution.

It is with the view to acting as a focal point for attracting such knowledge and to establishing a reliable and a structured repository of it, that the Special interest group on e-Governance of Computer Society of India (CSI's SIGeGov) jointly with Nihilent Technologies, has been organizing CSI-Nihilent e-Governance Awards annually and publishing, in conjunction with it, a selection of initiatives from the nominations received.

This compendium of Selected e-Governance initiatives in India – the eighth in its series - is an important chronicle of such a Knowledge. Containing detailed and well categorized description of a large number of e-Governance initiatives which cover a gamut of functional domains ranging from citizen service, health, education, electronic administration to knowledge management, there is no doubt that this compendium will well address the needs of e-Governance practitioners, the academia, and the industry.