

# A Proposed Three Tier Framework for E-Governance Services in Indian Context



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**Abstract:** In the course of this study, the researcher is designed the framework for successful implementation of the e-governance services in Indian context for today's scenario. The researcher is presents a Three Tier Framework for e-governance services by implementing latest and cutting edge information technology. Researcher proposed the framework for implementing successful e-governance projects in the district, which provides electronic services at the village, Tahasil, district and state level. Researcher achieved the wide range analysis of empirical transactional data and managed to gather the information in order to provide all inclusive responses to the research problem statement, therefore, considering the satisfactory outcomes.

**Keywords :** Tier 4 Data Center, IntaaS, Cloud Based Service Delivery

## I. INTRODUCTION

There is a lack of interdepartmental coordination about data sharing in the government departments which lead to problems of integration of services among the departments [1]. Considerably it is high between the state government and local bodies. Integration of data is a critical issue. To capture the data in the web-based form and to transfer it in the normalized form for sharing and processing the information is problematic. E-governance architectures need to ensure that the components are backward and forward compatible with the system. There is a somewhat same scenario in all other districts of Maharashtra state. Instead of viewing narrowly towards technical issues, to overcome these problems, remove the managerial issues in the e-governance projects management and reform in government process reengineering. Researcher is proposed the framework for implementing successful e-governance projects in the district, which provides electronic services at the village, Tahasil, district and state level. Researcher achieved the wide range analysis of empirical transactional data and managed to gather the information in order to provide all inclusive responses to the research problem, therefore, considering the satisfactory outcomes.

## II. THREE TIER FRAMEWORK

Researcher proposed three tier framework to overcome the technical as well as managerial issued in the implementation of e-governance projects. Three Tier Framework is shown in fig. 1.

### A. Tier 4 Data Center (T4DC)

Maharashtra government established the Tier 2 Data Center as per TIA-942 standard but this data center is not sufficient for today's computing demand of government services [2]. According to the Uptime Institute's benchmarks, the tier 2 data center offers 99.75% availability, annual downtime of 22 Hours and partial redundancy [3]. The data center infrastructure must be completely shutdown on an annually to safely perform preventive maintenance and repair work. In emergency situation may require more frequent shutdown. Failure regular performance maintenance significantly increases the risk of unplanned disruption as well as the severity of the consequential failure.

To fulfill the today's computing demand and performance of the electronic services, need to establish the Infrastructure as a Service (IaaS) cloud based Tier 4 data center in the Maharashtra state. IaaS includes the networked virtual servers which offer enhanced cloud applications hosting capabilities, enterprise IT infrastructure, networking resources, network connections, bandwidth, IP addresses and load balancers. IaaS architecture aims to achieve optimal levels of efficiency, in the delivery of computing services to the citizens. This requires an architectural design that provides a highly available pool of cloud based IT infrastructure resources and which also adequately delivers its resources in an elastic/scalable manner, especially during times of peak demand of service. A scalable platform allows organizations to perform the large-scale business transactions through the high-performance processing of massive data volumes. This scalable architecture of cloud avoids the peak day's service delivery problems. Tier 4 data center has the highest level of guarantee that a data center can provide 99.995% availability, 0.8 hours of annual downtime and all components are fully redundant including of electrical circuits, uplinks, storage, cooling, HVAC system, servers and network. This data center architecture can withstand even the most serious of technical incidents without any service interruption on the server. In this type of data center, servers have the 2 processors, everything is dual powered and with the hot-swap disk changes feature.

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This feature is being able to replace/upgrade faulty components (like RAID disk, power supply) without affecting on the running servers.

### B. Integration as a Service (IntaaS)

The IntaaS tier is the middle layer in the three-tier framework, probably contains some of the most key elements of the cloud. IntaaS is a cloud based integration service

delivery model on Platform as a Service (PaaS).

PaaS provides services to deploying, testing, hosting and maintaining the applications within the same integrated development environment (IDE).

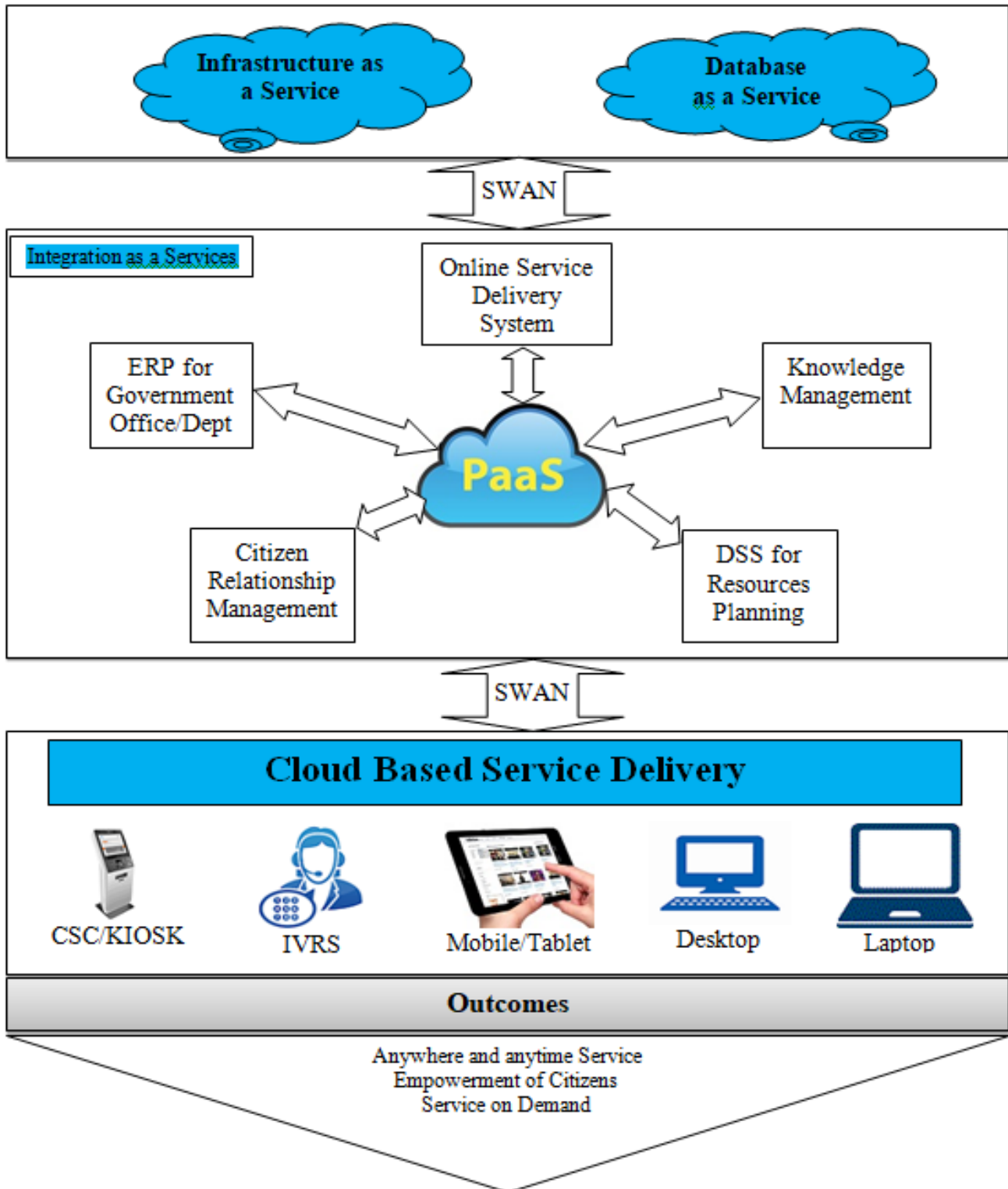


Fig. 1. Three Tier Framework for e-Governance Services

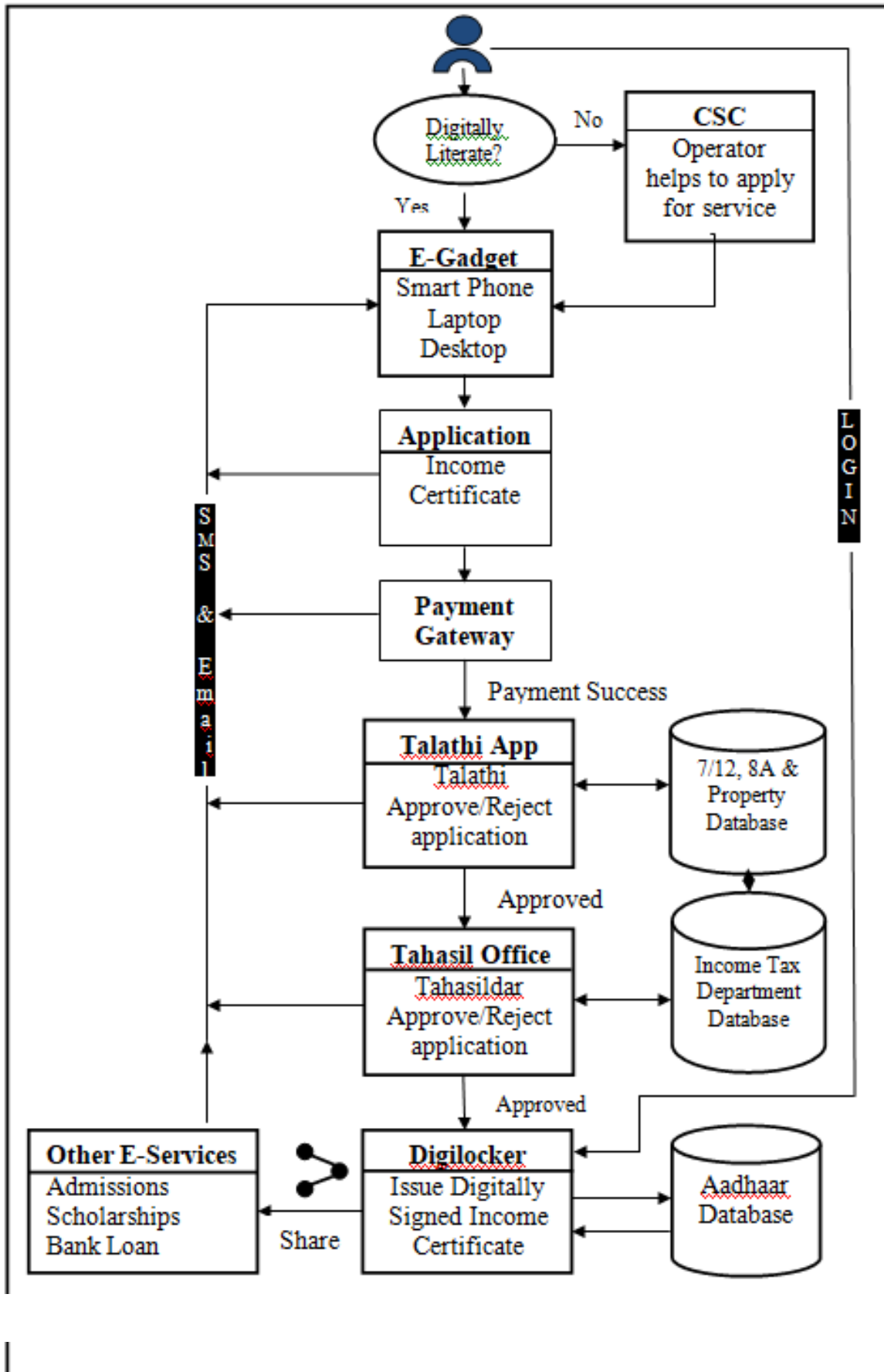


Fig. 2. Cloud Based Service Delivery

With PaaS, each platform components—whether middleware, messaging, integration is provided as a service. With PaaS, government can develop new applications or services in the cloud that do not depend on a specific platform to run, and government can make them widely available to users through the Internet. The open architecture of PaaS supports the integration with legacy applications in the government and interoperability with onsite systems. This can avoid the Vendor Lock-In problem. Interoperability is one of the advantages which give the flexibility to take advantage of cloud benefits while retaining the data and applications onsite as needed.

IntaaS delivers an integration solution which provides connectivity to back-end systems, sources, files and operational applications through the well-defined interfaces implementation, web services and coordination between the applications and data sources. This can provide users with a more loosely coupled environment and safe from complex interdependencies. The IntaaS delivery model enables integration across the cloud, making it possible to share data between the ERP, DSS, CRM, Knowledge Management systems and third party vendors in real-time.

### C. Cloud Based Service Delivery (CBSD)

The cloud based service delivery model serves through the Software as a Service (SaaS) as service delivery platform for the government services. This is the most visible layer to the end-users (citizens), which rests on the top of PaaS layer. With SaaS, citizens/operators can access services anytime, anywhere on any electronic gadget/device simply by navigating to them through a web browser. With SaaS, government can provide high-end, enterprise-level services at a lowest price and reduce maintenance costs. The efficiency brings at a minimal cost has a big positive effect on the government service delivery. Using a SaaS architecture that is multitenant, one application can be delivered to millions of different citizens/operators through the Internet browsers. There is no upfront licensing required by citizens/operators and government get cost saving benefit because government is maintaining a single application.

Digitally Literate Citizens (DLC) can directly avail the services from their laptop, desktop, mobile or IVRS whereas illiterate citizens can avail the service by visiting nearest CSC. CSC operator will help to the citizen for their desired service and pay the requisite charges for the service. For example, DLCs apply for the income certificate through their smart phone and confirm the application by paying service charges through the payment gateway. The income certificate requests are appear in the Talathi login. Talathi will check and enquire about the income of citizens from various online resources/database of the Income Tax department online services and 7/12 extract, 8A extract, property taxation online services. If everything is fine, then Talathi will approve the certificate otherwise he/she will be reject the application. Successfully approved income certificate will be now in the Tahasil Office system. If the applicant has been fulfill the all required government resolutions, rules and regulations then the Tahasildar will approve the certificate and issue the digitally signed certificates otherwise Tahasildar will reject the application. Digitally signed certificate will be issued in

the citizen's Aadhar number linked and cloud based Digilocker repository. From here the citizen can download any time through his secure login and take the print of this certificate. Also the citizens can directly share the certificate to the external applications or other e-services like school/college admissions system, e-scholarship system and bank loan etc. In this process, the citizen will be getting the every stage status of application through the SMS and email on their registered mobile number and email ID. Illiterate citizen can get the digitally signed certificate from the CSC where he/she applied for the certificate. This way the citizens shall avail the any online services at anytime and anywhere through their electronic gadgets. Cloud based service delivery process shown in fig. 2.

### III. CONCLUSION

Government services should be provided through the cloud based delivery model so that the citizens and operators can use the service without bothering with the software patches installation and hardware equipments details involved in the implementation. There should be implementation of proposed three tier framework i.e. Tier 4 Data Center (T4DC), Integration of Services (IntaaS) and Cloud Based Service Delivery (CBSD). By adopting the framework the literate citizen can avail the e-governance service directly on their finger tips and the illiterate citizens avail the service from the CSC. This will definitely result into a more effective and outstanding performance of government electronic services. In near future, there should be a strong research and development in the security and privacy of the government data.

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