Towards the Acceptance of XML based Governance

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ABSTRACT
Indian Government manages the various e-Government services through the several e-Governance portals. These portal are serve single department and represents the single solution for a particular department. With the time it becomes the necessity to manage inter-departmental dependencies in information sharing. XML; due to its unique features like simplicity, openness, extensibility and self description etc, is a language that can manage these complex interdepartmental dependencies. Moreover XML comes with powerful features that can manage contextual information and is able to separate content from presentation. It also support multilingual documents and Unicode and can embed multiple data type. XML is also able to provide one server view for distributed data. At present heterogeneity among databases poses problem in information sharing in e-Government portals. The paper aims at exploring the fact that the technology such as XML and Web Services having the potential capability to provide and increase inter operability among e-Governance applications in India. Present paper proposed models for information sharing and it shows that these proposed conceptual models will be useful to integrate data at various level and also accommodate Semi structured database in the context of Indian e-Governance applications. These models are also helpful to minimize dependency among applications and making secured information sharing possible among government portals. Presented model are also tested for Technology Acceptance Model (TAM) for their acceptance in the stakeholders.

Keywords
XML, Semi-Structured database, e-Governance, Technology Acceptance Model (TAM), Web Services, Portal.

1. INTRODUCTION
To make the governance effective and efficient, Indian government using technology to provide the services at the door steps of the citizens. various projects are being implemented in India for last two decades to provide services to the common citizens. Indian government also approved its National e-Governance Plan 1(NEGP) which have 27 Mission Mode Project (MMP) and 8 components, on may 18, 2006. National Informatics Centre (NIC) is setup to promote technology based information culture in various government departments and develop computer based management information to exchange information among the various entities of the Districts, States and Center[1]. Primarily NIC websites provides all e-Governance services portal [2]links. it has been observed that as the automation process for various departments has started, the citizens and other stockholders start using the information and similarly, the necessity to fine tune the existing services also arises. In India, Government departments are inter-connected and dependent in terms of government activities and the results of transactions from one department is needed by the another department [1]. In general, Local and Central systems are supposed to connect and communicate with each other for smooth functioning. All geographically scattered systems needs to be integrated for better co-ordination. XML could be a common format to exchange the information across the departments because XML provide the format[2] which can be universally understood. At present XML and its various tools like XSLT, XPointers, XPath etc has huge potential in coordinating multiple applications not only within an Organization but also across Organizations. This paper aims at collecting the facts through (Technology Acceptance Model) TAM model that using XML technology encourages the stakeholders to use new features of portals and is also encourages the department to experiment with the XML based portals. This paper also proposes a model for induction of XML in e-Governance projects.

2. LITERATURE REVIEW
The requirement for various intra-departments and inter-departments collaboration by sharing the information in Indian e-Governance [1] has been discussed by [1]. In the year 2008, Saxena Meetali discussed the impact of technologies on the practices and government administration. He also explores the relationships between public servants and society [3]. Authors also describe rural masses benefitted by the e-Governance initiatives in India. Bagga, R. K. and Gupta Piyush identified different aspects of e-Governance approaches in Indian scenario in 2009. R. Chauhan. & A. Singh, Lee, Tomas, Hon, C.T and Cheung, David, provides a comprehensive methodology for XML Schema design. He also discussed the necessary schema management infrastructure to facilitate e-Government data standardization in the year 2009 [4][5][6]. Y. Malhotra, Dennis F. Galletta provide the insight into the use of technologies using TAM[7]. M.Chuttur, describe the TAM in-depth along with its future implication and origin[9]. A practical approach called "Interoperability Practical Implementation Support or IPIS" is presented by Saekow, Apitep, and Boonmee, Choompol to implement government interoperability in the year 2009 [8]. Singh, A. J. & Chauhan, R presented interoperability approach using XML[5][9]. Jaeger, Paul and Matteson, Miriam studies the significance of the Technology Acceptance Model for e-Government at federal government level in the United States through an research study in the year 2009 [10]. Lai, Cora Sio Kuan and pires, Guilherme worked on integrated model of e-Government satisfaction which uses Technology Acceptance Model and end user satisfaction in the year 2010 [11].

3. RESEARCH METHODOLOGY
Present study concentrated on examine the possibilities of using XML technologies to share and exchange data among

[1] www.mit.gov.in
[2] http://www.nic.in/

different e-Governance portals in India. This papers conceives two models which are feasible in e_Government scenario in India. Two conceptual Ideas, primarily based on XML technologies, are proposed.

3.1 Use of Web Services as a Bridge

This model shows that web services can be used to share information among different Government applications. Not only this but web services can also be very useful to connect with the other departments as well. so, by using this model information sharing become easy among departments having different technologies. Through this model database base need not to be compromised and besides data can be securely shared with other independent applications. This model can be applied with the existing solution and need no prerequisite to implement. This model can be applied to any or all of G2G, G2C,G2B services.

3.2 Using Standardized Data

Apart from using web services as a tool for information sharing, Using XML as meta-language for data standardization can be used for information sharing by bringing the standardization among various databases. This model can be used with any kind of data and provide one-view for heterogeneous data or multi format data. This model is based on the unification of data sources through XML. Once the data in various data silos conform to some standard than data sharing and transformations become easy among the government portals. This model can also be used with the existing application except that the standard definitions of entities need to be defined and then existing entities need to be transformed to common XML format using XML as meta language for the standardization of entities. These standardized entities then can be reused any time anywhere.

Apart from this, present paper uses Technology Acceptance Model[7] to verify the acceptance of these models. TAM is used to predict the acceptance of new model and reveal the design problems by determining different

4. USE OF WEB SERVICES AS BRIDGE IN G2B

Application of Web Services in G2B scenario: Figure-I shows how the Web Services can be used to provide loosely coupled environment between G2B applications. following are the components of this model:

E-governance Portal: These are Government driven portals and provides citizen-centric services.

E-governance Portal Database: This represents the Database used to fulfill the user request. This may be the department-wise or the service-wise.

Web Services: These are the information sharing services provided by the portal using common information format.

Requestor Authentication: This is the module that authorize the user for proper data sharing.

Other Business Application: Other stockholders also need to exchange of information with the government portal.

To implement this model in the Indian e-Governance context, each portal will have to expose part of its database to Web Service for each and every fundamental functionality. Various Web services may be used depending upon the functionality. Portal also need authorization process through which the authentic request are identified..

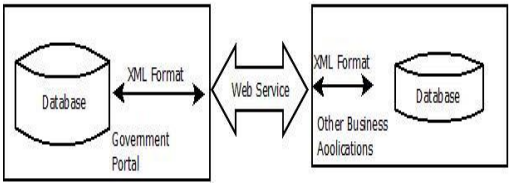

Figure I: Use of Web service (Source: Compiled by Author)

data and conversion accordingly. It also imposes some standardization on the part of government which provide long term sustainability of this model.

5. GOVERNMENT PORTALS BASED ON STANDARDIZED DATA

This model emphasize on the common definitions of entities on which the database is based. This model does not impose any rule on creation of database. Database may use any technology but the data should be converted to standardized data format. In government actually no standardization is followed for the data source and eventually the data at the source become the small data silo. Main challenge at database level is to organize these small silos in to big database. Once the data get converted into standardized xml definitions, it will then be available for any decisive or management operation. Here advantage with this is that the organization also do not have to focus on format of data, it can be in any format (structured, semi-structured or unstructured). XML processor has to do much of the work like extraction of Meta attributes like perceived usefulness, perceived ease of use, attitude toward using and behavioural intentions to use etc. A survey has been conducted and various TAM attributes are calculated. A questionnaire was used for this purpose and conducted interactive session among various IT Consultants from different Information Technology (IT) Industries in the State, Himachal Pradesh, India to gather their experience about use of XML in government portals for information sharing. Common citizen's are also included in this survey to measure the user acceptance of various e-Governance projects and, also to measure their readiness for adopting new technologies such as XML, web services etc.

6. TESTING

Technology Acceptance Model (TAM) is used to test acceptance of new technology among users. This can be carries out through survey and calculate the various parameters. The aim of TAM is to predict acceptance of new model prior to the actual use of model [12,13]. In this model, Users motivation can be explained as perceived usefulness, perceived ease of use, attitude toward using, and behavioral intentions to use. Behavioral intention of a user in TAM determining whether users are going use or reject the system [12,13]. These tools enhance the ability of researchers and practitioners to validate the concepts which has already been developed and empirically validated in previous researches and thereby avoiding the time-consuming and costly effort required to develop a new measurement metrics. Thus, the variables presented in TAM offer practitioners a practical, cost-effective method for evaluating new technology and predicting the degree to which end-users will actually use that technology before the system is actually implemented. This study has been conducted in urban area of Himachal Pradesh, among the citizens who uses e-Government services very frequently. Apart from this, various organizations that provide the e-government services are also considered for interview

and question-answer session. The idea of involving the citizens is to measure the user satisfaction to accept the various e-Governance projects and, to identify the demand of system up-gradation in terms of new technology like XML, web services etc. Table-1 provide the summarized result of the survey. From the above table-1 we can hypothesize that introduction of new technology will not deter the progress of existing ongoing e-Government services and neither it will hamper the initiation for new e-Government projects. On the contrary this will perceived as a welcome step by the stakeholders to effortless sharing of information among them or with the organization. This will also gesticulate to the fact that the new technologies in e-Governance sector should be used profoundly without any hesitation. It will give more satisfying experience to the user.

Table-1 (Survey Result)

Parameter	Definition	Result in Percentage
Usefulness (Perceived Usefulness)	%age of user believes that using XML will enhance the performance	82
Ease of Use (Perceived Ease of Use)	How much easy to use the XML based services	86
Willingness for using XML (Attitude Toward Using)	Willingness towards the use of new technology	78
Intention to use XML in future (Behavioural Intentions to Use)	One's Intention to use XML in future	79
Information sharing using XML (User Satisfaction)	Using XML as common format to share information.	88
Adoption of citizen based e-Government services (e-GovernanceAdoption)	How frequently citizens uses e-government services	70
Willingness for New Technology in e-Governance portal (Demand of New Technology in e-GovernancePortal)	Willingness in terms of new technology like XML, web service etc.	75

7. CONCLUSION

In a nutshell, these models expedite the process of information sharing seamlessly. Since XML provide government organizations the ability to share information securely by use of common XML standard hence apart from information sharing these models also contribute to the inter or intra departmental communication. Web services ensures that data is shared without compromising the security in interoperable manner, besides it reduce the e-Governance applications coupling and enhance the scope of applications. on the other hand second model ensures that the data need not be changed to any format except the common XML standard. This model emphasize on the standardization on entities rather than changing the data formats. It uses XML as meta language to make standardized definitions of entities. XML provides cost effective solution of e-governance services which are within the reach of common citizen. The technology such as XML and Web Services having the potential capability to manage the heterogeneity of data and increase inter operability among e-Governance applications in India. Paper shows that proposed conceptual models will be useful for Semi structured data in the context of Indian e-Governance. It also reduces the dependency factor among various e-Government applications and will make secured information sharing possible among government portals. It is found that the proposed model is also well accepted among stakeholders.

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