

EXECUTIVE SUMMARY

Department of Electronics and Information Technology (DeitY) in the Ministry of Communications and Information Technology is responsible for formulation, implementation and review of national policies in the field of Information Technology, Electronics and Internet (all matters other than licensing of Internet Service Provider). The Vision of the Department is e-Development of India as the engine for transition into a developed nation and an empowered society. The Mission is to promote the inclusive and sustainable growth of the Electronics, IT & ITeS industries, adopting a multipronged approach that includes development of human resources, promoting innovation, enhancing efficiency through digital services and ensuring a secure cyber space.

The objectives of DeitY are as under:

- e-Government – Providing e-infrastructure for delivery of e-services
- e-Industry – Promotion of electronics hardware manufacturing and IT-ITeS industry
- e-Innovation/R&D – Implementation of R&D Framework - Enabling creation of Innovation/ R&D Infrastructure in emerging areas of ICT&E/Establishment of mechanism for R&D translation
- e-Learning – Promotion of electronics hardware manufacturing and IT-ITeS industry
- e-Security – Securing India's cyber space

In order to operationalise the objectives of the Department, schemes are formulated and implemented by the Department. The schemes are implemented directly by the Department and through the organizations/institutions under its jurisdiction. To make the technology robust and state-of-the-art, collaboration of the academia and the private/public sector is also obtained. The Department has two Attached Offices, four Statutory Organizations and seven Autonomous Societies besides three Section 25 companies under its control to carry out the business allocated to the Department.

Chapter I of this document highlights the functions of the Department, organizational set up and major schemes/programmes being implemented by the Department. Chapter II depicts the schemes/programmes of the Department, financial outlays, physical outputs, projected outcomes, etc. for the financial year 2014-15; Chapter III details the reforms measures and policy initiatives; Chapter IV reviews past performance of the schemes/programmes; Chapter V portrays financial analysis of various schemes/programmes; and Chapter VI reviews the performance of Statutory and Autonomous Bodies.

Overview

Given the above objective, the key initiatives and achievements are as follows:-

Software and Services Sector

The sector is estimated to aggregate revenues of USD 118 billion in 2013-14 with the IT software and services sector (excluding hardware) accounting for over USD 105 billion of revenues. During this period, direct employment is expected to reach 3.1 million, an addition of 166000 employees, while indirect job creation is estimated at 10 million. As a proportion of national GDP, the sector revenues have grown from 1.2 per cent in FY1998 to nearly 8.1 per cent in 2013-14.

Export revenue (excluding hardware) are estimated to gross USD 86 billion in FY2013-14, growing by 13.1% over FY 2012-13 and contributing nearly 82% of the total IT-BPM revenues (excluding hardware), employing over 2.46 million employees. A combination of solutions around disruptive technologies such as SMAC, artificial intelligence, platforms, embedded systems etc have become the life-force of the industry.

IT services exports is expected to be the fastest growing segment in FY 2013-14, generating exports of USD 52 billion, driven by collaboration, communication, business intelligence projects, and integration of SMAC services with traditional offerings. During FY 2013-14, BPM exports is likely to be a USD 20 billion industry in itself – emergence of BPaaS/cloud based services and analytics leading to strategic shifts in traditional service lines with increased focus on non-linear growth, platforms and analytics. Software products and ER&D segment achieved a double-digit growth rate of 11% over FY 2012-13 and is estimated to generate exports of US\$ 14.2 billion in FY 2013-14. The domain specific solutions focusing on convergence, customization, efficiencies and localization, M2M technology and newer technologies around SMAC are playing a significant role in driving growth of ER&D and software products. With over 3,000 firms, India is emerging as a hotbed for software products with SMAC and a supportive ecosystem creating successful stories.

While US continues to be a largest geographic market for India, accounting for 62 per cent, the highlight for the year was revival in demand from Europe, which grew at 14% in FY 2014. BFSI continues to be the largest vertical segment, accounting for over 41% of industry exports; however, emerging verticals such as retail, healthcare, utilities, travel & transportation and media are estimated to grow faster. These verticals account for about 25% share in total IT-BPM exports.

Domestic IT-BPM revenue (excluding hardware) is expected to grow at 9.6% to gross INR 1147 billion in 2013-14. The domestic IT services growth is likely to be at 9.7% as large enterprises exhibit cautious spending pattern; driven by technology upgrades in BFSI, telecom and State Governments, and compliance MIS investments. The domestic BPM services growth is estimated at 11.9% in FY 2013-14 boosted by demand from select customers reverting to outsourcing business processes, especially from the BFSI, automotive and retail sectors. Domestic software products is estimated at 9.5% due to increased demand for vertical-specific and

SMAC-based solutions. With the advent of cloud, the next opportunity is India's 47 million SMBs – who are able to rapidly bridging the technology adoption gap.

National Policy on Electronics (NPE) 2012

The Union Cabinet has approved the National Policy on Electronics (NPE) 2012 on October 25, 2012. With the vision “To create a globally competitive electronics design and manufacturing industry to meet the country's needs and serve the international market”.

The policy is expected to create an indigenous manufacturing eco-system for electronics in the country. It will foster the manufacturing of indigenously designed and manufactured chips creating a more cyber secure ecosystem in the country. The increased development and manufacturing in the sector will lead to greater economic growth through more manufacturing and consequently greater employment in the sector. ESDM is of strategic importance as well.

To achieve these objectives, the policy proposes various strategies and in the year 2013-14, the numbers of initiatives were in line with the objective outlined in the NPE. It is an endeavour to consolidate the growth and brand of “Electronics India” and build on the foundation of new policy initiatives announced by the Government. The significant progress in one year has been made and following is the summary of changes happened over the last year in the electronics landscape in the Government.

National Policy on Information Technology (NPIT) – 2012

Looking into the changing dynamics of the ICT sector and also to give a fresh impetus to the the sector Government of India has approved the National Policy on Information technology, 2012. The principal policy objectives of the IT Policy is to optimally leverage our existing and evolving ICT infrastructure and capabilities to meet the growing need for high quality social sector services like education, health, skill development, welfare or benefit programmes, e-government services, economic services like banking, insurance, transportation and logistics, and other societal needs like entertainment, communications, social media, information dissemination, etc. Another major objective is to use ICT capabilities to enhance competitiveness and efficiency in manufacturing across the board and in key infrastructure sectors like power. Other policy objectives include leveraging the mushrooming demand for products and services in these and other areas to foster innovation, catalyze manufacturing, encourage relevant R&D through academic institutions and industry and create a range of products and services that not only meet domestic needs but also address global demand as a logical extension of the IT and IT- Enabled Services (ITES) industry. Under the National IT policy, 2012 IT-ITES market is targeted to grow to 300 bn USD by 2020.

National e-Governance Plan (NeGP)

The National e-Governance Plan (NeGP), the flagship plan scheme of the Department, is a multi-stakeholder programme which primarily focuses on making all government services available to the citizens and businesses. Under the programme, a robust e-infrastructure is being created to facilitate deployment of ICT solutions by various Departments and State Governments. Under the

NeGP, there are 31 Mission Mode Projects (MMPs) with a high citizen interface. Significant progress has been made in the implementation of the core infrastructure components and also in most of the Mission Mode Projects. The objective of NeGP is to transform traditional processes and service delivery mechanisms and create an environment that is citizen-centric, while making interaction with the Government easier, effective and transparent. The progress of the projects being implemented by DeitY under the NeGP and other e-governance initiatives is summarised as follows:

(i) State Data Centers (SDCs): Under this scheme, data centres in all the States/UTs are being established so that common and secure IT infrastructure is created to host state level e-Governance applications/data to enable seamless delivery of Government to Government (G2G), Government to Citizen (G2C) and Government to Business (G2B) services duly supported by State Wide Area Network (SWAN) and Common Service Centres (CSC) established at the village level. As on 31 March 2014, 23 SDCs have been made operational.

(ii) State Wide Area Networks (SWANs): SWAN is envisaged as the converged backbone network for data, voice and video communications throughout a State/UT and is expected to cater to the information communication requirements of all the departments. While SWAN proposals from 34 States/UTs have been approved, they have been made operational in 33 States/ UTs.

(iii) Common Services Centers (CSCs): The CSCs are ICT enabled kiosks with broadband connectivity to provide various Governments, private and social sector services at the doorstep of the citizens. As on 31 March 2014, 1,28,852 CSCs have been made operational in 35 States/UTs.

(iv) e-District: The implementation of the e-District project approved in 2011 for a period of four years is currently underway. The Department has issued guidelines for National Rollout in 2011, an integrated framework for implementation of the MMP and implementation guidelines in 2012 to all states. As on 31 March 2014, e-District Services have been launched in 298 non-pilot districts across 11 States.

(v) Mobile Governance: DeitY has developed and notified the framework for Mobile Governance in February 2012. The Mobile Services Delivery Gateway (MSDG) was operationalised in July 2011 and has now become the core infrastructure for enabling the availability of public services through mobile devices. A mobile applications store (m-AppStore) has also been created and made operational in January 2012. As on 31 March 2014, 970 Central and State Departments have been integrated for "PUSH SMS" services and more than 73.8 crore SMS notifications have been sent to citizens for various public services. 291 public services have been operationalized for "PULL SMS". Also, 290 live mobile apps for various government services have been developed & hosted on the Mobile AppStore.

(vi) Rapid Replication Initiative: This is a unique initiative which leverages sharing of infrastructure and rapid replication of successful applications across states. The initiative requires customization of successful applications as per the seeker state's requirements and then hosting this application either at the giver state SDC or seeker state SDC. In order to provide efficient delivery of services, these applications are envisaged to be hosted on Cloud at a later stage.

(vii) e-Bharat: The Government of India has received assistance from the World Bank towards programme management and financial support for the National e-governance plan (NeGP) for an amount of US\$ 150 million (about ` 700 crore). The project is envisaged to support NeGP's countrywide plans of increasing the availability of online services for citizens in their localities to improve the quality of basic governance in areas of concern to the common person. As on 31 March 2014, a total of 30 projects amounting to Rs. 398.27 crore have been approved. Funds for 27 projects have been released to the implementing agencies in various states/UTs.

(viii) MeghRaj: In order to utilize and harness the benefits of Cloud computing, DeitY has embarked upon a very ambitious initiative on Government of India Cloud (GI Cloud), which has been named as 'MeghRaj'. The focus of this initiative is to evolve a strategy and implement various components including governance mechanisms to ensure proliferation of Cloud in the Government domain. Formulation of a Cloud policy is one of the primary steps that will facilitate large scale adoption of Cloud by the Government.

(ix) e-Taal: Electronic Transactions Aggregation and Analysis Layer (e-Taal) is a web portal developed by NIC for aggregation and analysis of e-transaction statistics of central and state level e-governance projects including Mission Mode Projects. It receives e-transaction statistics from web based applications periodically on near real time basis and presents status on actual utilization of various applications running at various locations. It also presents quick analysis of transaction counts in tabular form as well as graphical form to give quick view of the category and number of transactions done through e-governance projects. e-Taal provides visibility for the national/state level e-governance services. 20.22 crore electronic transactions for e-Governance services have been reported for the month of March, 2014.

(x) State Service Delivery Gateway (SSDG): The State Portal, SSDG and e-Forms project aims at creating a State Portal, a secure middleware named as State Service Delivery Gateway (SSDG) and electronic forms for every state/UT to offer convenient and easy e-services to citizens. This project leverages the existing e-Governance infrastructure like CSCs, SDCs and SWANs. The total outlay for the project is ` 300 crores. Guidelines have been formulated to provide technical and financial assistance to the states/UTs for setting up State Portals, SSDGs and electronic forms. As per these guidelines, financial assistance is being provided to the states/UTs for creation of these components and meeting the operational expenses for a period of three years.

In order to facilitate the quick implementation and roll out of the project, DeitY has empanelled 5 consultants who will assist the states/UTs in preparation of the proposals and in the bidding and selection process of implementing agencies. DeitY has also empanelled 6 implementing agencies which can bid for the state projects. As on 31 March 2014, DPRs and funding have been approved for 33 states/UTs in the country and a total amount of ` 198.23 crore has been released to them. Out of these, 31 states/UTs have already floated RFPs for selection of the implementing agency (IA) for the project.

(xi) e-Pramaan: DeitY has formulated the e-Pramaan framework in 2012 for e-Authentication for public services to electronically deliver the government services to its intended recipients in a secured manner, as well as to build citizen's trust in the online environment. The "e-Pramaan: Framework for e-Authentication" was notified by DeitY in December 2012.

The objective of e-Pramaan is to provide a guiding framework to all central ministries, state departments and other Government agencies for implementation of appropriate security and authentication processes and mechanisms as part of their service delivery strategies. The overall objective is to provide a trusted electronic environment where the individual users can transact easily and securely with the Government. Moreover, e-Pramaan provides a uniform approach to manage identified authentications of all citizens for the delivery of various public services over internet and mobile platforms. As on 31 March 2014, identification and formulation of draft e-authentication standards, design of pluggable components/modules for level 1 and 2 e-authentication and ASA services for providing Aadhaar based authentication in staging environment have been completed.

(xii) Standards for e-Governance: Standards for e-Governance are a high priority activity which will ensure sharing of information and seamless interoperability of data and e-Governance applications under the NeGP. A mechanism for formulation of MDDS in various domains has been approved and notified. MDDS for education, urban development, agriculture, Panchayati Raj, health and drinking water & sanitation have been initiated. Also, best practices and standards for digital preservation of e-records have been notified.

(xiii) Localisation Projects Management Framework (LPMF): Localisation Projects Management Framework (LPMF) project aims to make Government services available to the citizens in their own languages. Under this project, DeitY has entrusted Centre for Development of Advanced Computing (C-DAC) with the responsibility of assisting various Ministries / Departments in localization of the online applications of their Mission Mode Projects (MMPs). C-DAC is carrying out this task through the use of a LPMF being developed over a Cloud platform. Seven MMPs viz. Health, PDS, Passport, Agriculture, Road Transport, e-District and Education have been taken up for localization under LPMF during 2013-14.

(xiv) Vikaspedia: Vikaspedia, earlier known as India Development Gateway project, is a unique initiative by DeitY for providing information and services in selected domains related to socio-economic development of the country. For this, a multilingual portal, namely www.vikaspedia.gov.in / www.vikaspedia.in, has been developed as a versatile collective knowledge repository. It will serve as a collaborative content creation, sharing and utilization platform for a rainbow of stakeholders – NGOs, Government, community based organizations, knowledge networks, CSRs, etc. spread across the entire country.

Availability of Vikaspedia has been ensured in five languages – Hindi, Assamese, Marathi, Telugu and English. Information services related to six key livelihood sectors, namely agriculture, education, health, social welfare, energy and e-governance, have been made available on the portal. The portal has been made mobile compliant, thereby enhancing the access and dissemination of information through mobile devices. The multi-lingual mobile Apps such as – KVK Khoj (Krishi Vigyan Kendra locator), CSC Finder (for providing information on Common Service Centres), SHELTOR (for locating nearby Government hostels for students), Ask-An-Expert (mobile based expert services delivery application) and MOTHER (Mobile based maternal health alerts for pregnant women)

having relevant packaged information to maximize the benefits of ongoing schemes to the citizens have been developed and hosted on DeitY's Mobile AppStore.

(xv) Electronic Delivery of Services Bill, 2011: To speed up the delivery of electronic public services to the citizens, it has been proposed by the Government that an Electronic Delivery of Services (EDS) Bill be enacted to make it mandatory for every Government organization to deliver their public services in electronic mode from a specified date. This would require each Ministry/Department to identify the basket of citizen centric services to be delivered through electronic means along with the delivery channels, with stipulated timelines and service levels for each service.

The proposed EDS Bill has been harmonised with the Bill being proposed by DAR & PG for Right of Citizens for Time Bound Delivery of Goods and Services. As advised by the Legislative Department, the proposed EDS Bill should await enactment of the Right of Citizens for Time Bound Delivery of Goods and Services and Redressal of Grievances Bill.

National Knowledge Network (NKN)

In March 2010 the government approved the establishment of the National Knowledge Network (NKN) at an outlay of ` 5990 crore, to be implemented by NIC over a period of 10 years. The objective of the NKN is to inter-connect all knowledge institutions across the country through high speed data communication network to encourage sharing of resources and collaborative research. These would cover about 1500 Institutions comprising of all Universities, Institutions of Higher Learning, and Research. The application areas envisaged under the NKN cover Agriculture, Education, Health, e-governance, Grid Computing (High Performance Computing).

NKN will facilitate creation, acquisition and sharing of knowledge resources among the large participating Institutions, collaborative research, countrywide classrooms (CWCR) etc. and help the country to evolve as knowledge society. As on 31st March 2014, under NKN:

- 1226 links to Institutions have been commissioned and made operational. This includes 336 links to institutions under NMEICT, which have been migrated to NKN.
 - Connectivity has also been extended to 280 NIC district centers. 66 virtual classrooms have been setup at IITs, IISc etc. over NKN.
- SWAN integration completed for a total of 26 states/UTs) and SDC integration for a total of 24States/UTs respectively.

National Cyber Security Policy

Government is taking appropriate measures to address these threats by way of an integrated approach with a series of legal, technical and administrative steps to effectively deal with the issue of cyber security in the country and to ensure that necessary

systems are in place to address the growing threat of cyber attacks. In order to address the issues of cyber security in a holistic manner, the Government has published the “National Cyber Security Policy” on 2nd July 2013, after public consultation, to unify the various activities and programs of the Government to address the cyber security challenges with an integrated vision and a set of sustained & coordinated strategies for implementation.

The Cyber Security programme aims at building a secure and resilient cyberspace for citizens, businesses and Government, by way of actions to protect information and information infrastructure in cyberspace, build capabilities to prevent and respond to cyber threats, reduce vulnerabilities and minimize damage from cyber incidents through a combination of institutional structures, people, processes, technology and cooperation. The cyber security programme is implemented by way of targeted actions in six focus areas during the XII plan period : (a) Enabling Legal Framework, (b) Security Policy, Compliance and Assurance, (c) Security R&D , (d) Security Incident – Early Warning and Response, (e) Security awareness, skill development and training and (f) Collaboration.

Electronics/IT Hardware Manufacturing

Indian electronics hardware production constitutes only around 1.3% of the global production. Moreover, the value addition in domestically produced electronic goods continues is also low. It is estimated that demand of electronics products and systems in India would grow to USD 400 Billion by 2020 at Compound Annual Growth Rate (CAGR) of 22%. At the conventional rate of growth of domestic production, it would only be possible to meet demand of about USD 100 Billion by 2020. The Government attaches high priority to electronics hardware manufacturing.

There have been concerted efforts for rapid growth of the electronics (including telecom) hardware manufacturing sector in the past like 100% FDI permitted under automatic route, no Industrial license requirement, payment of technical know-how fee and royalty for technology transfer under automatic route etc. However, these efforts have not led to a substantial impact, partly because of India becoming a signatory to the Information Technology Agreement (ITA-1) of WTO that resulted in zero duty regimes on import of the goods covered under the Agreement.

Free and Open Source Software

Department of Electronics & Information Technology (DeitY) has taken many initiatives for promoting and fostering the adoption of Free & Open Source Software (FOSS) in view of various inherent advantages like increasing interoperability, developing local capacity/ industry, reducing costs, conserving foreign exchange, achieving vendor independence, enabling localization and reducing piracy/copyright infringements. Deployment of Bharat Operating Systems Solutions (BOSS) in the country has progressed further in the areas of e-government, e-governance and education. Tamil Nadu Government has issued an Order for use of BOSS Linux as one of the Mandatory Operating Systems in all Government Departments. Under the Free laptop scheme, BOSS Linux has been deployed in around 16.68 lakh laptops.

Digital Preservation

Digital Preservation addresses the long term storage and access of digital data (born digital as well as reformatted digital) in the midst of technological obsolescence in terms of storage, file formats, operating systems, software etc.

The Centre of Excellence for Digital Preservation project was initiated to conduct Research & Development in the area of Digital Preservation, Develop tools and technologies, Develop domain specific standards and test-beds in various domains, create awareness through conferences etc.

Green Computing

ICT Technologies have an important role to play in reducing the energy consumption and thereby reducing carbon emissions, in many sectors of economy. Aim of the Green Computing initiative was twofold, use of ICT for attaining energy efficiency and reducing carbon footprint in every walk of life.

The project “Development of ICT Technologies for Smart Buildings with Low Carbon Emissions” was initiated to design, develop and deploy lighting control, HVAC control and air quality control in buildings.

Bioinformatics

Bioinformatics Initiative of DeitY has the objective to foster Bioinformatics research with an aim to improve human health and longevity and catalyse development of better yield, stress tolerant and pest resistant crop varieties. The road map for this is to identify DNA sequences responsible for various genetic and other common diseases like cardiac problems, cancer, diabetes etc and target for designing new and effective therapies. It is anticipated that the results of findings of the DNA sequence etc. will decide the medical and pharmaceutical research for the coming decades. In addition to Human Genome, research is also going on in the areas related to plant and animal Genomes with an endeavour to have better breeds and greater productivity. Under this Initiative 3 Centres of Excellence (COE) have been set up for Bioinformatics research for drug discovery, 5 **COE** for Agri-bioinformatics have been set up for crop improvement, disease detection and pest control, a Bioinformatics Resource and Application Facility (BRAAF) with grid enabled nationwide access of bioinformatics tools and resources have been set up and Novel Software tools, algorithms and databases generated and Novel Drug molecules have been initiated for malaria, cancer, Leishmania. Also, Bio-informatics is a major application area for National Supercomputing Mission.

National Programme on Perception Engineering (NPPE)

National Programme on Perception Engineering Initiative focuses on research in human perception/ cognitive processes for application development. Domains addressed include Education, Health, Brain Research, Artificial Sensing and Disability etc. This field is inter-disciplinary in nature requiring collaboration between engineering scientists, psychologists, neuro-biologists and medical

professionals. Cross fertilization of ideas from different fields have the potential to lead to fundamental breakthroughs and innovations. A number of cross-disciplinary multi-institutional research activities have been initiated on various themes . Researchers of diverse backgrounds from various organizations (Electrical Engineering, Computer Science, Cognitive Science and Neuro-Sciences) have collaborated together to build the broad framework of activity in the field of Perception Engineering. Phase I of the program has been concluded recently and a Phase II Launched with focus on TOT/ Product Development/ Field deployment/ patent filing and outreach efforts of research.

R&D Strategic Framework

ICT&E R&D and Innovation Framework 2013 has been formulated to harmonize the ongoing R&D efforts and to give a strategic direction and focus for an inclusive vibrant and sustainable eco-system for R&D and innovation involving Government, Industry and Academia to find solutions for the growing societal needs and challenges.

Supercomputing

Keeping in view the world wide technology trends and growing requirement in in the country in the domains of cutting edge R&D, the Government decided to provide impetus to Supercomputing in the 12th Plan. The proposal on National Supercomputing Mission, to be jointly implemented by DeitY and DST, to enhance supercomputing capacity and capability in the country is off the anvil and is presently in the advanced stages of approval process.

Indian Languages Technologies

People are most comfortable interacting with human/ machines in their own languages. “Technology Development for Indian Language” programme of DeitY is working towards “Digital Unite and Knowledge for All” to facilitate such an interaction with computers in the local languages, thus bridging the digital divide. It is involved in activities related to Research & Development, Proliferation and Standardization of Language Technologies for Indian languages so that people can use and get benefits of Information-Communication Technologies in their own languages.

Machine Aided Translation Systems for English to Indian Languages (Hindi, Bengali, Marathi, Malayalam, Punjabi, Odia, Tamil and Urdu) and for 8 pairs of Indian Languages to Indian Languages in the tourism domain have been made available for public use apart from making available Software tools & fonts in 22 constitutionally recognized Indian Languages freely to the general public. Monolingual Search Engines for Tourism Domain for five Indian Languages have been released for public use. Browser Plug-in of Text to Speech (TTS) for Mozilla Firefox Browser in 7 Indian Languages namely Hindi, Bengali, Marathi, Tamil, Telugu, Malayalam

and Gujarati languages & Optical Character Recognition systems for Assamese, Urdu, Punjabi, Hindi, Bangla, Malayalam, Gurumukhi, Telugu and Kannada languages have been made available through TDIL Data Centre.

Promoting Innovation and R&D in Electronics

Department of Electronics & IT since inception has been given primary importance to Research and Development. Promotion of Research & Development in the area of electronics has been one of the main activity of the department with a view to enhance creation of Intellectual Property and increase value addition in manufacturing by development of indigenous product and technologies to be commercialized by Indian Companies. The R&D in Electronics covers broad area of Electronic System Development & Application; Medical Electronics & Health Informatics; Electronic Materials & Component Development; Microelectronics and Nanotechnology Development; and promotion of Innovation and IPR.

Department of Electronics & Information Technology has initiated a scheme entitled “Multiplier Grants Scheme (MGS)” to encourage collaborative R&D between industry and academics/R&D institutions for development of products and packages. The scheme aims to strengthen industry/institute-linkages, encourage and accelerate development of indigenous products/packages and bridge the gap between R&D and commercialization. Another scheme has been launched for Technology Incubation and Development of Entrepreneurs (TIDE) in the area of Electronics & ICT to strengthen the technology incubation centers at the institutions of higher learning. Under the Scheme, 27 TIDE centers are being supported. In the area of promoting Intellectual Property, the major activities include technology development, facilitation services for filing of IPR and create awareness about IPR in Electronics & ICT sector. A Scheme to Support International Patent Protection in Electronics & IT for the benefit of SMEs(Small and Medium Enterprises) and Technology Start-Up Companies has been initiated by the department.

Nanotechnology is a revolutionary S&T area and is expected to be the key technology driver for the twenty-first century. The global market for nanotechnology enabled products is expected to reach US Dollar 3.3 Trillion by year 2018. Based on enormous success of Indian Nano Users Program (INUP) and its well-receiving by research community across the country, Phase II of INUP has been initiated. Besides R&D in Nanoelectronics area, focus is now on innovations, prototyping, technology/ product development also. Towards this, Nano-fabrication prototyping facility is being set-up at IIT Bombay to encourage and support start-up companies and SMEs for product development and commercialization. A major project for setting up a Centre of Excellence for development of Nanoelectronic Theranostic devices has been initiated at IIT Guwahati.

R&D in IT

To carry out competitive R&D in the cutting edge research and technology areas of electronics & IT is of key strategic importance for the economic and societal advancement of a nation in the 21st century information age. Following three major schemes are being implemented, in DeitY under R&D in IT Programme, towards developing a vibrant R&D and innovation ecosystem in the country:

- a. Technology Development Council Projects (Incl. ITRA)
- b. Centre for Development of Advanced Computing (C-DAC)

Technology Development Council (TDC) has nucleated various developmental and promotional programs in the department from its inception and has been responsive to changing technological development needs. The prime objective of TDC is to promote and support research, design, development, engineering and innovation in the area of IT & Electronics. Under the TDC scheme a number of activities of national and international importance are being pursued which include (a) IT in Emerging Area (b) High Performance Computing (c) Bioinformatics initiative, (d) Digital Preservation, (e) National Programme on Perception Engineering (NPPE), (f) Information Technology Research Academy (ITRA) programme, (g) Free & Open Source Software (FOSS), (h) Green Computing, (i) Technology Incubation and Development of Entrepreneurs (TIDE), (j) Multiplier Grant Scheme (MGS), (k) enhancing Intellectual Property Rights (IPR) portfolio, (l) Technology Translation, and (m) Electronics Systems and Applications Development.

C-DAC is a premier scientific society of DeitY and it is carrying out cutting edge R&D in the various domains of Electronics & IT having national and international importance. Its thematic areas of current focus include (a) High Performance Computing/ Supercomputing and Grid Computing, (b) Indian Language Technologies, (c) Cyber Security, (d) Professional Electronics covering VLSI Technologies, Power Systems Technologies, Intelligent Transport Systems, (e) Health Informatics, (f) Software Technologies covering Free & Open Source Technologies and e-Governance Applications, and (g) Education Technologies covering e-Learning and intelligent Class Rooms.

Supercomputing has emerged as the 4th Paradigm for cutting edge S&T research and accordingly special thrust has been provided to the capacity and capability building in Supercomputing in the 12th Five Year Plan (2012-17). In pursuance of this agenda, the **“National Supercomputing Mission (NSM): Building Capacity & Capability”**, with an outlay of ` 4500 Crores over a period of seven (7) years has been evolved, as an national effort, which is to be jointly steered and implemented by DST and DeitY, Government of India.

E-Infra

E-Infrastructure comprises network connectivities, digital infrastructure, tools, facilities and resources for advanced collaboration including integration of various technologies such as physical infrastructure like Information Technology Investment Regions(ITIR)s, Internet, broadband, computing, bandwidth provisioning, data storage, grid based resource sharing, cloud computing to name a few. Providing e-infrastructure for differently abled is an important aspect of the work. E-Infrastructure division in Department of Electronics and IT, has been dealing with issues, policies, projects, programmes and schemes related to development and implementation of e-infrastructure facilities in the country. The programs and projects in furtherance of National Universal Electronic Accessibility Policy approved by the Cabinet in October 2013 is important responsibility of this Division.

National Digital Library Cell

Libraries are the storehouse of knowledge as they maintain the book and other knowledge resource available - mostly in printed form. However, with the advent of digital technology and Internet connectivity, the library scenario is changing fast. Data available in physical form can be preserved digitally in Digital Library. Digital Libraries have the ability to enhance access to information and knowledge through Internet connectivity.

Department of Information Technology has identified Digital Library as one of the thrust areas. As part of this, copyright free books, manuscripts, and theses etc. have been digitized. Most of the digitized data has been web enabled on Digital Library of India web site -***<http://www.new.dli.ernet.in>*** and ***<http://www.dli.gov.in>***.

The following are the outcome of the Digital Library Initiatives:

1. Foster and Strengthen learning skills- moving from collection centric approach to learner centric approach.
2. Strengthen country's identity by digital preserving the National Cultural Heritage and Intellectual output.
3. Utilize country's resources more effectively
4. Bridge barriers of time and space for knowledge retrieving.