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Status of e-Governance in India and Maharashtra State

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ABSTRACT

The concept of e-governance in India owes its origin during the seventies with an in-house development of applications for government organizations like planning, economic monitoring, defence and the deployment of IT to manage data and intensive functions related to elections, census, tax administration etc. In Maharashtra state, the government started the development of projects through the establishment of department of information technology in secretariat. This paper studies the E-Government Development Index and E-Participation Index, e-governance initiatives and hardware infrastructure for the development of e-governance in Maharashtra state and India.

Keywords: EGDI, EPI, SDC, MSWAN, MahaGov Cloud

I. INTRODUCTION

The most prominent advantage of e-government from an organizational point of view is to improve the efficiency and effectiveness of the existing system so that it results into saving public money, efforts and time. While delivering the services to the various stakeholders of the society, it is the duty of government to design integrated services and the citizen centric system and deliver services at the doorstep of the citizens, seven days of a week and twenty-four hours. Among these services some projects initiated and maintained by the central government, some services by the state government and some by local bodies. From the citizens' point of view, one of the most significant benefits of electronic government over a manual system is *'anywhere and anytime'* availability of government services to citizens. Apart from this, there is a provision of local or multilingual information content, user friendly navigation, accessibility of information, regular updates and latest changes in government services and schemes [1].

II. UNITED NATIONS E-GOVERNMENT SURVEY

United Nations Division for Public Administration and Development Management has been publishing the E-Government Survey of the 193 member countries of United Nations. This survey publishes every two years since 2003. E-Government Survey 2016 published in July 2016. In this survey, two reports are published i.e. E-Government Development Index (EGDI) and E-Participation Index [2].

A. E-Government Development Index

E-Government Development Index (EGDI) presents the status of the E-Government Development of the member countries of United Nations. This survey publishes the assessment of website development

patterns in a country and EGDI incorporates assess the parameters, such as infrastructure and educational levels, to judge the country how using the IT to promote access of IT and participation of citizens in e-government. EGDI is combined determination of three dimensions of e-government i.e. provision of online service, telecommunication connectivity and human capacity. Table I shows the top 10 country list in EGDI. UN E-Government Survey 2016, India is not even in top 100 ranks in EGDI. India is gradually developing in the ranking of Electronic Government Development Index (EGDI) in the world. Among the 193 member countries of United Nations, India stands at the 107th rank in EGDI 2016 survey whereas earlier at 118th rank in EGDI 2014 survey. India stands at the 2nd rank among the 8 countries of South Asia. Table II shows the status of India in EGDI in the South Asia.

TABLE I
TOP TEN COUNTRIES LIST IN EGDI

Sr no	Country	2016		2014		2012	
		Rank	Index	Rank	Index	Rank	Index
1	United Kingdom	1	0.9193	8	0.8695	3	0.8960
2	Australia	2	0.9143	2	0.9103	12	0.8390
3	Republic of Korea	3	0.8915	1	0.9462	1	0.9283
4	Singapore	4	0.8828	3	0.9076	10	0.8474
5	Finland	5	0.8818	10	0.8449	9	0.8505
6	Sweden	6	0.8704	14	0.8225	7	0.8599
7	Netherlands	7	0.8659	5	0.8897	2	0.9125
8	New Zealand	8	0.8653	9	0.8644	13	0.8381
9	Denmark	9	0.8510	16	0.8162	4	0.8889
10	France	10	0.8456	4	0.8938	6	0.8635

(Source: UN E-Government Survey website)

TABLE II
STATUS OF INDIA IN EGDI IN SOUTH ASIA

Sr No	Country	2016		2014		2012	
		Rank	Index	Rank	Index	Rank	Index
1	Sri Lanka	79	0.5445	74	0.5418	115	0.4357
2	**India**	**107**	**0.4638**	**118**	**0.3834**	**125**	**0.3829**
3	Maldives	117	0.4330	94	0.4813	95	0.4994
4	Bangladesh	124	0.3800	148	0.2757	150	02991
5	Bhutan	133	0.3507	143	0.2829	152	0.2942
6	Nepal	135	0.3458	165	0.2344	164	0.2664
7	Pakistan	159	0.2583	158	0.2580	156	0.2823
8	Afghanistan	171	0.2313	173	0.1900	184	0.1701

(Source: UN E-Government Survey website)

B. E-Participation Index

E-Participation Index (EPI) is an initiative by the United Nations for participation of the citizens in the cornerstone of socially inclusive governance. The objective of the E-Participation is to enhance the citizen's access to information and public services and to encourage citizens in decision making which will have an impact on society for enhancing their lives. Table III shows top 11 countries in E-Participation Index in the world. UN E-Government Survey 2016, India is in the top 100 ranks in EPI. India is at the rank 27th out of 193 member countries of the United Nations whereas the 1st rank among the 8 countries of South Asia. Table IV shows Status of India in E-Participation Index in the South Asia.

TABLE III
TOP ELEVEN COUNTRIES IN E-PARTICIPATION INDEX

Sr. No.	Country	2016		2014		2012	
		Rank	Index	Rank	Index	Rank	Index
1	United Kingdom	1	1.0000	6	0.9608	5	0.9211

2	Japan	2	0.9831	5	0.9608	11	0.7368
3	Australia	2	0.9831	7	0.9412	8	0.7632
4	Republic of Korea	3	0.9661	2	1.0000	1	1.0000
5	Netherlands	4	0.9492	1	1.0000	1	1.0000
6	New Zealand	5	0.9492	19	0.7843	25	0.5789
7	Spain	7	0.9322	19	0.7843	31	0.5000
8	Singapore	8	0.9153	10	0.9020	3	0.9474
9	Canada	8	0.9153	14	0.8235	15	0.6842
10	Italy	8	0.9153	19	0.7843	56	0.2632
11	Finland	8	0.9153	24	0.7059	11	0.7368

(Source: UN E-Government Survey website)

TABLE IV
STATUS OF INDIA IN E-PARTICIPATION IN SOUTH ASIA

Sr No	**Country**	**2016**		**2014**		**2012**	
		Rank	**Index**	**Rank**	**Index**	**Rank**	**Index**
1	**India**	**27**	**0.7627**	**40**	**0.6275**	**75**	**0.1842**
2	Sri Lanka	50	0.6610	33	0.6471	109	0.0789
3	Bangladesh	84	0.5254	84	0.3922	109	0.0789
4	Nepal	89	0.5085	110	0.2941	134	0.0263
5	Afghanistan	104	0.4237	152	0.1373	89	0.1316
6	Pakistan	114	0.3729	97	0.3333	89	0.1316
7	Bhutan	118	0.3559	92	0.3529	134	0.0263
8	Maldives	146	0.2203	117	0.2745	134	0.0263

(Source: UN E-Government Survey website)

III. STATUS OF MAHARASHTRA STATE

Recently, Maharashtra state has made significant progress in the area of e-governance in the form of Digital India, MyGov (*Aaple Sarkar*) [3]. In the last few years, Maharashtra government has also realized that ICT has been playing a crucial role in transforming government services to the doorsteps of the citizens. The Maharashtra state is the pioneer in citizen centric e-governance initiatives like Common Service Centre (*Maha e-Seva Kendra, SETU*), Land Record System (*Bhoomi Abhilekh*) and Public Distribution System (*Sarvajanik Vitaran Pranali*).

At the state level, the researcher selected the Maharashtra state for the study of the e-governance status. Maharashtra state is one of the diversified state in the India. The Collectorate offices of the each district are responsible for implementation and sustaining the e-governance services in throughout the district. There are so many e-governance initiatives are implemented by the government of Maharashtra out of that the researcher concentrated on the three most important e-governance initiatives that are *Maha E-Seva Kendra* (CSC), *Bhoomi Abhilekh* (Land Record System) and *Sarvajanik Vitaran Pranali* (Public Distribution System). The current status of the CSC is fully implemented stage, Land Record System is in partial implemented stage and PDS is in development stage.

IV. CORE E-GOVERNANCE INFRASTRUCTURE IN MAHARASHTRA

Requirement of adequate infrastructure for the service delivery system is the way to core fruitful execution of any e-governance initiative. Aside from improvement of imperative computing and software systems for managing the governmental business processes, prerequisites of communication and networks system, security framework tools and supporting services and so on, must be set up before implementation or deployment of any e-governance application. The core infrastructure and human asset necessity should be resolved and gained for effective e-governance implementation.

A. Maharashtra State Data Centre (MH-SDC)

The State Data Centre (SDC) scheme of government of India is one of the important elements of the core infrastructure for supporting e-governance initiatives of NeGP. Under NeGP, state data centre is being created for the state to consolidate services, applications and infrastructure to provide efficient electronic delivery of services. The services can be core connectivity, infrastructure such as State Wide Area Network (SWAN) and Common Service Centre (CSC) extended up to village level. The State Data Center would provide much functionality like central repository of the state secure data storage, citizen information/service portal, state intranet portal, disaster recovery, remote management and service integration.

The Maharashtra state government operates a fully functional tier II data center as TIA-942 standard SDC spread over 1450 square feet area and the first of its kind in India to have a fully operational on government cloud [4]. The main objective of this service is to reduce the cost of data center and optimizing the IT capacity. The SDC has 39 rack servers with up to 86 TB storage capacity and has over 150 applications running on it.

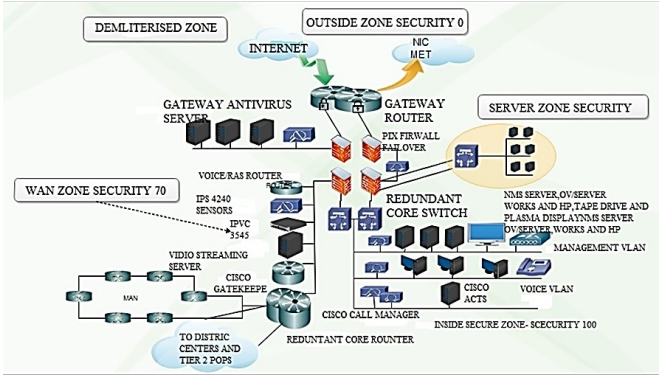

Figure 1. Maharashtra State Data Centre view

The MH SDC offers following services to the government's departments as

- Cloud Services
- Co-location Services
- Managed Hosting

The MH SDC is a member of Asia-Pacific Network Information Centre (APNIC) and only of its kind in India and to have its own pool of APNIC/IRINN IPv4 and IPv6 addresses. As there is a global crunch for IPv4 addresses, there has been a mandate from Department of Telecommunication (DoT) for enabling IPv6 addresses. To adhere to the mandate, MH SDC has successfully deployed end to end IPv6 along with IPv4. MH SDC is the first in the country to enable IPv6 at the MH SDC. As a part of Business Continuity Planning (BCP) and Disaster Recovery (DR), the GoM has created a facility at BSNL Internet Data Center fort as an extension centre to the MH SDC for storing the vital data and also providing collection services to the departments.

MahaGov Cloud Service

MahaGov Cloud is an initiative by DIT, Government of Maharashtra to provide Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) Cloud service to various departments in Government of Maharashtra. The MahaGov Cloud is implemented in State Data Center and is extensively used by many departments for website and application hosting. The availability of MahaGov Cloud and ease of provisioning infrastructure has encouraged departments to host their application in SDC. SDC is envisioned as the 'Shared, reliable and secure infrastructure services centre for hosting and managing the e-governance applications of state and its constituent departments. SDC is envisaged to establish a robust infrastructure to enable the government to deliver the services quickly and effectively to its stakeholders. Continuing to the shared service centre, during the implementation of Maharashtra state data centre, the state has conceptualized on implementing virtualization for efficient utilization of the infrastructure in SDC. The objective of this initiative is to reduce data centre cost drastically while increasing the IT capacity with maximum flexibility.

A Proof of Concept (PoC) on virtualization using VMware and Microsoft Hyper V was started in November, 2011 leading to implementation of fully operational Cloud commissioned in May 2012. MahaGov Cloud is the only government cloud setup in India which is running on production environment with such high volume of servers and applications.

The services will be offered through SETU and Mahaonline through the SDCs. While SETU would provide IaaS, PaaS and SaaS, Mahaonline would offer SaaS, Business Intelligence as a Service (BIaaS), GIS as a Service (GISaaS), API as a Service (APIaaS) and Survey as a Service (SyaaS).

Uniqueness of MahaGov Cloud:

- Only of its kind government cloud setup in India
- First state in India who enable IPv6
- High performance and volume of servers and its applications
- Own block of 4 B ASN number and IPv4 and IPv6
- Membership in APNIC/IRINN this makes it vendor independent
- Cloud services offered by the government and for the government
- High availability and load balancing at ISP level
- The rate chart serves as a benchmark for the user departments

B. Maharashtra State Wide Area Network (MSWAN)

The MSWAN is anticipated as the backbone network to carry data, voice and video throughout the state. It brings the information and communication requirements of the entire state government and among its departments. The MSWAN consists of the III tier structure. These three tiers are State Headquarter (SHQ), District Headquarter (DHQ) and Taluka Headquarter (THQ).

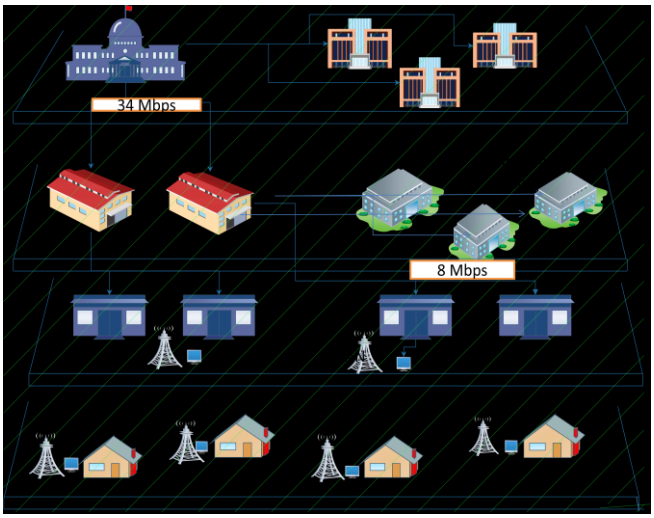

Figure 2. Maharashtra State Wide Area Network

These tiers have Point of Presence and Point of Interconnectivity for various horizontal offices. The MSWAN envisages the establishment of an intra-government network with a minimum of 2 Mbps connectivity to connect 35 District Headquarters to the State Headquarter (SHQ), 358 Taluka Headquarters and 6 Divisional Headquarters to District Headquarters [5].

V. CONCLUSION

India is not having satisfactory rank in the United Nations Survey i.e. E-Government Development Index and E-Participation Index. But India's rank is growing in EGDI and EPI. In India as well as in Maharashtra state, there are many issues and challenges in development and implementation of e-governance services. Maharashtra government joint venture with TCS is providing the electronic governance services in the state through the Mahaonline portal. The state government should spread the awareness among the citizens about the existence and use of e-governance services. Government of India should provide the basic infrastructure like high speed internet at free of cost in for the citizens. Easy accessible applications and mobile apps will increase the use of the e-governance services. This will helps to grow the India's global

ranking in the United Nations E-Government Survey EGDI and EPI.

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