Backward Compatibility-A Case of Interoperability of Application Programs for E-Governance

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ABSTRACT

Unique citizen identity underlies the genuine success of e-governance. An appropriate regulatory reform can take care of the multiplicity of citizen identity for achieving uniqueness in it. However, there is another case of multiplicity that e-governance encounter. Technology forms the base of e-governance and different e-governance projects use different technologies giving rise to the question of interoperability amongst various e-governance projects. If the multiplicity in the use of technology for e-governance is not duly taken care of it will create watertight compartments nullifying the very purpose of unique citizen identity. There requires therefore another government intervention for unification of hardware, software and applications for independent databases of citizens to be compatible amongst it.

Keywords: Government intervention, Interoperability, compatible applications

1. Introduction

The Central and State governments in India are spending crores of rupees every year on e-governance with the objective of ensuring efficiency, transparency and better citizen-friendly interface. In certain cases, such as land registration, motor vehicles department, railways and utility bills payment centers, there has been a marked improvement in the quality of service offered to the citizens. But if e-governance were to be truly effective, then individual application program of one department should be able to `talk to' another application program installed in another department. Interoperability of e-governance projects is thus of vital importance if the citizens are to feel the benefit of IT in day-to-day life. In other words, every IT project should have a clear government to government (G2G) interface before a meaningful government to citizen (G2C) solution can be implemented. The present paper brings out the future complications of this fallacies appearing into the present e-governance system and suggest an appropriate government intervention to do it right on the right time.

2. Management of E-Governance

E-governance is said to be only 20% technology and 80% management. There are various managerial issues that are dealt with the successful e-governance projects (Gupta, 2004). Coming out with unique citizen identity system design (Jha "Bidyarthi & Bokad, 2004) is one of these issue which form the foundation of every successful e-governance. This one issue has a very close relationship with the technology application in e-governance as it is happening, a lack of proper policy and guideline in this regard can take the direction of e-governance far away from its true success from where coming back to the

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right frame may prove to be very costly and unaffordable as well (Corbridge & Williams, 2005).

3. Interacting Stakeholders

Almost every section of society is a stakeholder in the e-governance projects. A few important of these stakeholders are named below:

- Governments Across-The-Border
- National / Central Government
- State Government
- Local Government
- Software and Platform Developers
- Citizens
- Private Organizations

These stakeholders do not exist in isolation. They have to incessantly interact with each other (Jha "Bidyarthi", Bokad & Srivastava, 2006). With more of e-governance projects coming up in practice their interaction would also be possible through electronic governance mechanism. If the technology used for all these connected e-governance projects do not facilitate interoperability the stakeholders shall be fragmented by these ongoing e-governance projects defeating its very purpose.

4. Technology for e-governance

Today e-governance projects are looking for easily accessible and economically affordable technologies apart from its suitability for the conceived e-governance project. Even though there are electronic identities created for citizens, the technology used for application of these identity cards greatly vary (Milutinovic, 2001). For instance, ATM uses one technology for verifying the authenticity of the ATM card whereas respective companies identity cards generated for its respective employee use altogether different technology. Electronically generated PAN card and Voters Identity Cards have no technological requirement for verification of its identity. Hence different technologies applied for different e-governance projects are creating deadlock for these e-governance projects to interoperate amongst them.

5. Legacy Software Applications

In choosing the technology in terms of hardware, software or its applications proprietor of e-governance projects – whether Central government or State governments in India or private organizations or even public organizations - have been discriminating in their choice for technology selection from legacy technology to open sourcing. This has been the root cause in variation of technology application by different e-governance projects. This is not to say that technology development should take unidirectional route but it must serve unidirectional purpose and i.e. citizen / customer/client services. It may also further mean that researches on the front of technology development particularly those to be used for various e-governance projects should provide for those features / facilities that ensure their interoperability amongst different e-governance projects (www.jus.uio.no).

6. Scalability and Interoperability

The proprietors of the e-governance projects have also been unmindful of the future developments. Most of the e-governance projects have been conceived of for a pre-determined scope which we know is never static and which ahs to keep on expanding. This has created the problem of scalability and interoperability of these projects due the limitations of the choice of the technologies used. Many government departments also in their eagerness to catch the IT bandwagon installed PCs and their own legacy software applications without any vision regarding its future scalability and interoperability. The result is a set of independent databases that are not compatible with each other. This results into multiple databases creation of identical sample / respondents for different purposes under different e-governance projects designed on differing

software, hardware and applications. The following table no. – 1 shows some such diversified technology used in developing existing e-governance projects in India. Such diversification in use of technology and platform for e-governance is even seen in countries abroad including the developed countries.

Table 1: Showing diversified range of technology applications for various existing e-governance projects in India challenging their interoperability

S.No.	Name of the e-governance project	Technology / Platform used
1.	Gyandoot	Use of OFC and WiLL technology with LAN backup
2.	Bhoomi	Applications run on Windows NT with an SQL Server back-end
3.	Conversion of monolingual to bi-lingual & ISCII, bi-lingual to monolingual & ISCII	Bi-lingual Software Nudi Version 3.0
4.	Land Records (Bhoomi), Revenue Department	Incorporates the bio-logon metrics system from Compaq, which authenticates all users of the software using their fingerprint
5.	Computerized payments and receipts, Treasury Department	V-SAT Network is installed
6.	Poura Vahini Project, Karnataka	4 layout plans are available using GIS package
7.	Sukhmani, Punjab	WAN, IT infrastructure

7. Open Systems Framework

Many e-governance projects look for application of open systems framework due to economic reasons. But here too there are varieties of technologies available that is being used by these e-governance projects making them difficult to interact with each other. The technology used by reliance telecommunications makes its mobile equipment invalid for use by BSNL subscribers. There are certain messages transferred through BSNL – Nokia mobile equipment which are not readable by the recipient Reliance Telecommunication mobile equipment raising the question of interoperability and hence citizens' conveniences (www.bangaloreit.com).

8. Cost-Benefit Analysis

In choosing the appropriate technology for developing e-governance projects one does emphasize on its cost aspect what needs to be done is that one should also take care of its benefit aspects considering the future obligations of the projects. European countries, which started computerization decades ago, face a problem with regard to legacy systems. Now with the advancement of secure `open systems' enabled by web technology (Palnitkar, 2004), both the industry and governments in those countries are in the process of migrating from the older legacy systems, which entails huge costs but provides business opportunities for the Indian software industry. But in our country the cost of migration from legacy to open systems should be lower considering the fact that computerization began as a wave only in the late 80s. That is one of the advantages of being a latecomer in an age where obsolescence also happens in nanoseconds.

Further, there is seen a clear tendency amongst various service providers to use each other's facility for offering quick and anytime service. This integrative approach can be mostly seen in cases where post offices in India have been authorized to use its well spread counters for collection of electricity bill by state electricity agencies (www.msebindia.com), telephone bills by local telephone authority (www.bsnl.co.in), issue of railway tickets by the railway booking services in India, issue of passport applications by the Passport organization, registration of birth and death by the local registration authority (in the offing in Maharashtra), issue of application forms for various employment opportunities in different organizations including Union Public Service Commission and admission forms of different academic institutions including IIMs, IITs, NITs Maharashtra Technical Education etc. So wide range of services being

channelized through a single counter necessitates that there is used a uniform technology to provide uniform platform compatible with the postal e-governance projects so that all other e-governance projects integrating with it can be interoperable with it. This increases outreach of services and also helps offload some part of services outside the core area by the service provider agencies, which can then concentrate more on its core and basic functional area. At the same time organizations like post offices in India, which specialize in the function of collection and disbursement of money can further raise its operational efficiencies for the benefit of both the parties.

9. Government intervention

There are number of hardware, software and applications available in the market. This number and its varieties are swelling day-by-day giving its user ample choice to choose according to its suitability. But the question of interoperability of these projects demand that there should be government intervention in the use of uniform technology for all e-governance projects. With appropriate government intervention through regulatory measures it will be possible to unify the platform on which the projects run and therefore make it backward compatible. The National Informatics Centre (NIC) has already started work on the interoperability framework for the Central and State governments as the realization has now come that databases of one department should be compatible with another all over the country. Some of the departments identified on a priority basis to have interoperability implemented are Treasury, Hospital, Employment Exchange, Registration and Land Records (www.setu.maharashtra.gov.in).

State governments going ahead with e-governance projects should exercise caution in implementing them, should go by their own experience as well as that of developed countries (Tarabanis & Peristeras, 2000). In view of the fact that taxpayer's money is being spent on such projects, the solutions in terms of hardware, software and applications chosen should be the most cost effective and also interoperable with each other (www.fgtk.informatik.unibremen.de). In many large organizations it has become a practice to have a high-profile chief information officer or chief technology officer who holds the responsibility of sourcing the best possible hardware, software and applications suited for the company. Sometimes, these officers also find a place in the board of directors. It is their responsibility to see that diversified use of electronic infrastructure for carrying out several e-governance projects do not create water tight compartment and make it impossible for interaction between two e-governance projects and data sharing.

10. National Vision

Considering the complexity of the information technology sector, in terms of technology, applications and solutions available, it would not be wise to entrust e-governance projects to a small group of people. There should be an empowered panel consisting of a cross-section of major stakeholders — government officials, solution providers in the private and public sectors, hardware vendors, people's representatives, scientists and others (Satyanarayana, 2004). This panel should evolve a national vision for e-governance and continuously advise, assist and coordinate the e-governance activities in the country. In IT implementation in the government it is the department heads concerned or private solution providers who decide what technology or solution is to be adopted for each project. Every government needs to have a CIO who will hold the responsibility for implementing G2G and G2C projects adopting the best practices and at the same time not bleeding the scarce government resources (Pani, Mishra & Sahu, 2004). This will ensure that department heads do not undertake IT implementation in a haphazard way and thus do not fail to pass on the benefits to the common man.

11. Concluding Remarks

Critics argue that crores of rupees have already been spent on e-governance projects and the citizen has not gained any major benefit. There is still no consensus about the deployment of open source and proprietary software. Complaints regarding IT implementation are surfacing one by one. The most recent example

being the problems in the billing software implemented on Microsoft platform and the application software developed by PriceWaterHouseCoopers for the Kerala State Electricity Board. The success stories of many e-governance projects in India have drawn attention of State governments and public and private organizations to design, develop and implement the same in their own respective domain areas (Pankaj, 2004). But in the process they have mostly overlooked the importance of selecting technology / platform of such projects keeping the future prospects of possible integration. A variety of such technologies in terms of software, hardware and applications have been used and used differently for different e-governance projects creating a problem of interoperability. At a later stage it is going to become too complicated in managing e-governance services due to this divide among various projects. It would require large scale overhauling of all the projects of e-governance to bring them on to uniform technological platform for integrated operation besides huge financial obligations, manpower and time requirement. It is leading us from the age of digital divide to the age of stakeholders divide.

It is apt therefore that the government intervenes through appropriate regulation to impose on the developers and users of such projects for observing uniformity in application of the electronic infrastructure or ensuring that these infrastructure don't adversely impact the interoperability of the projects making them truly universal in application. Government, in any case, stands responsible for creation, maintenance and operation of public infrastructure either through its own resource or machinery or through private participation. In this case it is electronic infrastructure, which calls for a similar responsible behavior on the part of the government and hence requires regulatory reforms now and here.

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