

# Introduction to e-Governance

Introduction to e-Governance

## Programs Offered

### Post Graduate Programmes (PG)

- Master of Business Administration
- Master of Computer Applications
- Master of Commerce (Financial Management / Financial Technology)
- Master of Arts (Journalism and Mass Communication)
- Master of Arts (Economics)
- Master of Arts (Public Policy and Governance)
- Master of Social Work
- Master of Arts (English)
- Master of Science (Information Technology) (ODL)
- Master of Science (Environmental Science) (ODL)

### Diploma Programmes

- Post Graduate Diploma (Management)
- Post Graduate Diploma (Logistics)
- Post Graduate Diploma (Machine Learning and Artificial Intelligence)
- Post Graduate Diploma (Data Science)

### Undergraduate Programmes (UG)

- Bachelor of Business Administration
- Bachelor of Computer Applications
- Bachelor of Commerce
- Bachelor of Arts (Journalism and Mass Communication)
- Bachelor of Arts (General / Political Science / Economics / English / Sociology)
- Bachelor of Social Work
- Bachelor of Science (Information Technology) (ODL)



**AMITY** UNIVERSITY

**DIRECTORATE OF**  
**DISTANCE & ONLINE EDUCATION**

Amity Helpline: 1800-102-3434 (toll-free), 0120-4614200

For Distance Learning Programmes: [diadmissions@amity.edu](mailto:diadmissions@amity.edu) | [www.amity.edu/addoe](http://www.amity.edu/addoe)  
For Online Learning programmes: [elearning@amity.edu](mailto:elearning@amity.edu) | [www.amityonline.com](http://www.amityonline.com)



AMITY

**AMITY** UNIVERSITY | DIRECTORATE OF  
**DISTANCE & ONLINE EDUCATION**

# **Introduction to e-Governance**



**AMITY** | DIRECTORATE OF DISTANCE &  
UNIVERSITY ONLINE EDUCATION

© Amity University Press

**All Rights Reserved**

No parts of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.

**SLM & Learning Resources Committee**

*Chairman* : Prof. Abhinash Kumar

*Members* : Dr. Divya Bansal

Dr. Coral J Barboza

Dr. Apurva Chauhan

Dr. Monica Rose

Dr. Winnie Sharma

*Member Secretary* : Ms. Rita Naskar

# Contents

## Module - I: Basics of e-Governance

- 1.1 e-Governance Basics
    - 1.1.1 Overview of e-Governance
    - 1.1.2 Advantages & Drawbacks of e-Governance
    - 1.1.3 Initiatives of e-Governance
    - 1.1.4 e-Governance Policies, Strategies & Framework
    - 1.1.5 Interactions in e-Governance
    - 1.1.6 The State & Governance
    - 1.1.7 Development Policies & Globalisation
    - 1.1.8 Towards Good Governance through e-Governance
  - 1.2 Information Society Concepts and Principles
    - 1.2.1 Define Information Society
    - 1.2.2 Ways to Measure Information Society
    - 1.2.3 Benefits of Information Society
    - 1.2.4 Information Society Policies
    - 1.2.5 Information Society Challenges
  - 1.3 ICT and e-Governance
    - 1.3.1 Introduction to ICT
    - 1.3.2 Role of ICT in e-Governance
    - 1.3.3 Technology Impact on Society
- Case Study

## Module - II: e-Governance Architecture

64

- 2.1 Architecture & Infrastructure Related Aspects of e-Governance
  - 2.1.1 Planning & Implementing e-Governance
  - 2.1.2 Legal Framework of e-Governance
  - 2.1.3 Framework for Citizen Engagement in e-Governance
  - 2.1.4 Business Models for Implementation of e-Governance
  - 2.1.5 Change Management and Capacity Building in e-Governance Projects
  - 2.1.6 Infrastructural Preparedness :Legal , Human , Institutional ,
  - 2.1.7 Leadership and Strategic Planning
  - 2.1.8 Case Study

## **Module - III Introduction to National e- Governance**

### **Division (NeGD) & National e-Governance Plan(NeGP)**

126

3.1 Introduction to National e- Governance Division (NeGD)

3.1.1 Overview of National e-Governance Division

3.1.2 Purpose of National e-Governance

3.1.3 Mission Mode Projects- Central , State and Integrated

3.1.4 e-Government Readiness

3.2 Introduction to National e-Governance Plan(NeGP)

3.2.1 Overview of National e-Governance Plan (NeGP)

3.2.2 Digital India , Digital Divide , Common Service Centres

3.2.3 m-Governance and Recent Initiatives by e-Government

Case Studies of e-Governance Initiatives in Different States of India

## **Module - IV: e-Governance Technologies**

194

4.1 Technological Aspects

4.1.1 Information Management and Digital Archiving

4.1.2 Security and Privacy in a Networked World

4.1.3 Internet of Things: Smart Devices, Processes and Services

4.1.4 Latest Technologies Empowering Digital India Initiatives

4.1.5 Legal Aspects of Software and Database Protection

4.1.6 Technological Barriers of e-Governance

4.1.7 Pillars of Digital India

4.1.7 Technical Change and Techno-Economic Paradigms

Case Study

## **Module - V e-Governance Portals Around the Globe**

268

5.1 e-Governance Portals

5.1.1 Overview of e-Governance Portals

5.1.2 Types of e-Governance Portals

5.1.3 Objectives of e-Governance Portals

5.1.4 Effectiveness of e-Governance Portals

5.1.5 Measure of Effectiveness of Portals

5.1.6 Study of e-Governance Models of Different Countries

5.1.7 Case Studies of e-Governance Outside India

## Module - I: Basics of e-Governance

Notes

### Learning Objectives

At the end of this topic, you will be able to understand:

- Discuss e-Governance and its advantages and drawbacks
- Describe initiatives, policies, strategies and framework of e-Governance
- Evaluate interactions in e-Governance
- Classify the state and governance
- Explain the development policies and the role of e-Governance in good governance
- Discuss information society and its different ways of measure
- Analyse the benefits, policies and challenges of information society
- Identify ICT and its role in e-Governance
- Discuss the impact of technology on our society

### Introduction



The use of ICT in governing processes has led to a major paradigm shift in the field of governance known as Electronic-Governance or e-Governance.

In terms of dependable access to information within government, between government, at the national, state, municipal, and local level, among citizens, and businesses, e-Governance improves transparency, accountability, efficiency, and effectiveness of the governing process. It also empowers businesses through information access and use.

e-Governance encompasses more than just using government websites, e-mail, or online payments. It will alter how people interact with the government in the same way that it alters how people interact with one another. The use of IT in the nation's democratic processes, such as elections, is also mentioned.

## Notes

### 1.1 e-Governance Basics



e-Governance can be defined as the application of Information and Communication Technology (ICT) for providing government services, exchange of information, transactions, integration of previously existing services and information portals. The “e” in e-Governance refers for ‘electronic.’

In terms of dependable access to information within government, between government, at the national, state, municipal, and local level, among citizens, and businesses, e-Governance improves transparency, accountability, efficiency, and effectiveness of the governing process. It also empowers businesses through information access and use.

The main focus of the e-Governance or electronic governance is to ensure transparent, equitable, and accountable service delivery to the population. The purpose of the e-Governance promotes and improves the quality of governance and ensures people's engagement in the governing process using electronic means including e-mail, websites, SMS connectivity, and others.

e-Governance is about the use of ICT for leading the citizens and promoting the public service. It comprises a pragmatic use and exploitation of ICT for delivering efficient and cost-effective services and information and knowledge to the citizens being governed, so realising the immense potential of the government to serve the citizens. It made links between state and society, government and people, people to people, governance and society.

ICT provides efficient storing and retrieval of data, instantaneous transmission of information, processing information and data faster than the earlier manual systems, speeding up governmental processes, taking decisions expeditiously and judiciously, increasing transparency and enforcing accountability. It also assists in broadening the reach of government - both geographically and demographically.

In India, the main drive for e-Governance was supplied by the deployment of NICNET in 1987 – the national satellite-based computer network. This was followed by the establishment of the District Information System of the National Informatics Centre (DISNIC) plan to computerise all district offices in the country for which free hardware and software was supplied to the State Governments.

NICNET was expanded via the State capitals to all district heads by 1990. In the coming years, with ongoing computerisation, tele-connectivity and internet connectivity developed a huge number of e-Governance initiatives, both at the Union and State levels.

### 1.1.1 Overview of e-Governance



Global movements towards higher deployment of IT by governments emerged in the nineties, with the introduction of the World Wide Web. What this strong means to publish multimedia, support hyperlinked material and interactive information meant was a clearer outlet for G to C interactions and the promise of the attainment of the aims of good governance.

Governments weighed down by the rising expectations and demands of a highly aware citizenry suddenly began to believe that there can be a new definition of public governance characterised by enhanced efficiency, transparency, accountability and a citizen-orientation in the adoption of IT enabled governance.

Different meanings are associated with the phrase “e-Governance”:

**e-Administration:** The modernisation of government through the use of ICTs; the development of MIS data repositories; and the computerisation of records.

**e-Services:** Here, the goal is to improve ties between the people and the government. Online service providing is one example. Together, e-administration and e-services make up what is commonly known as e-Government.

**e-Governance:** The application of IT to enhance the capacity of the government to satisfy societal issues. To interact with people, it also involves publishing information

## Notes

about policies and programmes. It comprises more than just offering online services; it also includes using IT for government development goals and strategic planning.

e-Democracy: The use of IT to make it easier for members of various social groups to take part in state governance. The scope is substantially wider in this case with a declared emphasis on accountability, openness, and involvement. Online grievance redress forums, e-referendums, and transparency policies are a few examples that come to mind. Conceptually stronger. The definition of e-Government does not include e-Governance. While e-Governance allows for direct citizen participation in government operations, e-Government is simply the transmission of government services and information to the public via electronic means.

**According to Blake Harris, the Following are the Summaries of e-Governance:**

Government websites and email are only a small part of e-Governance. It involves more than just online service delivery. It is not simply about having access to government data online or making payments electronically. It will alter how people interact with governments in the same way that it alters how people interact with one another. New ideas about citizenship will emerge as a result, both in terms of requirements and obligations.

Citizens will be able to communicate with the government, take part in the formulation of government policies, and communicate with one another thanks to e-Governance. By adopting e-Government as a tool, the public will actually be able to participate in the decision-making process of the government and represent their true needs and welfare.

Governments are unique organisations that support governance. While seeking and receiving support from the populace, representative governments also require the willing participation of their civil officials. The result of politics, policies, and programmes is governance.

The characteristics of traditional and electronic government and governance are summarised in the table that follows.

**Table: Characteristics of Government and Governance**

Government	Governance
superstructure	functionality
decisions	processes
rules	goals
roles	performance
implementation	coordination
outputs	outcomes
e-Government	e-Governance
electronic service delivery	electronic consultation
electronic workflow	electronic controllership
electronic voting	electronic engagement
electronic productivity	networked societal guidance

### 1.1.2 Advantages and Drawbacks of e-Governance



Applications of ICT have an impact on the structure of public administration system. Technological progress makes the administrative systems easier to use by:

- Administrative Development
- Effective Service Delivery

We will now discuss them individually.

**Administrative Growth** Frequently, administrative reforms have concentrated on reorganising the structures and processes of governmental organisations as well as on procedural issues. Enhancing system capabilities is the main goal of these modifications. ICTs can be utilised to further the process and are already being used to do so. They contribute in the ways listed below:

- **Automation of Administrative Processes**

A system that is really e-governed would rely less on human input and be more directed by the system itself. Initially, the solutions were relatively rudimentary with poor information presentation, limited navigational options, sporadic service interruptions, occasionally out-of-date content, and little to no “back office” assistance.

However, improvements in these areas have been brought about by technical development and rising public demand. These days, administrative departments are networked and computerised. Government agencies have been the focus of software development to ensure operational effectiveness.

The departments have each developed a webpage with information specific to that department. This has made it possible to do out operations and move files online. Data flow, accounting, and other tasks have all become simple. Due to this, office operations and procedures are now more efficient, and unneeded delays have decreased.

- **Paper Work Reduction**

Automation would have an immediate effect on the paperwork. The ability to communicate electronically and store and access information electronically reduces paperwork to a larger level. All of this has caused the “less paper office” to emerge. This idea is described as an office setting where all information (files and messages) is distributed online among multiple officials.

## Notes

According to Dubey, a less paper office is one that has efficient electronic communication procedures that allow for the removal of duplicative work and pointless paperwork. Files and mail (information) are sent via wires to tiny computers at each employee's workstation under this approach. Office tasks including file motions, notes, etc. are computerised, and databases, documentation, and report preparation are now all managed electronically.

Due to connectivity over LAN, information and files are transferred online, decreasing the need for physical transportation and the need to consume and store large amounts of paper.

- **Quality of Services**

ICT enables governments to provide services to the public with increased transparency, adaptability, and sensitivity. The quality of services increases since consumers can now get them quickly and effectively. The ability to handle large volumes of transactions and information electronically and send it over a larger area via the internet and the web allows for the delivery of high-quality services in the shortest amount of time at the lowest feasible cost with the least amount of difficulties.

The accountability of authorities is guaranteed by providing a platform for online grievance redress. They now understand the problems that others face. Video teleconferencing monitoring has made it easier to centrally monitor, report on, and have face-to-face conversations with officials, ensuring good service delivery.

- **Elimination of Hierarchy**

ICT has helped the organisation by reducing the procedural delays brought on by hierarchical processes. It is now possible to simultaneously communicate data and information across various organisational levels thanks to LAN and the Intranet. ICT-enabled computerisation and communication patterns have boosted efficiency and encouraged participation at all levels in decision-making.

- **Change in Administrative Culture**

Victor Thompson's term "bureau-pathology" perfectly describes the traits that plague bureaucratic institutions. Since the New Public Administration era, attempts have been undertaken to discover solutions for dealing with the pathological or dysfunctional parts of bureaucratic behaviour as well as to improve the effectiveness and efficiency of public service delivery.

With e-Governance, the public scrutiny of public actions would undoubtedly promote administrative culture with norms and values of accountability, openness, integrity, fairness, equity, responsibility, and justice. Administration would instead become effective and receptive.

### **Effective Service Delivery**

ICTs are essential for providing services to the public in an efficient manner. ICTs guarantee:

- **Transparency by Dissemination and Publication of Information on the Web:** This makes information readily available and, as a result, makes the system publicly responsible. Additionally, since the web allows for the free flow of

information, anyone can access it with ease and without any barriers.

- **Economic Development:** The adoption of ICTs reduces transaction costs, resulting in less expensive services. For instance, lack of knowledge on markets, goods, agriculture, health, education, weather, etc., causes rural areas to suffer. If all of this information could be available online, this would result in better and more opportunities and, ultimately, success in these areas.
- **Social Development:** The citizens are empowered by having access to information. The creation, implementation, monitoring, and service delivery of programmes and projects can be accommodated for informed citizens' participation and expression of their concerns. Participation through the web will combat the biased forces influencing our social behaviour.
- **Strategic Information:** System Changing organisational environment and increased competitiveness have put pressures on the performance of the functionaries. Information on all aspects need to be made available to the management at every stage to make routine as well as strategic decisions. ICTs successfully enable putting such strategic information systems in place.

#### Some more Advantages of e-Governance

- **Speed:** Technology makes communication quicker. Internet, Phones, Cell Phones have shortened the time taken in everyday communication.
- **Cost Reduction:** The majority of government spending is designated for stationary expenses. Communication that uses paper requires a lot of stationaries, printers, computers, etc., all of which require ongoing high expenditures. Communication is more affordable because to the internet and phones, which helps the government save money.
- **Transparency:** The use of ICT increases the transparency of government. The government would make all of its information online accessible. The information is available for public viewing at any time. However, this is only feasible after the public has access to all of the government's information, which has been published to the internet. There are numerous ways to hide information from the general public under the current political system. ICT facilitates the internet availability of information, removing any opportunities for information concealment.
- **Accountability:** Once the governing process is made public the Government is immediately made accountable. Accountability is answerability of the Government to the public. It is the answerability for the deeds of the Government. An accountable Government is a responsible Government.
- **Convenience:** E-Government offers public services to citizens on their schedule and their venue.
- **Improved Customer Service:** Resources can be moved from back-end processing to the front lines of customer care thanks to e-Government.
- **Increased Access to information:** E-Government makes government information more readily available to the public, making it a valuable tool for decision-making that affects daily life and promoting citizen empowerment.

## Notes

### Disadvantages of e-Governance



Electronic governments have certain drawbacks as well. Moving government services into an electronic-based system is the fundamental drawback of an electronic government. This system eliminates the interpersonal communication that many individuals value.

In addition, the installation of an e-Government service has the drawback that, with many technology-based services, it is frequently simple to use the justification that issues with the service being delivered are due to technology (for example, the server has gone down).

There are some limitations to the deployment of an electronic government. Users' literacy levels and computer skills are important since those who can't read and write will need help. The elderly would serve as an illustration. Senior adults typically lack computer literacy; therefore, they would need to ask a customer service representative for help. Additionally, it provides room for middlemen to skew the information in the case of rural residents.

Studies have indicated that variables like access to Internet technology, the usability of services, and the availability of computers could potentially reduce the usability of government online.

Even though the public has a high level of confidence in the security provided by government websites, security, the risk of spam from revealing email addresses, and government preservation of transaction or interaction history are still concerns. The privacy of the data being gathered for the UID initiative is a subject of considerable concern. The public's full adoption of the Aadhar card is still being held back by concerns about cyberspace security and data exploitation.

The drawback of e-Governance includes some difficulties. The deployment of e-Government faces numerous possible obstacles. There are certain obstacles in the way of implementation, such as security, unequal citizen access to computer technology, expensive initial setup costs for e-Government solutions, and aversion to change. Trust, resistance to change, the digital gap, cost, and privacy and security concerns were listed as challenges.

**Trust:** Trust can be characterised in two ways: as an evaluation of the present circumstance or as an underlying tendency towards certain personality traits. Two levels of trust must exist for public administration activities to be implemented through e-Government. The first requirement is that the user must feel at ease, confident, and trusting when interacting with the tool or technology. The government's trust is the second dimension of trust.

A system's ability to stop fraudulent transactions must be balanced against the hardship that burdensome checks can place on honest persons.

Recently, when a computer carrying war veterans' personal information was destroyed, the security of their confidential information was jeopardised. This kind of occurrence can reduce user confidence in government systems and erode public trust. The adoption of e-Government services is restricted by two important considerations, namely trust and financial security.

**Resistance to Change:** According to the innovation diffusion theory, an innovation will eventually spread throughout a population, and the rate of adoption will differ between those who adopt the idea quickly—known as early adopters—and those who adopt it considerably more slowly—known as laggards.

Many of the concerns that people have while switching from a paper-based to a Web-based method for dealing with government can be explained by the resistant to change phenomena.

Businesses, employees, and citizens can all have preconceived notions about how transactions ought to be handled. Administrators of public policy and representatives of the government, however, cannot ignore the changes brought about by the adoption of information and communication technology (ICT).

One way to lessen some of the current resistance is by educating people about the benefits of the new systems. A leader or manager may find it especially beneficial to embrace the new system at the outset of the adoption process.

**Digital Divide:** The distinction between people, groups, and companies who have access to information technology and those who do not is referred to as the "digital divide."

Indicators of the digital divide's existence include those related to social and economic conditions, infrastructure, and ethnic and linguistic diversity.

Limited information technology resources have a tight connection to economic poverty.

In order to take use of e-Government and other online services, a person who is below the poverty line cannot buy a computer for themselves. E-Government can be adopted more widely in the public sector as the digital divide closes. The digital gap is not solely a result of economic disadvantage. It may also be brought on by a general lack of awareness. Even some individuals who are financially secure are unaware of the reach of e-Governance.

Users can only be introduced to that service delivery channel once through awareness. Without the system being also constructed in such a way as to give good results, it cannot guarantee ongoing usage of the system. Clear instructions must be provided to encourage their use by the actual end users and lessen reliance on middlemen/intermediaries. Procedures must be streamlined to deliver tangible benefits.

**Cost:** One of the biggest obstacles to the introduction of e-Governance is cost, especially in developing nations like India where the majority of the population lives below the poverty line. Politicians and elected officials don't appear to be interested in putting e-Governance into practise.

## Notes

**Privacy and Security:** For e-Government stakeholders, there are three basic levels of access: no access to a Web service, limited access to a Web service, and full access to a Web service. However, when personal sensitive data is present, the creation of the security access policy is a much more involved process that takes into account the law.

Effective steps must be made to safeguard sensitive personal data while e-Government projects are implemented. The development of projects that contain sensitive information like income or medical history may be constrained by a lack of clear security standards and practises.

### 1.1.3 Initiatives of e-Governance



Several e-Governance initiatives include:

#### Government to Citizen (G2C) Initiatives:

- **Computerisation of Land Records:** In partnership with NIC, ensuring that on demand updated copies of Records of Rights (RoRs) and computerised copies of ownership, crop, and tenancy are provided to landowners.
- **Bhoomi Project:** Delivery of land records online. 6.7 million farmers in the State of Karnataka will receive 20 million digital rural land records through 177 government-owned kiosks as part of a self-sustaining e-Governance programme.
- **Gyandoot:** It is a Government to Citizen (G2C) service delivery project centred on the Intranet. With the dual goals of giving pertinent information to the rural community and serving as a conduit between the district administration and the populace, it was started in the Dhar district of Madhya Pradesh in January 2000.
- **Lokvani Project in Uttar Pradesh:** Initiated in November 2004, Lokvani is a public-private partnership project in the Sitapur District of Uttar Pradesh. Its goal is to offer a single-window, self-sustaining e-Government solution for managing complaints, maintaining property records, and offering a variety of critical services.
- **Project FRIENDS in Kerala:** As a single point of contact, FRIENDS (Fast, Reliable, Instant, Efficient Network for the Disbursement of Services) gives citizens the ability to pay their taxes and other financial obligations to the state government. The services are offered by FRIENDS Janasevana Kendrums, which is situated in the district administrative building.

- **e-Mitra Project in Rajasthan:** Through Lokmitra-Janmitra Centers/Kiosks, the e-Mitra project aims to provide the urban and rural masses with the greatest number of services connected to various state government departments.
- **e-Seva (Andhra Pradesh):** Government to citizen and e-business to citizen services are the goals of this project. The e-Seva project's standout feature is that all services are provided to customers and citizens online by connecting them to the appropriate government agencies and offering online information at the point of service delivery.
- **Admission to Professional Colleges – Common Entrance Test (CET):** Early in the 1990s, the process of admission to these schools became quite difficult due to the tremendous expansion in both supply and demand for professional education. The admissions process was then made transparent and unbiased by using ICT. Karnataka made one of the pioneering initiatives. The State Government made the decision to hold a common entrance exam for the purpose of selecting students for admission to various colleges and disciplines.

#### **Government to Business (G2B) Initiatives:**

- **e-Procurement Project in Andhra Pradesh and Gujarat:** To make it quicker and less expensive for the government and vendors to conduct business.
- **MCA 21:** By the Corporate Affairs Ministry. The project's goal is to give businesses and other stakeholders convenient, safe, and anytime access to all registry-related services offered by the Union Ministry of Corporate Affairs.

#### **Government to Government (G2G) Initiatives:**

- **Khajane Project in Karnataka:** The Government of Karnataka is undertaking a thorough online treasury computerisation initiative. Since the project's completion, the State Government's complete treasury-related operations have been computerised. The system can now follow every activity, from the state budget's approval to the time when the government receives its accounts.
- **SmartGov (Andhra Pradesh):** For use by the Andhra Pradesh Secretariat, SmartGov has been designed to improve efficiency through workflow automation and knowledge management.

#### **National e-Governance Plan**



The Department of Electronics and Information Technology (DEITY) and the Department of Administrative Reforms and Public Grievances (DARPG) created the National e-Government Plan (NeGP) in 2006.

With the following vision: "Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realise the basic

## Notes

needs of the common man," the NeGP seeks to improve the delivery of Government services to Citizens and Businesses.

### Central Government Initiatives as Mission Mode Projects (MMP)

- **e-Office:** The Indian government has realised that information and communications technology must be used to modernise the Central Government departments. Increased use of work flow and rule-based file routing, efficient file and order search and retrieval, digital signatures for authentication, forms, and reporting components are all goals of e-Office.
- **Immigration, Visa and Foreigner's Registration and Tracking (IVFRT):** In addition to being a significant commercial and service centre, India has become a prominent tourism destination. A state-of-the-art system is required for prompt and user-friendly services at the Immigration Check Post since it serves as the initial point of contact that shapes how the public and popular opinion of the nation are formed.
- **UID:** The unique identity project was designed as a programme that would give identification to every resident of the nation and serve principally as the framework for the prompt provision of social services. It would also serve as a tool for efficient government programme and scheme monitoring.
- **Pensions:** The primary goal of the pensions MMP is to provide the needy pensioners with online access to pension/retirement-related information, services, and grievance handling mechanisms using a combination of interactive and non-interactive components. This will help close the communication gap between the pensioners and the government.
- **Banking:** The Banking MMP represents yet another step in the direction of increasing operational effectiveness and minimising the time and effort needed to handle and settle transactions. The banking industry is implementing the MMP, which intends to streamline diverse e-services activities carried out by individual banks. The involved banks are carrying out the implementation, and the banking Department is giving a comprehensive framework and instructions.
- **Posts:** The Department of Posts has taken steps to modernise postal services, including computerising all post offices, networking them using a centralised server-based system, and establishing computerised registration centres (CRCs).

### State Mission Mode Projects



**Notes**

- **e-Governance in Municipalities:** It is a novel project of the Indian government designed to increase operational effectiveness inside urban local bodies under the general National e-Governance Plan (NeGP) and the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) (ULBs).
- **Crime and Criminal Tracking Network and Systems:** By adopting e-Governance principles and building a nationwide networked infrastructure, the Crime and Criminal Tracking Network and Systems (CCTNS) MMP seeks to develop a comprehensive and integrated system for improving the effectiveness and efficiency of policing at all levels, particularly at the police station level.
- **Public Distribution System:** The computerisation of the PDS is envisioned as an end-to-end project covering crucial functional areas like supply chain management, including allocation and utilisation reporting, storage and movement of food grains, a portal for transparent grievance processing, the digitisation of beneficiary databases, Fair Price Shop automation, etc.
- **Health:** The Ministry of Health and Family Welfare has used ICT for programme management in the Mother and Child Tracking System (MCTS) programme. Through this MMP, the Ministry envisions a more extensive use of ICT, including for hospital information systems, drug and vaccine supply chain management, giving ICT tools to ASHA and ANM workers, programme management of the National Rural Health Mission (NRHM), etc.
- **e-Panchayat:** The Panchayati Raj Institutions (PRIs) are burdened with issues such as insufficient technical resources, financial resources, and computerisation that is far from acceptable. Due to this, PRIs' promise as the preferable delivery method for State and Center plans as well as for citizen services has not yet been completely fulfilled. Although NIC has made some attempts to computerise PRIs over the years, the e-Governance revolution that is sweeping the nation has not yet had a substantial impact on PRIs. Therefore, the Government of India's Ministry of Panchayati Raj has chosen to begin the computerisation of PRIs on a mission mode basis.
- **e-District:** The DIT, GoI is the nodal ministry for e-District, one of the 31 Mission Mode Projects under the National e-Governance Plan (NeGP). This project aims to support the district administration, which is the fundamental administrative unit, by implementing backend computerisation to enable the electronic delivery of high-volume citizen-centric government services that would best leverage and utilise the three infrastructure pillars of State Wide Area Networks (SWAN), State Data Centers (SDC), and Common Service Centers (CSCs). These services would be delivered to the citizen at his doorstep.
- **National Land Records Modernisation Programme (NLRMP):** In 1988–1989, a project for the Computerisation of Land Records (CLR) was started with the goal of eradicating the inherent problems with the manual system of maintaining and updating land records. The plan was expanded to include tehsils in 1997–1998 so that landowners could begin receiving Records of Rights upon request. The entire endeavour has always been focused on using cutting-edge Information Technology (IT) to rev up and modernise the nation's current land records system.

## Notes

### Integrated Mission Mode Projects

INTEGRATED MISSION MODE PROJECTS
● CSC (Common Service Centers)
● e-BIZ (Business facilitation)
● e-COURT
● e-Procurement
● Electronic Data Interchange (EDI) For Trade (e-Trade)
● National e-Governance Service Delivery Gateways
● India Portal ( <a href="http://www.india.gov.in">www.india.gov.in</a> )

- **e-Procurement:** As the Nodal Ministry for carrying out e-Government Procurement (e-GP) Mission Mode Projects (MMP), the Ministry of Commerce and Industry (Department of Commerce) has been proposed. To “establish a national initiative to execute procurement reforms, via the use of electronic Government procurement, so as to make public procurement in all sectors more transparent and efficient.” is the mission statement of the e-Procurement MMP.
- **e-Courts:** The e-Court Mission Mode Project (MMP) was designed with the intention of utilising technology to change the Indian judicial system. The project was created in response to the report on national strategy and action plan on implementation of information communication technologies in Indian court that was provided by the e-Committee under the Supreme Court. Reengineering procedures and improving judicial productivity on both a qualitative and quantitative level are the system’s stated goals in order to make the delivery of justice more accessible, inexpensive, efficient, and transparent.
- **e-Biz:** The idea served as the inspiration for the e-Biz Mission Mode Project, which is being carried out by the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India. Its mission is to “change the business climate in the nation by offering investors, industries, and businesses with efficient, convenient, transparent, and integrated electronic services across the company life cycle.”
- **Common Services Centres:** In the fields of e-Governance, education, health, telemedicine, entertainment, and other private services, the CSCs would offer high quality and reasonably priced video, audio, and data content and services. One standout feature of the CSCs is that they would provide web-enabled e-Governance services, such as application forms, certifications, and utility payments for energy, phone, and water bills, in remote regions.

### Recent Initiatives

- **Direct Cash Transfer:** To make it easier for any Central or State Government organisations to distribute government benefits like NREGA, Social Security pensions, Handicapped Old Age Pensions, etc. by utilising Aadhaar and its UIDAI-supported verification.
- **Aadhar Enabled Payment system (AEPS):** Aadhaar authentication is used in AEPS, a bank-led platform that enables online interoperable financial inclusion transactions through any bank’s business correspondent. As a result, financial inclusion has benefited. The following are the four standard types of financial

transactions that support Aadhaar:

- i. Balance Enquiry
- ii. Cash Withdrawal
- iii. Cash Deposit
- iv. Aadhaar to Aadhaar Funds Transfer
- v. Digital India program

The Department of Electronics and Information Technology has designed this programme (DEITY). The goal of Digital India is to make the nation into a knowledge economy and society that is enabled by technology. Phased implementation of the initiative will begin this year and continue through 2018.

The Digital India initiative is revolutionary in nature and will make sure that citizens can access government services online. Additionally, required electronic delivery of government services, a Unique ID, and e-Pramaan based on reliable, standardised, interoperable, and integrated government apps and data will increase public accountability.

The initiative intends to provide high-speed internet as a basic service in all gramme panchayats and digital infrastructure as a utility to every resident. The overarching goals of this initiative are to “put technology at the centre of enabling change, prepare India for a knowledge future, and become an umbrella programme spanning many departments.”

- **MyGov Citizen Portal:** As he reached his 60th day in office on Saturday, the Prime Minister established an online portal called mygov.nic.in to include citizens in the practise of “good government” (surajya). MyGov is a technologically advanced platform that will provide users the chance to support good government.
- **e-Kranti Scheme:** This initiative will connect rural towns across the nation to the internet. The country’s rural communities will now have access to more internet services thanks to this plan. Making the records easily accessible to the government would be one of this scheme’s main components. The expansion of the internet and the start of IT jobs in rural regions are also included. Additionally, it will increase the usage of computers and mobile devices in rural regions. Additionally, it will increase the use of IT in retail and agriculture.
- **Digital Cloud for Every Indian:** Government departments must follow a communication protocol in order to access certificates issued by the government, such as birth certificates, medical records, education records, and residence data, which must all be kept in separate “digital lockers”. Government exists to prevent citizens from having to carry around original certificates while visiting agencies to obtain various services.

### m-Governance

M-Governance is a supplement to e-Governance rather than its replacement. M-Governance, which uses wireless or mobile technology to enhance governance information and services “anytime, anywhere,” Applications for mobile devices also

## Notes

require a strong back-office ICT infrastructure and business procedures. In some places where last-mile connection becomes a problem for basic data inputs that are crucial for decision-making in government agencies, it may be possible to use mobile phones as input devices.

M-government is not a novel idea. The private sector has made extensive use of these mobile devices to provide value-added services for the following, most of which are SMS-based: banking, media, airlines, telecom, entertainment, news, sports, astrology, and movie tickets, among other things.

M-governance has improved the distribution of government information and services, provided avenues for public contact, and reduced expenses, all of which have boosted public involvement. It has also raised the productivity of public sector employees.

### Recent Thrust to m-Governance is Being Provided Through USSD Services

Unlike SMS, which is a store-and-forward service, Unstructured Supplementary Services Data (USSD) is a session-based service. The user can use it to deliver text-based commands to an application. USSD serves as the application's trigger.

### Government Initiatives for m-Governance

#### Mobile Seva



It intends to give citizens access to government services via smartphones and tablets. It has been designed as the essential infrastructure for making public services accessible via mobile devices.

A shared e-Government infrastructure made up of State Data Centers (SDCs), State Wide Area Networks (SWANs), and State and National Service Delivery Gateways (SSDGs/NSDG) may be integrated with the mobile platform thanks to Mobile Seva.

It makes it possible for government agencies to seamlessly combine online and mobile-based services and vastly improves access to electronic services by taking use of the extremely high penetration of mobile phones, especially in rural regions.

As part of Mobile Seva, DeitY has also created a mobile applications store (m-App Store). Visit <http://mgov.gov.in> to access the m-App Store and the Mobile Governance Portal. Over 240 active mobile apps are now available on the m-Appstore. Anyone may access the live applications for free download and installation on a mobile device.

The “mobile seva” initiative took up second place in the Asia Pacific region’s category for “Promoting Whole of Government Approaches in the Information Age” at the annual United Nations Public Services Awards.

Kerala introduced “Dr. SMS,” an m-health information system, a few years ago to alert residents about the medical services that are accessible in their neighbourhood.

Goa followed suit with a mobile governance programme for alerting recipients of applications and complaints to the government as well as tracking their status.

Maharashtra followed next. It employed a comparable mobile alert traffic control system.

The Greater Hyderabad Municipal Corporation started a commendable project in September that uses technology in an Intelligent Rubbish Monitoring System based on mobile phones to allow sanitation supervisors to report the progress of cleaning garbage bins using their GPS-enabled cell phones. With the technology, both centralised reports and reports specific to individual bins may be produced.

#### 1.1.4 e-Governance Policies, Strategies and Framework

To usher in the era of e-Government, several State Governments and Central Ministries have launched numerous projects throughout the years. At several levels, ongoing work has been done to enhance the provision of public services and streamline the application process.

In India, e-Governance has rapidly advanced from projects that just computerised government departments to those that embody the finer nuances of governance, such as people centricity, service orientation, and transparency. The developing e-Governance strategy of the nation has been greatly influenced by the lessons learned from earlier e-Governance efforts.

Due consideration has been given to the idea that a programme approach, driven by a shared vision and strategy, is required to hasten the deployment of e-Government across the various branches of government at the national, state, and local levels. By combining core and support infrastructure, facilitating interoperability through standards, and giving citizens a seamless image of government, this strategy has the potential to provide significant cost reductions.

The National e-Governance Plan (NeGP) adopts a comprehensive approach to e-Governance activities across the nation, integrating them into a unified vision. Around this concept, a sizable national infrastructure that reaches down to the most isolated communities is developing, and extensive record digitalisation is happening to provide simple, dependable access through the internet. The ultimate goal, as stated in NeGP’s Vision Statement, is to make public services more accessible to residents.

To meet the basic requirements of the average person, “make all Government services accessible to the ordinary man in his neighbourhood, through common service delivery outlets, and assure efficiency, transparency, and dependability of such services at affordable pricing.”

On May 18, 2006, the National e-Government Plan (NeGP), which consists of 8 components and 27 Mission Mode Projects, was authorised by the government. In

## Notes

2011, four projects—Health, Education, PDS, and Posts—were added, bringing the total number of Mission Mode Projects from 27 to 31. (MMPs).

The vision, approach, strategy, major elements, implementation methodology, and management structure for NeGP have all received approval from the government. While NeGP has been approved, not all of the Mission Mode Projects (MMPs) and components that fall under it have received funding approval. The projects in the MMP category that are now being carried out by various Central Ministries, States, and State Departments would be appropriately upgraded and supplemented to line with the goals of NeGP.

Various policy efforts and projects have been launched to construct core and support infrastructure in order to enhance e-Governance holistically. State Data Centers (SDCs), State Wide Area Networks (S.W.A.N), Common Services Centers (CSCs), and middleware gateways, such as the National e-Government Service Delivery Gateway (NSDG), State e-Government Service Delivery Gateway (SSDG), and Mobile e-Government Service Delivery Gateway, are the main core infrastructure components (MSDG).

Core policies and guidelines on security, human resources, citizen engagement, social media, as well as standards relating to metadata, interoperability, enterprise architecture, information security, etc., are among the significant support elements. A framework for authentication known as e-Pramaan and G-I cloud is one of the new efforts that will guarantee the advantages of cloud computing for e-Government projects.

The legislative and political foundation for ICT and e-Governance has been established by the following provisions.

- **Information Technology Act 2000**

The crucial concerns of transparent and open government, as well as the freedom to information, were already covered by the Action Plan approved by the Conference of Chief Ministers in 1987. The Information Technology Act was published in 2000 to address these concerns.

To “provide legal recognition for transactions carried out by electronic data interchange and other means of electronic communication, commonly referred to as “electronic methods of communication and storage of information,” to facilitate electronic filing of documents with government agencies, and further to amend the Indian Penal Code, the Indian Evidence Act, 1872, the Banker’s Book Evidence Act, 1891, and the Reserve Bank of India Act,” according to the Act’s objectives.

This Act, which allows adoption of electronic records and digital signatures, covers both e-commerce and e-Governance transactions. Thus, the Act has a number of clauses. It intends to establish the legal framework necessary to grant all electronic records and other actions conducted via electronic means legal sanctity.

According to the aforementioned Act, acceptance of a contract may, unless otherwise agreed, be conveyed using electronic means of communication and shall have legal validity and enforceability.

- **Report of the Working Group on Convergence and e-Governance 2002-07**

The Working Group on Convergence and E-report Government's made the case that government must change from being a passive information and service supplier to being a platform or forum for the engaged participation of people. The main topic of this report was public investments.

It was unable to envision the scope of private initiative that would emerge in the convergence domain, in e-commerce or related segments. It felt the need to create a single organisation to assess the nation's overall IT situation. A "Council for E-Governance" or a "ad hoc Commission on Reengineering Administrative Procedures for E-Governance" might serve as this central organisation. It also recommended creating a National Institute of Smart Governance as an alternative.

- **Common Minimum Programme**

The Common Minimum Programme of the UPA Government, which among other things declares that e-Governance would be pushed on a huge scale, acknowledges the significance of e-Governance. With a government that would be free of corruption, transparent, and accountable, as well as an administration that would always be responsible and responsive, it made a solemn commitment to the people of the nation.

- **National E-Governance Plan**

Data Centers, State Wide Area E-Government, Networks, and Common Service Centers are three crucial components of the National E-Governance Plan that together create the foundation for efficient service delivery.

The rapid implementation of a "National E-Governance Plan" to promote openness and a citizen-centric approach in administration is one of the Department of Information Technology's 10-point agenda for growing ICT in the nation.

- **Expert Committee**

In order to incorporate technical advancements made after the IT Act 2000, an expert committee had also been established. In August 2005, the Expert Committee delivered its findings after having finished its discussions. The proposals of the Expert Committee have now been posted on the Department of Information Technology website for public comment and suggestion.

During its discussions, the Committee examined various pertinent cases and global best practises. The Committee had two goals in mind as it created its recommendations: I leveraging IT as a vehicle for socioeconomic development and job creation; and (ii) further solidifying India's place as a significant global player in the IT sector.

- **Right to Information Act 2005**

The Right to Information Act of 2005 grants citizens the following rights:

- i. examines the government's and its agencies' works, records, and papers
- ii. make certified copies, notes, or extracts of any papers or records
- iii. collect material samples with certification
- iv. Obtain information via any electronic modality, including printouts, diskettes, floppies, tapes, and video cassettes

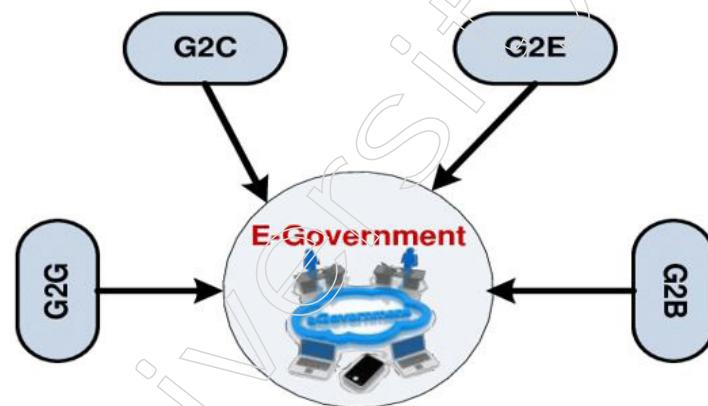
## Notes

This has made sure that the government is open to the public and responsible to them. Additionally, it has created a two-way conversation between the people and the government. It has made it possible for individuals to make educated judgements. Additionally, it is a significant step in the fight against corruption and has made sure that government services are effectively monitored.

### 1.1.5 Interactions in e-Governance

The following are the types of Interactions in E-Governance:

1. G2G: Government to Government
2. G2C: Government to Citizen
3. G2B: Government to Business
4. G2E: Government to Employee



It would be useful to comprehend these interactions if you read the accompanying description.

1. **G2G (Government to Government):** In this interaction, information and communications technology is utilised to improve the flow of information and services both inside and between various organisations as well as to restructure the governmental procedures involved in the operation of government bodies. According to Gregory (2007), G2G refers to online interactions between government departments, agencies, and organisations that are based on a super-government database.

This type of contact occurs vertically, such as between national, provincial, and municipal government agencies, as well as between different levels within an organisation, or horizontally, such as between various government agencies and between various functional divisions within an organisation. The main goal of this engagement is to improve production, performance, and efficiency.

2. **G2C (Government to Citizens):** Government to citizen interactions are preserved via G2C. It enables individuals to quickly and easily access government information and services through a variety of channels, from anywhere. To make it easier for citizens to communicate with the government, government-to-citizens (G2C) models have been developed. An interface is created between the government and the populace in this case, allowing the citizens to gain from the effective provision of a range of public services. On the one hand, this increases the accessibility and availability of public services, and on the other, it raises the standard of those services. Customers

of the G2C model may instantly and conveniently access government information and services at any time and from any location by using a variety of channels.

Additionally, the capacity of G2C initiatives to overcome potential time and geographic barriers may connect citizens who might not otherwise come into contact with one another and may facilitate and increase citizen participation in government. These transactions include certifications, paying taxes and applying for benefits.

3. **G2B (Government to Business):** E-Government technologies are used in this form of engagement to support smooth communication between the corporate entities that offer products and services and the government. Governments and corporations may both benefit greatly from G2B. G2B refers to a variety of services that are exchanged between the corporate and government sectors, including the dissemination of policies, memoranda, rules, and regulations.

The range of business services available includes finding out about new laws, downloading application forms, paying lodging taxes, renewing licences, registering enterprises, getting permits, and much more. The main goals of this engagement are to decrease bureaucracy, save time, save expenses associated with operations, and foster a more open corporate climate when engaging with the government.

4. **G2E (Government to Employees):** Only the relationship between the government and its workers is referred to as G2E. The purpose of this partnership is to assist workers and provide some online services, including, but not limited to, online applications for yearly leaves, checking leave balances, and examining salary payment records. In this instance, the government is a significant employer and must often contact with its workers.

The organisation and the employee are interacting with one another in this process. On the one side, using ICT tools makes these exchanges quick and effective, and on the other, it raises employee satisfaction levels.

#### 1.1.6 The State and Governance



In order to transform and improve the efficiency, effectiveness, transparency, and accountability of informational and transactional exchanges within government, between government agencies at the national, state, municipal, and local levels, as well as with citizens and businesses, and to authorise citizens through access and use of information, e-Governance is the wise use of information and communication technologies. e-Governance, at its core, is the use of information and communication technology by the government and the public sector at various levels to enhance governance.

Theoretical studies have shown that e-Government is the process of changing how the government interacts with its constituents—citizens, corporations, and internal

## Notes

organs—by utilising information and communication technology technologies. (2000) Keohane and Nye said that “Governance refers to the official and informal organisations and procedures that direct and control a group’s collective activity.

The portion of society that exercises authority and establishes legal duties is government. Governments do not necessarily have to exercise governance on their own. Private businesses, groups of businesses, nongovernmental organisations (NGOs), and groups of NGOs all participate in it to produce governance, frequently in collaboration with governmental entities but occasionally acting outside of official authority.” The goal of electronic governance is to use information and communication technology and provide people a chance to participate in decision-making.

The UNESCO defines e-Governance as the use of information and communication technology by the public sector to improve information and service delivery, encourage citizen participation in decision-making, and make government more responsible, transparent, and efficient.

e-Governance entails innovative management techniques, new means to make investment and policy decisions, new ways to access education, new ways to listen to citizens, and new ways to organise and provide information and services. Better access, accountability, and efficiency in the provision of government information and services are the goals. The public and commercial sectors may access all government information and services online thanks to e-Governance.

The public and private apparatus will be able to function in a more democratic, transparent, and accountable environment thanks to e-Governance initiatives and developments. A favourable atmosphere for e-Governance must be created by the governments of emerging nations.

e-Governance is the practise of delivering services and disseminating information to residents via electronic methods, offering several advantages over the traditional approach. These include improved government processes, anticorruption and openness in all dealings, citizen empowerment, and promoting citizen engagement in governance.

According to Ray and Dash, e-Governance should also address the internal working elements of using information technology to improve internal functions’ competency and effectiveness, as well as internal communications and internetworking.

internal features include streamlining and rationalising the business process to better serve the stakeholders in a transparent and cost-effective way, as well as a general restructuring of the government hierarchy to meet the new demands and expectations for efficient and enhanced services.

**Variables of e-Governance:****Notes**

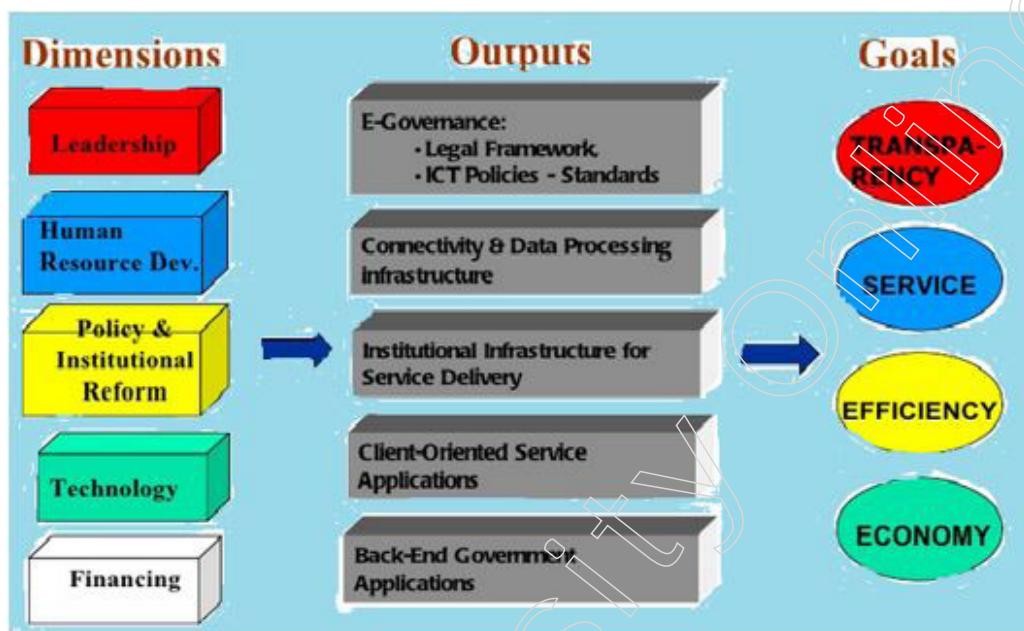
Governmental IT deployment has risen globally as a result of the technological advancement of internet technology in the 1990s. Since then, both technology and e-Governance projects have advanced significantly. The World Wide Web provided the worldwide people with excellent opportunity to take advantage of their new access method in several ways.

There is ample evidence that the new "e-citizenship" is gaining root because people have high expectations for getting information and services from governments and business entities online to further their civic, professional, and personal lives. The idea of e-Governance emerged in India in the 1970s, with an emphasis on the creation of internal government applications in the fields of planning, economic monitoring, and defence, as well as the use of IT to handle data-intensive tasks such as managing elections, censuses, and tax administration.

In the 1980s, the National Informatics Center made enormous efforts to connect all of the district headquarters. Since the beginning of the 1990s, information and communication technology (ICT) has improved IT technologies to broaden their usage for larger sectorial applications with a policy emphasis on reaching out to rural regions and bringing in increased engagement from NGOs and commercial sectors.

## Notes

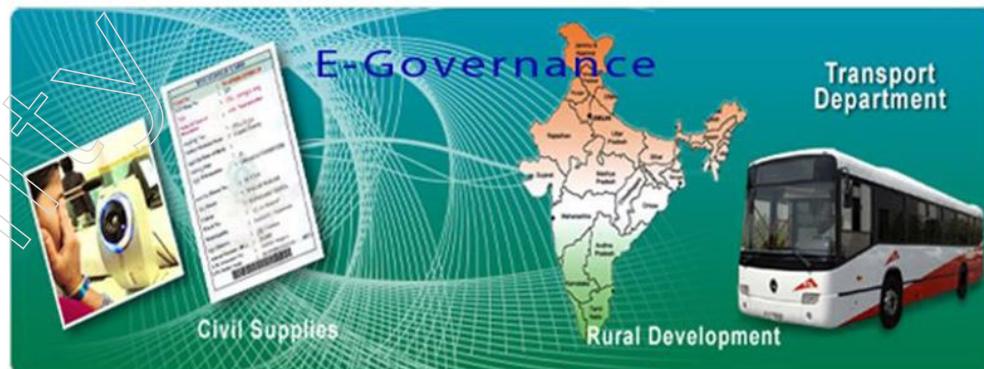
### Conceptual Framework of e-Governance Strategy:



Governments can use the e-Governance model as a guide to determine how a project fits into the broader development of an e-Governance strategy. It takes an e-Governance plan to achieve the company objectives. When projects are firmly rooted in a vision and backed by policies, they have structural value for development. Anderson has provided a description of the e-Governance project implementation procedure. He is conscious of Think large, begin small, and expand quickly.

Setting the broad vision and e-Governance goals requires considerable thinking. Starting small is essential to achieving quick success and maintaining a motivating force both within and outside. Only a thorough plan that ensures all required resources are accessible when needed may enable rapid scaling.

### e-Governance in India



India is a varied country in terms of its culture, traditions, languages, geography, and people's financial situation. Numerous citizens of this nation fall short of the required socioeconomic standards. This comprises the underprivileged in both urban and rural regions, rural women, children living on the streets, caste minorities, and residents of less developed areas. Globalisation has made these groups more vulnerable, and they are more likely to experience further social and economic marginalisation.

Scholars claim that India is a growing nation with enormous potential for rapid growth. It has, nevertheless, felt the effects of the political crisis. India has been set back many years by these events, which have had a significant impact on its development.

E-Government and ICT projects have a significant impact on India's ability to expand access to resources, lower prices, reduce corruption, and benefit underserved communities. E-Government projects have largely touched various groups of individuals in the era of technological growth.

The most vulnerable groups in society have been given the opportunity to participate in policy and decision-making processes, communicate, and participate in the economy and social development. This has encouraged ownership and the development of social capital, which in turn forms the foundation for local resurgence.

In Asia, India is well positioned to deploy ICT. The majority of countries in the globe have connections to India. India's tourism is improved by the deployment of E government formation and communication technology. In addition, there are ongoing reforms in the Indian telecommunications sector that are benefiting the nation's economy and offering users better services at reduced costs. The Indian government also creates e-zones for ICT-based enterprises and offers tax breaks as investment incentives.

The responsibility for leading, developing, and putting into practise E governance falls on organisations like the India National ICT Council and programmes like e-Government initiatives. A significant step towards implementing e-Government in India was the subsequent founding of the National Informatics Centre (NIC) in 1976 with financial assistance from the United Nations Development Program (UNDP).

After then, a large number of state and federal e-Government projects were launched. These initiatives were put in place to go towards resolving significant issues with government service. The Second Administrative Reforms Commission's recommendations served as the foundation for the Government of India's 2003 National e-Governance Plan (NeGP).

"Make all Government services accessible to the ordinary man in his region, through a single service delivery channel and ensure efficiency, transparency and dependability of such services at reasonable rates to satisfy the fundamental requirements of the common people," was the aim behind the creation of the NeGP (NeGP, 2003).

Various projects were then carried out. After reviewing academic papers, it was discovered that there was a contentious argument around e-Governance since there was no clear consensus about the necessity of changing the bureaucratic system with the use of ICT. Many theories claimed that the e-Governance revolution had a positive effect on government organisations since it helps to improve governance by lowering costs, improving information transmission, fostering improved engagement and interaction, and ensuring efficient service delivery.

A different team of scholars debated the significance of changing the current government bureaucratic paradigm. Some scholars express worry about how uses of information and communication technology would affect government procedures

## Notes

(Ciborra, 2015). Studies have revealed that, rather than automating or changing organisational structures, e-Governance has the capacity to bring about significant changes or restructure governmental organisations (Ho, 2002).

### 1.1.7 Development Policies and Globalisation



In the course of globalisation, e-Government has emerged as a crucial component of any business. Organisations are increasingly turning to electronic methods of operation in order to succeed in business due to rising expectations for administration that is clear, information transmission that is quick, performance that is more competent, and enhanced public service.

Through creative information technology and e-Governance use, organisations may function better. E-Governance offers a number of benefits that have an influence on public administration, including better service access, lower operating costs, greater information management, and increased agency collaboration.

One of the biggest online innovations is e-Government. It is commonly known that digital communities enabled by the Internet provide both possibilities and difficulties to national governments. The use of ICT and e-Governance by intermediary organisations in poor nations has enormous potential. E-primary governance's objective is to promote and streamline governance for all parties' governments, citizens, and commercial enterprises.

e-Governance encourages and supports effective governance via the use of technology. As a result, the goals of good governance are equivalent to the aim of e-Government. In order to effectively manage a nation's commercial operations at the national and local levels, good governance may be defined as the use of economic, political, and administrative authorities.

- A. **e-Governance for Development:** Governments in developing countries (DC) have been utilising IT for more than 40 years. The transition of e-Governance from IT to ICTs and from IT to IS is something fresh.

**New Digital Connections:** ICTs The previous paradigm included data processing to automate government operations using information technology (IT). The new model is one in which data processing and data communication technologies (ICTs) assist and modify the exterior operations of government. All ICTs should be considered part of e-Government, but the main innovation is computer networks, from intranets to the Internet, which have given rise to a vast number of new digital connections:

- Connections within government – allowing ‘joined-up thinking’.
- Connections between government and NGOs/citizens – consolidation accountability.
- Connections between government and business/citizens – renovating service delivery.
- Connections within and between NGOs – supportive learning and concerted accomplishment.
- Connections within and between communities – building social and economic growth.

As a result, the focus expands to include e-citizens, e-services, and e-society in addition to merely some aspects of e-administration.

**New Systemic Approaches:** IS The old models held information technology isolated from the mainstream of reform, or held IT as the objective of reform. The new model brings information systems (IS) to the heart of reform. In practice this means two things:

- **A central role for ICTs:** ICTs are becoming a crucial component of more and more governance projects as governance becomes - and is acknowledged as - ever more information-intensive. ICTs are seen as a major force for change. They are no longer solitary spectators.
- **An integrated role for ICTs:** Using ICTs as servants to the master of good governance is what is meant by e-Governance. ICTs are no longer viewed as a means in and of themselves, but rather as a component of a larger systemic “package.”

e-Governance is the ICT-enabled method for attaining excellent governance overall. We could choose to conceive of it as “i-governance,” or integrated governance, as it combines people, processes, information, and technology to achieve governance goals. It also incorporates communication and processing technologies.

#### A. Why e-Governance for Development?

Government in developing countries is too expensive, provides insufficient services, and is not adequately responsive or responsible, as is true around the world. Reforms for good governance are designed to fix these flaws. The implementation of these reforms has taken several years, yet progress has been far slower than anticipated.

A fresh approach is provided by e-Government, which supports bettering governmental operations, connecting individuals, and fostering connections with and among civil society. What benefits does e-Governance actually provide? ICTs, which provide three fundamental change potentials for effective governance for development, are at the heart of it.

## Notes

- **Automation:** replacing the present information-related procedures that are carried out by humans and entail data acceptance, storage, processing, output, and transmission. For instance, automating current administrative tasks.
- **Informatisation:** supporting the information processes now run by humans. Supporting existing decision-making, communication, and decision-implementation processes, for instance.
- **Transformation:** supporting new human- or ICT-executed information processes, or developing new human-executed information processes. Developing fresh techniques for delivering public services is one example. The following five advantages may be brought to governance for development by these change potentials, either separately or in combination:

### Efficiency Gains:

- **Governance that is Cheaper:** getting the same results for less money overall.
- **Governance that Does More:** increasing production while maintaining overall costs.
- **Governance that is Quicker:** the same outputs may be produced in less time and at the same overall cost.

### Effectiveness Gains:

- Governance that Works Better: Providing the same products to a better standard while maintaining the same overall cost and time.
- Governance that is Innovative: Generating fresh outputs these are the advantages that are tangible and immediate. ICTs provide a lot more benefits. For instance, government usage of ICTs may be advantageous both internally and externally:
  - Internally, delivering advantages including enhanced public perception, more political control, or higher employee motivation.
  - Externally, by providing people who rely on the government with more affordable, superior services. indirectly by making the advantages of ICTs more widely known, by boosting the local IT sector, and by promoting international investment.

### Issues in Implementation of e-Governance



e-Governance policies must be implemented despite several challenges. These include a lack of funding, infrastructure issues, a labour shortage, citizen excitement, data gathering, preparedness of the legal framework, and maintenance (Jayaradha and Shanthakumar, 2003).

According to a NASSCOM research, three southern states—Andhra Pradesh, Karnataka, and Tamil Nadu—made substantial advancements in the rapidly expanding field of e-Governance in India. Experts advise the government to take many proactive initiatives to solve the operational, economic, personnel, planning, and implementation difficulties that are impeding the proper implementation of e-Governance in order to reap the intended advantages (Rao, 2003).

Innovative methods of thinking about designing services and business processes, new ways of working, the development of new skills, the more effective use of existing skills, and a more adaptable approach to working patterns and practises are all required by advanced technology.

According to Robbins (1998), structural inertia (built-in processes) is a significant barrier to industry transition. People's aversion to change is another barrier. It is crucial to create human resource plans that are focused on the needs of the employees so that the organisation can help the staff members accept rather than resist change.

Additionally, there are cultural barriers, which pertain to a person's values, beliefs, mindset, behaviours, and conventions. Installing a new system is quite difficult because of these obstacles. There are cultural obstacles at the political, officer, and employee levels (Sharma and Palvia, 2004). The transition from an organisation to a "e-organisation" has a significant influence on organisational structure and management approaches because it causes a redistribution of power and authority. Additionally, the organisation's affiliation is altered.

Companies implementing e-Governance must cultivate a customer-centric mindset that recognises user needs, investigates novel information presentation methods to meet those needs, designs feedback mechanisms, manages customer relationships, streamlines processes, develops good communication processes, organises information, and works more flexibly, as well as focus on major issues in the context of personnel, such as performing job analysis once more.

Organisations also focus on redesigning the hiring and selection process to accommodate shifting labour demands, identifying technological environment competencies to enable all employees to function effectively in a fully electronic workplace, creating a performance management programme that would incorporate changes to job responsibilities and requirements and is development oriented, and informing workers about their new legal and ethical obligations (Riley 2003).

Companies need to develop a culture that supports any positive employee behaviour and concentrate on better managing the work of different government agencies since it will impact programme success and efficiency.

Additionally, for implementation to be effective, decision-making procedures must be altered to include speedier decision mechanisms, flatter organisational structures, and increased delegation of power (Garg and Khataokar, 2003). The organisation's structure, culture, and strategy must all be adjusted to reflect the new vision.

## Notes

### Recommendations to Tackle Challenges

To make changes in various internal systems of businesses and address problems, proper e-Governance, information, and communication methods are required. Numerous studies have shown that highly motivated and content employees perform better than disheartened and unsatisfied employees (Prasad).

In the altered environment, there are certain approaches to dealing with issues in many facets of human resource management. Changed sources of their availability need to be exploited in light of the new workforce profile needed for e-Governance. College campuses could be one of these sources; private organisations have made good use of this source. It's also possible to investigate the viability of alternative sources, such as HR consultants.

It's possible that the current workforce is not prepared to be used on e-Governance initiatives. Due to regional dispersion, training expenses might be significant. It is necessary to develop a selection procedure that will accurately and objectively assess the knowledge, abilities, and competencies needed to manage the altered work environment and job obligations.

Such a procedure should include tools for evaluating the knowledge and abilities needed to perform the redesigned job objectively. Strong conceptual and management abilities are required of the e-Governance implementation leader. The leader must provide direction and serve as a mentor and coach. To manage employees in new work environments in businesses that are defined by usage of current technology and continual change, leaders will need to adapt their methods and embrace new techniques.

E-commerce, to put it simply, is the transfer of information over electronic networks at any point in the supply chain, whether it be between enterprises, inside organisations, between consumers and businesses, or between the public and private sectors. e-Governance refers to the public sector's use of ICTs to enhance information and service delivery, promote citizen involvement in decision-making, and make government more responsible, transparent, and effective.

However, the term has a distinct connotation in developing countries. The goal of implementing e-Governance and altering the Indian economy extends well beyond simple computerisation of various back-office tasks. It requires fundamentally altering how the government functions, which includes new duties for the executive and politicians.

It will require fundamental adjustments to work culture and goal orientation, as well as parallel adjustments to the current procedures. At higher level systems, a mindset shift is required to create and agree upon the distributed and flat organised e-Governance system in order to achieve excellent place in the globe.

### 1.1.8 Towards Good Governance Through e-Governance



#### Introduction of Good Governance

Although it seems like the phrase currently for large organisations and assistance-givers to examine whether help should be given to nations or not, the idea of good governance is not a new one.

- The Arthashastra, written by Chanakya, discussed the idea in India. "In the happiness of his subjects lies his happiness, in their wellbeing his welfare," he says when describing the qualities of a good monarch. "Whatever pleases himself, he does not view as excellent, but whatever pleases his folks, he considers as good."
- Mahatma Gandhi also coined the word "Su-Raaj," which, when translated, means "good government."
- "The process of decision-making and the mechanism by which choices are executed" is the definition of governance.
- Governance describes the administration and decision-making processes that take place at any level, including the national, regional, municipal, business, family, etc.
- In governance, the government is a crucial player.
- Other actors might include cooperatives, bodies, associations, unions, NGOs, religious leaders, powerful landlords, industry, political parties, financial institutions, lobbying, think tanks, military, etc., depending on the level of governance being discussed.
- In governance, everyone else save the government and the military is referred to as "civil society."
- In some places, organised criminal groups like the land mafia may also have an impact on government and decision-making.
- It's crucial to remember that successful government starts with the people. Therefore, effective government and citizen-centric administration work hand in hand.

## Notes

### Good Governance Definition



- By “how authority is exercised in the administration of a country’s economic and social resources for development,” the World Bank defines governance.
- According to a 1992 World Bank report titled “Governance and Development,” effective governance is crucial to the creation and maintenance of an environment that promotes robust and equitable development. It also goes hand in hand with smart economic policies.
- **Components of Good Governance (According to the World Bank):**
  - Effectiveness and capacity in managing the public sector
  - Accountability
  - Legal foundation for growth
  - Transparency and knowledge
- Since corruption and bad governance are closely related, several international organisations, like the World Bank and the International Monetary Fund (IMF), are basing their assistance to nations on the promise that the recipients would adopt good governance practices.
- Governance is described as “the norms of the political system to solve conflicts between players and adopt decision (legality)” by the United Nations Development Programme (UNDP).
- According to the Commission on Global Governance’s definition from 1995, governance is “the collection of all the many ways that people and organisations, both public and private, manage their shared affairs.” It is an ongoing process that enables varied or competing interests to be taken into account and cooperative action to be done. It encompasses formal regimes and organisations with the authority to compel compliance as well as unofficial agreements that individuals and institutions have either consented to or believe to be in their best interests.

### Good Governance Characteristics

There are eight key qualities of good governance listed by the United Nations (UN). Here is a quick description of them:

**Good Governance – Participation**

- Participation from all facets of society is a crucial cornerstone of successful governance.
- This encompasses both males and women, weaker groups in society, underprivileged groups, minorities, etc.
- The representation of all individuals is not a given in representative democracies. Good governance becomes important in this situation.
- Freedom of association and expression are also implied by participation.

**Good Governance – Transparency**

- This entails that everyone interested, especially those who may be impacted by the decisions taken, would have simple access to information.
- This presupposes that the media has access to information.
- Another crucial aspect is that all choices are made and carried out in accordance with laws and regulations.

**Good Governance – Rule of Law**

- The impartial application of just legal frameworks is guaranteed by the rule of law.
- It also refers to the defence of human rights.
- A strong, unbiased police force and courts are also necessary for this.

**Good Governance – Responsiveness**

- This suggests that institutions and procedures should provide for the needs of all parties involved in a timely manner.

**Good Governance – Consensus Oriented**

- Consensus-oriented decision-making assures that even if no one gets everything they want, at least everyone can come up with a reasonable compromise that won't hurt anybody.
- Consensus-based governance is important. Proper mediation should result in a broad consensus.
- A thorough comprehension of the historical, cultural, and social settings of the society is required for this, coupled with sustainable human growth.

**Good Governance – Equity and Inclusiveness**

- Good governance assures an equitable society.
- In such a society, no one or no section feels left out and marginalized.
- Opportunities should be given to all irrespective of their backgrounds, and no one should be discriminated.

**Good Governance – Effectiveness and Efficiency**

- Effective governance entails that institutions and procedures produce outcomes that satisfy societal needs while making the best use of available resources.

## Notes

- This includes environmental preservation as well as the wise use of natural resources.

### Good Governance – Accountability

- This is a crucial quality of effective governance.
- Transparency and the rule of law are essential for accountability.
- Accountability should apply to all parties involved, including the public, the private sector, business, NGOs, and industry.



### Elements of Good Governance

The idea of good governance has gained popularity during the previous several decades among intellectuals, legislators, charity workers, development workers, and administrators. The World Bank, the United Nations Development Program (UNDP), the Asian Development Bank (ADB), and other international development organisations employ a functional approach to characterise effective governance, emphasising on management elements to advance economic challenges. In line with this, UNDP established three principles of good governance: financial, social, and administrative (UNDP 1997a).

The proper management of a nation's affairs at all levels is emphasised by the United Nations Development Programs (UNDP). It stipulated that excellent governance adheres to nine qualities, which are as follows:

- Participation,
- Strategic Vision,
- Rule of Law,
- Transparency,
- Consensus Orientation,
- Equity Building, Effectiveness and
- Efficiency and Accountability (UNDP 1997b).

The UN Economic and Social Commission for Asia and the Pacific (UNESCAP) lists eight principles for effective government. Which are:

**Notes**

- Accountable,
- Participatory,
- Transparent,
- Consensus oriented,
- Responsive,
- Follows the rule of law,
- Effective and efficient and Equitable and inclusive (UNESCAP 2008).



In development literature, the terms governance, good governance, and e-Governance are frequently employed. Decision-making and decision-implementation processes are referred to as governance (or not implemented). For instance, the World Bank lists these three elements of governance:

- i. The nature of the political system,
- ii. Public resource management for the economy and society, and
- iii. The government's ability to create, formulate, and carry out policies.

Kofi Annan, a former UN secretary general, defines good governance as a force that upholds the rule of law and respect for human rights, strengthens democracy, encourages openness, and builds the capacity of public administration. Good governance emphasises that government should be "good" and not "bad," in contrast to governance, which is primarily a political and technocratic phrase without normative ambitions.

The mechanisms that direct political and socioeconomic connections with a dedication to democratic principles, dependable services, and reasonable and ethical corporate practises are referred to as "good governance." Governments at all levels—federal, state, and partially local—face difficulties as a result of growing public expectations for higher standards of governance. India continues to fall behind in delivering on the rising levels of public expectations, compared to the industrialised world and several Asian nations.

## Notes



Massive population expansion, cultural diversity, extreme poverty, and widespread illiteracy pose several challenges for how government services are delivered. It is necessary to enhance the governance and service delivery procedures already in place.

e-Governance (Electronic Governance/Digital Governance) is now widely acknowledged as a key factor in the transformative development of governance's quality, effectiveness, and efficiency. To promote more accountability and openness, a governance plan based on information and communication technologies must be created and implemented.

The Government of India (GoI) is moving away from conventional modes of governance and towards technology participation in the governing process. The Indian government is now in a process of change as it smoothly introduces ICT (information and communication technology) into administration.

The GoI is investing a sizable sum of money in the implementation of e-Governance, but are these efforts effective and leading to the desired results? What are the general public's perceptions of e-Governance look like? What is the perception of e-Governance on a worldwide scale? What are the main obstacles to the implementation of e-Governance? The author has attempted to respond to the aforementioned difficulties in this attempt.

e-Government may significantly aid in the effective and long-lasting implementation of good governance in India.

India's economy is one of the fastest growing in the world, and it is currently undergoing a transition from bad governance to excellent governance through e-Government. The construction of good governance has now taken centre stage in discussions among academics, international development organisations, social researchers, and development professionals.

However, not all countries in the globe have started good governance programmes at the same rate. In order to promote a culture of "Digital India," the honourable prime minister has launched many initiatives. His idea of "Minimum Government and Maximum Governance" is a powerful one that has inspired numerous ideas.

The government has acted quickly to develop and implement these ideas. The author's theoretical goal is to comprehend how the concepts, models, and numerous projects associated with e-Governance, good governance, and governance relate to one another.

Global good governance has been successfully and sustainably implemented thanks in large part to e-Government. Analyzing the idea, methodology, and efforts used by the Indian Government, it can be shown that e-Governance plays a vital part in achieving good governance in India.

## 1.2 Information Society Concepts and Principles



In a short period of time, the importance of steel and miles of railways will be replaced by the scale and complexity of an information and communication infrastructure as a measure of a nation's development. No nation or person can afford to ignore the quickening pace of technological advancement in the information and communications sector. This 'Information Society', as it is known "originates from the post-industrial age.

Knowledge is power, and effective development is the key to it, according to many thinkers throughout history. It serves as a crucial input, fundamental resource, and connecting factor for many socially significant intellectual and material activities.

New avenues in research, development, and managerial activities can be sparked by having the appropriate information available when you need it in an easily accessible manner. Today, it is generally acknowledged that input in contemporary production systems is no longer limited to just land, labour, and money. Information is also included.

Communication and Information "are without a doubt two crucial terms, and communication is a process that occurs in all human interactions. The practise of science is intrinsically linked to the scientific study of communication and information. The constant flow of information sustains research, which is frequently sparked by new data, and when it is done again, it produces fresh data.

## Notes

Scientists do more than only gather, store, and use data. But also develop it via study. However, this is now true of all flourishing businesses, including those engaged in trade and commerce.

### 1.2.1 Define Information Society

“Information Society” is an overworked expression that has been used to denote many different concepts. The general sense in which it is most commonly used refers to a growing high-technology, materially affluent service society where, information rather than raw materials or energy is the dominant technology. It strives toward a society characterised by increasing responsiveness towards individual human needs, and toward preserving ecological balances.

An information society is the one that:

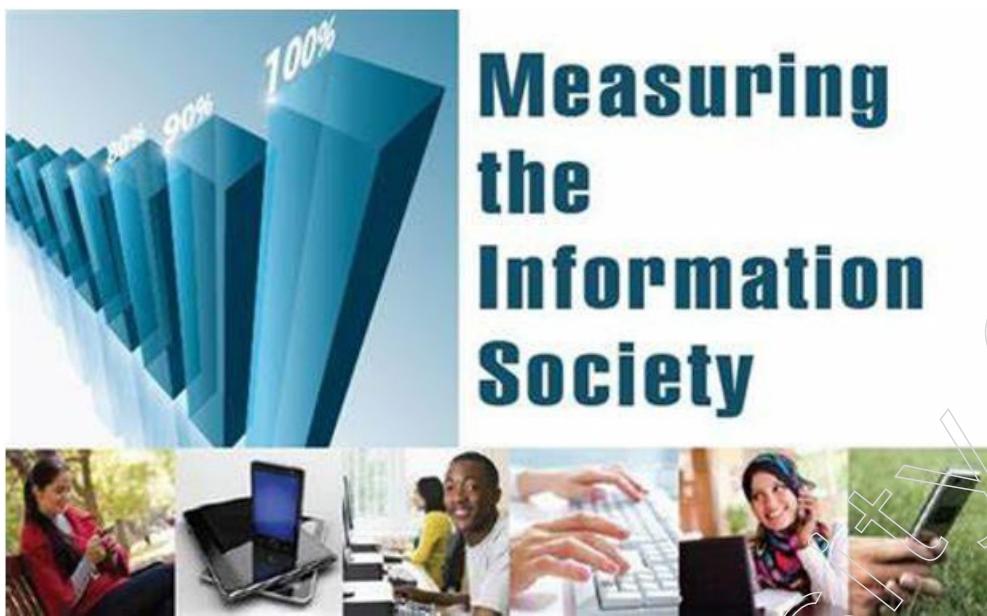
- enables most of its members to engage in productive pursuits that, are knowledge-intensive, knowledge-generating and knowledge-based
- has a communication network that freely circulates information so that this information is consistently, effectively and efficiently acted upon in the making of choices
- manages inevitable conflict between conservative pressures and pressures for adaptive change by reason, knowledge-based understanding, and enlightened creative wisdom blended with human values, rather than traditional resort to base emotions and brute force alone.

### Characteristics of the Information Society

The information society is characterised by a wide range of characteristics. Among them are:

- **Exuberance.** Large amounts of information (phrases, facts, and pictures) constitute a continual component of the environment in which society evolves.
- **Globalisation.** A globalised civilisation is created as a result of this ongoing interchange between any two points on the planet. This indicates that ties and exchanges that transcend national boundaries are created in the business, cultural, and political spheres, among others.
- **Centrality** Your residents send and receive information from all around the world in these communities. Of course, certain nations or economic areas stand out for creating and spreading a higher volume of information than the others.
- **Technology as the epicentre.** The advancement of numerous technical tools that enable the distribution of knowledge is essential for the growth of these civilisations.
- **Instantaneity.** In addition to the fact that this distribution may be done concurrently for very little cost and at a very high, instantaneous rate, data and information are disseminated instantly.
- **No barriers.** The spread of knowledge is not hampered by time or geography.

### 1.2.2 Ways to Measure Information Society



Information has always been essential to society, making it an information society. And a basic infrastructure has always existed. Since knowledge was of a low enough quality to be recalled and transmitted orally, as was the case with our vedas and upanishadas, society did not seem to be dependent on it for thousands of years.

All civilisations' early written records were histories, laws, and inventories, which served as the core mnemonic devices for preserving society. Even written literature was created to arouse memory rather than to immediately deliver content. Society developed an approximative mechanism for storing knowledge when the amount got too vast for the human mind to recall. Information was still not considered a dynamic resource, but rather a passive by-product of the activities it recorded.

However, those in charge of administration and revenue-generating operations undoubtedly understood the importance of information as a flexible resource. They controlled it as much as they could and utilised it.

Governments took measures to restrict information conduits like the book trade and newspapers in Europe from the middle ages to the nineteenth century. Education was only available to privileged families who already had control over the activities that generated cash.

However, in the nineteenth century, governments in many nations were convinced to become more liberal, and at the same time, business saw the need for people with higher levels of education. Starting in the late nineteenth century and widely acknowledged by the middle of this one, an increase in the publication of information, an improvement in general education, a general economic development, and the cumulative effect of the growth of universities and the scientific discoveries of the eighteenth century caused a fundamental change in society's view and use of information, and even in knowledge itself.

## Notes

### 1.2.3 Benefits of Information Society



Certain cultural, social, economic, and communicative advantages come with an information society. There are numerous information sources available on every topic that interests everyone thanks to the presence of knowledge networks and access to them.

A social revolution is also being brought about by the ease with which any kind of material can be shared and distributed, as well as through globalisation.

Information was merely a notion up until a few years ago. Later, it came to be considered as a choice. Information is readily available today, especially in industrialised nations.

This idea is taken for granted in the most industrialised nations since new generations are raised in environments where technological advancement is the norm. They therefore find it impossible to conceive a world without these instruments.

This expansion has led to a technologically advanced society with diminished social abilities. A large portion of what is presently displayed on displays was formerly in people's heads.

Information societies will keep growing in the future. At first glance, this transition can seem encouraging since it will result in more sustainability, affluence, liberty, and opportunities for professional and personal growth.

However, individuals and the wise application of current technology are key to these civilisations' proper progress. Being technologically responsible is essential for a brighter future.

#### Benefits of the Information Society

- **Efficiency.** The larger flow of data and information greatly increases the efficiency of manufacturing. More is produced for a lower price.
- **Access to goods.** Information was transformed into a product that may be used by people from any community.
- **Democracy.** The ease and affordability of information access democratises access to knowledge and gives individuals new tools.
- **Communication.** Communication between people in different regions of the world is facilitated and accelerated by the information society.

- **Informed society.** A society has more flexibility in decision-making since knowledge is more readily available.

### Among the benefits, the following stand out:

- Information is easier to access.
- It comes right away.
- Promotes interpersonal engagement.
- Promotes international exchange of information and globalisation.
- Encourages discussion and a range of viewpoints.

Due of its quickness, it encourages productivity and efficiency. The information society offers a number of cultural, social, and economic advantages, but freedom of speech and communication are its most important contributions.

In addition, the availability of networks for information distribution and ease of access have made a vast array of knowledge bases available to us in every sector where our curiosity is piqued or where we need to further our expertise.

Additionally, the simplicity of disseminating any material and the relocation of actions that may instantly go worldwide are causing societal upheavals and revolutions of extremely high intensity and brief duration. The news is quickly updated with fresh facts, allaying the worries of several individuals and groups.

### The Information Society as Part of Everyday Life

The information society was simply a notion a few years ago. It eventually manifested and emerged as a viable choice. These days, especially in industrialised nations, this kind of civilisation has permeated every aspect of our existence. It's nearly a requirement now.

Since the next generation is raised in a world ruled by technical advancements, this truth is absorbed to the point of being overlooked in the most developed nations. They therefore find it impossible to conceive a world without these instruments.

Loss of social skills in non-technological contexts is the consequence of this progress in a technologically advanced environment. So much of what is seen on screens now was once inside of humans. So, let's consider how different it can be to question a virtual assistant through a screen vs going to an information centre and speaking to someone in person.

Compared to the way of life that was prevalent only two or three generations before, it signifies a profound shift in perspective.

Future developments of the information and knowledge society will include an increasing number of individuals. The promise for more sustainability, affluence, independence, and, ultimately, opportunities on a professional and personal level makes this future in theory quite encouraging.

It necessitates a dedication on your part. The proper development of this new society depends on us and the wise application of the technology at our disposal, so that we may all properly contribute to a technologically more hopeful future.

## Notes

### 1.2.4 Information Society Policies



There are some significant policy ramifications to the assertion that we are entering the information society. Social analysts should point out any errors or inaccuracies in that assertion and make suggestions for corrections or alternatives. Martin Rein writes in his 1976 book "Social Science and Public Policy" that social science is a type of "story telling" that relies on comparison, metaphor, and other literary devices.

This narrative includes the idea of the "Information Society." It hinges on the metaphor and analogy (using the well-known picture of industrial civilisation) (social activities being predominantly bound up with information and its technological objects like computers).

The observable patterns in this tale, however, seem to be both desired and more or less inevitable. The accepted "Information Society Story" has been put to the test in a number of ways, and each time it has failed.

Nevertheless, it may nevertheless play a key role in terms of policy as an issue that warns us to important societal trends (and maybe transformations). This point is well demonstrated by the following government acts.

For instance, the British Department of Trade and Industry promotes the adoption of microelectronics-based technology by businesses through the publication of a brochure titled "Information Technology: The Age of Electronic Information." They claim that it will "revolutionise" the way that information is handled, stored, and processed. Additionally, it will change the way we live. Other policy background texts also include same conviction about the social transition.

Planning Now for the Information Society: Tomorrow is Too Late is the title of a study the Science Council of Canada issued for the Ministry of Supply for Science and Technology (1982). "The Uneasy Eighties: The Transition to an Information Society," published more recently by the same organisation (Cordell, 1985). Advances in microelectronics are bringing about a global technological revolution that all societies must adapt to; (Science Council of Canada, 1982, p.10). In Canada, the effectiveness of the telecommunications infrastructure will determine how smoothly the country can move to an integrated, efficient information society.

Numerous comparable publications, including the Canadian, cite the well-known Simon Nora and Alain Minz investigation that was conducted in France. The Society's

Computerisation (1980). Interestingly, this report calls for a more cautious and measured approach while highlighting the revolutionary nature of the new technologies as well as their social and political impacts:

"In order to make the Information Society possible, it is not only necessary to have knowledge, but also to have time." The mutual learning process between the disciplines and ambitions progresses gradually... (1980; Nora and Minz).

The phrase "Information Society" was likely first used in the context of technical advancement and policymaking in Japan. The Information Society, or Johoka, was described by a number of writers in the 1970s as the social equivalent of biological evolution. The Plan for Information Society:

A National Goal Toward the Year 2000 was written by Yoneji Masuda, and the Ministry of International Trade and Industry (MITI) in Japan has incorporated many of its principles. Masuda views his work on the information society as a "blue print" for policy information as well as an analysis of what is taking place.

It may be said that a variety of observers, experts, and decision-makers claim that the spread of information technology will result in the creation of an information society. Information creation, processing, and dissemination are more important in contemporary culture.

Thus, it is not unexpected to see that a new paradigm for policy research and analysis is being built on the "idea of the Information Society" put out in the writings of American authors like Machlup, Ben, and Porat (Edgar and Rahim, 1983).

### 1.2.5 Information Society Challenges

The information society has some difficulties.

- **Homogenisation.** Societies have a tendency towards homogeneity as a result of frequent exposure to other products, services, and cultures, which might cause them to lose their own traditions and embrace those from other places.
- **Unemployment and precariousness.** Many activities that people formerly performed have been mechanised by technology and replaced by it. As a result, job offers become more fragile and sources of employment are destroyed, leading to unemployment (low wages, informal work and loss of job benefits).
- **Loss of privacy.** The area of intimacy is diminished to its barest manifestation, particularly with the rise of social networks.
- **Economic concentration.** Additionally, as a result of the concentration of the management and control over the economy brought about by globalisation, inequality is now a global phenomenon.

Among these difficulties, the following merits attention:

- The data is not always accurate.
- False information may spread like wildfire and cause confusion.
- The misuse of "false news" may harm individuals physically and morally.
- Making a decision is challenging due to the abundance of information.

## Notes

- They are highly digital society with very little personal interaction.

### 1.3 ICT and e-Governance



“Electronic” is what the “e” in “e-Governance” stands for. As a result, e-Government essentially refers to performing governance-related tasks and producing related outcomes using ICT (Information and Communications Technology).

The Indian government is attempting to follow the trend and aims to run the country using ICT in the twenty-first century, when practically everything has been rendered electronic, such as through e-services, e-learning, and other forms of e-commerce. ICT services are required by e-Governance in order to accomplish their goal at anytime and anywhere. Citizens no longer need to physically travel to numerous government offices in order to do their tasks.

Supporting and making governance simpler for all government employees, people, and enterprises is e-main governance’s goal.

e-Governance also refers to e-democracy, in which all interactions between the voter and the election process are digital or electronic.

India is a nation of villages, and for overall prosperity, growth, and sustainable development, ICT and Governance play a key role. This is true both in terms of e-Governance models to highlight the major changes we see in services for healthcare, education, banking, mobility, agriculture, and other allied fields, as well as in terms of maintaining the country on the path of development in the face of growing competition from other nations on various fronts.

Journey so far...

- 1970: Department of Electronics
- 1977: National Informatics Centre (NIC)
- 1980: Use of computers began
- 1987: Launch of NICENET and DISNIC
- 1998: National Task Force on Information Technology and Software Development
- 1999: Union Ministry of Information Technology
- 2000 -05: 12-point e-Governance launched by central and state Govt with focus on G2C, G2B, G2G initiatives

- 2006 -11: National e-Government Plan (NeGP)
- 2012 -17: Current e-GoV and Digital India

### About ICT and Governance

- The term “e-Governance” refers to how governments employ new ICT across the board to perform all of their duties. In other words, e-Governance is the use of information and communication technology to deliver government services, information exchange, communication, transaction, integration, various stand-alone systems and services between government and citizens, government and business, as well as back-office process and interaction within the overall framework of government.
- ICT influences the way that government and citizens interact by accelerating the flow of information and knowledge between them.
- Different ways the government interacts with its citizens online.
  - ◆ G2G: Government to Government
  - ◆ G2C: Government to Citizen
  - ◆ G2B: Government to Business
  - ◆ G2E: Government to Employee

#### 1.3.1 Introduction to ICT



The infrastructure and parts that make up contemporary computers are known as ICT, or information and communications technology (or technologies).

Although there isn't a single, agreed-upon definition of ICT, it is generally understood to refer to all hardware, software, applications, and networking elements that work together to enable communication between individuals and groups (such as businesses, non-profit organisations, governments, and criminal enterprises).

Information and communication technologies (ICTs) is a more inclusive term for information technology (IT), which includes all media applications and services that allow users to access, retrieve, store, transmit, and manipulate information in a digital form. Examples of ICTs include the internet, wireless networks, cell phones, computers, software, middleware, video conferencing, social networking, and other media.

## Notes

ICTs also refer to a unified system of cabling (including signal distribution and administration) or connection system that enables the integration of media technologies, such as audio-visual and telephone networks with computer networks. Since the ideas, practises, and technologies associated with ICTs are always growing, there isn't a single definition of ICTs that is accepted worldwide.

With the aid of ICTs, "various types of innovations have already been taking place in the agriculture sector, including commodity and stock market price information and analysis, meteorological data collection, advisory services to farmers for agricultural extension, early warning systems for disaster prevention and control, financial services, traceability of agricultural products, agricultural statistical data gathering, etc."

### Components of an ICT System

ICT includes both the internet-enabled world and the wireless network-powered mobile world. Along with cutting-edge ICT components like artificial intelligence and robots, it also comprises outdated technology like landline telephones, radio, and television transmission, all of which are still commonly utilised today.

ICT and IT (information technology) are occasionally used interchangeably; however, ICT is typically used to refer to a more extensive list of all components connected to computer and digital technologies than IT.

The list of ICT components is extensive and is expanding. Computers and phones are two examples of components that have been around for a while. Others are more recent additions, like cell phones, digital TVs, and robotics.

ICT, however, often refers to more than just its component list. It also includes the use of each of those different elements. The true potential, strength, and danger of ICT may be discovered here.

## Components of ICT

The term information and communications technology (ICT) is generally accepted to mean all technologies that, combined, allow people and organizations to interact in the digital world.



### ICT's Societal and Economic Impact

ICT is used in transactions and relationships that are social, economic, and interpersonal. ICT has had a significant impact on how people interact, learn, work, and live. In addition, ICT continues to transform every aspect of human life by replacing many of the activities that formerly required human labour with robots.

Robots can now answer calls and frequently do so more quickly and effectively than humans can, for instance, while computers formerly answered phones and routed calls to the proper people who could reply.

ICT has contributed so significantly to economic growth and commercial expansion that it is often recognised as having ushered in the Fourth Industrial Revolution.

ICT also supports societal changes on a large scale, as people increasingly substitute digital connections for face-to-face encounters. The phrase "Digital Age" is often used to describe this new age.

Despite all of its ground-breaking features, though, ICT capabilities aren't dispersed equally. Simply put, richer nations and people have greater access to ICTs and are therefore better able to take use of their benefits and potential.

Think about, for instance, certain World Bank results. More than 75% of people globally, according to a 2016 report, have access to a cell phone. However, due to a lack of ICT infrastructure, internet connection through either mobile or fixed Broadband remains unaffordable in many nations.

In addition, the World Bank estimates that more than 4 billion of the 7.4 billion people living in the world do not have access to the internet. Only 1.1 billion individuals are thought to have access to high-speed internet, according to the projection.

The so-called "digital gap" is a result of the disparity in access to ICT, both within and outside of the United States.

The World Bank, various government agencies, and non-governmental organisations (NGOs) support policies and initiatives that seek to close the digital gap by granting more people who can't afford it access to ICT.

These numerous institutions contend that individuals who lack ICT skills are excluded from the many chances and advantages that ICT generates and would subsequently lag behind in terms of socioeconomic development.

To "substantially improve access to information and communications technology and try to offer universal and inexpensive access to the internet in least developed countries by 2020," according to the United Nations, is one of its Sustainable Development Goals (SDG).

Both the ICT market and the broader spheres of commerce and society as a whole offer economic benefit.

The expansion of ICT skills within the ICT industry has reduced the cost of developing and delivering various technologies for ICT vendors and their clients while also creating new market possibilities. For instance, telephone companies that previously had to install and maintain miles of telephone lines are now able to offer telephone, television, and internet services thanks to the development of more sophisticated networking materials.

As a result, consumers have more options for service delivery and price points.

## Notes

### The Significance of ICT in Enterprises

ICT advancements have opened up a wide range of options, conveniences, and cost savings for enterprises. They range from highly automated business procedures that have reduced costs to the big data revolution, where businesses are transforming the enormous amount of data produced by ICT into insights that fuel new products and services, to ICT-enabled transactions like online shopping, telemedicine, and social media, which give consumers more options in how they shop, communicate, and interact.

However, ICT has also produced issues and difficulties for businesses, people, and society at large. Data digitisation, increased usage of high-speed internet, and the expansion of the global network have all contributed to new levels of crime, where so-called bad actors can devise technologically enabled schemes or unlawfully access systems in order to steal money, intellectual property, or private information, or to interfere with systems that regulate vital infrastructure.

Robots and automation brought on by ICT have also replaced workers who are unable to adapt their abilities to new roles. And ICT has made it possible for an increasing number of individuals to restrict their connections with others, creating a population that some worry could lose part of what makes it human.

#### 1.3.2 Role of ICT in e-Governance



ICTs (information and communication technologies) are essential to India's development and economic expansion. Today's political, cultural, socioeconomic, and behavioural decisions depend on our capacity to acquire, gather, evaluate, and use knowledge and information. ICT is the means through which information and knowledge are sent to individuals, hence enhancing their options for economic and social empowerment.

People will soon be carrying portable computers that are connected to the Internet so they may have access to global information at their fingertips. The Indian government has set a lofty goal: by 2020, all citizen-government interactions would be conducted electronically (e-Government).

The urgent need is for an effective ICT application in e-Government that provides one-stop solutions, especially for rural communities. ICT is designed to facilitate

electronic governance through wireless communication, making it inextricably linked and interwoven.

India is a nation of villages, and the National e-Governance Plan (NeGP) aims to lay the groundwork with various projects, starting at the grass-root levels, and give the country's long-term e-Governance a boost in order to improve and sustain overall prosperity, growth, and development in the global competitive regime. Applications for rural e-Government that have been put in place recently show how important information and communication technologies (ICT) are to the development of rural regions.

In fact, several of the programmes implemented in rural India have greatly enhanced the quality of the services provided by the government. Examples include the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), the Warana Project in Maharashtra, online income tax, online central excise, unique ID, and e-office, all of which have boosted local economic growth.

Similar to this, state-level rural e-Governance initiatives like the SETU Project in Maharashtra and others have been delivering great services, saving both citizens and the government time and money, and making significant contributions to the socioeconomic development of rural India.

Since ICT is a key tool in e-Government and rural development, suitable infrastructure and design are essential for their successful operation as follows: -

- As planned with trustworthy service delivery mechanisms and citizen-centric services.
- Choosing the best technology for communication and information processing (reliable, affordable, maintainable).
- As cost-effective delivery kiosks aimed to create new services.
- The demonstration of efficiency and transparency to dispel mistrust and foster citizen confidence in the operation of service delivery systems.
- Invite private involvement to ease the strain on the central servicing agency, bring in the necessary knowledge, speed up implementation, and provide residents with a superior value proposition.

The use of modern ICTs by governments for the complete spectrum of governmental tasks is the emphasis of the term "e-Governance." e-Governance is the use of information and communication technology to deliver government services, information exchange, communication, transactions, integration, various stand-alone systems, and services between the government and citizens, government and business, as well as back-office processes and interactions within the overall framework of government.

Since the government is the provider of services, it is crucial to inspire the workforce to use ICT to offer those services. Efficiency, Transparency, and Citizen Participation are the goals of e-Governance. ICT-enabled e-Government promotes good governance, trust and accountability, citizen empowerment, welfare, democracy, and national economic development. Process reforms are less effective in the face of what ICT has accomplished in recent years, which is the main enabler of change.

## Notes

Transactional services involving municipal, state, or federal governments are referred to as e-Governance services using ICT. The use of ICTs has the potential to change how governments and citizens interact by accelerating the flow of information and knowledge between them.

The task for all nations, according to the United Nations Progress Program (UNDP), is to construct a system of government that encourages, supports, and maintains human development. Governments throughout the world have made large ICT investments with the goal of enhancing governance procedures.

The different facets of modern human existence are changing as a result of the improvements in information and communication technologies (ICTs). The delivery of public services and the socioeconomic makeup of communities have benefited from the improvements in ICTs.

In India, e-Governance applications have recently shown their benefits in reducing processing costs, boosting transparency, and supporting economic growth through income-generating ventures, increases in agricultural production, and advancements in the health and education sectors—all of which improve the general standard of living of rural people.

- ICT aids in the provision of transactional services for rural residents, allowing them to access public services more quickly and affordably. It also looks at improvements in agricultural production and an overall higher standard of living brought about by ICT services.
- In addition to the aforementioned, AEPS, GPS, and other ICT services are essential. The goal of rural ICT applications is to bring central government departments and cooperative unions—as well as state and local government departments—to the doorsteps of villagers. These apps make use of ICT to provide processing and connection options that are more effective and reasonably priced.
- A number of Government-Citizen (G-C) e-Government pilot projects have tried to use these technologies in an effort to broaden their reach, strengthen their user base, cut down on processing costs, boost transparency, and slash their cycle times in half.
- Developed as pilot projects, a sizable number of rural e-Government apps sought to provide simple access to citizen services and better processing of government-to-citizen transactions. The notion that individual motivation to collective mobilisation for an integrated rural development is the fundamental goal of ICT in e-Governance and development.

### 1.3.3 Technology Impact on Society

Growing quickly during the last few decades is technology. And there is a significant growth in the usage of technology. It has an impact on people's lives and alters how they learn, think, and communicate.

It has a significant impact on society, and now it is difficult to picture living without it. Technology and society are intertwined, interdependent, and mutually influential. Technology has an influence on society, with the capacity to either advance or regress in both positive and negative ways. Technology has an impact on our culture that may be both positive and negative.

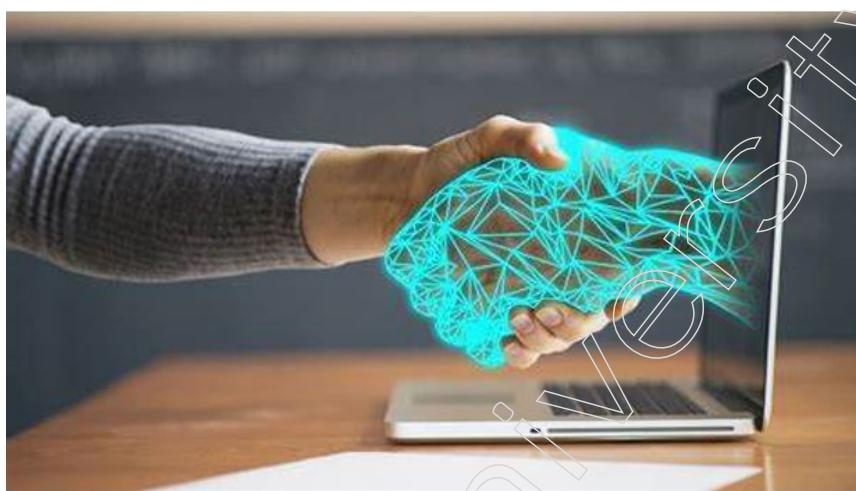
## What is Society?

The term “society” refers to a collection of people who interact socially. Or, to put it another way, a society is a collection of people who live together in a community that has laws, an economy, and some type of authority.

## What is Technology?

The definition of technology is the body of knowledge concerned with the development, creation, and use of technological means, as well as how these factors relate to human existence, society, and the environment. Or, to put it another way, technology is the application of scientific knowledge to the accomplishment of a certain objective or the development of tools that are utilised in business or daily life.

As a result, utilising science to accomplish a purpose entails the use of technology.



Since technological systems like cell phones, computers, TVs, etc. are created by humans and reflect a population's desires and lifestyle at their core, human societies and technology have become intricately interwoven. Although technology enhances human living, it also poses a serious threat to next generations.

People today use technology too much, which decreases their physical activity, which has a negative impact on their health. Additionally, because of the overuse of technology, there are numerous cybercrimes that take place every day in which a perpetrator steals the victim's identity or personal information, such as their Unique ID number, PAN number, debit card, etc., and uses it without their consent to commit a crime or commit fraud. Other online crimes include:

- **Hacking:** Hacking is the attempt to modify a computer's network or operating system. It is the use of computer systems without authorisation in order to conduct a crime.
- **Credit/Debit Card Theft:** Any fraud involving a payment card, such as a credit or debit card, is referred to as credit card fraud. The goal can be to purchase goods or services or to transfer money to an account under the control of criminals.
- **Malware Installation:** Malware is a term used to describe any software or file that poses a risk to computer users. Malware includes things like Trojan horses, worms, viruses, and spyware.

## Notes

- **e-Mail Threat:** Using email to trick someone else for one's own gain or to do someone else harm.
- **Phishing:** Phishing efforts can target a variety of persons, depending on the perpetrator. These emails can be general phishing scams intended for anyone with a PayPal account. These phishing efforts are commonly recognised as such.
- **Spams:** Spam is a term used to describe an unwanted, unsolicited digital communication that is delivered frequently. Spam can be sent to you by email, phone calls, texts, and other methods.
- **ATM Cards Theft:** ATM fraud is a type of crime when the perpetrator uses another person's ATM card and PIN to pay for their illegal activity.

### The History of Technology and Society in Changing Our Lives

Each culture, community, kingdom, and empire has developed, risen to power, and then fallen throughout history with technology at the forefront. The majority of the fundamental inventions (technologies) still in use today were created by the ancient Sumerians in Mesopotamia, the so-called “cradle of civilisation,” including ships, the wheel, irrigation systems, metallurgy, and one of the earliest recorded scripts.

Every aspect of a society, kingdom, or empire is impacted by technology, which is based on the math and science that is accessible in that culture. This includes every aspect of a civilisation's substructure, such as its:

- Military
- Architecture
- Cities
- Health
- Communication
- Government
- Time/Calendars
- Record Keeping
- Language

Ancient technology, like Adam's Calendar and the first arithmetic-based calculator, enabled the ancient kingdoms manage time, convey numerical numbers, regulate their economies, and expand in size. The oldest science, math, and medicine are found in East, Southern, and Northern Africa.

Additionally, technology influenced agricultural techniques, which supported the robust ancient economy and contributed to the prosperity of ancient cultures. The growth of ancient towns and kingdoms was influenced by the creation of irrigation systems, architectural designs, glass, and baked clay. Following the industrial revolution, these ground-breaking discoveries gave rise to megacities, skyscrapers, and farms that now provide food for millions of people.

Chariots, ships, and the ancient “Silk Road” all helped kingdoms trade, become wealthy and powerful, and spread their influence, which led to the conquest of kingdoms and the joining of various civilisations.

Technology also played a role in the creation of empires in globalisation and ancient trade. Even the most fundamental component of human communication—language—has been impacted by technology. For instance, certain archaic tongues, like the still-spoken Basque tongue, include root words for contemporary instruments connected to the term “stone,” suggesting that these words have ancient, possibly stone-age origins.

Even though English is an isolated language, it's possible that the development of stone tools thousands of years ago may have an impact on the spoken language of English today if a language like this altered the origins of English terms.

In reality, the invention of stone tools and the capacity to control fire are two of the most significant instances of how technology helped alter human society behaviour and probably even evolution. Both contributed to the survival of early hunter-gatherer societies, which produced the prehistoric behaviours for which *Homo sapiens* are famous (the hunter-gatherer model before the emergence of agricultural societies), thereby altering the genetic makeup of entire societies and thus, inadvertently, the course of our evolution (genetic flow).

All of these technologically advanced kingdoms from antiquity to the present, including the Egyptian and Kushite empires, the Aksumite and Chinese empires, the Assyrian, Babylonian, and Persian empires, the Greek, Roman, Mali, and British empires, expanded into empires as a result of their robust economies (resulting from advanced technologies), robust militaries (resulting from advanced technologies), and robust communication and transportation capabilities (resulting from advanced technologies). One may argue that the development and use of cutting-edge technologies have authored history.

Throughout human history and following the industrial revolution, humans transitioned from being hunter-gatherers to more sedentary beings whose technology automates many tasks for them. As a result, chronic illnesses and unhealthy diets are more commonly caused by sedentary behaviour while also making life more convenient and “easier.”

Today, communications can be delivered nearly quickly over the Internet and it is possible to travel across the world in a fraction of the time using aircraft, but in the ancient era it may take months to send a message from one end of the planet to the other or to go from one nation to another.

## Notes



## Notes

In our everyday lives, we use and rely on technology, and our needs and expectations in this area are expanding. Humans utilise technology to explore, connect, learn, and carry out tasks. Whether technology has positive or negative effects on society depends on how we utilise it.

### 1. Positive Impacts of Technology on Society:

In comparison to its negative effects, technology provides more benefits for people and society. It makes our lives simpler and rewards us by giving us access to tools or resources that greatly simplify our lives. The following are some advantages that technology has for us:

- **Improved Communication:** The most crucial aspect of society is communication since it allows us to construct or transfer our ideas amongst one another. In the past, individuals sent messages to their loved ones using pigeons or other birds. After that, as technology advances gradually, cell phones, email, etc. become the primary means of information conveyance. These days, we communicate with friends and family through email or on social media. It is the most rapid, useful, and efficient media. Even though they are quite far away from their loved ones, people may communicate with or exchange information with them effortlessly.
- **Improved Education and Learning Process:** The process of teaching and learning is improved by technology. Nowadays, utilising the internet, people may quickly increase their knowledge. The majority of the information on the internet is free, and you may access it whenever you want, from any location.
- **Mechanized Agriculture:** The way that farmers operate has changed because to technology. The introduction of several technologies and technological tools in the agricultural sector has made farming relatively simple, efficient, automated, etc.
- **Easy to Access Information:** The internet makes it simple for us to get information whenever and wherever we are. You may utilise the majority of the material on the internet, which is freely available, to improve your knowledge, talents, etc.

### 2. Negative Impacts of Technology on Society:

Everything on our earth, as we are all aware, has both advantages and downsides. The same is true with technology; it too has detrimental effects on society, including but not limited to:

- **Increase in Unemployment:** Due to their low cost and excellent efficiency, both large and small businesses use machinery and technological equipment nowadays, which contributes to the steadily rising unemployment rate.
- **Increase in Pollution:** Our environment is impacted by technology as much as by humans. The rate of pollution is continually rising as a result of machinery and cars, which contributes to global warming and other problems.
- **Increase in Health and Mental Concerns:** Technology nowadays has an impact on people's physical and mental health. People become emotionally brittle, sluggish, have trouble sleeping, engage in less physical exercise, and spend less time with friends and family.

- **Increase in Cybercrimes:** Cybercrimes are occurring more often as a result of excessive internet use. Some people (attackers) hurt children or innocent people (victims) for gain or amusement.

## Technology Induced Societal Issues and Cultural Changes

### Social Issues

The following are some social problems we encounter online:

- **Identity Theft:** To fraudulently get another person's financial or personal information in order to steal their identity and commit a crime.
- **Gaming Addiction:** The prolonged, excessive usage of online games has a negative impact on a person's ability to function in a variety of life areas.
- **Health and Fitness:** Internet usage has an effect on your health and fitness; it might affect your vision, backbone, etc.
- **Cyberbullying:** Cyberbullying is the use of technology to harass, harm, criticise, or target another person.
- **Terrorism and Crime:** Cyberterrorism includes the theft of our cyberinfrastructure as well as digital information such as software, hardware, data, or information.
- **Communication Breakdown:** When information is not shared, a communication breakdown happens and interaction is lost.
- **Defamation of Character:** Defamation of character is the act of spreading false information with the intention of seriously harming another person's goodwill.

### Cultural Changes:

Technology has fundamentally changed our culture. It has been a lengthy journey from our ideals to our communication methods. Nowadays, many individuals find it challenging to have a face-to-face conversation.

To spend time with their friends, people utilise their laptops, tablets, or phones. People increasingly judge others depending on how technologically advanced they are, including whether or not they drive the newest automobiles or buy the newest smartphones. Nowadays, headphones are preferable over open ears when listening to music.

Nowadays, the internet is preferred by the majority of people since it is all they have ever known. These days, touch-screen cell phones are all the rage.

Technology does nothing more than distance people from reality. Today's population struggles to make meaningful connections with others, solve problems, and act in a mature manner. All of this has an impact on our society.

Every time we choose to buy something online rather than from a local retailer, technology has an impact on culture. Every time someone settles down to enjoy our evening on-demand entertainment, we are using technology to shape culture.

## Notes

### Case Study



The Aarogya Setu App for Mobile The Sanskrit term “bridge to health” is Aarogya Setu (Clarance, 2020). Launched in April 2020, this community-driven contact-tracing mobile app quickly became the most widely downloaded mobile tracing app in the world after receiving over 50 million downloads in only 13 days (Banerjea, 2020).

Over 100 million people downloaded the Aarogya Setu app between April and June 2020. (Clarance, 2020). Under the direction of the Ministry of Electronics and Information Technology, National Informatics Centre planned, created, and hosted the Aarogya Setu mobile application.

This app was made accessible in eleven Indian regional languages as of May 17, 2020, in addition to English. On May 26, 2020, the GoI made the source code of this smartphone app available to the public after rising privacy and security concerns.

With daily active users in the range of 4 to 5%, the total number of downloads for this contact-tracing mobile app have been rising rapidly, surpassing 167.7 million in December 2020 and 169 million in February 2021, respectively (Aarogya Setu Website, 2021).

On average, a user would use the Aarogya Setu app four times each day, for an average daily usage duration of about eight minutes. The steady increase in the desire to use this community-driven contact tracing mobile app throughout 2020–21 demonstrates the app’s relevance and usefulness among the general public and the government for real-time information, monitoring, tracking, and self-control.

The user receives a message about the device’s Bluetooth and location sharing data collecting after downloading the contact-tracing app. In order to sign up for the app, the user must complete a self-administered questionnaire. The questionnaire asks about past travel experiences, medical history, smoking habits, and any COVID-19 symptoms the respondent may have had.

With the use of Bluetooth and GPS, the programme keeps track of interactions between the user and other people. This generates a social graph that aids in locating contact-tracing chances for subsequent actions for both the public and the government or medical personnel. Although the Aarogya Setu app gained international attention owing to its outstanding success, some lefties were more interested in criticising the product than in endorsing the nation’s development (O’Neill, 2020).

The obligatory adoption approach pushed by the Indian government on frontline COVID warriors, government employees, etc. was seen to have contributed to Aarogya Setu's success (O'Neill, 2020). Journalists neglected to highlight how important it was to protect and assist these COVID warriors who were waging the battle without concern for their health.

On the other hand, some blind journalists failed to notice that a number of industrialised nations embraced the obsessive adoption approach for contact tracing applications (Farronato, Iansiti, Bartosiak, Denicolai, Ferretti, and Fontana, 2020). Even private sector workers were compelled to download the contact-tracing software in wealthy nations like Italy.

If the government had waited for the contact-tracing software to be downloaded willingly, contact tracing would have been much more challenging and there would have been many more infections in a large nation like India. Thus, the Indian government's decision to prioritise protecting its COVID fighters on the front lines allowed it to achieve the necessary critical mass and secure the success of their contact tracing approach.

### Summary

- e-Governance can be defined as the application of Information and Communication Technology (ICT) for providing government services, exchange of information, transactions, integration of previously existing services and information portals. The “e” in e-Governance refers for ‘electronic.’
- e-Governance is about the use of ICT for leading the citizens and promoting the public service. It comprises a pragmatic use and exploitation of ICT for delivering efficient and cost-effective services and information and knowledge to the citizens being governed, so realising the immense potential of the government to serve the citizens.
- Global movements towards higher deployment of IT by governments emerged in the nineties, with the introduction of the World Wide Web. What this strong means to publish multimedia, support hyperlinked material and interactive information meant was a clearer outlet for G to C interactions and the promise of the attainment of the aims of good governance.
- Electronic governments have certain drawbacks as well. Moving government services into an electronic-based system is the fundamental drawback of an electronic government. This system eliminates the interpersonal communication that many individuals value.
- The Department of Electronics and Information Technology has designed this programme (DEITY). The goal of Digital India is to make the nation into a knowledge economy and society that is enabled by technology. Phased implementation of the initiative will begin this year and continue through 2018.
- In India, e-Governance has rapidly advanced from projects that just computerised government departments to those that embody the finer nuances of governance, such people centricity, service orientation, and transparency.
- Governments can use the e-Governance model as a guide to determine how a project fits into the broader development of an e-Governance strategy. It takes an e-Governance plan to achieve the company objectives.

## Notes

- Government in developing countries is too expensive, provides insufficient services, and is not adequately responsive or responsible, as is true around the world. Reforms for good governance are designed to fix these flaws. The implementation of these reforms has taken several years, yet progress has been far slower than anticipated.
- The World Bank, the United Nations Development Program (UNDP), the Asian Development Bank (ADB), and other international development organisations employ a functional approach to characterise effective governance, emphasising on management elements to advance economic challenges.
- Governments at all levels—federal, state, and partially local—face difficulties as a result of growing public expectations for higher standards of governance. India continues to fall behind in delivering on the rising levels of public expectations, compared to the industrialised world and several Asian nations.
- Information and communication technologies (ICTs) is a more inclusive term for information technology (IT), which includes all media applications and services that allow users to access, retrieve, store, transmit, and manipulate information in a digital form.
- ICT includes both the internet-enabled world and the wireless network-powered mobile world. Along with cutting-edge ICT components like artificial intelligence and robots, it also comprises outdated technology like landline telephones, radio, and television transmission, all of which are still commonly utilised today.
- ICTs (information and communication technologies) are essential to India's development and economic expansion. Today's political, cultural, socioeconomic, and behavioural decisions depend on our capacity to acquire, gather, evaluate, and use knowledge and information.

### Glossary

- **Accountability:** Accountability is an assurance that an individual or organisation is evaluated on its performance or Behaviour related to something for which it is responsible. The term is related to responsibility but is regarded more from the perspective of oversight.
- **Consensus:** The definition of consensus is an agreement made by a group. An example of consensus is when NDA and UPA agree on language for a bill.
- **Deployment:** Deployment refers to assigning people to serve in various locations, especially soldiers and other military personnel. A deployment may include soldiers, as well as equipment and generals.
- **Epicentre:** The epicentre is the point on the earth's surface vertically above the hypo-centre (or focus), the point in the crust where a seismic rupture begins.
- **Governance:** Governance can be defined as: "The system by which entities are directed and controlled. It is concerned with structure and processes for decision making, accountability, control and behaviour at the top of an entity."
- **Grievance:** A cause of distress (as an unsatisfactory working condition or unfair labour practice) felt to afford a reason for complaint or dispute.
- **Hyperlinked:** An electronic link providing direct access from one distinctively

**Notes**

marked place in a hypertext or hypermedia document to another in the same or a different document.

- **Informatics:** Informatics is the study of the structure, behaviour, and interactions of natural and engineered computational systems. Informatics studies the representation, processing, and communication of information in natural and engineered systems.
- **Initiative:** The definition of initiative is the nature to take the first step in something. An example of initiative is someone who is always first to start a new project.
- **Intellectual:** An intellectual is a person who engages in critical thinking, research, and reflection about the reality of society, and who proposes solutions for the normative problems of society.
- **Multimedia:** A technique (such as the combining of sound, video, and text) for expressing ideas (as in communication, entertainment, or art) in which several media are employed.
- **Tele-communication:** Telecommunications, also known as telecom, is the exchange of information over significant distances by electronic means and refers to all types of voice, data and video transmission.

**Check Your Understanding**

1. It implies government functioning with the application of ICT is called—
  - a) e-Governance
  - b) Government
  - c) Governance
  - d) All of the above
2. ICT refers to—
  - a) Intellectual and Communication Technology
  - b) Interconnectivity and Communication Technology
  - c) Information and Communication Technology
  - d) Intelligence and Communication Technology
3. The “e” in e-Governance refers for—
  - a) Electric
  - b) Electronic
  - c) Electricity
  - d) None of the above
4. What is e-Governance?
  - a) The use of electronic means to carry out government activities and functions
  - b) The use of physical means to carry out government activities and functions
  - c) The use of traditional means to carry out government activities and functions

**Notes**

- d) None of the above
5. What are the benefits of e-Governance?
- Increased efficiency and transparency
  - Reduced cost and improved services to citizens
  - Both a) and b)
  - None of the above
6. What is an example of e-Governance in practice?
- Online tax filing and payment systems
  - Electronic voting systems
  - Both a) and b)
  - None of the above
7. What is the role of government in promoting e-Governance?
- To provide the necessary technical infrastructure and support
  - To train government employees in using new technologies
  - To provide useful information online
  - All of the above
8. What was the main impact of the introduction of the World Wide Web in the 1990s on governments?
- It created a new definition of public governance characterized by enhanced efficiency, transparency, accountability, and citizen orientation in the adoption of IT enabled governance.
  - It limited the expectations and demands of a highly aware citizenry.
  - It hindered the attainment of the aims of good governance.
  - It decreased the use of multimedia and interactive information by governments.
9. What does e-Governance involve beyond just online service delivery?
- Making payments electronically.
  - Access to government data online.
  - Altering how people interact with governments and each other.
  - The willing participation of civil officials.
10. What will e-Governance enable citizens to do?
- Make payments electronically.
  - Represent their true needs and welfare.
  - Communicate with other citizens.
  - All of the above
11. Which is the main goal of administrative reforms in the public administration system?
- Enhancing system capabilities

- b) Reorganising the structures and processes of governmental organisations  
c) Improving procedural issues  
d) All of the above
12. Define the “less paper office”—  
a) An office setting where all information is stored in physical files  
b) An office setting where all information is distributed online among multiple officials  
c) An office setting with little to no computerisation  
d) None of the above
13. How does ICT contribute to the quality of services in public administration?  
a) Increases transparency, adaptability, and sensitivity  
b) Decreases the accountability of authorities  
c) Decreases the efficiency of service delivery  
d) None of the above
14. The advantage of e-Governance is—  
a) Cost Reduction  
b) Transparency  
c) Convenience  
d) All of the above
15. The disadvantage of e-Governance is—  
a) Breach of privacy and security  
b) High cost  
c) Digital divide  
d) All of the above
16. An information society is described as one that prioritises which of the following?  
a) Raw materials and energy  
b) Human needs and ecological balances  
c) Emotions and brute force  
d) Knowledge and reason
17. The characteristic of the information society is—  
a) Technology as the epicentre  
b) Knowledge economy  
c) Social transformation  
d) All of the above
18. What is ICT commonly understood to refer to?  
a) All hardware, software, applications, and networking elements

**Notes**

- b) Information technology (IT)
  - c) Unified system of cabling
  - d) None of the above
19. What are the goals of e-Governance?
- a) To construct a system of government that encourages, supports, and maintains human development
  - b) Efficiency, Transparency, and Citizen Participation
  - c) To bring central government departments and cooperative unions to the doorsteps of villagers.
  - d) To provide processing and connection options that are more effective and reasonably priced.
20. The main purpose of rural ICT applications is—
- a) To encourage, support, and maintain human development through ICTs.
  - b) To reduce processing costs, increase transparency and support economic growth.
  - c) To bring central government departments and cooperative unions to the doorsteps of villagers.
  - d) To improve the general standard of living of rural people through ICT services.

**Exercise**

1. Define e-Governance.
2. Describe the advantages and disadvantages of e-Governance.
3. Explain the policies, strategies and framework of e-Governance.
4. Discuss the importance of e-Governance in India.
5. What is information society?
6. Describe the challenges of information society.
7. Define ICT.
8. Explain the role of ICT in e-Governance.
9. How technology impact on society?

**Learning Activities**

1. Prepare a presentation on “Advantages and drawbacks of e-Governance” in PowerPoint.
2. Discuss the impact of “Digital India Initiative” on Indian governance system.

**Check Your Understanding – Answers**

1. a)
2. c)

- |        |        |
|--------|--------|
| 3. b)  | 4. a)  |
| 5. c)  | 6. c)  |
| 7. d)  | 8. a)  |
| 9. c)  | 10. d) |
| 11. a) | 12. b) |
| 13. a) | 14. d) |
| 15. d) | 16. b) |
| 17. d) | 18. a) |
| 19. b) | 20. c) |

**Notes****Further Readings and Bibliography**

1. R.P. Sinha: E-Governance in India- Initiatives and Issues, Concept Publishing Co, 2006 edition.
2. D N Gupta: E-Governance- A Comprehensive Framework, New Century Publications, 2008 edition.
3. Bidisha Chaudhuri: E-Governance in India- Interlocking politics, technology and culture, Routledge, 2017 edition.

## Module - II: e-Governance Architecture

### Learning Objectives

At the end of this topic, you will be able to understand:

- Discuss planning and implementing e-Governance with its legal framework
- Interpret framework for citizen engagement in e-Governance
- Describe business models for implementation of e-Governance
- State change management and capacity building in e-Governance projects
- Examine infrastructural preparedness: legal, human, institutional
- Analyse leadership and strategic planning

### Introduction



Since the 1990s, reinventing government has been a prevalent topic, with governments throughout the world striving to enhance the systems of public service delivery. Information and Communication Technology (ICT) advancements have eased the reinvention of governments and equipped them to address the requirements of a varied community.

In other words, the information era has irreversibly altered the basics, institutions, and service delivery systems. The vision articulates a goal to alter the way the government operates and interacts with its citizens. From this worry derives the notion of electronic governance, sometimes known as e-Governance.

Global democracies envision a future in which e-Governance will be standard practise. As we will see later in this Unit, India has been in the forefront of the IT revolution, which has had an impact on the public administration systems. If the full potential of ICTs is realised, there are several prospects, particularly for the social and economic development of the developing countries.

## 2.1 Architecture and Infrastructure Related Aspects of e-Governance



According to the United Nations Public Administration Network, e-Government growth requires infrastructure. Info-structure refers to the information-related infrastructure that is important to the execution of e-Government.

The following are the four infrastructures (informational structures) necessary for the establishment of e-Government in any nation:

1. e-Records
2. Authentication and Digital signature
3. e-Payment
4. Portal

In analysing the last decade of India's competitiveness, it is possible to conclude that India has achieved substantial improvement in infrastructure, one of the pillars in which it ranked the lowest. As the infrastructural deficit is closed, other priorities emerge.

The country's greatest relative deficit is its technology preparedness; nonetheless, India is preparing itself technologically for the e-Government transition. It should be underlined that e-Government is not translation; rather, it is change on a global scale. Therefore, we must first concentrate on the fundamental requirements for e-Government formation.

### India Lacks Basic Infrastructure for e-Government Development

Access to energy and high-speed Internet connectivity are essential for the implementation of e-Government in every nation. In both of these domains, India has a significant digital gap. India is the world's third largest power producer and fourth largest electricity user.

Still, more than 300 million people and 60 million families in India lack access to power. The Government of India established a programme titled "Power for All" to address the inadequacy of access to power for all of its citizens.

The smaller average band width of broadband connections in India compared to other nations is one of the primary challenges facing the Indian Internet sector.

## Notes

According to figures from 2007, the average download speed in India hovered around 40 kB/s (256 kbit/s), the minimum speed imposed by the Telecom Regulatory Authority of India, although the international average during the same year was 5.6 Mbit/s.

In order to address this infrastructural issue, the government dubbed 2007 "the year of broadband." Moreover, India's Internet penetration rate is lower than the average rate among Organisation for Economic Co-operation and Development nations, which is above fifty percent.

### The Issue of Digital Divide

Another problem is the digital divide, where development is skewed towards metropolitan regions; more than 75 percent of the country's internet connections are in the top 30 cities. A digital gap is an economic and social disparity in access to, usage of, or influence of information and communication technologies. India experiences both types of digital divide.

It is faced with both an internal and global digital divide. On a global basis, the technical divide between emerging nations like India and established nations is evident.

There are several interconnected factors that may exacerbate this disparity. Among them are:

- Poverty and unemployment
- Lack of literacy and e-literacy
- Lack of infrastructure to promote basic e-learning.
- Geographical and strategic division of areas and so on.

Regulators have attempted to promote the expansion of broadband in rural regions by encouraging more investment in rural infrastructure and introducing subsidised pricing for rural users as part of the Indian government's universal service obligation plan.

Digital India is a government-wide initiative encompassing several ministries and divisions. It combines a huge number of ideas and concepts into a single, all-encompassing vision so that each may be realised as part of a broader objective. Each piece stands on its own, but also contributes to the overall composition.

### Government Information Infrastructure Development (GIID)

In India, we have been preparing for the National Information Infrastructure (NII) for many decades, but it is still in the developmental phases and not operational. According to reports, horizontal connectivity would be provided to 100, 50, 20 and 5 government offices and service outlets at the state, district, block, and panchayat levels, respectively.

NII will combine the country's network and cloud infrastructure to deliver high-speed connectivity and a cloud platform, respectively, to all government agencies up to the panchayat level. Deity will serve as the project's coordinator.

**e-Record**

Government operations rely heavily on the maintenance of records. They give a record of past choices, modifications, and consequences. The emergence of the computer has had a profound effect on the creation, transmission, and storage of information.

E-records are inherently fragile due to their dependency on hardware (equipment) and software (programming) and rapid cycles of inventive obsolescence. All organisations are confronted with the problem of a consistent and reliable flow of data across all currently utilised and future applications.

The majority of e-records and the Personal Computer Application used to create them are currently inseparable. In order to access and provide future context for e-records created today, it is necessary to update the programme used to create them. As the number of electronic documents increases, so does the difficulty of access.

There are several more obstacles associated with technologies in use, e-Record management, maintenance and use of e-Documents, retention and disposal of e-Records, security of e-Records, destruction of e-Records, management of vital records, and agency internal review, among others.

The framework for records management within the Government of India is based on standards and practices as outlined by the Department of Administrative Reforms and Public Grievances, National Archives of India, (Public Record Act and Rules, 1993/1997) standards derived from legislation (RTI 2005), ISO Records Management Standards 15489, Metadata standards, and other similar standards.

These standards and practices aid in establishing criteria for proper documentation etiquette, what to preserve and what to discard, defining authority and veracity, and promoting the administration of email and other electronic reports and unique sorts of records.

**Issues Related to Info-Structure - Authentication and Digital Signatures**

By viewing, hearing, or perceiving a man's handwriting, it is not at all difficult to distinguish between individuals in the physical world. Regardless, in the computerised

**Notes**

## Notes

age, everyone communicates with one another via a personal computer screen. When organisations move their commercial transactions on the Internet, security and trust become essential requirements.

Therefore, character verification, whether of an individual or an organisation, has become an important problem. As a tool that accelerates transactions, reduces costs, reduces paper, and bolsters exchange security, electronic signature has become an integral part of online commerce.

A Digital signature provides information integrity and proof of origin (non-denial). It can be preserved by the receiver if the sender attempts to prevent the contents of the communication from being secured or even denies sending it. Digital signature is also utilised for framework or application validation.

On October 17, 2000, the Indian Information Technology Act of 2000 (the "Act") went into force. The Act is largely based on the model legislation on internet commerce developed by the United Nations Commission on International Trade Law (UNCITRAL). The purpose of the Act is to make electronic transactions and digital signatures legally recognisable. Section 5 of the Act provides digital signatures legal standing.

Since 2000, digital signatures have been permitted in India. Since then, however, few parts of the Act have been executed, with the exception of the 2001 appointment of the Certifying Authority. Although digital signatures appear to be a valid concept, they have not lived up to expectations. Digital signature applications are now confined to banking and financial services, online stock-trading platforms, and engineering companies (to authenticate critical engineering drawings and documents).

### e-Payment



The advent of Internet commerce has necessitated that payment systems adapt to new requirements. With the widespread use of the Internet, email, and mobile phones, payment via electronic means offers greater convenience and flexibility in payment systems.

In the past few of years, e-payment has expanded as a payment technique due to the growing demand for robust and effective electronic business and payment frameworks. e-Payment plays a crucial role in e-Government transformation as well, as various transactions must be handled electronically when government agencies collaborate online.

In a number of nations, e-payment is expanding steadily but persistently. It pertains to online payment for products/services. Various companies and organisations have begun delivering their products/services online in a safe manner to save operating expenditures. To grasp electronic payment, it is useful to first analyse conventional payment methods.

Paper currency is the most prevalent and dominant method of payment in all nations. It requires tight coordination between the customer and shipper. Typically, it secures specified payment. However, this method is not appropriate for significant payments and provides no audit record. For the formation of e-Government, governments should increase Internet- and mobile phone-based payment methods.

For the effective development of e-Government in India, the government must design a method for safe e-payments that facilitates digital exchanges between a C2G, between a G2G, between a G2C, between a G2E, and between a G2B.

### Issues Related to Portal: Info-Structure Portal



A portal serves as the contact between the government and the general populace. In reality, with the advent of the information age and the growth of e-Government, the interfaces between government agencies and between governments and their citizens are evolving from conventional ones, such as offices, windows, counters, and concierges, to an electronic one, i.e., portals.

Portals have been implemented to address several sorts of business issues. Some portals are designed as dashboards, containing all the key performance metrics pertinent to a given position that the role holder and anyone with an interest in the role must comprehend. In general, a gateway serves the following purposes:

- To address a specific business challenge or opportunity.
- Support a certain business function.
- To target certain demographics.
- Support self-service capabilities.
- Supporting overall productivity.

## Notes

Therefore, a portal may be used to minimise the need for users to visit several websites and apps in order to access the information and services they need to do their tasks or conduct commercial transactions. A well-implemented portal provides a personalised perspective with a logical organisation and grouping of information, which boosts productivity.

It provides a vast array of features that enable enterprises to swiftly integrate various apps without requiring composite programming. A portal is a device that expands an organisation's reach to a wide variety of internal and external audiences.

India.gov.in was launched in India on November 10, 2005. India.gov.in is the official website of the Indian government for its citizens. It provides centralised access to information resources and online services from government sources. It is also known as the India National Portal.

The site was established as a mission mode project under the government's National e-Governance Plan. The purpose is to give citizens and other stakeholders with a single point of access to the information and services offered by the Indian government, such as passports, driver's licences, and business registration.

India.gov.in provides links to official websites at the union, state, district, and local levels and is the most comprehensive portal regarding the Indian government with links to 6,700 government websites. The website also has a function that customises the presented material based on the user's profile and preferences. It is accessible to individuals with disabilities and mobile device users. The site is controlled by the Network Information Center (NIC).

The following are some of the most notable features of the National Portal of India:



**india.gov.in**  
national portal of india

- One stop source of all info single window service
- Comprehensive content
- Citizen orientation
- User centered design
- Bi-lingual content
- Content source
- XML interface
- Distributed content management system and so on

e-Government is a comprehensive revolution of government activity, and this transition necessitates the construction of information structures. It is a paradigm change from what has been in operation for the past two centuries to what the digital age requires.

It's not merely the computerisation of government offices and record-keeping processes, or the use of information technology in government operations; it's a shift that redefines the function of government and its relationship with the public. Based on

the above discussion, we may infer that India currently lacks the necessary information infrastructure for the construction of an e-Government.

We must develop info-structures such as the e-record management mechanism, the e-payment mechanism, and the content management/achieving mechanism, as well as strengthen the Info-structures that are already performing well, such as the Info-structure for Content management, which is considered a key enabling technology for moving governments online.

According to a recent analysis, it is a crucial factor in the success of e-Government programmes. The Indian national portal is a content management system. It must be converted into a robust content management system.

The National portal of India would unquestionably assist government entities that wish to manage and disseminate information and offer online government services. The National Portal of India meets all of the Key Requirements for Content Management.”

- It has a rapid deployment rate.
- It can publish documents and convert them from their original forms.
- It is able to automate the publication process utilising templates and common tools.
- It provides expiry, archiving, and retrieval of material.
- It enables a security paradigm that delivers the appropriate material to the appropriate users.
- It supports a big number of users, vast content archives, and a variety of writers.
- It is an open technology based on industry standards and other such criteria.

As experienced in India, the rate of deployment of new technologies within government organisations is frequently excruciatingly sluggish due to problems with change management. The reasons may include the following:

1. Fear of technology
2. Creative habits
3. Insufficient time to learn new techniques
4. Competing techniques
5. Environment compatibility

Integrated obsolescence syndrome e-Government would be a massive transition, and this digital transformation would necessitate that all stakeholders play their roles with equal accountability and use their rights while maintaining vigilance over their responsibilities.

In a country as enormous as India, with its wide geography and poverty, establishing ambitious goals in a short period of time would create chaos. To be effective, we must prioritise the sector-by-sector, step-by-step incorporation of private companies into the BOT (build, operate, and transfer) model, so that we may consider constructing massive infrastructure that attracts substantial investments.

## Notes

### 2.1.1 Planning and Implementing e-Governance



Once the vision and priorities have been set, a thorough work plan facilitates the implementation of E-Government initiatives by agencies and officials. Key factors on which the work strategy, infrastructure, and website development should concentrate include:

- Content Development: These include the creation of programmes, interfaces in local languages, and e-learning resources.
- Competency building: At all levels, training individuals for human resource development must be implemented.
- Connectivity: Interagency Intranet/internet connectivity must be created.
- e-Security, e-Ethics and e-Privacy
- Two-way communication flow
- Cyber laws: Providing a legal framework to support E-Government policy objectives.

The implementation of e-Governance is planned in stages as follows:



#### Stage 1: Building E-Governance Awareness and Commitment

##### A National Summit on E-Government

Numerous seminars and summits have already been held at the national and state levels, including the one that the author coordinated at the University of Roorkee. However, these summits have not produced the necessary direction.

A summit should be held in order to generate a paper outlining the National E-Government Initiative's methodology and structure, programme and project priorities, and any other goals. It must assure the engagement of all stakeholders, including political parties, bureaucrats, academics, the corporate sector, non-governmental organisations, and individuals.

##### Raising Awareness Among Leaders

In addition to the Summit, additional measures would be required to increase awareness and commitment among senior government officials. These would include

the President, the Prime Minister, the Ministers, the Chief Ministers, the Secretaries, and the leaders of other institutions within civil society who are mainly responsible for determining if and how change occurs.

By targeting government and civil society leaders, e-Governance drivers are formed both within and outside of government. Senior officials will require private, individualised instruction. Direct and ongoing usage of ICTs will be advantageous for sustaining knowledge and self-assurance.

### Political Acceptability

Despite the significance of technology and talent infrastructures, e-Governance efforts likely hold the key. In several nations, e-Government initiatives have advanced slowly because they do not satisfy the political self-interests of the primary players, particularly senior public officials.

Therefore, the opinions of top public officials are of the utmost importance; therefore, the focus placed on problems of leadership and commitment, increasing awareness and confidence, and “winning hearts and minds.”

Officials must be persuaded that e-Government is in their self-interests.

- In order to increase election victory,
- In order to reply to threats,
- In order to gain entree to donor funds,
- In order to increase control, credibility, kudos, and other intangible resources.

Other civil society stakeholders, such as managers, users, and citizens, have less influence but can nevertheless delay, distort, or obstruct e-Government efforts. Capacity-building, listening, addressing self-interest and motivation, and designing suitable rewards will all play a part in this situation.

### Awareness-Raising Among the Donor Community

The following activities might be offered as part of a package:

- Seminars and sessions for personnel of donor agencies
- Online documentation,
- Individual meetings with important contributors and
- Assistance in monitoring and assessing donor e-Governance programmes.

The Planning and Finance Commissions deserve special attention in India. It has been found that the Ministry of Information Technology and the Department of Science and Technology contribute the most to e-Government programmes.

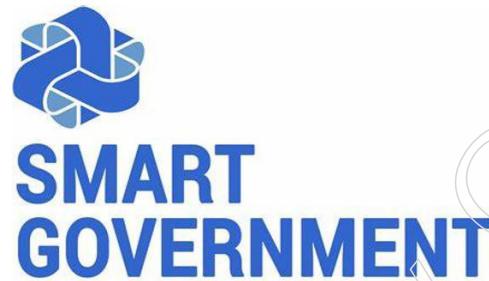
In reality, contributions should be interwoven with development initiatives, and all Ministries should contribute to the campaign. There is a need for e-Governance project monitoring and assessment to be improved in order to increase knowledge. The majority of donor-supported e-Governance initiatives have failed entirely or partially because they did not adhere to a number of the fundamental criteria outlined above.

Not surprisingly, sponsors do not want this information to be publicised and, as a result, have been hesitant to perform independent evaluations of ICT-related initiatives.

## Notes

Consequently, the errors are repeated and compounded. In addition, requests for funding these initiatives should be addressed to international donor institutions including the World Bank and UNDP.

### National Association for SMART State Governments: NASS-Gov



A committee composed of representatives from the corporate, government, and non-governmental organisations should be established to oversee the different E-Government efforts in the state. The author recommends the development of the National Association of SMART State Governments, or NASS-Gov, in order to achieve the objective. Similar to NASS-Corn, NASS-Gov will be a national body with representation from Politics, Bureaucracy, the IT sector, academia, and citizens.

The principal activities of NASS-Gov will be:

- A bimonthly publication on E-Government Offer advisory services on E-Government
- Publish an annual report on the state of E-Initiatives in India.
- Assist Central and State Governments with E-Project Bidding and User Specifications
- Launch [www.nassgov.org](http://www.nassgov.org) as a portal for E-Government Initiatives in India.
- Showcase the world's best E-Government practises
- Organise conferences, summits, and information sharing
- Establishment of an E-Government School.

### Stage 2: Building E-Governance Strategic Capacity

A national hub for E-Government:

The “Ministry of Information Technology” A single focal point for e-Governance strategy, such as the E-Governance Division of the Ministry of Information Technology, will be required.

- Setting overall e-Governance priorities
- Directing the formulation and application of framework policies, standards, and guidelines
- Promoting cross-cutting infrastructure and applications for e-Government
- Serving as a focal point for e-Governance education

NIC will be the implementation agency for such programmes.

The following institutions must also be constructed:

- The MIT Interoperability Commission will investigate the interoperability of all IT initiatives.
- Commission to provide access to information for all
- An institution for E-Government research and development (on lines of C-DAC)

- An establishment for Training and Mentoring Human Resources (School of E-Governance)
- An organisation that promotes awareness (Along the lines of Exhibitions India Pvt. Ltd.)
- A supporting institution for PKI.
- An association for software and technology standards

Government Certification Authorities Certification Authorities provide digital certificates that contribute to the development of an online identification and security system for the Internet, enabling individuals, corporations, and government agencies to conduct transactions and communications with complete security and confidence.

Beneficial would be a central hub for e-Governance-related knowledge and skill development. Its primary purpose would be to provide training pertinent to e-Governance: the focus, at least over time, may need to be less on general ICT skills and more on the broader range of competences necessary for e-Governance, and the School of E-Governance can help achieve this.

The School of e-Governance will aid in the education of government decision-makers. The School will be founded on four pillars: Governance, Management, Information Technology, and E-Government. Before using IT, it will introduce the notion of Government Process Reengineering, or GPR.

Existing political/civil society top-level leaders, second-tier public officials, current e-Governance leaders, and future e-Governance leaders are the target groups. Given the significance of leadership, the Academy might incorporate a distinct Directorate for e-Governance Leadership.

#### Other Academy Activities Could Include:

- Collaborating with other national, regional, and international entities to compile and share e-Governance best practises: policies, strategies, replicating projects, case studies, and narratives.
- Collaborating with the Massachusetts Institute of Technology and State Governments to provide consulting and facilitation for particular e-Government initiatives.

#### Building Legislative Infrastructure for e-Governance



## Notes

e-Governance necessitates a variety of legal modifications, such as electronic signatures, electronic archiving, data matching, freedom of information, data protection, computer crime, and intellectual property rights law. Regulatory modifications are necessary for a variety of operations, including procurement and service delivery.

Typically, these modifications would be incorporated within a larger adjustment to assist generic e-economy and enation goals. The Indian government has already presented the IT Act and Convergence Bill.

The following must be accomplished in the above direction:

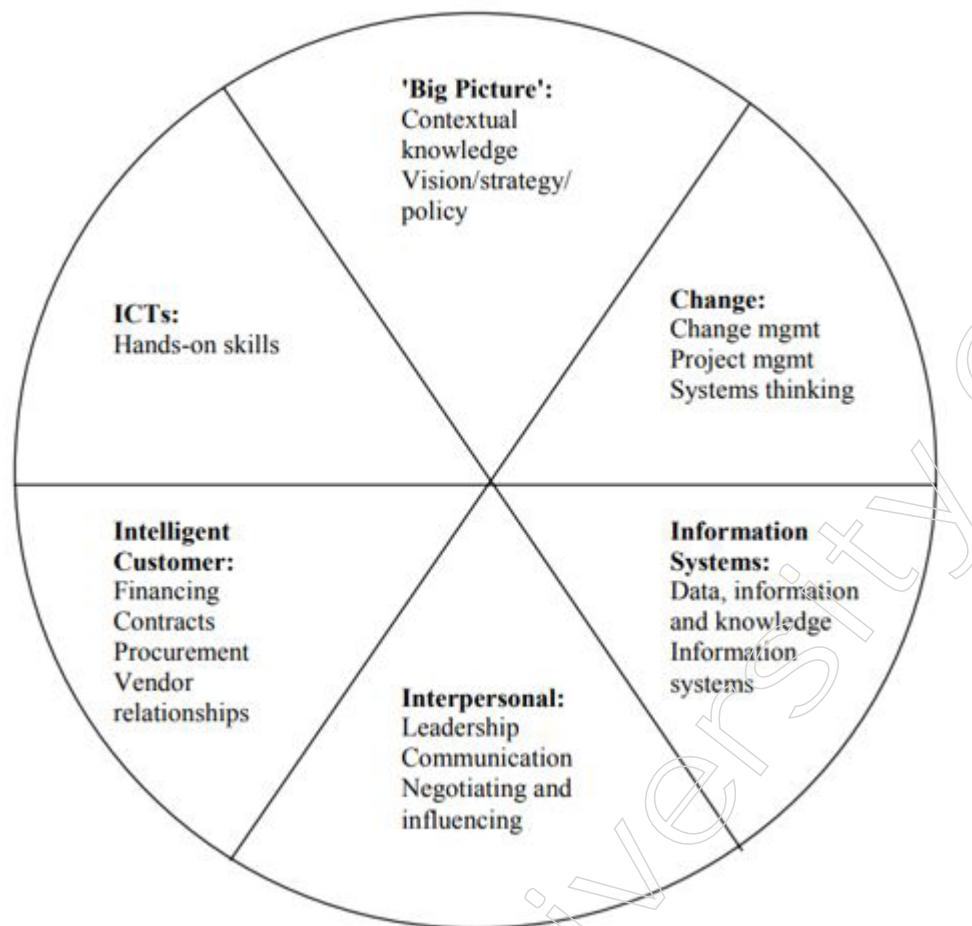
- Accountability Law: holds public servants, including elected officials, responsible for non-functioning/malfunctioning agencies.
- Law for Privacy: will prevent the abuse of personal information about citizens.
- A law similar to the United States Government Paper Elimination Act (GPEA) to encourage the use of electronic media.
- Freedom of Information Act allows access to government data by citizens.
- It is necessary to amend the Consumer Protection Law, Tariffs and Taxation Laws, Intellectual Property Regulations, etc.
- Additional criteria are required for Content, Technological Standards, and Electronic Payments.
- Standards for electronic publication, archiving, and electronic mail, etc.

### Building Commitment for e-Governance

In addition to measures to increase knowledge and commitment among top-level leaders, it is vital to educate people who will assume leadership roles. The Academies may perform the training activities listed below:

- e-Governance training for second-tier government and civil society leaders, emphasising the development of knowledge, confidence, and dedication to the e-Governance process, enabling them to contribute and support e-Governance at a high level.
- Training on leadership, interpersonal skills, strategic planning, and understanding of best practises for present e-Governance executives. In this sense, the proposed School of E-Government represents progress.

The Lal Bhadur Shastri Academy in Missouri should immediately demand all IAS probationers to take a six-month E-Government certificate programme. There is a need for instruction in the following areas:



The design of the curriculum for the School of E-Governance encompasses all of the aforementioned topics. Given the importance of government to e-Governance, the majority of current and future leaders will likely come from within government.

However, other institutions should not be excluded:

- **Unions:** Despite being frequently politicised, they may have a significant influence in obstructing or aiding e-Government projects. Obtaining the support of union leaders will aid the advancement of e-Governance.
- **Civil society:** Involving leaders from various institutions of civil society in efforts to create leadership and support for e-Governance might be beneficial.

### Building e-Governance Strategy

Any national initiative for e-Governance must be oriented to avoid fragmentation. The MIT should thus assist the creation of a national e-Government strategy. This might integrate the e-Governance Summit's aims with knowledge of specific country interests and competencies, as well as other national ICT efforts and policies. Document is the first step in the direction.

### Drivers for the E-Governance Strategy

- The greatest influence of IT in government will be felt by those citizen services with direct public contact.

## Notes

- The use of an intranet for government-to-government transactions should be favoured and made essential for all ministries.

### Information Obligation

The government must be open in its operations and, if necessary, enact legislation to that effect. The Right to Information should be made a basic citizen right.

#### Information Government . . . WISHES TO DISSEMINATE

- press notices
- consultation papers
- policies
- White Papers
- news
- health and safety advice
- benefits and entitlements
- applicable regulations
- Information Government . . . MAY MAKE AVAILABLE
- geographical data
- demographic data
- economic data
- information collected
- information generated routinely
- value added services

#### Information Government . . . WILL BE REQUIRED TO SUPPLY (Right to Information)

- performance indicators
- environmental indicators
- audited accounts
- personal data
- internal policy documents
- correspondence
- management reports

### Stage 3: Building e-Governance Implementation Capacity

There is a significant gap between the capacities required for ubiquitous e-Governance and the actual capacities available in the majority of developing nations. To completely close this chasm would require a monumental effort. Therefore, it is recommended to prioritise institutions engaged in any e-Government Pilot Projects.

### Building Human Capacities for e-Governance Implementation



Training Priority human capacities for e-Governance are “hybrids”: individuals who understand both the technology and the business of governance, as well as the function of information in government. As individuals or small teams, they are the most effective advocates for e-Governance within the target companies. Among the most important implementation capabilities to be established for pilot programmes are:

- Capability to create information system architectures
- Capability to manage both projects and change.
- Capability to be an “intelligent customer”: the ability to raise project financing, describe requirements, handle procurement, and oversee vendors.
- Capability to manage and run information systems

Since the absence of desire among individuals engaged is a major obstacle to e-Governance, training should also place a significant emphasis on attitude modification. Such training should seek to reach both the “hearts and brains” of its participants. The School of e-Governance or its equivalent would likely play a leading role in developing human capabilities through training.

#### **Moreover, the Following Modifications are Required:**

**Changing recruitment qualifications:** Certain modifications can be made to the requirements for employee recruitment in order to hire individuals with keyboard skills and the requisite levels of computer training. A system of incentives would go a long way towards ensuring that staff have the necessary computer abilities.

**Changing Civil Services Subjects:** IT should be offered as a topic in the civil service. It is unfortunate that IT/Governance/Computer Science is not a qualifying topic for the IAS. The demand will not be excessive if a new branch of Indian Information Services is formed.

**Identifying mentors:** Secretaries of ministries must find individuals with an aptitude for computers and the capacity to play the role of leaders and mentors in spreading the IT culture throughout the ministry and subordinate organisations.

**Notes**

## Notes

### Building Data Systems for e-Governance Implementation



Existing information, systems, and procedures will play a vital role in e-Government projects. When they are already in disarray, the addition of ICTs just makes the situation worse and more expensive. In conjunction with, or even before, the adoption of ICTs for the e-Governance Pilot Projects, it may be necessary to reconstruct and update the underlying data systems. Existing and future reforms of good governance should address this issue.

In certain respects, people may recreate work structures and procedures through their job. Unfortunately, businesses usually pay insufficient attention to data concerns and frequently have garbage in, garbage out data quality challenges. This may indicate the need for support for existing data-centric efforts, as well as data-aware governance initiatives.

This includes, for instance, bolstering the information systems component of existing public sector reforms and ensuring that information systems are not only equated with ICTs so that an integrated approach is used. The 'humanity of data' - the notion that data quality, data security, and data sharing are fundamentally dependent on human motives and values – should be acknowledged as part of this integrated approach.

To create complete information systems, the new application areas must be linked to the existing systems and databases. These databases should be integrated into a data warehouse to facilitate data mining for decision-making purposes. Given that various applications may utilise distinct languages, a consistent data integration policy must be defined.

### Financial Dimension of e-Governance

#### Cost Saving:

The primary revenue model of establishing an integrated platform, uniting all government operations, consists of cost savings associated with maintaining traditional channels of government operation and information delivery. The platform provides a communication platform that would significantly reduce the present expenses associated with activities such as,

- Transferring information manually, which necessitates extensive personnel, time waste, paperwork, and the possibility of human mistake.
- Performing government responsibilities, such as addressing citizen complaints and paying bills, etc.
- To reach the public, the dissemination of government information requires extensive and costly media coverage. With e-Governance, information is constantly accessible and readily available.
- Reducing Administrative expenses
- Reducing the cost of corruption owing to more openness

### **Revenue Generation**

Other income that might be earned through e-Government include:

- Advertising income generated by the portal.
- Extra services may be made available for a fee.
- Industry sponsorships on certain areas in exchange, the industry would receive publicity and be better able to reach the ordinary man and target customers.
- Increased knowledge among the populace, resulting in the creation of self-employment that generates cash for the government.

With these long-term financial benefits, private parties and government entities can be convinced to support these initiatives.

### **Stage 4. Building Infrastructure for e-Governance Implementation**

#### **Institution for Infrastructure:**

NIC Institutionally, it may be advantageous to assign responsibility for the technological infrastructure underlying e-Governance to a national ICT Infrastructure agency with infrastructure duties in all areas of ICT application, not only e-Governance. NIC already exist to perform the aforementioned work.

The goal is to guarantee that the MIT is not side-tracked from its work on strategy, structures, and procedures, and that it continues to recognise that technology is the servant of good governance. In addition to planning and managing the distribution of technology, the ICT Infrastructure organisation would need to concentrate on the standards and rules (such as those concerning public key infrastructure, interoperability, etc.) required to make the technology usable.

#### **Backbone Infrastructure**

By constructing the National Information Infrastructure (NII), the State Information Infrastructure (SII), and the Local Information Infrastructure (LII), the nation's Information Technology (IT) infrastructure will be established. The backbone infrastructure will include communication, networking, and data server infrastructure, among others.

It will contain the infrastructure required to connect blocks to districts, districts to state capitals, and state capitals to the National Capital. For connection, it will also include leased lines, satellite links, copper cables, etc. The infrastructure's backbone will consist of a local area network, servers, etc.

## Notes

### What Is the NII/ SII/LII?

National Information Infrastructure encompasses more than the physical infrastructure required to transport, store, analyse, and display speech, data, and pictures. It encompasses:

- Cameras, scanners, keyboards, telephones, fax machines, computers, switches, compact discs, video and audio tape, cable, wire, satellites, optical fibre transmission lines, microwave nets, switches, televisions, monitors, and printers, among many more devices. The NII will combine and interconnect these physical components in a manner that is technologically neutral, so that no industry will be favoured over another. Primarily, the NII demands laying the groundwork for living in the Information Age and for making these technical advancements beneficial to the public, businesses, libraries, and other non-profit organisations.
- Information is another important NII component. The information may be presented in the form of TV programmes, scientific or business databases, photographs, audio recordings, and library archives, among other media. There are currently vast volumes of this information in government agencies, and even more useful information is created every day in our laboratories, studios, and publishing companies, among other locations.
- Applications and software that enable users to access, alter, organise, and digest the expanding quantity of information that the NII's facilities will make available to them.
- The network standards and transmission codes that permit interconnection and interoperation across networks, safeguard the privacy of individuals and the security of the information transmitted, and assure the security and dependability of the networks.
- The individuals who generate information, design applications and services, establish infrastructure, and teach others to exploit its possibilities. Many of these individuals will be private sector suppliers, operators, and service providers.

### Delivery Infrastructure

In most instances, the distribution stations will be Information Kiosks. These points are capable of connecting to the server located in the closest district or block. These will function as hubs of information dissemination and feedback/complaint collection.

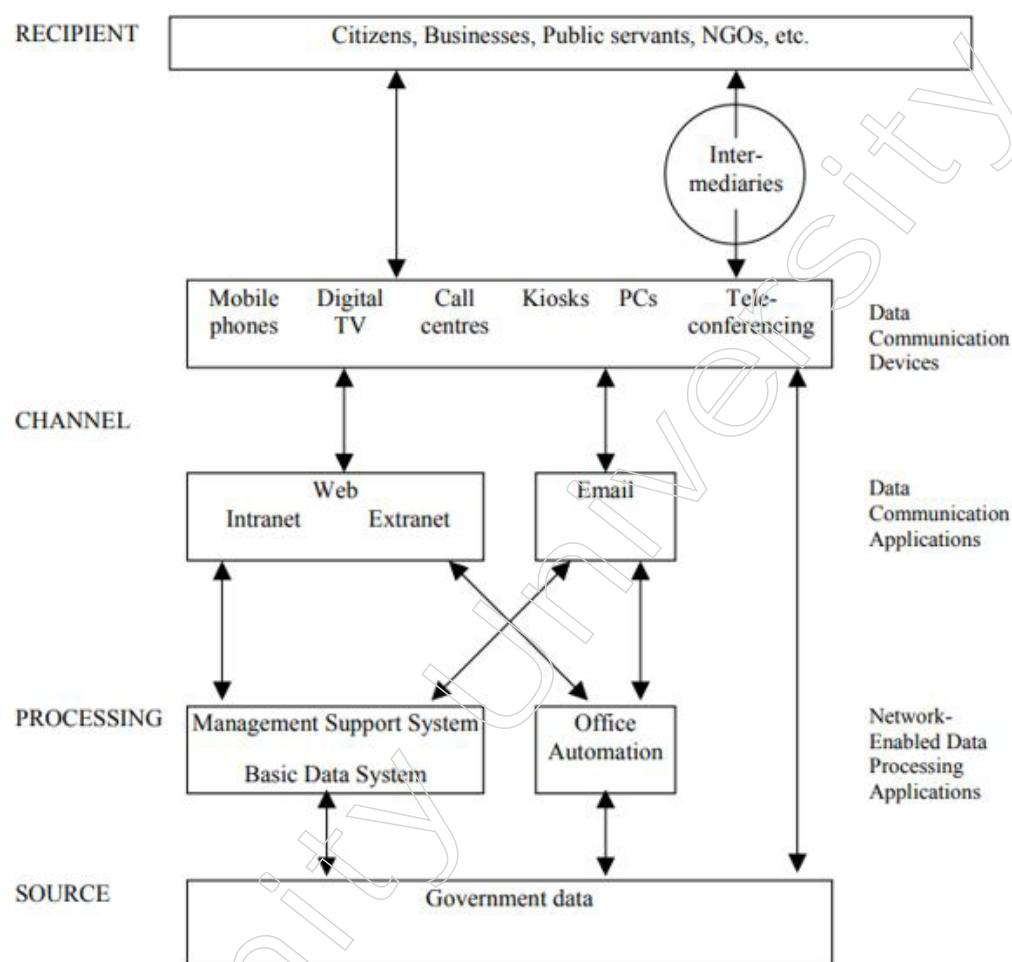
These can also be utilised for e-mail and online surfing. The needed infrastructure will consist of PCs, a modem, a UPS, a printer, and a dial-up or leased line. It is necessary to install information kiosks in public places such as shopping malls, post offices, train stations, and libraries. PCOs.

The distribution infrastructure will consist of:

- Telephone contact centres utilising 'intelligent' telephone networks and computer databases to enable operators to obtain all pertinent data from a single console
- Kiosks prepared to issue licences and permits, allow payments of benefits and awards, etc

## Notes

- The capacity to submit forms and other information online, either over the Internet or by dial-in lines connected to a “closed” network
- Interactive Digital Television (DTV) services in the home
- Eliminating the need to submit the same information several times by directing information from a single form to the proper departments utilising front-end systems
- “One-stop shops” at government or third-party offices (e.g., organisations for the jobless, tax accountants, etc.)
- Integrating government duties with the infrastructure of other enterprises – bank ATMs, supermarket checkouts, and National Lottery terminals have all been identified as potential government service delivery points



**Fig: The Architecture of e-Governance**

### Stage 5: Government Process Reengineering

#### Study of Existing Processes

Government Process Reengineering (GPR) is the process of rethinking and radically redesigning government processes in order to achieve major improvements in key performance indicators such as cost, quality, service, and speed. The reengineering of a government agency might be conducted internally or by bringing in outside specialists.

## Notes

This phase includes analysing the health of each department and its ability to accept change, constructing an inventory of the processes involved and identifying the most important core processes, and evaluating the effectiveness and efficiency of existing processes in order to establish improvement priorities. Priority selections in a GPR should be based on three factors: significance, opportunity, and practicability.

Additionally, the most crucial factor is whether or not the present procedures are necessary. It is also essential to obtain staff and customer input to determine the system's true requirements and highest priority.

### Recommendations for Reengineering

The results should be discussed with consultants/experts, and then the scope and expectations should be outlined in detail. Additionally, Executive support, sponsorship, and the necessary resources must be secured. Appoint full-time personnel with process and reengineering expertise and understanding. Internal and external environmental influences should be investigated.

Document the plan in a charter with clearly defined scope, expectations, success metrics, and resource required estimates. To manage change, appoint a full-time, cross-functional reengineering team. Reevaluate the organisation's adaptability to change.

Begin with a blank sheet of paper, disregard all restrictions, and outline a perfect method. Then, create other solutions and use process benchmarking to identify the best practises already being utilised by others. Examine the repercussions of adopting extreme designs and scale them down as gradually as feasible. Create an idealised design, extend alternatives, then choose the optimal design.

Share plan recommendations with all stakeholders and sponsors. Incorporate the projected improvements from the reengineering project into the organisation's goals and objectives. Communicate outcomes and adjust objectives and goals.

### Stage 6: Building e-Governance Pilot Projects

#### Identifying e-Governance Pilot Projects

This would be a negotiation between major stakeholders including funders, national ministries, and civil society organisations. These conversations might be productively conducted during the national Strategy-Making Workshops recommended previously. Priority should be given to government departments with the greatest citizen interaction. It is necessary to do an ABC analysis of the various government services in order to determine the most vital activities.

#### Several Such Departments are Listed Below for Consideration:

**Public Grievances:** Electricity, Water, Telephone, Ration Card, Sanitation, Public Transport, Police

**Rural Services:** Land Records, Below Poverty Line (BPL) /EWS Families

**Police:** FIR Registration, Lost and Found

**Valuables, Persons, Dead Bodies Social Services:** • Pension • Old Age, Widows, Exgratia Scheme • Acquisition / Rehabilitation and Compensation •

Registration of Licences and Certificates • Ration Cards, Birth Certificates, Death Certificate, Domicile Certificate, Caste / Tribe Certificate, Arms Renewal, Registration of Documents, School Registration, University Registration, Motor Vehicle Registration, Driving License

**Public Information:** • Employment Exchange Registration, Employment Opportunities, Examination Results, Hospitals / Beds Availability / Services, Railway Time Tables, Airline Time Tables, Road Transport Time Tables, Charitable Trusts, Government Notifications, Government Forms, Government Schemes

**EWS Services:** • Civil supplies, Old Age Pension, Widow Pension, Handicapped Pension / Services, Ex Gratia Payment

**Agriculture Sector:** • Speeds Information, Pesticides, Fertilizers, Crop disease, Weather Forecast - short range / District wise, Market Price Utility Payments / Billing  
• Electricity, Water, Telephone Commercial: Taxation and Return Filing, Income Tax, Corporate Tax, Custom Duty, Central / State Excise Duty, Sales Tax, House Tax, Property Tax, Octroi, Road Tax, Company Returns

**Government:** • Electronic Procurement, Education University Model for E-Governance

### Implementing e-Governance

Pilot Projects It is anticipated that MIT will take the lead on project execution. Donor/international contributions may include:

- Financial support or co-funding for trial initiatives.
- Contributions from advisors to different phases of the project lifecycle, including monitoring and assessment.
- Dissemination of best-practice pilot project learning.
- Consultative suggestions on scaling up by duplicating successful pilot projects

### Guidelines for e-Governance Projects

#### 1. Strengthening the Pressure Points

Governments appear to be more susceptible to external than internal forces. Priority might be given to bolstering these local external drivers by assisting them in maximising their ICT benefits. In reality, this may imply three target industries:

- the self-governing mass media,
- local NGOs, and
- public libraries, community centres, post offices and other access points to information for citizens

#### 2. Hitting the Bull's Eye: Networked Government

As stated previously, an excessive number of contemporary ICT initiatives appear to have a "anything except government" stance. They prioritise telecentres, telemedicine, schools, and ecommerce, but not the government's basic functions. However, government remains important to the growth process. Unless it is transformed, and e-Governance has much to offer, there will be little progress. Use of ICTs to facilitate government transformation is therefore a priority for e-Government.

## Notes

### 3. e-Governance Replicators

Priority might be given to supporting initiatives that aim to serve as demonstrators/replicators and as a means of constructing a knowledge base on e-Governance best practises. Such programmes would incorporate benchmarking as well as robust monitoring and evaluation measures.

### 4. e-Business and e-Commerce

Priority should be given to e-Business projects by promoting G2B (Government-to-Business) initiatives such as e-procurement and electronic delivery of government services to businesses.

#### **Stage 7: Appraisal of e-Projects**

##### **Study of Causes of Success or Failure**

The pilot projects should be categorised as a success or failure based on the outputs that were specified prior to their implementation. The research must be conducted by an impartial agency on behalf of the donor agency; otherwise, the implementation agency would never identify its project as a failure and publicise that fact. The research must be conducted at each phase of implementation. Even if bottlenecks and reasons of delays are eliminated later, they should be noted.

##### **Replicating the Successful Projects**

The successful initiatives should be duplicated across the nation using the implementation team as a resource.

##### **Bridging the Gaps for Failure**

The initiatives that were unable to reach the targeted outcome should be recorded in terms of potential failure causes. Various sources of delay and bottlenecks should be recognised.

#### **Stage 8: Identifying plans with long term potential**

##### **Citizen Card**

Regardless of the kind of electronic communication employed, electronic identity and authorisation are of similar significance, and the government has already signalled a preference for "smart cards."

##### **Possible Contents of A Citizen's Card**

- Digital signature
- Voter ID Number
- Unique Bank Account Number
- Health Information
- Date of Birth
- Address
- Telephone

**Notes**

- Place of work
- Blood Group
- Driving License Number
- Passport Number
- Organ donor wishes
- PAN Number
- Electronic Cash

**Travel:** Identity cards may replace passports for travel in Europe and maybe other regions.

You might use them to support checks worth more than fifty pounds when you create a bank account and as identification for other business-related activities.

**Evidence of your age:**

- Identification cards might be handy for young adults as evidence of age when purchasing smokes and alcohol.
- Seniors would no longer be required to submit pension books to establish eligibility for some discounts.

Identity cards might include information about your blood group, allergies, medical disorders requiring special care, who to call in the event of an accident, and organ donation preferences.

Cards might aid the authorities in identifying individuals more quickly and make it more difficult to commit crimes requiring impersonation, such as fraud. In 1994, credit card theft cost the nation 100 million pounds.

They might also assist homeowners verify a caller's identity, making it more difficult for imposters to get access to people's houses. When asked for the same information repeatedly by public officials, citizens frequently become irritated.

Identity cards might expedite access to public services while making it more difficult for individuals to make multiple claims or use false identities. This Smart Card will serve as an index of an individual's activity. Each transaction will only be valid if it is committed to a smart card belonging to a citizen, allowing further verification of fraudulent transactions.

**Establishment of National Networks**

Education, health care, police, postal services, and tourism-related networks will be the next step in this path. These national networks will guarantee the development is coordinated and will lead to the coordinated distribution of national policies in the regions.

**Stage 9: Global Vision****Policy formulation predicated on global interoperability**

During the construction of the e-Governance policy, the interoperability of the services with foreign networks will be given significant consideration. This will require subsequent

## Notes

- Global standards
- Support to an international PKI
- Recognition to international E-Payments etc

To ensure interoperability with foreign agencies, the following regulations and guidelines must be formulated:

- Government policy for networks
- Government policy for network security
- Government policy for e-mail
- Government policy for Directory
- Government policy for Domain Naming
- Government policy for File Transfer Systems
- Government policy on Data Integration
- Government policy on Metadata Standards
- Government policy on Data presentation

### **Combining national networks with international networks.**

In sectors where global cooperation is necessary, international networks will be of considerable assistance. Through it, areas such as combatting terrorism will receive a boost. The national police network will be linked to international organisations such as Interpol to ensure global policing. Health Services, Tourism, and Posts, as well as Education and other institutions, will be worldwide accessible.

### **Stage 10: Popularising e-Governance:**

#### **Marketing and Promotion**



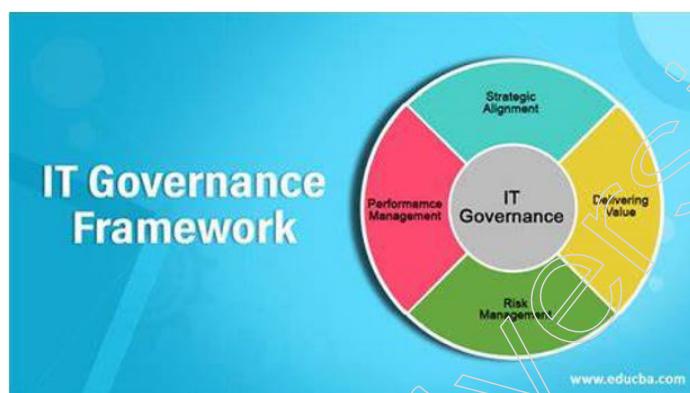
Marketing and public relations are essential components of effective electronic government efforts. The emphasis of marketing activities should be on building brand recognition of the internet presence. This type of "branding" may be achieved by using old media tactics and sources to establish the appropriate image for this new distribution channel.

Utilising an advertising firm, such as those utilised by numerous states for lottery promotion, is one branding method. Customers would learn to associate a certain phrase or message with e-Government operations.

Another essential tactic is for all company agencies to portray a cohesive front. All collateral materials provided to “traditional” consumers must specify the origin and location of the alternative electronic means of conducting business. For instance, a tax form should include the source’s location, such as a website address. Agencies should encourage front-line personnel to market to clients who conduct business online in the future.

Community outreach activities, such as seminars, educational programmes, and speaker bureaus, provide additional opportunities to contact the general population. Government personnel constitute a second clientele. If they are not persuaded, they will not convey the message to the public. Therefore, they should be addressed specifically. E-Commerce Business Groups can be particularly targeted.

### 2.1.2 Legal Framework of e-Governance



The following provisions have established the legal and policy foundation for information and communication technologies and e-Governance. Information Technology Improvement Act of 2000 In 1987, the Conference of Chief Ministers supported an action plan that addressed the essential concerns of responsible and citizen-friendly management, as well as openness and the right to information.

In 2000, the Information Technology Act was enacted to address these challenges. “to provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly known as ‘electronic methods of communication and storage of information’; to facilitate electronic filing of documents with the Government agencies; and further to amend the Indian Penal Code, the Indian Evidence Act, 1872, the Banker’s Book Evidence Act, 1891, and the Reserve Bank of India Act, 1934.”

This legislation covers both e-commerce and e-Government transactions and supports the adoption of electronic records and digital signatures. Thus, the Act has various sections. It aspires to provide a legal framework that accords legal validity to all electronic records and other actions conducted via electronic means. The aforementioned statute stipulates that, unless otherwise agreed, an acceptance of a contract may be sent electronically and will be legally binding and enforceable.

#### Report of the Working Group on Convergence and E-Governance 2002-07

The Working Group on Convergence and E-Government recommended in its report that the administration must shift from a passive provider of information and

## Notes

services to a platform/forum for the active participation of citizens. This study was mostly focused on public investments. It did not foresee the level of private initiative that would emerge in the convergence domain, e-commerce, and related markets.

It felt the need to establish a centralised organisation to assess the state of IT across the entire nation. This central organisation might be a "Council for E-Government" or a "Commission on Re-engineering Administrative Procedures for E-Government." The report also advised establishing a National Institute of Smart Governance.

**Common Minimum Programme:** The Common Minimum Programme of the UPA Government acknowledges the significance of e-Governance, among other things stating that e-Governance would be pushed on a huge scale. It made a solemn promise to the people of the country that the government would be free of corruption, transparent, and accountable, and that the administration would always be responsible and responsive.

**National E-Government Plan:** Data Centres, State Wide Area Networks, and Common Service Centres are three essential aspects of the National E-Governance Plan that comprise the foundational infrastructure for efficient service delivery. The Department of Information Technology's 10-point plan for the expansion of ICT in the country involves the speedy execution of a "National e-Governance Plan" to increase administrative transparency and citizen-centricity.

**Expert Committee:** Additionally, an expert committee was formed for the changes to the IT Act of 2000 to cover technical advancements following IT Act of 2000. In August 2005, the Expert Committee concluded its discussions and issued its findings. Now, the Department of Information Technology has posted the Expert Committee's proposals on its website to solicit public feedback and suggestions.

During its discussions, the Committee examined several pertinent experiences and worldwide best practises. While formulating its suggestions, the Committee kept in mind the twin goals of—

- i) using technology as a tool for socioeconomic development and job creation
- ii) further consolidation of India's position as a major global player in the IT industry

### Right to Information Act 2005

The 2005 Right to Information Act gives residents the right to:

1. inspect the government's and its agencies' works, papers, and records
2. make notes, extracts, or certified copies of records and documents
3. collect certified material samples
4. acquire information in the form of printouts, diskettes, floppy discs, tapes, or any other electronic format

This has guaranteed that the administration is transparent and responsible to the people. In addition, it has developed a communication between citizens and the government. It has empowered individuals to make educated choices. In addition, it is a crucial step in combating corruption and has resulted in improved government service monitoring.

Applications of information and communication technologies have an effect on the architecture of public administration systems. Innovations in technology enhance administrative systems by enabling:

- Administrative Development
- Effective Service Delivery

### **Administrative Development**

#### **Development of Public Administration**



Frequently, administrative reforms have centred on procedural particulars and the reorganisation of government organisations' structures and processes. The fundamental purpose of these modifications is to improve the systems' capabilities. ICTs may be utilised and are now being used to give the process more momentum. They assist in the following ways:

- **Automation of Administrative Processes**

A system with true e-Governance would require minimal human participation and be primarily system-driven. Initially, the solutions provided were rudimentary, with poor information layout, inadequate navigation facilities, occasional service disruptions, periodic out-of-date material, and little or no "back office" assistance. However, technical advances and more community pressure have led to improvements in these areas.

Currently, administrative departments are computerised and networked. The programme was developed and designed with government agencies in mind to maximise operational efficiency. The departments have developed separate websites with information about themselves. This has made internet operations and file transfers possible. Budgeting, accounting, data movement, etc., are now simplified. This has boosted the efficiency of office activities and decreased needless delays.

- **Paperwork Reduction**

Automation would have an immediate effect on the paperwork. With electronic communication and storage and retrieval of information in electronic format, there is a significant reduction in paper usage. This has resulted in the establishment of a "paperless office." This notion is characterised as an office environment in which all information (files and e-mail) is disseminated online among multiple officials.

## Notes

According to Dubey, a paperless workplace is characterised by the use of efficient electronic communication procedures that permit the removal of reproductions and unneeded documents. The concept involves the transmission of files and emails (information) across cables to miniature computers at each employee's workstation.

Documentation, report creation, and database management are now computerised, as are administrative tasks such as file transfers, notations, etc. Due to LAN connectivity, information and files are transferred online, hence minimising the need for physical transportation, paper usage, and storage space.

- **Quality of Services**

ICT enables governments to provide services to citizens with increased responsiveness, accountability, and sensitivity. As a result of being able to obtain services quickly and effectively, the quality of services improves. As quantities of transactions and information can be electronically processed and sent over a larger region via the Internet and the World Wide Web, qualitative services become feasible in less time, for less money, with less effort, and with better comfort.

By providing online grievance resolution, authorities' accountability is guaranteed. They have developed an awareness of the issues that impact individuals. The use of video teleconferencing for monitoring has further eased central monitoring, reporting, and face-to-face contact, which has ensured the efficient delivery of services by authorities.

- **Elimination of Hierarchy**

ICT has decreased organisational delays caused by hierarchical procedures. Through Intranet and LAN, it is now feasible to simultaneously transmit information and data across many organisational levels. ICT-facilitated computerisation and communication patterns have enhanced productivity and led to the participation of all levels in decision-making.

- **Change in Administrative Culture**

Bureaucratic organisations have been afflicted by traits that Victor Thompson has properly termed "bureau-pathology." Since the advent of the New Public Administration, attempts have been undertaken to address the pathological or dysfunctional parts of bureaucratic behaviour and to improve the delivery of public services. With e-Governance, public acts conducted in the public eye will undoubtedly instil the organisational culture with norms and values of accountability, transparency, honesty, fairness, equity, responsibility, and justice. Instead, the government would become responsive and efficient.

### **Effective Service Delivery**

ICTs are crucial to the efficient delivery of services to individuals. ICTs ensure:

### **Transparency**

This is accomplished through the distribution and publication of information on the Internet. This facilitates information accessibility and hence makes the system responsible to the public. In addition, because the Internet facilitates the free flow of information, it is accessible to anyone without exception.

### Economic Development

The implementation of ICTs decreases transaction costs, resulting in cheaper services. For instance, rural areas suffer from a lack of knowledge on markets, goods, agriculture, health, education, and the weather, and if all of this information could be available online, it would result in better and more possibilities and, consequently, success in these regions.

### Social Development

The availability of information empowers citizens. Informed citizens may participate and voice their concerns, which can be incorporated into the conception, execution, monitoring, and delivery of the programme or initiative. Participation facilitated by the Internet will combat the discriminating influences influencing our society's behaviour.

### Strategic Information System

Changes in the organisational environment and rising levels of competition have exerted pressure on the functionaries' performance. In order for management to make both regular and strategic choices, they must have access at all times to information on every element. ICTs facilitate the implementation of such strategic information systems. Following the preceding debate on the importance of ICTs in governance, we will now identify particular measures that will facilitate its successful implementation.

#### 2.1.3 Framework for Citizen Engagement in e-Governance



Unlike traditional types of engagement – Communication and Consultation, Citizen Engagement is an engaging two-way process that fosters involvement, exchange of ideas and flow of dialogue. It demonstrates the government's openness to disclose information and include individuals in decision-making.

Ideally, citizen engagement demands that governments:

- Allow participation in agenda-setting
- Ensure that the policy or project recommendations created as a consequence of this engagement are considered when a final decision is made

## Notes

Citizen involvement may occur at all phases of the policy or project development process and is an iterative process that continuously incorporates citizen objectives into policy making/project execution. In citizen engagement procedures, citizens may express themselves as individuals or through interest groups such as civil society organisations. Engagement has been conceptualised and described in several ways.

- Contributor
- Organisation builder
- Empowering process
- Combination of all the above

Politically speaking, the significance is inextricably related to the connection between citizens and governmental institutions. Citizens are frequently viewed as recipients of government welfare programmes or, in PPP terms, as consumers, neither of which really represents the government-citizen relationship.

Active involvement grants the right to hold others accountable, and holding others accountable is the practise of participating actively. It promotes more responsibility from service providers through enhanced conversation, collaboration, and external and mutual monitoring and evaluation of performance. Citizen engagement surpasses traditional public consultation in that it enables individuals to do more than express an opinion; it also enables them to take part in the deliberation process that leads to choices.

### Need for Citizen Engagement

As the government integrates ICTs into the delivery of G2C services, there are few integrated mechanisms to encourage public involvement in e-Government. This is especially true for the most vulnerable and marginalised segments of society, for whom e-Government programmes are designed.

In India, the issue is exacerbated by—

- High Rural Population – making service access assessment and outreach harder
- Low Literacy Rates – Assisted Access style of service delivery is required
- Low Rural Tele-density – reducing the availability of services in remote locations.
- Multi-Lingual Population – requiring delivery of services in native tongues

One of the reasons suggested for the high failure rate of e-Government programmes worldwide is a lack of comprehension of user requirements. Therefore, it is thought that Citizen Engagement would lead to:

- Enhancements to Project Conceptualisation and Decision Making, Including
  - Recognition of services
  - Service level definition
  - Identification of Preferred Service Access Channels
  - Re-engineering of Appropriate Process
- Increased Awareness resulting in a Greater Utilisation of Services

- Avoidance of disputes
- Enhancement in Sustainability
- Greater openness and accountability
- Empowerment of the Community leading to
- Better monitoring
- Capacity Development Additionally, public engagement improves
- Recognition by citizens of their obligation to better their lives and provision of fundamental social services
- Participation of citizens in development processes
- Program implementation for development

By engaging in policymaking, individuals guarantee that their needs and interests are included in national and local decision-making processes that influence their lives. Moreover, public participation strengthens the political standing of excluded or vulnerable groups, such as women, youth, and minorities, who are frequently disregarded.

### Ways of Citizen Engagement

To include and encourage public participation in e-Government projects, a number of mechanisms may be utilised.

- a) **Information Sharing:** In order to raise awareness and prepare individuals, elected officials, and other stakeholders, a vast array of information must be provided. It includes the presentation of the Citizen's Charter, which lists services and service levels, official duties and responsibilities, and escalation mechanisms, among other things. In addition, information may be shared via frequent meetings and interfaces. For a number of departments and services, mobile-based phone or text services and web-based presence function as an extra information-sharing channel.
- b) **Consultation:** At various phases of the project's lifecycle, consultative sessions with the project's stakeholders must be held at regular intervals. Each intervention should be discussed with the public, elected officials, local civil society groups and other stakeholders to have their viewpoints incorporated in the planning of the interventions, and so enhancing the possibilities of ownership among diverse stakeholders. These consultations may be conducted both online and in person.
- c) **Joint Assessment:** Participatory evaluation and monitoring with the stakeholders, especially the identified service seekers, are utilised to increase citizen participation. These include the employment of various approaches, such as collaborative citizen monitoring and meetings with elected officials.
- d) **Shared Decision-Making and Collaboration:** A variety of participatory planning techniques, such as participatory urban planning at the ward level, comprehensive zonal planning, and sectoral plans such as Solid Waste Management (SWM) at the city level, may be utilised for collaborative or shared decision-making. It requires the participation of several stakeholders at each level of the planning process. The most often cited instance of this approach comes from Porto Alegre, Brazil.

## Notes

### Core Values for the Practice of Citizen Engagement

Citizen involvement may lead to a feeling of disempowerment and a diminished sense of agency, and participation can be regarded as worthless, token, or manipulative if care is not given while establishing the groups and interaction methods. Consequently, the following must be borne in mind when engaging citizens:

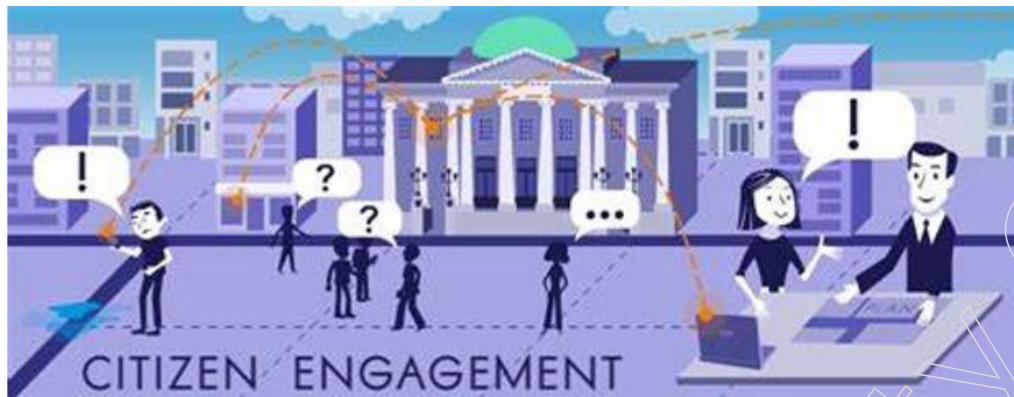
- Public participation is founded on the principle that individuals affected by a decision have the right to be involved in the decision-making process.
- Public involvement involves the assurance that the contribution of the public will affect the decision.
- Public involvement fosters sustainable decisions by acknowledging and conveying the needs and interests of all participants, including decision makers.
- Public participation solicits and encourages the engagement of individuals who may be affected by or interested in a decision.
- Public participation solicits participant feedback in the creation of participation methods.
- Public involvement provides individuals with the information necessary for meaningful engagement.
- Public involvement informs participants of the impact their contribution had on the decision.

### Challenges in Citizen Engagement

- a) **Limited Trust in Government:** The most significant obstacle to commencing dialogue is creating trust. In general, government acts have a low level of public trust for a variety of reasons, such as failing to keep public pledges, the impression of high levels of corruption and nepotism, and failing to include community input on development priorities. There is also scepticism over the rationale for encouraging involvement. It is sometimes considered as a means of demonstrating political power or as a symbolic type of consultation, rather than as a means of obtaining advice to enhance government policies.
- b) **Political Reluctance:** Public engagement is fundamentally a political process and is frequently neither formalised nor organised. Consequently, individuals are typically unwilling to join. Additionally, it is sometimes difficult to connect participation with good changes in daily life.
- c) **Limited Capacity to Engage:** In order to participate meaningfully in public policy discussions, people must have understanding of the relevant problems and policy-making processes. Given the restricted availability of knowledge and the need for specialised skill sets, such as legal, technical, etc., many individuals think that their capability to participate in such processes is limited.
- d) **Lack of Commitment:** Participation in policy making processes is a lengthy endeavour that frequently needs individuals to make long-term time and resource commitments. These are often restricted, restricting the nature and duration of engagement.
- e) **Exclusion:** Consultative methods may sometimes be perceived as a means of legitimising the dominant groups' perspective. In addition, the mode of

consultation – time, place, participation method, language, etc. – may result in the exclusion of the most disadvantaged and vulnerable groups.

### Citizen Engagement Framework for e-Governance Projects



e-Government initiatives are characterised by substantial expenditures and are frequently conducted via public-private partnerships. Given the low prevalence of PCs and Internet, the issues of basic literacy, computer literacy, and English literacy – the currency of the internet – it is crucial that e-Government programmes involve people and other stakeholders.

To connect with residents in a meaningful manner, it is necessary to do a thorough analysis of the need, the stakeholders, and the frequency of engagement. This section describes the fundamental components of the Citizen Engagement Framework for e-Government initiatives.

#### Engagement Framework

To ensure a meaningful engagement with citizens, all interactions must be conducted in a well-thought-out and planned manner, wherein all stakeholders must be able to voice their inputs/concerns, all must be given due consideration, and a proper feedback mechanism must be implemented to inform all those who participated about the decisions and the reasons for them.

A Framework for Citizen Engagement for e-Governance Projects has been established to aid departments in implementing such an engagement. Each piece is depicted with a brief explanation within the Framework.

#### Undertaking Need Analysis



## Notes

The first stage in the process of citizen engagement is the identification of the need or goal for which such involvement is advocated. Depending on the phase of the project, the objectives may include the following:

- **Conceptualisation and DPR Preparation:** ensuring that the programme is based on need and developed in conjunction with the community, supporting the poor and disadvantaged in particular.
- **Implementation:** Pilot and Rollout to guarantee that the intended services are delivered correctly and to the appropriate individuals.
- **Post Implementation Stage:** to verify that the type and quality of work are consistent with the initial indicated need.
- **Project Enhancement:** After the end of the project, guarantee that the deliverables are continuously enhanced.

It is simple to detect the requirement for participation in a new initiative. However, it is sometimes difficult to establish such intervention moments for current initiatives. Nonetheless, there are chances to connect with residents at every stage of the project.

For the purposes of this Framework, a project's life cycle has been divided into four stages:

1. Conceptualisation and DPR preparation,
2. Pilot and Roll Out,
3. Post Implementation and
4. Project Enhancement.

### Defining Degree of Engagement

In an ideal situation, individuals may contribute from the project's inception to its realisation, and they may even be empowered to reject or modify the project's design at a later stage.

In practise, however, project managers must determine the intervention points and level of involvement. As a first step in engagement, it is advised that, for e-Governance initiatives, implementers seek interaction solely at the first three levels of the spectrum, namely Inform, Consult, and Involve.

As the engagement process grows, however, the ultimate objective should be cooperation and empowerment. The engagement must be part of the primary strategy for the project execution cycle, and the frequency and phase of the engagement must be defined during the project planning phase.

Some of the most important questions that might influence the degree and depth of such a relationship include:

- Objectives and Goals (long term/short term engagement, setting a baseline, service feedback, etc.)
- Project stage (Conceptualisation, Implementation etc.)
- Involved parties (individuals, citizen organisations, elected officials, etc.)
- Statutory and administrative requirements (legal requirements for undertaking such an activity)

### **Creating Citizen Engagement team**

Since citizen involvement is an ongoing activity, it is suggested that a citizen engagement team be formed for the project. This team should ideally include-

- Internal Stakeholders — decision makers, service providers, service/process influencers.
- External Stakeholder — recipients, civil society organisations, and elected officials  
The team's diversity would depend on the scope of the project. For instance, if the project is about Panchayats or Municipalities, representatives of Gram Panchayats or the Municipal Corporation may be included on the team, whereas members of business associations may be included on teams for projects connected to commercial services.

The team would be entrusted with the following responsibilities:

- Developing contextual information
- Publicising the effort
- Designing standards and criteria for estimation
- Identifying and recruiting members
- Selecting tools for citizen contribution
- Reporting the outcomes of the process
- Making recommendations based on the outcomes

### **Techniques of Engagement**

There is no single correct approach to Citizen Engagement. It will always be context-specific, and the outcome will depend on the preparation, dedication, and capabilities of all involved parties. Nonetheless, approaches may be generically categorised as online or ICT-enabled or offline or face-to-face.

In recent years, social media have gained a huge amount of popularity and are now utilised globally to engage with and enlighten individuals. In light of this, the Indian government is developing distinct Framework and Guidelines for the use of social media. However, it must be remembered that, although becoming more prominent at times, social media is only one venue and method for citizen interaction.

#### **2.1.4 Business Models for Implementation of e-Governance**

In his research titled “E-Government Theory and Practice: The Evidence from Tennessee (USA),” Prof. Dr. Arie Halachmi outlines five essential models of e-Governance that can be used as a guide in designing e-Government initiatives based on the local situation and governance activities that are expected to be carried out. These examples are:

- The Broadcasting Model
- The Critical Flow Model
- The Comparative Analysis Model
- The E-Advocacy/Mobilisation and Lobbying Model
- The Interactive-Service Model We will now discuss these models individually.

## Notes

### The Broadcasting Model

Using ICT and convergent media, the approach is centred on the dissemination/broadcasting of important governance information already in the public domain. The model's strength depends on the concept that an informed populace is better equipped to evaluate the effectiveness of current government institutions and develop an informed judgement about them.

As a result, people are better able to execute their rights and obligations. Widespread adoption of this model corrects "information failure situations" by equipping individuals with the pertinent knowledge pertaining to the governance domain in order for them to develop an educated opinion and influence governance processes. In addition, the usage of ICT provides an alternate avenue for individuals to obtain and evaluate information from several sources.

### The Critical Flow Model

Using ICT and converged media, the approach is centred on disseminating/channelling information of significant importance to the intended audience or into the broader public sphere. This model's strength is that ICT renders the concepts of "distance" and "time" irrelevant when information is hosted on a digital network; this could be used advantageously by instantly transferring vital information to its strategic user group located anywhere or by making it freely accessible to the general public.

### The Comparative Analysis Model

This paradigm has great significance for developing nations and may be utilised to empower individuals. In essence, the model constantly incorporates governance's best practises and then utilises them as standards to assess other governance approaches. The outcome is then utilised to argue for positive changes or to influence "public" opinion towards certain governance methods.

The comparison might be conducted over a period of time to provide a picture of the past and present circumstances, or it could be used to assess the efficacy of an intervention by comparing two similar scenarios. This model's power resides in the endless ability of digital networks to store diverse information, retrieve it promptly, and transfer it over all geographical and hierarchical boundaries.

### The E-Advocacy/Mobilisation and Lobbying Model

This methodology increases the velocity of real-world processes by incorporating the thoughts and concerns of online communities. This paradigm facilitates the influence of global civil society on global decision-making processes. It is built on establishing a planned, directed flow of information to create powerful virtual allies to complement real-world efforts.

The formation of virtual communities that share similar beliefs and concerns, which in turn link with or support real-world groups/activities for concerted action. Through this sort of virtual networking, a diverse virtual community is created, and ideas, knowledge, and resources are amassed. In addition, it may mobilise and exploit human resources and information across geographical, institutional, and bureaucratic boundaries for coordinated action.

### The Interactive-Service Model

ICT facilitates more objectivity and transparency in decision-making processes, hence facilitating the direct engagement of individuals in governance processes. Fundamentally, ICT has the capacity to connect every individual to a digital network and facilitate interactive (two-way) information exchanges between them. Under this concept, the government's numerous services become directly and interactively accessible to its residents.

It accomplishes this by opening an interactive Government to Consumer to Government (G2C2G) channel in various aspects of governance, such as the election of government officials (e-ballots); redressing online of specific grievances; sharing concerns and providing expertise; opinion polls on various issues; etc.

#### 2.1.5 Change Management and Capacity Building in e-Governance Projects



The majority of States/UTs lack full-time quality employees and the necessary skill sets to address the issues that are anticipated to arise in achieving NeGP's vision and objectives. These consist of:

- Aligning project conception with NeGP service orientation
- Implementing uniformity and standards across efforts
- Change Management and Required Training
- Reengineering of Government Procedures
- Cost and resource utilisation optimisation
- Utilisation of external resources
- Implementing internationally accepted best practises
- Monitoring Project and Programme

Capacity Building programme aims to address the aforementioned difficulties holistically and assist NeGP in achieving its objectives through a variety of measures, such as enlisting experts, building skills, and providing specialised training.

The scheme identifies areas of capacity building support for the States/UTs through various activities, such as the appointment of agencies for temporary staffing and recruitment, the facilitation of State recruitment, and the provision of orientation courses for decision-making bodies, training initiatives, curriculum and content development, and human resource management.

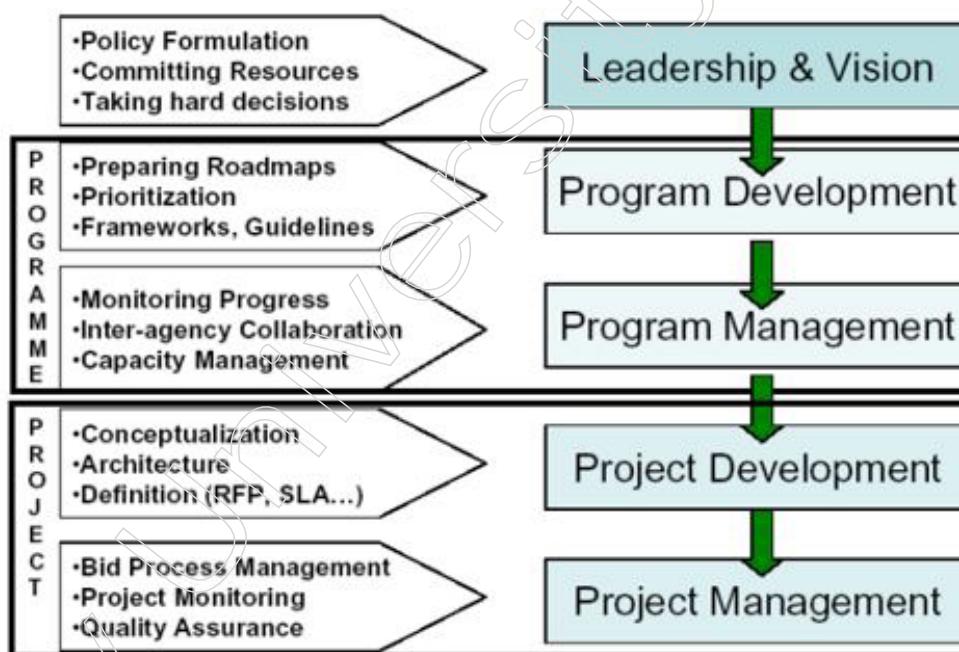
## Notes

### Institutional Framework for Capacity Building

Existence of institutions for monitoring, planning, and coordinating e-Government initiatives of the state is crucial to every state's strategy. The National e-Governance Plan provides instructions for the development of the e-Governance Institutional Framework and emphasises the necessity for the management of e-Governance at all levels of the state.

A professional team with the necessary skill-sets and ability is required to support the State administration and carry out the foundation for State MMPs and other e-Governance efforts, including creating project proposals, implementing the projects, and supervising OandM and support. The envisioned team must be in place at two distinct levels:

- Program level (i.e., at State Level)
- Project level (i.e., at Department Level)



The first level addresses challenges that span several projects, such as global policies, strategies, technologies, and shared infrastructure. These concerns must be addressed by a State Government-designated department, often the State Information Technology (IT) department.

The second level addresses all project level (i.e., State Government departments starting MMPs / e-Governance initiatives) concerns, from conceptualisation to implementation and operations and maintenance assistance. The challenges at hand are significantly distinct and are directly related to the department's operational domain. This plan is at the programme level, and it is anticipated that project-level teams would be supported by their individual project funds.

**State Leadership****Notes**

Public services closer home



**Department of Electronics and Information Technology  
Ministry of Communications and Information Technology  
Government of India**

Due to the cross-departmental nature of the State NeGP, it is anticipated that the State Government at the highest levels would provide leadership, direction, and vision for the programme, resulting in a comprehensive road plan and prioritisation of the projects. Ideally, a State e-Gov Council should be established under the leadership of the State Chief Minister to give overarching vision, broad policy direction, and guidance for NeGP activities at the state level.

### 1. Program Level

To achieve the policy goals and objectives as determined by the State e-Gov Council, it is anticipated that a high-level committee at the State level – State Apex Committee – will be established to provide strategic direction, oversee the e-Governance programme, and ensure inter-departmental coordination (similar to the National Apex Committee for NeGP constituted under the Cabinet Secretary at the Centre; see <http://www.mit.gov.in>, Section: Apex Committee for NeGP).

The following is a potential composition for the same:

- a) Chief Secretary – Chairman
- b) Secretary to the Chief Minister
- c) Secretary (IT) / Secretary (e-Governance) or any other Secretary designated by State Government - Member Convener
- d) Secretary (Finance) - Member
- e) Secretary (Planning) - Member
- f) Secretary (Administrative Reforms) - Member
- g) Secretary (Personnel) - Member
- h) SIO (NIC, State unit) - Member
- i) Councils of departments taking up e-Governance projects
- j) Domain /Technical experts - Members/special Invitees

## Notes

### State e-Governance Mission Team (SeMT)



A State e-Governance Mission Team (SeMT) has been suggested at the Program level to assist the State decision-making bodies and appropriate Apex Committee. This team would be responsible for laying the framework for providing an overarching direction, uniformity, and consistency for the State's e-Governance activities through programme management.

This group would be responsible for any interdependencies, overlaps, conflicts, standards, overarching architecture, security, legal considerations, etc. amongst projects, as well as core and support infrastructure shared by several projects.

Capacity Building at the State Level (SeMT), which normally falls under the Secretary (IT) or any other secretary designated by the State government, would assist the Apex Committee. This team may be assisted by a skeleton staff and/or the State unit of NIC at this time.

### Nodal Agency

For its normal activities and day-to-day operations, SeMT will be under the administrative jurisdiction of the State government via a Nodal Agency.

Therefore, the State Government should appoint a State Nodal Agency, which would be responsible for initiating and executing capacity building, such as selections, contracting of external agencies/persons/services, and administrative assistance to SeMT. As a State Nodal Agency, the State Government may either designate an existing agency or create a new agency.

If the state decides to create a new agency for this purpose, it must be registered as either a corporation or a society. If the State chooses to designate an existing agency as the State Nodal Agency, the following considerations must be taken into account:

- a. It must be a State-owned or -controlled agency engaged in the field of information technology and registered as a corporation or society.
- b. The company/society must be a running concern in good financial standing, with a positive net worth.
- c. e-Governance and the capacity building activity should receive the essential importance inside the organisation and not be reduced to insignificance by other activities and the organisation's structure.
- d. The organisation needs its own infrastructure and logistics support

### **Role of Nodal Agency**

The Nodal Agency would be responsible for administering the Capacity Building monies, which would be disbursed via Grant-in-Aid (GIA) and Additional Central Assistance (ACA) (ACA). The GIA payments are deposited immediately to the bank account of the Nodal Agency, whereas the ACA money can be acquired through the State Finance department and transferred to the Nodal Agency.

The size of the SeMT under the selected Nodal Agency will depend on the magnitude and maturity of the e-Governance project in the State. The SeMT will consist of specialists in areas such as Business Process Reengineering, Change Management, Financial Management, and Technology. If desired, the States may directly choose employees for SeMTs in accordance with the system and recommendations.

However, consultations with states and current market circumstances for such employees indicate that the majority of states would likely prefer a centrally managed selection and retention system.

The majority of states also believed that it is vital to avoid a scenario in which each state recruits a relatively small number of employees from the same group of candidates separately and uncoordinatedly. As envisioned by NeGP, DIT intends to assist the States/UTs in establishing long-term SeMT capability with the goal of retaining the expertise inside the government. The following three sources are indicated for the selection of applicants for SeMTs:

- a) Delegation from inside the Government/public corporations
- b) Recruiting directly from the market and,
- c) Temporary staffing through reputable agencies.

Deputation from inside the Government/PSUs and direct recruitment from the market have been proposed as primary methods for staffing the SeMTs in all States/UTs, in order to establish long-term capacity. Employing people from reputable firms should be a temporary option for States/UTs to maintain their e-Governance initiatives.

To maintain the quality and suitability of SeMT employees, the DIT, Government of India is in the process of centrally appointing competent agencies to help States/UTs in hiring excellent resources. In addition, the centralised recruiting mechanism would filter adaptationists selected/placed by the State under the plan.

It would therefore not be permissible/advisable for the States to simply transfer any or all existing staff of an organisation to SeMT without careful consideration of their suitability, as such expenditures would not be admissible under the CB Scheme if it is later determined that they are unsuitable.

### **2. Project Level:**

#### **Project e-Governance Mission Team**

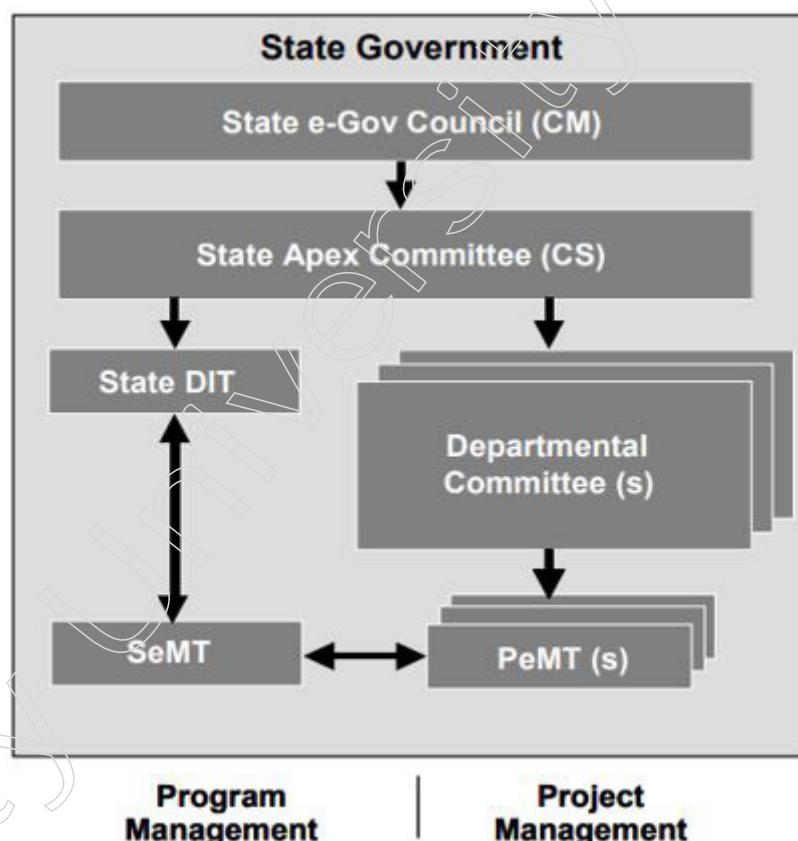
The State Departments should establish Project e-Governance Mission Teams (PeMT) at the Project level to assist the conceptualisation, development, implementation, and operations and maintenance of the State MMPs and other e-Government projects.

## Notes

This group will monitor project execution, manage implementation, and address technological, process, and change management concerns. Business process reengineering, change management, financial management, and technology are the highlighted skill-sets required for addressing difficulties at the program/project level.

However, the focus on specific talents would differ between SeMT and PeMT based on their respective functions. It is anticipated that the PeMT will have a well-balanced combination of domain experience (serving/retired department personnel with in-depth understanding of the department and its procedures and operations) and technical competence (i.e., technology, process re-engineering, change management, project management).

The following is a diagrammatic depiction of the State Government's Capacity Building and Institutional framework:



### Implementation of Capacity Building Scheme

A method has been established to assist the implementation of the CB Scheme's many components.

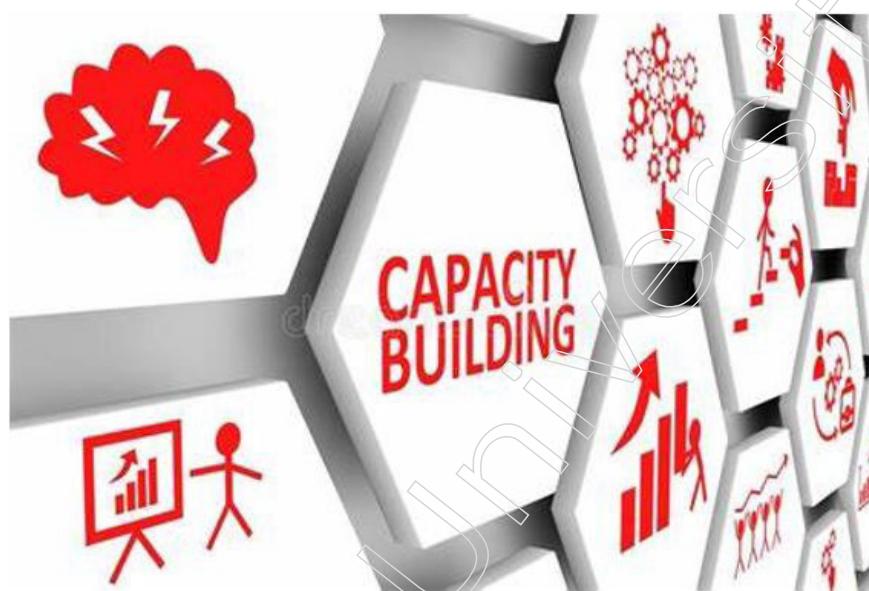
### Empowered Committee for Capacity Building

The Empowered Committee for Capacity Building will give the overall CB scheme's Policy, Vision, and Direction. It will periodically review CB policies and operations under the CB Scheme and, if necessary, suggest remedial actions, including reallocation of funds within the total approved budget.

The committee's broad scope is as follows:

- Providing direction and advice for the Capacity Building programme.
- Fund release authorisations
- If required, reallocation of monies within the entire budget allotment.
- Approval of numerous guidelines or policy papers pertaining to the CB plan, such as the HR Guidelines for SeMT staff and the Training Guidelines.
- General direction for the CB Management Cell
- Designating a central agency or organisation to facilitate the recruitment and retention of SeMTs The Empowered Committee has been established with representatives from the Planning Commission, Ministry of Finance, and States under the leadership of the Secretary (IT) of the Government of India.

#### **Capacity Building Management Cell (CBMC)**



A Capacity Building Management Cell (CBMC) has been established within the current NeGP-PMU at DIT, Ministry of Communications and Information Technology (MoCIT), to coordinate the implementation of the Capacity Building Scheme. Under the direction of the Empowered Committee, the CBMC's team of experts is responsible for the administration and implementation of Capacity Building.

The CBMC maintains the Capacity Building effort by facilitating, monitoring, providing feedback, coaching, and recommending remedial measures. In addition, it will ease the provision of technical assistance to the Central line Ministries. For enhanced synergy in implementing the CB Scheme, it is anticipated that the States/UTs would maintain constant contact with the CBMC at DIT, Gol.

#### **2.1.6 Infrastructural Preparedness: Legal, Human, Institutional**

For e-Governance in India to be successful, e-Readiness or preparation must be developed. This requires addressing infrastructure deficiencies, lowering obstacles to e-Governance, and bolstering E-drivers. Government's Priority should be placed on achieving e-Readiness in several areas.

## Notes

- Infrastructure
- Institutions
- Human capacities
- Leadership and commitment
- Laws
- Technology
- Data systems

The particular aims are:

- To cultivate the high-level awareness and dedication necessary to advance governance for development.
- To create the capabilities required to strategically address e-Governance.
- To establish the required people and data infrastructure for e-Governance.
- To conduct pilot projects.

### e-Government Readiness

e-Government is a subset of digital government, which encompasses the extensive use of all information and communication technology (ICT) technologies to offer public sector services.

It is a measurement of the extent to which a country, nation, or economy may be able, willing, or prepared to reap the benefits of information and communication technology (ICTs).

This metric is frequently used to assess a nation's readiness for electronic activities such as e-commerce and e-Government.

In the majority of instances, e-Readiness is represented by indices in which nations are scored in various categories, such as the number of telephone lines per 100 people or the proportion of GDP spent on IT infrastructure. The results are collated and can be utilised for both cross-country comparisons in the form of rankings and longitudinal research within nations.

e-Readiness as a “Measure of the e-business environment, a group of characteristics that reflect a market’s receptivity to Internet-based prospects”

e-Readiness is also described as “The degree to which a community is prepared to engage in the Networked World, which is measured by assessing a community’s relative progress in the areas that are most crucial for ICT adoption and the most essential ICTs.”

Evaluation of the quality of a nation’s ICT infrastructure and its customers’, businesses’, and government’s capacity to use ICT to their advantage.

Three main data providers for bench marking are-

- i) UN Public Administration Network (UNPAN)
- ii) IBM Institute for Business Value in cooperation with the Economist Intelligence Unit (EIU),

- iii) Brookings Institution

### Need

e-Readiness is the capacity of an economy to utilise information and communications technology to facilitate the transition of existing industries into the new economy. The ideal level of e-Readiness is reached when the economy is able to develop new business possibilities that would not exist otherwise.

The idea of e-Readiness is significant since its degree is a reliable indicator of a nation's performance in the new economy. An e-Readiness evaluation would give policymakers with a precise scorecard comparing the competitiveness of their economy to that of its worldwide competitors. In addition, a breakdown of indicators enables policy analysts to identify areas of strength and weakness, so offering a balanced view for steering a country through its digital transition.

### e-Readiness Framework: Suggested Framework for e-Readiness Assessment:



The above research paints a clear picture of the necessity for e-Readiness evaluation and the many choices accessible to developing nations.

Before allocating funds for e-Government initiatives or beginning their development and implementation, policymakers and planners in developing countries must have a clear understanding of their 'preparedness' or e-Readiness. This is because e-Government initiatives in any country require a substantial number of resources.

Since different evaluation systems use different factors, nations may adopt any of them based on their demographic, political, and socioeconomic circumstances. Countries may also explore tailoring/adapting any of the above models to their specific circumstances.

Although a country is free to choose any of the following approaches, we suggest that the e-Readiness Assessment.

Framework should encompass the following aspects:

#### 1. Political and Regulatory Environment:

- Assurance of the top leadership
- ICT Policy
- Communication Policy/ISP Policy/Broadband Policy

**Notes**

**Notes**

- E-Gov Policy/Accomplishment Plan
- IT Act
- Legal acknowledgement of Digital Signatures
- Intellectual Property Rights (IPR) Protection
- Security Standards
- Privacy Policy

**2. Infrastructure:**

- Hardware
- Accessibility of High-End Computing
- Infrastructure
- National and State Level Data Centres
- Community Information/Internet Access Centres
- Networking
  - ◆ Fibre Optic/Satellite/Wireless/Wired Networks
  - ◆ National/State level Network Backbones
  - ◆ Network Operation Centres
  - ◆ Internet Gateway
  - ◆ Security Infrastructure
  - ◆ Service Gateways/Payment Gateways etc
  - ◆ Last Mile/Rural Area Connectivity

**3. Application And Services:**

- Websites/Portals
- Back-end Automation
- Application Software
- Electronic Delivery of Services
- Localisation of Standard Commercial
- Technology Standards
- Data/Metadata Standards
- Interoperability Framework

**4. Human Resources:**

- ICT Skilled Manpower in Government/Industry
- ICT Literacy in Government
- E-Literate Citizens
- ICT Training Facilities (Basic and Professional)
- ICT Education in Schools and Colleges

**5. Financial**

- Financial Institutions
- Financial Resources
- Budgetary Allocation
- Through Partnerships
  - ◆ Foreign Investment

**6. ICT Usage Scenario/Environment:**

- ICT Usage by Citizens
- ICT Application in Government
- ICT Application in Business
- PC Penetration
- Internet Reach

**7. e-Government Action Plan:**

Once the 'e-Readiness' assessment has been conducted and the ground realities about a country's level of preparedness are known, a realistic and achievable strategy must be developed that not only aids in the effective implementation of e-Government but also prepares the nation to optimally adapt to it.

e-Readiness evaluation must identify the country's strengths and limitations in relation to several facets of e-Governance, including infrastructure, human capability, Internet penetration, and level of basic automation.

It will assist the government in determining which sectors are more equipped to adopt e-Governance and which community (Business, Citizen, and Government) is best positioned to profit from e-Government activities.

This would also assist them in identifying the key areas of e-Governance and the essential areas of investment (whether it be last-mile connection, trained people, computer and communication infrastructure, software development, or backend automation) for improved e-Governance effect.

**Steps to e-Government Readiness:**

## Notes

A ten-step process to e-Government preparedness that may be used as a guide to improve the e-Government readiness score. The 10 stages need not be performed consecutively. Some of them can be executed concurrently.

Each stage may be broken down into a series of activities and pursued in order to achieve positive outcomes. In reality, some of the phases and components, such as architectural design, the CIO programme, and the establishment of a state data centre and gateway, are themselves enormous undertakings.

### 10. Step Process to e-Government Readiness

**Step 1:** Formulate the vision and plan for e-Government. Create a five-year plan of action.

**Step 2:** Examine the telecommunications policy to foster an environment that is open and competitive for the development of national and subnational networks.

**Step 3:** Compile a list of G2C and G2B services that must be provided electronically to citizens and companies. Give precedence to the services. Announce a policy for the delivery of services electronically.

**Step 4:** Design functional and technology architectures for delivering e-services. Prescribe security criteria.

**Step 5:** Implement state-wide e-Government projects using the pilot methodology. Ensure that these are included in the "large picture" created in step 4.

**Step 6:** Design and implement an acceptable CIO programme as the sixth step. Implement programmes for change management throughout all main government agencies.

**Step 7:** Ensure that all government agencies allocate 2 to 5 percent of their budgets to e-Government. Announce a PPP policy for e-Government and implement the PPP Model for a few projects.

**Step 8:** Using a PPP paradigm, establish a government-wide WAN for data, audio, and video for G2G applications.

**Step 9:** Adopt a cyber legislation that provides all electronic transactions and records legal standing and authorises the use of digital signatures to authenticate messages and documents. Publish e-Government security and privacy policies.

**Step 10:** Using the PPP model, establish data centres for e-Government. At the Static Data Centre, design and implement an e-Government gateway.

### Concern for e-Governance



**Funding:** The fundamental challenge with e-Government programmes is funding. Either the government or the business sector must fund the projects associated with e-Governance efforts. For the private sector to participate in funding, their business interests must be protected. Either BOO (Built Own Operate) or BOOT (Built Own Operate Transfer) can be used to construct the projects.

In addition, the government's interest in Value Addition in services must be considered when transferring services to the private sector. Advertising, the dissemination of government information, etc., might be a few of the Government's revenue streams.

**Management of Change:** The delivery of government services via electronic media, such as EDI, the Internet, and other IT-based technologies, would demand procedural and legal modifications to the decision-making and service-delivery processes. It necessitates major reforms in Government decision management. More authority must be entrusted to the staff. Delayering the stages of decision-making results in reengineering and scaling the decision-making equipment appropriately.

These reforms must be supported not just by the government and the public, but also by diverse interest groups, such as employee unions. Under these conditions, bringing about a change will necessitate a thorough Reengineering process in order to alter the mentalities of the people.

This will need training at all levels, but especially at the lowest levels of government management organisations. In addition, there will be a loss of established interests and influence within the legislative and the administration, which may result in opposition to reform.

**Privacy:** The citizen's privacy must also be protected while resolving the challenges. When a citizen transacts with a government entity, he discloses a great deal of personal information that can be used by the commercial sector.

Consequently, the citizen must be assured that the information flow will be conducted via dependable channels and a smooth network.

**Authentication:** Also of importance is the need for safe methods of transaction for government services. Prior to accessing or utilising the services, the identification of citizens requesting them must be confirmed. Important role will be played by digital signature in the delivery of such services. However, the infrastructure required to maintain them is extremely costly and requires continual upkeep.

Consequently, a relevant requirement persists, pushing the authorities to assure the validity of their transactions, so obtaining the complete faith and confidence of the citizenry.

**Interoperability:** How to gather data in a Web-based form and move it to an agency's systems for processing and disseminating that data in a standardised manner is a crucial design consideration for integrated service delivery sites. Cooperation between multiple state governments and the various ministries within a state government is crucial. Another important aspect of e-Government is the question of how the multiple islands of automation will be integrated into one.

**Delivery of Services:** The capacity of individuals to obtain these services is an additional important factor. Due to the country's low PC and Internet penetration, a

## Notes

framework must be established for the delivery of e-Services that are accessible to the lowest of the poor. What network will the government use to supply these services?

Could we have something similar to a government one-stop shop? The Government Post Offices, which currently have brick-and-mortar support and the nation's most comprehensive network, are recommended as the delivery mechanism.

**Standardisation:** Another issue that must be addressed is defining the criteria for the various government services. Not only must standards be established for the technology involved, but also for matters such as the naming of websites and the creation of e-mail addresses.

**Technology Issues:** Several organisations, both at the federal and state levels, have made laudable steps to build hardware and software platforms to meet the problems presented by e-Government. Particularly notable at the central level are the C-DAC, CMC, and a number of others. The e-Governance programme would need to solve these Technology Issues/Objectives by finding the suitable hardware platforms and software application packages for delivering public services in a cost-effective manner.

This library of information should be readily accessible via suitable Demo-Mechanisms. Offering a selection of these models to State agencies, both at the Center and the State level, might be adapted to meet location- and task-specific needs.

**Use of Local Languages:** Access to information must be permitted in the user's preferred language, which is often the local tongue. Existing technology, such as GIST and language software, make it possible to transliterate English into foreign languages.

In addition to the necessity for a specific set of goals and objectives, the following criteria and variables must be examined prior to adopting an e-Governance system.

- Enhance e-Readiness in all facets of E-Government, including human resources, budgeting resources, inter- and intra-departmental communication flows, and societal readiness.
- Investment in the telecom infrastructure
- Internet connection and speed
- Governmental human capital
- Budget resources
- e-Business environment that incorporates a legal framework and information security.
- Begin with a simple approach, then as infrastructure is developed and other organisations adopt E-Government, functionality may be added in stages.
- Involve senior management
- Raise public understanding of the significance and possibilities of e-Government
- Encouragement and assistance from all departments
- Maintain uniform implementation
- Monitor assessment
- Assure security

**Notes**

- Encourage private sector
- To first plan locally while keeping in mind the worldwide user community.
- Include stakeholders such as high-tech businesses, software developers, the banking industry, etc.
- Adoption of worldwide standards whenever possible, eliminating modification and hence lowering the likelihood of software and compatibility issues.

### 2.1.7 Leadership and Strategic Planning



Leadership is the capacity to anticipate, foresee, retain adaptability, and enable others to implement strategic change as required. Strategic leadership is multifunctional in nature and entails leading via others, managing a full organisation rather than a functional subgroup, and coping with the global acceleration of change.

The ability to attract and then manage employees may be the most important leadership talent.

This is especially true because the dearth of qualified human capital hinders the expansion of businesses. In the current environment, a leader's performance is influenced by the intellectual capital that the firm's human capital possesses, including the capacity to manage knowledge and develop ideas.

In addition, leaders must have the ability to create and then sustain the context or climate in which resources can operate at top efficiency.

Important, considering that the essence of leadership is the capacity to manage well and maintain high performance over time.

#### Strategies for e-Governance in India



## Notes

Following are the strategies for e-Governance in India:

### 1. To Build Technical Infrastructure Framework Across India

Before the adoption of e-Governance, India requires a complete ICT foundation. In order to fully execute e-Governance in India, technical hardware and software infrastructure must be developed. Additionally, it will have improved and quicker connectivity choices. New communication choices will include broadband connections and cellular networks, such as 3G and 4G, that are quicker.

The infrastructure must be constructed by the government, the business sector, and people, and will include the promotion of Internet cafés, information kiosks, and interactive kiosks. Nevertheless, when constructing technical infrastructure. Additionally, disabled people must be considered. The technology utilised. Share include handicapped individuals.

### 2. To Build Institutional Capacity

In addition to developing its technological infrastructure, the government must develop its institutional capabilities. This will involve the training of government personnel, the appointment of experts, and the creation of an expert database for more efficient use of intellectual resources. In addition, the government must equip the department with advanced technology and establish a special investigation agency.

### 3. To Build Legal Infrastructure

For a more effective application of eagerness, the government must enact laws that fully include both established and developing technologies. Changes in technology have altered many long-held beliefs; similarly, technology is expanding and changing swiftly. It is crucial that the government enacts regulations that embrace current technology and provide room for future technological advancements.

These regulations must be adaptable to accommodate the fast evolution of technology. India has only the IT Act of 2000, which is mostly an ecommerce law. India has also amended a number of regulations to embrace electronic technologies, although this is not adequate to cover all instances of desire.

### 4. To Build Judicial Infrastructure

Overall, the technical literacy of today's judges is relatively poor. The whole judiciary need training on modern technology, its advantages and disadvantages, and its varied applications. The judiciary may appoint new judges with new judges or establish special courts to deal with ICT-related concerns. The government can also establish special tribunals to handle ICT-related issues.

### 5. To Make All Information Available Online

The government is required to post all information online via websites. This can be aided by centralising information storage, localising content, and managing content. The information of the government is public information; consequently, citizens have the right to know all government information, since the government is of the people, by the people, and for the people.

## 6. To Popularise e-Governance

The rate of literacy in India is worrying. The entire globe is heading towards E-Governance, yet India still lags behind in terms of literacy. People must be taught and become e-literate in order for E governance to grow. There are extremely few E-literate individuals in India. Da Gama must advocate for E governance and raise public understanding of E governance.

Government can only encourage people to go online if it makes them feel at ease with the administration. This may be accomplished by educating the populace on three benefits of E governance over physical government. This may also be accomplished by increasing the knowledge of leaders who can urge individuals to go online.

## 7. Centre State Partnership

Indian system is quasi-federal. Therefore, collaboration between centre states and interstates is required for the effective operation of the democratic process. Cooperation is also required for the effective execution of government. This cooperation will extend to centre-state, interstate, and interdepartmental relations.

To facilitate this, the government can establish a central hub, similar to the existing Government of India portal, for accessing the information of all the organs of the central government and all the state governments. Did states collaborate with this centre to develop a national database of citizens?

## 8. To Set Standards

Finally, it is essential to establish numerous criteria to bring government up to the same level of quality and performance as the private sector. The Indian government is currently working on standards management and has several draughts produced in this regard. These specifications include interoperability specifications, security specifications, technical specifications, and quality specifications. Government websites in India are not yet standardised.

Many websites of the Maharashtra government have standards that vary even across two of their web pages. There is no established quality standard for information, documents, or formats. It is crucial for the government to establish national standards that other governments and agencies must adhere to.

### 2.1.8 Case Study

#### Transformational Leadership

Department of Electronics was formed by the federal government in 1970, and the National Informatics Centre followed in 1977. 1987 saw the debut of NICNET (national satellite-based information network), followed by DISNIC (district information system of the National Informatics Centre).

These projects gave a substantial boost to the use of technology. In 1999, the Ministry of Information Technology was established, and in 2000, a 12-point action plan for e-Governance was unveiled. The government launched an e-Governance action plan to enhance e-Governance in 2006. Various state governments used various approaches to e-Government.

## Notes

Through its e-Governance programme, the Andhra Pradesh Government was the first state government in 1996 to implement the e-Sewa project to assist the ordinary people. There used to be lengthy lines of individuals waiting to deposit their money for unpaid power, telephone, and other government agency bills. When individuals began making payments through e-Government, e-Mitra and other similar systems were implemented (which enabled people to make payments through the e-Government arm).

This was a great relief to the general populace. It was lauded by the media, the general people, and the professionals. In addition, case studies on these efforts of the Government of Andhra Pradesh were prepared. Later, other governments began to see the advantages of e-Government.

The government of Karnataka introduced Bhoomi, the government of Gujarat introduced Mahiti Shakti, the government of Haryana introduced NAI DISHA, the government of Himachal Pradesh introduced lok-mitra, the government of Maharashtra introduced Setu, the government of Madhya Pradesh introduced Gyandoot, and the government of Delhi introduced Automatic Tracking of Vehicles.

Similarly, other countries undertook several initiatives to change governance. Eventually, practically every government in India adopted e-Governance as it quickly gained popularity. Today, e-Governance is widespread and provides ease, comfort, and convenience to the general public.

### Vision of the Government of Rajasthan

A significant proportion of individuals in Rajasthan encountered delays in government agencies. They were unable to obtain any remedies to the issue. Additionally, they were unable to lodge complaints. The government of Rajasthan established Sugam, an internet portal via which any anyone can lodge grievances against any government agency. In 2011, the Rajasthan government also approved the RGDPS Act (Rajasthan Guaranteed Delivery of Public Services).

Under this law, the relevant government agency must provide services to the general public within a certain timeframe. Thus, with the new legislation, there is now an actual application of Sugam (part of RGDPS). Every citizen has the right to contact the government via this method. It has facilitated the government departments' operations. The use of Sugam has significantly enhanced the efficiency of these departments.

Those departments who previously failed to provide timely services are now compelled to take rapid action owing to the influence of Sugam. The chief minister oversees the development of Sugam. Every district collector participates in a monthly review meeting to assess progress. Within a certain timeframe, the responsible government official was required to close the case and satisfy the citizen. In a short period of time, the government of Rajasthan handled and processed around one million complaints and grievances from the general population.

Given that Rajasthan is a backward state in terms of literacy, education, infrastructure, and technological resources, this is a tremendous accomplishment. Sugam has been an outstanding project of the Rajasthan government. On the Sugam portal, any person may make a complaint against any government agency in Rajasthan, and the concerns are resolved in record time.

**Summary**

- Since the 1990s, reinventing government has been a prevalent topic, with governments throughout the world striving to enhance the systems of public service delivery. Information and Communication Technology (ICT) advancements have eased the reinvention of governments and equipped them to address the requirements of a varied community.
- In analysing the last decade of India's competitiveness, it is possible to conclude that India has achieved substantial improvement in infrastructure, one of the pillars in which it ranked the lowest. As the infrastructural deficit is closed, other priorities emerge.
- Digital India is a government-wide initiative encompassing several ministries and divisions. It combines a huge number of ideas and concepts into a single, all-encompassing vision so that each may be realised as part of a broader objective.
- e-Government is a comprehensive revolution of government activity, and this transition necessitates the construction of information structures. It is a paradigm change from what has been in operation for the past two centuries to what the digital age requires.
- According to a recent analysis, it is a crucial factor in the success of e-Government programmes. The Indian national portal is a content management system. It must be converted into a robust content management system.
- E-Governance necessitates a variety of legal modifications, such as electronic signatures, electronic archiving, data matching, freedom of information, data protection, computer crime, and intellectual property rights law.
- In most instances, the distribution stations will be Information Kiosks. These points are capable of connecting to the server located in the closest district or block. These will function as hubs of information dissemination and feedback/complaint collection.
- The Working Group on Convergence and E-Government recommended in its report that the administration must shift from a passive provider of information and services to a platform/forum for the active participation of citizens.
- The Nodal Agency would be responsible for administering the Capacity Building monies, which would be disbursed via Grant-in-Aid (GIA) and Additional Central Assistance (ACA) (ACA). The GIA payments are deposited immediately to the bank account of the Nodal Agency, whereas the ACA money can be acquired through the State Finance department and transferred to the Nodal Agency.
- The idea of e-Readiness is significant since its degree is a reliable indicator of a nation's performance in the new economy. An e-Readiness evaluation would give policymakers with a precise scorecard comparing the competitiveness of their economy to that of its worldwide competitors.
- Leadership is the capacity to anticipate, foresee, retain adaptability, and enable others to implement strategic change as required. Strategic leadership is multifunctional in nature and entails leading via others, managing a full organisation rather than a functional subgroup, and coping with the global acceleration of change.

## Notes

### Glossary

- **Accessibility:** Accessibility refers to the quality of being easily approachable, available or usable by people of all abilities, including those with disabilities.
- **Brick-and-mortar:** Brick-and-mortar refers to a traditional physical business or store, as opposed to an online or digital one.
- **Broadband:** A high-speed internet connection that allows for faster and more reliable data transfer.
- **Deliberation:** The process of carefully considering and discussing a decision or course of action before taking it.
- **Etiquette:** The set of social conventions and rules that govern Behaviour and manners in a particular setting or society.
- **Fragile:** Easily broken or damaged, delicate, or vulnerable.
- **Inextricably:** Impossible to separate or disentangle from something else.
- **Inherently:** In a way that is an essential part of something's nature or character.
- **Irreversibly:** In a way that cannot be undone or changed back to its original state.
- **Legislation:** The act of making or enacting laws through a governing body or legislative process.
- **Preparedness:** The state of being ready or equipped to deal with an upcoming event or situation.
- **Regulatory:** Relating to laws, rules, or regulations that are designed to control or govern a particular activity or industry.
- **Reinvention:** The process of adapting, changing, or modifying something in order to create something new or better.

### Check Your Understanding

1. According to the United Nations Public Administration Network, what are the four infrastructures that are necessary for the establishment of e-Government in any nation?
  - a) e-Records, Authentication and Digital signature, e-Payment, and Portal
  - b) Infrastructure, Authentication and Digital signature, e-Payment, and Portal
  - c) e-Records, Verification, e-Transfer, and Portal
  - d) e-Records, Authentication and Digital signature, e-Banking, and Web-based Applications
2. What is the name of the project that aims to provide high-speed connectivity and a cloud platform to all government agencies in India up to the panchayat level?
  - a) Digital India
  - b) Government Information Infrastructure Development (GIID)
  - c) Power for All
  - d) National Information Infrastructure (NII)

3. Which two domains are essential for the implementation of e-Government in every nation?
  - a) Energy and High-speed Internet connectivity
  - b) Transportation and Water supply
  - c) Power and Food supply
  - d) Public health and Education
4. What was the Indian government's initiative for expanding broadband in rural regions?
  - a) Universal service obligation plan
  - b) National Information Infrastructure
  - c) Digital India campaign
  - d) Power for All programme
5. What are the key factors that the work plan for e-Government initiatives should focus on?
  - a) Content development, competency building, and cyber attacks
  - b) Content development, competency building, connectivity, e-Security, e-Ethics, e-Privacy and two-way communication flow
  - c) Content development, competency building and inter-agency connectivity
  - d) Content development, competency building, and cyber laws
6. In which stage of the implementation of e-Governance, a summit should be held in order to generate a paper outlining the National E-Government Initiative's methodology and structure, programme and project priorities, and any other goals?
  - a) Building E-Governance Strategic Capacity
  - b) Building E-Governance Awareness and Commitment
  - c) Building Infrastructure
  - d) Building User Acceptance
7. What was the objective of the Information Technology Act of 2000?
  - a) To address challenges of citizen-friendly management and right to information.
  - b) To establish a centralized Organisation to assess the state of IT across the nation.
  - c) To recommend the adoption of electronic records and digital signatures.
  - d) To solicit public feedback and suggestions on the changes to the IT Act of 2000.
8. What was the objective of the Expert Committee formed for the changes to the IT Act of 2000?
  - a) To recommend the adoption of electronic records and digital signatures.
  - b) To establish a centralized Organisation to assess the state of IT across the nation.
  - c) To assess the challenges of citizen-friendly management and right to information.
  - d) To cover technical advancements ensuing the IT Act of 2000.

**Notes**

9. Citizen Engagement is—
  - a) A one-way process of communication
  - b) An engaging two-way process that fosters involvement, exchange of ideas and flow of dialogue
  - c) An empowering process for the government
  - d) None of the above
10. The significance of citizen engagement in the government-citizen relationship is—
  - a) Citizens are viewed as recipients of government welfare programmes
  - b) Citizens are viewed as consumers in PPP terms
  - c) Citizens are empowered to hold others accountable
  - d) Both a) and b)
11. What are the ways of citizen engagement in e-Government projects?
  - a) Information sharing
  - b) Consultation
  - c) Joint assessment
  - d) All of the above
12. The four stages in the project life cycle for citizen engagement is—
  - a) Identification, implementation, verification, enhancement
  - b) Conceptualisation, implementation, post-implementation, project enhancement
  - c) Planning, execution, monitoring, evaluation
  - d) None of the above
13. The suggested levels of citizen engagement for e-Governance initiatives are—
  - a) Inform, Consult, Involve, Empower
  - b) Consult, Involve, Collaborate, Empower
  - c) Inform, Consult, Collaborate, Empower
  - d) None of the above
14. What are the responsibilities of a citizen engagement team for a project?
  - a) Developing contextual information, publicising the effort, creating statutory requirements
  - b) Identifying and recruiting members, selecting tools for citizen contribution, designing standards and criteria for estimation
  - c) Making recommendations based on the outcomes, selecting social media platforms, monitoring legal requirements
  - d) All of the above
15. The Broadcasting Model of e-Governance is—
  - a) A model that focuses on disseminating important governance information to the public using ICT and converged media.

- b) A model that empowers individuals by constantly incorporating best governance practices and utilizing them as standards to assess other governance approaches.
- c) A model that facilitates the influence of global civil society on global decision-making processes by incorporating the thoughts and concerns of online communities.
- d) None of the above
16. What is the Interactive-Service Model of e-Governance?
- a) A model that focuses on disseminating important governance information to the public using ICT and converged media.
- b) A model that empowers individuals by constantly incorporating best governance practices and utilizing them as standards to assess other governance approaches.
- c) A model that facilitates direct engagement of individuals in governance processes by connecting them to a digital network and opening an interactive channel between the government and residents.
- d) None of the above
17. Which of the following is not a challenge addressed by the capacity building programme for NeGP?
- a) Change management and required training
- b) Cost and resource utilisation optimisation
- c) Construction of new government offices
- d) Implementing internationally accepted best practices
18. What is NeGP?
- a) A programme for the development of the education sector in India.
- b) A programme for the development of the e-Governance sector in India.
- c) A programme for the development of the agricultural sector in India.
- d) A programme for the development of the healthcare sector in India.
19. What is the function of the State e-Gov Council in the NeGP programme?
- a) To provide overarching vision, broad policy direction, and guidance for NeGP activities at the state level
- b) To select external agencies/persons/services for capacity building initiatives
- c) To provide operational assistance for NeGP projects
- d) To oversee the day-to-day operations of SeMT
20. What is the primary challenge associated with e-Government programmes?
- a) Authentication
- b) Interoperability
- c) Funding
- d) All of the above

## Notes

### Exercise

1. Describe the planning and implementing process of e-Governance.
2. Explain the legal framework of e-Governance in detail.
3. Discuss the impact of Right to Information Act 2005.
4. What is Citizen Engagement in e-Governance and why is it important?
5. In your opinion, which e-Government model do you think is the most effective in promoting transparency and accountability in governance, and why?
6. Do you think that e-Government initiatives that prioritise the dissemination of information through ICT and converged media can lead to more informed citizenry and better governance outcomes? Why or why not?
7. In your opinion, what is the biggest challenge faced by the majority of States/UTs in achieving the objectives of NeGP?
8. Do you think the establishment of a State e-Gov Council is essential for the successful implementation of the NeGP? Why or why not?
9. In your opinion, what are the most important qualities a leader should possess in order to successfully implement strategic change in an organisation?
10. How important is it for the government to prioritize the development of technical infrastructure, institutional capacity, legal infrastructure, and judicial infrastructure in order to successfully implement e-Governance in India?
11. Do you think that popularising e-Governance and making all information available online will have a positive impact on the overall literacy rate in India? Why or why not?

### Learning Activities

1. Research the four infrastructural requirements (e-Records, Authentication and Digital Signature, e-Payment, and Portal) for the establishment of e-Government in any nation and prepare a presentation in PowerPoint on these requirements, highlighting their importance and interconnection with the overall e-Government system.
2. Research and present case studies of successful initiatives in other countries that have helped bridge the digital divide, such as public-private partnerships, subsidised pricing, or community-driven programs.

### Check Your Understanding - Answers

1. a)
2. d)
3. a)
4. a)
5. b)
6. b)
7. c)

8. d)
9. b)
10. c)
11. d)
12. b)
13. a)
14. b)
15. a)
16. c)
17. c)
18. b)
19. a)
20. c)

**Notes****Further Readings and Bibliography**

1. R.P. Sinha: E-Governance in India- Initiatives and Issues, Concept Publishing Co, 2006 edition.
2. D N Gupta: E-Governance- A Comprehensive Framework, New Century Publications, 2008 edition.
3. Bidisha Chaudhuri: E-Governance in India- interlocking politics, technology and culture, Routledge, 2017 edition.

## Module - III: Introduction to National e- Governance Division (NeGD) and National e-Governance Plan (NeGP)

### Learning Objectives

At the end of this topic, you will be able to understand:

- Outline of national e-Governance division
- Describe the purpose of national e-Governance
- Differentiate between the various types of mission mode projects, including central, state, and integrated projects.
- Assess the e-Government readiness
- Summarise the key components of the National e-Governance Plan (NeGP)
- Analyse the concepts of digital India, digital divide, and common service centres in the context of e-Governance
- Evaluate the effectiveness of recent m-Governance initiatives by the e-Government

### Introduction



In 2009, the Ministry of Electronics and Information Technology established the National e-Governance Division as an Independent Business Division inside the Digital India Corporation (formerly Media Lab Asia). Since 2009, NeGD has played a crucial role in aiding MeitY in Programme Management and execution of the e-Governance Projects; providing technical and advisory assistance to Ministries/Departments at both the Central and State levels, as well as other Government organisations.

NeGD's principal operating areas are programme management, project creation, technology management, capacity building, awareness and communications-related initiatives within the Digital India Project.

NeGD has created and manages a variety of National Public Digital Platforms, including DigiLocker, UMANG, Rapid Assessment System, OpenForge, API Setu, Poshan Tracker, Academic Bank of Credits, National Academic Depositories, National AI Portal, MyScheme, India Stack Global, Meri Pehtaan, etc.

### 3.1.1 Overview of National e-Governance Division

The Capacity Building Scheme under the National e-Governance Plan (NeGP) of the Government of India envisions the establishment of an institutional framework for State-Level decision-making, including the formation of State e-Mission Teams (SeMTs) with the expertise and experience to provide technical and professional support to States and Union Territories.

To this end, the Department of Electronics and Information Technology (DeitY), Government of India, has established NeGD as an independent business division within Media Lab Asia, under the Ministry of Communications and Information Technology, Government of India, to assume the responsibilities of the Programme Management Unit National e-Governance Plan (PMU-NeGP) within DeitY.

#### **NeGD Include the Following Projects:**

Programme Management of NeGP, comprising, inter alia, facilitating and assisting DeitY in carrying out the following NeGP-assigned activities and responsibilities:

- Supporting the execution of the New Economic Growth Plan by different Ministries and State Governments
- Provide technological support to the Central Ministries and State Line Departments
- Acting as the Apex Committee's secretariat
- Doing a technical evaluation of all NeGP projects in order to assess topics such overall technological architecture, framework, standards, security policy, service delivery method, and infrastructure sharing, etc.
- Human Resource Development, Education, and Sensitisation
- Formulation of fundamental policies, technical support, RandD, awareness and evaluation, and establishment of an organisational structure
- Serving as a Central Agency for the proper execution of the Capacity Development Program, including the provision of personnel at various SeMTs throughout the States/UTs
- Placement of a Capacity Development Management Cell for the successful management of personnel at SeMTs, as well as the management of other Scheme operations such as training, establishing HR policies, etc.

### 3.1.2 Purpose of National e-Governance

The duties and responsibilities envisioned for NeGD are as follows:

1. Giving strategic guidance in terms of policy formulation and implementation strategy for the Digital India Project in various e-Governance sectors.
2. Aggressive support for Mission Mode Projects and other e-Government initiatives by the Central and State Governments
3. Serving as a facilitator and accelerator for the implementation of the Digital India Initiative by many Ministries and State Governments
4. Offering technical help directly or in partnership with professional consultants to Central Ministries and State Line Departments for their e-Governance projects.

## Notes

5. Conducting technical evaluations of e-Government projects in order to examine topics such as overall technology, architecture, framework standards, security policy, service delivery mechanism, and infrastructure sharing, etc.
6. Creating generic/model Expressions of Interest, Requests for Proposals, Standard Contracts, PPP Models, and other relevant documents for use by the States at various project phases and needs.
7. Ensuring excellent public participation and communication with all constituents through offline and social media platforms
8. Impact evaluation and e-Readiness measurement of all State/JT e-Governance programmes
9. Recruiting, deployment, and HR management of specialised personnel in all State e-Governance Mission Teams
10. Initiatives for training and development, including
  - Creation of competence frameworks, training protocols, case studies, etc.
  - Creating Web-based and Online Training and establishing a Learning Management System.
  - Knowledge management and dissemination through means of workshops, the production of case studies, the sharing of best practises, and the establishment of knowledge repositories, etc.

### 3.1.3 Mission Mode Projects- Central, State and Integrated



A mission mode project (MMP) is a project under the National e-Governance Plan (NeGP) that focuses on a single component of electronic governance, such as banking, property records, or commercial taxes, etc.

Within NeGP, “mission mode” denotes projects with well-defined objectives, scopes, implementation deadlines and milestones, as well as quantifiable outcomes and service levels.

NeGP consists of 31 mission mode projects (MMPs), which are subdivided into state, central, and integrated projects. Also, any state government may establish five MMPs tailored to its own requirements.

## Central Mission Mode Projects (MMPs)

### 1. Banking

The development of core banking technology in India has enabled “anytime, anywhere banking” for Indian clients. Currently, there is a trend towards integrating the core banking solutions of multiple banks, which is anticipated to increase operational efficiency, reduce the time and effort required for processing and settling transactions, and thereby improve customer service and facilitate regulatory compliance.

The Banking MMP includes the subsequent services:

- Electronic Central Registry under Sarfaesi Act, 2002
- One India One Account-for Public Sector Banks
- Electronic Mass Payment System

The full concept note is being developed by the Banking and Insurance Division of the Department of Economic Affairs.

### 2. Central Excise and Customs

This MMP is being implemented by the Central Board of Excise and Customs (CBEC) to ease commerce and industry by streamlining and simplifying customs and excise processes, and to foster an environment of voluntary compliance.

The project seeks to connect 20,000 users in 245 cities through wide area network and provide taxpayers with up-to-date information on Customs, Central Excise, Service Tax Rules, etc. over the internet.

Among the suggested services covered by this MMP are:

- Simplifying procedures for registration, returns, income reconciliation, and exports
- Progress towards consolidation of goods and services taxation
- Electronic Registration for VAT and Service Tax
- Electronic filing of tax returns and refunds
- Integration of e-filing with risk-based, system-driven inspection
- Export facilitation by means of Excise and Customs links
- Enhanced dispute resolution system
- Monitoring and recovery of arrears
- Central Excise Revenue reconciliation

### 3. Income Tax (IT)



**Notes**

## Notes

The Income Tax Department of India is undertaking a strategy to establish a complete service that allows citizens to do all transactions with the Department from any location and at any time.

The Income Tax MMP is planned to cover the following services:

- Allocation of Permanent Account Number (PAN)
- Tax accounting
- Taxpayer grievance redressal
- Taxpayer correspondence
- Tax compliance
- Online submission of returns
- Processing of tax return
- Processing of tax-deducted-at-source (TDS) return

### 4. Insurance

The objective of this MMP is to enhance customer service in the General Insurance industry.

The MMP intends to:

- Facilitate customer service through education, information, rapid claims processing, and web-based policy issuing
- Facilitate the automatic reporting and resolution of client complaints
- Develop and expand commercial possibilities
- Build a comprehensive database of insurance customers
- Connect insurance database(s) with other government database(s) to enhance social security analysis and service delivery.

It is envisaged that the initiative will be undertaken by the four PSU Insurance firms.

### 5. MCA21

The Ministry of Corporate Affairs (MCA), Government of India, has begun the MCA21 initiative, which provides business entities, professionals, and the general public with convenient and secure access to MCA services. The MCA21 project is intended to fully automate all operations connected to the Companies Act of 1956's enforcement and compliance obligations.

The project also aims to establish interoperability with the National e-Government Services Delivery Gateway (NSDG), which will assist expand MCA services to enterprises via numerous front-end delivery channels and provide additional value-added services in addition to MCA21's base services.

## 6. Passport

**Notes**

The Passport Seva Project was initiated by the Ministry of Foreign Affairs with the intention of providing Passport Services to individuals in a convenient, accessible, and dependable environment.

The project calls for the establishment of 77 Passport Seva Kendras (PSKs) around the nation, a Data Centre and Disaster Recovery Centre, a Contact Centre running 24x7 in 17 languages, and a centralised national computerised system for passport issue.

The entire process will run in a “less paper” environment, and attempts will be made to give passports to categories that do not require police verification within three business days.

## 7. Immigration, Visa and Foreigner's Registration and Tracking (IVFRT)

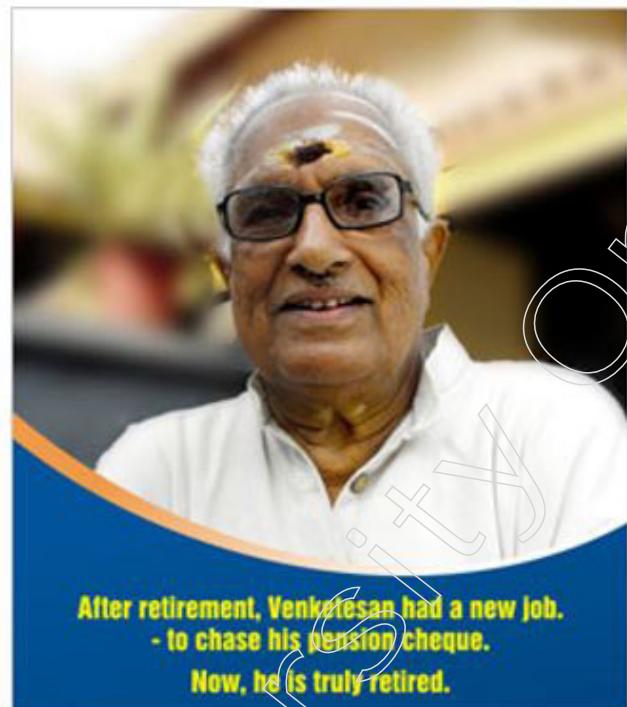
“Immigration, Visa and Foreigners Registration and Tracking (IVFRT)” has been recognised and listed as one of the MMPs to be implemented by the Ministry of Home Affairs under the National e-Government Plan in order to modernise and improve the Immigration services (NeGP).

The primary purpose of this project is to build and execute a framework for the delivery of safe, integrated services that enables lawful passengers while enhancing security. The project encompasses 169 Missions, 77 Immigration Check Stations, 5 Foreigners Regional Registration Offices, and Foreigners Registration Offices in State/District Headquarters.

The implementation of this MMP will enable the authentication of traveller's identity at Missions, Immigration Check Posts (ICPs), and Foreigners Registration Offices (FROs) through the use of intelligent document scanners and biometrics, the updating of foreigner's details at entry and exit points, and the improved tracking of foreigners through the sharing of information captured during visa issuance at Missions, during immigration check at ICPs, and during registration at FRRO/ FROs.

## Notes

### 8. Pension



Under this MMP, a Pensioner's Portal <http://pensionersportal.gov.in> with the following components has been established:

- A non-interactive element providing current information on pension concerns
- An interactive component to track grievance remedy on three interconnected levels:
  - ◆ Central-level in Department of Pensions and Pensioners' Welfare (nodal point)
  - ◆ Central Ministries/ Department-level
  - ◆ Pensioners' Associations-level (field level)

Pensioners who lodge grievances on the site receive unique access numbers, allowing them to track the status of their cases. The designated nodal official at the Department of Pension and Pensioners' Welfare level and at the Central Ministry/ Department level can also monitor the progression of such registered cases.

### 9. e-Office



The Indian government has designated e-Office as a key mission modal project (MMP) within the National e-Governance Plan in recognition of the long-felt need for efficiency in government operations and service delivery systems (NeGP). It is expected that this MMP might reach more than 2 million consumers.

By migrating to a "Less Paper Office," this MMP intends to dramatically enhance the operational efficiency of the government.

The MMP's aims are as follows:

- To enhance the efficacy, uniformity, and efficiency of government responses
- To minimise turnaround time and satisfy citizens charter requirements
- To provide optimal resource management to enhance administration quality
- To decrease delay in processing
- To foster openness and responsibility

## 10. Posts

The Cabinet Secretary-led Apex Committee for the National e-Government Plan (NeGP) has authorised the inclusion of Posts as a Mission Mode Project (MMP) within the NeGP.

### 1. UID

The unique identification project was designed as an effort that would give identity for every citizen in the nation and serve as the foundation for the effective delivery of social services. It would also serve as a tool for the effective monitoring of various government programmes and initiatives.

The notion of a unique identity was initially studied and developed in 2006, when the Department of Information Technology, Ministry of Communications and Information Technology granted administrative clearance for the project "Unique ID for BPL households."

The NIC was to implement this project over a period of one year. On the recommendation of the Empowered Group of Ministers (EGoM) for collation of the two schemes - the National Population Register (NPR)/MNIC under the Citizenship Act, 1955 and the Unique Identification Number (UID) of the Department of Information Technology - the Unique Identification Authority of India (UIDAI) was established and notified by the Planning Commission on January 28, 2009.

The UIDAI was assigned the task of establishing the strategy and procedures for implementing the UID programme, as well as the ownership and operation of the UID database and its continuing updating and maintenance.

### 2. NPR

The National Population Register (NPR) is a registry of the country's permanent residents. In accordance with the Citizenship Act of 1955 and the Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003, it is being compiled at the local (Village/sub-Town), sub-District, District, State, and National levels.

## Notes

Every normal inhabitant of India is required to register with the NPR. For the purposes of NPR, a regular resident is a person who has resided in a local region for the last six months or longer, or who plans to remain in that area for the future six months or longer.

### State MMPs

#### 1. Agriculture

State and federal governments have taken a number of steps to address the issues affecting the nation's agriculture industry. The Agriculture MMP has been included into the NeGP in an effort to consolidate prior lessons, combine the different and divergent projects now ongoing, and scale them up to span the entire nation.

The Department of Agriculture and Cooperation (DAC) will implement the MMP, which seeks to deliver services such as:

- Infor for farmers on seeds, fertilisers, and pesticides
- Information for farmers on government programmes
- Specifics for farmers about soil recommendations
- Clarification on crop management
- Detailed description on the weather and selling of agricultural products

#### 2. Commercial Taxes

There has been a great desire for simplifying VAT administration through citizen-centric, service-oriented processes and standardising Commercial Tax (CT) administration to a certain degree. Given that the CT departments interact primarily with companies and contribute for 60–70% of the overall income of the States and Union Territories (UTs), their performance can have a direct impact on the desirability of a State or UT as a business location.

In light of these circumstances, the Commercial Taxes MMP was developed. The effort is led by the Department of Revenue (DoR), Ministry of Finance, with the National Institute for Smart Government (NISG) and Ernst and Young providing strategic consulting (E andY).

Various suggestions have been made in accordance with this MMP to promote the streamlining of administrative operations and the reduction of processing times. Some of the most important guidelines are listed below:

- Electronic filing of returns
- Electronic clearance of refunds
- Electronic payment of tax
- Online dealer ledger
- Online issuance of CST statutory forms through Tax Information Exchange System (TINXSYS)
- Facility to dealer to obtain various online information services

### 3. e-District

Districts are the de facto face of government where the vast majority of Government-to-Consumer (G2C) interactions occur. The eDistrict initiative was conceived to improve this experience and boost the efficiency of the numerous district-level Departments in order to provide seamless service delivery to the citizenry.

The Project intends to target specific high-volume services that are not currently covered by any MMP under the NeGP and to provide backend computerisation to facilitate the delivery of these services via common Services centres.

The Scheme for the National Rollout of the e-District MMP has been authorised with a financial expenditure of Rs 1663.08 Crores, of which the Government of India's contribution is anticipated to be Rs 1233.08 Crores and the States' portion is Rs 430 Crores over a 4-year period. The eDistrict MMP was granted approval on April 20, 2011. Under Services Portfolio and Launch State, the current status of the MMP is mentioned.

# Due to devolution instructions published by the MoF/DoE, no financing GIA is available under this MMP.

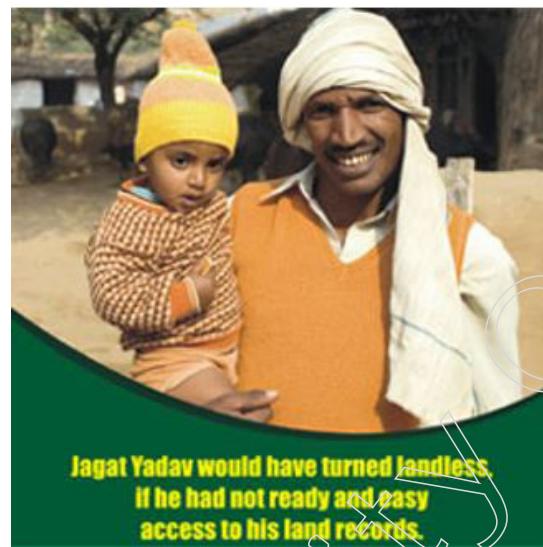
- Certificates: Creation and distribution of certificates for income, domicile, caste, Birth, Death etc.
- Licences: Arms Licenses etc.
- Public Distribution System (PDS): Issue of Ration Card, etc.
- Social Welfare Schemes: Disbursement of old-age pensions, family pensions, widow pensions, etc.
- Complaints: Related to unfair prices, absentee teachers, non-availability of doctor, etc.
- RTI: Online filing and receipt of information relating to the Right to Information Act
- Linking with other e government projects: Registration, Land Records, and Driving Licences, etc.
- Information Dissemination: About government schemes, entitlements, etc.
- Assessment of taxes: Property tax, and other government taxes.
- Utility Payment: Payments relating to electricity, water bills property taxes etc.

### 4. Employment Exchange

The Ministry of Labour and Employment is currently conceptualising this MMP. It is anticipated that the MMP will assist in matching company needs with personnel databases. In addition, it is anticipated that the MMP will give vital information and career counselling to the jobless and allow online registration of job openings by companies.

## Notes

### 5. Land Records



The upkeep of property records and the availability of freely available land data is one of the most pressing concerns confronting government today. "Land Records" is a general term that may encompass the register of lands, Records of Rights (RoRs), the tenancy and crop inspection register, the mutation register, the contested cases register, etc. It may also contain geological information about the land's shape, size, and kind of soil, as well as economic information on irrigation and crops.

The Land Records MMP, which is being carried out by the Ministry of Rural Development (MoRD), aims to achieve the following throughout the states:

- Finalisation of all data input associated with the digitalisation of land records
- Provision of legal protection for electronic Records-of-Rights (RoRs)
- Ceasing the issuance of manual RORs
- Establishing computer centres in Tehils
- Allowing Internet access

The primary goals of the MMP are:

- To allow simple database maintenance and updating
- To provide for full examination to make land records tamper-proof (in an effort to lessen the danger of litigation and societal issues related with land disputes) (in an effort to reduce the menace of litigation and social conflicts associated with land disputes)
- To offer the essential assistance for execution of development plans for which data about distribution of land holdings is crucial
- To promote precise planning for infrastructural as well as environment development
- To facilitate the mechanised creation of an annual set of records, hence providing correct papers for documenting data such as land revenue collection, cropping pattern, etc.
- Facilitate a range of conventional and ad hoc land data queries
- To offer database for agricultural census

Core Services provided by the Land Records MMP include:

- Distribution of RoRs
- Information on crop, irrigation, and soil
- Filing and status tracking of mutation cases
- Form availability and submission

## 6. Municipalities



The objective of the Municipalities MMP is to harness ICT to sustainably enhance the efficiency and effectiveness of municipal service delivery to residents.

The primary goals of the MMP are:

- To give residents with a single point of access to services at all times and locations
- Enhance the effectiveness and output of Urban Local Bodies (ULBs)
- To create a unified, state-wide picture of the ULB information system across all ULBs in the State.
- To furnish municipal administration decision-makers with fast and trustworthy management information
- To implement a standards-based strategy to facilitate integration with relevant apps

Given that municipalities provide a vast number of fundamental services to millions of citizens residing in metropolitan areas around the country, this MMP involves substantial citizen contact.

## 7. Panchayats



## Notes

The Panchayat is the initial point of contact with the government for more than 60 percent of the Indian population, and it delivers a vast array of basic services to millions of rural residents. In light of this, the Panchayat MMP has been incorporated into NeGP.

The MMP seeks to address and overcome the typical challenges faced in villages, such as a lack of dependable communication infrastructure, a delay in the delivery of services to citizens, low revenue mobilisation for implementing schemes at the Gram Panchayat level, and the absence of monitoring mechanisms for schemes.

The MMP envisions the deployment of the following modules throughout the services and management responsibilities of the Gram Panchayat:

- Commercial licences and NoC issuance
- Residential-related services
- Issuance of Birth and Death, Income and Solvency Certificates
- Distribution of internal Panchayat agenda, voting, and resolution procedures
- Copy of Gram Sabha sessions and Action Taken Report (ATR)
- Funds received / progress report
- Distribution of BPL information

### 8. Police

This MMP has been incorporated into the NeGP in response to the ever-increasing threat of terrorist attacks and the steadily rising crime rates. It comprises the construction and sharing of crime-related databases among departments, as well as effective personnel management and inventory control.

Given the wide diversity in these functions between states, the MMP proposes a phased implementation strategy. The first phase focuses on functions that are widespread among states and governed by the Criminal Procedure Code (CrPC).

### 9. Road Transport

The Road Transport MMP was incorporated into NeGP with the intention of establishing a standard data structure that could be utilised by all States and Union Territories to computerise their various transport offices (for faster and better-managed issue of vehicle registration certificates and driving licences).

This MMP is being carried out as part of MeitY's Horizontal Transfer Programme.

### 10. Treasuries



Due to the lack of computerisation or partial computerisation of State Treasuries, the majority of operational information is still transferred on paper.

A Core Group on Computerisation of State Treasuries has been established to create a system for the Treasury MMP under NeGP.

The Department of Expenditure is in the process of drafting the full concept note.

## Notes

### 11. PDS

The Apex Committee for the National e-Government Plan (NeGP), led by the Cabinet Secretary, has accepted Public Distribution System (PDS) as a Mission Mode Project (MMP) under the NeGP.

### 12. Education

The NeGP's Apex Committee, led by the Cabinet Secretary, has authorised the inclusion of School Education as a Mission Mode Project (MMP). Focus of the MMP is on School Education (Primary and Secondary including Higher Secondary).

### 13. Health

The NeGP's Apex Committee, led by the Cabinet Secretary, has authorised the addition of Health as a Mission Mode Project (MMP).

## Integrated MMPs

### 1. Common Services Centres

The CSC is a strategic pillar of the National e-Governance Plan (NeGP), which was adopted by the government in May 2006 as part of its promise to introduce e-Governance on a huge scale as part of the National Common Minimum Programme.

The CSCs would deliver high-quality, cost-effective video, audio, and data content and services in the fields of e-Governance, education, health, telemedicine, and entertainment, in addition to other private services.

CSCs will offer web-enabled e-Governance services in rural regions, such as application forms, certifications, and utility bill payments for energy, telephone, and water. In addition to the universe of G2C services, the CSC Guidelines envision the following content and services being offered:

- Agriculture Services (Agriculture, Horticulture, Sericulture, Animal Husbandry, Fisheries, Veterinary)
- Training and Education Services (School, College, Vocational Education, Employment, etc.)
- Medical Services (Telemedicine, Health Check-ups, Medicines)
- Banking and Insurance Services in Rural Areas (Micro-credit, Loans, Insurance)
- Recreational Services (Movies, Television)
- Service Providers (Bill Payments, Online bookings)
- Business Services (DTP, Printing, Internet Browsing, Village level BPO).

## Notes

The Scheme establishes a favourable climate for the private sector and NGOs to actively participate in the execution of the CSC Scheme, therefore becoming a partner of the government in rural India's development.

The PPP model of the CSC scheme envisions a three-tiered structure consisting of the CSC operator (referred to as the Village Level Entrepreneur or VLE), the Service Centre Agency (SCA), which will be responsible for a division of 500 to 1,000 CSCs, and a State Designated Agency (SDA) designated by the State Government to manage the implementation throughout the entire State.

### CSC Online Monitoring Tool

The four primary apps currently developed and implemented as part of the CSC monitoring system are as follows:

- **CSC SMART Solution:** This application monitors the block-by-block rollout status of CSCs until they are eventually commissioned. The application tracks CSCs throughout stages, including selection of SCAs, selection of CSC locations, identification of VLEs, setting up IT infrastructure, Internet connectivity, commissioning, and final certification of CSCs. Additionally, the system tracks the status of BSNL connectivity at various CSCs and provides useful performance data for CSCs. <http://www.csc.gov.in>.
- **CSC Online Monitoring Solution:** Post CSCs are activated; the online monitoring tool aids in the registration of CSC IT terminals and monitors their uptime. Each CSC computer must install and register an internet monitoring application. The online registration procedure acts as evidence of the accessibility of CSC IT terminals, as certified by their unique machine ID (Mac ID) and internet connectivity for the delivery of digital services.
- **CSC Online Dashboard:** This programme tracks the performance of CSCs, SCAs, and States based on uptime logs created by the online monitoring tool.
- **CSC Connect:** CSC Connect is a feature offered by several Service Access Provider (SAP) Portals that enables CSCs to connect in to their portals using their unique CSC ID and password, as determined by the CSC Online Monitoring System. This feature would spare CSC the hassle of enrolling profiles and remembering IDs and passwords for different SAPs. The CSC Connect method would enable CSCs to access the SAP Portal using their unique CSC ID and password, and it would also assist DIT in measuring the utilisation of SAP services at various CSCs.

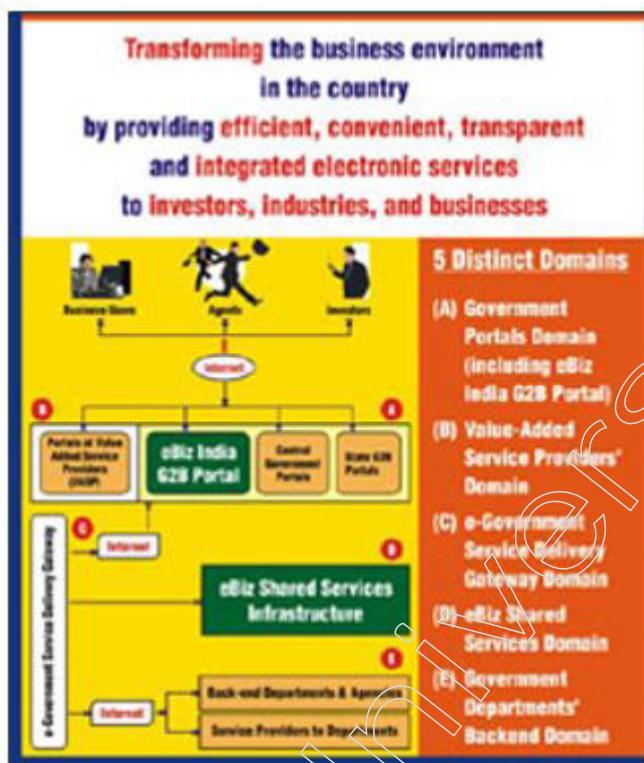
Currently, the solution provides the following function:

- Provides a unique identifier for a CSC depending on its geographic location
- Maintains a consolidated database of CSCs and VLE addresses, email addresses, and contact information.
- Allows CSC registration status to be seen online
- Calculates the daily uptime performance of CSCs that have been registered online.
- Maintains CSC, SCA, and State uptime performance depending on CSC performance in their respective areas

## Notes

- Provides role-based access to all stakeholders in accordance with their geographical privilege utilisation
- Provides a single waterfall view of CSCs from Pan India to State to District to Block to the final CSC
- Permits recording of the BSNL connectivity status at each CSC.

### 2. e-BIZ



The Department of Industrial Policy and Promotion is piloting the e-Biz programme, which aims to deliver full Government-to-Business (G2B) services to business organisations with transparency, speed, and predictability. It aims to reduce the number of points of contact between business entities and government agencies by standardising "requirement information", establishing single-window services, and reducing the compliance burden, which will benefit stakeholders such as entrepreneurs, industries and businesses, industry associations, regulatory agencies, industrial promotional agencies, banks and financial institutions, and taxation authorities.

### 3. e-Courts

The Indian judiciary consists of around 15,000 courts located in approximately 2,500 court complexes. It is envisaged, under the e-Courts MMP, to introduce ICT in the Indian judiciary in three phases over a period of five years. The MMP intends to design, deliver, install, and operate automated decision-making and decision-support systems in 700 courts across Delhi, Bombay, Kolkata, and Chennai; 900 courts across 29 State/Union Territory capitals; and 13,000 district and subordinate courts nationwide.

The project's aims are as follows:

- To assist the court administration in simplifying their daily operations

## Notes

- To aid judicial administration in decreasing case backlog
- To present litigants with information in a transparent manner
- To facilitate judges' use of legal and judicial databases

### 4. e-Procurement



This MMP strives to make government procurement more streamlined, transparent, and focused on results. It is being carried out by the Directorate General of Supplies and Disposals (DGSandD), which is a central buying organisation under the Ministry of Commerce and Industry with expertise in the procurement of products and services.

The MMP's aims are as follows:

- To develop a one-stop shop for all government procurement-related services
- To minimise cycle time and procurement costs
- To increase openness in government procurement
- To boost procurement efficiency
- To implement procurement reform throughout the federal government

The e-Procurement MMP will cover all phases of procurement, from solicitation of bids to bid preparation, evaluation, and award. In light of the CVC requirement that all Departments post their bids online, the MMP will include sophisticated security capabilities for bid encryption and decryption, as well as digital signatures.

### 5. Electronic Data Interchange (EDI) for Trade (e-Trade)



The MMP aims to simplify procedures, introduce electronic delivery of services by regulatory and facilitating organisations, provide 24x7 access to users, increase transparency in procedures, reduce transaction costs and time, and introduce international standards and practises for export/import cargo clearance.

The Following Organisations have been Selected for Integrated EDI Implementation:

- Airports (7 locations)
- Airlines (20 locations)
- Apparel/Textile export Promotion Councils (24 locations)
- Banks (106 locations) and RBI
- Customs (35 locations)
- Container Corporation of India (CONCOR) (38 locations)
- Directorate General of Foreign Trade (DGFT) (33 locations)
- Export Promotion Organisations, DG Commercial Intelligence/Statistics and Inland Container Depots/ Container Freight Stations (47 locations)
- Indian Railways (1 location) and
- Port Trusts (13 locations)

The Services Covered Under the Project are:

- Electronic filing and clearance of export import documents
- e-Payment of custom duties and charges of ports, airports, CONCOR, etc.
- Filing and processing of licences for DGFT
- e-Payment of licence fee for DGFT
- Electronic exchange of documents between community partners such as Customs, ports, airports, DGFT, CONCOR, Banks, etc.

## 6. India Portal

NIC is implementing the National Portal of India as a Mission Mode Project under the National e-Government Plan. The purpose of the Portal is to give Citizens, Businesses, and Overseas Indians with a single point of access to the information and services of the Indian Government at all levels, from Central Government to State Government to District Administration and Panchayat.

Through this Portal, an effort has also been made to give a complete, accurate, and trustworthy source of information on India and its many sides. The content on the Portal has been organised into various modules that are interconnected at pertinent points to give the user with a holistic perspective.

The first version of the Portal was released on November 10, 2005.

As part of the Content Management Strategy, 66 Central Ministries/Departments and 35 State Governments have nominated National Portal Coordinators (NPCs) who are responsible for the content generation, compilation, and maintenance. The development of a Web-based, secure Material Management System (CMS) to facilitate the NPCs' supply of content.

## Notes

### Status

- The initial version of the portal has been released
- Identification of a National Portal Coordinator from 66 Central Ministries/ Departments and 35 States/UTs
- The English and Hindi versions of the National Portal of India (NPI) and related Content Management System (CMS) are operational.
- Certified ISO Certificates ISO 25051: 2006 Software Engineering and ISO 9126
- The National Portal of India (English and Hindi) adheres to the most recent W3C recommendations
- Certificate of Website Quality ISO/IEC 23026: 2006
- The Portal is now functioning in five regional languages, namely Gujarati, Assamese, Tamil, Oriya, and Bengali.

### 3.1.4 e-Government Readiness

The majority of governments have certain traits; they are primarily focused on providing public services. The interaction between citizens and governments is closely governed by law, and government agencies may be forced by law to share information with other government agencies or with the general public. In several regions of the globe, residents' faith in governments is fundamentally suspect.

Bureaucracy is also one of the primary characteristics of public sectors. There are several more features of universal administrations that are outside the scope of this investigation. The fundamental prerequisites for e-Government depend on a society's most pressing requirements. The amount of technological infrastructure, legislative framework, and professional skills required for e-Government, for example, varies depending on the objectives being pursued; yet, since requirements vary, how can a government measure its readiness for e-Government?

e-Government readiness is not limited to the government alone. In addition, it is essential to evaluate the society, institutional frameworks of government, human resources, existing budgetary resources, interdepartmental relationships, national infrastructure, economic health, education, information policies, private sector development, and other e-Government readiness factors.

In reality, e-Government has several dimensions. To make a vision a reality, each dimension requires leadership, strategy, cross-coordination, and expertise, linked with a technological plan. Four steps comprise the e-Government planning methodology: Strategic Planning, Readiness Assessment, Implementation Plan, and e-Government Plan.

**Organisational Readiness Assessment:** Organisations, especially government organisations, are often structured in a top-down bureaucratic fashion, requiring consumers to acquire an understanding of the structure in order to access services. Governments are characterised by their bureaucracy, lengthy process delays, complex procedures, duplication of labour and efforts, duplicate records and data, and redundant processes.

Additionally, an innate aversion to interacting with government creates obstacles between citizens and governments. In addition to automating government business activities, it is essential to build a revolutionary business environment (i.e., a thorough Business Process Re-Engineering, or “BPR”). Business Processes and Organisational Hierarchy are the two major themes to be discussed here.

**Business Processes:** The bottleneck is the process flow, which is established by senior management and subject matter experts to enable process application. The outcome of the procedure is regulated by the law. Once the process flow has been established and certified, it is difficult to modify it in areas where process improvement is conceivable. To accomplish process improvement, the present process efficiency must be re-evaluated based on a set of common criteria from several viewpoints, including those of citizens, government, businesses, and employees.

The following are the criteria for efficiency measures in process evaluation:

- Process Automation
- Process Electronic Distribution
- Average number of expected service Journeys
- Mean Time Required to Complete Service Delivery
- Average Number of Stations Visited to Complete a Service by a Citizen

**Organisation Hierachal Structure:** The process improvement will almost probably result in substantial changes to the organisation, including the hierarchical structure, the new functions of employees, the new role of the organisation, and the laws that regulate the company.

All other dependents (i.e., other organisations) associated with the process must be reconfigured. Process-Technical integration is also necessary, which indicates that technical infrastructure integration must exist beneath process integration.

**Leadership and Governance Readiness Assessment:** It is evident that e-Government will be achieved through Leadership and Governance; nevertheless, the complete support and adoption of leaders at all levels is essential. Leadership is essential for maintaining and coordinating the body of rules, agreements, and standards that serve as the foundation for inter- and intra-organisational connections and activities.

e-Government cannot be accomplished only by writing a legislation or issuing an executive order. It entails altering how officials think and behave, how they see their positions, and how information is shared across departments (G2G), with companies (G2B), and with people (G2C). It necessitates the reengineering of government business operations, both inside individual agencies and throughout the government.

Governance or management from a scientific and technological standpoint is described as effective management at several levels. e-Governance outlines the decision-making authority and responsibility necessary to promote acceptable IT usage practises. Over seventy-five percent of organisations now have inadequate or non-existent e-Governance.

In order for IT to advance fast in a business-driven environment, e-Governance must undergo radical and rapid transformation to optimise the commercial value of IT. The majority of businesses should “throw up” their present governance arrangements

## Notes

and start from scratch. To attain a particular level of service delivery agreement through e-Government, it is necessary to establish and define the responsibilities of leadership and governance.

**Customer Readiness:** Electronic Government is intended for all persons and enterprises that public administration has a duty to serve, including those who are physically, socially, economically, geographically, or culturally disadvantaged. Customers cannot be viewed as a homogenous group; consequently, preparedness is contingent upon the accessibility, culture, and economic standing of various groups. Accessibility Concerns and Trust Concerns are the primary consumer preparedness concerns.

**Accessibility Concerns:** Access to government services provided by e-Government, which encompasses Social, Cultural, Disability, and Economic problems, the Social concerns where some individuals prefer to complete the simplest commercial transactions in person. Language and literacy limitations are part of the cultural problems.

The Disability concerns prohibit discrimination against those with impairments. The Economic problems include taking into account the digital gap, restricted public access to the Internet, lack of appropriate skills among the public and public workers, and the inability of the poor to purchase Internet-accessing gadgets.

**Competency Readiness:** Competency readiness refers to the availability of qualified personnel in the public sector; these valuable resources may include permanent public servants, outsourced resources, contract negotiation skills, change management, relationship management, contract administration skills, and project management. Long-term, the government must consider conserving all types of needed talents, whether they are held by public servants or by external organisations from the commercial sector.

**Technology Readiness:** Technology preparedness encompasses hardware, software, communication and network infrastructure, Internet penetration, software application, legacy systems, and the organisation's present technology and electronic systems in order to support the e-initiative. In this aspect of preparedness, the availability of professional government talents is the primary issue. Also essential is the provision of a variety of technology to allow the deployment of e-Government.

In this context, we are discussing the design and implementation of websites, the use of advanced web tools to facilitate access to government portals, the creation of portals with an appealing look and feel, the development of bilingual portals, the use of less expensive devices to access the Internet, and the maintenance of customer security and privacy.

The government's investment in current information technology and legacy systems must be the e-primary initiative's priority. Communication Technology Infrastructure constitutes the second aspect of technology readiness (CTI).

The government is already in the process of granting fresh licences to other rivals. In the field of mobile services, there are two providers. Also, other businesses will soon compete for market share. The Communication Technology Infrastructure (CTI) requires enhancements in the following areas:

**Notes**

- The communication network was built for voice transmission.
- The absence of low-speed digital national networks impedes the development of data transfer.
- The existing network is incapable of supporting sophisticated voice functions.
- The existing network is incapable of supporting video services. Jordan has been at the forefront of innovation and cutting-edge service delivery in the area.

**Legal Readiness:** In addition to Organisational, Governance and Leadership, Customer, Competency, and Technology concerns, e-Government preparation also includes Customer and Competency difficulties. It entails the conventional manner of government performance. Important is the legal aspect of e-Government, in which new procedures and other government operations must be explicitly controlled. Legal authorisation is required for the implementation of BPR, organisational transformation, leadership and governance reform, and new service channels.

This encompasses laws, bylaws, directives, and any other regularity concerns pertaining to the delivery of government services. The legal framework is the safety valve for all government operations. Each organisation that desires to execute an e-initiative is required to conduct its own legal analysis.

The legal concerns consist of several components; the most significant of them are:

- Legality of doing electronic commercial transactions
- Legality of sharing electronic documents.
- Legality of application data sharing across corporate borders
- Assigning liability for Internet transactions.
- Legality of electronic transactions
- Legality of notifications, management, supply of physical services, and contracts.
- Validating identities, electronic signatures, and authentication processes.

Each government has its unique aims and priorities, making e-Government readiness evaluation an extremely challenging endeavour. The Electronic Transactions Law has paved the path for the initiative's implementation.

The adoption of electronic methods to perform government services does not need the passage of a specific law or the amendment of current laws. It is sufficient for an authority, such as a minister, to issue written directions for the adoption of electronic means in service delivery, without any uncertainty as to the foundation of the established processes.

In general, the present legislative framework does not expressly prohibit electronic internet transactions with government ministries. On the contrary, the existing law appears to encourage the use of electronic transactions where the applicant's identity cannot be questioned. If this barrier to electronic service delivery is to be eliminated, the exemption to this rule that requires the physical presence of a customer will require a modification in the law. Rather, what is necessary is the adoption of administrative processes that comply to the country's legally enacted legislative frameworks.

## Notes

### 3.2 Introduction to National e-Governance Plan (NeGP)



The deployment of ICT in urban areas is integral to the communications revolution. Frequently stated as ICT-driven advantages to metropolitan areas are high-quality infrastructure, innovation, investment, well-connected businesses, energy and cost savings. Government of India and state governments have recognised the potential urban development advantages of E-Governance.

With the use of ICTs, efforts were undertaken to simplify administration and integrate urban services. States such as Karnataka, Kerala, and Andhra Pradesh have developed the most effective forms of urban e-Governance. The Indian government has offered institutional, infrastructure, and financial assistance for creating, developing, and deploying e-Governance solutions for the majority of urban issues.

#### 3.2.1 Overview of National e-Governance Plan (NeGP)

In India, e-Government has slowly progressed beyond the computerisation of government departments to programmes that encompass the finer elements of governance, such as citizen-centricity, service orientation, and transparency. The developing e-Governance approach of the country has been significantly influenced by the lessons learned from past e-Governance efforts.

To expedite the implementation of e-Government at the National, State, and Local levels, it is necessary to adopt a programme-based approach driven by a unified vision and strategy. This has been taken into account. This strategy has the potential to provide enormous cost savings via the pooling of core and support infrastructure, to facilitate interoperability through standards, and to provide people with a unified image of the government.

The National e-Governance Plan (NeGP) offers a comprehensive picture of e-Governance projects across the nation, unifying them into a unified vision and cause. Around this concept, a gigantic nationwide infrastructure that reaches even the most isolated communities is being developed, and large-scale digitalisation of documents is occurring to provide simple, dependable internet access. According to the NeGP Vision Statement, the ultimate goal is to bring government services closer to citizens.

“Make all government services available to the common man in his neighbourhood through common service delivery outlets, and maintain the efficiency, transparency,

and dependability of such services at cheap prices in order to meet the common man's fundamental necessities."

On May 18, 2006, the government adopted the National e-Government Plan (NeGP), which consists of 27 Mission Mode Projects and 8 components. Four projects - Health, Education, PDS, and Posts - were added to the list of 27 MMPs to 31 Mission Mode Projects in 2011. (MMPs). NeGP's vision, approach, strategy, main components, execution methodology, and management structure have been approved by the government. The acceptance of NeGP does not, however, entail financial approval for all Mission Mode Projects (MMPs) and subcomponents. Existing or current projects in the MMP category, undertaken by various Central Ministries, States, and State Departments, would be expanded and enhanced in accordance with NeGP's goals.

In order to promote e-Governance in a comprehensive way, several policy initiatives and projects have been launched to establish core and support infrastructure. State Data Centres (SDCs), State Wide Area Networks (S.W.A.N), Common Services Centres (CSCs), and middleware gateways, i.e., National e-Governance Service Delivery Gateway (NSDG), State e-Governance Service Delivery Gateway (SSDG), and Mobile e-Governance Service Delivery Gateway (MESDG), are the major core infrastructure components (MSDG).

Important support components include Core policies and standards on Security, Human Resources, Citizen Engagement, and Social Media, as well as Standards on Metadata, Interoperability, Enterprise Architecture, and Information Security, etc. New efforts include an authentication framework, e-Pramaan, and G-I cloud, an initiative that will ensure the benefits of cloud computing for e-Government programmes.

### 3.2.2 Digital India, Digital Divide, Common Service Centres

Connecting rural regions with high-speed internet networks is a preliminary step towards a digital India. On 2 July 2015, it was introduced for the first time by Prime Minister Shri Narendra Modi. Universal digital literacy, digital delivery of government services, and the development of a safe and robust digital infrastructure are its three important components.

In this age of digital advancement, the usage of technology in everyday life, from communication to transactions in retail outlets and government agencies, increases daily. It allows individuals to connect with one another and share information.

Shri Narendra Modi (Honourable Prime Minister of India) and Shri Ravi Shankar Prasad (Honourable Minister of Communications and IT Government of India) have expressed the following on digital India:

"e-Governance is fundamental to our vision of a Digital India; the more technology we incorporate into Governance, the better for India." Shri Narendra Modi, India's Honourable Prime Minister

"Digital India mostly serves the poor and disadvantaged. It aspires to bridge the gap between digital haves and have-nots through the use of technology for citizens." Shri Ravi Shankar Prasad, India's esteemed Minister of Communications and Information Technology

## Notes

Digital India is the government of India's dream initiative. The goal is to provide Indian residents with digital access to government services and to link rural areas to the internet so that people may take use of all government services and increase their digital literacy. The Indian government desires to engage digitally with the general population in order to digitally empower society.

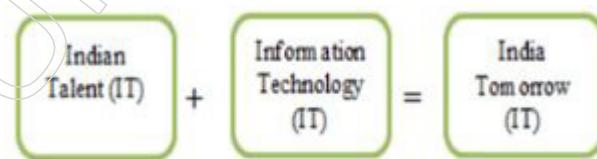
Currently, people are living in a digital era, and it is imperative that they embrace technology, since the world is becoming increasingly digital. Individuals should learn to use digital technology in their everyday lives, especially for communication, transactions, commerce, and other tasks. With the use of digital technology, individuals may perform everyday tasks and distribute information in a far more efficient and effective manner. Digital India is a word that speaks volumes about itself. The Digital India programme aims to convert India into a digitally empowered and knowledge-based nation.

### Digital India

As a concept, "Digital India" refers to whatever that is provided digitally via Information and Communication Technologies (ICTs) and contributes to the improvement of employment, economic growth, and productivity. The objective of this programme is to digitally empower India, hence the slogan "Digital India: Power to Empower."

It will be equipped to meet the nation's growing demand for electronic production on a large scale. Digital India is a connection between digital "haves" and "have-nots." It also assures that each and every Indian citizen has access to government services so that the country may attain sustainable growth. Three major visions and nine pillars are intended to be achieved by 2019.

The model of digital India is:



The goal of digital India is to consolidate and reorganise various current programmes. These plans must also be brought into focus and implemented in a coordinated manner. Numerous current programmes merely required process improvement, which has a lower cost effect. In this regard, DeitY has previously provided the "MyGov" platform to facilitate collaborative and participatory government.

Bharat Broadband Network Limited (BBNL) is a company responsible for implementing the National Optical Fibre Network project and constructing Digital India initiatives. BBNL placed an order with United Telecoms Limited to connect 250,000 villages via Gigabit Passive Optical Network (GPON) in order to validate Fibre to the Home (FTTH)-based broadband. It is anticipated that this fundamental step towards the realisation of the Digital India idea would be accomplished by 2017.



#### A. Vision of Digital India

Digital India comes with several visions, some of which are listed below:

- **Development of High Speed Secure and Strong Digital Infrastructure:** The objective of digital India is to provide a high-speed, secure internet connection so that all records, certifications, and other vital documents would be accessible via cloud computing, which must also be secure.
- **Convey All Government Services Through Technology Digitally on Demand:** In this concept, every government service and piece of information will be transmitted in real time over the internet. It will also facilitate the elimination of currency because all transactions would be digital.
- **Global Digital Literacy and Empowerment:** In accordance with this goal, all digital technologies will be accessible in Indian languages in addition to English, etc.

#### National Digital Communications Policy 2018

As the world entered the era of modern technological advancements in the Telecommunications Sector, such as 5G, IoT, M2M, etc., there was a need to introduce a 'customer-focused' and 'application-driven' policy for the Indian Telecom Sector, which can form the main pillar of Digital India by addressing emerging opportunities for expanding not only the availability of telecom services but also telecom-based services.

## Notes

Consequently, the new National Digital Communications Policy - 2018 has been established to meet the contemporary demands of India's digital communications industry.

### Objectives

The primary goals of the policy are:

- Broadband for everyone
- Adding four million employments to the Digital Communications industry
- Increasing the Digital Communications sector's contribution to 8% of India's GDP from 6% in 2017
- Moving India from position 134 in 2017 to position 50 on the ITU's ICT Development Index
- Strengthening India's participation in global value chains
- Guaranteeing Digital Independence

### Vision

To meet the information and communication needs of citizens and businesses through the establishment of a pervasive, resilient, secure, accessible, and cost-effective Digital Communications Infrastructure and Services; and in doing so, to support India's transition to a digitally empowered economy and society.

### Missions

In order to achieve these goals by 2022, the National Digital Communications Policy of 2018 outlines three Missions.

**Connect India:** Establishing a Solid Digital Communications Infrastructure To promote Broadband for All as a vehicle for socioeconomic growth, while assuring the quality of service and environmental sustainability.

**Propel India:** Enabling Next-Generation Technologies and Services through Investments, Innovation, and IPR To leverage the potential of new digital technologies, such as 5G, AI, IoT, Cloud, and Big Data, to allow the creation of future-ready goods and services; and to catalyse the fourth industrial revolution (Industry 4.0) by boosting investments, innovation, and intellectual property rights.

**Secure India:** Providing Digital Communications with Sovereignty, Safety, and Security To protect the interests of individuals and India's digital sovereignty by emphasising individual autonomy and choice, data ownership, privacy, and security, while recognising data as a vital economic resource.

### Features

The policy's goals are:

- Provide 50 Mbps of universal broadband connection to all citizens
- Provide connectivity of 1 Gbps to all Gram Panchayats by 2020, and 10 Gbps by 2022
- Ensure connection to all locations without coverage

**Notes**

- Attract 100 billion US dollars in investments in the digital communications sector
- Train one million individuals in New Age Skills
- Increase the number of linked IoT devices to five billion
- Establish a comprehensive data protection system for digital communications that protects individuals' privacy, autonomy, and freedom of choice
- Facilitate India's engagement in the digital economy globally
- Enforce responsibility through proper institutional procedures to guarantee the safety and well-being of the public
- Safe infrastructure and services for digital communications

**Strategy**

The policy's proponents:

- Creation of a National Fibre Authority to establish a National Digital Grid
- Establishing Common Service Ducts and utility corridors in all new city and interstate route construction
- Establishing a coordinated institutional structure between the Centre, the States, and Local Bodies for Common Rights of Way, cost standardisation, and timeframes
- Elimination of obstacles to approvals
- Facilitating the establishment of Next Generation Open Access Networks

**B. Pillars of Digital India**

Digital India is comprised of nine pillars that the government of India hopes to achieve. Each tablet The programme included the introduction of nine pillars of digital India by the Indian government. In recent years, the nation has been through a transformation, with new ideas and innovations becoming ubiquitous.

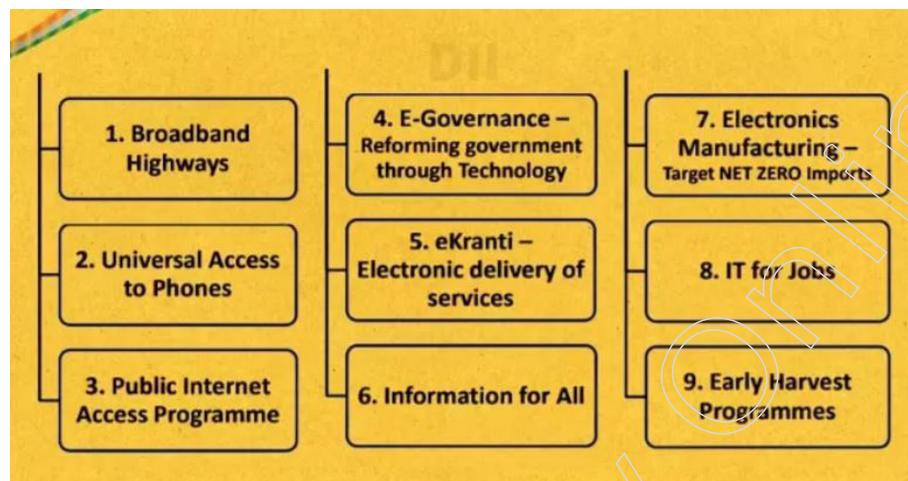
More or less, everyone is enjoying the benefits, whether it's about moving money or paying taxes. These nine pillars represent nine sectors that the government intends to advance through the project.

The Digital India Programme was created as a flagship initiative for the country's digitisation. It was intended to provide government services to the indigenous population and develop digital infrastructure throughout India. With the assistance of DeitY, the government has enhanced services across all of its departments (Electronics and Information Technology).

Additionally, the programme involves enhancing infrastructure in Indian communities and connecting them to the internet. Its purpose is to digitise and build India digitally. Therefore, we can now access numerous government services online and make online payments.

The Nine Pillars of Digital India Mission is implemented for a certain reason.

## Notes



In this initiative, the government has selected nine areas for growth and digitalisation. Today, the digital world is replete with new opportunities to increase the accessibility of government services.

Let's examine the nine pillars of the digital Bharat initiative...

### 1. Broadband Highways

One of the nine pillars of digital India, broadband highways aim to link rural regions to internet, increase broadband in urban areas, and create a national information infrastructure that connects India's digital infrastructure.

- **Rural:** For universal access to broadband in rural regions, optical fibre connections are being installed. It links 250,000 villages and continues to expand as part of the Bharat Net programme.
- **Urban:** The objective of this subcomponent is to enhance the quality of broadband connection in metropolitan areas. To execute this, the Indian government has issued licences to several service delivery companies or virtual network operators (virtual network operators).
- **NII:** National Information Infrastructure seeks to provide high-quality broadband services to government sectors, including education, health, finance, and more, in support of the digital India initiative.

### Universal Access to Mobile Connectivity in India

According to figures released by MeitY, there will be about 37,439 unconnected villages in India by February 2021. The programme aims to expand its internet coverage in Indian cities and villages.

- Rural areas are frequently underserved by mobile service providers. The limited participation of private sector telecommunications and internet service providers makes the digital India mission challenging in many regions of India.

### Public Internet Access Programme in India

The public Internet Access programme is one of the nine pillars of the digital India mission's most major projects. It would empower every individual by making digitally accessible services available to them.

- The post office has existed for centuries and is currently expanding to meet the demands of Indian inhabitants in their daily lives. Post Offices and CSCs (Common Service Centers) act as multi-centers so that citizens may rapidly acquire all government e-services.
- DeitY has established Common Service Centers and expanded its reach to every Indian community.
- The successor to the CSC, CSC 2.0, was introduced in 2015 to broaden its reach to all gramme panchayats in India. Now we have CSC 3.0 DSP (District Wise Service Provider).
- The overall number of CSC centres has reached 43 million in 2021.

#### e-Governance: Reforming Government through Technology Under Digital India Programme



- Departments and ministries are utilising IT to improve the delivery of government services in government departments.
- Digitising government through the introduction of technology and rules such as an online application and tracking system, simplified forms with fewer fields, and the mandate for online documentation.
- To make the accessibility of documents simple and secure. The Indian government is enforcing the use of open API for data entry, the usage of UIDI systems such as Adhaar for identity, and the availability of all datasets in electronic format.
- IT is required for data automation in order to tackle frequent problems caused by a poor infrastructure.

#### e-Kranti – Electronic Delivery of Services

- The objective of e-Kranti is to transform the manner in which citizens interact with government services by guaranteeing that all services may be delivered online.
- The digitalisation of the delivery of government services is now more efficient, transparent, and dependable.
- e-Kranti is one of the nine fundamental pillars of digital India.
- The mission encourages new technologies in order to increase the efficiency of government e-services.

## Notes

### Information for All

Under the 9 pillars of digital India, the mission “Information for all” breaks down barriers between government services and Indian residents to close the communication gap. With only a few clicks or taps on their smartphone displays, individuals may now get everything they require in a one location.

- The government employs a variety of internet venues to inform Indian residents about services and activities. Suppose, for instance, that you are active on Twitter and follow government entities. In this situation, you will receive the majority of updates straight from them, without having to visit their website or obtain physical confirmation.
- The government distributes information via e-mail, Telegram, and text messaging in addition to social media sites.
- Online document and information hosting It is essential that everyone has access to the vast amount of knowledge available on the Internet nowadays. Hosting papers and data online will facilitate citizens' access to open-source information and facilitate their pursuit of the truth.

### Electronics Manufacturing is Empowering India

Imagine a future where you could produce your own goods without importing them from abroad. This pillar focuses on increasing domestic Electronics Manufacturing with the goal of achieving net-zero imports.

The seventh component of the nine pillars of digital India, electronics manufacture in India and zero import, is a tough endeavour to achieve in India. Incentives, taxation, the elimination of cost disadvantages, and economies of scale for the benefit of local producers are among the steps that must be taken for the plan to be effective.

Coordination of action on the development of talents, PhDs, consumer electronics, smart electric metres, smart cards, incubators, and medical electronics, among other topics.

To meet the objective, existing programmes and structures are being upgraded.

### IT for Jobs in India Under 9 Pillars of Digital India

India's IT industry has been expanding at a fast rate. The purpose of this pillar is to empower India's young. It has been accumulating resources to teach them in the IT field so they may find employment in this booming industry.

- It focuses on training individuals in small towns and villages for the IT industry. Previously, it had sought to teach one billion students over the course of five years to assist them find employment in the IT industry.
- It is digitising the North-Eastern Indian states by establishing BPOs and delivering ICT-enabled growth services. ICT-enabled services can be electronically facilitated, consumed, reviewed, and supplied.
- The organisation is educating three million service delivery agents.
- Ability development for 5 million rural TSPs

### Early Harvest Programmes



Notes

These one of the nine pillars of digital India strives to strengthen the technological infrastructure somewhat. The pillar focuses on achieving the digital India objective by enhancing and supplying facilities to diverse regions of India.

- DeitY has created a programme to manage elected officials and government staff.
- School e-book service,
- E-Greetings began operations on August 14, 2014
- Central and state government efforts for biometric attendance portals.
- WIFI is available at NKN (National Knowledge Network) universities.
- Secure e-mail facility under all government ministries,
- Real-time gateway for missing and recovered children

### C. Services of Digital India

The digital India initiative offers several services, including e-education, e-health, Digital Locker, e-sign, and a national scholarship portal. Keeping in mind the adage that a well-connected nation is a well-served one, a concept is conceived to digitally link the most distant villages in India. When individuals connect digitally through broadband and high-speed internet, items are easily accessible, government services benefit residents, and the act of adding financial services may be realised.

#### Advantages Of Digital India

Digital connectedness is an emerging notion for connecting with individuals across demographic and socioeconomic categories. The Digital India initiative promises to transform India into a digitally empowered nation by stressing digital literacy, supplying digital resources, and integrating digital platforms.

A commitment of the Digital India initiative is to make digital resources accessible to Indians. For instance, the initiative aims to make phones, tablets, and laptops accessible to persons with partial or total vision or hearing impairments, learning or cognitive difficulties, or physical limitations, etc.

**e-Saadhyā:** Adaptable e-Learning Accessibility Model for the Disabled has been adopted by CDAC Bangalore and CDAC Hyderabad. It is a framework for the teaching of children with autism and minor mental disability. The Indian government intends to create

## Notes

28,000 BPO jobs in various states and one Common Service Center (CSC) in each gramme panchayat. India is viewed as the digital generation's protest against old customs.

To create a new India that is a digitally empowered knowledge economy, the objective of digital India is to revolutionise the travel routes of both rural and urban India and to have a profound impact on the life of every individual.

E-education plays a vital part in the development of rural communities in the contemporary environment. In India, 6.5% of the population is digitally literate, while 20.83 % of the population has access to the internet. After the establishment of Digital India, high-speed networks will bring Internet access and mobile commerce to the people.

In addition to rural areas, healthcare services and educational facilities are continuously advancing. It also gives a platform (E-farming) for Indian farmers to pick the best crop according to weather, plant protection, and marketing information, etc. In addition, there are other additional services that benefit Indian society.

### India Ready for Digital

Upon the launch of the Digital India campaign, a number of firms, including BSNL, Reliance Ltd., and others, stepped up to provide significant support. These groups are expanding Internet access to India's rural communities. It is anticipated that by 2018, more than 4,200 villages in India would have access to high-speed Internet.

By attaching their bank account number to their AADHAR card, engaging in digital transactions, utilising mobile applications for government services, etc., Indian residents are expected to join in this activity furthering the digital India idea.

As the revolution demonstrates, India is now prepared to become Digital India. As announced in India's 2016 union budget, eleven technologies have been introduced, including the creation of opportunities for IT firms and the use of data analytics to catch tax evaders. The objective of digital literacy is to reach over six billion rural families, and it is meant to connect 550 various farmer marketplaces in India utilising the digitalised India idea.

Digitized India's numerous plans and initiatives, as well as their implementation, ensure that India will be fully digital over the next few years.

The introduction of the concept of Digital India is the first step towards a radical and far-reaching shift in the methods used to create a new India in which residents are digitally empowered and economically prosperous. The Digital India initiative will contribute to the development of employment and the expansion of the Indian economy's economic sector.

It provides digital literacy and enhances technological understanding in both rural and urban settings. If a consistent and trustworthy strategy is taken to this initiative, it will certainly precede India's transformation into the Digital India. And the growth obtained will assist India in becoming a developed nation as opposed to a developing nation.

### Challenges of Digital India

The Digital India Mission is an endeavour by the Indian government to link the country's rural areas to high-speed internet networks. In addition to the numerous initiatives undertaken by Digital India, it faces a number of obstacles.

Listed below are some of the difficulties and pitfalls of Digital Mission:

- The daily internet speed and Wi-Fi hotspots are slower than in other wealthy countries.
- The majority of small and medium-sized businesses struggle greatly to adapt to new technologies.
- Entry-level cell phones have limited internet connectivity capabilities.
- Skilled labour shortage in the sector of digital technology.
- To recruit about one million cybersecurity specialists to combat and monitor the rising threat of cybercrime.
- Inadequate user education.

### Digital India Initiatives

Numerous activities have been undertaken by the government under the Digital India programme. Listed below are a handful of these crucial initiatives:

- **DigiLockers** – This flagship effort strives for ‘Digital Empowerment’ of the citizen by enabling digital document wallet access to authentic digital documents.
- **e-Hospitals** – It is a Hospital Management Information System (HMIS) that provides a single digital platform for linking patients, hospitals, and physicians. Under the Digital India initiative, 420 e-Hospitals have been constructed by February 2021.
- **e-Pathshala** – Through its website and mobile app, e-Pathshala presents and distributes all educational e-resources, including textbooks, audio, video, magazines, and a range of other print and non-print materials.
- **BHIM** – Using Unified Payments Interface, Bharat Interface for Money is an application that makes payment transactions simple, straightforward, and rapid (UPI)

### Impact of Digital India Campaign

Since its inception in 2015, the Digital India initiative has had an effect on a number of fields:

- Approximately 12000 rural post office branches have been electronically networked.
- The Make in India programme has enhanced India’s electronic manufacturing industry.
- By 2025, the Digital India strategy may increase GDP by up to \$3 trillion.
- The healthcare and education sectors have also witnessed growth.
- Improvements in web infrastructure will boost the nation’s economy.

### Digital Divide

The expansion of digital technology has been accompanied by a rise in concerns around unequal access to and knowledge of the technology. Consequently, it is essential to comprehend the idea of the digital divide. According to the OECD,

## Notes

the digital divide is “the difference between individuals, families, enterprises, and geographic regions with varying socio-economic levels in terms of their access to information and communication technologies (ICTs) and their usage of the internet for a wide range of activities.”

It represents numerous variances between and between nations. Singh adds to this description, “[it] is not only about those who have access and those who do not; it is not only about the haves and the have-nots. It is about people becoming knowers and non-knowers, doers and non-doers, communicators with the rest of the world and non-communicators.” The digital divide is viewed from two distinct theoretical approaches.

The technological diffusion normalisation model predicts that, although technological expansion may be gradual at first, it will eventually follow a normalisation route and ICTs will become pervasive across all nations and social strata.

In contrast, the stratification model of technology diffusion postulates that privileged social groups and wealthy nations would keep their advantage in the digital economy even as digital use expands globally, hence sustaining digital inequities. Amina Mohammed, Deputy Secretary-General of the United Nations, has asserted that the digital gap has the potential to become the “new face of inequality.”

The digital gap poses the greatest risk of worsening disparities in the least developed nations, which have been unable to acquire technology capacities and are falling behind. In a rapidly digitising society, the rising digital gap in access to and usage of technology requires urgent attention.

Consequently, it is essential to focus on the “access” and “use” components of the digital divide concept. The availability of digital technology infrastructure alone is insufficient to bridge the digital divide without also addressing concerns of access and use.

**Digital Divide** is the disparity between people who have frequent, effective access to digital technology and the internet and those who do not. The purpose of this essay is to provide applicants with an up-to-date understanding of the digital gap in India and the global digital divide.

With the advent of digitalisation, the Internet has become a crucial medium of communication and information gathering. This is evidenced by the fact that during a worldwide pandemic such as COVID-19, administrative help for the affected population was provided successfully using digital channels.

In public health programmes, digital assistance such as a hotline number or the Arogya Setu app was beneficial. During this global crisis, access to digital technology emerged as a potent resource for millions of individuals.

Despite the fact that the usage and significance of Information and Communication Technologies (ICTs) are growing exponentially, the digital divide persists at an alarming rate.

### Types of Digital Divide In India

The Digital Divide, sometimes known as the digital divide, is a societal issue that refers to the disparity between those who have access to contemporary information and communication technologies and those who do not.

It depicts the inequalities between populations and areas with diverse social, economic, or other characteristics regarding Internet and communication technology usage.

The digital gap can occur between rural and urban residents, between the educated and uneducated, between economic strata, and, on a global scale, between industrially developed and underdeveloped nations.

Access to Information and Communication Technologies is impacted by several forms of digital divide.

Among the most glaring examples of digital inequality are:

- **Gender Divide** – The gender disparity on the Internet is particularly evident in poorer nations. Although mobile connection is rapidly expanding, it is not expanding uniformly. Women are still trailing. Studies reveal that Indian women are 15 percent less likely than males to own a cell phone. Even among women who possess cell phones, the majority lack internet connectivity.
- **Social Digital Divide** – Internet access facilitates the formation of relationships and social circles among individuals with similar interests. Social media platforms such as Twitter, Facebook, etc. facilitate the formation of online peer groups with shared interests. Those who are connected to the internet and those who are not have become socially stratified as a result of Internet usage. Non-connected groups are marginalised since they do not receive the same benefits as linked groups.
- **Access Digital Divide** – Lack of communications infrastructure with sufficient, dependable bandwidth, excessive cost, and inability to acquire or rent the necessary equipment are the primary obstacles under this topic. Consequently, they lack access to technology.
- **Other Digital Divide** – This involves disparities in the use of digital technologies due to a lack of ICTs expertise or assistance, physical impairment, or cultural and behavioural attitudes towards technology.

### Digital Divide in India

Despite the surge in mobile phone consumers in India over the past few years, the digital divide still remains. Several aspects are as follows:

1. **The Urban-Rural Divide** – During the shutdown, the digital divide between India's rural and urban areas was emphasised not only in the education sector, but everywhere, including telemedicine, e-commerce, banking, and e-Governance, all of which became available exclusively via the internet.

Services such as online classrooms, financial transactions, and e-Governance need internet connectivity and the use of internet-enabled devices such as smartphones, tablets, and PCs.

- According to the NSO data, the majority of internet-capable residences are situated in urban areas, where 42% of households have internet connection. However, just 15% of people in rural India are linked to the internet.

In India, barely one in ten homes own a computer - desktop, laptop, or tablet. Nearly a quarter of all households have Internet connection via a fixed or mobile device.

## Notes

- The digital gap between urban and rural areas is clear from the country's internet penetration rate. Even in states with software centres such as Karnataka and Tamil Nadu, according to the NSO, Internet penetration is less than 20%.
- According to a study by the Telecom Regulatory Authority of India (TRAI), India's total internet density in 2018 was around 49 percent. 25 percent lived in rural regions, while 98 percent resided in metropolitan areas. According to the most recent estimate by the Telecom Regulatory Authority of India (TRAI), the country has more than 1,160 million cellular customers in February 2020, up from 1,010 million in February 2016. It indicates an increase of 74 million urban users (from 579 million to 643 million) and 86 million rural members (from 431 million to 517 million). This demonstrated an increase in fundamental telecom infrastructure, not digital development.

2. **Gender Digital Inequalities** – India has one of the largest gender inequalities in access to digital technologies worldwide. In India, just 21% of women are mobile internet users, compared to 42% of males, according to the GSMA's 2020 mobile gender gap study. The survey indicates that while 79% of males in India own a cell phone, just 63% of women do.

There are economic impediments to girls possessing a cell phone or laptop, but cultural and social conventions play a significant role as well. The gender gap in mobile use frequently exacerbates existing inequities for women, such as information access, economic opportunity, and networking.

3. **Regional Digital Divide and Intra-State Digital inequality** – States' matrices differ too considerably in terms of the number of individuals who have access to computers and Internet-use skills. The South has a greater digital literacy rate than the North. Kerala is the state with the smallest disparity between rural and urban regions.

The state with the most computers in urban areas is Uttarakhand, whereas Kerala has the most computers in rural regions. Himachal Pradesh tops the nation in both rural and urban internet accessibility. While 55% of residences in the nation's capital have Internet connectivity, barely one in ten homes in Odisha have access to the web.

4. **Talking about Intra-State Divide** – While metropolitan areas have more digital literacy, their rural counterparts in the respective states remain deficient. More than 39% of the poorest rural houses in Kerala have Internet connection, compared to 67% of the richest urban homes, but Assam has the most remarkable inequality, with nearly 80% of the richest urban homes having Internet access and 94% of the poorest rural homes in the state lacking access.

5. **Disparity Due to Literacy/Digital Literacy:** Access to the Internet does not ensure that it can be utilised. Twenty percent of Indians over the age of five possessed basic digital literacy. Just 40% of those between the ages of 15 and 29, which includes all high school and college students and young parents responsible for educating younger children. More than one-fifth of Indians older than seven cannot read or write in any language.

Literacy rates have grown from 71.7% to 77.7% over the past decade, with the greatest advances occurring among rural women. A division of literacy rates by state also yields unexpected results. Andhra Pradesh has the lowest literacy percentage in

the country, at 66.4%, much lower than less developed states such as Chhattisgarh (77.3%), Jharkhand (74.3%), Uttar Pradesh (73%) and Bihar (70%). The literacy rate of Kerala is 96.2%, followed by three northern states: Delhi (88.7%), Uttarakhand (87.6%), and Himachal Pradesh (86.2%).

6. **Linguistic Digital Divide:** Since more than 80 percent of the information on the Internet is in English, states where the population is more proficient in English are more technologically savvy.

### Effects and Implications Digital Divide in India

1. Educational: The digital gap in India will hinder the learning and development of youngsters. Explore the topic of Digital Education in India.
2. Without Internet access, Students cannot develop the necessary technological abilities.
3. Social: Internet penetration is correlated with a nation's stronger socioeconomic advancement. Thus, the digital divide undermines the social development of a nation. Due to the digital gap in India, rural populations are suffering from a lack of knowledge, which will only exacerbate the vicious cycle of poverty, deprivation, and backwardness.
4. Political: Without internet access, political empowerment and mobilisation are challenging in the age of social media.
5. Economic: The digital gap will exacerbate the disparity between those who can afford technology and those who cannot.
6. Governance: Digital connectivity is necessary for both transparency and accountability. The digital gap has a detrimental impact on e-Government activities. Learn about e-Governance and its relevance through the link provided.

### Government Initiative to Bridge Digital Divide in India

To address India's Digital Divide, the Indian government is taking substantial strides towards obtaining information and technological expertise.

1. **Digital India Initiatives** by The government will increase internet connectivity throughout the nation. Learn about Digital India on the website provided. Several efforts under this umbrella include—
  - In 2011, the BharatNet project was initiated to connect 0.25 million panchayats with optical fibre (100 MBPS) to India's communities.
  - The government rolled out the National Digital Literacy Mission and the Digital Saksharta Abhiyan in 2014.
  - In 2015, the government announced many programmes as part of its Digital India initiative to link the whole nation.
  - The PM Gramin Digital Saksharta Abhiyan, started in 2017, aims to introduce digital literacy to 60 million rural Indian families.
2. **Digital Literacy**, Article 21 of the Indian Constitution guarantees the right to privacy and the right to education, and the Supreme Court of India has proclaimed Internet access to be a basic right. Access the Right to Education Act (RTE).

## Notes

3. **National Education Policy, 2020-** Aims to make “India a worldwide knowledge superpower” by bringing many improvements to the Indian education system from the elementary to college levels, with a focus on digital education. Learn more about New Education Policy on the page provided.
4. **Internet Saathi Program –** 2015 marked the inauguration of the Internet Saathi Program by Google India and Tata Trusts. This project’s objective is to promote digital literacy among rural Indian women.
5. **Optical Fibre Network (NOF-N),** A project designed to provide broadband access to over two hundred thousand (200,000) gramme panchayats in India.
6. **DIKSHA (Digital Infrastructure for Knowledge Sharing) platform-** Launched in September 2017, DIKSHA is the nationwide platform for K-12 school education open to all states and the federal government. As part of Aatmanirbhar Bharat’s Atma eVidya initiative, DIKSHA is the “one country, one digital platform” for school education in India.
7. **Unnati Project –** The Hindustan Petroleum Corporation Limited (HPCL) aims to bridge the digital gap in schools by providing computer instruction to rural kids from disadvantaged economic and social backgrounds.
8. **Gyandoot:** In January 2000, the Dhar district of Madhya Pradesh launched an Intranet-based Government to Citizen (G2C) service delivery programme with the dual goals of delivering pertinent information to the rural populace and serving as a liaison between the district government and the people.
9. **Digital Mobile Library:** The government of India, in conjunction with the Centre for Advanced Computing (C-DAC) in Pune, is working to bridge the digital gap in a more significant way.
10. **Online Massive Open Online Course MOOC:** On the SWAYAM site, courses pertaining to NIOS (grades 9 to 12 of open schooling) have been posted; around 92 courses have begun, and 1.5 crore students have enrolled. Learn about SWAYAM Scheme on the page referenced here.
11. **On Air Shiksha Vani,** DAISY by NIOS for children with disabilities, e-Pathshala-Radio broadcasting for children in distant places who are not online (especially for grades 1 to 5).
12. **e-pathshala:** Providing pupils in rural and urban areas with learning resources.

### Way Forward – Digital Divide

1. **Infrastructure development:** Under Aatmanirbhar Abhiyan, the promotion of indigenous Information and Communication Technology development may play a key role. The objective is to promote inexpensive mobile phones; we should investigate migration to new technologies such as 5G. It would resolve a portion of the bandwidth issues.  
The emergence of market rivalry amongst service providers may result in cheaper services. It is necessary to investigate efficient spectrum allocation in big contiguous blocks.
2. **Promoting Digital Literacy:** Digital literacy requires special attention in schools and colleges. The National Digital Literacy Mission should prioritise implementing digital

**Notes**

literacy at the elementary school level in all government schools for basic material, and at the secondary school and college levels for advanced subject.

In addition to increasing the nation's adoption of computer hardware, a growth in digital literacy will lead to a rise in the use of computer hardware. In addition, when these students teach their family members, multiplier effects will result.

- 3. Promotion of Regional Language:** State governments should devote special attention to the production of material in the regional languages of India, especially regarding government services. It is necessary to develop natural language processing (NLP) in Indian languages.
- 4. TRAI** should contemplate implementing a trustworthy system. This system will monitor call dropouts, signal degradation, and outages. It guarantees the reliability and quality of telecom services.
- 5. Cyber Security:** MeitY must develop a comprehensive cyber-security framework for data protection, secure digital transactions, and complaint resolution. Follow the linked link to learn more about Cyber Security.
- 6. Telecom ombudsman:** The government should select people and establish a telecom ombudsman to address complaints.
- 7. Role of regulators:** By revising licencing, taxes, and spectrum distribution regulations, regulators could reduce entry obstacles.

### **Common Service Centres (CSC)**

The Common Services Centre programme is an initiative of the Indian Ministry of Electronics and Information Technology (MeitY). CSCs provide rural and urban Indians with simple access to a variety of digital services, therefore helping to a financially and digitally inclusive society. In India's rural areas, CSCs are not just service delivery hubs, but also agents of change, supporting rural entrepreneurship and enhancing rural capabilities and livelihoods.

Incorporated under the Companies Act of 1956, CSC e-Governance Services India Limited offers a centralised collaborative framework for the delivery of services to residents through CSCs, as well as assuring the scheme's systematic viability and sustainability.

The CSCs provide web-enabled e-Governance services in rural regions, including as applications for Passport, PAN CARD, Aadhaar, Voter ID, Ration Card, etc., different Government certifications, and utility bill payments for power, telephone, and water. Through CSCs, individuals have access to high-quality, cost-effective video, audio, and data content and services in the fields of e-Governance, education, health, telemedicine, telelaw, entertainment, and other private services.

#### **A. GST Services in India**

##### **GST – Goods And Services Tax**

Products and Services Tax, or GST for short, is a sort of indirect tax imposed on goods and services primarily marketed for domestic consumption. This system levies tax on the final customer. In reality, the majority of nations use the GST.

## Notes

### 1. Mechanism of GST

- a. GST Addition
- b. Payment
- c. Remittance
  - ◆ GST Addition: A firm determines the GST, adds it to the cost of the goods, and finalises the pricing.
  - ◆ Payment: The price is paid by the buyer who purchases the goods.
  - ◆ Remittance: After receiving payment, the business sends the GST amount to the government.

### 2. GST in India

India enacted the Products and Services Tax (GST) on July 1, 2017; GST is a sort of destination-based consumption tax that applies to specific goods and services. Except for a few state and government levies, the GST is India's principal form of taxation.

In addition to unifying taxation across the nation, the adoption of GST is projected to lessen the tax burden. In the framework of the goods and services tax, an apex committee chaired by the Union Finance Minister that meets to approve, regulate, and direct.

### 3. Types of GST

- **CGST (Central Goods and Services Tax)**

CGST is the variant of the Goods and Services Tax (GST) in which the federal government imposes a tax on intrastate sales of goods and services.

- **SGST (State Goods and Services Tax)**

SGST is a variant of GST in which state governments impose a tax on interstate sales of goods and services.

- **UTGST (Union Territory Goods and Services Tax)**

UTGST is a kind of GST in which the governments of union territories impose a tax on the supply of goods and services.

- **IGST (Integrated Goods and Service Tax)**

IGST is the form of the Goods and Services Tax imposed on interstate sales of goods and services. It is collected largely by the federal government, with the state governments receiving their part thereafter.

### 4. GSTIN: The GSTIN is a unique number of fifteen digits provided for the purpose of identifying persons registered under GST.

### Structure of GSTIN:

Digit	Details
1-2	State Code
3-12	PAN Number
13th	No: of registration done with the PAN in the state
14th	Alphabet “z” by default
15th	Check Code

**Notes**

### 5. Documents Required

- Aadhaar Card
- PAN Card

### 6. GST Registration

- Official GST portal
- >Services, under the services tab
- >Registration > New Registration.
- On the Registration page, enter all requested details.
- Click Proceed, after entering the details.
- Then provide the two OTPs received on the email and mobile.
- A 15-digit Temporary Reference Number (TRN) will be delivered to the email and cell number registered. Within the following 15 days, the TRN will be required to finish the completion of part-B details.
- Then visit the GST portal. > New Registration
- Opt for Temporary Reference Number (TRN). Enter the TRN and Proceed.
- Enter the OTP received and then Proceed
- The Application will be displayed.

### 7. Fees

Nonetheless, the government does not impose a fee for GST registration; however, service fees may apply when using service centres.

8. Mandatory Registration Applicable to everyone.
9. Every Supplier; having an aggregate turnover of Rs.20 lakh, Rs.10 lakh for business in Assam, Arunachal Pradesh, Himachal Pradesh, Manipur, Mizoram, Meghalaya, Sikkim, Uttarakhand, Nagaland or Tripura)
10. Inter-state suppliers with a combined annual revenue of Rs.20 lakh, or Rs.10 lakh for special category states, excluding Jammu and Kashmir, on an all-India basis.
11. A person who receives supplies that are taxed on a reverse charge basis for the receiver
12. Taxable person who intends to make a supply but does not have a fixed place of business in the state or territory. Casual Taxable Persons engaged in the supply of selected handcrafted items are eligible for a Rs. 20 Lakh exemption threshold.

## Notes

13. Taxable non-residents who lack a designated location of business in India.
14. An Agent who makes taxable supply on behalf of another taxable person.
15. E-commerce Establishment Operators, who support the providers' supply by providing a platform.
16. Supplier, of products who provide through e-commerce businesses which are obligated to collect tax at source. Persons delivering services through e-commerce enterprises should not seek immediate registration as they are allowed to utilise the threshold exemption of Rs.20 lakh.
17. Those e-commerce businesses that are required to pay GST pursuant to Section 9(5) of the CGST Act of 2017.
18. TDS Diductor.
19. Input Service Distributor (ISD).
20. Entity providing online information and database access or retrieval services to an unregistered individual in India from outside India.
21. Cancellation of Registration.

The GST law specifies two instances in which a Registration can be cancelled;

- i. **Voluntary Cancellation:** when the registrant is no longer required.
- ii. **Suo-motu Cancellation:** when a proper authority determines that the registration is subject to cancellation due to certain pre-defined defaults, such as when the registrant ceases to do business from the registered place of business or when he prepares tax invoices without providing the products or services.

### 22. Revocation of Cancellation

If the registration is cancelled by Suo-motu, a taxable person may ask the officer to override the cancellation order he issued within 30 days after service cancellation. However, prior to doing so, the individual must rectify the defaults by completing any delinquent tax returns, paying all outstanding debts, etc., for which the officer previously terminated the individual's registration.

If satisfied, the officer will disregard the prior cancellation order he issued. If the officer decides to deny the request for revocation of cancellation, he will notify the applicant that he wishes to be heard on the matter.

## B. Passport Registration in India

A passport is a legal document or certification issued by a government or other entity with the ability to do so. A valid passport is typically used as a travel document while visiting foreign countries. The holder of a valid passport is entitled to protection in other countries as well as to be returned to the country that issued the passport.

A passport is also used to determine a person's nationality. The passport has a photograph in addition to information such as name (complete), date of birth, gender, residence, validity, etc.

The Ministry of External Affairs of the Government of India grants Indian passports to Indian citizens for overseas travel. The Passports Act (1967) facilitates foreign travel and acts as confirmation of Indian citizenship for passport holders.

The Passport Seva (Passport Service), a division of the Consular, Passport and Visa (CPV) Division of the Government of India's Ministry of External Affairs, is responsible for granting passports on demand to all eligible Indian nationals. There are around 93 passport offices in India and approximately 197 diplomatic posts overseas.

### Types of Passports

1. **Ordinary Passport (dark blue):** The most common type of passport granted to citizens for travel purposes such as vacations, business trips, studies, etc. It falls under Type P Passport, where "P" stands for personal.
  2. **Official Passport (white):** Service passport is another name for an official passport. This type of passport is provided to government officials and their accompanying family for travel relevant to their employment. It is a Type S Passport, where "S" implies service.
  3. **Diplomatic Passport (maroon):** Diplomatic passports are granted to individuals with diplomatic status, such as members of parliament, members of the Union Council, high-ranking officials, etc. This sort of passport entitles its possessor to specific benefits, such as tax exemption.
3. **FSSAI Registrations in India:**

### Food Safety and Standards Authority Of India (FSSAI)

Food safety and standards authority of India is abbreviated as FSSAI. FSSAI was established to develop standards for food products and to control food production operations. Consequently, guaranteeing the supply of safe and nutritious food for human consumption.

### Purpose OF FSSAI

The Food Safety and Standards Authority of India (FSSAI) was founded to boost the efficacy and reduce the complexity of food registration and regulation in India. As time progressed, it became evident that a governing organisation was required to control food safety across the nation, as the existing norms were extremely disorganised.

As a result of the decentralisation of authority to numerous agencies across the nation, the management of food safety rules in the country became very challenging. FSSAI was established as a solution and to improve service. Obtaining an FSSAI licence is now required for everybody in the food sector.

### Who Needs Registration

- Restaurants
- Online Food Selling Firms
- Hotel Cum Restaurant
- Club

## Notes

- Canteen/Cafeteria
- Hawker
- food truck
- DHABAs
- Food Vending Agencies
- Home Based Canteen/ Tiffin Service
- Food Stalls-(religious gatherings, fairs, etc.)
- Stall Holders-Permanent/ Temporary
- Food Item Wholesalers/ Retailers
- Food Item Manufacturers/ Storage Services/ Distributors or Suppliers/ Marketer
- Petty Retailer of Snacks/ Teashop

### 4. MSME Registration in India

Typical Service Centres Provide MSME Registration Services with Ease, connect with your local CSC for further details. Here it is:

Micro, Small, and Medium-Sized Businesses are abbreviated as MSMEs. According to the quantity of investments made in plant and machinery or equipment, businesses are categorised.

### 5. Trademark Registration in India:

#### Trade Mark

Trade Mark refers to a mark that is used to differentiate a company's product or service from similar things on the market. One can secure a trademark for a name, tagline, logo, pattern, package design, etc. Trademarks assist businesses in securing and protecting their product/service rights.

#### Registerable Trade Marks In India

Product Mark	To secure the right on product
Service Mark	To secure the right on services
Certification Mark	Claimed at satisfying a specified criterion
Collective Mark	When there exists a group of owners/ partners
Word Mark	To secure the right on specific words
Sound Trademark	To secure the right on specific sounds
Shapes and Packing Trademark	To secure the right on the shape and packing
Colour Trademark	To secure the right on the colour of a specific product

### Registered /Unregistered Trade Mark

Types	REGISTERED	UNREGISTERED
DEFINITION	Officially registered trademarks that contain specific legal rights and whose use is restricted to the owner by law.	The form of trademark that is not registered but falls under common law protection.
SYMBOL	®	™

Notes

### 6. Driving Licence in India:

Common Service Centres offer services pertaining to the Driver's License, including Registration, Renewal, Fee Payment, Test Scheduling, etc.

Driving Licence: A driver's licence is a legal document that authorises an individual to operate a motor vehicle on public roads.

#### Types

- Learner's Licence: The principal form of licence issued for operating a motorcycle without gears (Usually under 50cc).
- Permanent Licence: The permit to operate a motor vehicle that is not a transport vehicle, such as a motorcycle with gears or a light motor vehicle.
- Transport Vehicles licence: The permit issued for operating a motor vehicle.
- International Driving Permit: The permission provided to an Indian resident who possesses a valid Indian License.

#### Class of Vehicle:

- MOTOR CYCLE LESS THAN 50CC (MC50CC)
- Motor cycle without Gear (Non-Transport) (MCWOG)
- Motor Cycle with Gear (Non-Transport) (MCWG)
- LIGHT MOTOR VEHICLE (LMV)
- LMV -3-Wheeler NT (3W-NT)
- LMV-Tractor-NT (TRCTOR)
- Adapted Vehicle (ADPVEH)
- Road Roller (RDRLR)
- Loader/Excavator (LDRXCV)
- Cranes (CRANE)
- ForkliftT (FLIFT)
- Boring Rigg (BRIGS)
- Construction Equipment's (CNEQP)
- Adapted Vehicle-2 (ADPVH2)
- Adapted Vehicle-3 (ADPVH3)
- E-CART (eCART)
- E-RICKSHAW (eRIKSH)

## Notes

- Harvester (HARVST)
- Trailers (TRAILR)
- Agriculture Tractor and Power Tiller (AGRTLR)
- Tow Trucks (TOWTRK)
- Breakdown Van and Recovery Van (BRKREC)

### Duplicate Licence

If the licence is damaged, ripped, destroyed, lost, or fully written off, and if the photo on the licence must be changed, a replacement licence will be provided.

### Renewal Of Licence

To maintain its validity, a licence must be renewed 30 days before to its expiration date or within 30 days of its expiration date.

- Renewal applications must be received at least one month before the licence expiration date.
- If the application is submitted more than five years after the license's expiration date, the applicant must complete all processes necessary to get a new licence.
- If the renewal application is submitted within 30 days of the expiration date of the licence, it will be renewed as of the expiration date.
- If the application is filed more than 30 days after the expiration date of the licence, the renewal will begin on the day the right application is received. A charge of Rs. 30/- will be collected.

### 8. PANCARD Services in India:

PAN is an abbreviation for Permanent Account Number, which is a 10-digit alphanumeric identifier used to identify a business. The Income Tax Department of India is responsible for providing PAN in India, which is printed on a card and is hence referred to as a PAN Card. Although the card is primarily used for tax purposes, it also functions as a picture identification card.

#### Types of PANCARD:

PAN cards are classified according to the type of the organisations they represent. The fourth letter of a PAN identifies the sort of entity it represents, as seen below.

Alphabet	Entity	Alphabet	Entity
A	Association of persons-AOP	H	HUF (Hindu undivided family)
B	Body of individuals-BOI	L	Local authority
C	Company	J	Artificial juridical person
F	Firm	P	Person (Individual)
G	Government	T	Trust (AOP)

## 8. Recharge and Bill Payments in India:

CSCs provide the majority of services linked with a citizen's everyday routine, such as Recharge services and Bill payments, etc.

Common Services Centres (CSCs) are a federal government effort designed to act as entry hubs for the delivery of various electronic services to villages in India, therefore encouraging a digitally and financially inclusive society in every sector.

CSCs provide the majority of the numerous services associated with a citizen's everyday routine, such as Recharging and Bill Payments.

CSCs – Common Service Centres – are nearly overflowing with clients seeking assistance with Recharging, Bill Payment, etc. Obtaining these services is as simple as visiting your local CSC. Other Services available at CSCs:

### #AADHAAR SERVICES

- Aadhaar Enrolment
- Aadhaar Updating
- Aadhaar Correction
- Order PVC

### #PAN- (Permanent Account Number) SERVICES

- PAN Enrolment
- PAN Updating/ Correction

### #VOTER ID SERVICES

- Voter Enrolment

### #PASSPORT

- Fresh Issue REGISTRATION
- Renewal REGISTRATION

### #JOB REGISTRATION

- Employment Registration
- State Public Service Commission Registration
- Union Public Services Commission Registration
- Other Government and Private Registrations

### #Admission Registration

- Higher Secondary Registrations
- Graduate Programme Registration
- Undergraduate Programme Registration
- Postgraduate Programme Registration
- Polytechnique Programme Registration
- Diploma Programme Registration
- Etc.

## Notes

### #Competitive Examination Registrations

- JEE – Joint Entrance Examination
- GATE – Graduate Aptitude Test in Engineering
- NEET – NATIONAL ELIGIBILITY CUM ENTRANCE TEST
- SSC – CGL Staff Selection Commission Combined Graduate Level Examination
- SSC MTS – Staff Selection Commission exam Multi-Tasking Staff
- SSC CHSL – Combined Higher Secondary Level Examination
- ETC.

### 3.2.3 m-Governance and Recent Initiatives by e-Government

m-Governance enables the use of mobile wireless communication technology in government administration and as a tool for providing information and services to residents and businesses.

As the penetration rate in India continues to rise, m-Governance can assist in enhancing accountability and openness. Mobile phones can access locations where no other ICT infrastructure can. In addition, technology has become a vital part of people's life, making adoption simpler and facilitating real-time communication.

e-Governance subsumes m-Governance. It facilitates the accessibility of electronic services via mobile technologies and devices such as mobile phones. These services eliminate the requirement for conventional physical networks for cooperation and communication. In the majority of India's rural regions, mobile services are affordable and easily available.

Governments are encouraging and employing the mobile phone in the delivery of e-Government services due to its increasing accessibility, versatility, and base of millions of subscriptions. In recent years, governments have realised that mobile phones may empower individuals and influence their interactions with one another and with society at large.

Mobile phones are also viewed as a useful instrument for bolstering democracy through improved citizen-government engagement, therefore influencing political decision making and holding governments responsible for their actions.

#### Objective of m-Governance

m-Government intends to facilitate citizens' access to government services via mobile devices.

- Mobile services are rapidly becoming the next frontier for modernising government and making it even more accessible and citizen-centric by expanding the advantages of remote delivery of government services and information.
- Providing timely and reliable information to citizens and establishing a two-way communication channel between the government and the people is one of the keys to enhancing democracy by encouraging increased use of public services, citizen involvement, and citizen empowerment.

- Government agencies have made extensive use of mobile technology, particularly in agriculture, health care, financial services, retail trade, utilities, communications, manufacturing, and transportation.
- Businesses have caught on to the popularity of mobile phones and are implementing services, particularly in the banking industry.
- Mobile banking is the future due to its low cost and ability to reach clients in remote locations.

### Mobile Phone: Emerging Channel for Service Delivery

Today, the ‘Mobile Phone’ is not merely a tool for instantaneous communication or sending and receiving text and voice messages. It has become the most effective tool for bridging the digital gap between urban and rural areas.

Despite obstacles such as lack of connectivity and energy and low levels of literacy, mobile phones have reached distant rural regions of India within 20 years of their introduction. On the other hand, it has provided tens of thousands of direct and indirect employment possibilities for young people.

In its second phase of growth, the mobile phone has emerged as a delivery channel for a variety of services; anybody may now move money from one bank account to another using their cell phone. Government and corporate institutions have begun delivering business services to citizens and consumers via mobile devices.

The Reserve Bank of India permitted commercial banks to provide banking services on mobile phones, while the Government of India approved an interministerial group’s “Framework for delivering financial services through the mobile phone.” In continuation, the Indian government has established mobile seva, which intends to offer citizens with government services via mobile phones and tablets.

It has been created as the foundational architecture for providing mobile access to public services. After the debut of 3G technologies in India, individuals would have access to health, educational, agricultural, and entertainment services via their mobile devices.

### m-Governance in India

Government of India aims to utilise the massive reach of mobile phones and the potential of mobile applications to facilitate easy and round-the-clock access to public services, particularly in rural areas, and to create a unique infrastructure and application development ecosystem for m-Governance in the country.

The Indian government is undertaking the “Digital India” initiative with the goal of transforming India into a digitally empowered society and a knowledge-based economy. Under the Digital India initiative, e-Kranti aims to provide different e-Government services across the nation.

The objective of the e-Kranti programme is to transform the e-Governance services by expanding the portfolio of Mission Mode Projects (MMPs) in e-Governance under various Government Departments, implementing Government Process Reengineering (GPR), work flow automation, introducing the latest technologies such as Cloud and mobile platform, and concentrating on the integration of services.

## Notes

In February of 2012, the Ministry of Electronics and Information Technology designed and announced the Mobile Governance framework. The m - Governance framework of the Government of India intends to use the vast reach of mobile phones and the potential of mobile apps to facilitate convenient, round-the-clock access to public services, particularly in rural regions.

The framework intends to provide a singular infrastructure and application development environment for m-Government in the country. The following are the principal MEIT measures:

- Using the “One Web” methodology, all government department and agency websites must be compatible with mobile devices.
- According to the Government Policy on Open Standards for e-Government, open standards must be established for mobile apps to ensure the interoperability of applications across different operating systems and devices.
- To guarantee ease, uniform/single pre-designated numbers (long and short codes) should be utilised for mobile-based services.
- All government departments and agencies are required to create and implement mobile apps for the delivery of all public services via mobile devices, to the extent that is viable on the mobile platform. Additionally, they must identify the service levels for these services.

To guarantee the timely acceptance and execution of the framework, the government created the Mobile Service Delivery Gateway (MSDG), which is the main infrastructure for allowing the access of public services via mobile devices.

### Uses of m-Governance

1. **Agriculture:** Through SMS-based applications, farmers may receive warnings and advise. Additionally, these tools allow them to learn about market pricing without physically visiting the markets. For example, mobile devices are utilised to distribute IMD's meteorological data and Kisan call centre's agriculture-related questions.
2. **Health care:** SMS-based apps for information data exchange, expert guidance, public health service registration, appointment reminders and notifications are possible.
3. **Financial services:** Mobile governance enables mobile banking, information retrieval on financial activities, etc. All Indian banks, both public and commercial, offer a variety of services via mobile phones.
4. **Transportation:** Applications for updates, m-ticketing, etc.
5. **Other Services:** For example, Indian post status monitoring is an app that may be used to track the status of mail.

### Challenges

1. **Cost:** m-Governance is expected to be an extra service delivery channel that incurs additional expenses.
2. **Low levels of literacy:** The majority of mobile phones and applications are text-based, making it nearly hard for consumers to receive, understand, and access any government-provided information.

3. **Lack of knowledge of English:** As the majority of mobile device applications are designed in English, this tends to hinder their use.
4. **Security:** If m-Governance is to incorporate m-payment systems or other transactional public services, then it must be secure and reliable.
5. **Data overload:** The stresses of a perpetually linked environment are exacerbated by mobile technology. These connections increase the quantity of messages in circulation and can result in a blizzard of spam, trash, and undesired communications.

### Mobile Services Delivery Gateway (MSDG)

The MSDG facilitates the delivery of public services via mobile devices using many mobile-based channels, including SMS, USSD, IVRS, and mobile apps. The purpose of establishing the MSDG is to provide common infrastructure and services throughout the government to facilitate the fast development, mainstreaming, and deployment of m-Governance services.

It improves interoperability across various public services and reduces the total cost of operation of m-Governance services by providing a common pool of resources that aggregates the demand for communication and e-Governance services, and acts as a platform for various Government Departments and Agencies to test, rapidly deploy, and easily maintain m-Governance services across the nation. The infrastructure has been created as a cloud-based service using open standards.

MSDG provides the following delivery channels for mobile application development and deployment for government services. When mobile-based technologies continue to evolve, other channels may be established as the need arises in the future.

- SMS (Short Message Service)
- IVRS (Interactive Voice Response System)
- USSD (Unstructured Supplementary Service Data)
- CBS (Cell Broadcasting Services)
- LBS (Location Based Services)
- Mobile Payment Service

### Making Public Delivery Systems Efficient and Corruption Free

Mobile technology has improved the efficiency and openness of public service delivery systems. It has made government services more accessible to the average citizen. This is one of the initiative's core tenets since it allows citizens to communicate with the departments they choose, and vice versa. m-Governance has enabled citizens to contact directly with the government and receive different services without visiting a government office.

### Mobile Applications Store

DeitY has also built a Government Mobile Applications Store (m-AppStore) as part of the Mobile Seva- External website that opens in a new window programme. The m-AppStore now includes over 240 active mobile applications, such as the Election Commission of India's Polling Station Location app, which has been used to locate polling locations around the country.

## Notes

Another important mobile application is the on-screen keyboard driver and editor for Android smartphones that supports GIST Hindi and eleven other Indian languages. Mobile Seva-External website that opens in a new window has also been combined with a Mobile Payment Gateway, allowing individuals to pay for government services through mobile phone. Additionally, USSD and IVRS-based services have been created and are now being tested.



In the 21st century, mobile has fundamentally transformed the world of communication. The mobile device is regarded as one of the most powerful instruments for bringing about change in governance in the twenty-first century.

Initially, mobile was largely utilised as a medium of communication; however, government organisations now find it extremely useful not just for disseminating vital information but also for providing "Anytime, Anywhere" citizen services. Now, mobile devices are utilised to supply services such as healthcare, education, banking, and commercial services, among others.

According to India's Department of Telecommunications and Telecom Regulatory Authority, the Indian telecom sector has experienced spectacular expansion in recent years and is now the second biggest telephone network in the world (1.8 MB)

- PDF file that only opens in a new window outside of China. number of wireless subscribers (1.1 MB) - Our country's PDF file that opens in a new window base rose from 870,58 million in September 2013 to 875,48 million at the end of October 2013.

Mobile Seva/Mobile Governance-External website that opens in a new window is a novel framework designed to capitalise on the exponential rise of wireless communication technology and the country's acceptance of it. It was planned and developed by the Government of India's Department of Electronics and Information Technology (DeitY).

- m-Gov - Govt services on handheld devices
- Solution on your mobile phones
- Objectives
- Efficient and Corruption Free
- Mobile Apps Store
- Smartphones and Apps
- M-Passport Seva App
- M-Reservation
- Popular Mobile services

### m-Governance - Govt Services on Handheld Devices



**Notes**

m-Governance intends to offer citizens with government services via mobile phones and tablets. This service was created as the foundational framework for enabling the accessibility of public services via mobile devices.

Mobile Seva- External website that opens in a new window enables the integration of the mobile platform with the common e-Governance infrastructure consisting of State Data Centres (SDCs)- External website that opens in a new window, State Wide Area Networks (SWANs), and State and National Service Delivery Gateways (SSDGs/ NSDG)- External website that opens in a new window.

Government of India's programme derives from the fact that millions of less fortunate citizens without Internet connection have no practical prospect of accessing government/public services, which undermines equitable growth.

The global mobile phone landscape has transformed during the past decade. Given that the majority of Indian population dwell in rural areas, mobile devices provide a viable alternate access and delivery channel for public services in these regions.

Mobile Seva- External website that opens in a new window is envisioned to emerge into a one-stop solution for all citizen transactions with government entities. C-DAC- External website that opens in a new window, on behalf of DeitY, has designed platforms and implemented gateways for delivery of integrated government services to citizens over mobile devices using mobile communication channels such as SMS (Short Message Service), USSD (Unstructured Supplementary Service Data), IVRS (Interactive Voice Response), CBS (Cell Broadcasting-Based Services), LBS (Location-Based Services), and through mobile applications installed on the mobile devices.

#### Solution on Your Mobile Phones

Mobile Seva- External website that opens in a new window seeks to enable all integrated government departments and agencies to offer their services via SMS (Short Message Service), Voice/ IVR (Interactive Voice Response), USSD (Unstructured Supplementary Service Data), and mobile-applications (m-apps).

A long-term goal of the initiative is to provide all non-emergency public services to all individuals through a single three-digit number that is accessible nationwide. DeitY has already received the short code 166 for this purpose. Deity has also acquired the mobile governance short code 51969. More than 210 public services are already accessible via these two short numbers.

## Notes

MSDG (Mobile service delivery gateway) has been connected with a Mobile Payment Gateway to allow citizens to pay for government services using their mobile phones. Additionally, USSD and IVRS-based services have been developed.

A mobile AppStore that includes more than 200 active and fully integrated mobile apps has also been made operational. The following are the many Mobile Seva-External website that opens in a new window solution:

- SMS Gateway
- USSD
- IVRS
- Location Based Services (LBS)
- Cell Broadcasting Based Services (CBS)
- Mobile Payment Service
- Mobile Applications (m-apps)

### Objectives of Mobile Governance



The Framework for Mobile Governance, which was published in The Gazette of India-External website that opens in a new window in February 2012, aims to utilise the massive reach of mobile phones and the potential of mobile applications to facilitate easy and round-the-clock access to public services, particularly in rural areas.

The framework intends to provide a singular infrastructure and application development environment for m-Government in the country. In accordance with this framework, the Indian government would embrace and implement m-Governance in a time-bound way to enable inclusive delivery of public services via mobile platforms to both urban and rural populations.

### Making Public Delivery Systems Efficient AND Corruption Free

Mobile technology has improved the efficiency and openness of public service delivery systems. It has made government services more accessible to the average citizen. This is one of the initiative's core tenets since it allows citizens to communicate with the departments they choose, and vice versa. m-Governance has enabled citizens

to contact directly with the government and receive different services without visiting a government office.

## Notes

### Mobile Applications Store

DeitY has also built a Government Mobile Applications Store (m-AppStore) as part of the Mobile Seva- External website that opens in a new window programme. The m-AppStore now includes over 240 active mobile applications, such as the Election Commission of India's Polling Station Location app, which has been used to locate polling locations around the country.

Another important mobile application is the on-screen keyboard driver and editor for Android smartphones that supports GIST Hindi and eleven other Indian languages.

Mobile Seva-External website that opens in a new window has also been combined with a Mobile Payment Gateway, allowing individuals to pay for government services through mobile phone. Additionally, USSD and IVRS-based services have been created and are now being tested.

### Smartphones and Apps: Service Delivery Tools



Mobile Governance is gaining ground rapidly in India. Multiple mobile-based channels are being utilised to provide services to individuals via mobile devices. SMS is predominantly employed for status updates, alerts, and notifications. USSD is currently slowly catching up. USSD offers considerable promise for mobile service delivery because it works on low-cost handsets, but with the constraint that only GSM devices are supported.

IVR systems have been in use for decades, but they are increasingly being connected with the back-end systems of government agencies to allow automated service delivery. Location-based systems are being investigated, and SIM Toolkits are in the works. Mobile Applications are also gaining popularity since smart phones are inexpensive in India. The Mobile Application Store is a significant step in this regard.

### Mobile Passport Seva Application

Ministry of Foreign Affairs has provided Smartphone users with passport-related mobile information. Using the mobile app m-Passport Seva - External link that opens in a new window, users may now get this information on their Smartphone.

## Notes

The m-Passport Seva-External website that opens in a new window is primarily intended for citizens interested in Passport-related information. It is a lightweight, user-friendly application that gives precise information on categories such as Centre Location, Fee, Application Status, Contact Information, and General Information.

### m-Reservation of Railway Tickets

Passengers may now reserve train tickets using their mobile devices, and the confirmation message they get can act as their electronic ticket. Indian Railways, through Indian Railway Catering and Tourism Corporation (IRCTC), a Public Sector Undertaking under the Ministry of Railway, has begun facilitating e-ticket booking through mobile phone.

### Popular Mobile Services for Citizens:

- **SMS Railway Booking** - ticket reservations
- **Mobile Passport SEVA Application** - Website external that opens in a new browser window
- **Mobile Application Store** - Download Government Apps
- **Register for IGNOU** - related mobile notifications
- **Application for the Right to Know Act** - External website that opens in a separate window
- **Application for India's Election Commission EVM Tracking** - Website external that opens in a new browser window
- **Application for determining the location of ECI Polling Places** - External website that opens in a new window
- **App for Aadhaar Bank Service** - Website external to Aadhaar Bank that opens in a new window
- **Indian Post Status Tracking** - Website external that opens in a new window
- **Ministry Directory Application** - Site external that opens in a new window
- **Rakshak app for women's protection** - Website accessible via a new window
- **Personal treatment application** - External website that opens in a new window
- **SMS Translation App** - Website external that opens in a new window
- **Nirbhaya, a smartphone application designed to aid distressed women** - External website opening in a new window
- **Dr. SMS** - mobile technology for healthcare in Kerala

## Case Study

### Case Studies of e-Governance Initiatives in Different States of India

Several state governments have taken a variety of creative measures to enhance e-Governance and have developed a road map for IT deployment and online service delivery to residents. Implemented apps are designed to provide Government to Citizen (G2C), Government to Business (G2B), and Government to Government (G2G) services with an emphasis on local language.

Each State is permitted to designate up to five additional State-specific Mission Mode Projects (relevant for economic development within the State). In circumstances where Central Assistance is necessary, such additions are considered based on the advice of the relevant Line Ministries/Departments.

States have MMPs pertaining to Agriculture, Commercial Taxes, eDistrict, Employment Exchange, Land Records, Municipalities, Gram Panchayats, Police, Road Transport, and Treasuries, among others. In addition to MMPs, the states have further e-Government projects.

### e-Governance Initiatives at the State Level

A number of state governments have taken steps to integrate information technology and its associated tools into the governing process. The majority of these states use these applications to enhance the delivery of services to their inhabitants. They are transitioning from manual operations to online delivery by establishing service centres in convenient public locations.

These service centres are staffed by governmental and commercial entities, and each site offers various online services. Empirical data demonstrates that implementing ICT-related changes, particularly at the state level, has not been simple and, as a result, meticulous planning is required for their successful implementation. In this sense, it is of the highest significance to research and analyse past experiences in order to develop effective future tactics.

### Project “Bhoomi” in the State Of Karnataka

As an agrarian state, Karnataka was confronted with the difficulty of keeping voluminous land records, which was performed manually by tax authorities. The ‘Bhoomi’ initiative enabled the computerisation of all 20 million land ownership data for Karnataka’s 6.7 million farmers.

Currently, computerised land record kiosks, also known as “Bhoomi Centers,” are operational in all 177 talukas in the state. These kiosks are used to charge farmers Rs. 15 for online RTC services. Therefore, a request for a change in land ownership owing to sale or inheritance can be submitted at these “Bhoomi Centers.” On receiving an application, the computer automatically prepares notifications, which are then given to the “patwari.”

The method by which a “patwari” notifies interested parties stays unchanged. Nonetheless, the revenue inspector is expected to accept these revisions within a certain timeframe, i.e. within 30 days of notice service. As soon as the permission reaches the “Bhoomi Center,” it is scanned, and the “patwari” at each centre preserves the record.

## Notes

The new owner can obtain a copy upon request. With this technologically advanced system, it is simple to establish the number of executed and outstanding mutation orders, as well as assigning responsibility and holding authorities responsible, thereby reducing corruption, whereas "Before Bhoomi, the procedure took weeks and was rife with corruption. Farmers stated they had to bribe inspectors somewhere between 100 and 200 rupees (Kaushik, 2004).

In addition, the project has enhanced the contributions of revenue to the state treasury:

In addition, the initiative has already begun generating substantial money for the state, between 7 and 7.5 million rupees per month (*ibid.*) The government of Karnataka initiated the programme in phases since it was impractical to implement it simultaneously in all 177 talukas of the state. Initially, it was piloted in just four talukas; later, it was expanded to one pilot taluka in each of the 27 districts.

Finally, it was implemented in each of the state's 177 talukas. With the active participation of private data entry organisations, the arduous task of implementing the project was successfully completed despite the bad work culture and hostile attitude of the tax personnel. In addition, the selection of the officials (patwaris) was conducted with great care.

College students were recruited and trained to manage the Bhoomi Centers under the supervision of the project leader-additional secretary of the department. Thus, the 'Bhoomi' initiative was a success, as it resulted in the streamlining of processes, decreased the difficulties of impoverished farmers in terms of delays, eliminated corruption, and established a more accountable, transparent, and responsive system.

### **Project "Gyandoot" in the State of Madhya Pradesh**

"Gyandoot" was introduced on 1 January 2000 in rural parts of Madhya Pradesh that were impoverished and dominated by tribal groups, after gathering information from residents about their concerns. Their primary issues were a lack of knowledge regarding the prices of agricultural products, difficulties in getting information on land records, and the absence of a process for redressing grievances.

The government chose villages that act as block headquarters, villages where weekly markets were conducted, and villages along key routes for the establishment of Internet-connected computer-equipped information kiosks. These information kiosks were managed by rural youngsters with a high school diploma and computer skills.

These kiosks give the following services:

- i. Providing, for a minimal cost of Rs. 5, information on current crop prices at local and other auction venues throughout the country.
- ii. All documents including land registry information will be provided on the spot for Rs. 15.
- iii. All applications for residence, income, and caste certifications can be submitted through email for a fee of Rs. 10.
- iv. Complaints regarding the poor quality of seeds/fertilizers, drinking water, the working or non-functioning of schools or panchayats, village committees, etc.,

- can be filed for 10 rupees.
- v. Three-month access to auctions for land, machinery, and other durable goods for Rs. 25; complete information on government development programmes and funding for different development projects.
  - vi. Information about families living below the poverty level. Some of these facilities also provided other services, such as online matrimonial adverts.
  - vii. Photostat services for STD, PCO, and horoscopes. "Gyandoot" is crucial in building a connection between the administration and the rural village residents. It has also enabled underprivileged tribal members to have affordable access to information.

### **Project Smart Government in the State of Andhra Pradesh**

In an effort to deliver simple, moral, responsible, responsive, and transparent governance to its citizens, the Government of Andhra Pradesh introduced 'SMART GOVERNMENT' (Smartgov) at the secretariat level. This project resulted in an automated procedure inside the secretariat, which not only increased internal efficiency but also offered a useful tool for performance evaluation.

With this, the recurring theme became effectiveness. When a document is received by Smartgov, it is scanned to establish a file number and then e-mailed to the appropriate official. The formal notations are made digitally. The automated nature of the system enforces the appropriate checks and balances.

It eliminates pessimism and overcomes all resistance and hostility to change. The Smartgov initiative has contributed to the implementation of a paperless file processing system in the Andhra Pradesh secretariat. Not only has it helped reduce the time required to process files, but it has also considerably enhanced the quality of choices and reduced corruption.

The fact that the public in general and the administrative structure in particular have responded positively to the new governance improvements/systems due to their speedier, more effective, efficient, and effective corrective consequences speaks eloquently about their acceptance. Thus, it can be concluded that the success of implementing changes can only be guaranteed if end-user training and orientation programmes are implemented beforehand. This will reduce resistance.

### **FRIENDS Project in the State of Kerala**

Part of the Kerala State IT Mission is the Project FRIENDS (Fast, Reliable, Instant, Efficient Network for the Disbursement of Services). FRIENDS counters process one thousand distinct payment bill types originating from various PSUs. Citizens can make payments for utilities such as electricity and water, revenue taxes, licencing fees, motor vehicle taxes, university fees, etc.

Firewalls prevent data from being manipulated. The programme allows for the addition of additional modules and the reversal of wrong entries without changing the database at the user level. Important features of FRIENDS include the ability to install other modules and a queue management system.

### **Lok Mitra Project of the State of Rajasthan**

## Notes

Lok Mitra is the first electronic service of its sort in the state of Rajasthan. It strives to implement Information Technology for the general public's benefit. It is a centralised, user-friendly computer centre located in the heart of the city at the Government Hostel in Jaipur.

The average man now receives efficient services through IT-driven interfaces at a single point of access. It is an e-Governance project in which the computer server is connected to several Departmental servers through Dedicated Leased Line and Dial-up Network with numerous encounters, allowing it to manage all services. It offers the option to pay using Credit Card over the Internet.

### Summary

- The Capacity Building Scheme under the National e-Governance Plan (NeGP) of the Government of India envisions the establishment of an institutional framework for State-Level decision-making, including the formation of State e-Mission Teams (SeMTs) with the expertise and experience to provide technical and professional support to States and Union Territories.
- A mission mode project (MMP) is a project under the National e-Governance Plan (NeGP) that focuses on a single component of electronic governance, such as banking, property records, or commercial taxes, etc.
- "Immigration, Visa and Foreigners Registration and Tracking (IVFRT)" has been recognised and listed as one of the MMPs to be implemented by the Ministry of Home Affairs under the National e-Government Plan in order to modernise and improve the Immigration services (NeGP).
- Districts are the de facto face of government where the vast majority of Government-to-Consumer (G2C) interactions occur. The eDistrict initiative was conceived to improve this experience and boost the efficiency of the numerous district-level Departments in order to provide seamless service delivery to the citizenry.
- The Panchayat is the initial point of contact with the government for more than 60 percent of the Indian population, and it delivers a vast array of basic services to millions of rural residents. In light of this, the Panchayat MMP has been incorporated into NeGP.
- The majority of governments have certain traits primarily focused on providing public services. The interaction between citizens and governments is closely governed by law, and government agencies may be forced by law to share information with other government agencies or with the general public.
- The deployment of ICT in urban areas is integral to the communications revolution. Frequently stated as ICT-driven advantages to metropolitan areas are high-quality infrastructure, innovation, investment, well-connected businesses, energy and cost savings.
- In India, e-Government has slowly progressed beyond the computerisation of government departments to programmes that encompass the finer elements of governance, such as citizen-centricity, service orientation, and transparency.
- Connecting rural regions with high-speed internet networks is a preliminary step towards a digital India. On 2 July 2015, it was introduced for the first time by Prime Minister Shri Narendra Modi. Universal digital literacy, digital delivery

of government services, and the development of a safe and robust digital infrastructure are its three important components.

- m-Governance enables the use of mobile wireless communication technology in government administration and as a tool for providing information and services to residents and businesses.
- Government of India aims to utilise the massive reach of mobile phones and the potential of mobile applications to facilitate easy and round-the-clock access to public services, particularly in rural areas, and to create a unique infrastructure and application development ecosystem for m-Governance in the country.
- m-Governance intends to offer citizens with government services via mobile phones and tablets. This service was created as the foundational framework for enabling the accessibility of public services via mobile devices.
- Mobile Governance is gaining ground rapidly in India. Multiple mobile-based channels are being utilised to provide services to individuals via mobile devices. SMS is predominantly employed for status updates, alerts, and notifications. USSD is currently slowly catching up.

### Glossary

- **Bureaucracy:** The primary characteristic of public sectors, characterized by lengthy process delays, complex procedures, duplication of labour and efforts, duplicate records and data, and redundant processes.
- **Business Process Re-Engineering (BPR):** A revolutionary business environment that is essential for automating government business activities and improving process efficiency. This involves re-evaluating the present process efficiency based on a set of common criteria from several viewpoints, including those of citizens, government, businesses, and employees, and changing the process flow established by senior management and subject matter experts to enable process application.
- **Digital India:** An initiative launched by the Government of India with the goal of transforming the country into a digitally empowered society and a knowledge-based economy. It aims to provide various e-Government services across the nation and expand the portfolio of Mission Mode Projects (MMPs) in e-Governance.
- **e-Government Readiness:** The evaluation of society, institutional frameworks of government, human resources, existing budgetary resources, interdepartmental relationships, national infrastructure, economic health, education, information policies, private sector development, and other e-Government readiness factors in order to determine a government's readiness for e-Government.
- **Electronic Filing (e-filing):** The process of submitting tax returns or other forms electronically over the internet. The Income Tax and Central Excise and Customs MMPs aim to simplify the process of e-filing of tax returns and refunds, along with electronic registration for VAT and Service Tax.
- **Envision:** “Envision” means to imagine or picture in one’s mind a future situation or outcome, often with the intention of working towards making it a reality. It

## Notes

involves having a clear and specific idea of what one wants to achieve, and visualizing the steps and actions necessary to accomplish it.

- **m-Governance:** m-Governance is a system of utilizing mobile wireless communication technology in government administration and as a tool for providing information and services to residents and businesses.
- **Mission mode project (MMP):** A project under the National e-Governance Plan (NeGP) that focuses on a single component of electronic governance, such as banking, property records, or commercial taxes. Within NeGP, “mission mode” denotes projects with well-defined objectives, scopes, implementation deadlines, and milestones, as well as quantifiable outcomes and service levels.
- **Mobile Service Delivery Gateway (MSDG):** The main infrastructure created by the Indian government to enable the access of public services via mobile devices. It ensures the timely acceptance and execution of the m-Governance framework.
- **Mobile Seva:** A platform created by the Government of India to provide citizens with access to government services via mobile phones and tablets. It serves as the foundational architecture for offering mobile access to public services.
- **NeGP:** The National e-Governance Plan is a comprehensive plan developed by the Indian Government to transform the delivery of public services through the use of information and communication technology. The plan consists of 31 mission mode projects (MMPs), which are subdivided into state, central, and integrated projects.
- **Permanent Account Number (PAN):** A unique 10-character alphanumeric code assigned to taxpayers in India. The Income Tax MMP includes the allocation of PAN as one of its services.
- **Programme Management Unit National e-Governance Plan (PMU-NeGP):** The unit responsible for the management and implementation of the National e-Governance Plan (NeGP) in India, including the Capacity Building Scheme and other projects. The Department of Electronics and Information Technology (DeitY) has established the National e-Governance Division (NeGD) as an independent business division within Media Lab Asia to assume the responsibilities of PMU-NeGP.
- **State e-Mission Teams (SeMTs):** A team of experts and professionals established at the state level under the Capacity Building Scheme of the National e-Governance Plan (NeGP) in India, with the primary responsibility of providing technical and professional support to states and union territories in implementing e-Governance initiatives.
- **Wide Area Network (WAN):** A network that connects devices over a large geographic area, such as a city, state, or country.

### Check Your Understanding

1. What is the responsibility of NeGD under the National e-Governance Plan (NeGP)?
  - a) Supporting the execution of the New Economic Growth Plan by different Ministries and State Governments
  - b) Providing technological support to only Central Ministries

- c) Only acting as the Apex Committee's secretariat  
d) Formulating only fundamental policies, technical support, and RandD
2. The role of State e-Mission Teams (SeMTs) under the Capacity Building Scheme of NeGP is—  
a) To provide technical and professional support to States and Union Territories  
b) To execute the New Economic Growth Plan  
c) To act as the Apex Committee's secretariat  
d) To formulate fundamental policies, technical support, and RandD
3. Which of the following is a responsibility of NeGD under the Digital India project?  
a) Conducting elections in the country  
b) Providing healthcare services to the citizens  
c) Creating generic/model Expressions of Interest, Requests for Proposals, Standard Contracts, PPP Models, and other relevant documents for use by the States at various project phases and needs.  
d) Conducting space missions and exploration
4. What is a Mission Mode Project (MMP) under the National e-Governance Plan (NeGP)?  
a) It is a project that focuses on multiple components of electronic governance, such as banking, property records, and commercial taxes.  
b) It is a project that focuses on a single component of electronic governance, such as banking, property records, or commercial taxes, etc.  
c) It is a project that focuses on enhancing traditional governance services without electronic components.  
d) None of the above
5. How many Mission Mode Projects (MMPs) are included in the National e-Governance Plan (NeGP)?  
a) 30  
b) 31  
c) 32  
d) 22
6. Which of the following is not a Central Mission Mode Project (MMP) under the National e-Governance Plan (NeGP)?  
a) Banking  
b) Income Tax (IT)  
c) Passport  
d) None of the above
7. The Agriculture MMP seeks to provide information to farmers about all of the following EXCEPT:

**Notes**

**Notes**

- a) Seeds
  - b) Fertilizers
  - c) Pesticides
  - d) Types of tractors
8. Which of the following is NOT listed as a guideline for promoting the streamlining of Commercial Tax administration?
- a) Electronic filing of returns
  - b) Online dealer ledger
  - c) Paper-based payment of tax
  - d) Electronic payment of tax
9. Which of the following services is NOT targeted by the e-District MMP?
- a) Creation and distribution of certificates
  - b) Issue of arms licenses
  - c) Disbursement of old-age pensions
  - d) Collection of property tax
10. The main objective of Common Services Centres (CSCs) is—
- a) To deliver high-quality, cost-effective video, audio, and data content and services in the fields of e-Governance, education, health, telemedicine, and entertainment.
  - b) To provide private services to individuals in rural regions.
  - c) To monitor the roll-out status of CSCs.
  - d) To provide government-to-business services to business organisations.
11. What is the primary aim of the e-Biz program?
- a) To reduce the compliance burden on stakeholders such as entrepreneurs, industries and businesses, industry associations, regulatory agencies, industrial promotional agencies, banks and financial institutions, and taxation authorities.
  - b) To assist court administration in simplifying their daily operations.
  - c) To introduce ICT in the Indian judiciary.
  - d) To provide web-enabled e-Governance services in rural regions.
12. How many phases are there in the implementation of the e-Courts MMP?
- a) 1
  - b) 2
  - c) 3
  - d) 4
13. The primary objective of the e-Courts MMP is—
- a) To provide litigants with information in a transparent manner.
  - b) To monitor the uptime of CSC IT terminals.

- c) To assist the court administration in simplifying their daily operations.
  - d) To design, deliver, install, and operate automated decision-making and decision-support systems in courts.
14. What is the three-tiered structure of the CSC scheme?
- a) CSC operator, Service Centre Agency (SCA), and State Designated Agency (SDA).
  - b) CSC SMART Solution, CSC Online Monitoring Solution, and CSC Online Dashboard.
  - c) Department of Industrial Policy and Promotion, entrepreneurs, and regulatory agencies.
  - d) Delhi, Bombay, Kolkata, and Chennai; 29 State/Union Territory capitals; and 13,000 district and subordinate courts nationwide.
15. The goal of Digital India is—
- a) To provide Indian residents with access to government services and increase their digital literacy
  - b) To bridge the gap between digital haves and have-nots
  - c) To consolidate and reorganise various current programmes in a coordinated manner
  - d) None of the above
16. What is the National Digital Communications Policy 2018?
- a) A policy that addresses the emerging opportunities for expanding the availability of telecom services
  - b) A policy to provide Indian residents with access to government services
  - c) A policy to bridge the gap between digital haves and have-nots
  - d) None of the above
17. What is the objective of m-Governance?
- a) To promote the use of conventional physical networks for cooperation and communication.
  - b) To facilitate citizens' access to government services via mobile devices.
  - c) To establish a two-way communication channel between the government and the people.
  - d) To provide timely and reliable information to citizens.
18. The significance of mobile phones in m-Governance is —
- a) They are viewed as a useful instrument for bolstering democracy through improved citizen-government engagement.
  - b) They have eliminated the requirement for conventional physical networks for cooperation and communication.

## Notes

- c) They have made the adoption of technology simpler and facilitated real-time communication.
- d) All of the above.
19. The e-Kranti programme of the Digital India initiative is—
- A programme to transform the e-Governance services by expanding the portfolio of Mission Mode Projects (MMPs) in e-Governance.
  - A programme to establish the latest technologies such as Cloud and mobile platform in e-Governance.
  - A programme to transform India into a digitally empowered society and a knowledge-based economy.
  - A programme to promote the use of mobile phones in agriculture.
20. What is the Mobile Service Delivery Gateway (MSDG)?
- The foundational architecture for providing mobile access to public services.
  - The main infrastructure for allowing the access of public services via mobile devices.
  - A programme to transform India into a digitally empowered society and a knowledge-based economy.
  - A programme to promote the use of mobile phones in agriculture.

## Exercise

- What are the main components of the national e-Governance division?
- What is the purpose of national e-Governance, and how does it relate to the overall government strategy?
- How do central, state, and integrated mission mode projects differ from one another, and what are some examples of each type?
- What are some of the key factors that are used to assess e-Government readiness in a country or region?
- Describe the key components of the National e-Governance Plan (NeGP), and how do they contribute to the overall goal of e-Governance?
- What is the relationship between the concepts of digital India, digital divide, and common service centres in the context of e-Governance, and how do they impact citizens?
- How effective have recent m-Governance initiatives been in improving e-Government services, and what are some of the challenges that remain?

## Learning Activities

- Conduct a group discussion on the challenges faced by the national e-Governance division in implementing e-Governance projects in India.
- Conduct a group activity where students brainstorm and suggest ways to improve e-Government readiness in India.

**Check Your Understanding – Answers**

1. a)
2. a)
3. c)
4. b)
5. b)
6. c)
7. d)
8. c)
9. d)
10. a)
11. a)
12. c)
13. d)
14. a)
15. a)
16. a)
17. b)
18. d)
19. a)
20. b)

**Notes****Further Readings and Bibliography**

1. R.K. Bagga and S. Kumar: "National e-Governance Plan: A Critical Assessment", International Journal of Electronic Governance, 2010 edition.
2. S. Sharma: "Digital India and E-Governance: A Comparative Analysis", International Journal of Applied Engineering Research.
3. Subhash Bhatnagar, S. J. Singh, and Ravi S. Srivastava: "e-Governance: Concepts and Case Studies", SAGE Publications Pvt. Ltd, 2nd edition.
4. Vishanth Weerakkody: "Handbook of Research on E-Government Readiness for Information and Service Exchange: Utilizing Progressive Information Communication Technologies", IGI Global, 1st edition.

## Module - IV: e-Governance Technologies

### Learning Objectives

At the end of this topic, you will be able to understand:

- Describe Information management and digital archiving
- Classify security and privacy in a networked world
- State internet of things: smart devices, processes and services
- Demonstrate latest technologies empowering digital India initiatives
- Analyzing the legal aspects of software and database protection and technological barriers of e-Governance
- Recognise the pillars of digital India in the context of techno-economic paradigms and technical change

### Introduction



e-Governance is the use of information and communication technology (ICT) to provide government services, information sharing, transactions, integration of previously offered services, and information portals.

The “e” in e-Government represents “electronic.”

Use of electronic technology in three areas of government action:

- relationships between the government and civic society

- the operation of the public authority across all phases of the democratic process (electronic democracy)
- delivery of public services (electronic public services)

The grounds for opting for e-Governance are because governance has gotten increasingly complicated and citizens' expectations of the government have risen dramatically.

#### Different Connotations of e-Governance

- **e-Administration:** The application of ICTs to modernise the state; the establishment of data repositories for Management Information System (MIS) and the computerisation of records (land, health etc).
- **e-Services:** The focus here is on bringing the state closer to the people. For Examples: online service provision
- **e-Governance:** The use of Technology to enhance the government's capacity to fulfil societal demands. Together, e-administration and e-services create what is often known as e-Government. It involves the dissemination of policy and program-related information to citizens. It goes beyond the provision of online services and includes the use of IT for strategic planning and achieving the government's development objectives.
- **e-Democracy:** The use of Technology to enable the participation of all segments of society in state administration. It emphasises bringing about openness, accountability, and people's engagement. It comprises online policy disclosures, online grievance resolution, e-referendums, etc.

#### 4.1 Technological Aspects



Many of the obstacles to enabling developing technologies stem from technology governance rather than technology itself. Some find government to be overly complicated and burdensome. For others, governance mechanisms fail to safeguard essential human values, resulting in a crisis of public confidence in technology.

For some, government fails to create the required linkage of technological progress with the greatest human objectives. In such conditions of uncertainty, traditional regulatory instruments, such as risk assessment, product-based standard-setting, export controls, and liability, tend to narrowly focus on immediate or easily quantifiable

## Notes

consequences and their management, or enter only after crucial design decisions have been made.

Nonetheless, several concerns highlighted by developing technologies are more basic and long-term in nature. One example is artificial intelligence (AI), whose effects might be significant, pervasive, and unpredictable. In the case of neurotechnology, embedded devices and brain-computer interfaces are subject to current safety and effectiveness standards, but these regimes may not address long-term ethical concerns about the protection of human autonomy and mental privacy.

The founding of the Department of Electronics in 1970 was India's first important move towards e-Governance, since it emphasised "information" and its conveyance. Established in 1977, the National Informatics Centre (NIC) initiated the District Information System initiative to computerise all district offices in the country. 1987 saw the inauguration of NICNET, the national satellite-based computer network, which provided the primary impetus for e-Governance.

### 4.1.1 Information Management and Digital Archiving



Information management (IM) refers to the collecting, organisation, storage, and upkeep of data, such as papers, photographs, knowledge bases, code, and other forms of virtual media. Traditional data management centred on the storage and maintenance of physical media.

As technology, concepts, and business requirements evolve, the notion of information management is always developing. IM encompasses a cycle of organisational operations, including data collection, analysis, categorisation, contextualisation, archiving (and, in certain situations, deletion), and support for business requirements. This indicates that data and information have a lifecycle: They are helpful for a period of time, but eventually lose their value.

IM integrates broad management ideas such as planning, controlling, and execution, much like any other company activity. Data management and its accompanying tasks are often included under information management. Data management is the creation and implementation of tools and rules that facilitate the data's progression through its lifespan.

The four main components of information management are:

- **People:** Not just individuals active in IM, but also data and information makers and users.
- **Policies and Processes:** The rules that decide who has access to what, the methods for how to retain and safeguard information, and the archiving or deletion timelines.
- **Technology:** The hardware (computers, file cabinets, etc.) and software used to store data and information.
- **Data and Information:** What the remaining components utilise.

IM is frequently mistaken with knowledge management and content management. Despite the fact that these three processes are connected and share some overlap, they are distinct. Content management is concerned with the data (blocks of text, photos, and videos, among others) a website employs, as well as the organisation and presentation of that material (e.g. XML tags or HTML coding).

Similar to library science, knowledge management is concerned with information for training and education, as well as the transfer of knowledge and expertise and the dissemination of lessons gained.

### Principles of Information Management

Many information management concepts exist. The Information Management Body of Knowledge (IMBOK) is a well-known framework that divides management abilities into six knowledge domains and four process domains.

The following are the knowledge domains:

- **Information Technology (IT):** Hardware and software
- **Information Systems:** Technology integrated into a system that satisfies business requirements and policies
- **Business Information:** Developed by the analysis and contextualisation of data using technologies such as the information system
- **Business Processes:** How to assess and use corporate data for decision-making
- **Business Benefit:** The desired benefit provided by the business information
- **Business Strategy:** The strategy that provides a corporation with direction. Ideally, choices made through business processes and based on business knowledge will influence the strategy and result in the achievement of business advantages.

### The IMBOK procedure areas are:

- **Projects:** Introducing new hardware, software, and capacity into information systems
- **Business Change:** Assessing information to motivate process enhancements
- **Business Operations:** The daily operations of a firm. They will steer enhancements based on process modifications and, perhaps, boost benefits.

## Notes

- **Performance Management:** Attempting to guarantee that activities are operating at maximum capacity

### What are Information Management Strategies?

Information management strategies are plans that assist a business in coordinating its IM practises, enhancing its processes, and planning for the future. These plans may include the following information, ranging from a status report to a list of objectives:

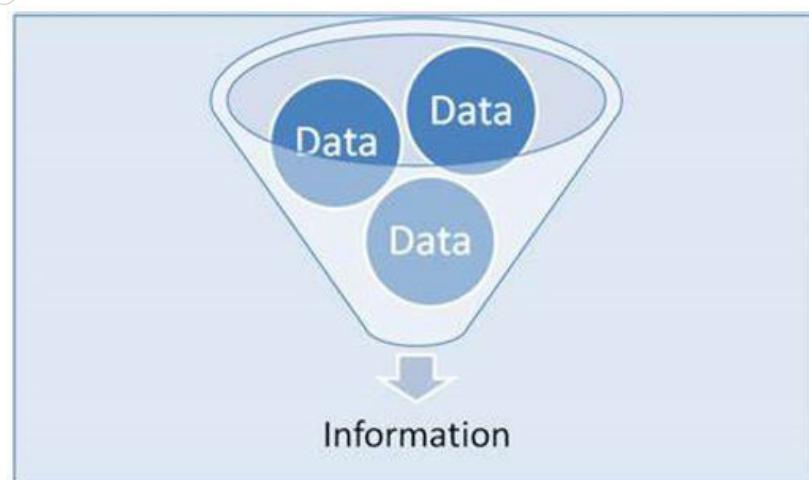
- Current status
- Objectives for the future
- Specific measures to attain these objectives
- Plans to acquire additional resources
- Interaction processes and policies with business divisions
- Assigning accountability for adopting and

### Where do Data and Information Come from?

Information is data that has been processed, formatted, evaluated, and arranged such that it may inform choices and plans. Businesses can obtain data from several sources, such as:

- **Legacy Systems:** Used for information that has accumulated over time. The legacy systems of a corporation (e.g., learning management, employee records, and financial history) hold valuable data that may be accessed.
- **Data Creation:** Transactions, manufacturing, payment processing, purchasing, and staff evaluations, to mention a few, all generate data. For a retailer, the data may be how many hammer and saw sales their point-of-sale system logged. For a manufacturer, it may be the quantity of assembled computer displays. The time a package was dropped off at a predetermined location for a delivery service.
- **Data Collection:** Externally sourced information, such as weather patterns, news reports, road closure alerts, and employment trends. This type of data is available for purchase or free collection.

### How Data Becomes Information



Interpretation, analysis, contextualisation, processing, and other IM processes transform data into information.

While there are other methods to conceptualise how data becomes information, the portfolio model developed by Andy Bytheway, a professor of computer science at the University of the Western Cape in South Africa, is a well-known example. This model is based on two axes:

- **Source:** Internal vs. External - Whether data originates from within a business (sales statistics, emails) or from outside (external sources) (news reports, hourly road conditions).
- **Structure:** Structured versus Unstructured - If data has been evaluated, contextualised, or is simply a collection of facts.

The quadrant with the highest value is internally organised. This information has been reviewed, analysed, and contextualised to give the greatest foundation for operational business decision making.

### Data and Information Have Value

Data and information are business assets that are developed or gathered by a corporation. Because they may increase the value of the company, they require protection. Unlike computers or buildings, data and information are ethereal, therefore it's frequently impossible to give a genuine value.

A 2015 Information Digital Transformation Maturity Scape assessment by IDC stated, "Information is at the foundation of the new digital ecosystem." In order to obtain the most value out of data and information, businesses might examine the information value chain concept, devised by Elias Bizannes. Although he designed this model with B2C in mind, it may be adapted for B2B or interdepartmental partnerships. The model contains the following steps:

- **Collect and Create Data:** The information is a valuable resource.
- **Process Data:** The value lies in the capacity to integrate, contextualise, and so forth.
- **Generate Information:** The value generated in this stage is the different patterns and relationships that become obvious.
- **Apply Knowledge:** Using what has been generated to alter operations, procedures, etc., provides value.

### Security and Information Management

Data security procedures are outside the scope of this paper, although they are essential to any programme for information management. Criminals and hackers recognise the value of firm data and hence pursue it. Data is not always accorded the security its worth justifies.

### What's an Information Management System?

An information management system (IMS) is a combination of hardware and software that stores, organises, and provides access to database-stored data. In addition, it includes tools for the production of standard and custom reports.

## Notes

There are a variety of IMSs capable of performing particular business operations, including the following:

- **Business Intelligence System:** A business intelligence system is used by operations to make business choices based on the gathering, integration, and analysis of data and information.
- **Customer Relationship Management System:** Customers' prior sales, contact information, and sales possibilities are stored in this database. CRM is commonly used by marketing, customer care, sales, and business development teams.
- **Sales Force Automation System:** A component of a customer relationship management system that automates several sales force duties. It may consist of contact management, lead monitoring and creation, and order management.
- **Transaction Processing System:** An IMS that completes a sale and handles the associated information. On a fundamental level, it might be a point-of-sale (POS) system or a system that enables a traveller to search for a hotel, include room choices such as price range, type and number of beds, or a swimming pool, and then pick and book it.
- **Knowledge Management System:** A KM system may be used by customer service to answer queries and fix issues.

### Best Implementation of Information Management

Although the optimal implementation may vary, the following list is a solid starting point.

**Ease of Use:** An IM system must be intuitive. If the user interface is poorly designed, managers and workers may become irritated and look for other, non-sanctioned ways to transmit information, meaning they will not adhere to security regulations.

- **Get User Buy-in:** Besides usability, it is essential to address consumers' demands. R. Rebecca Carter says, "Avoid making assumptions; instead, monitor the surroundings and directly ask users what they require and anticipate. Use reflective design approaches to construct systems that can listen, evolve, and adapt."
- **Plan and Design at the Enterprise Level:** Instead of enabling departments to run their own IM procedures, beginning the programme at the enterprise level incorporates sharing and interoperability.
- **Enterprise-wide Reuse:** All departments should have access to data and information, allowing for economies of scale, improved decision making, and enhanced feedback.
- **Data Management:** Establish guidelines for the organisation, modification, dissemination, archiving, and destruction of data.
- **Centralised Data Management and Governance:** Data governance is the administration of the enterprise's data's availability, usability, integrity, and security. A programme for data governance consists of a governing body, a set of established processes, and strategies for executing the procedures.

**Metadata Management:** Metadata allows for the appropriate categorisation of data, allowing it to be compared and merged with data from distant systems. In addition, metadata may be used to track who should have access to data. Metadata examples include the creation date, the language, and the categories. Ensuring that metadata is accurate and current increases the usability of information and supports security standards.

**Create a Taxonomy:** Various groups use distinct terminology for same topics. A taxonomy will connect and classify these concepts, enabling cross-system searches and sharing.

**Data Quality Management:** If employees and supervisors lack confidence in the data and information they view, they will not utilise it. Applying quality checks prevents the use of inaccurate data, establishes a procedure for correcting problems when they are discovered, and maintains the high quality of data.

**Make Data and Information Available (with appropriate restrictions):** Sharing data and information is the primary objective of information management, hence this should be a fundamental concept of every IM programme. Yet, not everyone should have access to everything; thus, explicitly define who should have access and ensuring that the technology you employ supports these regulations.

**Strategic Information Management:** Problems and Strategies in Managing Information Systems states, “Managing the information requires defining what should be preserved, how it should be arranged, where it should be stored, and who should have access to it.”

**Training, Rules, and Accountability:** Instruct people who access and generate data and information on the policies that govern their usage and sharing. When policies are violated, managers and employees must accept responsibility.

**IT and Business Collaboration:** Collaboration between those who own and utilise the data and those who store and handle the data is crucial. While adding or updating systems, IT must prioritise the demands of the users. While dealing with IT, users must grasp the constraints of the available technologies.

**Plan for Continuous Improvement:** Both business requirements and accessible data are always evolving. With this concept in mind, design an IM programme and the supporting technology such that it can accommodate new or altered inputs and provide new outputs.

**Plan for the Future:** Without planning for flexibility, any system established today would be rendered obsolete by tomorrow's unanticipated technological advancements. You cannot construct a system and then abandon it. Companies must recognise the need of committing resources to maintaining and enhancing their information management systems in order to develop and adapt to changing processes.

- **Design for Integration with Other Apps and Interoperability Between Systems:** Your systems should be able to integrate diverse and divergent data sources and formats into a unified perspective.
- **Audit Trails:** A well-designed IM system should display who accessed information, what they did with it, and who they shared it with. This helps avoid security breaches and ensures everyone adheres to the stated regulations.

## Notes

### Benefits of Information Management

As stated previously, data and information are valuable assets. In order for these assets to generate value, they must be utilised. Professor of Information at Boston University, N. Venkatraman, devised the DIKAR (Data, Information, Knowledge, Action, and Results) paradigm for achieving the advantages of an IM programme:

- Data must be interpreted in order to provide information.
- Information must be comprehended for knowledge to develop.
- Knowledge enables managers to make sound choices
- Successful judgements result in suitable actions
- Proper acts result in significant outcomes

### Digital Archiving



Digital archiving is an essential business activity that should be taken seriously by companies. It helps avoid data loss and other calamities, and ensures that all records are maintained and accessible at any time.

The practise of conserving digital material for future use is known as digital archiving. Organisations must archive their digital material to protect it against data loss and other calamities in order to avert negative outcomes.

### Best Practices for Digital Archiving in Government

These five recommendations have been made for handling new communication platforms in consideration of information security, policy controls, and more complex archiving processes:

1. **Do a Risk/Benefit Analysis to Decide Which Tools Explicitly can and Cannot be Used by Employees.** Have you considered anything that may go wrong if your organisation permitted a larger variety of communication tools? Are you capable of implementing the required privacy controls? Are you certain that individuals will not divulge intellectual property or other high-value information that may now be shared via Teams or Zoom? Do an audit of all applications and devices used by employees, apply due diligence to each of these tools, and include the necessary stakeholders in this discussion.

- 2. Ensure that Basic Archiving Controls are Available.** When evaluating any new technology that your workers are using or have requested to use, you should establish if it is capable of capturing and storing information over time. Can three years of data be retrieved from Slack or Zoom? Are you able to receive and keep all the material, activity, and files that individuals are exchanging?

This information is essential for public records responsibilities, as well as for determining what employees are doing and if the information, they provide is secure. If these controls are unavailable and your existing archiving system cannot satisfy these requirements, it may be time to seek an alternative.

- 3. Look Closely at Vendor Capabilities.** Every company, whether government or non-government, struggles to handle the volume and variety of data created by digital communication platforms. This is an excellent moment for government agencies with formal data retention requirements to review whether these demands are being met.

Is the third-party tool you're employing to capture and store your data capable of preserving and aggregating all communications data? Ensure that your vendor partner has the resources to satisfy your current and future requirements.

- 4. Review and Refine Your Communication Policies.** This is one of the most important aspects of understanding the variety of technologies used by agency staff. As viewed as a by-product or effect of policy training and technology, information governance originates with policy.

Are your communication policies up to date? Are individuals aware of their capabilities and limitations? Have you revised and addressed work-from-home behaviour in your organisation's code of conduct? Are you capable of recognising behaviours that constitute harassment? All of these policy controls must be evaluated to ensure that they are effective and operable in this distant circumstance.

- 5. Develop an Ongoing Training Program for Your Employees.** It is essential to train personnel on communication protocols and information security. Staff members should be aware of their obligations whether they are in the office or working remotely, particularly as new technologies are introduced and the work environment evolves. Training should be ongoing as new personnel are hired and conducted often to maintain consistency.

To manage government archiving in the digital era, your organisation must be both prepared and flexible. There have been several developments over the past few months that will continue to need policy modifications and technological restrictions. Keeping abreast of emerging communication trends and tools can assist you in achieving all of your information governance goals.

There are several benefits and advantages of digital archives. Archivists and organisations may take advantage of these benefits by developing a digital archive for their major resources. Digital archive offers its customers the following advantages and benefits, among others:

- A digital archive does not necessitate the construction of a new facility information exchange may be expanded and collection redundancy can be eliminated.

## Notes

- Digital resources are accessible over the Internet from any location, at any time, and according to the user's preference. It allows faster access to all forms (text, image, graphic, audio, and video) of onsite and offsite information on computers and mobile devices (text, image, graphic, audio, and video).
- A digital archive may accommodate requests for simultaneous access to the same document by permitting the creation of numerous copies of the desired document and the storage and printing of resources at the user's location.
- Compared to a conventional management system, digitally archived documents and objects are easier to manage and administer using a digital management system.
- Ensuring the long-term preservation and conservation of digital data or assets in order for them to be available for future use.
- Enables simple, widespread recognition and access to preserved resources around the globe.
- Promotes democratic concerns by increasing public record accessibility

In addition to saving digital material for future use, digital archiving organises and manages it so that it may be retrieved whenever necessary. To organise and maintain digital material, digital archiving requires the following steps:

- Creation
- Acquisition
- Cataloguing/identification
- Storage
- Preservation
- Access

**1. Creation:** Production of a digital object or piece of data is the process of manufacturing an informational good. Virtually all archive documents and artefacts are made available in analogue format as primary facts, data, and evidence. In order to create a digital archive, documents must initially be converted into digital format for long-term archiving and preservation, as well as worldwide internet access.

The digitisation process turns archive resources into digital format for this purpose. There are two forms of digital content: one that was originally created in analogue format (such as printed books, manuscripts, etc.) and then transformed to digital format. The other was created in a machine-readable digital format (e.g. digital photographs, websites, and multimedia etc.).

A vast array of sophisticated technologies and techniques, including scanning, optical character recognition (OCR), markup language, audio, video, and multimedia technologies, metadata, and PDF, are involved in this process (Portable Document Format). If attention is paid to issues of consistency, format, standards, and metadata description at the outset of the generation of digital documents, the process of preserving and archiving digital resources may be made more efficient.

**2. Acquisition:** Acquisition and collection development are crucial phases of digital archiving in which produced digital items or data are physically or electronically incorporated into an archive. Many factors must be addressed while acquiring digital objects:

- i. **Collection policies:** To include digital artefacts inside a digital archive, collection development policies must be developed. This will assist the archivist in determining if digital assets are covered by current deposit laws. A set of regulations and guidelines assists in defining the bounds of an uncontrolled scenario. It is not necessary to archive all of the accessible resources. In such a circumstance, rules are required to adjust the organisation's general collection techniques.
- ii. **Selecting What to Archive:** There are many legal and other difficulties related with the content that need the development of a guideline for selecting the items or information to be included in a digital archive. In such a circumstance, a guideline assists archivists in determining whether a certain item should be archived or not.  
National Library of Canada (NLC) and National Library of Australia (NLA) recognise the significance of selection criteria (Kumaravel 2004). Selective archiving should be conducted for the long-term preservation of documents of organisational lasting worth, operational value, and historical significance.
- iii. **Refreshing the Archived Contents:** When digital material is archived, it is necessary to periodically refresh the archived content due to changes and upgrades in file format, software, and hardware. Hence, digital content must be periodically updated and made compatible with software and hardware. In addition, a balance must be struck between the archive's completeness and currency and its impact on system resources. Clearly, as the number of sources saved in the archive rises, so does the load of renewing the material.
- iv. **Copyright and Intellectual Property Concerns:** Intellectual property continues to be a significant concern in the acquisition, preservation, and digitalisation processes. The IPR acts strive for three levels of protection: legal protection through copyright laws and other legislation; technology protection through digital rights management systems (DRMS); and legal protection to assist technological protection by prohibiting actions of copyright evasion (Maji and Das 2009).

Watermarking, fingerprinting, and tamper-proof hardware and software; access control by user ID and password; content use by disabling printing and downloading, copying a specified number of times only, and restricting copying through originals (master) only have been developed to protect the content.

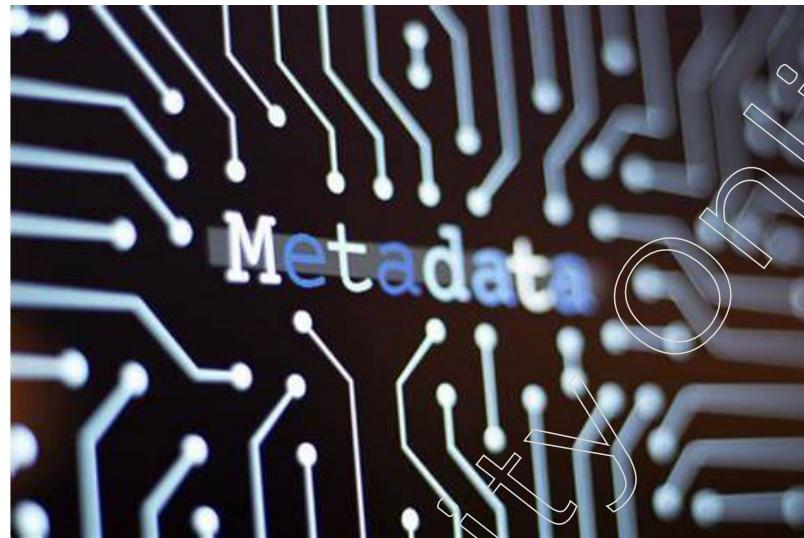
Digital preservation and digitalisation both entail content duplication. Copying for preservation is therefore subject to copyright laws. Digital archive must adhere to intellectual property rights and other legal and moral rights pertaining to duplication, storage, change of material, and use of certain digital assets. Existing assets in an archive must have copyright permissions for digital preservation secured (NMA 2012).

3. **Identification and Cataloguing:** After an archive has gathered digital artefacts, they are stored in the archive. It must be identified and catalogued. Both identification and classification enable the archiving organisation to handle digital artefacts throughout time.

Identification provides a unique identifier for locating the thing and relating it to other relevant objects. Cataloguing and identification procedures are frequently dependent

## Notes

on what is being preserved and the available management resources for the archive. Several significant topics are explored here:



- i. **Metadata:** All archives employ certain types of information for the description, reuse, management, and preservation of archive objects. Use and accessibility of digitally stored assets are contingent on the metadata approach. Metadata increases archive object discovery and accessibility.

Metadata is essential for guaranteeing that materials will endure and be available in the future. In a digital archive, the primary functions of metadata are information retrieval, administration of information services, documentation of ownership and authenticity, and interoperability. Metadata is used to define, arrange, summarise, manage, and generally handle digital items in surrogate form.

Metadata literally means data about data or information about information. Metadata are primarily developed to aid the finding of pertinent information. In addition, it aids in the organisation of electronic resources, allows interoperability and the examination of legacy materials, and supports identification, archiving, and preservation. Archiving and preservation require particular features to monitor the genealogy of digital objects (where they originated and how they evolved over time), to capture their physical attributes and their behaviour so that future technologies might imitate them.

- ii. **Digital Identification:** The location of a digital item may also be specified using a filename, URL, or a permanent identifier such as a persistent URL or the Digital Object Identifier (DOI) (DOI). A permanent identification is preferable due to the fact that file locations change often, rendering URLs incorrect when digital content is not instantly placed into the archive.

In the network, digital content transfers from server to server or from directory to directory, resulting in a URL change. That is a difficult aspect of constructing a digital archive. If the server is used as the location identifier, neither the source object nor any related objects will be persistent over time. Notwithstanding potential issues, the majority of archives continue to utilise the URL to identify the location of digital objects.

- 4. **Storage:** The selection of physical storage for digital information in an archive is also a significant concern. Access to any physical storage media is contingent on a highly particular

mix of hardware and software (Brown 2008). In today's context of fast technological change, the accessibility of data saved on such media is extremely insecure.

Moreover, technological obsolescence is inevitable, and all media have finite lifespans. In the near future, an expensive migration from an existing storage system to a new storage system will be necessary. It may cause the loss of archived data. Archivists or data makers must evaluate a number of factors while selecting storage medium for the digital archive, including duration, capacity, viability, obsolescence, cost, and susceptibility.

5. **Preservation:** Preservation is the process of preserving digital artefacts in digital format to maintain their usefulness, longevity, and informational integrity. Digital preservation is a component of archive management that involves the policies, strategies, planning, resource allocation, and actions necessary to preserve access to reformatted and "born digital" information despite the obstacles of medium failure and technological development.

To assure the safeguarding of knowledge of enduring significance for access by future generations, it is necessary to employ preservation techniques and technologies.

The primary goal of preservation is to safeguard digital assets for perpetuity so that they can be passed down to future generations. For this objective, OCLC (The Internet Computer Library Centre, 2006) has devised a plan comprising the following focal points:

- I. Evaluating the risks of content loss caused by technological factors such as regularly used proprietary file formats and software programmes.
  - II. Assessing the digital content objects to identify the type and level of format conversion or other preservation activities to implement.
  - III. Defining the necessary information for each object type and how it should be related with the objects.
  - IV. Giving content access In addition, archivists and content providers employ additional tactics, such as refreshing, migration, duplication, and emulation, among others. Due to a lack of defined standards, protocols, and procedures for maintaining digital information, digital preservation is primarily challenged by digital obsolescence.
6. **Access:** All of the aforementioned actions are taken to provide continuing access to archived materials. Changes in access mechanisms typically occur over time, and Digital Right Management and long-term security requirements must be considered for effective practise.
    - i. **Access Mechanisms:** Access to and presentation of archival materials are contingent on digitalisation and browser advancements. Changes and advancements in both digitisation and browser technology occur swiftly, and it may be feasible in the future to improve the display quality of digital archive contents.
    - ii. **Digital Rights Management and Security Requirements:** DRM systems are meant to allow access to and use of digital content while restricting copying, sharing, and other modifications to electronic media. DRM addresses concerns with the access and use of digital content for digital archiving, such as what rights the archive has.

## Notes

What privileges do different user groups possess? What rights does the proprietor retain? How will the access mechanism interact with the metadata of the archive to guarantee the effective management of these rights? Rights management comprises granting or restricting access as necessary and modifying access permissions when the copyright and security level of the item change. Moreover, security and version control have an effect on digital archiving.

### 4.1.2 Security and Privacy in a Networked World



Since the number of different types of assaults continues to rise, network security has become the top priority in the design and implementation of computer network systems and services. The crucial question is how to safeguard these computer network systems and services from rogue nodes, which cause a variety of issues inside the network ecosystem, such as service unavailability, data loss, and compromised privacy in communications, etc.

As threats evolve from simple assaults against a single device to sophisticated attacks against several devices in the computer network ecosystem, traditional security measures are insufficient in the era of digitalisation. These concerns have been the impetus for the development of numerous network security techniques to mitigate the aforementioned issues.

#### Background on Security Services and Challenges

##### a) Security Services

Network security encompasses all measures used to protect the integrity and usability of data and the network. Software and hardware technologies are included. Effective network security regulates access to the network's resources and services. It identifies and prohibits several dangers, preventing them from propagating or accessing the network.

The media and society as a whole have recently shown a great deal of worry over security dangers such as the leaking of personal data and economic espionage, identity theft, and the infection of vital computer systems.

In general, computer network and information system security must provide the following services:

**Confidentiality:** It ensures that information is incomprehensible to unauthorised persons, processes, and entities upon their access.

**Integrity:** It ensures that data has not been altered intentionally or accidentally by a third party.

**Authentication:** It verifies that the data source corresponds to the desired identity.

**Non-repudiation:** It ensures that the message's sender cannot contest its authorship in the future.

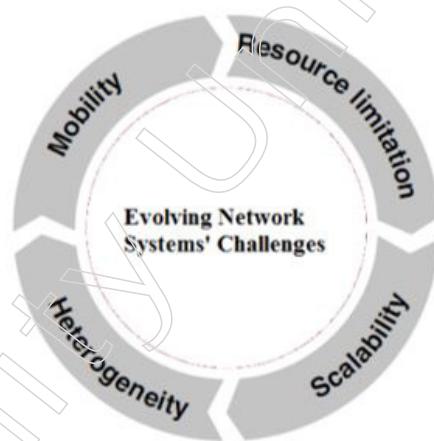
**Availability:** It ensures that system services are accessible to authorised users.

**Privacy:** It ensures both the anonymity and Untraceability of user identities based on their actions and behaviours within the system. Various cryptographic procedures have been devised to counteract various security risks and assure the supply of the above security services.

### b) Challenges

Modern IT technologies are employed to improve the customer experience and maximise the performance of mission-critical applications in many industries. Communication networks enable the enhancement of several applications in a variety of disciplines, including smart homes, healthcare, smart grids, smart cities, and other industrial applications.

Yet, the centrality of communication networks in the fundamental infrastructure for the delivery of such sensitive applications raises significant security and privacy concerns.



#### Heterogeneity

Critical to the ecosystem's security is the heterogeneity of communication standards and information system technologies in a dispersed networked environment.

For instance, the communication between sensor nodes and servers or CPU units from different applications (which are heterogeneous in terms of units of measurement and delivery frequencies) is typically conducted over the Internet, where networks, communication mediums, and protocols are heterogeneous and have different security configurations.

## Notes

The variety of entities participating in growing networks presents an expansive attack surface for any of these entities (e.g., Attacks such as Distributed Denial of Service are inevitable). Hence, designing an adaptive security system that functions in varied situations is quite difficult.

### Scalability

As the population and reliance on network-connected technologies progressively expand, the number of smart devices continues to increase every day, providing a significant scaling problem for the development of security solutions.

### Resources limitations

Most emerging devices engaging in contemporary networks, such as embedded sensors and wearables, have limited memory, processing, and battery resources. Considering the majority of cryptographic techniques are computationally intensive, modifying them to provide a good degree of security while lowering energy consumption is a difficult and significant task.

### High mobility

From embedded sensors and actuators in human bodies to intelligent cars, providing dependable security solutions is a key task. Considering mobility in highly dynamic contexts where network architecture changes regularly make security solution implementation rather complex.

### 3. Evolution of Network Security Strategies

The rise of pervasive interconnectivity between individuals, devices, and dispersed networks has influenced the development of network security solutions (i.e., Networked ecosystem, for instance the Internet of Things). Traditional security measures, such as guarding a single location inside the network, are becoming more useless in a networked environment. In addition, some conventional security standards and best practises are ineffective in addressing the developed security concerns inside the ecosystem.

The growth of security techniques involves the classic security pillars: confidentiality, availability, and integrity. But it must progressively exceed these criteria in order to fulfil the expanding requirements pertaining to the physical environment, health, and safety problems.

The addition of numerous interconnected devices and services to the ecosystem necessitates the resolution of critical issues such as physical safety, disaster recovery for smart or driverless cars, connected HVAC systems, business continuity, and online medical devices such as pacemakers and infusion pumps, or interconnected city networks. In order to counteract the escalating security threats, chosen security strategies are dynamically incorporating new security capabilities to meet the increasing security needs. For example, fundamental security needs.

#### 4. Classification of Evolving Security Strategies



**Notes**

##### a) Conventional Strategies

This category includes cryptographic-based solutions created expressly for the Internet of Things, the paradigm that has evolved to link numerous electronic gadgets and services. The primary emphasis is on ensuring confidentiality, privacy, and accessibility of services. Encryption methods are required in an emerging networked environment to safeguard data shared between objects from harmful actors. Hence, only authorised users are permitted to decrypt data.

Cryptographic techniques provide data secrecy, but in the majority of circumstances, they are useless or even inappropriate for devices with limited resources. This is due to the nature of cryptographic techniques, which need a great deal of storage and calculation. Privacy protection is required in a networked environment since the data generated by smart products are very sensitive and inextricably tied to users' actual lives.

The primary purpose of privacy approaches is to ensure the following conditions:

- **Anonymity:** The property ensures that a third party cannot distinguish the individual's identity from other identities in the system.
- **Unlikability:** Impossible to conceal the identity of the individual from the information they create.
- **Untraceability:** Difficulty in tracking activities and data generated by the activity of an object within the system.

The privacy measures aim to preserve sensitive data while also concealing users' identity to prevent attackers from identifying their activities. Availability of network systems and services is one of the most crucial security services that must be safeguarded against malicious attacks (such as DoS/DDoS) or inadvertent failures.

Very commonly, violations of availability result in astronomical costs, ranging from economic losses (e.g., in manufacturing systems) to safety losses (e.g., in transportation systems) or both. In addition, ensuring the system's availability has proven to be a difficult effort due to the fact that in order to compromise the system, attackers must exploit a wide variety of vulnerabilities at various levels (i.e., Software, network design, cryptographic algorithms, and etcetera.). Most conventional techniques include centrally trusted entities to assure the operation of security services (i.e., in centralised environments).

## Notes

### b) Confidentiality Enablers

Symmetric key techniques provide secrecy by requiring each entity in the system to share cryptographic keys with every other entity in the system. Symmetric based cryptographic techniques are favourable for their efficiency (since they are less-computational) and also are straightforward to implement on hardware platforms. AES (Advanced Encryption Standard), 3DES, and RC4 are merely a few examples of regularly used encryption algorithms.

Despite the fact that Symmetric key schemes bring efficiencies, they still have key management and scalability concerns. Probabilistically or deterministically, these are the two most common distribution strategies. In deterministic strategies, each entity must create a secure connection with all other entities in order to establish comprehensive secure connectivity.

In Probabilistic key distribution, the sharing of a safe key by each node in the network with all other nodes is not guaranteed; nonetheless, the nodes distribute keys to their neighbours based on certain probabilities, so establishing secure channels between all network entities.

Conventional Asymmetric tactics include all techniques that rely on public keys and need the authority to issue certificates to various users of the system. It contains RSA, DSA, NTRU, and ECC cryptosystems, among others. The primary benefits of asymmetric techniques are scalability, adaptability, and efficient key management. Nevertheless, in terms of energy consumption, these solutions are not suitable for devices with limited resources.

NTRU consists of the significantly less computationally intensive asymmetric technique based on the shortest vector problem within a lattice, albeit it requires more memory space to store the keys. Attribute based encryption (ABE) presents an expressive method for regulating the accessibility of private data via a policy access structure that explains the connections between attribute sets used to encrypt data. Inside the ABE system, the Key Generation Server (KGS) generates a private key depending on the properties of each authorised user.

In addition, a public key is utilised in accordance with a preset policy to encrypt data. A valid user can only decrypt data if it possesses the relevant policy-compliant qualities. Key Policy ABE (KP-ABE) and Cipher-text Policy ABE (CP-ABE).

- **Key Policy ABE (KP-ABE):** With KP-ABE, the data owner establishes an access structure A and encrypts the data using a set of characteristics I. Consequently, in order to decode the ciphertext, a user must possess the characteristics that satisfy the access structure A. A user will be able to obtain the private key for decrypting the ciphertext in this manner.
- **Cipher-text Policy ABE (CP-ABE):** The encryption in CP-ABE relies on the access structure A. A user is only authorised if he or she possesses a set with sufficient characteristics I that satisfies the access structure (policy A) that has been applied to the ciphertext.

Identity-based encryption (IBE) addresses the scalability concerns that plague transitional public key cryptosystems. This is as a result of their reliance on the granting of certificates by the authority for each user in the system, which is required to combat

identity theft and spoofing. Identity-Based Encryption technologies effectively cope with scalability and complexity by employing an unforgeable string connected with the user's identification (such as the user's email address, phone number, etc.) as the public key for data encryption, thereby eliminating the need for certificates.

Although IBE is a costly and resource-intensive method, it is not well-suited for a networked ecosystem with numerous resource-constrained devices.

### Privacy Enablers



Data tagging protects the privacy of data flows by adding extra labels, known as tags, to data flows. This enables trustworthy computing entities to associate with the flows of private data, so concealing the identity of those responsible for the data. Depending on the amount of the data, however, tagging techniques may encounter calculation problems.

To demonstrate the usefulness of tagging technique for programmable microcontroller (PIC) under constraint, the authors of offered lightweight code templates dedicated to resource-constrained devices in.

Zero Knowledge Proof (ZKP) is an effective approach primarily used to ensure the anonymity of user identities. The ZKP enables one party (the prover) to authenticate certain property to another party (the verifier) by proving information possession without revealing it. This notion is extremely valuable for designing security procedures while respecting the privacy of the users' data and property.

On the basis of the Discrete Logarithm Problem, a resource-constrained device assessment of various ZKP protocols on elliptic curves (ECC) was developed. Using ECC (with a key length of 1024) provides significantly less execution time and memory than RSA with the same degree of security settings. Interestingly, for tiny message sizes, the energy involved with communication is low. Yet, at a certain threshold, fragmentation of messages causes overloading in ZKP protocols.

The K-Anonymity model is a possibly viable way for protecting data privacy in emerging network services, such as applications for the Internet of Things. Considering the scenario in which a set of homogeneous data (including sensitive information such as ages, phone numbers, addresses, etc.) is recorded in a table.

Whether the column reflects a record of data held by a specific user or users. The K-anonymity models aim to conceal the owner's sensitive information in order to protect each record in the table from at least k 1 other entries in the same database. In cloud

## Notes

and large data applications, the k-anonymity model is commonly used to secure the privacy of user-provided data streams. Many efforts are made to deploy k-anonymity models in IoT applications, namely.

### Availability Enablers

DoS/DDoS countermeasure measures, such as IP Trace back methods, are often deployed in IP-based networks, such as the Internet, in order to identify in real-time DoS and IP flooding assaults. These approaches focus largely on enhancing the security of IP-based lightweight protocols created as variants of the classic TCP/IP protocols in an expanding networked environment such as the Internet of Things. IPv6 Low power Wireless Personal Area Networks (6LoWPAN), Datagram Transport Layer Security (DTLS 9), and IPv6 Routing Protocol for Low-Power and Lossy Networks (RPL) are only a few of the widely implemented protocols that support the secure end-to-end exchange of information between IoT devices by ensuring confidentiality and integrity.

Nevertheless, these protocols are not pre-designed to combat common DoS/DDoS assaults based on IP. Various security enhancements to the RPL-based 6LoWPAN routing protocol and DTLS-based transport layer have been evaluated in an effort to increase the robustness and security against DoS attacks. Among the present solutions, IP routers and IoT gateways perform the most important function by scanning and analysing packets in order to identify malicious behaviour and take the necessary steps.

On the other hand, many security upgrades of RPL and 6LoW- PAN-based IoT designs are recommended for the network layer of TCP/IP, namely inside the routing level. In contrast, Kasinathan et al. proposed an architecture to protect IoT devices based on 6LoWPAN from DoS attacks as well as tampering and jamming assaults as part of the ebbits European project.

They contributed to the construction of an intrusion detection manager intended to protect restricted devices from DoS assaults. For monitoring 6LoWPAN packets, they also provide an Intrusion Detection System (IDS) design that generates alarms in the event of any abnormal activity. The IDS employs promiscuous mode.

Artificial intelligence tactics, like as Artificial Neural Networks (ANN), are recognised as one of the most prominent strategies employed in the building of effective IDS. In [16], for example, the authors investigated the usage of ANN in IoT to identify DOS threats. In order to determine which is superior as an IDS in growing networked systems, they compared two varieties of ANNs: Multilayer Perceptron with Restricted Weights and Multilayer Perceptron with Normal Weights.

The results indicate that during the training phase, both ANN approaches reduce false positive detection, but their memory consumption is considerable, restricting their use within an ecosystem with restricted devices. Several academics studied the feasibility of utilising Cumulative Sum (CUSUM) to identify DDoS assaults in the context of developing networks such as IoT.

The primary objective of the CUSUM algorithm is the real-time identification of statistical process changes in data streams. DDoS are discovered using network traffic monitoring and statistical computing. Constantly, the programme processes the information and ultimately identifies deviations that are associated with network traffic misbehaviour.

### c) Modern Strategies

This category consists of security solutions that rely only on evolving new approaches, as opposed to current cryptographic tools. They are more appropriate than conventional ways for addressing scalability concerns. Generally speaking, the solutions in this area are decentralised. Emerging are some of the two potential technologies:

- 1) **Software Defined Networking (SDN)**, SDN is a revolutionary network paradigm that alters the functions of computer networks by fostering the development of more flexible network solutions and simplifying network resource management via centralised SDN controllers. In the literature, there are various SDN-based security solutions that target emerging network services. As a result, adoption of SDN in tandem with Network Function Visualisation (NFV) helps improve resource allocation in restricted devices within an evolving networked environment.

Hence, SDN offers several chances for addressing various growing security, scalability, reliability, and QoS concerns in a flexible and effective manner. It provided a new SDN-based IoT architecture with many domains that supports all networks, infrastructure or not. Additionally, to handle security rules across various SDN domains, a distributed security model was developed. The conflicts caused by the implementation of security policies across several domains are resolved through a security paradigm grid designed to address security heterogeneity challenges. Hence, each SDN controller pushes security policies inside its domain and coordinates with other SDN controllers outside the domain.

### Challenges

The SDN-based security approach focuses primarily on addressing security challenges within the operations of centralised architectures. Thus, centralised SDN controllers become more vulnerable to attack. This is the greatest obstacle, as centralised SDN controllers must be protected from developing common threats like as DDoS. Managing the huge number of devices in the underlying data plan network efficiently also presents scaling challenges. Moreover, the southbound link between the data plan and SDN controller is the weak area for network performance efficiency. For example, sited integrity problems inside the OpenFlow protocol.

In highly dynamic contexts where multiple messages are exchanged between devices and network topology changes often, such as in automotive networks, a centralised SDN method is ineffective. In such systems, implementing security policies and configurations using SDN techniques may take a considerable amount of time. It is true that the SDN technique is better appropriate for specific applications and effectively addresses service quality and heterogeneity challenges. In most situations, however, their centralised architecture restricts their scalability.

- 2) **Blockchain Technology**, It promises to offer security within a growing network ecosystem, since its application to bitcoin tools has already proven effective (for instance Bitcoin). Essentially, it permits dispersed transactions between entities (peer to peer architecture without referring to any central trusted server).

Also, in its operation, there is no necessity for organisations to have mutual trust. Using this technology, it is nearly hard to contest completed transactions once

## Notes

they have been authenticated. Researchers have shed light on emerging security solutions that provide security features such as data privacy, access control, etc. in order to reduce security risks in evolving network systems and services.



Many vivid illustrations of blockchain's implementation inside a growing networked ecosystem are shown below. Alliance on Blockchain for IoT (Guard time and Intrinsic-ID) Intrinsic-ID is a firm that provides cryptographic solutions to authenticate embedded devices using a technology known as a Physical Unclonable Function (PUF), which is typically used to safeguard sensitive processes such as government payments and data. Guard time's objective is to provide a security solution based on a Keyless Signature Infrastructure (KSI) platform that includes a scalable blockchain solution.

- 3) **Chronicled.com:** It is a new company that provides blockchain-based solutions. It is largely concerned with resolving security-related issues, including the authentication and identification of IoT devices. They argued that blockchain's tamper-resistant property might resolve a number of existing security challenges.

Especially given the ease with which existing security measures such as barcodes and QR codes may be replicated. With the growth of networking services, blockchain technology can contribute to security-related sectors.

The following blockchain characteristics can be implemented to improve the security of growing network services:

**Security of Transactions:** Before being transmitted to the blockchain network, all transactions must be signed by the node and confirmed and verified by miners. Following validation, the transactions stored on the blockchain are nearly hard to counterfeit or alter. This provides a system-wide record of traceable occurrences.

**Decentralisation:** The decentralised design of growing network systems and services encourages blockchain as the ecosystem's optimal security method. The scalability made possible by blockchain's decentralised architecture might enhance security by eliminating single points of failure, hence boosting resistance to DoS assaults.

**Pseudonymity:** The pseudonyms inside blockchain provide unlikability between information and the identities of participating nodes. In blockchain, public keys or public keys are used to identify nodes.

### Challenges

Despite the aforementioned advantages of blockchain, there are still a number of obstacles to overcome in order to implement the technology in current networks. These are a few of the obstacles:

**Computation and Storage Issues:** Miniaturisation of devices within a growing networked ecosystem restricts computational and storage capacity. To satisfy the security requirements of emerging networking systems and services, the blockchain must be modified to overcome compute and storage challenges. Proof of Work (PoW) solution addresses the adaptability issue by introducing a new application level for the sole purpose of concealing blockchain data. In this manner, resource-constrained devices inside a networked ecosystem can contribute without doing the PoW computation.

**Time Latency:** If emerging networking systems and services follow the same 10-minute transaction validation interval as the bitcoin blockchain, security vulnerabilities may arise for real-time applications.

**Scalability Issues:** According to Cisco, by 2020 there will be more than 20 billion IoT items linked to the Internet. Blockchain technology cannot ensure scalability inside networked ecosystems such as IoT, despite the bitcoin blockchain's immense success and exponentially growing user base.

**Bandwidth Consumption:** Due to the requirement of authenticating each device's transaction, a large number of transactions created by various devices in a networked ecosystem creates issues with bandwidth usage.

**The Anonymity:** Although while it is hard to determine the identity of a person from a pseudonym in a blockchain transaction, this does not ensure a completely anonymous transaction. This is due to the fact that peers inside the blockchain are identifiable by pseudonyms that may be traced.

In dynamic and contemporary networks, such as vehicular networks, where the context frequently changes, fundamental concerns such as resource restrictions and scalability are still not well addressed. Frequently, the context groups many pieces of information regarding the positions of the devices, their battery levels, the number of nearby objects, etc.

These snippets of information may be pertinent and hence highly significant for strengthening security, and they may also be used to develop more flexible and context-aware security solutions without using cryptographic methods. Consider, for example, the use of a complex cryptographic technique to verify a single IoT device A.

**In some situations, it may be advantageous:** to avoid using a cryptographic technique to authenticate device A because it lacks the energy to finish the intensive cryptographic operations, thereby conserving its battery while it is positioned in a secure area. Using other information linked with the device A to identify it without relying on cryptographic procedures might be of significant use. The information may include the date of its most recent authentication, the location of A, its owner, etc. Context plays a crucial role in addressing security concerns in dynamic IoT systems.

In general, the solutions in this category efficiently fulfil performance criteria such as power consumption, computation, memory use, and service quality. In contrast to other strategies, these solutions are less explored in the literature, particularly in the context of the Internet of Things. Thus, further research should be conducted to close the gap and improve existing solutions by using the environment in which IoT devices grow.

Despite the fact that a number of the security concerns prevalent in digital transformation are novel, they may be controlled by a mix of time-tested best practises and the installation of a stronger security architecture.

## Notes

The important function in safeguarding the highly scattered ecosystems is played by rapid authentication in tandem with monitoring. In addition, internal segmentation built for monitoring and safeguarding distributed computing and networking, as well as enforcing and coordinating distributed and cloud-based security services that can track and secure distributed data and devices throughout the network ecosystem.

Security must bind the entire networked ecosystem together. Security inside changing network systems and services demands automated visibility from end to end points, equipped with unique detection capabilities, driven by the threat information enabling orchestration of actions to relieve threats at machine speed.

What is required is an integrated and distributed framework-based security strategy that can safeguard computer resources, boost and ensure resilience, and cover the whole networked ecosystem. This technique can effectively enable monitoring legal traffic, verifying authentication and credentials, and enforcing access management across the dispersed ecosystem via an integrated, synchronised, and automated security architecture.

### 4.1.3 Internet of Things: Smart Devices, Processes and Services



Internet of Things (IoT) refers to the enormous collection of physical things outfitted with sensors and software that allow them to communicate with minimal human involvement by collecting and exchanging data over a network.

The Internet of Things (IoT) consists of the numerous “smart” computer-like devices that can connect to the Internet or interact via wireless networks; these “things” include phones, appliances, thermostats, lighting systems, irrigation systems, security cameras, vehicles, animals, and even entire cities.

Nowadays, smart watches measure fitness and steps, smart speakers add things to shopping lists and control lighting, and transponders allow automobiles to electronically pass through tollbooths and pay the price.

The Internet of Things simplifies and automates operations that are complex and often beyond the capability of humans. Nowadays, billions of linked gadgets comprise the Internet of Things.

### What are IoT Devices?



IoT devices are nonstandard computer devices that connect wirelessly to a network and have the capability to transfer data, such as the vast majority of internet of things devices (IoT).

IoT includes expanding internet connectivity beyond ordinary devices, such as desktops, laptops, smartphones, and tablets, to a variety of traditionally “dumb” or non-internet-enabled physical equipment and commonplace things. These gadgets, which are embedded with technology, may connect and interact through the internet. They may also be monitored and operated remotely.

### What is an Example of an IoT Device?

Connected gadgets are part of an ecosystem in which all devices communicate with one another to automate domestic and industrial processes. They are able to transmit sensor data to consumers, corporations, and other parties. The gadgets may be divided into three major categories: consumer, business, and industrial.

Smart consumer gadgets consist of smart televisions, smart speakers, toys, wearables, and smart appliances.

In a smart home, for instance, equipment are designed to detect a person's presence and respond accordingly. When a person arrives at their residence, their vehicle connects with the garage to unlock the door. As the data from their smart watch shows they have had a stressful day, the thermostat is already set to their desired temperature, and the lighting is dimmed and changed to a warmer hue.

Other smart home technologies include sprinklers that regulate the quantity of water provided to the grass based on the weather prediction and robotic vacuum cleaners that learn which sections of the home require the most frequent cleaning.

### The Operation of the Internet of Things

Internet Protocol (IP) and Transmission Control Protocol serve as the IoT's foundation (TCP). These standards and norms serve as the foundation for sensors, devices, and systems to connect to the Internet and to one another. The Internet of Things analyses data from devices and transmits it over wired and wireless networks, such as Ethernet, Wi-Fi, Bluetooth, 5G and LTE cellular, radio frequency identification (RFID), and near field communication (NFC).

**Notes**

## Notes

IoT devices often link to IoT gateways or edge devices, which gather data. They transmit and receive data between cloud computing environments, which store and process the data. A wide range of networking protocols ensures that the data is then shareable and reaches the appropriate “object,” thereby linking the real and digital worlds.

Two fundamental types of linked devices exist: digital-first and physical-first. The former comprises of machinery and gadgets explicitly designed with built-in connection, such as smartphones, streaming media players, mobile payment terminals, agricultural combines, and jet engines. Digital-first devices create data and communicate with other machines using machine-to-machine (M2M) connections.

In contrast, physical-first devices comprise a microchip or sensor with communication capabilities. For instance, a keychain, a vehicle, or a medical gadget at a hospital may have a post-manufacturing-added chip that confers functionality and traceability. Some observers describe items based on a spectrum of interactivity that includes not two but five categories, ranging from pure digital (followed by digital first, dual usage, and physical first) to pure device (without any digital capabilities).

The Internet of Things enables individuals and systems to exchange data and information via social media and other internet ways, to remotely monitor and manage events, and to engage with others via mobile and other systems, such as gaming devices. During the pandemic, for instance, networked thermometers helped epidemiologists better comprehend the spread of COVID-19 by following individuals with fevers.

### A Historical Perspective on the Internet of Things—

Although examples of networked electronic devices date back to the early 19th century, with the introduction of the telegraph and its capacity to convey information by coded signal over a long distance, the IoT dates back to the late 1960s. Afterwards, a group of eminent experts began investigating methods for connecting computers and systems.

ARPANET, the network built by the Advanced Research Projects Agency (ARPA) of the United States Department of Defense, was a precursor to the Internet as we know it today. In the late 1970s, corporations, governments, and consumers began investigating methods for interconnecting personal computers (PCs) and other technologies. In the 1980s, local area networks (LANs) were a popular and efficient means to interact and share documents, data, and other information in real time among a group of PCs.

By the mid-1990s, the Internet had globalised these capabilities, and academics and engineers were researching methods for humans and robots to communicate more effectively. In 1997, British technologist Kevin Ashton, cofounder of MIT’s Auto-ID Center, began exploring a technology framework, radio-frequency identification (RFID), that would enable physical devices to connect via microchips and wireless signals. In 1999, Ashton coined the term “the Internet of Things” in a speech.

Within a few years, cell phones, cloud computing, advances in processing power, and enhanced software algorithms have built a foundation for more robust data collection, storage, processing, and sharing. Simultaneously, advanced sensors that

could monitor motion, temperature, humidity, wind direction, sound, light, pictures, and vibrations, as well as the capacity to geolocate a person or item, emerged.

These advancements made it feasible to connect in real time with both digital devices and physical items. By attaching a tracking chip such as an Apple AirTag to a wallet or bag, for instance, its whereabouts may be determined. The same chip incorporated into a digital gadget may be used to track its whereabouts if it is misplaced or stolen.

The growing use of mobile devices such as smartphones and tablets and the arrival of pervasive wireless connectivity made it feasible to link people and objects in an almost omnipresent manner. Hence, intelligent traffic networks, networked storage tanks, and industrial robotics systems became commonplace.

The IoT is always evolving. It now supports a variety of use cases, such as artificial intelligence used for very complex simulations, sensing systems that identify pollution in water sources, and systems that monitor agricultural animals and crops. It is now feasible, for instance, to monitor the location and health of animals remotely and to administer appropriate amounts of water, fertiliser, and pesticides to crops.

Heavily interconnected systems enable shipping businesses and airlines to account for weather and mechanical issues, and then manage fleets for maximum load and efficiency. The Internet of Things offers drivers with real-time maps and routing suggestions based on current traffic trends. These solutions decrease traffic and pollution while saving time and money.

#### Security, Privacy, and Safety Concerns about the Internet of Things



The capacity to implement sufficient security measures is a critical challenge for the Internet of Things. Already, hackers have compromised video systems, Internet-enabled baby monitors, medical gadgets, and even autos, and they have used unsecured IoT devices to gain access to corporate networks.

Personal and data privacy are also key factors to consider. Poor security can result in the loss, theft, or improper use of sensitive data, including health and financial information. Linked devices and systems, combined with cloud-based data storage, increase the number of sites of vulnerability. In 2017, the Food and Drug Administration (FDA) of the United States recalled over 500,000 pacemakers owing to

## Notes

their susceptibility to hacking; a hacker may, for instance, deplete the battery or transmit shocks to the patient.

In the same year, hackers hacked into a casino and stole a substantial quantity of data using a poorly protected “smart” fish tank, whose Internet capabilities allowed its temperature, salinity, and food distribution to be managed remotely, but left the casino’s data system exposed to assault.

When video data is integrated with other forms of data gathered from sensors, cameras, cellular records, computer logs, and other systems, it is feasible to determine where an individual has been or what they have done at any particular time. This data may be utilised or misused by law enforcement, governments, and enterprises, among others.

There are other risks inherent with technology. Individuals are able to circumvent the law and “print” unlawful weapons and other objects, such as counterfeit products, using 3D printers that are networked and capable of fabricating ordinary items.

In the next years, microbots and practically undetectable nanobots - small, networked electronic robots — might be employed for espionage or terrorist operations. The United Nations and humanitarian organisations have denounced these very contentious technologies.

### The future of the Internet of Things

While the capacity to link physical items and devices provides enhanced efficiency and, in some circumstances, cost reductions, increasing the number of connection points and networks opens the door to more opportunities, albeit with significant dangers and difficulties.

For instance, a smart car that connects to a smartphone can already integrate mapping, entertainment, voice commands, and other functions that transform the vehicle into a computer on wheels.

However, a network of connected vehicles and infrastructure could enable vehicles to not only avoid crashes while driving, but also “see” around corners and avoid collisions with bicyclists and pedestrians. In addition, sensors installed in bridges, tunnels, roads, and other infrastructure might signal when repairs are required or failure is imminent.

Yet, putting such advances into reality might be difficult. Existing autonomous vehicles, for instance, are already plagued with safety problems and hacker vulnerability.

Smart utilities and perhaps even smart cities might enable society to utilise energy resources and transportation systems more efficiently and at a lower cost than in the past. Connected gadgets inside and outside the body might transform the way people manage their health, allowing smart-connected devices to release the proper quantity of medication at the right time, and allowing small robotic devices injected into the body to identify and treat medical issues.

It is certain that the IoT will continue to have a tremendous influence on people’s lives and culture in the years to come, despite the fact that no one can foresee the

precise path that these linked technologies will follow or the issues and societal concerns they may spark.

## Notes

### What are Smart Devices?



Smart Devices are Internet of Things (IoT) gear that enables users to get advanced and dependable real-time data as easily as possible. Almost any type of physical sensor (photo-eyes, temperature, pressure, vibration, encoder, etc.) can be connected to Smart Data Collectors, which transmit data to a Smart Coordinator (edge device) and then into software (on-premises or in the cloud) for analysis, visualisation, notification, collaboration, and decision support.

### Applications of Smart Devices

"The uses for these gadgets are virtually infinite."

- Smart gadgets are all commonplace objects that have been rendered sentient by sophisticated computing, including AI and machine learning, and networked to form the internet of things (IoT).
- Intelligent devices can function at the network's edge or on extremely small endpoints, despite their diminutive size, they are powerful enough to analyse data without reporting back to the cloud. These vary from sensors and refrigerators to wearables and container transportation and are capable of executing autonomous tasks.
- Smart devices may be integrated to add intelligence to objects and places, such as smart homes and buildings, as well as automate processes and controls.
- They may be implemented in virtually any industry, from smart manufacturing to healthcare, in order to increase efficiency and optimise operations.
- Smart devices can be employed in any circumstance where real-time values from industrial processes must be acquired.
- Typical applications include condition-based monitoring, time-series data recording, preventive and predictive maintenance, notification and escalation

## Notes

management, KPI tracking, at-line and in-process quality checks, and numerous more.

### What are IoT Technologies?

Instances of technologies utilised in IoT systems include:

#### Edge Computing

Edge computing is the technology that enables smart devices to do more than simply transmit or receive data to their IoT platform. It improves the computational capability at the edges of an Internet of Things network, therefore decreasing communication latency and enhancing reaction time.

#### Cloud Computing

The cloud is used for distant data storage and Internet of Things (IoT) device management, making the data available to various networked devices.

#### Machine Learning

Machine learning refers to the software and algorithms used to analyse data and make judgements in real time. These machine learning algorithms may be applied on-premises or in the cloud.

#### IoT Processes

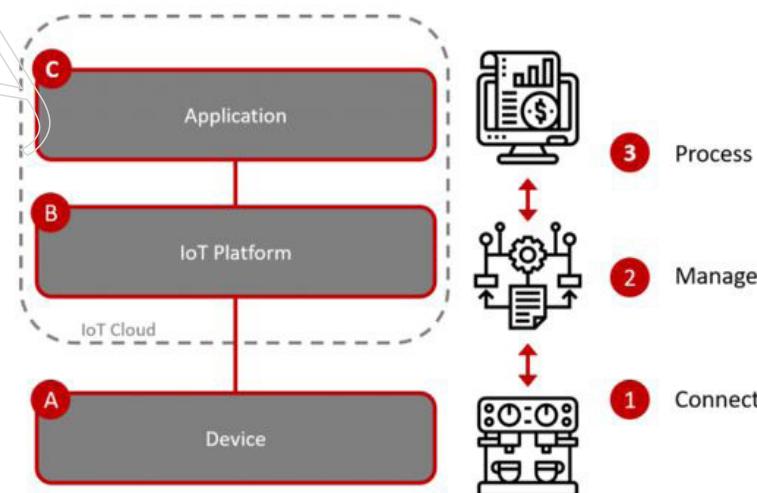
All IoT solutions typically have three main processes:

**Connect** = Establish internet linking and send data

**Manage** = Receive, structure, normalise, store and keep data

**Process** = Analyse and visualise data

**Connect** = Establish internet connectivity and send data



Then, the gadget must be connected to the internet so that it may transfer data. Similarly to how a smartphone may be linked by SIM, i.e. via a mobile internet connection or over WLAN, IoT devices provide several connectivity options.

The following things should be understood before attaching the device:

## Notes

### Can the Device be Connected to the Internet?

The initial inquiry is whether or not the gadget contains a communication module. They are accessible for the various communication options: For instance, is it compatible with WLAN and LAN connections? Or does it have Bluetooth or ZigBee local data interfaces? Perhaps a SIM module that is incorporated and facilitates mobile communication?

### Can the Device Send (and receive) Data?

If the device is linked, it must be able to send and, ideally, receive messages. So, the question is whether the equipment has a communication interface (direct or indirect). Example: Direct: Does the gadget support MQTT and XMPP as well as other IoT protocols? or Indirect: Is it compatible with field networks like as Modbus, CANBus, or OPC UA?

If the device is outdated and lacks a communication option:

- Is "retrofitting" feasible?
- This means, may an extra data transmission module be added?
- For instance, is it possible to retrofit a WLAN module or Bluetooth beacon to link the device?
- Which link makes the most sense (based on which Use Case)?

If a device is usually connectable, the question is how it should be linked (i.e., via which network and with which connection mechanism).

Which network to use (Smartphone WLAN or mobile) relies initially on the required coverage area. Is the gadget mobile, like a fitness watch that should function globally, or is it stationary, like a refrigerator?

The second factor is the volume of data. Once every day, the gadget will transmit a few data points, such as temperature and alarm data from a machine or live video from a surveillance camera.

When these two facts have been explained, one may determine which logical relationship exists. The graphic below provides an overview of the available connection possibilities.

### Other Factors in the Selection are:

- Existing networks, for instance, may a WLAN be utilised?
- Are there any reasons why it should not be utilised?
- How many devices are allowed to be connected?
- What is the regional network coverage?
- What is the power consumption of the connecting devices?
- Are there criteria for transmission speed and connection reliability?

**Manage** = Receive, structure, normalize, store and maintain data

## Notes

Ensure that the cloud can accept data from the devices as the initial step. After the data packets have been transmitted across the chosen network, the IoT platform must be able to receive and interpret them. More IoT protocols and data formats must be understood by the platform as the number of connected device types grows.

The data point structures vary from manufacturer to manufacturer and device type to device type. Due to the fact that this structure is absolutely unique to each device, they must be organised and normalised upon arrival in the cloud. You may compare it to asking ten individuals to sketch a house:

You receive 10 distinct variations of a home. Each artist has a unique method of depicting a home, despite the fact that every image depicts a residence. Similarly, each manufacturer has his own method for configuring his equipment to transmit data. So, it is possible for 10 distinct devices to transmit temperature data in 10 distinct ways. Often, only the manufacturer understands how to interpret this data.

In certain areas, standardised data processing standards already exist, such as the DICOM standard in the healthcare industry. In most industries, however, there is not currently an uniform norm. Thus, data standardisation of the linked devices is one of the primary challenges in the creation of an IoT solution.

In the case of the sketched homes, this means that the system would need to be trained that each of the 10 drawings represents a house. Or, more precisely, which elements of the drawing indicate the walls, windows, doors, and roof?

**Process** = Analysand visualize data

So, everything relies on how the data will be utilised. As previously said, IoT possibilities are as diverse as the sectors and application domains in which we make goods.

### 4.1.4 Latest Technologies Empowering Digital India Initiatives



Digital India is a flagship initiative of the Indian government with the goal of transforming India into a digitally empowered society and knowledge-based economy.

e-Governance projects in India expanded in the mid-1990s to encompass larger sectoral applications with a focus on citizen-centered services. The government's key ICT efforts included, among others, the computerisation of the railways, the computerisation of land records, etc., which concentrated primarily on the construction of information systems. Many jurisdictions subsequently initiated ambitious e-Governance initiatives aimed at offering electronic services to residents.

Despite the fact that these e-Government programmes were designed with the citizen in mind, their restricted capabilities prevented them from having the desired effect. The segregated and less interactive platforms highlighted significant inadequacies that were impeding the adoption of e-Governance throughout the whole spectrum of government.

To develop a more connected government, they pointed out the need for a more extensive design and execution of the essential infrastructure, interoperability concerns to be addressed, etc.

The government designated Digital India as the primary mechanism for empowering, protecting, and promoting the health of its population and for advancing the nation's economy. The Reserve Bank of India, the country's central bank, predicts that by 2025, digital payments would increase to 1.5 billion transactions per day, or Rs 15 trillion. Prior to March 2020, daily transactions averaged over 125 million, the majority of which were powered by the government's renowned United Payment Interface, or UPI.

To track individuals' health and monitor the spread of the epidemic, the government established the Aarogya Setu app, which has been downloaded over 127 million times, a testament to the fast digital transformation of India.

From the perspective of governance, Information Technology in modern India has played a revolutionary role in establishing the country as one of the nation's making the greatest digital advances in recent years. Importantly, digital transformation has increased India's potential for innovation in every facet of its economic engine, as well as resource optimisation, which is currently being pursued in sectors spanning e-Education, manufacturing, agriculture, healthcare, retail, financial services, banking, national defence, security, and public utilities.

Overall, data, technology, and governance are converging as a force to accelerate social change and address the importance of leveraging the data produced by various e-Governance efforts to maximise decision making.

In 2015, the Digital India Initiative (DII), which is a project of 'Digital India,' unveiled a flagship programme to turn India into a digital economy with the involvement of residents and businesses. The campaign targeted many devices. It pledges to turn the nation into a digitally empowered society and a knowledge-based economy with a high level of intellectual capital.

The Digital India initiative, in General, Aims to Assist in Achieving the Following Visions:

- Digital infrastructure as a Need for Each Person
- Governance and on-demand services
- Citizen digital empowerment

The government has taken significant initiatives in recent years to develop citizen-friendly e-Government. Several of the initiatives can be classified as "unique to our country" since our nation has such a vast array of cultural, linguistic, and character traits.

## Notes

### Digital India Initiatives

The following efforts contribute to the Digital India infrastructure:

#### Aadhar



**MERA AADHAAR, MERI PEHACHAN**

Every citizen of the nation is assigned an Aadhaar number as part of the Aadhaar identification platform, which is one of the fundamental pillars of "Digital India." Aadhaar is a strategic policy instrument for social and financial inclusion, public sector delivery reforms, controlling fiscal budgets, increasing convenience, and promoting hassle-free people-centered government.

It is sufficiently unique and resilient to eliminate duplicate or false identities and may be used as a basis/primary identity to roll out a number of government welfare schemes and programmes for effective service delivery, hence boosting transparency and good governance.

#### BHARAT BROADBAND NETWORK (BBNL)

The Government of India established Bharat Broadband Network Ltd as a special purpose vehicle under the Companies Act with an authorised capital of 1 trillion rupees. India is required to establish a National Optical Fiber Network (NOFN). By installing additional fibre, about 2,500,000 Gram Panchayats across 6,600 Blocks and 641 Districts would be covered.

#### COMMON SERVICE CENTRES (CSCS)

The CSC scheme is one of the mission mode initiatives within the Digital India Program. CSCs are the access points for the delivery of key public utility services, social welfare programmes, healthcare, finance, education, and agriculture services, as well as a host of B2C services to rural and distant inhabitants of the nation.

It is a pan-India network that caters to the regional, geographical, linguistic, and cultural diversity of the nation, hence allowing the government's mandate for a socially, financially, and digitally inclusive society.

#### Digital India Initiative's Service Offerings:

##### ACCESSIBLE INDIA CAMPAIGN AND MOBILE APP

Sugamya Bharat Abhiyaan, also known as the Accessible India Campaign, is a nationwide initiative to achieve universal accessibility, allowing individuals with disabilities to get access to equal opportunities, live independently, and participate fully in all parts of life in an inclusive society. The objective of the programme is to improve the accessibility of the built environment, transportation system, and information and communication ecosystem.

The smartphone application is a platform for crowdsourcing information on inaccessible locations around the United States. The mobile application may be downloaded from the various App Stores for IOS, Android, and Windows platforms.

## Notes

### AGRIMARKET APP



The smartphone application was designed to keep farmers informed of crop prices and dissuade them from engaging in distress sales. With the AgriMarket Mobile App, farmers may obtain information on crop prices at marketplaces within 50 kilometres of their own device.

This application automatically determines the location of farmers using mobile GPS and retrieves market values for crops within a 50-kilometer radius. The prices of agricultural products are retrieved from the Agmarknet website. Presently, the applications are accessible in English and Hindi.

### BETI BACHAO BETI PADHAO

The goal of the campaign is to ensure that girls are born, raised, and educated without prejudice in order for them to become empowered citizens of this nation. Across 100 districts, the campaign integrates interventions at the national, state, and district levels with community-level action, bringing together diverse stakeholders for rapid effect. The initiative's YouTube account has a variety of campaign-related videos.

### BHIM (BHARAT INTERFACE FOR MONEY)

Bharat Interface for Money (BHIM) is a programme that uses Unified Payments Interface to make financial transactions simple, straightforward, and rapid (UPI). It permits instantaneous direct bank-to-bank payments and the collection of funds utilising a Mobile number or Payment address. The Bharat Interface for Money app is presently available for smart phones on Android and can be downloaded from the Google Play store.

### CRIME AND CRIMINAL TRACKING NETWORK and SYSTEMS (CCTNS)

Crime and Criminal Tracking Network and Systems (CCTNS) is a plan scheme that was designed based on the experience of a non-plan scheme, namely Common Integrated Police Application (CIPA). CCTNS aims to create a comprehensive and integrated system for enhancing the efficiency and effectiveness of policing by adopting the e-Governance principle and establishing a nationwide networking infrastructure for the development of an IT-enabled, state-of-the-art tracking system centred on 'Investigation of crime and detection of criminals.'

## Notes

### Crop Insurance Mobile App

The mobile app for crop insurance may be used to determine the insurance premium for notified crops depending on the region, coverage amount, and loan amount for loanees farmers. It may also be used to obtain information on the regular sum insured, the extended sum insured, the premium and the subsidy for any crop in any notified area.

### DIGITAL AIIMS



In January 2015, an effective link was established between AIIMS, the Unique Identification Authority of India (UIDAI), and the Ministry of Electronics and Information Technology, marking the beginning of the Digital AIIMS initiative (MeiTY). On the Aadhaar platform, a unique health identification number was produced for each patient attending AIIMS. The Unique Health Identification Number provided each AIIMS Patient with a Digital Identity.

### e-Granthalaya

Developed by the National Informatics Centre, Department of Electronics and Information Technology, e-Granthalaya is an Integrated Library Management Software. The programme is useful for automating internal library operations and providing several online member services. The programme has an integrated Web OPAC interface for publishing library catalogues on the Internet. The programme is UNICODE-compliant and hence allows for data entry in regional languages.

### e-Panchayat

e-Panchayat is an e-Governance programme for the rural sector that aims to automate Gram Panchayat operations through a full software solution. It is a forum for panchayat representatives to communicate with the rest of the world, with the goal of amplifying local voices by allowing local communities to discuss local social, cultural, and economic practices, tales, and obstacles.

### e-Biz

Infosys Technologies Ltd (Infosys) is implementing eBiz under the supervision and auspices of the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India. The objective of eBiz is to improve the country's business climate by facilitating quick and efficient access to Government-to-Business (G2B) services via an online platform. This will aid in avoiding needless delays in the different regulatory procedures required to launch and operate a firm.

## Some Empowering Digital India Initiatives

### Aadhaar Enabled Payment System (Aeps)

AEPS is a bank-led platform that enables interoperable online financial inclusion transactions at Point of Sale (MicroATM) through the Business correspondent of any bank utilising Aadhaar verification. It is a payment service that enables a bank client to use Aadhaar as his/her identification to access his/her Aadhaar-enabled bank account and undertake basic banking operations such as balance inquiry, cash deposit, cash withdrawal, and remittances via a Business Correspondent.

### BPO Scheme



The India BPO Promotion Plan (IBPS) aims to incentivise the construction of 48,300 BPO/ITES seats around the country. It is allocated to each state in proportion to the state's population, totalling Rs 493 crore. This would aid in the development of infrastructure and human capital in smaller cities and serve as the foundation for the next wave of IT/ITES-driven growth. This programme has the potential to generate around 1.5 million direct jobs, assuming three shift operations. It may also provide indirect employment opportunities.

### Digidhan Abhiyaan

Via the DIGIDHAN Bazaar, the programme intends to enable people and merchants to conduct digital transactions in real time. It intends to assist consumers in downloading, installing, and utilising various digital payment systems for digital transactions by organising DigiDhan Melas around the nation.

### MYGOV

MyGov platform is an innovative effort that was established by India's honourable prime minister, Shri Narendra Modi. It is the first-of-its-kind effort involving the general public in participatory government. The objective of MyGov is to contribute to the social and economic development of India by bringing the government closer to the average man via the use of an online platform that facilitates a healthy interchange of ideas and perspectives between the common person and professionals.

### National Mission on Education Using ICT

The National Mission on Education through Information and Communication Technology (NMEICT) has been conceived as a Centrally Sponsored Scheme to

## Notes

## Notes

leverage the potential of ICT in the teaching and learning process for the benefit of all the learners in Higher Education Institutions, in a move that is accessible at any time and from any location. It is a historic project of the Ministry of Human Resource Development to meet the education and learning requirements of all students, instructors, and lifelong learners.

### North East Bpo Promotion Scheme (NEBPS)

The North East BPO Promotion Scheme (NEBPS) has been approved under the Digital India Plan in order to stimulate BPO/ITES operations in the North East Region (NER) for the development of job opportunities for youngsters and the expansion of the IT-ITES industry. The goals of NEBPS are as follows:

- I. The creation of job possibilities for the local youth in NER through the promotion of the IT/ITES industry and the establishment of BPO/ITES enterprises.
- II. Promotion of investment in the IT/ITES sector in the NER in order to broaden the IT industry's foundation and ensure balanced regional growth.

### NREGA-SOFT

NREGA-SOFT envisage establishing e-Governance throughout State, District and three levels of Panchayati Raj Institutions. It enables the average man via the use of information technology. Citizens can get information from NREGA-SOFT in accordance with the Right to Know Act (RTI Act). It makes public papers such as Muster Rolls, Registration Application Register, Job Card/Employment Register, Muster Roll Issuance Register, and Muster Roll Receipt Register that would otherwise be concealed from view.

### OpenForge



OpenForge is the Indian government's platform for the open and collaborative creation of e-Government applications. Via this platform, the government intends to promote the adoption of open-source software and encourage the sharing and re-use of e-Government-related source code. Open-Source has the following goals:

- Provide a framework for maintaining government source code repositories and version control
- To encourage a culture of open, collaborative application development between public agencies and private enterprises, people and institutions.

- To decrease development cycles and expedite the national implementation of e-Government applications
- To provide e-Governance services and solutions of greater quality and security by enhancing transparency and peer review on a massive scale.
- To lower the cost of the e-Governance project and the total cost of ownership through a system of reuse, remixing, and sharing.

### **PahaL (DBTL)**

The PAHAL (DBTL) seeks to remove duplicate or fraudulent LPG connections and decrease diversion. The programme was initially introduced in 2013 and amended in 2015. Under the PaHaL programme, LPG cylinders are sold at market prices, and the subsidy is deposited directly into the bank accounts of eligible consumers. This is accomplished via an Aadhaar link or a bank account link.

### **Paygov India**

A National Payment Service platform has been envisioned for a single e-Government infrastructure, which would enable end-to-end transactional experience for citizens, including internet access to various services and payment gateway interface for online payments.

Ministry of Electronics and Information Technology and NSDL Database Management Ltd (NDML) created a common infrastructure that can be used by Center/States/Departments to offer a variety of services via their National/State portals, with the option to pay online via net banking, credit cards, and debit cards.

### **Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA)**

PMGDISHA is a programme that aims to become six crore rural Indians digitally literate across all states and union territories by 31st March 2019, encompassing one member of each eligible rural family. It attempts to bridge the digital gap by focusing on the rural population, particularly the underprivileged groups of society such as Scheduled Castes (SC) / Scheduled Tribes (ST), Minorities, Below Poverty Line (BPL), women, and those with disabilities.

### **Pradhan Mantri Jan-Dhan Yojana (PMJDY)**



PMJDY is a National Mission on Financial Inclusion that employs an integrated strategy to ensure the complete financial inclusion of all Indian families. The strategy

## Notes

envisioned universal access to banking facilities, a minimum of one basic bank account per family, financial literacy, access to credit, insurance, and pension facilities, and financial education.

The effort entails routing all government payments (from the federal, state, and local levels) to the beneficiaries' bank accounts and promoting the Union Government's Direct Benefits Transfer (DBT) plan.

### **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**

PMKVY is the Ministry of Skill Development and Entrepreneurship's flagship programme (MSDE). The purpose of this Skill Certification Plan is to enable a large number of young Indians to pursue industry-relevant skill training that would aid them in attaining a better standard of living. Under Recognition of Prior Learning, individuals with prior learning experience or skills will also be tested and certified (RPL).

### **Smart Cities**

In June 2015, the Indian government started the Smart Cities Initiative. Its goal is to promote sustainable and inclusive cities that offer basic infrastructure and a fair quality of life for their residents, as well as a clean and sustainable environment and the implementation of "Smart" Solutions.

The emphasis is on sustainable and equitable development, and the goal is to build a replicable model for compact regions that will serve as a beacon for other aspirant cities. The Smart Cities Mission is intended to provide examples that may be imitated both within and outside of the Smart City, therefore stimulating the development of comparable Smart Cities in other areas and portions of the nation.

### **Targeted Public Distribution System (TPDS)**

Targeting the poor, the Indian government created the Targeted Public Distribution System (TPDS). Under the TPDS, the States were expected to devise and execute flawless mechanisms for identification of the needy for foodgrain supply and distribution at the FPS level.

During its introduction, the plan was meant to serve around 6 crore impoverished families, for whom an annual allocation of approximately 72 lakh tonnes of food grains was designated.

### **Visvesvaraya PhD Scheme For Electronics And IT**

One of the primary objectives of the Visvesvaraya PhD Program is to encourage working professionals and non-PhD academic members to pursue a PhD part-time in the ESDM and IT/ITES sectors. It is anticipated that having part-time PhD students will promote contact between industry and academia, aid in the alignment of their R&D activities, and add value to the nation.

#### 4.1.5 Legal Aspects of Software and Database Protection



Notes

The increasing relevance of software in contemporary life is accompanied by a growing interest in its legal protection. The appropriate regulation of rights and responsibilities relating software ownership, copying, decompilation, the possible patent protection of software, penalising the illegal use of software, etc., is essential for any society fostering the growth of the (IT) sector.

In contrast to the universally acknowledged copyright protection of software (both in Serbia and across the world), the topic of whether software may be patented has been the subject of considerable debate on a worldwide scale.

Given that copyright and patent are two quite different intellectual property rights, the solution to this question is of enormous practical relevance. Copyright and patent are obtained differently, provide distinct authorisations to their holders, have different durations, may have different financial consequences on the firm, etc.

As for software, its unique character is mirrored in the fact that it may be (and should be) additionally protected by a variety of intellectual property rights and legal institutions that give indirect protection. When discussing the legal protection of software, this is the primary reason to examine the following rights:

- Copyright
- Patent
- Trade secret
- Trademark

##### Copyright Protection of Computer Software



## Notes

In accordance with the Law on Copyright and Related Rights, in order for a particular work to qualify for copyright protection, it must be an original work of authorship expressed in a certain manner. Copyright only protects the tangible form that conveys the originality. This is why it is commonly stated that copyright protects the form but not the substance.

Using a novel as an example, this means that the copyright protects the sentences inside a novel from illegal duplication, but not the work's concepts. Given that the programme is protected as a literary (written) work in line with the law and relevant international legal sources, the novel serves as an excellent example. Hence, source code may be characterised as a written text.

Moreover, not only source code but object code as well provides the form of expression, which makes them acceptable for copyright protection, since such form is the aim of the protection.

We may demonstrate this using a well-known case law scenario. The internationally renowned crime thriller by Dan Brown, "The Da Vinci Code," has been the subject of several accusations of plagiarism. The writers of "The Holy Blood and the Holy Grail" have accused Dan Brown of plagiarising their work, namely that he "replicated their approach of linking the data and drawing the conclusion of the existence of Jesus Christ's lineage."

However, the greatest hurdle for these writers in the court proceedings was that Dan Brown did not reproduce the material from "The Holy Blood and the Holy Grail." Considering this, the writers asserted that there was "non-literal copying of a key portion of their book."

The court did not accept these arguments; rather, it took the position that there was no duplication of a text from these authors' book, but rather the derivation of some ideas (such as the notion that the Holy Grail is not a cup but a metaphor for Jesus' bloodline) that are not protected by copyright.

"The case is dismissed." Thus, this case law reaffirms that the fundamental aim of copyright is the representation of the author's thoughts and ideas, not the concept itself, i.e. its substance.

The plot of "The Da Vinci Code" is also applicable to the software industry. Infringement of copyright does not occur, for instance, if someone builds software for the sale of sports equipment that has the same functionality as already-existing software on the market, as long as the form is not copied, but just the concept.

As a potential answer to this restriction of copyright protection, it is intriguing to investigate the possibility of patenting the programme, given that a patent is the sole means of protecting the concept.

## Software Patent Protection



Notes

It is a complicated topic whether the software can be covered by the patent. First, it must be stated that software "as such" cannot be patented in the EU and the vast majority of other legal systems (with the USA as an exception).

The Serbian Patent Law has an explicit section emphasising this point (that computer programs, in accordance with the law, are not considered inventions). Why is this so? In fact, all computer programmes are mathematical algorithms.

The Law on Patents stipulates that mathematical processes are not innovations and therefore cannot be patented. In contrast, nobody else could utilise these mathematical formulae during the patent lifetime (20 years from the date of submitting the patent application).

Yet, the programme may provide an industrially useful technological impact. When covered by a patent, it is often the device controlled by the programme that is protected, not the software itself.

Thus, the software is a component of a system, regulates that system, and enables the gadget to perform in a novel, novel, and inventive manner. It is not sufficient to establish a simple relationship between software and hardware; a software presence must have a distinct technological consequence.

Regarding the aforementioned, it is not sufficient for software to automate only the existing solutions. What is required is the existence of a novel result, as opposed to a mere automation. In essence, the patent covers the software indirectly, through the system that incorporates the programme.

These so-called software-implemented inventions include:

- May be patented if they pertain to the technological sciences
- Meet all three patentability requirements: novelty, inventive step, and industrial applicability

These innovations are evaluated in the same manner as all other inventions, with a significant emphasis on their capacity to be incorporated into the technical scientific field and to have a technical essence.

Due of the software's intricacy, patent protection is deemed nearly unattainable, and so copyright protection is generally seen as "crystal clear." Considering that the registration of a patent involves a laborious procedure involving the composition of a

## Notes

patent application and the payment of fees, it is obvious why software creators choose for copyright protection, which does not need registration and incurs no costs.

In addition, while discussing the patent application for software, considerable writing skills are required since the patent application must not indicate a desire to protect the software "as is." These apps may be rather complex, particularly when they define several queries (for the system, the method, the software, the signal, etc.).

### **Some Examples of the Practise Include:**

- Travel and ID documents reader
- Process for the certification of electronic mail, including the execution of a trustworthy digital signature by the telecommunications provider
- Method and procedure for applying coding to tiny data carriers
- Systems and processes for securing multi-factor authentication according to the transaction chain
- Method and technique for the usage of digital marketing security programmes

The exception to the stated norms exists in a small number of legal systems, the most notable of which being the United States legal system due to its economic relevance.

### **Limitations of the Software Author's Right Favouring the Legal Holder Of the Software**

A person who acquired the copy of the work of authorship legally (by obtaining a licence, for instance) has the right to permanently or temporarily copy the software or some of its parts by any means and in any form, without the authors' permission and without the obligation to pay the copyright remuneration, if doing so is required for the software's intended use.

The legal clause illustrates the exemption to the author's exclusive right to copy software. If it were otherwise, the author might prevent the legal owner of the software from using it as intended. In other words, in order to utilise the software, it is frequently essential to copy it, as the starting of the application typically involves software copying.

So, if you legally obtained the programme, you have the right to duplicate it if you need to use it frequently in line with its intended use.

### **What else can the Subject Who Legally Acquires a Software do?**

The legal owner of software has the legal right to (without the author's consent or payment of copyright compensation):

- eliminate software mistakes if this is a need for software use
- load, display, launch, transfer, or otherwise accommodate the software in computer memory if required for producing the copy
- translate, adapt, organise, and make other modifications to the copied software and its output

In addition, it is essential to highlight that the legal holder of the programme cannot be stopped from creating a backup copy of the software on a durable physical medium if such a copy is required for its usage.

The person authorised to use a copy of the software is also permitted by law to observe, inspect, or test the software's operation in order to investigate the ideas and principles on which the software or any portion of it is based, so long as these actions are performed concurrently with downloading, displaying, running, transferring, or storing the software.

#### 4.1.6 Technological Barriers of e-Governance



Information and Communication Technology (ICT) has enabled quicker and more efficient communication, data retrieval, and information use for its consumers. e-Government is the application of ICT to offer citizens with government services over the internet.

In developing countries such as India, where the literacy rate is very low and a large proportion of the population lives below the poverty line, people are not even aware of the benefits of e-Governance activities, and citizens do not use Information and Communication technologies to a significant degree. Additionally, implementing e-Governance activities presents a number of departmental issues.

During the introduction of e-Government in all Indian states, with specific emphasis on the computerisation of land records as a mission mode project, the following obstacles are encountered: (MMP).

**Defined Requirements:** With traditional government service delivery, there was a great deal of discretion, but when we put these procedures into applications, the issue of freezing the processes arises. Due to improper requirement analysis, the process could not be extensively reengineered. The study of requirements is a crucial component of any service mechanism.

**Inter-operability:** Interoperability is the capacity of diverse systems and organisations to function together. The e-Government apps must include this capability in order to implement newly built and existing applications.

**Lack of Infrastructure:** Several government agencies lack the necessary IT infrastructure to offer their services. In the majority of villages, the absence of broadband/optical fibre Internet connections makes it impossible to get information.

The problem of power outages in rural areas impedes service delivery. Even when Internet resources are accessible, application or Internet connectivity-related performance difficulties prevent citizens from utilising e-Government services.

## Notes

**Lack of Resources:** Hardware and network specialists are needed to resolve operational issues in several organisations.

**Lack of Back up:** Most departments lack consistent and centralised backup.

**Lack of Strategy or Policy:** It is necessary to boost people confidence and trust in the government.

**Tried and Tested Technologies:** Very rapidly, technology tends to become obsolete in terms of delivery. Our government may not be able to routinely acquire additional storage facilities. Thus, it is preferable to adopt tried and proved technology and goods that are superior and safer than the most recent innovations.

**Privacy and Security:** There will be three levels of access available to e-Government stakeholders: no access to a web service, limited access to a web service, and full access to a web service. However, when there is personal sensitive data, the formation of the security access policy is a much more complicated process requiring legal consideration.

With the execution of initiatives connected to e-Government services, adequate steps must be adopted to safeguard sensitive personal data. A lack of security standards and protocols can impede the development of projects that contain sensitive data such as income and medical history.

We have seen how the concept of e-Governance has evolved over the years in the Indian context and how essential it is for responsiveness, transparency, and accountability on the part of the government, and how important it is to increase the participation of citizens in policymaking by empowering them.

The rising penetration of the internet and communications services in India over the past decade has provided a glimmer of hope for the nation's population to combat the long-standing challenges of poverty, corruption, regional diversity, and unemployment.

Nevertheless, the slow pace of project completion has led to bureaucratic red tape, and pushback from government officials and public has not produced the anticipated outcome.

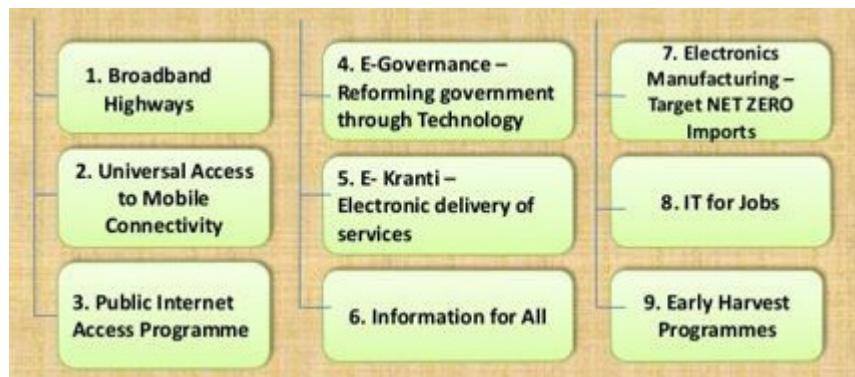
To overcome such obstacles, a well-defined Architectural Governance must be implemented, taking into account all factors/sources that impede the success of e-Governance initiatives. A strategic framework for identifying and implementing e-Government might be advantageous.

On the basis of the research of e-readiness in India and the difficulties encountered during the implementation of e-Government in India, a conceptual framework is proposed for the efficient design and execution of e-Government projects in India.

#### 4.1.7 Pillars of Digital India

**Notes**

**Nine Pillars of Digital India**



Digital India is a programme designed to turn India into a digital society and knowledge-based economy. Digital India is transformative in character and will make government services available online to individuals. It will also increase public accountability via required electronic delivery of government services, a Unique ID, and e-Pramaan based on legitimate, standard-based, interoperable, and integrated government apps and data.

#### Vision Areas

The vision focuses on three primary areas:

1. Digital infrastructure as a Need for Each Person
2. Governance and on-demand services
3. Citizen digital empowerment

#### Digital Infrastructure as a Need for Each Person:

- Availability of high-speed internet as a fundamental utility for service delivery to residents.
- A digital identity that is unique, permanent, online, and verifiable for every citizen from birth to death.
- Mobile phone and bank account facilitate citizen involvement in the digital and financial spheres.
- Accessibility to a Common Service Centre
- Private shared space on the public Cloud.
- Cyberspace that is secure and safe.

#### Governance and On-demand Services:

- Integrated seamlessly across departments or jurisdictions.
- Availability of services in real time via web and mobile platforms.
- All citizen entitlements must be accessible via the Cloud to facilitate accessibility.
- Digital transformation of government services to improve Ease of Doing Business.

## Notes

- Electronic and cashless financial transactions exceed a threshold.
- Using GIS for decision support system development and implementation.

### Citizen Digital Empowerment:

- Universal digital literacy.
- All digital resources universally accessible.
- All government papers and certifications will be accessible via the Cloud.
- The existence of digital resources and services in Indian languages.
- Digital collaborative platforms for participatory governance.
- Cloud-based portability of all entitlements for persons

### Scope of Digital India

The broad scope of this initiative includes:

- To prepare India for a future based on knowledge.
- On realising IT (Indian Talent) with IT (Information Technology) equals IT (India Tomorrow).
- Making technology key to change facilitation.
- About the umbrella program's coverage of many departments.
- The project integrates a huge number of ideas and concepts into a single, all-encompassing vision, so that each is viewed as part of a broader objective. Each piece stands on its own, but also contributes to the overall composition.
- The interweaving transforms the Mission in its entirety.
- The Digital India Project will bring together several existing initiatives, which will be reformed, refocused, and delivered synchronously. The programmes' shared branding as Digital India underscores their revolutionary potential.

### Nine Pillars of Digital India

Digital India seeks to offer the necessary impetus to the nine pillars of progress, namely:

1. Broadband Highways
2. Universal Access to Mobile Connectivity
3. Public Internet Access Programme
4. e-Governance: Reforming Government through Technology
5. e-Kranti - Electronic Delivery of Services
6. Information for All
7. Electronics Manufacturing
8. IT for Jobs
9. Early Harvest Programmes

The primary objective of the Digital India programme is to benefit both the Indian government and its population. It aspires to help the population in the same manner

as their campaigns, such as Made In India, Stand-up India, and BharatNEt. The Digital India Campaign focuses on the nine pillars listed below.

## Notes

### 1. Broadband Highways

This pillar aims to cover three subcategories. Consequently, it focuses on the development of broadband roads for rural, urban, and national information infrastructure.

- **Rural** - The primary purpose of the broadband is to serve two hundred and fifty thousand local panchayats.
- **Urban** - For the supply of broadband services in metropolitan areas, virtual network operators would be utilised. New urban structures are required to include communication infrastructure.
- **National Infrastructure**- The national information Infrastructure would include networks such as SWAN, NKN, and NOFN. In addition, it will be permitted to connect up to 100, 50, 20, 5 government offices horizontally.

### 2. Universal Access to Mobile Connectivity

Priority will be given to burrowing deeply into the country. This will allow them to access areas with little or no connection. Consequently, there would be improved nationwide connection. Consequently, the country is anticipated to have improved system penetration and service breadth.

### 3. Public Internet Access Program

The Public Internet Access Program consists of two subcomponents. Post Offices and Common Service Centres have been established as multi-centres.

**Common Service Centres** - The growth of common service personnel has been significant. It creates cost-effective, multipurpose administrative delivery nodes. It attempts to extend the reach of government agencies to all general practitioners.

There is consideration to convert 150,000 post offices into multi-service centres. This plan would be executed by the coordinating department. This should be a long-term objective for POs.

### 4. e-Governance: Reforming Government Through Technology

Government Business Process Redesign leverages information technology to improve interactions. This task must be completed by all departments and ministries across the nation. For the transformation process to effectively steer the government through technology, the following stages are essential.

**Electronic Databases**- The entire database should be transformed to electronic format.

**Workflow computerisation** - the workflow of all Indian government offices and departments should be electronic and automatically updated. This will provide efficiency and visibility for all of the country's residents.

**Public Grievance Redressal** – The government and its agencies should be able to analyse, automate, and respond to data in the event of chronic difficulties. This will not only save time, but it will also aid the process.

## Notes

### 5. e-Kranti – Electronic Conveyance of Administrations

With 31 e-Government Mission Mode initiatives now in place, it is anticipated that 10 more will be added to e-Kranti. This consists of:

**Technology for Education** – It is anticipated that all schools would be linked via an e-Education network. There will be free Wi-Fi at all schools, including elementary ones. This will increase the degree of literacy.

**Technology for Health** – This will encompass online consultation for everyone. E-Healthcare also offers online medication ordering and online medical record viewing.

**Technology for Planning** - This Mission Mode project will adhere to the GIS-based determination. This will be utilised during the conceptualisation, planning, and design and development phases of the project.

**Technology for Farmers**- Farmers will be able to generate accurate information about their inputs and even place orders online utilising technology. There will even be online transfers of advance loans and aid funds.

**Technology for Security**- In a situation requiring emergency services or disaster assistance, it will offer services to residents and reduce losses.

**Technology for Financial Inclusion**- Using technology will strengthen mobile banking, micro-ATM usage, and post offices.

**Technology for Justice**- This will include electronic courts, jails, police, and prosecution.

**Technology for Cyber Security**- This facility is dedicated to securing cyberspace.

### 6. Information for All

The primary objective is to give Indian residents with all the necessary information. It also facilitates contact with the government, reducing the need to physically visit various government agencies to obtain information.

**Hosting of Information and Reports Online**

Government celebrity attracts successfully via web networking. The citizens will be informed of any new developments or news, and vice versa.

Online informing involves notifying individuals about special events or activities via SMS or e-mails.

This will deplete a substantial portion of the existing base and necessitate more resources.

### 7. Electronics Manufacturing

Electronics marketing will necessitate collaboration amongst several disciplines.

- Target NET ZERO Imports is an impressive indication of anticipation.
- Ambitious aim requiring coordinated work on several fronts
- Concentrated markets, such as Fab-less Design, VSATs, Smart Energy metres, and micro-ATMs.

## 8. IT for Jobs

This program calls for:

- Educating persons in smaller cities and villages for IT division positions
- IT/ITES in Northeast
- Educating Service Delivery Agents on how to manage proper IT-benefits-communicating businesses
- Providers of telecom management services must prepare rural employees to meet their special demands.

## 9. Early Harvest Programs

- Throughout the country, Government personnel and officials will have access to the IT stage for communications.
- Government e-Greetings have been made accessible in a variety of forms and formats.
- Biometric attendance will be implemented in all central government offices in Delhi, India.

Digital India is the government of India's aspiration for more openness between the government and its citizens. The digital marketing business in Hyderabad is likewise firmly committed to digitalisation. With digital payments, the government is ensuring that everyone has a bank account and cell phone number.

This will be connected to the Aadhaar card to facilitate transactions. Pay checks and loan repayments will be processed without delay and within minutes. e-Governance is another effort that will allow you to produce birth certificates and death certificates instantly. These are a few initiatives that the Indian government has undertaken towards the nation's growth.

### 4.1.7 Technical Change and Techno-Economic Paradigms



The Digital India (DI) programme was started by our esteemed Prime Minister Narendra Modi in July 2015 with the intention of transforming India. The objective of DI is to digitally empower society by infusing digital technologies into the public service ecosystem utilising Information Technology and to make India competent at emerging technologies in order to develop the nation into a leading knowledge economy.

## Notes

As DI focuses on a tech-enabled social transformation, the overarching mission works in combination with several departments under numerous ministries; each initiative stands on its own, but also contributes to the bigger goal. Efforts are devoted to achieving success in two important areas:

- **Governance and Services on Demand** – DI aims to integrate processes and information across departments and jurisdictions so as to help provide real-time services to citizens both – on online and mobile platforms, digitally enable processes for businesses, creating a digitally enabled cashless economy, and creating a cloud-based repository for easy citizen access, as well as better planning and decision-making using GIS.
- **Digital Empowerment of Citizens** – Provide digital literacy and digital services to all citizens via universally accessible digital resources and services in multiple Indian languages, the introduction of collaborative digital platforms, the accessibility of all documents and certificates online, and the accessibility of all entitlements via the cloud.

### Funding: Rs 3, 958 crores for 2020-21

- Budget allocation of Rs 6,000 crores in 2020-21 for BharatNet, Department of Telecommunications (DoT)
- Rs 3000 crore allotted in the 2020-21 budget for the Ministry of Skill Development and Entrepreneurship's (MoSDE) Skill India programme development
- The Ministry of Science and Technology's (MoST) National Mission on Quantum Computing and Technology would get 8000 billion rupees in the 2020-21 budget

### Techno-Economic Paradigms: Key Initiatives

#### Aadhaar Enabled Payment System

Developed by the National Payments Corporation of India (NCPI), AEPS is a payment service based on an individual's Aadhaar card (one can use Aadhaar card instead of debit or credit cards) that enables the cardholder to conduct financial transactions such as transferring funds, making payments, depositing cash, withdrawing money, etc.

The AEPS is bank-agnostic and lets customers to conduct transactions at any point of sale or micro-ATM utilising biometric and Aadhaar-based authentication. According to the NPCI, as of October 2019, the platform had processed 208 million transactions. The GoI initiated the initiative in 2016.

The NITI Aayog has cited AI as a crucial component of the programme, citing the possibility of creating multilingual chatbots to assist clients, assuring safe and secure payments, eliminating erroneous rejections, etc.

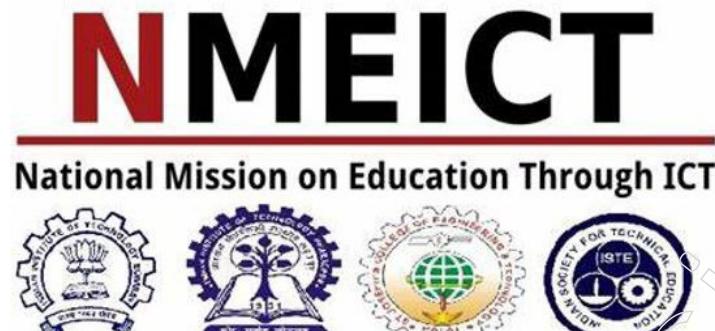
#### MyGov

In 2014, the MyGov platform was established. It fosters participatory government by giving citizens a voice in policy formulation and proposal formulation. The platform provides a vibrant environment for debates, projects, presentations, interactive polls, and blogs on a variety of governance and public policy-related topics. More than 9.5

million users are currently involved in various activities, and more than 10,000 weekly postings are collected, analysed, and shared with the relevant ministries and agencies.

As the platform is always being upgraded, AI plays a unique role in the endeavour. It allows for the creation of interactive chatbots, real-time data analysis, the screening of dangerous information, and the generation of automated, complete reports for government agencies.

#### National Mission in Education through ICT (NMEICT)



The NMEICT is a centrally-sponsored programme that intends to utilise the potential of ICT in education through teaching and learning processes to the advantage of institutions of higher education across India.

Under this mission, the government aims to use ICT interventions to increase enrolment rates in higher education by creating a proper balance of the right content, conducting research in education delivery and other critical areas, and increasing connectivity with other nations to share our progress and exchange ideas. The mission's purpose is to achieve these objectives by:

- developing and distributing great content via the content delivery platform Sakshat
- avoid duplicating material that is already publicly accessible online. Also, the information is intended to be distributed via EduSAT and Direct to home systems.

NMEICT is to provide more than 50 crore working individuals with access to continuing education via interactive, individualised knowledge modules tailored to their needs and objectives. The NMEICT efforts with a significant AI component are mentioned below:

- Sakshat Portal- This is a bilingual, centralised education portal that facilitates lifelong learning by generating and curating interactive educational content to be made accessible online, via EduSAT and broadcast satellite television. Sakshat's primary objective is to improve the digital literacy of both urban and rural students and instructors so that they are both equipped with current information. The Ministry of Human Resource Development has envisioned, as part of NMEICT, the establishment of digital libraries for students including pertinent reference books, papers, journals, and other learning materials to improve education. The site also intends to develop a transparent database of profiles for students, institutions, teachers, and courses in order to assist the matching of potential with possibilities.

## Notes

- Digital Literacy for Teachers Empowerment to Help Bridge the Digital Divide- Implement a teacher-training programme to provide them with knowledge of computer systems and other electronic devices to connect to the information network. The training will be interactive and individualised by utilising multimedia content. Via government partners, non-governmental organisations, change agents, and institutions that work with teachers, information will be disseminated.
- Provide e-books and e-journals to learners- To encourage education, it is vital to have access to diverse learning materials. Due to the gradual decline of library culture and facilities, students no longer have access to this information. To address this issue, NMEICT intends to establish digital libraries.
- Video Indexing and Chunking- There are at least 60,000 hours of unindexed and unchinked video footage accessible from various government educational bodies. The content must be digitised. Although the job is labour-intensive, the objective focuses on creating indexing technologies to save time and prevent errors.
- Evaluation of Content - In order to curate, develop, and streamline effective educational content, the mission is to assess accessible digital information so that it may be categorised and graded for the benefit of learners, along with complete search capabilities.
- Support Research Projects with Financial Assistance- Provide financial support for research projects that focus on the development of low-cost access devices, the enhancement of ICT use in education, an ERP system for higher education institutions, edu-entertainment and gaming for knowledge enhancement, an on-demand examination system, and the optimisation of bandwidth usage with technology and hardware.
- Content Generation- The National Programme in Technology Enhanced Learning Phase ii and iii (NPTEL) is envisioned to create online course content for science and engineering students through collaboration between the best academicians and colleges in the country by creating a national video server for delivering video lectures and a robust search engine for content.
- Interconnectivity between colleges- While Sakshat's current material is in English, NMEICT plans to develop a language converter toolkit to make the information accessible to more students from throughout the country.
- Developing Virtual Reality Labs- The Virtual Lab is envisioned as a stimulation engine with a strong graphic frontend on a server to assist students in conducting 'real-world' experiments in order to stimulate their creativity and curiosity.
- Adaptation of Open-Source- Stimulation applications such as MATLAB, ORCAD, AUTOCAD, circuit simulators, and financial and statistical analysis applications, etc.
- Creation of a standardised Enterprise Resource Planning (ERP) system for educational institutions

As proposed by industry experts, MHRD consultants, and NITI Aayog, there is great opportunity for AI to assist in achieving the following NMEICT objectives:

**Notes**

- adapt lessons to specific preferences, especially those of physically handicapped students
- help with the creation of intelligent systems for query resolution and test assessments
- conduct effective teacher preparation
- provide incentive payments to scholars who publish high-quality papers in the e-journal of the platform
- generating multilingual content with voice-enabled search queries and voice support
- Enterprise Resource Planning (ERP) and e-Government in education.
- Establishing identifying methods for students and evaluators
- Establishment of virtual reality laboratories to assist and facilitate e-learning, maybe through running stimulation
- Establishment and expansion of web-based portals for different mission-critical tasks

**Pradhan Mantri Jan-Dhan Yojana (PMJDY)**

Under the National Mission for Financial Inclusion, the PMJDY is a programme for India's underprivileged population. It gives cheap access to financial services in order to promote financial inclusion and encourage savings.

The PMJDY services include savings accounts, lending services, pension, and insurance, among others. Around 39 billion Jan Dan bank accounts have been opened to date. While no particular provisions have been established for AI under PMJDY, the NITI Aayog and other industry experts believe that AI has the potential to contribute in the following ways:

By utilising AI skills, the government may improve monitoring and discover fraud in record time, allowing for a more precise assessment of the plan.

By integrating the Aadhar database, paperless Know Your Customer (e-KYC) may be accomplished using AI-based technologies.

AI may also assist in educating account users on the best practises and benefits of the Jan Dhan account in order to promote greater financial inclusion and address the issue of keeping the accounts "active."

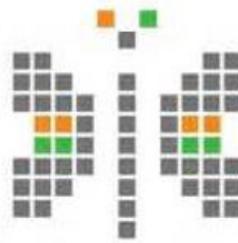
With the Aadhar connection, AI may also assist banks in disbursing loans to Jan Dhan account holders at competitive interest rates by evaluating an individual's credit score based on their savings, spending, and other financial information.

Intelligent, AI-enabled bots can help banks communicate with rural Jan Dhan account holders by overcoming the language barrier and gaining access to challenging locations where the programme is currently challenged.

There will be improved data analysis and real-time updates for administrative monitoring.

## Notes

### SMART Cities



## Smart City

MISSION TRANSFORM-NATION

Under the Digital India umbrella, the Smart Cities Mission promotes the conceptualisation and actualisation of cities with robust basic infrastructure that promote sustainable, safe, and inclusive development for their residents by providing a clean, sustainable environment through the application of "Smart" solutions. As part of the effort, 99 cities have been chosen to address pollution, rising crime rates, traffic congestion, and low living conditions by improving administrative and infrastructural systems using modern technologies.

AI may play a significant role in transforming "Smart Cities" into "Intelligent Cities" by making sense of the vast amounts of data generated by new technologies in order to apply predictive intelligence and develop superior solutions. NITI Aayog has considered the following applications of AI in smart cities:

- **Smart Parks and Facilities:** AI-enabled monitoring and automated, remote-controlled systems such as pavement lighting, park maintenance, etc. will contribute to enhanced safety and accessibility, as well as cost savings.
- **Smart Homes:** While smart metres for monitoring electricity and water consumption are already being installed on a large scale, artificial intelligence can be introduced to other domestic functions such as smart rooftops and water saving applications for optimal use of water consumption in domestic chores.
- **AI driven service delivery:** Based on citizen data, rationalisation of administrative employees based on anticipated service demand, and migration trend analysis AI will be utilised in applications such as predictive service delivery and complaint resolution via chatbots.
- **Crowd management:** At the 2019 Kumbh Mela, artificial intelligence was utilised to experiment with crowd management in order to forecast crowd behaviour using over a thousand CCTV cameras to track 32 square kilometres of movement. For improved prediction and reaction management in metropolitan areas, comparable AI systems and Big Data analysis can be implemented.
- **Intelligent safety systems:** Possible criminal situations and the general safety of inhabitants can be prevented by integrating cutting-edge surveillance systems with AI-enabled smart command centres. Social Media intelligence solutions that collect data from social networking sites may also aid in boosting public safety by anticipating potentially dangerous actions. The deployment of AI-enabled safety measures in Surat has resulted in a 27% decrease in crime.

- **Cyber Attacks:** Artificial intelligence technology may be used to safeguard online platforms and protect sensitive data by discovering vulnerabilities and implementing corrective procedures to limit such exposure.

### e-Pathshala

e-Pathshala is a platform for disseminating educational resources via mobile app and online, administered by NCERT. The NITI Aayog's discussion paper describes the following potential roles for AI on the platform:

Text-to-speech and text translation technologies to facilitate the provision of instructional materials in the several Indian languages and to promote the interoperability of instructors across states.

### e-Prison

This project aims the digitisation and integration of all prison and prisoner administration functions for prisons via an application suite. The suite is a cloud-based programme developed by NIC that is intended to be a one-stop solution for residents to digitally apply for visitation, write complaints, utilise a gateway for purchasing things manufactured by convicts, etc.

The project assists the prison administration system with surveillance and supervision of inmates, administrative activities, resource optimisation, etc. In jails, AI-enabled technologies have already been adopted in response to security concerns.

The state of Uttar Pradesh has built a video analytics platform powered by artificial intelligence to discover irregularities and unlawful activity and alert the appropriate authorities immediately. Presently, JARVIS has been used in 70 prisons to monitor prisoners, control crowds, identify breaches, and prevent unauthorised entry. The state of Punjab is in the midst of introducing identical policies in many jails.

### Farmer Portal

The portal is intended to be a one-stop shop for obtaining information on agriculture, risk management, animal husbandry, aquaculture, the weather, programmes and schemes, etc. The National Strategy for Artificial Intelligence whitepaper from NITI Aayog outlines AI's involvement in agriculture in the following ways:

- Using image-recognition software, drone technology, and machine learning to monitor crops, anticipate yields, promote precision farming, stabilise production, assess soil quality, and predict economic rewards from future harvests.
- Forecast weather, planting, pest control, and input management to enhance the farmer's revenue.
- An AI-enabled, voice-enabled chatbot for spreading information may prove useful in addition to these proposals.

In the NITI Aayog paper, successful examples of AI-enabled technology are presented. 3,000 farmers in Andhra Pradesh and Karnataka have utilised a successful AI-sowing application. In the Indian states of Assam, Bihar, Jharkhand, Maharashtra, Madhya Pradesh, Rajasthan, and Uttar Pradesh, AI-enabled precision agriculture has been introduced.

## Notes

### Goods and Services Tax Network (GSTN)



### Goods and Services Tax Network

The GSTN handles the IT infrastructure of the GST site and serves as the backbone and central database of the GST system. The network assists the government in monitoring financial activities and assists tax payers with GST registration, tax record management, etc.

During her Budget 2020 speech, Finance Minister Nirmala Sitharaman stated, "... Deep data analytics and AI techniques are being utilised to crack down on GST input tax credit, refund, and other frauds, and to identify individuals attempting to cheat the system." Invoices and input tax credits are being matched, and returns with mismatches of 10 percent or more are being detected and investigated.

### Khoya Paya

Digital India's Khoya Paya project encourages individuals to share and exchange information on missing and recovered children. The Ministry of Women and Child Development and the Department of Electronics and Information Technology have created a website via which individuals may report missing and discovered children via messages, images, videos, and other ways using their smart phones.

The Khoya Paya site may be linked to the CCTNS initiative to aid in the capture of offenders and the recovery of missing children. If authorised, the proposed Automatic Face Recognition System (AFRS) would be included into the Khoya Paya portal together with other security and safety technologies to provide a smooth interchange of information to prevent and solve crimes, locate missing individuals, and catch criminals. The AFRS searches and matches face patterns using 'neural networks,' an AI-enabled technique.

### Kisan Suvidha

The mobile application provides farmers with pertinent information on weather, market pricing, plant protection, inputs, weather warnings, go-downs and storages, as well as market-related data such as favourable markets, market rates, quantity requests, etc. The National Plan for Artificial Intelligence whitepaper from NITI Aayog anticipates the adoption of AI tools and big data analysis to provide more precise information on supply and demand.

In addition to emphasising AI, big data analysis, block chain technology, IoT, etc., an inter-ministerial group tasked with recommending a strategy to quadruple farmers' incomes by 2022 has advised putting an emphasis on these technologies.

### National Knowledge Network (NKN)



**Notes**

The NKN is a pan-India network that aims to connect India's universities, libraries, labs, and research institutes to facilitate inter-communication, promote research, and develop next-generation applications and services. In addition, NKN promotes research and education network connectivity between India and SAARC nations. It also promotes collaboration with educational networks such as TEIN4, GARUDA, CERN, and Internet2 in order to ease the remote sharing of scientific databases and access to remote research facilities.

The National Strategy for Artificial Intelligence whitepaper from NITI Aayog sees NKN as a multitenant network serving as the foundation for the effective execution of AIRAWAT (AI Research, Analytics and knowLedge Assimilation platform)

The document argues for the establishment of a common cloud platform with AI computing infrastructure to connect NKN with all the Centres of Research Excellence in Artificial Intelligence (COREs) and International Centre for Transformational Artificial Intelligence (ICTAI), the two pools that will help boost fundamental and applied research in AI, as this approach will reduce infrastructural requirements as a result of pooling efficiencies and reduce operational and maintenance costs while maintaining the same level of service.

### Online Labs (OLABS)

OLABS is a virtual learning platform designed to assist students do over 130 practical virtual labs in Chemistry, Physics, and Biology from classes 9 to 12, as well as English and mathematics sessions for classes 9 to 10.

The experiments consist of a combination of accessible interactive stimulations, animations, and lab films. This platform is designed to assist students who reside in difficult-to-reach places and lack the infrastructure to support their in-person education. The content is comprehensive, serving CBSE and State Boards curriculums.

The National Strategy for Artificial Intelligence whitepaper from NITI Aayog has highlighted chances to integrate AI into the education system. Some of these components are also relevant to OLABS in the following ways, although this is not expressly stated:

- Adaptive learning tools for customised learning
- Intelligent and interactive tutoring systems

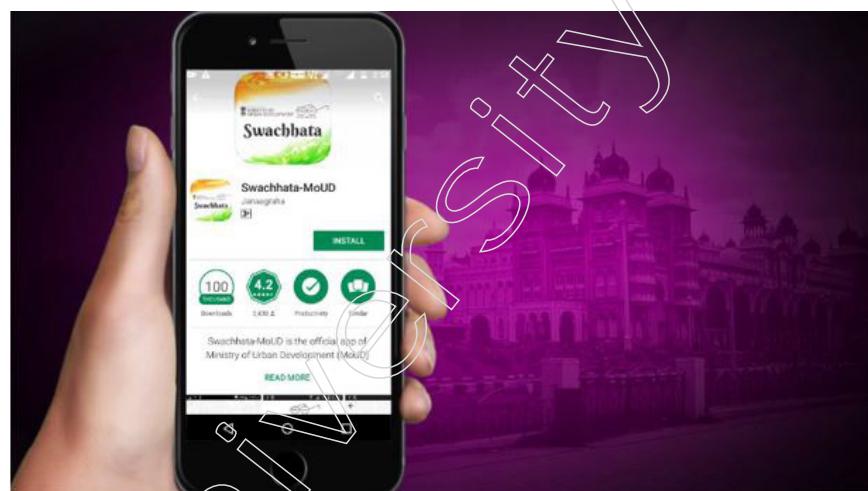
## Notes

### Project Monitoring Website for e-Courts

The E-court project monitoring website was developed to assist courts with their automated decision-making and decision-support system. It has been applied in tens of thousands of metropolitans, state, and district courts.

While the primary purpose of the project was to simplify administrative court procedures, the e-Court project policy action plan paper also outlines a broader vision for the Indian judicial system. In phase III, the use of technologies such as information migration to the cloud has already begun. In addition, it is intended to leverage big data mining, block-chain processing, and artificial intelligence as additional technical advances.

### Swachh Bharat App



Swachh Bharat Abhiyaan (SBA) is a sanitation and cleanliness-centered programme that engages individuals with cleaning efforts and a subsidised toilet construction scheme for rural and urban India's disadvantaged population.

The National Informatics Centre (NIC) developed a trial study to monitor the legitimacy of the SBA's toilet construction implementation. The programme employs artificial intelligence to determine the recipient using face recognition software and digitally confirming the cleanliness of toilets, as well as cross-checking photographs with the cell phones' GPS locations.

### Unified Mobile Application for New-age Governance (UMANG)

Designed by India's Ministry of Electronics and Information Technology and National e-Governance Division (NeGD) to promote e-Governance. Almost 1,200 central and state e-services are supported. The application is available through SMS, IVRs, and smart phones, tablets, and desktop computers. In 2018, the National e-Governance Division - Ministry of Electronics and Information Technologies sought a partner to deploy an artificial intelligence (AI)-based Chatbot and Voice Assistant module for the app.

### AADHAR

Aadhar, touted as the world's largest biometric-based identification system, is one of the mission's core pillars. Aadhar's unique identifiers are vital to social and financial

inclusion, the delivery of public services, the creation of improved policies and reforms, and the creation of a more transparent and automated government for the people.

Face recognition, voice-enabled chatbots, and cloud-based systems are aided by the seamless integration of several databases, augmented by Artificial Intelligence and Machine Learning. Although CCTNS, Khoya Paya, and PMJDY provide distinct public services, they all employ biometric identification to differing degrees to provide these services.

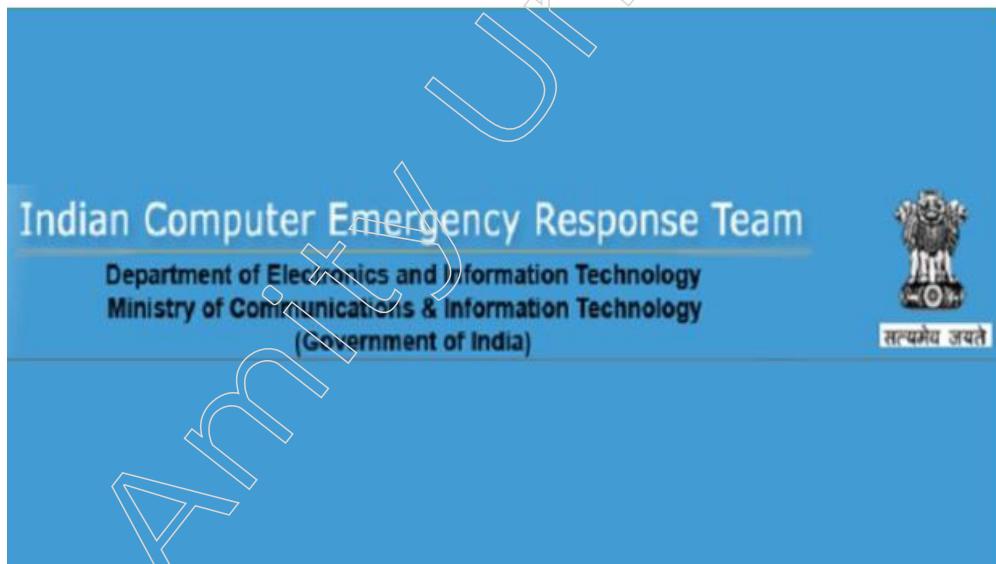
The Income Tax department has lately proposed the establishment of a network of Public Sector Banks to confirm the identity of a loan applicant using Aadhar and other public information in order to determine credit ratings and eligibility. Although official documents have not specifically described the usage of artificial intelligence for Aadhar, it is reasonable to infer that AI is a key component of the Aadhar system. Legally unclear grounds also impede Aadhar's full implementation.

### **NASSCOM Lead Centre for Excellence for Internet of Things (COE-IT)**

As part of Digital India, the COE-IT has been established to promote the Internet of Things (IoT) ecosystem through the development of innovative applications and domain knowledge. To do this, the centre will collaborate with the startup ecosystem and capitalise on India's IT skills.

In addition, the centre has launched an initiative titled AI for Enterprise, which showcases instances of effective use of AI technologies to tackle business difficulties. NASSCOM assists these businesses in amplifying their success stories, establishing industry connections, and expanding the reach of AI solutions.

### **Indian Computer Emergency Response Team (CERT-In)**



CERT-In is a Ministry of Electronics and Information Technology project (MEITY). The National Incident Response Centre is responsible for cyber security in India. CERT-In has three functions:

- Increase cyber security awareness and give technical support to address India's cyber security challenges.

## Notes

- Provide System Administrators and end-users technical guidance for responding to cyber security situations. Moreover, it regularly monitors trends in invader activity in collaboration with other institutions and organisations.
- Distributes studies, recommendations, advisories, best practises, and other documents pertaining to security awareness.

The NITI Aayog's discussion paper does express concerns about cyber security in light of the increase in the number of connected devices and the potential impact of such an assault on infrastructure and public systems at the city scale.

The report also considers AI as a potential countermeasure against such attacks, suggests corrective actions, and identifies flaws in safe online systems. The soon-to-be-released National Cyber Security Plan 2020 will almost certainly use AI.

### COMMON SERVICE CENTRES (CSCs)

Common Services Centres Scheme (CSCs), an initiative of CSC e-Governance Services India Ltd (CSC PVP), is intended to be the access point for citizens in rural and remote areas to receive subsidies, conduct bank transactions, apply for and request public utility services, and utilise the platform for healthcare and education.

According to a news release issued in May 2019, CSC has been collaborating with NEC Technologies India (NECTI), a subsidiary of the Japanese corporation NEC Corporation, to improve their services via the use of AI and data analytics.

Dr. Dinesh Kumar Tyagi, CEO of CSC SPV, stated in a news release, "Education, financial inclusion, and telemedicine are areas where innovative technology may be utilised to improve the quality of life for rural Indians."

### Government e-Marketplace (GeM)

GeM is an e-marketplace project of the National Public Procurement Portal that enables government departments and public sector entities to procure common usage products and services. The customers of this marketplace include state and federal government ministries and departments, public sector companies, municipal bodies and autonomous entities.

In 2017, the platform stated that the platform was going to be combined with artificial intelligence and analytics for enhanced service delivery. While official records make no mention of employing AI to expand GeM's reach, Dr. Rajesh Narang, CTO of GeM, stated:

"The objective of GeM is to leverage Artificial Intelligence to automate the human decision-making process using cognitive computing capabilities. GeM is already employing Live ChatBot, objective is to deploy AI Assistants for automating repetitive jobs needing human judgement, Voice and Picture recognition techniques allowing GeM users to search items and services merely by talking over and with the aid of photos of products."

**IRCTC Connect****Notes**

IRCTC Connect is an e-ticketing application to help passengers book tickets for the Indian Railways online. In 2018, IRCTC launched an AI-enabled chatbot called 'Ask Disha' in English and Hindi to help solve text-based queries and voice-based queries of users.

**Crime and Criminal Tracking Network and Systems (CCTNS)**

CCTNS is an initiative of the Government of India's National e-Government Programme. It intends to create a system that is thoroughly integrated to improve the effectiveness of policing through the development of an IT-enabled, highly efficient tracking system for the investigation and detection of crimes and offenders.

Till July 2019, about 15,000 police stations have been integrated into the CCTNS, and a total of 20.10 crore criminal/crime records have been made available online, together with databases on prisons, prosecution, forensics, and courts, for administrative purposes.

This is intended to speed the transmission of information between police departments in all 35 states and the District of Columbia, hence improving services to residents. Numerous states have reported favourable results in resolving various sorts of complaints as a result of the database's cross-pollination.

The compendium released by the NCRB on 10/29/2018 specifically mentions the need for artificial intelligence-based tools to provide criminal data analysis for the suggested Automatic Face Recognition System, AI-based techniques such as neural networks will show to be efficient (AFRS).

While several nations have been experimenting with it, only China and a few others have been able to properly adopt it. The approach confronts other obstacles, such as the conversion of data from many languages, which can be solved by AI-based solutions.

## Notes

### Case Study

#### Greater Hyderabad Municipal Corporation (GHMC)

Greater Hyderabad Municipal Corporation was established in 2007, with its headquarters located in the centre of the city. GHMC is comprised of four zones and is led by a Commissioner who is an IAS officer.

GHMC is responsible for the maintenance of health and sanitation, garbage collection and disposal, city planning, maintenance of public places and lakes, issuance of birth and death certificates, collection of property, and issuance of trade licences, etc. Gartner (2000), a consulting and research firm, suggests four phases for the effective phased adoption of e-Governances. They presented a concept for e-Governances that begins with presence and progresses to transformation.

Efforts are underway to fit the Gartner e-Governances model to the GHMC's operational structure and ICT usage.

#### 1. Presence

The GHMC create enormous quantities of information, much of which may be beneficial to people and enterprises. With their official website, [www.ghmc.gov.in](http://www.ghmc.gov.in), users may read and download a variety of papers, rules and regulations, application forms, and significant Government Order (GO) documents, among others. The GHMC's online presence gives individuals with immediate access to vital government information without the need to travel to offices, wait in line, or pay bribes to receive it.

#### 2. Interaction

GHMC should provide two-way communication as one method for enhancing citizen engagement. This issue is handled by encouraging individuals to email their complaints. Giving essential contact information for officials. The GHMC maintains official Facebook and Twitter accounts where they post and tweet news on activities within their authority.

My GHMC is an application that individuals may download from the Google Play Store to engage with GHMC. Many services, such as application status, property tax payment information, birth and death certificates, etc., are accessible. With the APP, feedback and comments can be provided.

#### 3. Transaction

It goes even farther by enabling online transactions for consumers. On the official website, property tax, GHMC penalties, payment for issuing and renewing business licences, and other payments can be made online. Before, making such payments required lengthy delays and confrontation with a designated official; however, the advent of online transactions has saved residents time and increased the openness of GHMC's operations.

#### 4. Transformation

Transformation is the fourth and final step of the e-Governance paradigm. The ultimate objective is to integrate ICTs to their full capacity, following the successful completion of the previous three phases. This phase revises the manner in which

GHMC conducts its business with the general public and the business community, resulting in increased user accessibility and involvement. Transparency and efficiency are achieved, and citizens are ultimately empowered.

### Innovative Practices

The GHMC has implemented a biometric attendance system in an effort to increase responsibility among road-sweeping sanitation staff. This has put an end to the sweepers' habit of subcontracting their labour to others for a very cheap wage and then claiming their salary. Manual collection of trash from containers put at various sites.

The GHMC has equipped the garbage collection vehicles with GPS in order to ensure that the collected trash is disposed of at the specified landfills. Around 500 vehicles can be followed through GPS, and trash cans are RFID-tagged. Recently, GHMC has implemented measures such as the installation of a community refrigerator in which individuals can store food and ingredients for use by others.

The original pilot initiative garnered a positive reaction, and GHMC will repeat it in ten different neighbourhoods around the city of Hyderabad. Anyone in need of food may retrieve it from these community refrigerators.

### Conclusion

The use of ICTs in the operation of the GHMC to provide residents with services appears to have significantly enhanced the interaction between citizens and government agencies by providing convenient access to automated services.

In addition, clients save time and may access services that are suitable for all types of people, including on Weekends and holidays. Newspapers, radio, and television, as well as social media, should be used appropriately to increase awareness of the variety of services provided by GHMC.

### Summary

- Information management (IM) refers to the collecting, organisation, storage, and upkeep of data, such as papers, photographs, knowledge bases, code, and other forms of virtual media. Traditional data management centred on the storage and maintenance of physical media.
- IM integrates broad management ideas such as planning, controlling, and execution, much like any other company activity. Data management and its accompanying tasks are often included under information management. Data management is the creation and implementation of tools and rules that facilitate the data's progression through its lifespan.
- Data and information are business assets that are developed or gathered by a corporation. Because they may increase the value of the company, they require protection. Unlike computers or buildings, data and information are ethereal, therefore it's frequently impossible to give a genuine value.
- Sharing data and information is the primary objective of information management, hence this should be a fundamental concept of every IM programme. Yet, not everyone should have access to everything. Thus, explicitly define who should

## Notes

have access and ensuring that the technology you employ supports these regulations.

- Network security encompasses all measures used to protect the integrity and usability of data and the network. Software and hardware technologies are included. Effective network security regulates access to the network's resources and services. It identifies and prohibits several dangers, preventing them from propagating or accessing the network.
- Data tagging protects the privacy of data flows by adding extra labels, known as tags, to data flows. This enables trustworthy computing entities to associate with the flows of private data, so concealing the identity of those responsible for the data.
- Internet of Things (IoT) refers to the enormous collection of physical things outfitted with sensors and software that allow them to communicate with minimal human involvement by collecting and exchanging data over a network. The Internet of Things (IoT) consists of the numerous "smart" computer-like devices that can connect to the Internet or interact via wireless networks
- Smart Devices are Internet of Things (IoT) gear that enables users to get advanced and dependable real-time data as easily as possible. Almost any type of physical sensor can be connected to Smart Data Collectors, which transmit data to a Smart Coordinator (edge device) and then into software (on-premises or in the cloud) for analysis, visualisation, notification, collaboration, and decision support.
- Digital India is a flagship initiative of the Indian government with the goal of transforming India into a digitally empowered society and knowledge-based economy. e-Governance projects in India expanded in the mid-1990s to encompass larger sectoral applications with a focus on citizen-centered services.
- OpenForge is the Indian government's platform for the open and collaborative creation of e-Government applications. Via this platform, the government intends to promote the adoption of open-source software and encourage the sharing and re-use of e-Government-related source code.
- PMKVY is the Ministry of Skill Development and Entrepreneurship's flagship programme (MSDE). The purpose of this Skill Certification Plan is to enable a large number of young Indians to pursue industry-relevant skill training that would aid them in attaining a better standard of living.
- Information and Communication Technology (ICT) has enabled quicker and more efficient communication, data retrieval, and information use for its consumers. e-Government is the application of ICT to offer citizens with government services over the internet.
- Digital India is a programme designed to turn India into a digital society and knowledge-based economy. Digital India is transformative in character and will make government services available online to individuals.
- The NMEICT is a centrally-sponsored programme that intends to utilise the potential of ICT in education through teaching and learning processes to the advantage of institutions of higher education across India.

- Swachh Bharat Abhiyaan (SBA) is a sanitation and cleanliness-centered programme that engages individuals with cleaning efforts and a subsidised toilet construction scheme for rural and urban India's disadvantaged population.

### Glossary

- **Information Management (IM):** The process of collecting, organizing, storing, and maintaining data, including physical and digital media, to support business operations and decision-making.
- **Data Management:** The creation and implementation of tools and rules that facilitate the organisation, storage, processing, and retrieval of data throughout its lifecycle.
- **Knowledge Management:** The process of creating, organizing, and sharing knowledge within an organisation, including best practices, lessons learned, and expertise.
- **Content Management:** The process of creating, managing, and distributing digital content, including text, images, videos, and other multimedia formats.
- **Information Management Body of Knowledge (IMBOK):** A framework that divides information management into six knowledge domains and four process domains, providing guidance on best practices, strategies, and implementation approaches.
- **Digital India:** A flagship initiative of the Indian government aimed at transforming India into a digitally empowered society and knowledge-based economy.
- **e-Governance:** The use of technology to improve government services and make them more accessible to citizens.
- **Aadhaar:** A unique identification number issued to every citizen of India, which is an important part of the Aadhaar identification platform that is used to promote hassle-free people-centered government.
- **Bharat Broadband Network (BBNL):** A special purpose vehicle established by the Indian government to establish a National Optical Fiber Network (NOFN) covering about 2,500,000 Gram Panchayats across 6,600 Blocks and 641 Districts.
- **Common Service Centres (CSCs):** Access points for the delivery of key public utility services, social welfare programmes, healthcare, finance, education, and agriculture services, as well as a host of B2C services to rural and distant inhabitants of India.
- **Patent:** A form of intellectual property right granted by the government to the owner of an invention, which gives the owner the right to exclude others from making, using, selling, or importing the invention without their permission for a specific period of time.
- **Computer program/Software:** A set of instructions that are written to perform a specific task on a computer or electronic device.
- **Copyright:** A form of intellectual property right granted to the creator of an original work, which gives the creator the exclusive right to use, distribute, and sell that work for a specific period of time.
- **Industrial applicability:** A requirement for patentability that states that an invention must be capable of being made or used in an industrial or commercial context.

## Notes

- **Novelty:** A requirement for patentability that states that an invention must be new or have not been previously disclosed or made available to the public.
- **Inventive step:** A requirement for patentability that states that an invention must not be obvious to a person having ordinary skill in the relevant field at the time the invention was made.
- **e-Government:** The use of information and communication technology (ICT) to deliver government services to citizens over the internet.

### Check Your Understanding

1. What is Information Management (IM)?
  - a) It is only concerned with traditional data management
  - b) It is the management of physical media
  - c) It is the collecting, organisation, storage, and upkeep of data and other forms of virtual media
  - d) It is the implementation of rules and tools to facilitate data progression
2. The four main components of Information Management are—
  - a) Hardware, software, data and information
  - b) People, Policies and Processes, Technology, Data and Information
  - c) Business Information, Business Processes, Business Benefit, Business Strategy
  - d) Projects, Business Change, Business Operations, Performance Management
3. The difference between Knowledge Management and Information Management is—
  - a) They are the same
  - b) Information Management is focused on the transfer of knowledge and expertise
  - c) Knowledge Management is focused on the organisation and presentation of data
  - d) They are distinct but share some overlap
4. What are the six knowledge domains of the Information Management Body of Knowledge (IMBOK)?
  - a) Information Technology (IT), Business Processes, Business Operations, Business Benefit, Business Strategy, Performance Management
  - b) Business Information, Business Processes, Business Benefit, Business Strategy, Performance Management, Data and Information
  - c) Information Technology (IT), Information Systems, Business Information, Business Processes, Business Benefit, Business Strategy
  - d) Projects, Business Change, Business Operations, Performance Management, Data and Information, Technology
5. How does data become information?
  - a) Through the evaluation of data only

**Notes**

- b) Through interpretation, analysis, contextualisation, and processing
- c) By collecting data from various sources
- d) By storing data in physical media
6. What is network security?
- a) It refers to all measures used to protect the integrity and usability of data and the network.
- b) It is the process of connecting multiple networks together.
- c) It refers to the process of removing all security measures from the network.
- d) None of the above.
7. The focus of conventional security strategies in network security are—
- a) Ensuring confidentiality, privacy, and accessibility of services.
- b) Creating communication standards and information system technologies.
- c) Maximizing the performance of mission-critical applications.
- d) Increasing the number of smart devices in the network.
8. What is the Internet of Things (IoT)?
- a) It is a collection of physical things with sensors and software that allow them to communicate with minimal human involvement
- b) It is a collection of non-internet-enabled physical equipment and commonplace things
- c) It is a collection of internet-enabled physical devices only
- d) It is a collection of traditional computer devices that connect wirelessly to a network
9. Which protocol serves as the foundation for IoT devices to connect to the Internet and to one another?
- a) Simple Mail Transfer Protocol (SMTP)
- b) File Transfer Protocol (FTP)
- c) Transmission Control Protocol (TCP)
- d) Hyper Text Transfer Protocol (HTTP)
10. Who coined the term “the Internet of Things”?
- a) Kevin Ashton
- b) Bill Gates
- c) Tim Berners-Lee
- d) Steve Jobs
11. Which category of IoT devices is comprised of machinery and gadgets explicitly designed with built-in connection, such as smartphones, streaming media players, mobile payment terminals, agricultural combines, and jet engines?
- a) Physical-first devices

**Notes**

- b) Digital-first devices
  - c) Dual usage devices
  - d) Pure device devices
12. The primary objective of Digital India is—
- a) To transform India into a digitally empowered society and knowledge-based economy.
  - b) To provide job opportunities to the youth of India.
  - c) To promote traditional Indian handicrafts and handloom products.
  - d) None of the above.
13. Which of the following is not one of the key ICT efforts by the Indian government?
- a) Computerisation of railways
  - b) Computerisation of land records
  - c) Computerisation of hospitals
  - d) None of the above
14. Which of the following initiatives is aimed at offering electronic services to residents of India?
- a) Digital India Initiative
  - b) Aarogya Setu App
  - c) Accessible India Campaign
  - d) Bharat Broadband Network (BBNL)
15. Which of the following is the primary use of Aadhaar number in India?
- a) Tracking individuals' health
  - b) Providing job opportunities
  - c) Basis for government welfare schemes and programmes for effective service delivery
  - d) All of the above
16. The objective of the Bharat Broadband Network (BBNL) is—
- a) To provide broadband connectivity to all Indian citizens.
  - b) To establish a National Optical Fiber Network (NOFN) and cover about 2,500,000 Gram Panchayats across 6,600 Blocks and 641 Districts.
  - c) To provide social welfare programmes to rural and distant inhabitants of the nation.
  - d) None of the above.
17. The goal of the AgriMarket App is—
- a) To promote traditional Indian handicrafts and handloom products.

- b) To provide information to farmers about crop prices at marketplaces within 50 kilometres of their device.
- c) To improve the accessibility of the built environment, transportation system, and information and communication ecosystem.
- d) None of the above.
18. The purpose of the NMEICT program is—
- To provide financial assistance to students who want to study in higher education institutions
  - To distribute great content through Sakshat platform and provide access to digital libraries
  - To promote the Jan Dan bank accounts for India's underprivileged population
  - None of the above
19. What is the objective of the Sakshat Portal under NMEICT?
- To empower teachers to help bridge the digital divide
  - To develop low-cost access devices and ERP system for higher education institutions
  - To improve digital literacy and provide lifelong learning through the generation and curation of interactive educational content
  - All of the above
20. What is the purpose of the PMJDY program?
- To promote financial inclusion and encourage savings
  - To increase the enrolment rate in higher education
  - To provide e-books and e-journals to learners
  - All of the above

**Notes****Exercise**

- What is information management and how does it relate to digital archiving?
- How can security and privacy be classified in a networked world?
- What is the internet of things, and how do smart devices, processes, and services fit into it?
- Can you demonstrate some of the latest technologies that are empowering digital India initiatives?
- What legal aspects should be considered when it comes to software and database protection, and what technological barriers exist in the implementation of e-Governance?
- In the context of techno-economic paradigms and technical change, what are the pillars of digital India?

## Notes

### Learning Activities

- **LA Topic:** Internet of Things (IoT) Scavenger Hunt:

**Objective:** To help students understand the concept of IoT, smart devices, and services.

**Instructions:** Divide the class into teams of 2-3 students each. Give them a list of smart devices (such as smart bulbs, smart thermostats, smart security cameras, etc.) and ask them to find out how these devices use IoT to interact with other devices and services. They should research and answer the following questions for each device:

- What is the device and what does it do?
- How does it connect to the internet or other devices?
- What kind of data does it collect or transmit?
- What are the benefits and potential risks associated with the device?

The team that answers all the questions correctly in the shortest amount of time wins the scavenger hunt.

- **LA Topic:** Digital India Technology Showcase:

**Objective:** To help students understand the latest technologies empowering digital India initiatives.

**Instructions:** Divide the class into groups of 4-5 students each. Assign each group a specific technology related to digital India initiatives, such as Blockchain, AI, or Cloud Computing. Ask them to create a technology showcase that demonstrates how the technology is being used in India to drive digital transformation.

**The showcase should include the following:**

- A brief explanation of the technology and its benefits
- Examples of how the technology is being used in India
- Any challenges or limitations of the technology in the Indian context
- A demo or prototype of how the technology could be used in a hypothetical scenario

Each group should present their showcase to the class, and the class can vote on the best showcase based on creativity, effectiveness, and relevance to digital India initiatives.

### Check Your Understanding- Answers

1. c)
2. b)
3. d)
4. c)
5. b)
6. a)
7. a)

8. a)
9. c)
10. a)
11. b)
12. a)
13. c)
14. a)
15. c)
16. b)
17. b)
18. b)
19. c)
20. a)

**Notes****Further Readings and Bibliography**

1. Richard J. Cox: No Innocent Deposits: Forming Archives by Rethinking Appraisal, Scarecrow Press, 2004 edition.
2. Laura A. Millar: Archives: Principles and Practices, Facet Publishing, 2nd edition.
3. Bruce Schneier: Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World, W. W. Norton and Company, 1st edition.
4. Maciej Kranz: Building the Internet of Things: Implement New Business Models, Disrupt Competitors, Transform Your Industry, John Wiley and Sons, 1st edition.

## Module - V: e-Governance Portals Around the Globe

### Learning Objectives

At the end of this topic, you will be able to understand:

- Overview of e-Governance portals
- Classify e-Governance portals
- Describe the objectives of e-Governance portals
- Recognise the effectiveness of e-Governance portals
- Define measure of effectiveness of portals
- Compare e-Governance models of different countries

### Introduction

The development of digital technology and the increasing proliferation of electronic devices such as computers and mobile phones have enabled new methods of administering public services, resulting in e-Governance.

**e-Governance:** refers to the use of information technology by government entities to facilitate the decision-making process of a community.

**e-Administration:** concentrating on the enhancement of public services through data collecting and information management. This permits the establishment of the realities and needs of residents, so that solutions may be adopted to suit these demands.

**e-Services:** enhance people' interactions with the administration by permitting online requests for public papers, certifications, and licences.

**e-democracy:** aims to promote citizen engagement in decision-making by creating simplified voting procedures.

e-Governance eliminates time and space constraints, facilitates communication between the administration and citizens, provides access to more egalitarian information, improves the internal processes of governments, increases their transparency, reduces corruption, facilitates democratic processes, and strengthens the credibility of institutions.

Governments must understand when it is necessary to establish online portals and how they may improve their governance capacities. Every web portals have a function, which must not be lost sight of before or after implementation. Once the implementation of a web portal becomes a source of anxiety, it is essential to begin planning.

No matter which portal a state implements, it must be relevant to the intended audience. A state's online portal should be a one-stop shop for whatever their target is and fulfil all requirements. A web portal should contain all of the information a user need, eliminating the need to seek several locations or communicate with different individuals. It should function as the organisation 's primary information hub. If constructed properly, it may serve as a centre of collaboration for effective government.

## 5.1 e-Governance Portals



State governments are implementing measures to develop highly functional online portals.

Companies are providing value to their online portals by incorporating pertinent material and services and by developing their websites' operations and features intelligently.

A web portal acts as the integrated entryway into state government and gives online access to state information and resources for both external citizens and internal government staff. There are hundreds of agencies, departments, commissions, and regulatory agencies within state governments.

Portals are web-based front-end programmes that enable state governments to access, manage, and distribute all of their data and information. Via this portal or primary user interface, millions of Internet users may access the large amount of information, services, and applications offered on governmental websites.

### 5.1.1 Overview of e-Governance Portals



Governments are utilising online portals to improve the delivery of electronic services. Until recently, state governments established their web presence on an agency-by-agency basis, with little inclination to create a centralised website that links all state resources.

While this method allows them to construct websites rapidly, it hinders the efficacy of online government service delivery and makes it harder to fulfil the expectations of

## Notes

a public that is becoming increasingly web-savvy. Innovative state governments are currently rethinking their online strategy and redesigning their existing websites into web portals in response to mounting demand to be more responsive to citizens' needs.

A web portal acts as the integrated entry point to a state government's website and offers a single point of contact for online service delivery within the state. Since portals incorporate state e-service, they can increase government accessibility, cut service-processing costs, and enable state agencies to deliver a greater level of service.

As a result, several states are replacing their conventional homepages with online portals on their websites. Yet, similar to what many businesses in the private sector have discovered, state governments are also realising that merely building a website with various bits of information is insufficient to properly serve residents.

Nowadays, the majority of state governments give fundamental information about state agency regulations and processes through their respective online portals. Instead, state government officials are under pressure to create intelligent portals that provide individuals the ability to customise a web page to their own requirements, while simultaneously acting as a gateway to community news and activities and a driver of economic growth. Policymakers and technology experts face the difficulty of determining how to develop a simple website into a high-functioning online gateway.

### 5.1.2 Types of e-Governance Portals

e-Government portals are created for a variety of functions. A portal is a centralised access point to apps and information. These portals are designed not just for online commerce or to assure an online presence, but also for a variety of other uses. Diverse portals with distinct objectives have been established using distinct methodologies. For instance, if you want an online portal for RTI, you need an e-Governance platform that supports governance operations and is easy to use.

The word portal refers to a knowledge and data management system that is capable of giving the facility to various businesses and organisations for constructing, sharing, exchanging, and reusing their data. A portal is a form of private website that exists on the Internet. Obtaining a portal requires a unique location (URL), combined with an id and a password. The information contained inside is extremely safe and protected. It is user-specific, and the global interface can be either public or private.

A portal provides users with access to numerous roles. Such portals provide material that is dynamic in nature and changes regularly. The total visibility of the stuff inside it varies from person to person. In other words, the stored knowledge and data may be exclusive to particular users based on the group member preferences. These sites obtain their material from a range of varied sources.

There are two fundamental types of portals:

- **Vertical Portals** - This sort of gateway prioritises the user experience. This indicates that it is not accessible to the general public and provides organisation -specific information.
- **Horizontal Portals** - These portals are comparable to public websites. It attempts to provide all the services that users require.

## Notes

### Vertical Portal

A vertical or vortal portal is a specialised portal that caters to a niche market. It is a website devoted to a particular subject that provides specialised information such as industry-specific news and articles, statistics, chat, discussion forums, job listings, etc.

It contrasts with horizontal or generalist portals that do not segregate visitors based on their interests but instead attempt to cover the broadest spectrum feasible.

The purpose of a vertical portal is to assist other users in locating the information they want without leaving the same website. In this manner, loyalty is pursued, which fosters continuing use. This suggests that the success of a vertical portal is largely dependent on the quality of its content.

The distinction between these and horizontal portals is that these give their services to all users independent of the portal's content. While vertical portals concentrate this information or services on a certain institution, these information or services are accessible through horizontal portals. This is accomplished by means of intranets, extranets, and vertical portals.

The intranet portal is used for corporate communication with a company's workers. Also, the extranet portal is utilised for corporate communication, but in this instance with suppliers and business partners. The vertical portal is used to supply clients with information.

Nowadays, a third categorisation can be identified. It is a diagonal portal, a combination of the vertical and horizontal portals. These would include portals that utilise social networks or programmes like LinkedIn, Flickr, YouTube, etc. They are supplemented by material geared towards a certain target.

### Classification of Vertical Portals

Vertical portals can be classified as follows:

- **Geographical Portals:** Those specialized in a complete geographical area.
- **Demographic Portals:** Those specialized based on a specific theme.

### Vertical Portals-Examples

- Health--WebMD
- Travel--Travelocity
- Financial Services--Quicken.com



### Vertical Portal Examples

Here are some examples of vertical portals:

- **Travel Portals:** Expedia

## Notes

- **Educational Portals:** Educaweb
- **Portals for Lawyers:** Abogacia.es
- **Financial Portals:** Credimarket
- **Geographical Portals:** Portal of the Autonomous Community of Murcia

### Horizontal Portal

A horizontal online portal collects and displays information from diverse sources across a broad spectrum of interests, typically with search and customisation capabilities. For instance, a weather network that allows for town-specific customisation and the ability to save and alter dashboard views.

Mega portals are web portals that target the whole Internet (e.g. Yahoo, MSN) or the largest possible audience (e.g. government portal). A horizontal portal may also be a collection of vertical portals, as Yahoo's forays into sports, fashion, and entertainment demonstrate.

### Examples of Horizontal Web Portals

A couple instances of horizontal portals include Yahoo and AOL. They provide users with access to the Internet and links to breaking news, e-mail, social media, etc.

### Why do You Need a Portal?

A portal is a web-centric platform that aggregates data from numerous sources into a single user experience. These portals are also frequently referred to as web gateways, portal websites, and portal sites. They reflect the digital capabilities of a company, whether internal or external.

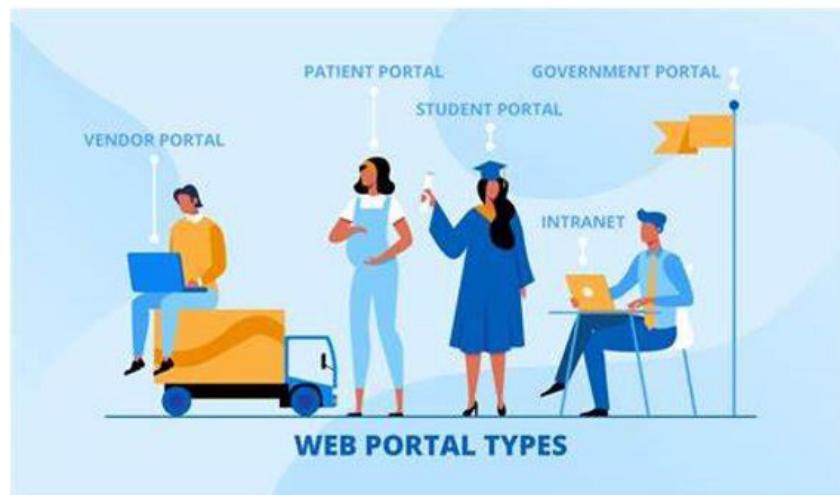
What began as basic portals in the early 1990s has evolved into platforms enabling projects to digitise the governing experience. A portal offers at least one or many of the following four fundamental services:

In the next part, we will examine numerous portal types and their uses for diverse purposes.

- Search engine
- Links to other related sites
- Personalized content
- Email

Online portals serve as the primary communication and information centre. There are a variety of online portals that offer consumers the most pertinent information for their environment.

### Different Types of e-Governance Portals



Most individuals with access to technology are familiar with the notion of a web portal, but are ignorant of the several sorts of portals and the fact that they exist in a format distinct from websites.

The next section will outline the distinguishing characteristics of each.

### **1. Customer Portal**

A customer portal is a web-based self-service platform that provides your customers with a single point of individualised access to relevant organisational data. Invoices, policies, orders, delivery, and online payments are included. Customer portals are accessible 24/7, 365 days a year, through desktop or mobile device.

Clinked is one example of a web portal with a business platform that enables focus team communication and the exchange of knowledge.

#### **Integration Features for Customer Portal**

##### **I. Single Sign-In with Secure Login**

The possibility for safe and simple sign-in is a fundamental customer portal feature. The portal can give a customizable dashboard for all additional personalised functionalities after the user has logged in.

##### **II. Knowledge Database**

This tool makes it simple for consumers to go online, search for their difficulties, and read relevant material to find solutions.

##### **III. Forums**

Here is where your consumers interact with one other and with your company. Having unique web portal services, such as forums, increases consumer portal usage.

##### **IV. Multi-Language Support**

With businesses having a global footprint, it is necessary for your business to have multilingual assistance in order to thrive and allow individuals from many backgrounds to engage with your brand.

**Notes**

## Notes

### V. Real-Time Alert Notifications

Another crucial function that enables you to send timely notifications regarding new features, shared videos, shared articles, and updated service timings.

### VI. Payment Module

Internet transactions have become the standard. The addition of various payment modules to your web portal provides customers with a variety of payment possibilities.

## 2. Corporate Portal

A cor-portal or corporate portal is an intra-organisational website used to provide information to employees, clients, and partners. The enterprise portal web-based platform is utilised for internal training, information gateway, collaboration on business processes, team involvement, and interface sharing. If you want to construct a corporate portal for your business, consult with the leading web portal development firm in Canada, which has experience developing bespoke web portals.

For example: SharePoint is a Microsoft-based online application development platform. SharePoint Online's most useful features are content management and document management. Even non-technical users may simply operate the system due to its vast array of features, such as data collaboration, document and file management, website creation, social network management, and process automation.

### Integrate Functions with Corporate Portal

#### I. Customisation

This feature enables your company to connect authorised users with services and data depending on their profile and user privileges.

#### II. Integration Adaptability

This capability enables corporate portals to not only integrate information from many sources, but also to combine several portals and portal pages.

#### III. Analytics and Reporting

This feature assists administrators in monitoring user behaviour and reviewing audit records.

#### IV. Personalisation

This functionality enables customisation of corporate portal content depending on roles and job responsibilities.

#### V. Access Management

Two-factor authentication, single sign-on (SSO), and VPN capabilities increase the security of the online corporate platform's access.

#### VI. Classification and Collaboration

The internet portal can classify all information and enable people to cooperate regardless of location.

### 3. Education Portal

Education or student portals are custom-built websites that provide a host with a variety of educational services. Educational Online Portals offer numerous eBooks, articles, journals, research papers, online courses, and other educational materials. Delivering user-specific and customised material is one of the education portal's primary functions. Employ web developers to design a bespoke education portal if you wish to develop an education portal for your business.

EDX, for instance This education online portal was established by Harvard University and MIT and is one of the most popular student web portals. It provides high-quality courses from the world's finest colleges and institutions to students in every country.

#### Incorporate Features into Education Portal

##### I. Unique Account Creation

This entry point feature will assist students, parents, and agents in gaining access to just pertinent documentation and features.

##### II. Customized Field Options

This tool enables you to thoroughly personalise every area of your student application.

##### III. Numerous Payment Gateways

The addition of multiple payment gateways to your web portal provides customers with multiple payment options and fulfils your business requirements.

##### IV. Extra Student Recruitment Instrument

This function facilitates the simplification of workflow operations. Also enables a second onboarding procedure.

##### V. Monitoring Controls

This functionality is vital for optimising customer interaction and streamlining processes from the outset.

##### VI. Integration with CRM

This portal feature allows you to obtain information about all registered users and monitor your leads from a single location.

### 4. Informational Portal

Often, informational portals contain content that is appealing to a variety of audiences. Their workflow management comprises giving internal and external access to public information and focuses mostly on the creation of potential user pathways and situations.

The New Yorker, for instance, is one of the greatest instances of an informative gateway including categories such as news, culture, literature, and technology. It contains several stories, news, and articles, resulting in daily significant traffic.

## Notes

### Integration Features for the Informational Portal

#### I. Content

This feature gives consolidated and straightforward access to data and documents. Also facilitates simple content search and authorisation capabilities.

#### II. Collaboration

This function is supplied to facilitate a certain piece of labour or undertaking.

#### III. Integration

With this feature, functionality from many portals is consolidated into the primary portal.

### 5. HR Portal

An HR portal is an internal point of entry for workers to access numerous HR-related and other workplace-related information. It is also a portal for prospective jobseekers and external job candidates. Typically, HR portals are dynamic, interactive online programmes that do not limit access to sensitive data and workplace information.

Monday.com, for instance, is an HR online portal that enables HR professionals to execute all HR procedures with drag-and-drop functionality. With this application, hiring managers may simply track applicants and record their contact information.

### Integration Features with HR Portal

#### I. Introduction and Onboarding Packets

This feature can provide new employees with information about onboarding and other pertinent details shared by HR. It can also serve as a place for current employees to refresh.

#### II. Procedures and Policies

This feature may contain company values, manuals, social media policies, forms, grievance procedures, and diversity policies.

#### III. Job Description and Recruitment processes

This feature employee portal will contain information regarding employee salaries and performance reviews, organisational charts, and internal vacancies.

#### IV. Benefits and Entitlements

A location where all benefits-related information, including wellness incentives, insurance, retirement plan details, and annual leave policies, will be provided.

#### V. Links to Company News and Announcements

This section will publish all news related to the company and other announcements.

### 6. e-Commerce Portal

e-Commerce portals are commercial programmes that facilitate trade between customers and sellers. Manufacturers and wholesalers create commerce portals to direct their customers to an online channel. The online portals simplify the purchase

procedure by easing bulk orders and providing volume-based pricing based on company requirements.

Skullcandy provides earbuds, headphones, and music-connecting gadgets. It is clear from their website why they are so popular. The entire website features the site's trademark black backdrop and colourful pictures.

### Integration Features for eCommerce Portal

#### I. Price and Catalogue Customisation

This tool will assist with automatic pricing rules, custom catalogues containing prices, and minimum and maximum order volumes per client or business.

#### II. Corporate Account Administration

This feature facilitates self-administration, corporate account hierarchy, user logs and permissions, per-user requisition lists, numerous lists of rapid orders, and shipping to various locations.

#### III. Simplified Ordering Procedure

This feature facilitates bulk ordering, pricing depending on quantity, order export prior to submission, and numerous requisition lists per customer account.

#### IV. Payment Modularity

This function offers payment by account, credit card, check or money order, and purchase orders.

#### V. Analytics

This component would have reports for negotiated bids, sales team performance, sales reports based on a variety of parameters, as well as buyer-specific balances and credit limitations.

## 7. Government Portal

Government portals help in easy interaction between citizens, enterprises, and the government. These web portals are knowledge management portals that offer multiple contents, such as information on payment for bills and parking tickets and other personalized information based on the citizen's address.

For instance: India.gov.in is an Indian government's web portal that provides information and online services from government sources. This website is accessible from a single point and is also known as the National port of India.

### Features to Integrate with Government Portal

#### I. A Prominently Featured Search Bar

This feature will include a search bar on every page of the site, allowing visitors to locate what they are searching for quickly and easily.

#### II. Merging of a Blog with Social Media

This function is excellent for the dissemination of emergency information. It also serves as a community hub where your audience may simply communicate with you.

Notes

## Notes

### III. Contact Information

This feature is a crucial component in the development of government web portals. It will provide emergency phone numbers so that consumers may easily contact the organisation.

### IV. Events Calendar

This tool will assist keep people informed about forthcoming agency and community activities and meetings.

## 8. Healthcare Portal

A healthcare portal, often known as a patient portal, is an online health care platform. The online web tools assist in monitoring medications, doctor visits, test results, and billing. You can also get health-related information through a healthcare portal.

Regional One Health, for instance, is one of the top healthcare websites that features a range of video narratives. Via this web site, patients may view facility tours and videos of pain-relieving treatments.

### Features to Integrate with Healthcare Portal

#### I. Doctor Visit Arrangement

This feature provides online appointment scheduling, a complete view of past appointments, a view of forthcoming appointments, and automatic appointment reminders.

#### II. Access to Health Information for Patients

This tool provides encrypted and password-protected access to health history, lab test results, discharge summaries, treatment, procedures, and medication plan views.

#### III. Safe Doctor-Patient Communication

In this feature, doctor-patient chat, video consultations, and post-visit patient questionnaires are all encrypted.

#### IV. Patient Payment and Insurance Management

This function provides access to bills and online payment options. It contains a case list for insurance coverage.

#### V. Portal Administration

This feature grants new user's portal access and facilitates the editing of patients' health and contact information. Additionally facilitates the uploading of patient data from vendor portals.

## 9. Community Portal

A community portal is a centralised online platform that communicates with selected community members and delivers insightful data based on their ideas and input on a certain topic. Many quantitative and qualitative market research techniques, such as idea board, surveys, polls, debates, and themes, can be utilised across several websites to accomplish this goal.

MTI, for example, is a community platform that enables users to connect and interact across generations. When they are unable to attend in-person sessions, community members may access the information and expertise.

### Features to Integrate with Community Portal

#### I. Community Participation:

Its functionality covers user self-registration, community membership programmes, user profile storage, and membership automation rules.

#### II. Social Engagement:

Personal conversations, video chats, online blogs, online polls, social media sharing tools, and thematically organised online forums fall under this category.

#### III. Knowledge Transfer and Education:

This feature contains partner marketing materials and staff onboarding.

#### IV. Event Management:

Under this function, there are video streaming services for hosting online events and personal calendars for event participation scheduling.

Below is an overview of numerous additional types of web portals:

### 1. Enterprise Portal

An enterprise portal, often known as a corporate portal, serves as the communication structure for a business. Using an enterprise framework, active projects are managed by employees while the top management unit may monitor the activity. Having such a gateway reduces the administrative burdens of small firms. It also makes the work environment nicer for employees, allowing for increased productivity. Corporate portals can handle several users, with each user generally having a unique ID and password to access their portal profile.

#### Benefits:

- Centralisation of information
- Enhanced interaction
- Enhanced cooperation
- Document management
- Boost Productivity
- Solid corporate culture
- Payment transaction audit trail

### 2. News Portal

Several online news organisations are accessible through a news portal, which is becoming a regular sight. The news portal simplifies and streamlines the news updating and content management processes. The database administration method for news portals is also simplified. This is the reason why online news organisations like having a news site. Some business-related websites also provide their own news portals that highlight forthcoming business events, news, etc.

## Notes

### Benefits:

- Centralisation of information
- Enhanced interaction
- Boost Productivity

### 3. Travel Portals

Like with news portals, travel portals exist and are mostly utilised by travel agency firms. Travel portals are created so that companies may make their web presence known to their audience. Moreover, travel portals offer a simple content management system, and travel-related news, updates, and blog posts may be shared with simplicity.

### Benefits:

- Information centralisation
- Enhanced communication
- Enhanced cooperation
- Payment transaction tracking

### 4. Education Portal

With the development of online-based communication platforms, the education industry has achieved significant progress. To provide students with the appropriate internet platform for distant learning programmes, education portals are developed. Every user of an educational portal normally has a unique user id and password to access the site. The education site contains the most recent updates, exam announcements, course fee notices, syllabi, and assignments, among other items.

### Benefits:

- Centralising information
- Improved communication
- Improved comprehension
- Document management
- Increase Productivity
- Registration and approvals
- Content library
- Measuring and reporting tools
- Information not available to the general public

### 5. e-Commerce Portal

Ecommerce-based businesses must create portals to present their items to consumers. Buyers can access the portal and purchase things according to their needs.

#### B2C Portal

A B2C portal is a typical ecommerce site that aims to create the optimal purchasing experience. It enables the creation of a purchasing experience, from generating interest

in your goods or service to completing the transaction.

## Notes

### B2B Portal

A B2B portal often deals with pricier and more intricate goods and services than a B2C site. There are three sorts of B2B portals: buyer-owned portals, supplier-owned portals, and independent marketplaces that connect different buyers and sellers. In B2B, there is less tolerance for impulsive purchases, and the buying experience gets longer and more involved. Hence, the B2B portal requires enhanced personalisation and collaboration features.

#### Benefits:

- Wholesale customers management
- Supplier management
- Administration of online logins for wholesale clients
- Stock inventory
- Payment transaction audit trail
- Login account administration
- Tailored reports
- Module for calendar and communication

### 6. Service Portals

A service portal (self-service portal) is a web-based platform that aggregates information and functionality from several sources to facilitate user self-help and self-service. Customer self-service portals, employee self-service portals (typically part of a broader HR portal), government service portals, and patient portals are the most prevalent forms of service portals.

#### Benefits:

- Generating and monitoring service requests
- Disseminating policies and records
- Manage purchasing orders and follow shipment progress
- Searching for estimates and invoices
- Distributing thorough FAQ information
- Customize content for each consumer

### 7. Partner Portal

Partner portals are developed for companies who sell through indirect channels. A partner portal is a tool for managing your partner relationships and persuading them to sell more of your products or services.

#### Benefits:

- Special offers or discounts
- Service memoranda customised for certain partners

## Notes

- Recruiting and onboarding information
- Registration and approvals
- Content library
- Measuring and reporting instruments
- Non-public information

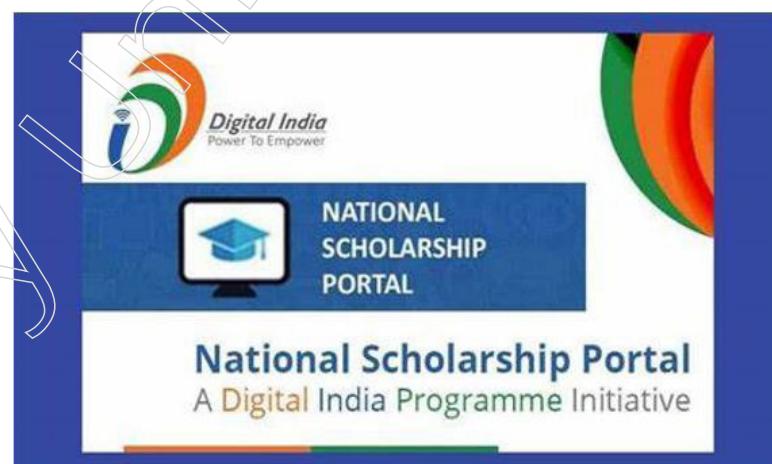
### 8. Franchisor and Franchisee Portal

The Franchisor and Franchisee portal is a subset of the partner portal category. A franchisor provides franchisees with access to pertinent news, corporate updates, opportunities, and resources. A franchisor establishes a partner portal to facilitate connection, communication, and engagement with its franchisees. The same benefits as the partner portal above are provided.

#### Benefits (same as Partner portal):

- Special offers or discounts
- Service memoranda customised for certain partners
- Details on recruitment and orientation
- Registration and authorisation
- Content repository
- Tools for measurement and reporting
- Content unavailable to the general public

#### 5.1.3 Objectives of e-Governance Portals



A web portal strives to give workers, staff, clients, and customers with a centralised access point to the organisation's information. It makes it simple for you to manage all business activities without assistance.

Consumers may generate tickets, resolve inquiries, manage orders and payments, use a knowledge base to learn about the product, and even assist others in the community.

The staff may examine and manage their assigned duties. Based on their function, they can access consumer information and deliver pertinent services.

The best part is that each stakeholder in your organisation will have their own location to handle their activity. They would have restricted data access. Yet without a password-protected login, no outsider could view or modify the data. It indicates that you would know who modified the data input, etc. In turn, this would assist you get transparency.

Many companies find it difficult to articulate the value and purpose of a portal. Consider the subsequent:

Despite the fact that portals score first in software-purchasing surveys and that corporate interest in this technology continues to rise, current research indicates that portal projects struggle to justify their existence. Companies must forsake their IT-centric perspective on portals, link portals to particular business processes, and acknowledge the role portals will play in ushering in the next generation of bundled composite applications in order for portals to produce the promised returns.

Regardless of who made the investment choice, portals must demonstrate their worth, just like any other IT acquisition. To estimate the genuine financial worth of a gateway, a better comprehension of its function is required. In this regard, below are seven important considerations:

- **Processes:** The portal should simplify events and enable businesses to perceive themselves as collections of business processes as opposed to functional departments, enabling them to exchange intellectual capital more effectively throughout the enterprise.
- **User Experience:** The portal must guarantee that the information, apps, and collaboration capabilities are tailored and integrated to provide distinct, role-based user experiences. Also, the portal should handle a worldwide audience, taking into account differences such as time zones, currency conversion rates, and support for many languages.
- **Return on Investment (ROI):** ROI must be proved by simple deployment, integration, and execution. The expense of administering the site should not tax IT personnel or frustrate end users.
- **Partners:** Various departments should be able to access vital information on the portal in a secure manner, and the portal should result in decreased delivery costs for business operations.
- **Organisational Productivity:** The portal should give all workers, customers, and partners with a collaborative work environment that eliminates barriers between departments and organisations and ensures that individuals work as efficiently as possible.
- **Streamlined:** The portal should support the incorporation of collaboration features such as instant messaging, Web conferencing, team rooms, and third-party apps.
- **Embedded:** The portal should provide access to e-learning and training opportunities.

Nowadays, all businesses are information-driven businesses. Regardless of your industry, you must be aware of the location of all information relevant to your products, services, and internal procedures. In the absence of a secure and centralised

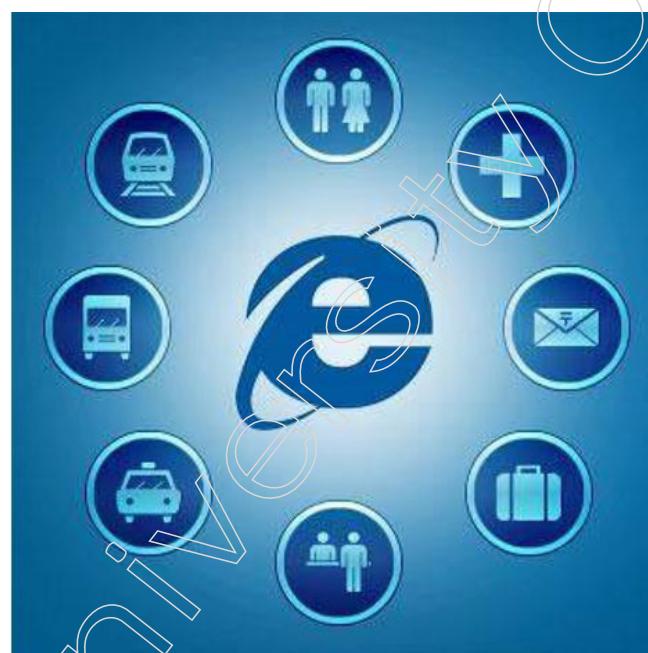
## Notes

knowledge base, it is normal for developing businesses to be unaware of how much information they own and how much they have lost.

There is no silver bullet for resolving all data and information deficiencies, as doing so demands a company-wide culture shift and the acceptance of a new way of doing things.

Yet, implementing a portal is an effective method to begin the development of a smarter, more connected workforce, which may lead to enhanced cooperation.

There are five primary purposes of portal installation:



### 1. Institutional knowledge is Lost with Employee Turnover

It is estimated that employees spend nine hours each week searching for knowledge that someone else already possesses but cannot share. The number of lost hours may vary, yet this issue affects businesses of all sizes. Not every procedure and workaround is documented, and when an employee quits, this information is frequently lost.

There is usually one person in every business who is always punctual, never absent, stays late to finish his work, and even picks up the slack for his team. Over time, he is considered as a “document management system”. He becomes the go-to person for any process-related issues until one day he fails to go to work for a variety of reasons. Even single person on sick leave might cause his department to lose productivity.

At this point, terror sets in. How did he handle this specific client? Who do we contact if this machine malfunctions? Should we contact them? Perhaps we can handle it ourselves...

Another thing that businesses must address is the retirement of baby boomers. Each day, 10,000 baby boomers reach age 65. Several of them retire well before age 65. It is not enough to simply replace them with younger personnel. If you do not have a plan to keep their institutional and industry-related expertise, it will leave with them.

And it's not just elderly employees who can abandon the organisation. Several studies indicate that Millennials switch employment every two years, which is a quicker rate than that of other generations. Given these variables, it is crucial to ensure that there is no information gap.

With a portal, all employees' expertise may be gathered by having them write papers on a variety of topics and uploading them with the appropriate tags. With such a system in place, when there is a breakdown in a process and other employees do not know what to do, they only need to search up the manual using the tags or keywords in the document. This material is accessible to authorised employees from anywhere, including their mobile devices. A document prepared years ago can be a lifeline if it is freely accessible to the appropriate individuals at the appropriate moment.

A gateway is crucial to the preservation of intellectual capital.

## 2. Employees are Trapped in Email Web



Management experts have been talking about email overload for years and the Internet is full of email memes. But email still continues to be the communications workhorse for companies across all industries. There are start-ups trying to eliminate email by coming up with email alternatives, but no one has been able to slay the beast of email overload so far.

Emotional responses, misunderstandings, pressure to reply, spam, offensive jokes from co-workers, novel length emails and viruses are just some of the reasons your employees don't like email.

The reason for email hell is that staff are not provided with a more efficient method of collaboration. As a result, people wind up utilising the sole instrument they have to exchange information and interact as a substitute for this function.

This results in some users receiving too much information and others receiving no information at all, leading to wounded egos and suspicion over hidden motives.

Outlook is one of the most widely used workplace productivity applications, second only to Microsoft Word, but with features such as Cc and Bcc, employees are unsure if they are following proper email etiquette.

As a result, the resulting email chains become email trees, with some employees spending the majority of their time replying and forwarding emails. If this characterises your firm, you require an Intranet gateway to provide more simplified and coordinated staff collaboration.

## Notes

With the urge to respond, email also serves as a work-interrupting distraction. This also prompts individuals to treat email as a game of ping pong in which the ball is tossed into another person's inbox.

There is information in certain inboxes, but it is not available to everyone who may require it.

This does not mean that email has no role in the company or that the Intranet gateway can or should replace email. Email is ideal for its intended purpose, which is communication with people outside the office and one-on-one correspondence.

A portal can facilitate cooperation among staff without overwhelming inboxes. Workers who enjoy sharing cat images, risqué jokes, and political rants can continue to do so on their own personal, customizable sub-sites. The outcome is that nobody is insulted.

Employees who wish to collaborate on a document may do so without engaging in a lengthy email chain or losing track of which version is the most recent.

### 3. Employees Who Work from Home can be Hired



Several businesses now give their workers the opportunity to work from home full-time or at least once each week. When certain employees are absent from the workplace, teamwork can become challenging. Even mid-sized businesses have branches in multiple time zones and countries, making collaboration impossible without the proper tools.

When subject matter experts are immediately accessible through chat and the material provided is saved in a location where others can also view and amend it, collaboration is significantly enhanced.

Multiple-location businesses can utilise the Intranet gateway to eliminate cultural barriers between geographically distributed staff. One of the most common concerns about working from home is that employees feel isolated from the organisation's culture and day-to-day operations.

This can be alleviated in part by providing them with access to an Intranet portal that provides a virtual representation of the main office and its daily activities. This is not something that can be communicated over email.

Also, the social network within the Intranet portal humanises the email sender's name. It can serve as a virtual water cooler where staff can converse. After all, sharing images of loved ones, pets, and favourite sports teams is what makes us sociable and strengthens our bonds with co-workers.

#### 4. Searching for Documents Takes Forever

Various document storage systems and procedures result in silos of information for many organisations. This information is unavailable to members of other departments when they require it, resulting in turf battles between departments.

For instance, the sales staff must have access to marketing materials for a presentation to prospective clients. Unaware that there are existing brochures and manuals on the product, they end up replicating it and omitting material that might have enhanced the product's visibility.

With an intranet gateway, this type of duplication may be avoided. It might serve as a "internal Google" for your staff to search for pertinent information. Instead of having your company's information scattered over several programmes, cloud services, desktop folders, C drives, D drives, and flash drives, you can save it all in a single, searchable gateway.

The complete central store of information is searchable from anywhere and on any device by authorised users. User rights allow for the material to be managed, including its release. Only authorised users may finalise a copy for public release or distribution inside the organisation.

Nowadays, intranet portals resemble social networks. This implies that if someone has generated a document that is helpful to other employees, it may receive likes and comments in the same manner as a Facebook post. This demonstrates to the author that people are reading and appreciating his or her work. It boosts the employee's morale and encourages others to participate as well.

#### 5. Employees Need to be on The Road



## Notes

Consider a mobile-friendly Intranet portal if a significant portion of your staff, particularly your sales and marketing teams, are frequently out of the office. This will ensure that your road warriors have access to current information via their computers and mobile devices.

Your workers are indifferent to the location of their emails, files, contacts, calendar, and other information. What matters is how and when they may obtain the information. A cloud-hosted Intranet gateway enables your workers to do work from any location and at any time.

SharePoint is one of the greatest intranet portal development platforms. Another is constructing a bespoke.NET-based site. If you want more assistance in determining whether your organisation requires an Intranet portal and how to create one, you can contact us and our collaboration specialists will examine your needs and establish the best solution.

### 5.1.4 Effectiveness of e-Governance Portals



Portals are frequently used in e-Government to offer web access to citizen (G2C) and business (G2B) services. Portals facilitate the following e-Government objectives:

- Transforming departmental services (offered on departmental property) into self-services (rendered online)
- Delivery of government services anytime and everywhere
- Provide information services on behalf of the department

Many legal concerns arise from the use of portals for the delivery of government services; they must be addressed in order to develop trust and confidence in the government site. Each portal's rules and terms and conditions handle these legal issues for portal-based service delivery:

- Portal Terms and Conditions
- Privacy Policy
- Copyright statement / policy
- Hyper linking Policy

On the basis of some broad concepts, these policies are created for each e-Government portal. These concepts are addressed in detail below:

**A. Portal Terms and Conditions**

The Portal Terms and Conditions should have clearly defined terms covering the following aspects of portal usage:

- Details About Portal Ownership: Who owns the portal?
- Usage Policy of Content: The rules and regulations controlling the use of the portal's content and transaction services. Particular contractual conditions for system usage (e.g., fraudulent information submission results in termination of registration or blacklisting) (e.g., e-Procurement, MCA21)
- Legal Factors: governing legislation and which court will have jurisdiction in the event of legal issues arising from portal material
- Disclaimers: Disclaiming the contents of a website that links to a non-government site
- Liability and Indemnification: Limitation of Government Liability
- Responsibility for connected websites

The Terms and Conditions should be displayed to the citizen / company (portal user) after portal registration. Only after consenting to the Portal Terms and Conditions shall the user be granted access to the portal's services.

**According to the Terms of:**

- Clauses of the 1872 Indian Contract Act (pre-requisites for a contract)
- Article 10A of the IT Act (contract formation and other pre-requisites of a contract can be fulfilled through electronic means) Thus, the Terms and Conditions have the force of a legally binding contract in the event of legal problems originating from site use.

**B. Privacy Policy**

The majority of portals acquire personal information from users during Portal Registration or in the course of service delivery (e.g., income tax). The Portal should only gather information that is absolutely required for service delivery.

**Portals should include a Privacy Statement that states:**

- The reason for collecting personal information
- If the information will be shared with anybody - who and for what reason
- If the portal handles high-risk personal data (credit card, bank account information, etc.), the precautions should be described (SSL, Digital Certificates etc)
- Will cookies (software downloads that gather user's personal data) be delivered to the visitor's system? The Privacy Policy should be prominently published on the Portal, and it should be referenced in the Terms and Conditions.

## Notes

### C. Content Copyright



All portal material should be supported by a Copyright Policy that explains the rules and restrictions of its usage and citation by others. The department's copyright policy may be liberal, moderate, or conservative.

- Liberal / Moderate: Content may be reproduced without authorisation. In the case of replication, source attribution must be supplied. Protections against disparaging material usage.
- Conservative: Material may only be duplicated with prior authorisation. Particular restrictions on content usage.

Before publishing any work protected by the intellectual property rights of a third party, all necessary permissions must be secured.

### D. Hyper-linking Policy

Users may view any other website (external or government) hyperlinked at the government portal as having the permission and trust of the government. Often, external websites may have links to government portals. Thus, all government portals should have lucid navigation. A policy on hypertext linking that outlines the criteria and standards for providing connections to external websites. If additional websites provide links to the government portal:

- The policy should specify if the external site must get approval before establishing links.
- The policy must stipulate that the hyperlink must launch the government portal in a new browser tab (instead of in a frame within the external site)

In the event that the portal provides links to other government or non-government websites:

- The policy should establish the particular guidelines/criteria for determining which external websites may be connected to from the portal.

- If non-government websites are connected, there must be a compelling commercial case for doing so (e.g., giving a link to the site of a licenced certified public accountant on the e-Procurement / Income Tax portal).
- Whenever the user navigates to a different portal via a hyperlink, the user should be informed of the same.

### 5.1.5 Measure of Effectiveness of Portals



Here are a few benefits of online portals that may help your business boost its return on investment by accessing more clients and partners worldwide.

#### Improved Customisation

On the majority of web sites, users may personalise the material depending on their tastes and requirements. This facilitates the management of information even more.

#### Training Opportunities

Whether your firm is B2B or B2C, portal platforms offer great training possibilities for potential buyers/users. This is an emerging trend in web construction that provides chances for intelligent marketing methods. No longer will you be left behind while attempting new techniques or perfecting existing ones, because these materials make everything feel like a single learning experience – even if things occasionally go awry.

#### Reach an Extended Audience

Online portals provide organisations with efficient communication channels, allowing them to reach out to consumers and partners. This helps firms to expand their consumer base and build a strong internet reputation for their company.

#### Seamless Access from Anywhere

The ability for businesses to give their staff, partners, and/or clients with a user-friendly interface that permits access from any place and device is perhaps one of the greatest benefits of online software development. This makes it easy for individuals to modify or update material based on their needs, resulting in increased productivity.

#### Centralised and User-friendly

It all comes down to the user experience. They facilitate a robust organic link structure by centralising significant pages in one location. This implies that users just need to remember a single URL, login, and password to access all company-wide content.

## Notes

### Improved Communication

We are all aware of the importance of providing our clients and partners with the most accurate information available. You can customise certain bits of information that your staff, partners, and/or clients may find beneficial. Online portals are an efficient means of communication with clients and co-workers. They facilitate contact, which can lead to more commercial endeavours.

### Builds Customer Loyalty

Using client portals, you may provide consumers with an additional means of contacting and communicating with your organisation. When clients receive timely updates on the progress of their orders, inquiries, or other relevant problems, it demonstrates that they are being attended to, which aids in client retention.

### Access to Accurate Data and Analytics

It is a wonderful tool to monitor the entire success of your organisation. You can identify where you have room for development or growth potential in a single window, without the hassle of data processing, because everything gets directly into the system!

### Improved Productivity

You get immediate access to all the documentation required to handle your project or transaction. You can simply access them in a single location, so you no longer have to sift through emails or spend time searching for what you and your co-workers or clients agreed upon.

### Enhanced Customer Service

Using customer portals, clients may address their own inquiries, saving them time. It's an easy win for service providers that don't want to spend countless hours on the phone with clients or incur personnel expenditures for managing difficulties that a computer programme should fix.

### One Source of Truth

With effective content control, the likelihood of inaccurate material appearing on your client portal is dramatically decreased. By consolidating firm data, only the most recent versions of documents with the appropriate branding and signatures may be shared.

### What are the disadvantages of online portals?

Web portals are not a panacea for all organisations, and they do come with certain downsides.

Online portals do not always account for changes in device capabilities; thus, businesses that choose a desktop development solution can boost usability across platforms. In this sense, desktop application development yields greater outcomes for many firms than any online gateway.

Choosing the appropriate online portal might be difficult. It must be simple to update and have minimal usability difficulties. Complex and ever-changing systems are not conducive to staff or customer adoption.

Many firms may find desktop or web applications preferable to web portal solutions for these and other reasons.

Despite this, online portals are an excellent tool to promote your brand. Consider creating a web portal to allow clients and partners to access vital information from anywhere, while also enhancing customer service, if you are seeking the next step for your business.

## Notes

### 5.1.6 Study of e-Governance Models of Different Countries

#### e-Governance in Nepal



According to current literature and practices, e-Governance is a novel notion in Nepal. In Nepal, e-Governance is effective as a consequence of each of the drivers of economic governance (Pariyar, 2007). In order to increase the capabilities of e-Governance, the Nepalese government updated and adopted new legislation and regulations to further promote e-Governance practices in Nepal (Nepal Telecommunication Authority, 2018). The growth of ICT-enabled services and e-Government practices was significantly influenced by private enterprises. Nepal is a geographically varied nation.

Consequently, the use of technology in the delivery of public services might assist in reaching individuals in remote places. In the next years, the government should carefully plan and develop methods for utilising e-Governance effectively, based on the economic governance model (UNPACS, 2014). In the global context, Nepal's e-Governance condition is not particularly outstanding (Shrestha, 2019).

Nepal had achieved remarkable progress in the use of ICT as a result of the rapid increase in internet usage and the adoption of cutting-edge technologies. The government has also implemented e-Governance in the delivery of public services. Yet, government organisations lagged well behind the commercial sector in their use of IT (Nepal Telecommunication Authority, 2018).

## Notes

### e-Governance in China



### China's Policy Climate for e-Government Projects

State Council, the central government's executive body, is comprised of 30 ministries and commissions, 18 organisations, and six offices under the supervision of the China Communist Party (CCP). ICT applications are utilised by nearly all local administrations, including 22 provinces, 8 autonomous regions, and 4 municipalities. Beginning in 1992, the general office of the State Council outlined implementation plans for the development of a nationwide office automation system.

### China's Ambitions for e-Government

e-Government has the ability to make governments more receptive to the demands of their constituents. In market-based democracies such as the United States, this often entails adopting lessons from the private sector to make government more citizen-centric and service-oriented.

### The Application of e-Government in China

China's e-Government began with a series of "Informatisation (Xinxiu)" programmes. The "National Informatisation (NI, Guojia Xinxihua)" plan was announced by the State Council in 1997 in an effort to promote industrialisation and modernisation through the use of information technology. 1999 saw the adoption of the NI plan as the primary target of the Tenth Five-Year Plan for National Economic and Social Development. The State Council issued the "Five-Year Plan for National Administration" in January 2001.

China's authorities anticipate that e-Government will facilitate administrative changes by modernising government services, reducing procedures, and increasing administrative transparency. This expectation assists in reconciling two seemingly contradicting e-Government goals in China. On the one hand, officials are attempting to exploit e-Government as a driver of economic growth, while on the other, they wish to further strengthen the central government's functions.

The Chinese government's stated motivations for using information and communication technologies (ICTs) must be fully comprehended. Specifically, the

evidence that administrative reform, Xingzheng Guanli Tianli Gaige, in Chinese represents relatively unique conceptions is shown.

- 1) transforming government functions
- 2) reengineering government process
- 3) enhancing government transparency

This has been the driving force behind many of China's national and local e-Government apps. In turn, this reengineering of the public administration is driven by a desire to encourage economic growth. Specifically, in China, IT applications in government are designed to promote economic growth by facilitating a more decentralised and transparent public administration and to provide the central government with the instruments essential for high level government surveillance and control.

Some of the most important e-Government initiatives are now being implemented in China. While proposals are reviewed at both the national and local levels, it is intriguing that some of the most creative initiatives are taking place on the local level (though sanctioned and funded by the national government). Knowing why there is such energy at the local level gives a foundation for comprehending what the Chinese government means by "administrative reform."

#### e-Governance in Australia



e-Government in Australia would reduce the amount of time residents and companies spend interacting with the government. A digital signature would simplify official transactions, such as the signing of contracts and the submission of applications. There would be no need for 100-point identification checks in person, and visits to real government offices would become obsolete.

In Estonia, where e-Government is a national obsession, these efficiencies are estimated to increase the yearly GDP by 2%. While many government departments already have user-friendly online portals and some states have begun integrating multiple services into single online platforms (such as Service NSW and Service Victoria), Australia has not yet attempted a citizen-centric approach that enables seamless engagement between citizens and businesses and all three levels of government. In addition, it lacks essential enabling mechanisms.

#### Notes

## Notes

An integrated government back office, a simple, user-friendly, and secure e-ID, and a digital signature are the essential components for achieving an integrated approach to e-Government.

This is not to minimise the practical difficulties of integrating three levels of government that have traditionally resisted collaboration or the attention to detail necessary to handle cybersecurity problems. Integrated e-Government is still necessary for a thriving economy in the 21st century and should be pursued.

Australia was an early adopter of the worldwide e-Government movement, gaining an international reputation as a pioneer in this field (peaking around 1999). A coordinated strategy to e-Government was not accomplished. Several big agencies, such as the Australian Taxation Office and Centrelink, have relied more on a unified “front end” than on an integrated “back end” that enables seamless citizen engagement with the government.

In the 1980s, a national identification programme (the Australia Card) was suggested. The Australia Card Bill, however, aroused substantial public privacy concerns and was rejected in the Senate.

In 2006, Prime Minister John Howard made a second effort with the Access Card before the Rudd administration shut it down in 2007. The Electronic Transactions Act of 1999 allowed companies that were obliged by federal law to furnish written information, a signature, or a document to do so electronically.

Yet, the Australian Government and state and territory governments exempted a substantial amount of legislation from the Act's application. The Act was a facilitator, but it did not generate a “unique and unforgeable identity that can be examined by the recipient to ensure authenticity and integrity and provide non-repudiation.”

The Department of Communications, Information Technology, and the Arts was a key actor in the coordination of e-Government at the end of the 1990s. There are now two units within the department:

1. Office for Government Online
2. National Office for the Information Economy (NOIE)

They advised and assisted the government on internet-specific issues. The Australian Government Information Management Office, which was founded in April 2004, subsequently assumed a portion of the NOIE's responsibilities.

Nonetheless, the reputations of government departments and agencies varied, and the largest departments were often the originators of creative cross-agency collaborations. In certain respects, this is still the case, but with greater cooperation. In general, the dominant electronic players (such as the Tax Office and Centrelink) and creative state governments advised central agencies and drove central initiatives.

The federal government formed the Digital Transformation Agency in 2016

to handle the government's digital and ICT priorities (the successor to the Digital Transformation Office, launched in 2015). The agency intends to consolidate digital delivery throughout the federal government and increase the openness of the government's ICT and digital programmes. It includes ICT procurement strategy as well as strategic and policy leadership on government-wide and shared ICT and digital service delivery.

Coordinated by the agency, the Digital Transformation Agenda envisions agencies and departments delivering "a range of initiatives that will provide benefits to all users and improve their digital experience," such as Single Touch Payroll, My Health Record, health payments, trusted digital authentication and verification, whole-of-government platforms, grants administration, and a streamlined online business registration service.

The Trusted Digital Identification Framework defines a standard approach to digital identity in Australia and will be an integral part of any integrated e-Government strategy. In the federal budget for 2018–19, \$92.4 million was allocated for the development of the infrastructure that would support an eID (Gov-pass), and the government aims to roll out test services to half a million users by the end of June 2019. This will mainly replicate the Digital ID or e-ID recently introduced by Australia Post. In a recent Policy Brief, the obstacles to the general rollout and adoption of eID in Australia are discussed.

States and municipal governments also provide a variety of services online. More than 1.5 million users have already signed up for the New South Wales Government's single sign-on programme, which provides safe access to government transactions. Victoria is an additional leader. The Victorian Government Information Technology Strategy was published in May 2016 and details the efforts the government is taking to enhance the security of information and infrastructure vital to the smooth operation of e-Government.

The City of Sydney, at the level of local government, contributes to the open data movement by making available to the public an expanding variety of data in a variety of forms. The databases provide information about environmental sustainability, transportation, arts and culture, amenities, and parks, among other topics. The release of data helps the development and administration of open services for the corporate and public sectors, boosts transparency, and stimulates the economy. It also lessens the number of requests for information and administrative burden.

#### e-Governance in France



*Liberté • Égalité • Fraternité*

**RÉPUBLIQUE FRANÇAISE**

## Notes

e-Government or digital government refers to the use of modern technologies to improve administrations by making public services more accessible and procedures easier (OCDE, 2003). Estonia is a pioneer in this sector since its inhabitants may complete practically all administrative procedures online.

In 2017, former French Prime Minister Edouard Philippe stated, “Estonian e-Government is the 2022 aim for France in terms of e-administration” and accordingly announced “Public Action 2022,” a campaign to rethink the paradigm of public action in France.

A few months before the conclusion of Emmanuel Macron’s term, has France become a leader in the digital administration field? And before, what were the defining events of the digital change in France?

### Some Insights on the Evolution of France’s e-Government

The objective of modernising the French public sector is to grow towards a modernised and nimble administration, which necessitates the disruption of France’s cumbersome and inflexible bureaucratic systems.

The French plan for the digital transformation of the state dates back to the early 2000s. Hence, one of the earliest revolutions in the industry was the introduction of the service-public.fr website in 2000, which gave citizens access to online resources for the execution of their administrative operations.

After this modest time of online information, the digital transformation of public services continued with the dematerialisation of vital administrative activities, propelled by three action plans in 1998, 2004, and 2008. Then, in 2013, France implemented several steps to streamline administrative procedures within the context of the legislation “allowing the Government to simplify contacts between the administration and the population.”

In 2014, France was placed 121st out of 144 nations in terms of administrative load, according to the World Economic Forum’s Global Competitiveness Report.

Thus, administrative simplification is fundamental and represents the third aspect of the digital transformation of French public services. In reality, the construction of a digital administration is dependent on the enhancement of the citizen experience, as opposed to the simple transfer of standard operations to the digital realm. The government is attempting to modernise itself for more efficiency, but the primary objective is to restructure the interaction between the public and the public service.

Moreover, in 2014, a decree launched the “state as a platform” initiative, which aimed to make the state an interface between administrations by bolstering the digital interoperability of administrative information systems. This edict was of tremendous importance since it compelled all administrations to share their infrastructures, networks, and software.

In 2015, France approved a bill establishing a “Digital Republic.” This digital law was an important milestone in the digital transformation of public services since it not only facilitated simple access to administrative papers, but also launched the open sharing of public data on the www.data.gouv.fr portal.

The sharing of data held by the administrations was therefore made available to the public for improved transparency of public activity while offering the chance to the French to enrich the existing data.

**The Macron Administration Represents a Turning Point in the Transformation of Public Services.**

In 2017, candidate Emmanuel Macron claimed to “put the French administration at the service of entrepreneurs” and highlighted, “I would want to be able to implement a fundamental transformation in the administration very fast.” As soon as the new president took office, it was only natural for the administration to initiate a comprehensive reform of the state.

The goal of the “Public Action 2022” programme was to dematerialize the 250 most frequently utilised administrative processes in France by 2022. To oversee the implementation of the initiative, the French interministerial directorate for digital matters (DINUM) was established, with an emphasis on the administrations’ information systems.

The DINUM collaborates with the already established DITP (Inter-ministerial Directorate for Public Transformation) on this program’s three-tiered objective: improving the quality of public services for users, controlling public expenditures for taxpayers, and modernising the status and working conditions of civil servants in the public service.

Hence, we observe a need for a multi-scalar change of the administration that takes into consideration all parties involved. Thus, what are the consequences of the “Public Action 2022” programme a few months before the deadline?

As of today, 212 of the 250 most common administrative procedures in France, including the declaration of income, the payment of taxes and fines, the request for identity documents, the request for housing assistance, and access to the Covid-19 vaccination certificate, are available online in their entirety.

Notwithstanding the epidemic, France has undergone a marked acceleration in its digital transition over the past few years. So, what may have been a hindrance ironically strengthened the state’s digital transition.

As part of the “France Relance” economic recovery strategy, which attempted to revitalise the French economy after the economic crisis caused by the Covid-19 epidemic, a budget of 1.7 billion euros was provided to help the digital transformation of the state.

### **France is a Global Leader in the Digital Realm.**

So how can we judge if these improvements have allowed France to become a leader in e-Government? One of the solutions is the #EGDI indicator, which was developed by the United Nations to evaluate the global digital administration development initiatives.

EGDI is a composite index ranging from 0 to 1 that measures the performance of e-Governments. It is computed by averaging three indices that quantify, in order, the usage of NTICs for public services, the level of telecommunication connection in the

## Notes

nation (internet access), and the human capability of the country's population (human capital).

Despite a high score of 0.87180, France is now placed nineteenth and has fallen ten positions since 2018. France is ranked ninth in Europe, behind nations such as Denmark, Estonia, and Finland, which are at the top of the list (both European and international). France's EGDI score has never been so low, considering that since 2008 the French government had consistently been among the top 10 in the world for e-Government. Hence, the score indicates that France's deployment of e-Government is slowing relative to other nations.

### The Digital Divide in France

People left behind by the state's digital revolution. The EDGI score for France demonstrates that the French e-Government is not fully mature, particularly in terms of connection and Internet access. In reality, despite its evident benefits, the digital transfer of public services has a significant limitation, as it might inadvertently violate the principle of equal access to public services by excluding those who struggle with technology. First, more than 7.5 million people in France lack access to a quality Internet connection, particularly in rural and ultramarine regions.

In addition, access to computer equipment is a discriminatory issue in the implementation of dematerialized operations, as 19% of French citizens do not own a computer at home. Lastly, the dematerialisation of operations might be a source of difficulty for those unable to utilise digital tools: a third of the French population (18 million) considers itself to have little or no computer proficiency.

Hence, the administration's digital transition encounters issues of geographical, economic, and cultural inequality. As such, the example of France is important inasmuch as a big portion of the social issues is founded on the unsatisfactory ties between residents and administration.

In fact, the lack of access to public services and their scarcity in rural regions was one of the factors that sparked the "yellow vests" protest movement, which led to frequent rallies in 2018 and 2019. Hence, France faces a contradiction and is at a crossroads where digital administration may provide significant opportunities in terms of accessibility and access to rights for all, but also poses a risk of exclusion for many individuals who are digitally illiterate and live in isolation.

### A Shift Towards Open Democracy via Digital Management.

The analysis of some of the milestones of the French public action reforms, in particular the "Public Action 2022" programme, demonstrates a desire on the part of decision-makers to use digital technology and its methodologies to modernise the state. The subject of digitisation is reshaping legislation, and the state is taking the initiative to develop new frameworks and instruments for digital public administration, as we have observed.

Yet this digitalisation does not only simplify the daily lives of French individuals; rather, as an instrument of open government, it causes a radical shift in terms of governance. In fact, the introduction of the digital in the public sphere contributes to the redefinition of the doctrine of governance, towards a more horizontal model based

on the necessity of transparency and the availability of public data, as well as fostering collaboration with civil society in the design of public policies.

"The way in which public services are produced must be rethought by encouraging the use of "agile" methods and experimentation within public services and by involving users in the co-production of these services through participatory processes (...) to adapt the social contract between citizens and the State to this new digital era," write Algan et al. (2010).

In its pursuit of digital leadership, France must therefore continue to promote a citizen-centric approach in the design of new public services; this would allow it to overcome administrative rigidity and the traditional vertical structure of the French government, while taking into account the needs of its citizens more effectively. Avoiding a "forced march" transformation of public services, which would weaken the French people who are the furthest from digital, is thus of paramount importance.

### e-Governance in Austria



Imagine being able to alter your home address, obtain official paperwork, and order an electoral card all in one spot.

In other areas of the globe, completing these simple chores might take a significant amount of time, but in Austria, you need look no farther than your cell phone.

Via the Berlin Declaration on December 8, 2020, European Union (EU) countries have acknowledged the paradigm change from "e-Gov" (electronic Government) to "m-Gov" (mobile phone-based access to government services).

Even while governments have created e-Government portals and online solutions, not everyone has access to the internet through a laptop computer. Mobile phones, on the other hand, are nearly ubiquitous, and more than 70 percent of EU citizens choose to access services via mobile phones.

Peter Kustor, Federal Minister for Digital and Economic Affairs of Austria, presented the government's experiences with Mobile First: From e-Government to m-Government - The World Bank-organized transition and whole-Government approach to mGov in Austria.

#### Here are the Five Most Important Lessons Learned from Austria's m-Gov Experience:

- 1) A legal structure is essential. In 2004, the Austrian government approved the e-Government Act. The modification to the Act that went into effect last year

## Notes

establishes a “right to digital engagement” and specifies that “everyone has the right to communicate electronically with federal courts and administrative authorities about federal law.”

- 2) Institutional frameworks necessitate collaboration across the whole government. Under the direction of the Ministry of Digital and Economic Affairs, a government-wide strategy was chosen, and an overarching coordinating structure was constructed. To increase monitoring and alignment, the government created the Digital Austria Federal ICT Board to coordinate the federal ministries and the Digital Austria Local Government Board to coordinate the provinces, municipalities, and regions. There are representatives from the government, the Chamber of Commerce, and social security on the boards.
- 3) Examine the overall picture of the technological components to minimise duplication of services. To avoid recreating the wheel for each service, the government evaluated the new system through the lens of a unified, government-wide design. This includes, among other things, a uniform approach to ensuring interoperability, the integration of core registries, the usage of e-ID, the provision of e-payment alternatives, and e-Backoffice. Its infrastructure permitted the adoption of the “only once” principle: individuals need only enter their information once into the system to access a variety of government services.
- 4) The essential enabler is electronic identification. The e-ID law established the groundwork for digital change. As the Act did not identify a specific technology, the government was better able to adjust and keep up with the rapid evolution of technology. First, chip cards and then mobile devices were employed to establish electronic identification systems. As mobile technology progressed, the e-ID based on mobile devices progressed through numerous stages. Earlier, when cell phones were uncommon, SMS was used to authenticate citizens for online service supply — a code was delivered to a citizen’s mobile device when the person sought a service online, such as a change of address. The citizen might finish the change of address service by providing the SMS code as an authentication technique to ensure that the change of address is being made by the correct individual. QR (Quick Response) codes were created to verify and deliver e-signatures in response to the increasing proliferation of cell phones. The most recent approach employs the ‘secure aspects’ of smart devices, enabling the secure use of the same device for both authentication and identity and for accessing the service.
- 5) Start with services in great demand. The government of Austria emphasised services that were in high demand among its inhabitants. They included assistance with passport renewal (notice prior to expiration), birth registration, address changes, application for social security and health cards, requests for election cards and/or ballots, and assistance with citizen initiatives.

Austria’s government service delivery has been more effective and efficient after adopting mGov.

### African e-Government Implementation

African eGovernment activities have been the subject of very little academic examination and evaluation. The scant information available has mostly originated

from outside Africa and has not been updated to reflect new events. In light of the tremendous expansion of information technology and e-Government in Africa over the past decade, more recent analyses are required.

Recently, a few of African scholars have presented a more Afrocentric perspective, founded in the reality of the area. Richard Heeks's critique of e-Government practises in Africa is the most widely recognised (2002a). Heeks estimates that 85% of e-Government projects in developing countries fail in whole or in part (Heeks, 2002c).

In Africa, this is largely attributable to "the large gaps that frequently exist between project design and African public sector reality" resulting from a Western supply-driven bias that disregards African realities (Heeks 2002a, 1). Heeks attributes the Western orientation of African eGovernment initiatives to international donor agencies, (presumably international) consultants, information technology vendors – who frequently bring with them the "If it works for us, it will work for you" mentality (Odedra-Straub, 1995) – and Western-trained African civil servants.

Among the additional causes of failure that Heeks and others (such as Berman and Tettey, 2001) identify are the following:

- Project objectives are excessively ambitious given available resources
- Efforts focused on supporting problematic processes as opposed to redesigning them
- e-Government priorities diverge from those of other sectors of government
- Ignoring cultural factors in project delivery techniques
- Ignoring inadequate infrastructure and unequal technological distribution.

Others (Coleman 2005) view Heeks, Berman, and Tettey as committing the error of "African exceptionalism" – believing that failure is inevitable because things, particularly those based on new technologies, simply don't work in Africa because African bureaucratic institutions "differ fundamentally from those of Western states in which computing and IT were developed" (Berman and Tettey 2001, 1).

On multiple occasions, African government leaders have rejected this view of the irrelevance and unsuitability of e-Governance to Africa, declaring, for instance, at the fourth African Development Forum (organised by ECA in Addis Ababa in 2004) that: e-Governance... is an important innovation for enhancing good governance and strengthening the democratic process that can also facilitate access to information, freedom of expression, greater equity, efficiency, productivity growth, and transparency.

As a consequence of good multi-stakeholder collaborations, successful e-Government programmes may have concrete and measurable effects on enhancing public involvement and quality of life.

African governments must develop appropriate policy frameworks, supported by legislation for e-Governance, that are linked to strategic development objectives; recruit high-ranking political e-Government champions; focus awareness, outreach, and training efforts on the less privileged segment of targeted users, especially women and neglected rural communities; and promote local content and supports local language development.

## Notes

(ECA 2004) Participants at the UNPAN e-Governance workshop held in Addis Ababa in February 2009 felt that Heeks' criticism was out of date and that eGovernment efforts in Africa needed to be evaluated by African scholars in the context of the African environment, rather than in direct comparison with more developed and wealthy nations.

Some African scholars, notably Chango, Ngulubu, and Mutula, have explored analytic approaches to e-Government in Africa after Heeks' critique. Chango (2007) acknowledges Heeks' argument that there is a significant failure rate among African e-Government programmes and relates this to design flaws. As evidence, he cites Gambia's collaboration with the ECA on e-Government. Chango views Gambia's e-Government approach as a pre-e-Government phase. (Chango 2007, 1).

In other words, a NICI plan cannot stand alone as an e-Government policy or strategy. A significant contribution made by Chango is the necessity to link communities of practise with research communities, particularly local research communities, in order to advance social knowledge. If local scientific communities do not engage in these activities, he warns, the chance to collect vast amounts of relevant data and advance knowledge would be lost.

Among the subjects he offers for local research groups are IT adoption and public organisation transformation. Chango also raises a number of significant anthropological issues (following Rabinow, 2003) that scholars and communities of practise must evaluate in relation to the implementation of e-Government in Africa:

- How can a technology system be implemented in an environment where most inhabitants do not perceive it as a reality?
- How can systems be designed without a critical mass of ICT users?
- How can a technology system be implemented when the expenses of technology surpass those of human employment and unemployment is high?
- How can e-Government be more responsible and transparent than the government that it represents? (Chango 2007, 392).

### Strategies for Building Successful e-Government Projects

There is no shortage of prescriptions for building successful e-Government projects in Africa in ways to, if not ensure, at least have a better chance at success. It is worth taking a look at some of these strategies for risk reduction.

Perhaps the greatest depth and breadth of analytic experience is that of Gianluca Misuraca, who has worked directly with UNDESA as well as indirectly on secondment with CAFRAD. Based on four in-depth case studies of e-Government in Africa (from Senegal, Ghana, Uganda and South Africa), Misuraca drew a number of conclusions on the building e-Government/governance in Africa:

1. Customised approaches are needed- no one strategy fits all.
2. Local conditions must be taken into account; wholesale import of external models does not work.
3. Local content is essential.

4. Engaging substantial numbers of the local population is difficult but important.
5. The high cost of ICT equipment, applications and services remains a deterrent to the adoption or successful implementation of e-Government programmes.

All of them contain the phrase “think local.” It is difficult to see e-Government programmes succeeding without consideration of the local context, particularly the human difficulties. Heeks also provides simple yet effective success tactics, condensing the many e-Readiness studies to six questions that governments should ask themselves before launching e-Government programmes.

1. Is our data infrastructure prepared to increase the amount and quality of data to enable e-Government?
2. Exist the necessary laws and regulations (such as allowing digital signatures) to support e-Government?
3. Is our institutional infrastructure prepared (do we have a coordinating office for e-Government)?
4. Our human infrastructure: are we prepared?
5. Has our technical infrastructure been established? Are our leadership and strategic planning prepared? (Heeks 2002c).

### **The Road Ahead**

In the majority of nations, the primary objective of e-Government development is to create Internet-accessible electronic services for the public. Regrettably, the majority of African nations have not even reached this point.

Before achieving the construction of integrated government portals and reengineering of back-office procedures, they have a long way to go. Developed nations are increasingly adapting their e-Government strategies in the direction of customer-centricity, and instead of maintaining rigid organisational structures, they are focusing on integrating services and processes across administrative bodies and institutions, and even private businesses.

To do this, the growth of e-Government need a comprehensive strategic approach that embraces the whole public administration and is not restricted to certain organisations and institutions, sectors, or administrative levels. e-Government activities must do so to advance the creation of services based on user demands and challenges, which most frequently entail a desire for integrated services and are aimed at life-events.

As part of Africa's transition from eGovernment to integrated, linked government, increased bidirectional information flows and public involvement are anticipated. It is anticipated that African citizens will reap the benefits of public sector reform, more efficient government, improved public sector capacities, improved governance/strengthened democracy, increased government transparency, a reduction in corruption, a high level of citizen participation, greater citizen trust in government, and an increase in ICT diffusion and literacy as a result of this movement.

## Notes

### Examples of e-Governance or Digital Governments



The Digital Government Index (DGI) is a categorisation devised by the Organisation for Economic Co-operation and Development (OECD) that establishes the characteristics a nation must adhere to in order to attain complete e-Governance.

- **Digital by default:** uses technology to reimagine public procedures and make them more accessible and straightforward.
- **Data-driven:** considers information a strategic advantage for decision-making
- **As a platform:** It delivers a vast array of tools to satisfy the demands of users while delivering public services.
- **Open:** citizens have a central role in their interaction with the government and have access to government-related information.
- **Proactive:** Anticipates or is capable of promptly reacting to the demands of residents.

#### E-Estonia: The Estonian e-Government

By these criteria, Estonia is among the most advanced nations in terms of e-Government. Once the country achieved independence from the Soviet Union in 1991, this circumstance arose out of need rather than design. In addition to eliminating the old Russian bureaucracy, Estonian officials understood that accelerating the administration and equipping it with technology was more efficient and cost-effective.

e-Estonia is the result of this process; it is an ecosystem that has enabled the council of ministers to eliminate the use of paper, laws to be approved with digital signatures, public services to be connected in order to optimise resources, and administrative procedures such as passport renewal to be completed while engaging in mundane activities such as waiting for the bus.

#### United Kingdom's Digital Governance: The e-Government Unit

Digital by Default was established by the United Kingdom in 2010 to digitise its interaction with residents. A year later, the creation of the Gov.Uk site directed all government functions to a single digital platform.

The guiding principles of this strategy are that citizens do not need to provide the same information to multiple government entities, that all government officials working

in the public sector must have used the services being offered to citizens, and that although all the services are designed to be digital by default, this does not mean that there is no information number or customer service desk to prevent digital divides.

### China's e-Government

With his 2012 election as President of the People's Republic of China, Xi Jinping has undertaken the modernisation of the Chinese government by embracing technology and artificial intelligence. This approach yielded the large data gathering system, which has also contributed to population monitoring.

In reality, one of the outcomes of Chinese e-Governance is the social credit system, a personal digital record system that gives residents points based on their morality and honesty and defines how they may interact with the government. Individuals who, according to the system, cannot be trusted will be unable to communicate with institutions or carry out particular operations. A kind of e-Governance that was first developed in China, but whose main ideas, according to some experts, are now in place in the West, but without government support.

### 5.1.7 Case Studies of e-Governance Outside India

#### Case Study 1

##### Making e-Government More Easily Available in the United Kingdom

To address the issue of user awareness and adoption of electronic services, the United Kingdom has devised a plan centred on:

- A single, citizen-focused, "all-government site" that is explicitly branded and actively marketed, including via large commercial sites and intermediaries.
- Consistent navigation based on "audience" and "subject" user segmentation.
- Offering of a variety of high-value services based on research and analysis of user demands, with information tailored to the audience and issue and presented in simple language, and with evident added value for online users. Based on research and analysis of user requirements, these services supplement search directories and other navigational tools, allowing users to choose how they would want to locate information and services.
- The one-stop Business Link website, which gives free and quick access to government information, advice, financing, and training for small businesses, and aims to minimise the amount of time firms spend complying with laws. businesslink.gov.uk, a cross-government partnership among departments and agencies that deal with businesses, has been improved in response to user input and changes in the business environment to ensure that it continues to be of genuine benefit to users.

#### Case Study 2

##### Improving e-Government Services Through Feedback on Phone in the United States

The Internal Revenue Service (IRS) of the United States Department of Treasury has monitored customer satisfaction and taxpayer awareness via phone surveys for its Free File programme, which is included in all IRS publications.

## Notes

Free File appears initially on the IRS website, and IRS media initiatives in 2002 and 2003 appear to have resulted in an estimated 3.5 million people utilising the Free File programme in 2004. Also, the IRS has established a website ([www.aboutefile.com](http://www.aboutefile.com)) to give additional information about the programme.

FirstGov.gov (the Federal Internet Portal) gathers information on the number of visitors and page views, the frequency with which pages are viewed (or not), and the most popular search phrases in order to better understand who uses the portal and why.

The website utilises the American Customer Satisfaction Index to administer a customer satisfaction survey and Nielsen Net Ratings to gather demographic information about its visitors. Lastly, FirstGov.gov undertakes individual usability testing and focus group testing to confirm the efficacy of the information and services to which it provides access.

### Case Study 3

#### Online Access to Multiple Levels of Government in Austria

One of the primary goals of the central citizen and business site [www.help.gv.at](http://www.help.gv.at) in Austria is to offer transactional services supplied by various public agencies and administrative entities. The site is guided by a life events model.

#### Users to services that fit their requirements.

As a fundamental framework, a “directory of services” identifies and provides portal-based services. This list includes all four levels of the Austrian government. The site provides service comparability (both online and offline) based on standard metadata descriptions and even process models of the services, as well as information on specific authorities in great detail.

The method is a centralised transaction gateway, but the various online transaction services are offered by national, county, municipal, or community-level agencies. Only the display of the service on the portal is centralised in order to make it easier for users to locate the required information or service.

To ensure more uniform service delivery, Austria has found it necessary to specify means and degrees of cross-departmental collaboration – coordinated and organised by the Austrian IT strategy’s national staff department ([www.cio.gv.at](http://www.cio.gv.at)).

It has also opted to depend on common standards and fundamental technologies (e.g., XML, SOAP, etc.) and provide free basic “e-Government modules” (e.g., establishing and validating signatures, identity verification) on a national scale, adhering to interoperability criteria at all times.

#### Summary

- State governments are redesigning their existing websites into web portals to meet the increasing demand for more responsive online service delivery.
- Web portals offer an integrated entry point for online service delivery within a state and can increase government accessibility, cut service-processing costs, and enable state agencies to deliver a greater level of service.

- State government officials are under pressure to create intelligent portals that provide individuals with customized web pages while also acting as a gateway to community news and activities, and a driver of economic growth.
- e-Government portals are created for a variety of functions. A portal is a centralised access point to apps and information. These portals are designed not just for online commerce or to assure an online presence, but also for a variety of other uses.
- A horizontal online portal collects and displays information from diverse sources across a broad spectrum of interests, typically with search and customisation capabilities. For instance, a weather network that allows for town-specific customisation and the ability to save and alter dashboard views.
- A web portal strives to give workers, staff, clients, and customers with a centralised access point to the organisation's information. It makes it simple for you to manage all business activities without assistance.
- The Terms and Conditions should be displayed to the citizen / company (portal user) after portal registration. Only after consenting to the Portal Terms and Conditions shall the user be granted access to the portal's services.
- The majority of portals acquire personal information from users during Portal Registration or in the course of service delivery (e.g. income tax). The Portal should only gather information that is absolutely required for service delivery.
- China's e-Government began with a series of "Informatisation (Xinxiu)" programmes. The "National Informatisation (NI, Guojia Xinxihua)" plan was announced by the State Council in 1997 in an effort to promote industrialisation and modernisation through the use of information technology.
- e-Government or digital government refers to the use of modern technologies to improve administrations by making public services more accessible and procedures easier (OCDE, 2003). Estonia is a pioneer in this sector since its inhabitants may complete practically all administrative procedures online.
- The Digital Government Index (DGI) is a categorisation devised by the Organisation for Economic Co-operation and Development (OECD) that establishes the characteristics a nation must adhere to in order to attain complete e-Governance.

### Glossary

- **e-Government:** Refers to the use of digital technology by governments to deliver services, communicate with citizens, and manage their operations in a more efficient and effective manner.
- **Digital by Default:** A principle that involves making digital channels the preferred or default option for accessing government services and information.
- **Data-driven:** A strategy that emphasizes the use of data and analytics to inform decision-making and improve service delivery in government.
- **Social Credit System:** A system used in China that assigns a score to citizens based on their Behaviour and trustworthiness. The score can impact a person's ability to access services or carry out certain transactions with the government.

## Notes

- **Centralised:** A centralized system refers to the collection of information or resources in one location, making it easier to manage and access.
- **User experience:** User experience refers to the overall experience that a user has when interacting with a product or service, including how easy it is to use and how satisfied the user is with the experience.
- **Customer retention:** Customer retention refers to the ability of a company to retain its customers over time, typically through strategies that focus on keeping customers satisfied and engaged.
- **Usability:** Usability refers to how easy and efficient it is to use a product or service, including how easy it is to learn, how intuitive it is to use, and how much user support is available.
- **Electronic Services:** It refers to the delivery of services using electronic means like the internet, smartphones, or other digital devices.
- **Web Portal:** It is a central access point to apps and information that acts as an integrated entry point to a website. A web portal offers a single point of contact for online service delivery within an Organisationor state government.
- **Vertical Portal:** A vertical or vortal portal is a specialised portal that caters to a niche market. It provides specialized information on a particular subject, such as industry-specific news and articles, statistics, chat, discussion forums, job listings, etc.
- **Horizontal Portal:** A horizontal online portal collects and displays information from diverse sources across a broad spectrum of interests, typically with search and customisation capabilities.
- **Intranet Portal:** An intranet portal is used for corporate communication with a company's workers.
- **Extranet Portal:** An extranet portal is utilised for corporate communication with suppliers and business partners.

### Check Your Understanding

1. What is the benefit of using online portals for government service delivery?
  - a) Reducing government accessibility
  - b) Cutting service-processing costs
  - c) Making it harder to fulfil the expectations of the public
  - d) Increasing government bureaucracy
2. What is the definition of a web portal?
  - a) A form of private website that is exclusive to a single user
  - b) An entry point to a state government's website that offers a single point of contact for online service delivery within the state
  - c) A knowledge and data management system that is capable of giving the facility to various businesses and organisations for constructing, sharing, exchanging, and reusing their data

- d) A centralised access point to apps and information
3. The difference between vertical and horizontal portals is—
- Vertical portals are open to the general public and provide organisation-specific information, while horizontal portals prioritize the user experience
  - Horizontal portals are a specialized portal that caters to a niche market, while vertical portals collect and display information from diverse sources across a broad spectrum of interests
  - Vertical portals concentrate on a certain institution, while horizontal portals attempt to provide all the services that users require
  - Vertical portals are a combination of the vertical and horizontal portals, while horizontal portals attempt to cover the broadest spectrum feasible
4. The purpose of a vertical portal is—
- To provide users with access to numerous roles
  - To supply clients with information
  - To collect and display information from diverse sources across a broad spectrum of interests
  - To cater to a niche market by providing specialized information such as industry-specific news and articles, statistics, chat, discussion forums, job listings, etc.
5. The benefit of a diagonal portal is—
- It provides organisation-specific information
  - It attempts to cover the broadest spectrum feasible
  - It is a combination of the vertical and horizontal portals
  - It concentrates on a certain institution
6. Portals are frequently used in e-Government for which services?
- G2B and G2C
  - G2C and G2G
  - G2G and G2B
  - None of the above
7. Which of the following policies is NOT created for each e-Government portal?
- Portal Terms and Conditions
  - Privacy Policy
  - Hyper linking Policy
  - Environment Policy
8. Which of the following aspects of portal usage should be covered by the Portal Terms and Conditions?
- Details about portal ownership

**Notes**

**Notes**

- b) Legal factors
  - c) Disclaimers
  - d) All of the above
9. What does the Privacy Statement of a portal typically state?
- a) The reason for collecting personal information
  - b) If the information will be shared with anybody
  - c) If the portal handles high-risk personal data
  - d) All of the above
10. What does the Hyper-linking Policy of a portal outline?
- a) Criteria and standards for providing connections to external websites
  - b) Permission to view other websites
  - c) Information services on behalf of the department
  - d) None of the above
11. Which country was an early adopter of the worldwide e-Government movement?
- a) China
  - b) Nepal
  - c) Australia
  - d) None of the above
12. The main reason behind China's e-Government initiative is—
- a) To promote industrialisation and modernisation through the use of information technology.
  - b) To reduce the procedures and increase administrative transparency.
  - c) To strengthen the central government's functions.
  - d) All of the above.
13. What would be the main benefit of e-Government in Australia?
- a) To simplify official transactions such as the signing of contracts and the submission of applications.
  - b) To encourage economic growth by facilitating a more decentralised and transparent public administration.
  - c) To reduce the time residents and companies spend interacting with the government.
  - d) All of the above.
14. What is the current condition of Nepal's e-Governance according to global context?
- a) It is particularly outstanding.
  - b) It is not particularly outstanding.

**Notes**

- c) It is one of the best in the world.  
d) None of the above.
15. The main challenge faced by the Nepalese government in utilising e-Governance effectively is—  
a) The lack of effective legislation and regulations.  
b) The lagging behind of government organisations in their use of IT.  
c) The difficulty in planning and developing methods for utilising e-Governance effectively.  
d) None of the above.
16. Which country is considered a pioneer in e-Government?  
a) Germany  
b) Spain  
c) Estonia  
d) France
17. The aim of the campaign “Public Action 2022” in France is—  
a) To simplify the contacts between the administration and the population.  
b) To create a bureaucratic system that is more complex and inflexible.  
c) To make public services less accessible to citizens.  
d) To discourage the use of modern technologies in public services.
18. In which year was the “state as a platform” initiative launched in France?  
a) 2013  
b) 2014  
c) 2015  
d) 2017
19. What is the purpose of the #EDGI indicator?  
a) To evaluate the global digital administration development initiatives.  
b) To measure the performance of the entertainment industry.  
c) To evaluate the global development of traditional methods in public services.  
d) To measure the performance of the education sector.
20. According to the #EDGI indicator, in which position is France currently ranked in the global digital administration development initiatives?  
a) 9th  
b) 19th  
c) 29th  
d) 39th

## Notes

### Exercise

1. What is the purpose of e-Governance portals, and how do they help to facilitate government services for citizens and businesses?
2. How are e-Governance portals typically classified, and what are some examples of different types of portals that exist today?
3. What are some of the primary objectives of e-Governance portals, and how do they support broader government initiatives around transparency, efficiency, and citizen engagement?
4. Can you provide examples of e-Governance portals that have been particularly effective in driving positive outcomes for citizens or businesses, and what factors contribute to their success?
5. How do we measure the effectiveness of e-Governance portals, and what metrics can be used to evaluate their impact on government efficiency and citizen engagement?
6. How do e-Governance models differ across different countries, and what lessons can be learned from studying these models and the challenges they face in implementation?

### Learning Activities

- **LA Title: e-Governance Portal Scavenger Hunt**

**Objective:** Students will gain a better understanding of e-Governance portals and their objectives through a fun and interactive scavenger hunt activity.

**Instructions:**

1. Divide students into small groups.
2. Provide each group with a list of questions related to e-Governance portals.
3. The groups will search for answers by exploring different e-Governance portals on the internet.
4. The first group to complete the scavenger hunt wins a prize.

**Example Questions:**

1. What is the objective of the e-Governance portal of the government of India?
2. Which countries have the most effective e-Governance portals according to recent studies?
3. What types of services can be accessed through e-Governance portals?
4. What is the difference between horizontal and vertical e-Governance portals?
5. What is the most common measure of effectiveness used to evaluate e-Governance portals?
6. Which countries have implemented successful e-Governance models?

- **LA Title: Comparative Analysis of e-Governance Models**

**Objective:** Students will gain a deeper understanding of e-Governance portals

and their effectiveness by comparing different e-Governance models in different countries.

**Instructions:**

1. Divide students into small groups.
2. Assign each group a country with a unique e-Governance model.
3. The groups will research and prepare a presentation comparing the e-Governance models of their assigned country to other countries.
4. The presentations should cover the objectives of the e-Governance portals, the services offered, the measure of effectiveness, and any notable successes or challenges.
5. After all the presentations, the class will discuss the similarities and differences of the e-Governance models.

**Example Countries:**

- India
- United States
- Estonia
- South Korea
- Singapore
- United Arab Emirates

**Check Your Understanding — Answers**

1. b)
2. d)
3. c)
4. d)
5. c)
6. a)
7. d)
8. d)
9. d)
10. a)
11. c)
12. a)
13. d)
14. b)
15. c)
16. c)

**Notes**

17. a)
18. b)
19. a)
20. b)

**Further Readings and Bibliography**

1. Singh, M. P: e-Governance: Concepts and Case Studies, Springer, 2018 edition.
2. Al-Khouri, A. M: Electronic government: the design, deployment and use of e-Government services, Routledge, 2012 edition.
3. Verma, S., and Singh, S: e-Governance: The Way Forward for Good Governance, IGI Global, 2018 edition.
4. Kofi, A., and Williams, M. D: e-Government Development and Diffusion: Inhibitors and Facilitators of Digital Democracy, IGI Global, 2016 edition.