CHAPTER 2

E-Governance in India

Sunil K. Muttoo

2.1 E-Governance Development in India

India is considered as an early adopter of E-Governance among other developing countries. The first wave evolved bottom-up. It was the recommendation of some social entrepreneurs to the district level officials about the wonders of new ICTs that made them consider using IT in government departments. ICT can help providing convergent services to remote areas, and improving transparency (Singh 2012). With the advent of World Wide Web, striking developments were witnessed in IT applications by governments. The technology and E-Governance initiatives have been increasing since then. The increasing recognition of importance of electronics made the government of India to establish a department of Electronics in 1970. Another step taken towards E-Governance was establishment of National Informatics Centre (NIC) in 1977 which brought information and communication in limelight. It was the first major step taken by the government of India that contributed towards E-Governance. However, E-Governance program in India gained prominence with the launch of NICNET in 1987 satellite-based computer network nationwide. Computerization (provision of free hardware and software) was done in all the district, State and National level offices of the country (Mitra 2012).

In India, E-Governance was started in Kerala by the name of *AKSHAYA*. This project provided power of networking and connectivity to 1000–3000 families in Kerala by setting up around 5000 multipurpose community technology centers called *Akshaya E-Kendras* across Kerala. Initially owned

by private entrepreneurs, each E-Kendra set up was within 2–3 kilometers of every household. The project Akshaya focused on E-Learning, E-Transaction, E-Governance, information and communication and provides social and economic power to the public (Mitra 2012).

The *Gyandoot* project was launched in 2000 in Dhar district for mass-based information revolution. The purpose of this project was to provide user-charge-based services to the masses and to fulfill the information technology-related developmental needs of government departments and Panchayats without any cost. The aim was to create pressure from the community front-end for digitization of backend departmental processes.

One of the most organized and successful efforts of E-Governance in India made during 2000–2005 was *rural E-Seva* launched in West Godavari district of Andhra Pradesh. The two-community level E-Governance initiatives, *N-logue* and *Drishti* running thousands of community tele-centers across the country to deliver E-Governance services were also successful steps taken by the Indian government.

The early efforts are seldom scaled up. Around 2005–2006, N-logue and *Drishti* were closed. Rural E-Seva also moved out of E-Governance services. However, these initiatives developed a lasting impression of new ICTs as a medium to provide better services to the people as well as make the system more transparent and accountable. They created the framework for the very determined E-Governance project National E-Governance Plan (NeGP), launched by the Government of India in 2006 (Singh 2012).

2.2   STRUCTURE OF E-GOVERNANCE IN INDIA

The institutional mechanism guiding E-Governance in India is headed by an apex body that comprises of senior strategic members from NIC, NASSCOM, IT, BIS, MAIT, CDAC and Planning Commission, the apex body approve, notify and enforce standards. The next level bodies include NIC, DIT that are responsible for standards formulation and STQC which is meant for execution. Expert committees and Working Groups under NIC and Specialist Committees under DIT are formed for planning and formulation of standards and committee formed under STQC release and maintain standards (DeitY 2016a, b, c) (Fig. 2.1).
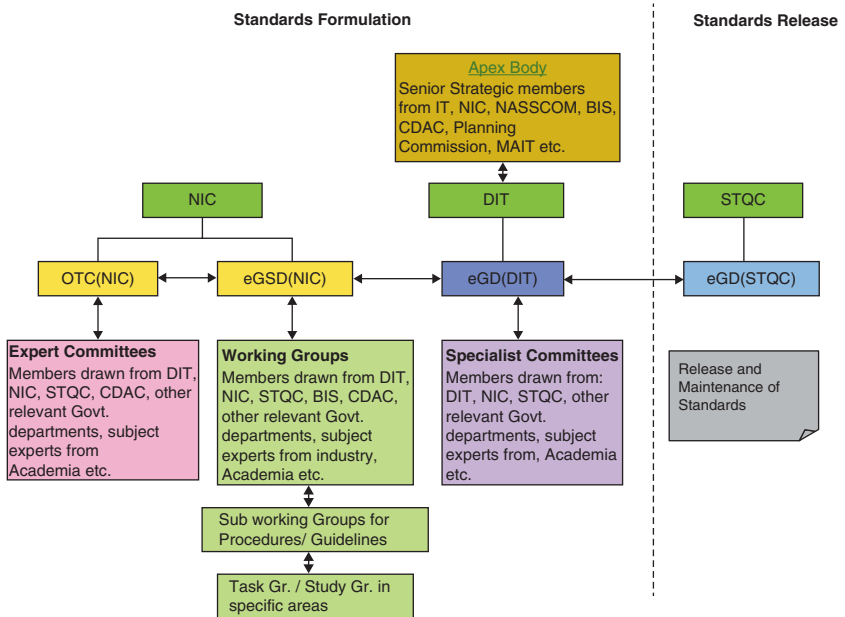
Institutional Mechanism

Fig. 2.1 Institutional mechanism of E-Governance. (Source: DeitY 2016a, b, c)

2.3 NATIONAL E-GOVERNANCE PLAN FRAMEWORK

2.3.1 *Initiatives*

2.3.1.1 *National E-Governance Plan*

Numerous initiatives under the E-Governance plan have been taken by the State and Central governments over the years. The initiatives aim at improving the delivery of public services and their assessment process. From computerization of government departments, E-Governance has evolved to advanced services such as citizen centricity, service orientation and transparency. Previous E-Governance initiatives have become a source of learning to shape progressive E-Governance strategy of the country. A programmed approach has been adopted with a vision and strategy to speed up the process of E-Governance at Local, State and

National levels. This approach has been introduced with the aim of reducing the costs, allow interoperability through standards and provide services to the citizens.

The National E-Governance Plan (NeGP) is a comprehensive view of E-Governance initiatives in India. NeGP, initiated by Department of Electronics and Information Technology (DEITY) and Department of Administrative Reforms and Public Grievances (DARPG), aims to provide better government services to the citizens and businesses of the country.

2.3.1.2 *Implementation Strategy, Approach and Methodology of NeGP*

The implementation process of E-Governance involves provisioning of hardware and software, networking, process re-engineering and change management that makes it a complex process. The earlier experience from E-Governance initiatives, the NeGP has been introduced with the following methodology (India.gov.in 2015).

a. Common Support Infrastructure
   The proper implementation of NeGP requires setting up of support IT infrastructure such as Common Services Centres (CSCs), State Wide Area Networks (SWANs), State Data Centers (SDCs) and Electronic Service Delivery Gateways.
b. Governance
   The process of implementation of the program involves arrangements for monitoring and coordinating the direction of the competent authorities. The proper implementation of the NeGP program requires laying down standards and policy guidelines, providing infrastructure, building necessary capacity, R&D, and so forth. DEITY and other institutions like NIC, STQC, CDAC, and NISG play an effective role in the implementation process and, therefore, are required to strengthen themselves to promote effectiveness.
c. Centralized Initiative, Decentralized Implementation
   A centralized approach is being used to promote E-Governance in order to ensure citizen-centric orientation and optimal utilization of ICT infrastructure and to enhance interoperability of E-Governance applications while promoting a decentralized implementation model. The program intends to identify successful projects and replicating them with modifications as needed by the project.

d. Public-Private Partnerships (PPP)
   The PPP model is suggested to enlarge the resource pool and to deal with security aspects.
e. Integrative Elements
   In order to facilitate integration and avoid ambiguity, unique identification codes have been adopted for citizens and businesses.
f. Program Approach at the National and State Levels
   NeGP needs involvement of various Union Ministries/Departments and State Governments. The program was implemented with well-defined roles and responsibilities of each agency involved for overall integration at the national level. Program management structures have been introduced to implement this.
g. Facilitator Role of DEITY
   DEITY provides support and technical assistance for the implementation of NeGP and is, therefore, considered to be the facilitator of the implementation of the program. It assists the Apex Committee in managing the program. DEITY is considered a catalyst in promoting and implementing pilot/infrastructure/technical/special projects and supporting the program. Government Process Re-engineering and Change Management is another function of DEITY. The NeGP is running from the funds of Planning Commission and Ministry of Finance and through Plan and Non-plan budgetary provisions (DeitY 2016a, b, c).
h. Ownership of Ministries
   Mission Mode Projects have been introduced under NeGP by the concerned line Ministries. E-Governance is being used for major projects like Bharat Nirman, Rural Employment Guarantee Schemes, and so on. The State governments are also given the flexibility to identify a few state-specific projects to contribute to the economic development of the State.

   The NeGP comprises 27 Mission Mode Projects and 8 components as on 18 May 2006. The MMPs are implemented by Central and State Ministries to align with the objectives of NeGP. The infrastructure components include State Data Centers (SDCs), Common Services Centres (CSCs) and National E-Governance Service Delivery Gateway (NSDG), State Wide Area Networks (SWAN), State E-Governance Service Delivery Gateway (SSDG), and Mobile E-Governance Service Delivery Gateway (MSDG) (Kumar 2016).

2.3.2   National E-Governance Division

National E-Governance Division (NeGD) was proposed to enhance proper implementation of NeGP and provide a suitable institutional mechanism to enable DeitY to engage competent resources from the open market and from the Government. NeGD was formed by DeitY in 2009 as an Independent Business Division (IBD) within Media Lab Asia (MLAsia) (a Section 8 Company under DeitY).

The functions of NeGD include Program Management of NeGP, that is, supporting DIT in fulfilling the responsibilities assigned to DIT under NeGP. It helps in proper implementation of NeGP by various Ministries and State Governments and provides technical assistance to Central Ministries and State Line Departments. It serves as a secretariat to the Apex Committee and handles issues related to technology, security, standards and infrastructure. It frames policies, creates organization structure and is responsible for human resource development, training and awareness building.

NeGD is the facilitator for initiatives under Mission Mode Projects and is a supporter for components under NeGP 2.0 across the country. NeGD also supports central and state governments/ministries to implement their E-Governance initiatives (NeGD 2016a, b).

2.3.3   Services

The National E-Governance Plan aims to bring public services closer home to citizens, as stated in its Vision Statement. The 31 Mission Mode Projects (MMPs) launched under the National E-Governance Plan are responsible for Electronic Service Delivery.

Public service is defined as government services provided directly or through any service provider; such as the receipt of forms and applications, issue or grant of any license, permit, or approval and the receipt or payment of money by government.

Electronic Service Delivery is the delivery of government services through electronic mode such as the receipt of forms and applications, issue or grant of any license, permit, or approval and the receipt or payment of money by the government (DeitY 2016a, b, c).

Three kinds of services offered by the Government are as follows:

(a) Government to Citizen (G2C) Services accessed by the Citizens
(b) Government to Business (G2B) Services accessed by the Businesses
(c) Government to Government (G2G) Services accessed by Government Departments

2.3.4   Projects

2.3.4.1 Mission Mode Projects

Under the National E-Governance Plan (NeGP), mission mode projects (MMPs) have been introduced that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes and so on. Mission mode projects are individual projects with clearly defined objectives, scopes, and implementation timelines and milestones and have measurable outcomes and service levels.

Mission mode projects (MMPs) are classified as the state, central or integrated projects specifying their individual needs (DeitY 2016a, b, c) (Fig. 2.2).

The integrated Mission Mode Projects include E-Procurement, E-Courts, E-Biz and common services centres. The recent initiative introduced under Digital India include Direct Cash transfer, MyGov Citizen portal, E-Kranti

Central MMPs	State MMPs	Integrated MMPs
• Banking • Central Excise & Customs • Income Tax (IT) • Insurance • MCA21 • Passport • Immigration, Visa and Foreigners Registration & Tracking • Pension • E-Office • Posts • UID	• Agriculture • Commercial Taxes • E-District • Employment Exchange • Land Records (NLRMP) • Municipalities • E-Panchayats • Police (CCTNS) • Road Transport • Treasuries Computerization • PDS • Education • Health	• CSC • E-Biz • E-Courts • E-Procurement • EDI For ETrade • National E-Governance Service Delivery Gateway • India Portal

Fig. 2.2   Mission Mode Projects. (DeitY 2016a, b, c)

scheme, Digital Cloud, Digi Locker, E-Sign framework, Swachh Bharat Mission mobile App, National Scholarship Portal, E-Hospital, Bharat Net, Wi-Fi hotspots, Next generation network, electronics development fund, Centre of Excellence on Internet of Things (IoT), M-Governance and Mobile Seva (Pareek 2015).

2.3.5   *Capacity-Building Scheme*

The government of India introduced Capacity-Building Scheme for establishment of institutional framework for strategic decisions at the State Level. The scheme was approved by the Cabinet Committee on Economic Affairs (CCEA) in 2008 with a budget of Rs. 313 Crores. The objectives of the scheme include:

- Setting up of State E-Governance Mission Team (SeMT) for decision making.
- Providing training and set up orientation program to SeMTs and decision makers.
- Setting up of Capacity-Building Management Cell to coordinate and implement plans under the scheme.

Since most states have inadequate personnel and the skill-sets needed to solve the problems, so to improve service orientation in order to fulfill the objectives of NeGP, a capacity-building scheme is necessary to develop skills and handle the challenges. The objectives of capacity-building scheme are to align project design to NeGP service orientation, to enhance consistency across initiatives, allow change management, Government Process Re-engineering, promote resource utilization, leverage external resources, implement and monitor best practices (DeitY 2016a, b, c).

2.3.6   *Awareness and Communication*

The proper implementation of National E-Governance Plan involves awareness and communication. The awareness and communication efforts of the government help in raising the level of awareness about NeGP, related services and service delivery channels amongst stakeholders across the country.

The Department of Electronics and Information Technology is responsible for the awareness task, for branding of NeGP, its Mission Mode Projects, and improving visibility of E-Services through mass media, rural outreach campaign, conferences, workshops and exhibitions (DeitY 2016a, b, c).

2.3.7 Standards, Policies and Frameworks

Standards ensure sharing of information and interoperability of data across departments and with citizens through E-Governance applications. DeitY is responsible to promote the usage of standards to avoid any technology issues. NeGP has set up an Institutional Mechanism to adopt Standards for E-Governance for areas like Metadata & Data, Localization and Language Technology, information security and interoperability, biometrics, and quality and documentation (DeitY 2016a, b, c) (Fig. 2.3).

2.3.8 Impact and Outcomes

National E-Governance Plan is viewed to promote effective service delivery to citizens and improve the quality of basic governance. A large amount of resources is invested in promoting E-Government projects with the aim to enhance service quality and delivery and reduce challenges related to governance. An assessment strategy is devised for the existing E-Government projects for project appraisal and capacity building. Under the assessment process, DeitY also undertakes E-Readiness Assessment of States and Union Territories (DeitY 2016a, b, c).
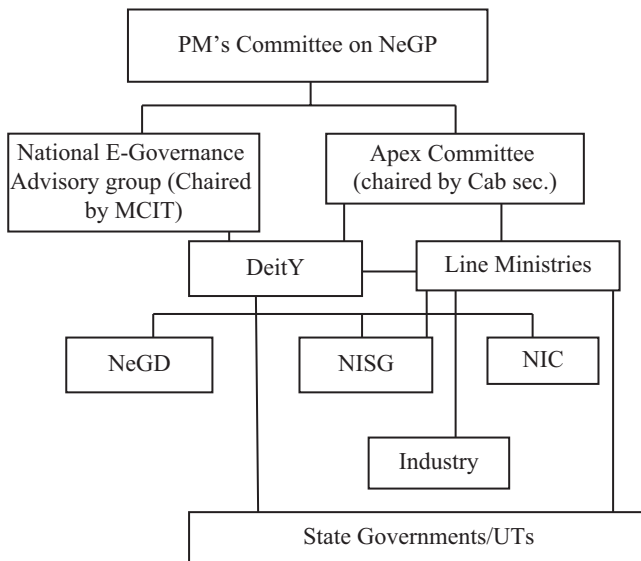

Fig. 2.3 Institutional framework of NeGP at National level. (Source: DeitY 2016a, b, c)

## 2.4   E-Governance Infrastructure

The government has realized the importance of IT in growth and therefore has directed all government departments to allocate up to 3 percent of their annual budget to computerization, that is, for procurement of hardware and software and 5 percent for building IT infrastructure (TCS 2008).

2.4.1   *NeGP Infrastructure Plan*

Under NeGP, core infrastructure and institutional mechanisms have been set up to create an environment favorable to citizens and businesses. The plan involves setting up of State-wide Area Networks (SWAN), State Data Centers (SDCs) and Common Service Centres (CSCs). The National Data Centers (NDCs) were introduced as the core infrastructure under the plan (Fig. 2.4). The four main pillars of NeGP infrastructure initiative are (NeGP 2016) as follows.

1. State-wide Area Networks (SWANs).
2. State Data Centers (SDCs).
3. Common Services Centres (CSCs).
4. Electronic Service Delivery Gateways.

Fig. 2.4 NeGP infrastructure. (NeGP 2016)
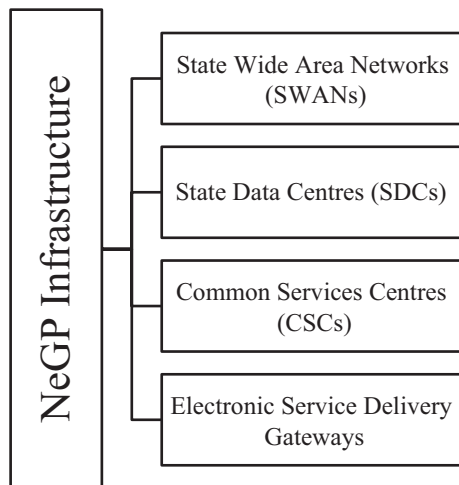
SWANS are the secured networks in the State headquarters up to block level with minimum bandwidth capacity of 2Mbps. The plan also aimed at establishing 100,000 broadband internet-enabled CSCs in rural areas to provide E-Services to the citizens at their doorsteps.

Many States have established SWANS, data banks and customized applications. The State Data Centers have been established to improve the interconnectivity of the servers. VSAT connectivity has also been introduced in all districts of the country.

An SDC serves as a physical storehouse of public and private data. It acts as a centralized database for various E-Government applications. The purpose of SDC is to provide shared, secured and managed infrastructure for E-Government applications. With the support of State-wide Area Network (SWAN) and Common Service Centre (CSC), SDC is capable of providing efficient electronic delivery of G2G, G2C and G2B services.

CSCs are access points for service delivery that provide high-quality and cost-effective data content and services to support E-Governance. It provides services in the areas of E-Governance such as agriculture, education, banking, health, commercial, telemedicine, entertainment as well as other private services. It promotes rural entrepreneurship, builds capacities, enables community participation and brings social change (NeGP 2016).

Electronic Service Delivery Gateways are messaging and routing switches that allow interoperability and exchange of electronic data across government departments. It helps in disseminating government information anytime and maintains online records of the same. It enables status tracking, downloading of forms and application submission by the citizens. Mobile service delivery gateway (Mobile Seva) is another platform for delivery of services. It makes use of mobile phones that provide multiple mobile-based channels SMS, USSD, IVRS, m-Apps to reach citizens of the country especially in rural areas.

The purpose of MSDG is to deliver Government services over mobile devices using mobile applications that are installed on the user's mobile handsets. The users generally include backend departments and citizens. It allows integration with backend department with the help of NSDG/SSDG, E-Governance exchange infrastructure.

MSDG offers services like SMS Gateway, Interactive Voice Response Systems (IVRS) based Services, and Unstructured Supplementary Services Data (USSD) based services and Mobile Applications and M-Gov Application Store (NeGP 2016).

2.4.2   Other Initiatives under NeGP

Apart from the main four pillars of NeGP infrastructure initiative, many other initiatives have been taken under the scheme to improve the infrastructure (Fig. 2.5).

Another component of the plan included Capacity-Building Scheme to establish a mechanism for capacity building and training of the end user. Capacity-Building Management Cell at the center and State E-Governance Mission Team have been set up for this purpose.

Another important infrastructure initiative of the plan includes single-window access to all government-related information and services at all levels from Central government to State government to district administrations and Panchayats.

Satellite-based country-wide communication network (NICNET) has been initiated to provide connectivity in various Central, State and District ministries/departments which provides linkages in 611 districts with 3000 nodes in Wide Area Network (WAN) and Local Area Network (LAN) (Poulose 2010).

A very important initiative in this regard is E-Taal (Electronic Transaction Aggregation and Analysis Layer). E-Taal is a web portal developed for dissemination of statistics related to E-Transactions of E-Governance Projects including Mission Mode Projects. It collects transaction statistics from web-based applications and presents transaction counts done by various E-Governance projects in tabular and graphical form (Swathi 2016).
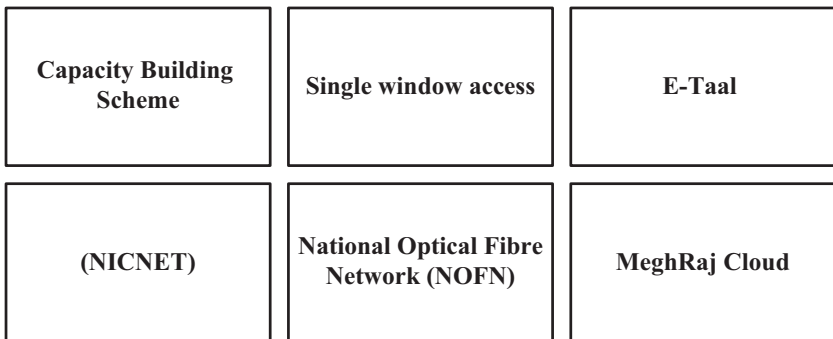
Capacity Building Scheme	Single window access	E-Taal
(NICNET)	**National Optical Fibre Network (NOFN)**	**MeghRaj Cloud**

Fig. 2.5 Other initiatives under NeGP Infrastructure Scheme. (NeGP 2016)

National Information Infrastructure (NII) is another initiative of the government to improve the infrastructure and is responsible for integration of network and cloud infrastructure with the objective of providing speedy connection and cloud platform to government departments at all levels. The infrastructure components of the initiative are State-wide Area Network (SWAN), National Knowledge Network (NKN), National Optical Fibre Network (NOFN), Government User Network (GUN) and the MeghRaj Cloud (Swathi 2016).

2.4.3   E-Governance under Digital India

The infrastructure plans under Digital India is another initiative to support E-Governance in India. One of the aims of Digital India plan is to provide Infrastructure as Utility to every citizen. It involves the private sector with the public sector to provide last mile access, location-specific Wi-Fi access (schools, universities, etc.) and applications to provide cloud-based services on demand to citizens such as branchless banking, skill development, health and education and E-Justice. Social Media, Mobility, Analytics and Cloud (SMAC) are visions of digital India campaign to provide governance and services on demand and digitally empower citizens.

E-Governance Policy Initiatives under Digital India include the E-Kranti Framework, Open Source Software, Open APIs, E-Mail Policy, Use of IT Resources, Collaborative Application Development and Application Development and Re-Engineering for Cloud Ready Applications. This compendium of initiatives intends to provide help to policy makers and practitioners to fasten the implementation of Digital India projects (Digital India 2016a, b, c).