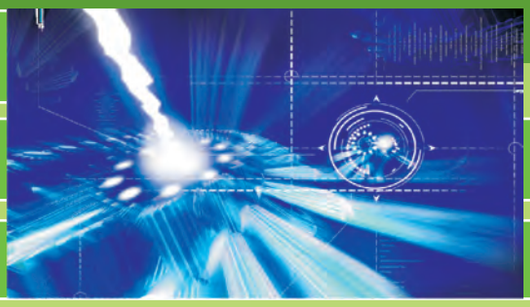
Electronics and Information Technology

Annual Report

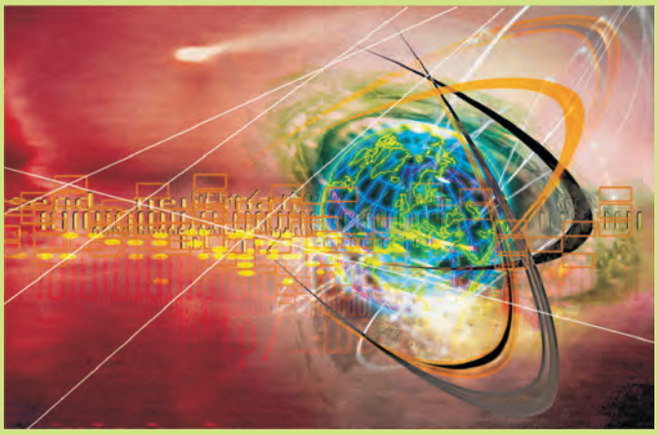
2011-12



सत्यमेव जयते

Government of India

Ministry of Communications & Information Technology
Department of Electronics and Information Technology



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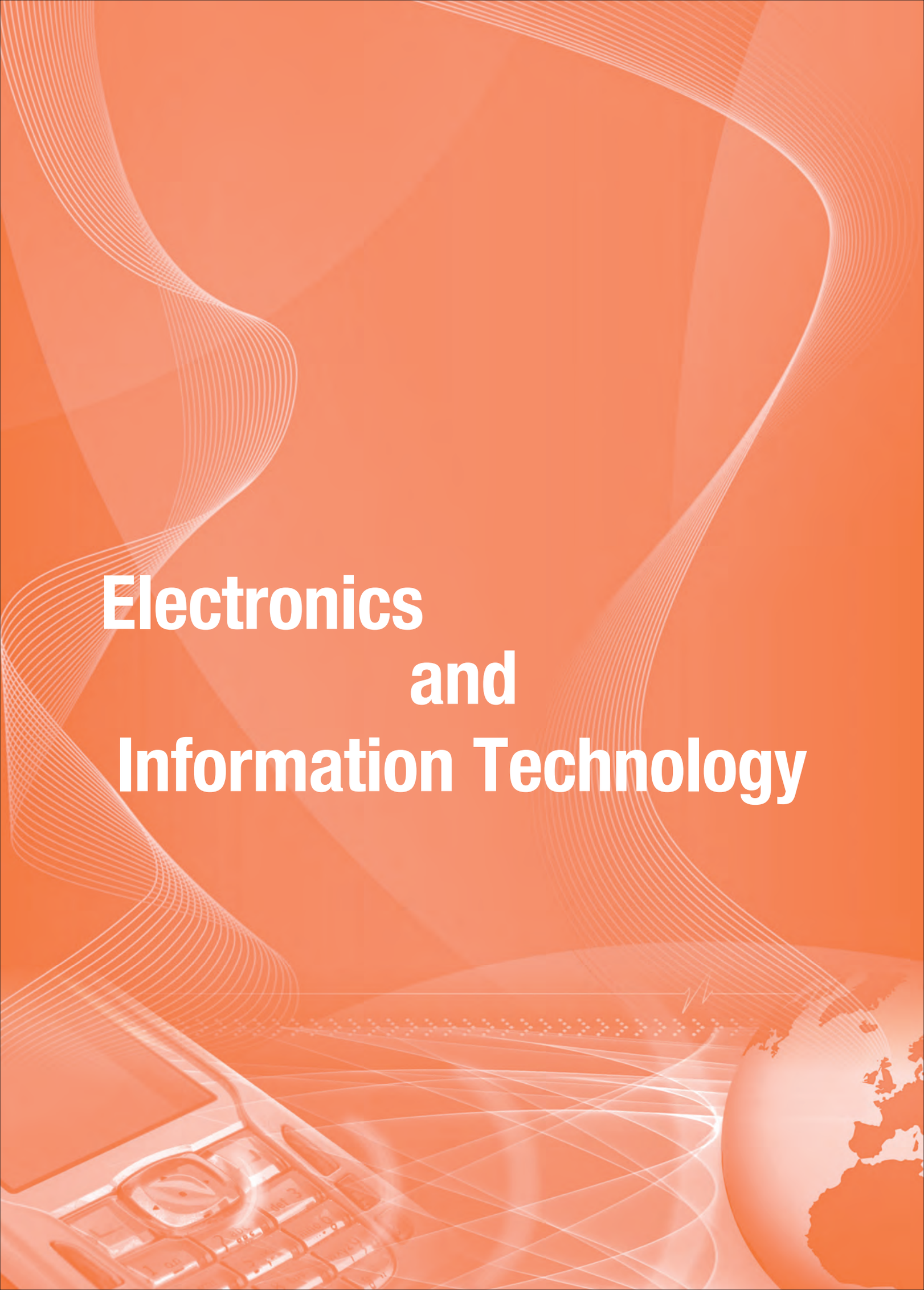


Overview

The year 2011-12 was marked by growing global uncertainties. Global recovery has stalled, growth prospects have dimmed and downside risks have escalated. Global output is projected to expand by 3.8 per cent in 2011 as compared to 5.2 per cent in 2010. The growth of the Indian Economy has also slowed down and is estimated to grow at 6.9 per cent in 2011-12 as compared to 8.4 per cent in 2010-11.

By contrast, the Indian IT-BPO Industry (including hardware) continued to exhibit resilience. It weathered uncertainties in global business environment and reached a significant milestone in the year 2011-12 by aggregating revenue of US $ 101 billion, a growth of about 14.7 per cent over 2010-11. Thus, the year 2011-12 is a landmark year for the IT-BPO Industry.

The Indian software and services exports including BPO exports is estimated at US $ 68.7 billion in 2011-12, as compared to US $ 59 billion in 2010-11, an increase of 16.4 per cent. The IT services exports is estimated to be US $ 39.8 billion in 2011-12 as compared to US $ 33.5 billion in 2010-11, showing a growth of 18.8 per cent. BPO exports is estimated to grow from US $ 14.2 billion in 2010-11 to US $ 15.9 billion in 2011-12, a year-on-year (Y-o-Y) growth of about 12 per cent. IT services contributed 58 per cent of total IT-BPO exports in 2011-12, followed by BPO at 23 per cent and Software products/engineering services at 19 per cent.

US continues to drive IT-BPO exports growth. Export revenue from the US is likely to grow by over 17 per cent in 2011-12, thereby retaining its largest market share at 62 per cent. Growth is being driven by higher demand for IT services and support.

Continental Europe and UK, the second largest markets for Indian IT-BPO exports are seeing their share decline in the last three years. In 2010-12, their combined share is set to be about 28 per cent with UK at US $ 12 billion and Continental Europe at US $ 8 billion.

Indian service providers have been aggressively growing business in the Asia-Pacific (APAC) market. Aimed at reducing their geographic dependency and spread currency risk, APAC is growing fastest at nearly 18 per cent; its share in total IT-BPO exports is expected to increase to nearly 8 per cent.

The Indian domestic IT market continues to grow in 2011-12. The revenue from the domestic market (IT Services, software products and BPO) is expected to grow from US $ 17.3 billion in 2010-11 to US $ 19 billion in the year 2011-12, an anticipated growth of about 9.8 per cent. IT services is one of the fastest growing segment in the Indian domestic IT market.

The IT-BPO market is being driven by demand across all key consumer segments. Various Government initiatives to deliver IT-led citizen services and increased automation of processes, large enterprises and SMBs leveraging technology to improve efficiencies and maintain differentiation, and individual consumers, particularly those in Tier II and Tier III cities are the drivers at IT-BPO domestic segment.

Notwithstanding the growth witnessed in the IT-BPO domestic segment, it accounts for a little over 21 per cent of overall industry revenues. This is slightly below previous year's level and is mainly because of the depreciation of the rupee against the dollar. This depreciation has also impacted the growth rate in dollar terms.

India continued its dominant position as the leading sourcing market as compared to other emerging economies. Its share in global sourcing stands at 58 per cent in 2011. It is estimated that India-based resources account for about 60-70 per cent of the offshore delivery capacities available across the leading multinational IT-BPO players.

The IT-BPO sector has become one of the key sectors for the Indian economy because of its economic impact. The sector is responsible for creating significant employment opportunities in the economy. Direct employment within the IT-BPO sector is expected to grow by over 9 per cent to reach 2.77 million, with over 230,000 jobs being added in 2011-12. IT services exports (including Engineering Research and Design (ER&D) and software products) continues to be the largest employer within the industry with nearly 47 per cent share of total direct employment, BPO exports generate about 32 per cent of the total industry employment, and the remaining 22 per cent is accounted for by the domestic IT-BPO sector.

The sector is responsible for enabling employment to an additional 8.9 million people in various associated sectors – catering, security, transportation, housekeeping, etc – many of whom belong to rural areas/ small towns of India.

The industry is also working towards, bridging the gender divide and improving the state of the differently-abled by making all sections of the society a part of its expanding community.

The spectacular growth performance in the IT-BPO industry in the last decade has helped the industry contribute substantially to India's GDP. In 2011-12, the IT-BPO industry's contribution to GDP is estimated to be 7.5 per cent as compared to 7.1 per cent in 2010-11.

The IT-BPO industry has played a key role in putting India on the world map. Although global uncertainties persist, the Indian IT-BPO sector has been able to grow due to its ability to adapt to changing business environment. The IT-BPO Industry has enormous potential to grow in the years to come. By 2012-13, India's IT-BPO industry (excluding hardware) has the potential to touch US $ 100 billion in revenues as compared to US $ 87.7 billion in 2011-12, a growth of about 14 per cent.

Draft National Policy on Electronics - 2011

Government recognizes the importance of Electronics Hardware manufacturing in the country, both for economic and strategic reasons. Accordingly, suitable measures are being taken to attract investment in this sector. The draft National Policy on Electronics released on 3.10.2011 provides a roadmap for the development of the sector in the country. The draft Policy envisions creating a globally competitive Electronics System Design and Manufacturing (ESDM) industry including nano-electronics to meet the country's needs and serve the international market.

Draft National Policy on Information Technology - 2011

Draft National Policy on Information Technology, 2011 was released on 7.10.2011. The Policy focuses on application of technology-enabled approaches to overcome developmental challenges in education, health, skill development, financial inclusion, employment generation, governance etc., to greatly enhance efficiency across the board in the economy. The policy seeks to achieve the twin goals of bringing the full power of ICT within the reach of the whole of India and harnessing the capability and human resources of the whole of India to enable India to emerge as the Global Hub and Destination for IT-ITeS Services by 2020.

Electronic Delivery of Services Bill, 2011

For promoting e-Governance in the country, the second Administrative Reforms Commission, in its Eleventh Report submitted in 2008, has recommended a clear road map with set of milestones to be outlined by Government of India with the ultimate objective of transforming the citizen-Government interaction at all levels to the e-Governance mode by 2020 through a legal framework, taking into consideration the mammoth dimension of the task, the levels of required coordination between the Union and State Governments and the diverse field situations in which it would be implemented. Accordingly it is proposed to enact the Electronic Delivery of Services Act.

The Draft Electronic Delivery of Services Bill, 2011 (EDS) has been approved by the Union Government and introduced in the Parliament on 27th December, 2011. The Lok Sabha has further referred the Bill to the Standing Committee on Information Technology.

National e-Governance Plan

A major initiative of the Government for ushering in e-Governance on national scale, called National e-Governance Plan (NeGP) was approved on 16th May, 2006 with a vision to provide Public services to the common man in his locality at affordable costs. The NeGP is a multi-stakeholder programme which primarily focuses on making critical public services available and promoting rural entrepreneurship.

The objective of NeGP is to transform traditional processes and service delivery mechanisms and create an environment that is citizen-centric, with rights based approach to governance while making interaction with Government easier, effective and transparent.

NeGP consists of 31 Mission Mode Projects, encompassing 10 Central MMPs, 14 State MMPs and 7 integrated MMPs. 'India Post 2011' has been added as a Central MMP while the 3 MMPs (Education, Health and PDS) have been added as State MMPs. Of the 31 MMPs, 24 have been approved by the Government of India. 19 MMPs have gone live and are delivering services electronically.

State Wide Area Networks

State Wide Area Network (SWANs) 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. Under this Scheme, technical and financial assistance is being provided to the States/UTs for establishing SWANs to connect all State/UT Headquarters up to the Block level via District/Sub-Divisional Headquarters, in a vertical hierarchical structure with a minimum bandwidth capacity of 2Mbps per link. Steps have been initiated to integrate all SWANs using the National Knowledge Network (NKN). Four SWANs of States namely Gujarat, Tamil Nadu, Karnataka and Andhra Pradesh have been integrated using NKN. As on 31st December, 2011 SWANs are operational in 28 States/UTs.

State Data Centres

State Data Centre (SDC) has been identified as one of the important elements of the core infrastructure for supporting e-Governance initiatives under NeGP. Under the SDC Scheme, it is proposed to establish Data Centres in all the States/UTs so that common 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 and Common Service Centres established at the village level. The Department has approved the proposals received from 31 States/UTs. As on 31st December, 2011, 16 SDCs have been made operational. SDCs in 3 States are under implementation.

Common Services Centres

The Government has approved the Common Services Centres (CSCs) Scheme for providing support for establishing 100,000 Common Services Centres in 600,000 villages of India. The Scheme envisions CSCs as the front-end delivery points for Government, private and social sector services to rural citizens of India, in an integrated manner. The objective is to develop a platform that can enable Government, private and social sector organizations, to align their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT-based as well as non-IT based services.

As on 31st December, 2011, total number of CSCs rolled out in 33 States/UTs of India is 97, 871. Approval of additional 1,50,000 Bharat Nirman Common Service Centers is under consideration of the Group of Ministers.

Capacity Building Scheme

Capacity Building is one of the important components of NeGP for building internal capacities within the Government framework especially at the State level to mitigate the major managerial and technological challenges in implementation of e-Governance projects. Consistent strategies for integration, resource optimization, prioritization and resolving conflicts and overlaps are also required for effective implementation of e-Governance projects. Thus specialized skills are required in the States/UTs to provide technical and programme management support for the overall management of the programme.

The scheme is mainly for providing technical & professional support to State level policy & decision-making bodies and to develop specialized skills for e-Governance. State e-Governance Mission Teams (SeMTs) are being set up in 35 States/UTs.

e-District

e-District is a State Mission Mode Project under the National e-Governance Plan. The Project aims to target certain high volume services currently not covered by any MMP under the NeGP and to undertake backend computerization to enable the delivery of these services through Common Services Centers. The Department has approved 16 Pilot e-District projects covering 41 districts. Pilot project has been launched/ gone live in 32 districts across 12 States. The scheme for National Roll Out of e-District MMP has been approved by the Government.

Electronics/IT Hardware Manufacturing

Government constituted an Empowered Committee (EC) in May 2011 for identifying technology and investors for setting up Semiconductor Fabrication facilities in the country. Based on the decision of the EC, Expression of Interest (EOI) was sought and the EC is in process of evaluating the responses received.

The Government has also approved the proposal to provide preference to domestically manufactured electronic products, in procurement of those electronic products which have security implications for the country and in Government procurement for its own use, consistent with our World Trade Organization (WTO) commitments.

A roadmap for growth of semiconductor design has been prepared to enable semiconductor design and services industry to move up the value chain and maintain growth rate of revenue of over 17 per cent per annum . Another roadmap has also been prepared for promoting growth of electronic components industry in the country.

National Knowledge Network

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 National Knowledge Network is to interconnect Institutions of higher learning with a high speed data communication network. The application areas envisaged under the NKN cover: Agriculture, Education, Health, e-governance, Grid Computing (High Performance Computing).

The Network consists of an ultra-high speed Core (multiples of 2.5/10Gbps and upwards), and over 1500 nodes.

A total of 21 Points of Presence (PoPs) has been established. 82 core links have been established between various NIC/NKN PoPs. A total 639 number of Institutions have been connected to NKN [this includes 172 National Mission on Education through ICT (NMEICT) links to Institutions which have been migrated to NKN]. A total of 50 virtual classrooms have been setup so far.

Cyber Law

The Information Technology Act, 2000, a legal framework for transactions carried out electronically, was enacted to facilitate E-Commerce, E-Governance and to take care of computer related offences. Amendments to this Act were carried out through the Information Technology (Amendment) Act, 2008 to deal with the new forms of cyber crimes. The rules pertaining to the sections 6A, 43A & 79 of the Information Technology (Amendment) Act, 2008 such as (i) Information Technology (Electronic Service Delivery)

Rules, 2011, (ii) Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011, (iii) Information Technology (Intermediaries guidelines) Rules, 2011 and (iv) Information Technology (Guidelines for Cyber Cafe) Rules, 2011, have been notified.

The Information Technology Act, 2000 facilitates acceptance of electronic records and Digital Signatures through a legal framework for establishing trust in e-Commerce and e-Governance. For authentication of electronic transactions using digital signatures, the Controller of Certifying Authorities (CCA) licenses Certifying Authorities to issue Digital Signature Certificates under the IT Act, 2000.

Cyber Security

The Cyber space is borderless and actions in the cyber space can be anonymous. These features are being exploited by adversaries for perpetration of crime in the cyber space. The scale and sophistication of the crimes committed in the cyber space is continually increasing thereby affecting the citizens, business and Government. Cyber Security requirements are quite dynamic that change with the threat environment. A holistic approach has been followed towards securing country's cyber space by pursuing major initiatives including: (i) Security Policy, Compliance and Assurance, (ii) Security Incident – Early warning & Response, (iii) Security Training, (iv) Security R&D, (v) Enabling Legal Framework and (vi) Collaboration.

CERT-In is the national nodal agency for responding to computer security incidents as and when they occur. CERT-In creates awareness on security issues through dissemination of information on its website and operates 24x7 Incident Response Help Desk. It provides Incident Prevention and Response services as well as Security Quality Management Services.

Crisis Management Plan (CMP) for countering cyber attacks and cyber terrorism has been prepared. The CMP has been approved by the National Crisis Management Committee (NCMC) for wider circulation and implementation.

Indian Languages Technologies

Standards in the Natural Language Processing (NLP) and Development of language resources are the key components of the advanced language technologies. Technology Development for Indian Languages (TDIL) Programme is taking initiatives in this direction by working with the international organizations. Many initiatives are being taken to develop linguistic resources and tools. The programme is also playing a catalytic role for wider proliferation of Indian language technology products and solutions by making them available to common people through Data Centre in addition to the resources for research for the language technology researchers. Indian Languages tools in the areas of Text to Speech, Machine Translation, optical character recognition etc., have been made available on the data centre.

Free and Open Source Software

The objective of Free and Open Source Software (FOSS) initiative is to deal with the development and proliferation of Free and Open Source Software in the country. Under the National Resource Centre for Free and Open Source Software (NRCFOSS), Phase II various applications and systems have been developed. A Software-as-a-Service (SaaS) stack delivery model has been developed using only FOSS components. Deployment of Bharat Operating Systems Solutions (BOSS) in the country has progressed further in the area of e-governance and education. EduBOSS preloaded laptops for school students have been delivered to Tamil Nadu Government for distribution. BOSS v4.0 localised to 15 Indian languages was released.

National Informatics Centre (NIC)

National Informatics Centre (NIC), an attached office of the Department, is a frontrunner in providing e-Governance services to the Government and common man alike. NIC's role has become crucial in the implementation of various National/State level ICT enabled initiatives and acquiring strategic control of these ICT applications on behalf of the Government. NIC has taken major initiatives in the design, development and operation of various e-Government projects.

NICNET, a nationwide computer and communication network of NIC, utilizes state-of-the art network technologies to provide connectivity to Central Government Ministries/Departments and all 35 States and 616 Districts of India. High Speed Terrestrial Circuits have resulted in enhancement of Terrestrial bandwidth of State Capitals to 100 Mbps / 1Gbps and district connectivity to 34Mbps / 100Mbps. Secondary link from different National Long Distance (NLD) for more number of key districts has been established. New Internet Gateways have been installed at Chennai, Mumbai and Shastri Park Data Centre. In the current year, last mile redundancy for NICNET has been extended to more number of districts and with installation of new Internet Gateways at selected locations, latency for Internet traffic has been reduced.

Standardization, Testing and Quality Certification (STQC)

STQC Directorate an attached office of the Department has established a network of test laboratories spread across the country including North Eastern region. The laboratories are equipped with state of the art standards and equipments. It provides Test & Calibration, Training and Certification services. Many national and international accreditations / recognitions have made STQC services widely acceptable at international level also. With this STQC has established itself as a premier

organization for Quality Assurance in the field of Electronics and Information Technology (IT) in the country. The services are primarily being used by medium and small scale industries. Currently, STQC services are being utilized by more than 10,000 Organizations representing the entire segment of industry, Government Departments, R&D Organizations etc.

Besides providing services in a professional manner, STQC also supports government policies, initiatives and programs concerning Standardization, Quality Assurance and Management. Number of projects sponsored by the Department in the area of Software Quality Assurance, Information Security Management, Quality Assurance of Indian Language Technology & Products have been executed.

Centre for Development of Advanced Computing (C-DAC)

Centre for Development of Advanced Computing (C-DAC) is a premier Research & Development (R&D) organization of the nation in IT&E (Information Technologies and Electronics). It focuses on incubating, nurturing and strengthening national technological capabilities in the context of global developments in selected focus areas. In that process, it continuously works towards realizing nation's policy and pragmatic interventions and initiatives in Information Technology. As an institution for high-end R&D activities, C-DAC has been at the forefront of IT revolution. It is constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions in different sectors of the economy.

High Performance Computing programmes are focused towards building capabilities, systems, facilities and applications for nation's high performance computing requirements. PARAM Yuva with mass storage has been commissioned. The facility has been enabled as a Computational Resource on Grid. Applications in Bioinformatics, Materials Modeling, Aerospace, Weather Research and Forecast for regional weather and climate change have been ported.

Results-Framework Document

Government of India has approved the outline of a "Performance Monitoring and Evaluation System (PMES) for Government Departments" to measure the performance of the Government by preparing Results-Framework Documents (RFD) of all the Ministries/Departments every year, which provides a summary of the most important results that a Department / Ministry expects to achieve during the financial year.

The Department has prepared RFD for 2011-12 with a vision entitled 'e-Development of India as the engine for transition into a developed nation and an empowered society' with Six Core areas namely: e-Government, e-Industry, e-Innovation / R & D, e-Learning, e-Security and e-Inclusion.

Industry Profile

Major Policy Initiatives

Electronics Hardware Manufacturing

Information Communication Technologies and Electronics (ICTE) have been contributing significantly to the economic growth of the country. Electronics is increasingly finding applications in all sectors of the economy and thus is accepted as a key enabler in development.

Government of India recognizes that the development of domestic capabilities in Electronics System Design and Manufacturing (ESDM) is crucial for both economic and strategic reasons. The vision is to create a globally competitive ESDM sector to meet the country's needs and serve the international markets. It is with this vision that the Government has come out with the draft National Policy on Electronics, 2011. The draft Policy, a first for the ESDM sector, lays the road map for the sector in the next decade. The draft policy was formally released for wider public consultation on October 3, 2011.

Draft National Policy on Electronics

One of the important objectives is to achieve a turnover of about US $ 400 Billion by 2020 involving an investment of about US $ 100 Billion and employment to around 28 million by 2020. This is a quantum jump from production level of about US $ 20 Billion in 2009. This interalia, includes achieving a turnover of US $ 55 Billion of chip design and embedded software industry and US $ 80 Billion of exports in the sector.

The salient features of the draft policy include:

- **Multi-fold growth in production, investment and employment:** Achieving a turnover of about US $ 400 billion by 2020 involving an investment of about US $ 100 billion and employment opportunities to around 28 million people at various levels in ESDM sector. Inter-alia, the following specific initiatives are proposed:
  - Setting up of semiconductor wafer fabs for manufacture of semiconductor chips.
  - A Modified Special Incentive Package Scheme providing for the disabilities in manufacturing in the sector.
  - Electronic Manufacturing Clusters Scheme for about 200 clusters with world-class infrastructure.
  - Preferential Market Access for domestically manufactured electronic goods to address strategic and security concerns and consistent with international commitments.
  - Provide for 10 year stable tax regime.
- **Semiconductor chip design industry:** Building on the emerging chip design and embedded software industry to achieve global leadership and to achieve US $ 55 billion by 2020.
- **Multi-fold growth in Export:** To increase the export from US $ 5.5 billion to US $ 80 billion by 2020.
- **Human Resource Development:** Significantly enhancing availability of skilled manpower, in scale and scope, including in emerging technology areas, by active participation of the private sector and thrust on higher education. It includes creation of about 2500 Ph.Ds annually by 2020.
- **Standards:** Developing and mandating standards for electronic products.
- **Security Eco-system:** Creating a complete secure cyber eco-system in the strategic use of electronics.
- **Sourcing for Strategic sectors:** Creating long-term partnerships between ESDM industry and strategic sectors like Defence, Space, and Atomic Energy etc.
- **R&D and Innovation:** To become a global leader in creating Intellectual Property in the ESDM sector by increasing fund flow for R&D, seed capital and venture capital for start-ups in the ESDM and nano-electronics sectors.
  - Setting up of a Electronic Development Fund as a Fund of Funds
  - Development of India Microprocessor

- Develop electronic products catering to the domestic needs and conditions at affordable price points

- **To develop core competencies in identified sectors** (Automotive Electronics, Avionics, LED, Industrial Electronics, Medical Electronics, Solar Photovoltaics and Information and Broadcasting) through use of ESDM.

- **National Electronic Mission (NEM):** A NEM will be set up with industry participation, as an institutional mechanism to formulate policy, to implement approved policy and to promote "Brand India" in Electronics.

Development of Electronics Systems Design and Manufacturing (ESDM) Ecosystem

Setting up of Semiconductor Wafer Fabs: Government constituted an Empowered Committee (EC) in May 2011 for identifying technology and investors for setting up Semiconductor Fabrication facilities in the country. Based on the decision of the EC, Expression of Interest (EOI) was sought and the EC is in process of evaluating the responses received.

Preference to domestically manufactured electronic goods in procurement due to security considerations and in Government procurement: The Government has approved the proposal to provide preference to domestically manufactured electronic products, in procurement of those electronic products which have security implications for the country and in Government procurement for its own use, consistent with our World Trade Organization (WTO) commitments. Electronic product or products having security implications and agencies deploying them will be notified by concerned Ministry/Department. The notified agencies will be required to procure not less then 30 per cent of the total procurement value of the specified electronic product or products from a domestic manufacturer. In Government procurement, the policy will be applicable to all Ministries/Departments (except Defence) and their agencies for electronic product or products purchased for Governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale.

- **Roadmap for promoting growth of semiconductor design and services industry:** A roadmap has been prepared to enable semiconductor design and services industry to move up the value chain and maintain growth rate of revenue of over 17 per cent per annum. The said road map has been developed as part of a study entitled "Study on semiconductor design, embedded software and services industry". The Department funded study was carried out by the India Semiconductor Association (ISA. The report covers VLSI design, Embedded software design and Hardware/board design.

- **Roadmap for promoting growth of electronic components industry:** A roadmap has been prepared for promoting growth of electronic components industry in the country as part of a Department funded study entitled. "ELCOMOS - Electronic Components, Hardware Market and Manufacturing Output Study including related Assemblies & Value Chain in India". The study was done by Electronic Industries Association of India (ELCINA)

- **A meeting of Chief Ministers and Ministers concerned of the States** was organized on August 29, 2011 to highlight the importance of ESDM sector in India and role which the States can play in this sector by emphasizing the importance of the role of the State Governments in the promotion of ESDM industry in the country by developing attractive policies for attracting the investment to their respective states like development of Electronic Manufacturing Clusters; creating necessary human resource required by the industry and effective single window mechanisms so as to provide for ease of doing business in the State, etc..

- **Communications and Brand Building Campaign for promotion of ESDM sector in India:** The Campaign has been launched with the objective to build "Made in India" as leading global brand in ESDM and increasing awareness regarding initiatives taken by Government to promote investments in ESDM sector. As a part of the Campaign, State level workshops, specific verticals related workshops and outreach activities in academia pertaining to ESDM are being promoted. The Department along with LEDMA (LED Products Manufactures' Association) co-organized an International Forum for promotion of LED and LED Products Manufacturing in India at New Delhi during September 23-24, 2011. Action has also been initiated to conduct a Communications Need Assessment Study to help orchestrate the Campaign.

- **Electronics e-Newsletter:** An e-Newsletter relating to Electronics System Design and Manufacturing (ESDM) has been launched with the objective of keeping the ESDM stakeholder community better informed about the policy initiatives, decisions and actions of the Government in the sector.

- **Expansion of list of electronic items under Focus Product Scheme of Foreign Trade Policy:** The Directorate General of Foreign Trade, Department of Commerce has expanded the list of items for the purpose of benefit under the Focus Product Scheme of Foreign Trade Policy, 2009-14. Under this notified scheme, the exports of products are entitled to duty credit scrip equivalent to 2 per cent FOB value of exports. Following additional electronic items have been

added to the list: Static Converters, Populated Printed Circuit Boards, Optical Disc Drives, Parts of Mobile Handsets, Parts of Telecom Transmission Equipment, Push Button, Telephones, Telephone Answering Machines and Optical Fibre Cables.

- **Mandatory compliance of safety standards for electronic items:** With the objective to control the quality of electronic goods being manufactured in the country and restrict import of sub-standard electronic goods, mandatory compliance of safety standards for electronic items is proposed to be introduced. A draft Order in respect of safety standards for selected electronic items has been prepared and consultations are underway with the Department of Consumer Affairs and Bureau of Indian Standards to notify mandatory compliance.

Actions have also been initiated for the following:

- Setting up a National Electronics Mission (NEM) with the objective to spearhead and facilitate development of ESDM capability in the country to meet the target of US $ 400 Billion in the next 10 years.
- Modification of Special Incentive Package Scheme to enhance investments in the electronics ecosystem with the objective to promote entire electronics manufacturing value chain i.e., products and inputs required for manufacturing of these products in the EMCs for enhanced value addition and to partially eliminate the disability costs which Indian electronics hardware industry is facing as compared to other countries. The draft Modified Special Incentive Package Scheme (M-SIPS) has been formulated in consultation with the stakeholders and action is being taken for obtaining requisite approvals.
- Setting up of Electronics Manufacturing Clusters (EMCs): The draft Electronics Manufacturing Clusters (EMCs) Scheme has been formulated in consultation with the stakeholders and action is being taken for obtaining requisite approvals.
- Setting up an Electronics Development Fund to promote innovation, Research and Development, Indian Intellectual Property and development of Indian Microprocessor with the objective to create an ecosystem to promote domestic innovation and manufacturing in the highly dynamic electronics industry. The Detailed Project Report for setting up of Electronics Development Fund has been prepared.

Investment Opportunity

The projected growth of production of ESDM to US $ 400 Billion by 2020 is expected to attract investment of over US $ 100 Billion. This is an opportunity for international investors to consider India as potential alternate destination for Electronics hardware manufacturing.

An outward looking and liberal trade policy is one of the main features of India's economic reforms. Approvals for all foreign direct investment upto 100 per cent in the electronics hardware manufacturing sector are under the automatic route. In order to promote the industry, action has been taken on a continuing basis to rationalize the tariff structure by making suitable changes in fiscal policy as part of annual budgetary exercise. The sailent features of the tariff structure applicable to electronics hardware industry as per the Union Budget 2012-13 are brought out below:

Customs

- Peak rate of basic customs duty is 10%. Basic customs duty on 217 tariff lines covered under the Information Technology Agreement (ITA-1) of WTO is 0%.
- All goods required in the manufacture of ITA-1 items have been exempted from basic customs duty subject to actual user condition.
- Basic customs duty on specified raw materials / inputs used for manufacture of electronic components is 0%.
- Basic customs duty on specified capital goods used for manufacture of electronic goods is 0%.
- To promote indigenous manufacturing of LCD TVs, LCD Panels have been exempted from basic customs duty for 20 inches and above.
- Basic customs duty on Set Top Box was raised from 0% to 5% to promote indigenous manufacture of Set Top Box.
- To promote indigenous manufacturing of computer printers, a concessional import duty structure of 6% additional duty of customs (CVD) and Nil SAD has been prescribed on parts of all computer printers imported by actual users.
- A concessional import duty structure of 6% CVD and Nil SAD has been prescribed on parts for manufacture of DVD writers, Combo drives and CD Drives subject to actual user condition, to promote indigenous manufacture of these items.
- To promote indigenous manufacturing of Blood Pressure Monitors and Gluco-meters, basic customs duty has been reduced to 2.5% with 6% CVD and Nil SAD on parts of Blood Pressure Monitors and Blood glucose monitoring systems (Gluco-meters) on actual user basis.

Central Excise

- The standard rate of excise duty (CENVAT) is 12%.
- To promote indigenous manufacturing of mobile handsets; parts, components and accessories for the manufacture of mobile handsets; sub-

parts for the manufacture of such parts and components; and parts or components for the manufacture of battery chargers, PC connectivity cable, hands-free headphones and memory cards of such mobile handsets and sub-parts for the manufacture of such parts and components are exempted from basic customs duty and excise duty. They have also been exempted from Special Additional Duty of Customs (SAD) upto 31.3.2013. The unconditional excise duty on mobile handsets is 1%.

- To promote indigenous manufacturing of computers, Microprocessors, Hard Disc Drives, Floppy Disc Drives, CD ROM Drives, DVD Drives/DVD Writers, Flash Memory and Combo-Drives are levied concessional excise duty of 6% and Nil SAD.

- To promote indigenous manufacturing of LED Lamps, excise duty has been reduced to 6% on LED lamps & LEDs required for manufacture of such lamps and SAD has been fully exempted on LEDs used for manufacture of LED Lamps.

Production Profile

The Electronics & IT-ITeS industry continued to exhibit remarkable resilience during the year 2011-12. The total production of Electronics & IT-ITeS Industry is estimated to grow by 19.2 per cent in 2011-12 as against 14.6 per cent in 2010-11. This increase in growth is attributed mainly to the accelerated growth of software and services industry which is export driven and continues to dominate the electronics and IT industry. In 2011-12, the Indian software and services exports industry witnessed robust growth. The total value of software and services exports is estimated at ₹ 332,445 Crore (US $ 68.7 billion) in 2011-12 as compared to ₹ 268,610 Crore (US $ 59 billion) in 2010-11, an increase of about 23.8 per cent in rupee terms and 16.4 per cent in dollar terms.

The production and growth trend of the Indian Electronics and IT-ITeS industry since 2006-07 has been as follows:

Year	Production (₹ Crore)	Growth (%)
2006-07	244,000	28.2
2007-08	295,820	21.2
2008-09	372,450	25.9
2009-10	415,520	11.6
2010-11	476,180	14.6
2011-12*	567,510	19.2

*Estimated

The above table indicates that Electronics and IT-ITeS industry has sustained its growth momentum in 2011-12. Software and services exports, which constitutes about 59 per cent of Electronics and IT-ITeS industry's revenue aggregate in 2011-12 has enhanced its share from about 56 per cent in 2010-11.

The production performance of various industry groups in the Electronics Hardware and Software & Services Sector in 2011-12 is given below.

Consumer Electronics

The Indian Consumer Electronics industry has experienced rapid changes over the last few years. Convergence of Information, Communication & Entertainment along with the changes in life-style, higher disposable income and greater affordability have boosted the consumer electronics industry to a large extent. The consumer preference has shifted towards products and devices that come with smart technology, innovative designs and aesthetic looks.

The Colour Television segment is one of the largest contributor and the market size in 2011 was about 14.00 million units. In value terms, the growth was fuelled by the sale of flat panel LCD / LED TVs which is increasing in exponential terms. The market of LCD / LED TV has increased from 2.8 million units in 2010 to 4.0 million units in 2011 and is further projected to increase to 5.5 million units in 2012. Declining prices and high penetration levels are the main reasons for the growth of this segment. On the other hand, the conventional CRT TV segment is showing negative growth, as the trend has turned towards LCD / LED TVs.

The DVD player market continues to decline from 4.5 million units in 2010 to 4.0 million units in 2011, exhibiting a de-growth of 11 per cent. Rapid growth and popularity of the Direct to Home (DTH) sector is impacting the DVD player market and this trend is likely to continue in the future.

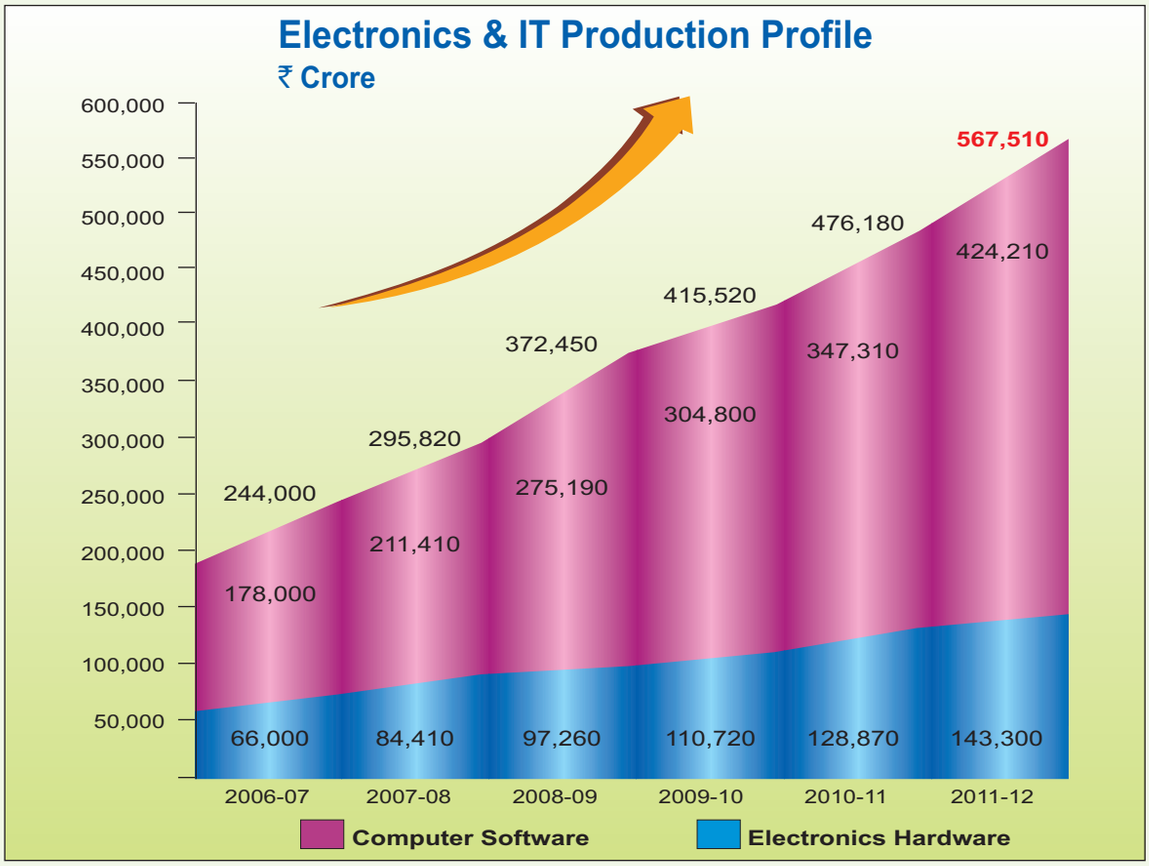
The Home Theatre segment continues to grow from 0.30 million units in 2010 to 0.33 million units in 2011 with a limited growth and is anticipated to grow nearly by 21 per cent during the next year.

During 2011-12, the total production of consumer electronics industry is estimated to be ₹ 34,300 Crore as against ₹ 32,000 Crore in 2010-11, registering a growth of about 7.2 per cent.

Industrial Electronics

The Industrial electronics Segment includes critical Hardware Technologies & systems, such as, Power electronics, Process control & automated / automation equipments with built-in Software which accounts for nearly 81 per cent of the total industrial electronics production. Most of the domestic demand is catered to by the local manufacturing, whereas, about 10 per cent of the sophisticated products are imported.

Some of the major players have set up global tie-ups and



have brought in newer technologies in a variety of Industrial Sectors of the Indian Economy.

The importance of automation and process control in the process industries has increased dramatically in the recent years. The demand for process automation is from chemical, medical, pharmaceutical, power generation, and petrochemical industries.

Some of the areas in the Industrial electronics segment, which could potentially change the landscape of the sector are - Artificial intelligence, Integration of production and business operations, Introduction of robotics, Decision Analysis, 3-D co-ordinate systems, Smart Image processing, Nanotechnology, Nanoscale assemblies, Distributed control systems and other intermediates like semiconductors.

Irrespective of tremendous expertise, the sector is largely dependent on import of critical hardware and associated software. Large projects are implemented with import of C&I packages from abroad without much knowledge of its design.

During 2011-12, the total production of Industrial electronics industry is estimated to be ₹ 18,700 Crore as against ₹ 17,000 Crore in 2010-11, registering a growth of about 10 per cent.

Computer Hardware

IT hardware market in India continue to expand rapidly with the significant IT adoption plans by the key drivers, such as, Telecom, BFSI (Banking, Financial Services and Insurance), ITeS (Information Technology enabled Services), Education, Small Office / Home Office (SOHO), manufacturing verticals, Small & Medium Enterprises (SMEs), e-Governance and households.

IT Products being manufactured in the country include personal computers, servers, workstations, supercomputers, data processing equipment, Dot-matrix printers, digitizers, networking products, such as modems, hubs, add-on cards etc.

The related peripherals market including networking products in India is growing at a rapid pace and fast assuming global scales, mainly due to the setting up of assembly units in India by MNCs.

This fiscal, IT Hardware companies were adversely affected due to devaluation of rupee against US dollar, depressed demand and supply chain disruption because of floods in Thailand.

Despite several odds, the PC market in India is expected around 10.3 million units in 2011-12, which is still a 10 per cent growth over last year. For Printers and MFDs, the market is of 2.8 million units, which is same as last year.

Tablet PCs, since its launch in India in November 2010 are growing very fast, due to their portability and utility.

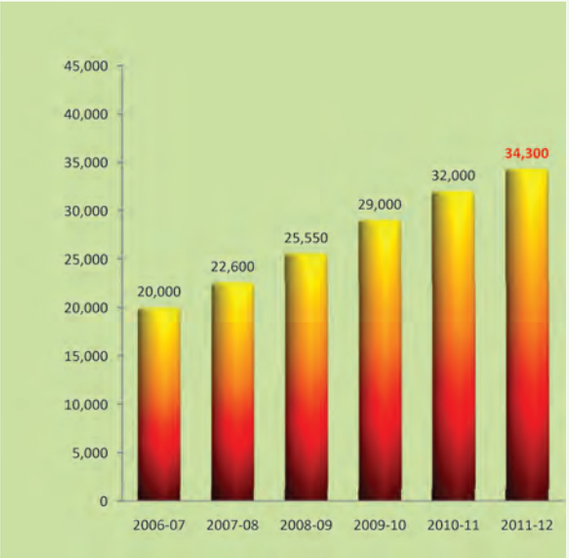
Further, with mobile industry's rolling out 3G, the mobile phone will become the access as well as the computing device in changing the traditional definition of computing.

Production of computer hardware is estimated to increase by 10 per cent in 2011-12 to touch ₹ 16,500 Crore, as against ₹ .14,970 Crore during 2010-11.

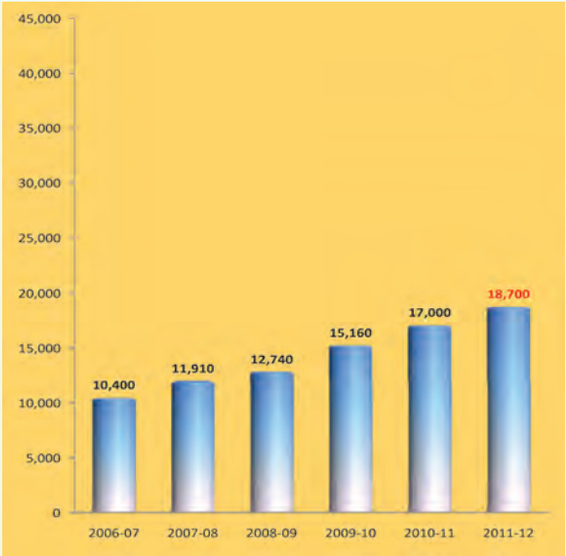
Electronics Production

₹ Crore

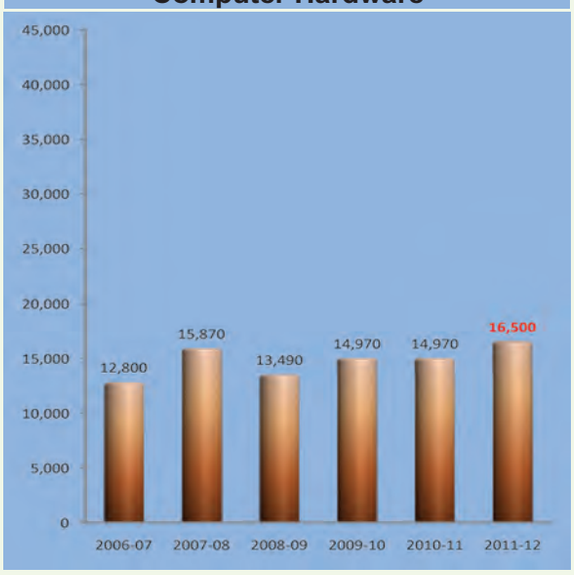
Consumer Electronics



Industrial Electronics

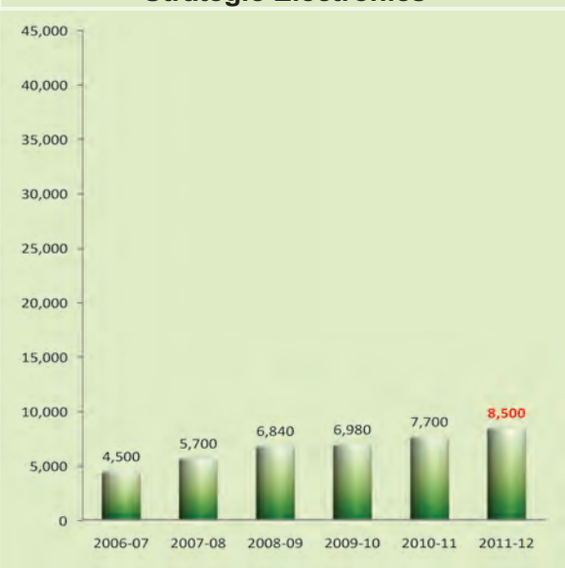


Computer Hardware



Communication & Broadcast Equipments

Strategic Electronics



Electronic Components

Communication and Broadcasting Equipments

Communication Technology is a key driver for development and growth. India is third largest in the world in terms of gross telephone subscribers, and second largest in Asia. The gross telephone subscribers in the country reached 926.53 million at the end of December 2011. Total wireless subscribers reached 893.84 million and total Wireline subscribers reached 32.69 million. The overall Tele-density reached 76.86 per cent in December 2011 with overall urban and rural tele-densities being 167.85 and 37.48 respectively. The break-up of the Tele-density with respect to wireline and wireless are 2.77 and 72.70 respectively. The total broadband subscriber base of India is 13.3 million.

There are a total of 245 FM Radio Stations in operation, at the end of September, 2011 apart from All India Radio (AIR), Prasar Bharati (a public broadcaster). Total number of Registered Channels with I&B Ministry is 762, whereas, number of pay channels is 161.

Maximum number of TV channels (Pay, FTA and Local) being carried by any of the reported MSOs is 287, whereas, in the conventional analogue form, maximum number of channels being carried by any of the reported MSOs is 100 channels.

Three types of Set Top Boxes (STBs) are currently being deployed in Indian market, viz., Pay TV DTH STBs, Free to Air - DTH STBs and Digital Cable STBs. Indian Pay TV market is growing very fast, year on year basis, with a subscriber base over 40 Million at the end of December 2011. Indian pay TV DTH subscriber base, has nearly doubled since 2009, due to competition and innovation / introduction of the new concept, called, added viewers in Cable Dark Areas (CDA) and has added second TV connections in the "cable-connected" areas through improved performance, such as High-definition (HD). There are 6 private DTH licensees, offering their services to the DTH subscribers apart from the free DTH service of Doordarshan. The subscriber base is about 41.04 million as on 30.9.2011.

Indian Free mandatory to Air STBs has surpassed US and has become number one in the world. The number of STBs installed in CAS notified areas of Delhi, Mumbai, Kolkata and Chennai is about 8.2 lacs at the end of September, 2011.

According to TRAI, the demand for telecom equipment in India is projected to grow to ₹ 96,514 Crore in 2015 and ₹ 170,091 Crore in 2020. Despite significant growth of the telecom network and the subscriber base over the last decade, the telecom manufacturing sector has not shown corresponding increase in value terms.

The estimated production figure for this segment for 2011-12 is ₹ 40,500 Crore as against ₹ 35,400 Crore in 2010-11, showing a growth of about 14.4 per cent.

Strategic Electronics

The strategic electronics segment envelops Military Communication systems, Radars & Sonars, Network Centric systems, Electronic Warfare systems, Weapon systems, Satellite based Communication, Navigation and Surveillance systems, Navigational aids, underwater electronic systems, infra-red based detection and ranging system, disaster management system, internal security system etc. The Indian strategic electronic industry has been able to meet the bulk of the requirements of India's defence and paramilitary forces.

The strategic electronics industry comprises lead system integrators (tier-I class) and component and sub-system manufacturers (tier-II class). System integration with outsourced components and sub-systems is the most viable business option in this segment. Components need huge production size but the chances of discouraging factors like volume rejection and technology obsolescence are limited. Sub-systems may require a good design and technology base.

In the value proposition term, a significant change has been observed in the last five years. Preference for domestic route over the import of technology is increasing. A steady shift towards 'develop and make' model is prominent from the previous 'buy' and 'buy-and-make' policy.

Indian defence electronics industry has been growing at an average rate of about 13.4 per cent per year during the 11th plan period. India's defence, aerospace and nuclear sectors are poised for substantial growth on the back of economic growth and the need to maintain national and energy security. The role of IT in defence is expanding with the new focus on cyber security.

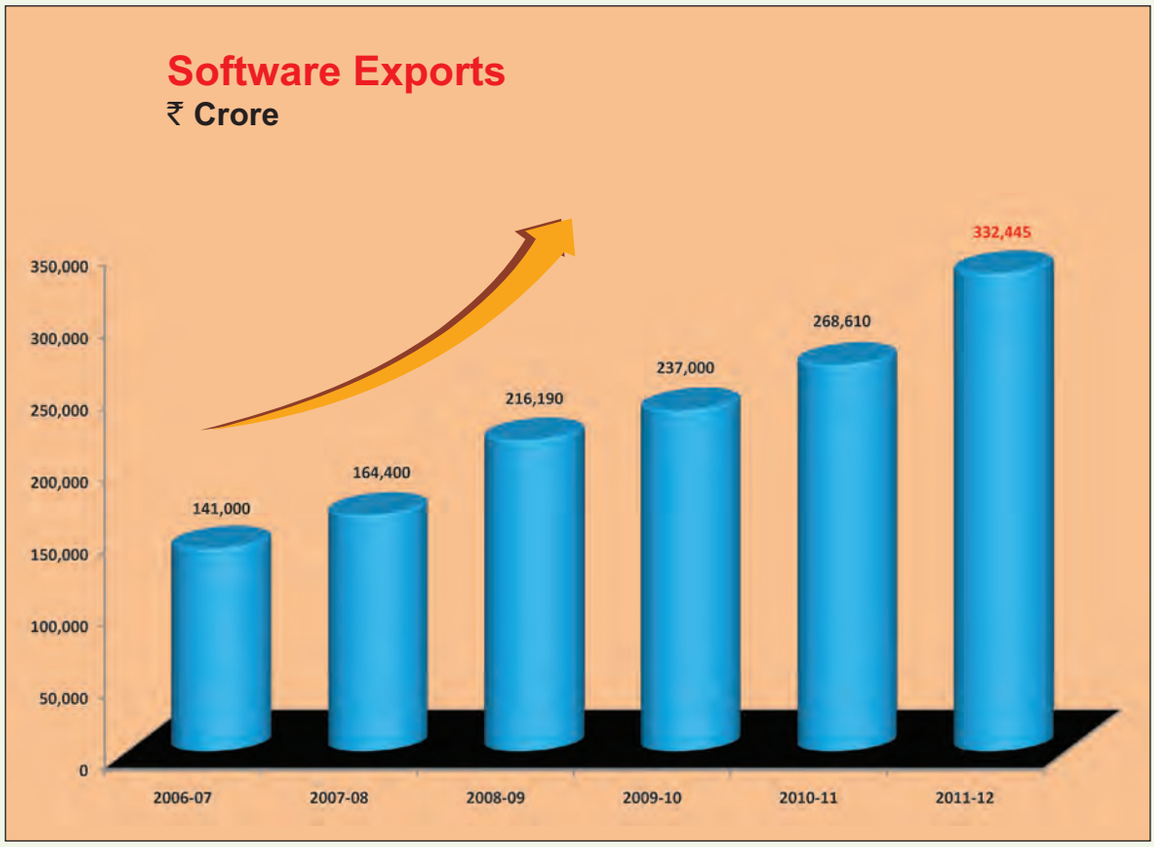
Driven by geo-political considerations, India is expected to be one of the top-5 markets for defence equipment by 2015. Similarly, economic growth and a focus by commercial aircraft manufacturers on low cost countries are expected to create growth in the aerospace market in emerging markets in general and India in particular. The civilian nuclear agreement between the US and India will enable commerce and cooperation, in particular allowing India to collaborate with global companies on nuclear projects. India has an opportunity to play an important role in this global phenomenon.

The estimated production figure for this segment for 2011-12 is ₹ 8,500 Crore as against ₹ 7,700 Crore in 2010-11, with a growth of about 10.4 per cent.

Electronic Components

The growth of the electronics industry has triggered the expansion of electronic component industry. The electronic components produced in India include Picture Tubes, Diodes, Transistors, Power devices, Resistors, Capacitors, Switches, Relays, Connectors, Magnetic heads, etc.

The Indian electronic component market is dominated by electro-mechanical components (like printed circuit boards, connectors, etc.,) and passive components (like wire-wound components, resistors, etc.). However, in recent times, the active components (like Integrated



circuits, diode, etc.) and the associate components (like optical disc, magnets, RF Tuners etc.) have also witnessed significant growth.

The demand for Consumer Durables and Telecommunications is about 60 per cent, IT & Office Automation & Automotive industries is about 22 per cent. This demand is largely met through Imports from China, Taiwan, South Korea, Japan and few European countries. The share of imports is higher for specialized & precision components like ICs, Chip components, PCBs, LEDs, etc.

At the same time, India has established a near self reliance in several components. This includes components like cables (with only 20 per cent being imported and expected to reduce to 15 per cent), Speakers (with only 20 per cent being imported), Connectors, CRTs, etc. In case of many of these components, Indian manufacturers are also exporting to several countries in Europe, Americas, Middle East etc.

The demand for the products, like tablets, smart phones, etc. has contributed to the significant increasing trends in the component industry.

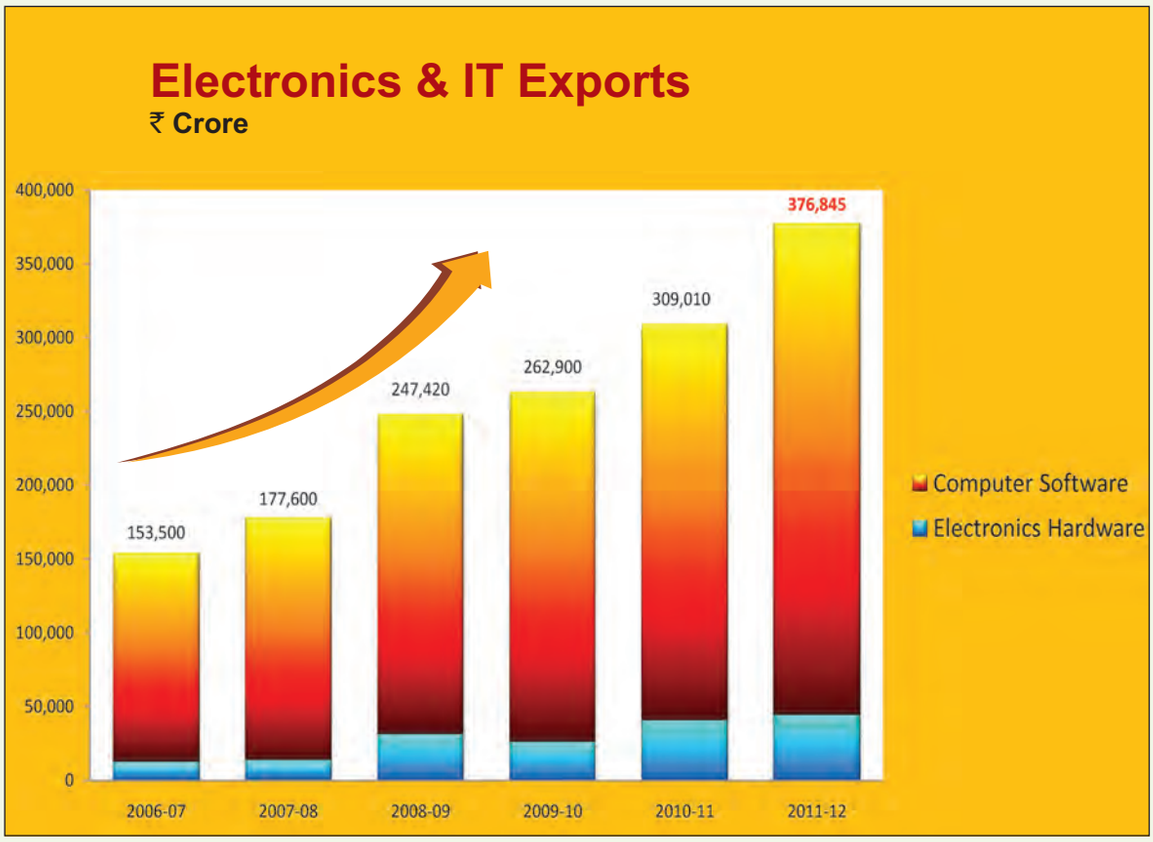
The growth in Telecommunication, Consumer durables, Information Technology & Office Automation and Automobile industry has contributed to significant growth in the electronic component industry.

The production figure for this segment for the year 2011-12 is estimated to be around ₹ 24,800 Crore as against ₹ 21,800 Crore in 2010-11, registering a growth of about 13.8 per cent.

Software and Services Sector

The Indian Information Technology - Information Technology Enabled Services (IT-ITeS) industry has been the most favoured destination for the global sourcing of IT-ITeS, accounting for almost 58 per cent of the global sourcing market size in 2011 as compared to 55 per cent in 2010-11. Almost all the verticals (large enterprises in banking, financial services, insurance, telecom, retail, manufacturing, pharmaceuticals and travel), either through their captive units or independent service providers, are going for outsourcing of the back end operations and other tasks to remain globally competitive. The BPO/KPO continues to remain essential part of the operations of the multinationals based in leading economies to address the global market in the free global economy. With the increased connectivity and emergence of non-traditional platforms (e.g mobile payments, mobile TV, Software-as-a-Service and Cloud computing) the manpower supply chains become "virtual" (location independent) enabling seamless global delivery. Corporations become increasingly independent, relying on a vast global network of suppliers and vendors and creating a corporate "ecosystem". This will further increase the global opportunity, providing Indian IT-ITeS industry a great chance for much expected growth.

Indian IT Industry has been contributing substantially to India's GDP, exports and employment. The revenue aggregate of IT-ITeS industry is expected to grow by about 15 per cent and reach US $ 87.6 billion in 2011-12 as compared to US $ 76.2 billion in 2010-11. (₹ 4,24,210 Crore in 2011-12 as compared to ₹ 3,47,310 Crore in 2010-11 with a growth of about 22.1 per cent). The



Indian software and services exports including ITeS-BPO are estimated at US$ 68.7 billion in year 2011-12 as compared to US$ 59 billion in year 2010-11, a 16.4 per cent growth in dollar terms. (₹ 3,32,445 Crore in 2011-12 as compared to ₹ 2,68,610 Crore in 2010-11 with a growth of about 23.8 per cent). IT services exports is the fastest growing segment within the Indian IT-BPO sector. This segment is estimated to grow at 18.8 percent and to generate exports revenues of the order of US$ 39.8 billion in year 2011-12 as compared to US$ 33.5 billion in year 2010-11. (₹ 1,92,790 Crore in 2011-12 as compared to ₹ 1,52,325 Crore in 2010-11 with a growth of 26.6 per cent). ITeS- BPO segment is also estimated to grow at 12 per cent and generate export revenue of the order of US $ 15.9 Billion in year 2011-12 as compared to US $ 14.2 Billion in year 2010-11. (₹ 76,930 Crore in 2011-12 as compared to ₹ 64,480 Crore in year 2010-11 with a growth of 19.3 per cent). There has been a growth of about 14 per cent in the exports of Software Products and Engineering Services, which is estimated to reach US$ 13 billion in year 2011-12 from the level of US $ 11.4 billion in year 2010-11. (₹ 62,720 Crore in 2011-12 as compared to ₹ 51,800 Crore in 2010-11 with a growth of 21 per cent).

Though the IT-BPO sector is export driven, the domestic market is also significant. The revenue from the domestic IT market (excluding hardware) is expected to grow to ₹ 91,765 crore in year 2011-12 as compared to ₹ 78,700 crore in 2010-11, an anticipated growth of 16.6 per cent in rupee terms. Domestic IT Services sector is expected to reach ₹ 58,905 Crore in year 2011-12 as compared to ₹ 50,065 Crore in year 2010-11 with a estimated growth of about 17.7 per cent. Domestic BPO demand in the domestic market has witnessed noticeable growth over the past few years. The domestic BPO revenue is estimated to increase from ₹ 12,700 crore in year 2010-11 to about ₹ 14,850 crore in year 2011-12, a growth of 16.9 per cent in rupee terms. In Domestic Market, the IT Services is the fastest growing segment (18 per cent) followed by BPO (17 per cent) and Domestic Software Products (13 per cent). This segment is being driven by the need to replace legacy systems and technology advancements around cloud computing/Virtualization technologies that are enabling everything as-a-service.

The IT-ITeS sector has been the biggest employment generator and has spawned the mushrooming of several ancillary industries. Direct employment in the IT- BPO industry is estimated to grow by over 9 per cent reaching to 2.77 million in 2011-12 with over 230,000 jobs being added during the year. Indirect employment of over 8.9 million is expected to be generated in 2011-12. These indirect employment opportunities have been generated in diverse fields such as commercial and residential real estate, retail, hospitality and transportation, security, etc.

Electronics & IT Exports

During the year 2011-12, electronics and IT exports are estimated to be ₹ 3,76,845 crore as compared to ₹ 3,09,010 crore in 2010-11 showing a growth of about 22 per cent. The software and services exports witnessed remarkable rebound. The total value of software and services exports are estimated at ₹ 3,32,445 crore in 2011-12 as compared to ₹ 2,68,610 crore in the year 2010-11, an increase of about 23.7 per cent.

Initiatives in Information Technology Sector

E-Governance

National e-Governance Plan (NeGP)

The National e-Governance Plan (NeGP) was approved by the Union Cabinet in May 2006 with a vision to provide Public services to the common man in his locality at affordable costs. The NeGP is a multi-stakeholder programme which primarily focuses on making critical public services available and promoting rural entrepreneurship.

The objective of NeGP is to transform traditional processes and service delivery mechanisms and create an environment that is citizen-centric, with rights based approach to governance while making interaction with Government easier, effective and transparent.

NeGP encompasses the entire spectrum of Governance at the Central, State and Local levels. Moreover, the country's demographic profile, economic, socio-cultural and geographical diversity, poor penetration of computers, internet connectivity and low levels of e-literacy have been impediments towards extension of NeGP's outreach. Lack of awareness about the Plan, limited G2C services on ground, re-engineering archaic Government processes as well as bringing about change in the mindset of Government officers have also posed as serious challenges.

However, there has been significant progress in providing access to critical services and information; cutting edge technology and its rapid advancement and embracement has helped facilitate a demand driven atmosphere for Government services. Under NeGP, the Common Services Centres Scheme has been created to deliver critical public, private and social services. Over 97871 CSCs have been established across the nation as on December 31, 2011.

As per the decision taken during the Apex Committee Meeting held on 29th July 2011, 4 new Mission Mode Projects (MMPs), (Education, Health, PDS and Posts) have been added under NeGP, taking the total number of MMPs under NeGP to Thirty One (31). 'India Post 2011' has been added as a Central MMP while the remaining three (3) MMPs (Education, Health and PDS) have been added as State MMPs. Of the 31 MMPs, 24 have been approved by the Government of India. 19 MMPs have gone live and are delivering services electronically, though may not be in the entire country or the entire set of envisaged services.

State Wide Area Networks (SWANs)

The Government has approved the Scheme for establishing State Wide Area Networks (SWANs) across the country, in March, 2005 at a total outlay of ₹ 3,334 crore to be expended by the Department under Grant-in-Aid of ₹ 2,005 crore, over a period of five years. Under this Scheme, technical and financial assistance are being provided to the States/UTs for establishing SWANs to connect all State/UT Headquarters up to the Block level via District/ sub-Divisional Headquarters, in a vertical hierarchical structure with a minimum bandwidth capacity of 2 Mbps per link. Each State/UT can enhance the bandwidth up to 34 Mbps between SHQ and DHQ and upto 8 Mbps between DHQ and BHQ depending upon the utilization. Steps have been initiated to integrate all SWANs using the National Knowledge Network (NKN). Four States namely Gujarat, Tamil Nadu, Karnataka and Andhra Pradesh have been integrated using NKN.

SWAN proposals from 34 States/UTs have been approved, with a sanctioned total outlay of ₹ 1972 crore from the Department. The Proposal for implementation of SWAN in the UT of Andaman & Nicobar Islands has been approved by the Empowered Committee recently. The State of Goa has implemented GOA Wide Area Network outside SWAN Scheme.

The SWANs in 28 States i.e. Andhra Pradesh, Chandigarh, Chhattisgarh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Kerala, Karnataka, Lakshadweep, Maharashtra, Orissa, Punjab, Puducherry, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal, Assam, Bihar, Madhya Pradesh, Uttarakhand, Manipur, Arunachal Pradesh, Meghalaya and Mizoram have been made operational .

- The SWANs in Nagaland are in advanced stage of implementation. Rajasthan has identified the Network Operator and implementation is underway.
- J&K has initiated the bid process to identify the Network Operator for implementation.

- Dadra & Nagar Haveli, Daman & Diu and Andaman and Nicobar are in RFP/BOM finalization stage.

- It is expected that all State SWANs would be operational by September, 2012.

To monitor the performance of SWANs, the Department has mandated positioning Third Party Auditor (TPA) agencies by the States/UTs. As on date, 23 States viz. Haryana, Himachal Pradesh, Punjab, Gujarat, Karnataka, Kerala, Tripura, Orissa, Maharashtra, Arunachal Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Assam, Tamil Nadu, Jharkhand, West Bengal, UP, Lakshadweep, Andhra Pradesh, Meghalaya, Nagaland and Mizoram have empanelled the TPA agencies for monitoring the performance of the SWAN in their respective State. Remaining States/UTs are in the process of empanelment of TPA.

State Data Centres (SDCs)

Since the approval of the SDC Scheme by the Government, Department of Electronics and Information Technology has approved the proposals received from 31 States/UTs at a total outlay of ₹ 1378.00 crore. An amount of ₹ 134.74 crore as Department share has been released to 31 States/UTs.

As on 31st December, 2011, 16 SDCs have been made operational (Gujarat, Tripura, Rajasthan, Tamil Nadu, Puducherry, West Bengal, Andhra Pradesh, Meghalaya, Karnataka, Manipur, Orissa, Sikkim, Haryana, Kerala, Maharashtra and Nagaland). SDCs in 3 States are under Implementation (Uttar Pradesh, Andaman, and Madhya Pradesh). The bid process is complete but the site is yet to be handed over in 2 States (Mizoram, Jharkhand). The bid process is in advanced stages in 5 States (Himachal Pradesh, J & K, Lakshadweep, Chhattisgarh and Bihar). Bid process is in progress in Uttarakhand. RFP is yet to be published / under review in 4 States (Arunachal Pradesh, Assam, Punjab, Goa). DPR is yet to be received from 3 States (Dadra & Nagar, Daman & Diu, and Delhi). Chandigarh has opted out of the SDC Scheme. It is expected that all State Data Centres shall be made operational by December, 2012.

- **SDC Enhancement:** As part of the SDC Enhancement initiative by the Department, the following components have been considered for implementation at the SDCs:

  - **Cloud Enablement:** It has been proposed to enhance the efficiency & performance of infrastructure hosting components at the SDCs by enabling private cloud in the SDCs. Currently, a Proof of Concept (PoC) is in progress in States like Tamil Nadu, Karnataka, etc. for proof of Cloud capabilities in an SDC environment.

  - **Disaster Recovery Solution:** Four National Data Centres (NDC), run by NIC, have been identified to be used as DR Sites for the SDCs. DR Strategy and DR handbook template has been prepared to help States prepare their DR Plans.

- Third Party Audit of State Data Centers: Six Agencies have been empanelled as Third Party Auditors by the Department to carry out Audit activities of the State Data Centres as below, for a period of five years from the date of appointment by the State.

Common Services Centres (CSCs)

The Government has approved the Common Services Centres (CSCs) Scheme for providing support for establishing 100,000 Common Services Centres in 600,000 villages of India. The Scheme envisions CSCs as the front-end delivery points for Government, private and social sector services to rural citizens of India, in an integrated manner. The objective is to develop a platform that can enable Government, private and social sector organizations, to align their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT-based as well as non-IT based services. The Scheme has been approved at a total cost of ₹ 5742 crore with the Government of India contribution being ₹ 856 crore and State Governments contribution being ₹ 793 crore. The balance funds would be brought in by the private sector.

In the current financial year, the Department has approved CSC proposal of two States/ UTs Andaman & Nicobar Islands and Lakshadweep. The CSC Project is under implementation in thirty-three States/ UTs.

The CSC Scheme is being finalized in Daman & Diu and Dadra & Nagar Haveli. In the NCT of Delhi, CSC like centers are already existing. As of December 2011, 97,871 CSCs have been established across the country in rural areas. Out of the total rolled out CSCs, 9464 centers are presently non operational due to termination of Service Center Agencies (SCAs) in the States by the State Governments. The issue of connectivity to the CSCs has also been addressed. BSNL has been identified to provide broadband connectivity to all 100,000 CSCs. This initiative is being partly funded by the Department. BSNL has committed to provide connectivity for all the CSCs by September 2012. Further Department is also providing VSAT connectivity for 2500 CSCs situated in NE States and other difficult areas. CSC Special Purpose Vehicle (SPV) has been entrusted the responsibility of Programme Management Agency for installation of VSATs. One of the key components for sustainability of the CSC or the Village Level Entrepreneur (VLE), is the delivery of the Government services (G2C) to the citizens through these centers. The CSCs are to be leveraged for various services for Bharat Nirman and flagship Schemes like NREGA, NRHM and SSA. Already many of the CSCs in the States have started delivering services concerning these Flagship Schemes / Programmes.

Further a Note for consideration by Cabinet Committee on Infrastructure for approval of additional 1,50,000 Bharat Nirman Common Service Centers had been submitted to the Cabinet Secretariat on 18th November, 2011 and is under consideration of the Group of Ministers. Some of the major challenges for the successful implementation of the CSC scheme relate to lack of Broadband Connectivity, inadequacy of power in

the villages and lack of G2C services in the States.

Implementation of State Portal, State Service Delivery Gateway (SSDG) & Electronic Form application

The issue of enabling Service Delivery is being addressed by earmarking funds to the tune of ₹ 400 crore saved out of the funds of the sanctioned plan for CSC Scheme, for establishing State Portals, State Services Delivery Gateway and gaps in infrastructure.

This project creates State Portals that will host electronic forms to offer convenient and easy services to citizens. This project leverages the existing e-Governance infrastructure like CSCs, SDCs and SWANs.

This project intends to provide easy, anywhere and anytime access to Government Services (both informational & transactional). The project aims to reduce number of visits of citizens to a Government office/department for availing the services. It also aims to reduce administrative burden and service fulfillment time & costs for the Government, Citizens and Businesses and creating a more efficient communication through the portal. The major components of this project include State Portal, electronic forms, the services delivery gateway, gap infrastructure and training.

Guidelines have been formulated to provide technical and financial assistance to the States for setting up State Portals, State Service Delivery Gateways (SSDGs) and Electronic Forms and financial assistance is being provided to the States/UTs for creation of State Portal, SSDGs and Electronic Forms and meeting the operational expenses for a period of 3 years.

In order to facilitate the quick implementation and roll out of the project, the Department has empanelled 5 consultants who will assist the States in preparation of the proposals and in bidding and selection process of Implementing Agency (IA). The Department has also empanelled 6 Implementing Agencies which can bid for the State projects.

Achievements during 2011-12

- DPR and funding of 31 States approved and ₹ 11023.65 Lakhs released to the States/UTs.
- Out of the approved 31 States/UTs proposals, 27 States/UTs have floated the RFP for the selection of the Implementing Agency for the project.
- Out of these 27 RFPs, 3 States (Goa, Tamil Nadu & Manipur) have Gone-live and another 7 States/UTs have completed implementation and are in the process of deployment for Go-live.
- 10 States/UTs are in project implementation stage.
- 4 States/UTs have completed the bid process and are in the process of issuing the LoI to the selected Agency.

Capacity Building Scheme (CB)

Capacity Building (CB) is one of the important components of NeGP for building internal capacities within the Government framework especially at the State level to mitigate the major managerial and technological challenges in implementation of e-Governance projects. Consistent strategies for integration, resource optimization, prioritization and resolving conflicts and overlaps are also required for effective implementation of e-Governance projects. Thus specialized skills are required in the States/UTs to provide technical and programme management support for the overall management of the programme.

The scheme is mainly for providing technical & professional support to State level policy & decision-making bodies and to develop specialized skills for e-Governance. The scheme is for a period of three years and is being implemented by the Department. The scheme envisions:

- Establishment of Institutional Framework for State level Strategic decision- making for State e-governance program
- Setting-up of State e-Governance Mission Team (SeMT) in States & UTs
- Imparting of specialized training and orientation program for SeMTs and decision makers (Public functionaries, State Legislature and Senior Bureaucrats)
- Knowledge sharing through e-Governance related trainings and bringing in international best practices to the implementation of initiatives
- Strengthening of Training Institutions in States
- Setting up of a central Capacity Building Management Cell for coordination and implementation of the scheme, which will be working under the Empowered Committee.

The Capacity Building Scheme at an outlay of ₹ 313 crore was approved on 10th January, 2008. Approval for extension of Capacity Building Scheme without cost escalation has been obtained.

Achievements during 2011-12

Training

The programme for imparting orientation/training for policy & decision makers specialized training and, orientation program for SeMTs under the CB Scheme has been divided into two phases.

Phase-I

The objective of orientation/training for policy & decision makers termed "e-Governance Leadership Meet" is to sensitize the political and senior policy makers in the States/UTs in e-Governance. A calendar for these

programmes was circulated to all States/UTs for opting slots according to their convenience. 20 States/UTs have already conducted the 'e-Governance Leadership Meet" so far.

Phase-II

The "Specialized Training Program" (STeP) is for senior and middle level officers of the States/UTs viz. Secretaries, Jt. Secretaries, Directors, Jt. Director and other senior level officers at HQ and District level preferably from NeGP and State MMPs; as well PeMT members in the areas like Government Process Reengineering, Business Models and PPP, Project Management, Change Management, Regulatory & Legal framework for e-Governance , Knowledge Management, Documentation standards & skills, Security Standards and Open Source Standards. Course design and content development for eight modules have been completed. Roll out of the training programmes has commenced in November 2010. 1487 Government Officers from 18 States/UTs have undergone trainings in these modules under the STeP Trainings so far.

- Chief Information Officers Training programme has been launched to create a talent pool of in-house resources within Departments and Line Ministries to lead e-governance Programmes. 24 officers of Central and State Governments, working in key areas of e-Governance have completed the CIO Certification Programme.
- The work of development and publishing of Case Studies from various sectors on e-Governance Projects has been taken up. 50 Case Studies to be developed by April, 2012.

State e-Governance Mission Team (SeMT)

Setting up of SeMTs in the 35 States/UTs with about 300 professionals is under process. The SeMTs are a team of professionals in the areas of technology, programme management and Capacity Building etc. Their role is to assist the policy and decision makers in the States/UTs primarily on technology and programme related matters related to the conceptualization, implementation and management e-Governance Programme.

The Capacity Building Management Cell

NeGD is the central agency for facilitating the recruitment and HR management of the SeMTs. The creation of SeMTs through a centrally managed process from the open market on contract basis and from Central/State Government/PSU on deputation basis is well underway. In all, 224 persons have joined the SeMTs. It is planned to fill up the remaining positions in the next six months.

e-District

e-District is a State Mission Mode Project under the National e-Governance Plan. The Project aims to target certain high volume services currently not covered by any MMP under the NeGP and to undertake backend computerization to enable the delivery of these services through Common Services Centers.

The Department has approved 16 Pilot e-District projects covering 41 districts. Pilot project has been launched/ gone live in 32 districts across 12 States in Uttar Pradesh, Tamil Nadu, Bihar, West Bengal, Assam, Maharashtra, Mizoram, Madhya Pradesh, Orissa, Kerala, Haryana & Jharkhand.

The scheme for National Roll Out of e-District MMP was approved by the Cabinet Committee for Infrastructure on 20th April 2011. The progress in National Rollout of e-District MMP so far has been following:

- The Empowered Committee has provided the guiding principles for approval of DPRs submitted by the States and subsequent release of funds to these States.
- M/s Accenture has been selected as National Program Management Unit.
- The process is underway for selection of the Consultancy agencies that will provide State level program management support for the implementation of the e-District MMP.
- EOI bid evaluation for Selection of consultancy agencies for State Program Management Unit in the various States & Union Territories is completed.
- Detailed Project Reports (DPRs) of 10 States have been appraised and submitted for approval to the Empowered Committee.

e-Bharat

World Bank supported "India: e-Delivery of Public Services" Project:

- The Government of India and the World Bank on May 10, 2011 signed an Agreement of US $150 million for "e-Delivery of Public Services Development Policy Loan",under NeGP.
- The "e-Delivery of Public Services Development Policy Loan" will support NeGP's countrywide plans of increasing online services for citizens in their locality, to improve the quality of basic governance in areas of concern to the common man.
- The above funding will support GoI's objective of increasing access to online services by citizens in their locality. It will do so through supporting policy and institutional actions, which place higher emphasis on coordination and increase outreach to citizens. These policy and institutional actions include:

- Policy for Institutional Strengthening of State Governments;
- Policy for Public Private Partnerships to improve service delivery;

- Policy on use of Open Standards to ensure interoperability and avoid vendor lock in;
- Policy for Inter-agency Coordination and Monitoring & Evaluation;
- Policies for access to citizen services through Mobile platform and increasing the pace of broadband penetration;
- Policy for mandating increased participation of users;
- Policy on service orientation for Government Processes and Officials;
- Electronic Service Delivery Act; and
- Policy on uniform and predictable verification of e-service users.

The Department proposes to use this support as a focal point to convene the associated departments and levels of government around a concrete reform agenda.

Framework for Mobile Governance

With the objective of utilizing the massive reach of mobile phones and harness the potential of mobile applications to enable easy and round-the-clock access to public services, especially in the rural areas, it has been decided to create unique infrastructure as well as application development ecosystem for m-Governance in the country. The specific deliverables of the project are:

- To create a Mobile Service Delivery Gateway (MSDG) to enable the Government Departments both at the central and state levels to provide citizen centric public services over mobile devices (m-Governance services);
- To create an M-Governance Applications Store which will host the various mobile based applications for public services;
- To develop standards and guidelines for delivery channels, platforms and mobile applications for provision of public services through mobile devices.

Additionally, the project also aims to deliver the following outcomes:

- Seamless integration and delivery of mobile based public services through Mobile Service Delivery Gateway (MSDG);
- Unified Gateway access points for mobile based public services for all central and state Government Departments/ Agencies;
- Standardized applications for sending service requests and delivering mobile based public services.

Achievements during 2011-2012

- Framework for Mobile Governance has been finalized and approved in January 2012.
- MSDG – SMS Gateway, Interactive Voice Response System (IVRS), Unstructured Supplementary Service Data (USSD), and GPRS based applications have been launched.
- M-Applications Store – a Prototype has been developed and launched with 33 applications for public services.

National e-Pramaan Framework on e-Authentication

With the objective of establishing a common national infrastructure to ensure electronic authentication of online and mobile users to facilitate access to and delivery of public services, it has been decided to create and deploy a National e-Pramaan Gateway. This will facilitate e-authentication processes and mechanisms by all Government Departments and Agencies, as part of their service delivery strategy.

The specific deliverables of the project are:

- National e-Pramaan Framework on e-Authentication for Public Services
- National e-Pramaan Gateway
- Integration of e-Pramaan Gateway with NSDG, SSDG & MSDG

The project also aims to deliver the following outcomes:

- Common National e-Pramaan Gateway
- Deployment of e-Authentication processes and mechanisms by all Government Departments and Agencies for both online and mobile based users
- Electronic authentication of Government Web sites to build confidence and trust among the users

Electronic Delivery of Services Bill, 2011 (EDS Bill)

For promoting e-Governance in the country, the second Administrative Reforms Commission, in its Eleventh Report submitted in 2008, has recommended a clear road map with set of milestones to be outlined by Government of India with the ultimate objective of transforming the citizen-Government interaction at all levels to the e-Governance mode by 2020 through a legal framework, taking into consideration the mammoth dimension of the task, the levels of required coordination between the Union and State Governments and the diverse field situations in which it would be implemented.

To give effect to this recommendation of the Administrative Reforms Commission, and for resolving issues like resistance to change, systemic inertia, procedural hurdles, lack of transparency and legal impediments experienced in electronic delivery of services, it is proposed to enact a legislation which would mandate provisioning of all public services

compulsorily through electronic means from a specified date. Accordingly, it is proposed to enact the Electronic Delivery of Services Act.

The Draft Electronic Delivery of Services Bill, 2011 (EDS) has been approved by the Cabinet and introduced in Lok Sabha on 27th December, 2011 in the Parliament. The Lok Sabha has further referred the bill to the Standing Committee on Information Technology.

Formulation of Rules under Section 6A of the IT (Amendment) Act, 2008

The formulation of these rules was done by the Department after due consultation, both within as well as with outside agencies including State Governments and the general public. Rules under Section 6A of the IT (Amendment) Act, 2008 were framed. These rules provide for creation of a system of electronic delivery of services.

Horizontal Transfer of Successful e-Governance Projects

The Department launched a countrywide initiative "Horizontal Transfer of Successful E-Governance Initiatives" aimed at pervasively spreading the benefits of e-Governance across the country. One key component of this multi-pronged initiative is to identify and replicate major successes that have been achieved in some States. In the first phase, projects on Land Records, Transport and Registration were taken as they have potential for improving significantly Government-to-Citizen services.

- **Land Records Computerization Projects:** Roll out in entire state on Public Private Partnership model has been completed in Assam.
- **Computerization of Property Registration:** Roll out in entire state on Public Private Partnership model is being carried out in Rajasthan.
- **Computerization of Transport system at RTOs:**
  - Roll out in entire state on Public Private Partnership model has been completed in Punjab.
  - Implementation in 8 RTOs in the State of J&K is under progress.

National e-Governance Service Delivery Gateway (NSDG)

NSDG is a standard based middleware infrastructure which aims at providing secure messaging between the various departmental applications. It also helps provide interoperability among the various departmental applications by use of messaging standards. The National Gateway has been implemented by CDAC and has been Live in production since August 2008..Currently 3 services are available in the NSDG production environment- Issuance of Income Certificate, Issuance of Caste Certificate and the Trademark Verification service.

Achievements during 2011-2012

The specific achievements made under this project during 2011-12 are summarized as under:

- Go Live of the Trademark Verification Service of DIPP via NSDG in December 2011 for access by the MCA21 application.
- Integration of 22 services of e-Biz has been completed in the staging environment and this integration is currently under audit by STQC.
- Integration with UID application for NSDG as AUA has been successfully completed in the staging environment.
- Integration of NSDG with Passport Seva project for the Passport Verification service and the CCTNS application for the Police Verification service is currently underway in the staging environment.
- Dialogues underway with CBDT, MOPR, IVFRT, e-Migrate in order to integrate their services via NSDG.
- ISMS certification of NSDG is currently underway.
- MPTA (Marketing, Promotion, Training, Awareness) team operationalized by CDAC for the NSDG/SSDG project.
- Callback enhancement for NSDG implemented for e-Biz in December 2011.

Open Technology Center (OTC)

The Government has initiated the setting up of an Open Technology Center through NIC aimed at giving effective direction to the country on Open Technology in the areas of Open Source Solutions (OSS), Open Standard, Open Processes, Open Hardware specifications and Open Course-ware. This center is based in Chennai. This initiative will act as a National Knowledge facility providing synergy to the overall components of Open Technology initiative that are being taken by various communities and strengthen the support on the Open Technology. The OTC will provide the requisite support to the Standardization activity for e-Governance.

Achievements during 2011-2012

- Agri MMP – Hand holding Support for Agri MMP. A two week's training program on OSS was organized for two batches of Agri MMP team, New Delhi.
- Formulation of Device Driver Policy.
- State Portal – Support Services, Staging Server, Security Auditing & Hand holding for Tripura, Meghalaya in their State Portal.
- Awareness & Demo on Open Stack Cloud Computing and Virtualization was organized.

- E-Panchayat MMP – OSS Stack for e-Panchayat MMP was finalized.
- Migration Services for DAVP & e-Panchayat (data from one data base to other database).
- E-District MMP – Support and Hand holding to e-Districts MMP in Tamil Nadu State.
- Creation of Knowledge Portal for the identified OSS.
- Hand Holding Projects for adopting OSS.

Standards for e-Governance

Standards in e-Governance are a high priority activity, which will ensure sharing of information and seamless interoperability of data and e-Governance applications under NeGP.

Achievements during 2011-12

The specific achievements made under this project during 2011-12 are summarized as under:

- Metadata and Data Standards (MDDS) Demographic - Person Identification and Land Region Codification Ver 1.1 released.
- Mechanism for formulation of MDDS in various domains drafted.
- Formulation of MDDS for Panchayati Raj & PDS domains initiated.
- Draft document on Change and Release Management created.
- XML signature report submitted by Expert Committee and put up for public review.
- Technology Standards in Interoperability Framework for e-Governance (IFEG).
- IFEG document listing Technical Standards for the various generic areas for Phase I and Phase II put up for public review.
- Guidelines for compliance to Quality and Security requirements of e-Procurement Systems released.
- Expert Committee for formulation of standards and guidelines on Digital Preservation constituted.

India Portal

India Portal is a Mission Mode Project in the integrated service category under the NeGP. This Portal is envisaged to be a unified portal that will provide 'single window access to information and services to be electronically delivered from all state sector institutions and organizations.

Achievements during 2011-2012

- **Content Enhancement –** This is an ongoing activity and content is regularly enhanced under different sections/modules of India Portal namely Business, Overseas, Citizen, Governments, Sectors, Know India and Services.
- **Web Ratna Award -** Awards in 8 different categories for Government Ministries/ Departments/States/Offices to promote exemplary e-governance initiatives.
- **Training and support -** for website design guidelines implementation.

e-Governance Conformity Assessment Centers (eGCAs)

To ensure trust and confidence of the citizens and all stakeholders involved it is important to provide the necessary 3rd Party Audit and testing services for Compliance and Certification to various mission mode projects.

Through this project, the Department has established 7 "e-Governance Conformity Assessment Centres (eGCA)" across the country (i.e. Chennai, Bengaluru, Hyderabad, Delhi, Kolkata, Pune/Mumbai, Guwahati) to provide the requisite facilities for testing, audit and certification. Kolkata and Bengaluru centers are accredited internationally by A2La, USA for software testing. The eGCA centres are also providing services to various e Governance projects (both mission mode and other projects) covering following areas:

- Support to 17 Mission Mode Projects already given
- Seventy Five projects of central and state level completed
- Training to various Ministries/Departments on subject areas of Quality e-Governance provided
  - 150 Government officials on Sevottam (IS 15700) accredited by QCI
  - 8000 Industry professionals on various subject areas.

Other Achievements

- Six certification schemes launched (Website certification, biometric device certification, smart card certification, software replication, ISMS and ITSM certification schemes launched)
- Publication of two books and presentation of more than ten papers
- State-of-the-Art Biometrics device test lab. is planned to be setup at Mohali (new STQC IT Center)

India Development Gateway (InDG)

India Development Gateway (InDG) is a national level initiative that seeks to facilitate rural empowerment through provision of relevant information products and

services, responding to the strategic needs of the rural communities, in their local languages. InDG catalyzes the use of ICT for collaboration and knowledge sharing among development stakeholders representing from Government, NGOs, community based organizations, private, academic and research institutions. It is driven by an inclusive vision to harness the use of technology for the collective sharing of knowledge and wisdom that yields benefit to the unreached. This initiative is supported by the Department and being implemented by C-DAC, Hyderabad since 2006. As part of this initiative a multilingual platform (www.indg.in) has been established for knowledge sharing with information, products and services in 10 Indian languages on 6 identified verticals.

As the Rural landscape is set to take advantage of the flourishing ICT initiatives, by various institutions, and more specifically the 'Common Service Centres', during 2011, InDG focused its efforts towards enhancing its Unique Selling Proposition/Point(USP) and utility through developing selected value added products and services and piloting them in identified CSC clusters.

Assessment of e-Governance Projects

Keeping in view the need for a more comprehensive framework for assessment, the assessment strategy was revised to undertake three types of assessments:

- **Impact Assessments** which are primarily service seeker centric
- **Base Line Surveys** that establish ground realities in early stages of or pre-project implementation
- **Detailed Assessment** that provides a comprehensive view of the projects and the learning derived from the projects.

Accordingly the assessment framework was also revised to include the expanded scope for detailed assessment. To undertake the Assessment activities, agencies have been empanelled in three categories – Knowledge Partner, Research Institutions and Market Research Agencies.

Awareness and Communication

To take forward the progress made by various Mission Mode Projects under NeGP and enhance uptake of e-Services, the Government approved a 2-year project for NeGP Awareness & Communication. The project was approved to fulfil the following objectives:

- Build NeGP as an umbrella brand
- Create awareness about e-Governance services and service delivery points
- Expedite ownership/ stake of implementers into e-Governance/ NeGP

As the implementation of the various Mission Mode Projects gains momentum, awareness campaigns for increased uptake of services are being undertaken. A countrywide mass media campaign in 13 languages was undertaken in June 2011. The mass media campaign was further supported by on ground activities undertaken through various District e-Governance Societies (DeGS) in different States. For this purpose funds were released to nearly 250 DeGS. Further impetus to awareness amongst the policy makers and implementers is being provided through State e-Governance Consultation Workshops. A total of 11 workshops have been held in Delhi, Tamil Nadu, Andhra Pradesh, Gujarat, Assam, Jammu & Kashmir, Bihar, Himachal Pradesh, Punjab, Sikkim and Karnataka.

Efforts were made to enthuse younger generation. A targeted awareness programme was launched in which funding was extended to various central and state universities for organizing e-Governance workshops. So far, 11 such workshops have been held.

To support the brand recall of NeGP, a Theme Song has been created.

A feather in the cap of NeGP awareness generation was display of the Departments Tableau on e-Governance at the Republic Day Parade 2012.

HRD, New Initiative in e-Governance/GIS applications / ongoing Projects

With an objective of using innovative new technologies in the e-governance domain some pilot projects have been initiated and showcased. Some of competed projects Include:

- **e-Swaraj –Gram Swaraj Digital Approach :** This is an e-Governance initiative for creation of digital database of multiple thematic layers and development of decision support system for various natural resources management. The implementing agency is Jharkhand Space Applications Centre (JSAC), Ranchi and Jharkhand.
- **Remote Sensing and GIS Project on Integrated Land Management and Administrative Planning (ILMAP) in Manipur State on Pilot basis:** This has been initiated in the State of Manipur associating the Manipur Remote Sensing Application Centre (MARSAC), to develop and implement Integrated Land Management and Administrative Planning (ILMAP) on a pilot scale in one district for improving land resource management and delivery system. This has been completed.
- **Development of GIS based Integrated Infrastructure, Resource and Utility, Planning & Management system (IIRUPM) for Assam State on Pilot :** This has been initiated on pilot basis for Integration of information with all the attribute data of Government Line departments including resources such as forest, fisheries, water bodies, municipalities, health, education, employment, public utilities etc., and

development of Decision Support system. This is being implemented by Assam Electronics Development Corporation Ltd (AMTRON), Assam. Project is at the verge of completion.

- **Integrated Land Management and Administrative Planning (ILMAP) in East and South Districts of the State of Sikkim:** This has been initiated on pilot basis for development of special database and Integration of information with all the attribute data of Government Line departments including natural resources such as forest, water bodies etc. and also development of a web-based data dissemination system. This has been completed.

The following projects are under various stages of completion:

- **Development of Digital Land Resource Information System for Integrated Land Management for Mizoram State on Pilot Basis:** This has been initiated for development of special database and Integration of information with all the attribute data of Government Line departments including natural resources such as forest, water bodies etc. and also development of a web-based data dissemination system. Field survey has been completed and implementation is under progress.

- **Remote Sensing and GIS Application for Chennai City on e-Governance Aspect:** has been initiated for the development of interactive database information system and design of rapid visual screening procedure based on seismic hazard map on web. This is being implemented by Anna University, Chennai.

- **Automated Driving Test Track System for Regional Transport Department, Government of Karnataka:** The objective of this system is to standardize and automate the procedure of evaluating the driving skill of a driver, before granting him a license to drive on public roads. This system removes the subjective opinion of an examiner.

- **E-Cranti, Jhansi Jan Suvidha Kendra :** The main features are:

  - Round the clock availability of service
  - Warm welcome and positive response to citizen registering grievance
  - Grievance categorized based on their nature
  - Status tracking
  - Cross check and verifying the quality of the disposal of the grievance
  - Removing the middle man

- **Fast Tracking Delivery of G2C services, J&K:** The proposal is for fast tracking the delivery of G2C services in the State of J&K by utilizing the infrastructure of MPSEDC (Madhya Pradesh).

- **Implementation of e-Complaints System for the Maharashtra Police:** The key objectives of the project are:

  - Allow citizen to register complaints in a hassle-free manner ensuring greater transparency
  - Ensure that complaints are registered without any discrimination

Cyber Security

The Cyber space is borderless and actions in the cyber space can be anonymous. These features are being exploited by adversaries for perpetration of crime in the cyber space. The scale and sophistication of the crimes committed in the cyber space is continually increasing thereby affecting the citizens, business and Government. Cyber Security requirements are quite dynamic that change with the threat environment. A holistic approach has been followed towards securing country's cyber space by pursuing major initiatives including: (i) Security Policy, Compliance and Assurance, (ii) Security Incident – Early warning & Response, (iii) Security Training, (iv) Security R&D, (v) Enabling Legal Framework and (vi) Collaboration.

Security R&D

Security R&D initiative is aimed at development /enhancement of skills and expertise in areas of cyber security by facilitating basic research, technology demonstration and proof-of-concept and R&D test bed projects. A Working Group constituted with experts from Government, academic / R&D and user organizations provided advisory support for implementation of cyber security R&D. Promotion of cyber security R&D is carried out through sponsored projects at recognized R&D organizations with identified thrust categories: (a) Cryptography and Cryptanalysis, (b) Network and Systems Security, (c) Security Architectures, (d) Vulnerability and Assurance and (e) Monitoring and Forensics.

During the year 2011-12, R&D proposals were initiated and funded at premier institutions in the areas of (i) anti-malware solution for web applications and mobiles, (ii) active honeypots for distributed honeyet system, (iii) secure data aggregation system for wireless sensor networks, (iv) multimedia based content for cyber security awareness and (v) DDoS attack detection using Ensemble approach.

Ongoing projects were reviewed from time to time and follow up actions have been taken. Advanced version of Cyber Forensics tool kit Cyber Check suite to facilitate investigation of Cyber Crimes has been developed and released to user agencies. The capabilities of Enterprise forensic system have been enhanced. Hardware based

high speed data acquisition tool for imaging and mobile forensics toolkit Mobicheck V1.0 to facilitate acquisition and analysis of evidences from mobile phones have been developed. Cyber Forensics Training labs in North Eastern States, Jammu & Kashmir and Kolkata, Pune, Mumbai, Bengaluru have been set up to create Awareness on cyber crimes and train officials of Judicial and Law enforcement Agencies for handling and analyzing cyber crime cases. More than 5000 persons including 934 officers from North East region have been trained utilizing the infrastructure in these labs. Indigenous algorithms have been developed to detect content promoting hate crime.

A test bed with transmitter/receiver pair for distribution of cryptographic keys based on quantum mechanics has been developed. The device can transmit/receive cryptographic keys in line of sight using lasers of wavelength 780nm. A pilot system of biometrics based face recognition system with features for detection of Indian faces has been developed and provided to user agencies for rigorous testing. A working prototype of Person Authentication System based on Speaker Verification in uncontrolled Environment has been developed with Average Error Rate (AER) of 20% and is being refined for improving its performance. Speech Database of 500 speakers has been developed for speaker verification in English, Hindi and Assamese in multi-sensor (mobile phone, landline and microphone) and uncontrolled environment.

Development of an Enterprise Level Security Metrics (ELSM) tool to enable measurement of and improvement in, the effectiveness of Information Security Management System is in progress. Web-service based Information System Security Design and Operational Management tool for E-governance (WISSDOM2-egov) is being enhanced with identified additional services. A National Information Security Assurance Framework alongwith Security Controls (Implementation Guidelines and Enhancements) document, which suggests mechanism to ensure, continues compliance and monitoring has been developed and validated in user Departments.

Efforts in North East region

Efforts have been made towards capacity building at various institutions in North East region. The projects supported in this region helped in creation of cyber forensics training infrastructure, R&D infrastructure and research skill development. Cyber Forensics training labs have been set up in the States of Assam, Meghalaya, Sikkim, Tripura, Manipur (Imphal), Mizoram (Aizawl) and Nagaland (Kohima). 934 officers of law enforcement agencies have been trained utilizing the training infrastructure created. These officers have been provided general awareness training and also training on cyber crime investigation techniques.

A prototype system of Person Authentication System based on Speaker Verification in uncontrolled Environment has been developed by IIT, Guwahati and is being refined for improving its performance. Speech Database of 500 speakers has been developed for speaker verification in English, Hindi and Assamese in multi-sensor (mobile phone, landline and microphone) and uncontrolled environment. Speech Verification Lab has also been set up as part of the project efforts. Rajiv Gandhi University, Itanagar, Arunachal Pradesh is working on development of a system based on speech to control access of important resources in multi-lingual environment (Hindi, English and Arunachali). Tripura University initiated efforts for creation of a visual face database of North East persons and implementation of techniques for face identification.

The project efforts at Assam University, Gauhati University and Manipur University helped in developing expertise in the area of network traffic capture, data logging and analysis with the open source tools at these institutions. The experimentation and investigative efforts at Mizoram University led to capacity building in the area of application of Artificial Neural Networks for intrusion detection. The project team at Tezpur University has developed specific clustering and association rule mining approaches for network intrusion detection and validated them with both standard datasets as well as the dataset created by them. The team at IIT, Guwahati proposed a scheme using Discrete Event System for intrusion detection to detect Address Resolution Protocol (ARP) related attacks. In another project, Tezpur University team proposed an architecture for malware defense based on the vulnerability signature based approach.

Cyber Law

The Information Technology Act, 2000, a legal framework for transactions carried out electronically, was enacted to facilitate E-Commerce, E-Governance and to take care of computer related offences. Amendments to this Act were carried out through the Information Technology (Amendment) Act, 2008 to deal with the new forms of cyber crimes. The rules pertaining to the sections 6A, 43A & 79 of the Information Technology (Amendment) Act, 2008 such as (i) Information Technology (Electronic Service Delivery) Rules, 2011, (ii) Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011, (iii) Information Technology (Intermediaries guidelines) Rules, 2011 and (iv) Information Technology (Guidelines for Cyber Cafe) Rules, 2011, have been notified.

Indian Computer Emergency Response Team (CERT-In)

CERT-In is the national nodal agency for responding to computer security incidents as and when they occur. CERT-In creates awareness on security issues through dissemination of information on its website (http://www.cert-in.org.in) and operates 24x7 Incident Response Help Desk. It provides Incident Prevention and Response services as well as Security Quality Management Services.

The Information Technology Act, 2000 designated CERT-

In to serve as the national agency to perform the following functions in the area of cyber security:

- Collection, analysis and dissemination of information on cyber incidents
- Forecast and alerts of cyber security incidents
- Emergency measures for handling cyber security incidents
- Coordination of cyber incident response activities
- Issue guidelines, advisories, vulnerability notes and whitepapers relating to information security practices, procedures, prevention, response and reporting of cyber incidents
- Such other functions relating to cyber security as may be prescribed.

The activities carried out by CERT-In comprise the following:

Activities	Year 2011 -12
Security Incidents handled	5431
Security Alerts issued	19
Advisories Published	40
Vulnerability Notes Published	126
Security Guidelines Published	3
Trainings Organised	19
Indian Website Defacements tracked	14603
Open Proxy Servers tracked	2558
Bot Infected Systems tracked	12,798,761

CERT-In has evolved as the most trusted referral agency in the area of information security in the country. CERT-In is regularly interacting with CISOs of Critical Infrastructure Organisations and sectoral CERTs to ensure security of the critical systems, collaboration with IT product and security vendors to mitigate the vulnerabilities in various systems, cooperation with international CERTs and security organizations on information sharing and incident response, promote R&D activities in the areas of Artifact analysis and Cyber Forensics and security training and awareness.

Security Assurance Framework

CERT-In has taken steps to implement National Security Assurance Framework to create awareness in Government and critical sector organisations and to develop and implement information security policy and information security best practices based on ISO/IEC 27001 for protection of their infrastructure. Security Assurance Framework for Government Departments has been developed and validated in Government Departments. For communicating with these organisations, CERT-In maintains a comprehensive database of more than 1400 Point-of Contacts (PoC) and Chief Information Security Officers (CISO). As a proactive measure, CERT-In has also empanelled 60 information security auditing organisations to carry out information security audit, including the vulnerability assessment and penetration test of the networked infrastructure of Government and critical sector organisations. The technical competency of the empanelled organisations is evaluated by CERT-In with the help of test networks.

National cyber security policy and computer security guidelines

The draft National Cyber Security Policy has been prepared and circulated to all stakeholders for views/comments and hosted on website of the Department as well for public comments. The policy is intended to cater to a broad spectrum of ICT users and providers including Government and non-Government entities. Besides this, CERT-In, in coordination with MHA, NIC and other stakeholders prepared and circulated Computer security guidelines and procedures for implementation across all Central Government Ministries/Departments.

Crisis Management Plan

Crisis Management Plan (CMP) for countering cyber attacks and cyber terrorism has been prepared. The CMP has been approved by the National Crisis Management Committee (NCMC) for wider circulation and implementation. CERT-In has been conducting workshops to appraise the Central Ministries and States/UTs about the CMP implementation and all necessary assistance is being provided to Central Ministries and States/UTs with regard to implementation of CMP. The CMP is updated annually and the latest version was released in March 2011.

Cyber Security Drills

Indian Computer Emergency Response Team is carrying out mock drills with key sector organizations for accessing their preparedness in dealing with cyber crisis situation.

These drills have helped tremendously in improving the cyber security posture of the information infrastructure and training of manpower to handle cyber incidents, besides increasing the cyber security awareness among the key sector organizations. These drills at present are being carried out once in six months. Till date CERT-In has conducted 5 Cyber security drills of different complexities with 57 organizations covering various sectors of Indian economy i.e. Finance, Defence, Telecom/ISP, Transport, Power, Energy and IT industry.

Beside this CERT-In is also participating in cyber security drills at international level. During 2011-2012, two international drills involving Asia Pacific CERTs and one national drill involving IT industry sector have been conducted.

Security Cooperation and Collaborations

CERT-In plays the role of mother CERT and is regularly interacting with the cyber security officers of sectoral CERTs in Defense, Finance, Power, Transport and other sectors to advise them in the matters related to cyber security.

To facilitate its tasks, CERT-In has collaboration arrangements with IT product vendors, security vendors and Industry in the country and abroad. Security Cooperation agreements and MoUs have been signed with the various multinational IT Industry. This collaboration facilitates exchange of information on threats and vulnerabilities in relevant products, developing suitable countermeasures to protect these systems and providing training on latest products and technologies.

CERT-In has established collaborations with international security organisations and CERTs to facilitate exchange of information related to latest cyber security threats and international best practices. CERT-In is a member of Forum of Incident Response and Security Teams (FIRST).

CERT-In has become Full Member of Asia Pacific CERT (APCERT) since August, 2008. CERT-In has become Research Partner of Anti-Phishing Working Group (APWG) to counter and develop best practices for containing phishing attacks.

CERT-In is interacting with other international CERTs to exchange advance information regarding vulnerabilities and malicious code, responding to incidents involving attackers and victims of international jurisdiction. In the year 2011, CERT-In signed an MoU with US-CERT to enhance cooperation in the area of cyber security for rapid resolution of and recovery from cyber attacks.

As part of MoU with National Computer Board, Mauritius, CERT-In is providing advice to make CERT, Mauritius fully operational and become member of Forum of Incident Response and Security Teams.

Security Awareness

Creating security awareness among Indian communication and IT infrastructure organizations is one of the important roles of CERT-In. CERT-In is conducting training workshops to train officials of Government, critical sector, public/industry sectors, financial and banking sector and ISPs on various contemporary and focused topics of Information Security. CERT-In team members have provided training on Computer Forensics and Log Analysis to other Government organizations and Law Enforcement agencies, and also participated in various national and international conferences and delivered lectures on topics related to Information Security. In order to increase the outreach, CERT-In has engaged NASSCOM and Data Security Council of India (DSCI) to spread the cyber security awareness and facilitate interaction with various user groups. During the year 2011-12, CERT-In has conducted 20 trainings (including 3 for SC/ST/OBC) and 694 officers have been trained till December, 2011.

A portal "secureyourpc.in" has been created in collaboration with Microsoft, CII, NASSCOM and MAIT to help consumers and general users in securing their computers and information.

Cyber forensics

Cyber Forensic investigation facility at CERT-in is equipped with the equipment and software tools to handle cyber forensic investigations of the cyber crimes and has been carrying out imaging and analysis of digital evidence in the cases of cyber crimes. Hands on practical trainings were provided to the law enforcement agencies on investigation of Cyber Crimes, Computer Forensics - imaging and analysis of digital evidence, Mobile Forensics and Network Forensics at the training workshops organized by CERT-In. CERT-In is working with defence, banks, public sector enterprises, judiciary and law enforcement agencies in training their officials as well as extending the support in investigation of cyber crimes. Three manuals on cyber forensic techniques and procedures were prepared and circulated to Law Enforcement agencies.

CERT-In had provided hand holding support in selection and setting up of Cyber Forensics training infrastructure in the States of Nagaland, Manipur, Mizoram, Jammu & Kashmir, Sikkim, Meghalaya, Tripura and Assam. CERT-In has extended technical support to CBI-CFSL, New Delhi, CID, Kolkata and Karnataka State Forensic Lab in identification of cyber forensic equipments and tools. Lectures and practical training sessions have been provided by CERT-In during the workshops organized by the training institutes of law enforcement agencies and judiciary.

Early Warning System

CERT-In is implementing projects for Attack Detection and Threat Assessment at ISP and organization level to enable early detection of cyber threats /cyber attacks and issuance of early warning to take appropriate countermeasures to mitigate the attacks and contain the damage.

Controller of Certifying Authorities

The Information Technology Act, 2000 facilitates acceptance of electronic records and Digital Signatures through a legal framework for establishing trust in e-Commerce and e-Governance. For authentication of electronic transactions using digital signatures, the Controller of Certifying Authorities (CCA) licenses Certifying Authorities to issue Digital Signature Certificates under the IT Act, 2000. Indian Air Force was issued a Licence in August, 2011 to operate as Certifying Authority under the IT Act, 2000. Eight Certifying Authorities are operational currently and the total number of Digital Signature Certificates issued in the country grew to more than 28, 00,000 by December, 2011. For ensuring continued trust in this authentication framework, the Annual Compliance Audit of Certifying Authorities were conducted as per the requirements of Information Technology Act, 2000.

Technical Infrastructure

The Root Certifying Authority of India (RCAI) set up by the CCA is at the root of trust for authentication through Digital Signatures. Repository containing Certificates & Certificate Revocation List (CRL's) issued by CCA to the licensed CAs is being operated by the Office of CCA. The Disaster Recovery Site for RCAI is also operational. Policies relating to the website of CCA have been formulated in accordance with the Guidelines issued by the Department.

Enhancing trust

After the Root Certificate of RCAI was pre-installed in Microsoft's IE Browser, for ease of establishment of trust, process for pre-installation of Root Certificate in other popular Browsers like Mozilla, Firefox is in progress. To further enhance the level of trust in digital signatures, a proposal was prepared for setting up the Online Certificate Validation Service (OCVS), after discussion on the different possible implementation models.

Standards & Interoperability

A Notification relating to Standards upgradation with respect to use of higher key length (2048 bits) for subscriber certificates, use of Stronger Hash Algorithm (SHA2) and certificates with longer validity period was issued. In respect of upgradation of standards being followed in the Public Key Infrastructure (PKI) implementation in India, the key length for the subscribers has been changed to 2048 bits from 1024 bits. Fresh Public Key Certificates to the Certifying Authorities with SHA2 Algorithm has been issued.

A Notification has been issued for making provisions for the process for verification of the Digital Signature Certificate attached to the Electronic record.

Meetings of India PKI Forum were held at Jaipur on 25.08.2011 and Delhi on 22.12.2011 to discuss on promotion of PKI, implementation of Interoperability Guidelines and other related issues.

International Cooperation

For promotion of PKI, discussions/ meetings were held with the officials from Nepal, Rwanda, and Bangladesh. The process has been initiated by an Indian CA for implementation of PKI in Mauritius as per the MoU signed between office of CCA & ICTA of Mauritius.

Training & Awareness Generation

Under the Nationwide PKI Awareness programme on Digital Signature and Digital Signature Certificate, two days Workshop was held in Agartala, Srinagar and a three days Training programme was held in Raipur. Two National Symposiums were also conducted – one at Bangalore with focus on e-procurement and another at Kolkata with emphasis on Mobile-PKI. The office of CCA also participated in training programs in this area in various other academic institutions.

Legal Aspects

Under Section 28 of the Information Technology Act, 2000, information has been sought from the various service providers for investigation purposes. Legal action has also been initiated against a Service provider for not providing the required information.

Cyber Appellate Tribunal (CAT)

In accordance with the provision contained under Section 48(1) of the Information Technology (IT) Act, 2000, the Cyber Regulations Appellate Tribunal (CRAT) has been established in October, 2006. As per the IT Act, any person aggrieved by an order made by the Controller of Certifying Authorities or by an Adjudicating Officer under the Act can prefer an appeal before the Cyber Appellate Tribunal (CAT). This Tribunal is headed by a Chairperson who is appointed by the Central Government by notification as provided under Section 49 of the IT Act, 2000. Provision has been made in the IT amendment Act for the Tribunal to comprise a Chairperson and such number of other members as the Central Government may notify/appoint. The name of CRAT has also been changed to CAT.

The Chairperson extensively interacted with all the concerned Authorities/Officers to make them aware of the functioning of the Tribunal. He has participated in various National Level Seminars, Conferences, Workshops and Co-hosted a Western Regional Consultation Meeting on Cyber Law Enforcement Programme of National Project Committee on Enforcement of Cyber Law in which participants were Hon'ble Judges of Supreme Court, Judges of High Courts, Chief Justice of High Courts, Judicial Officers of many States, Senior Officials of Government of India.

Website of the CAT and Video Conferencing System are operational. An awareness programme was organised at Dehradun (Uttrakhand) in May 2011. Out of a total number of 18 appeals with the Tribunal as on April 2011, 9 appeals were disposed off till 30th June, 2011.

The Semiconductor Integrated Circuits Layout-Design Act, 2000

In India, though Intellectual Property (IP) legislations like Patent Act, Trade Marks Act, Copyright Act, etc., have been in place, however, protection of layout-designs of integrated circuits was one gap area of microelectronics hardware. In order to address this gap the Department has enacted Semiconductor Integrated Circuits Layout-Design (SICLD) Act, 2000.

To meet the objectives as per the provisions of the SICLD Act 2000, a Registry known as the Semiconductor Integrated Circuits Layout-Design Registry (SICLDR) was established with Head Office at Electronics Niketan, New Delhi. The jurisdiction of this Registry is whole of India. The Registry, as per the guidelines laid down in the SICLD Act and SICLD Rules, examines the layout-designs of the Integrated Circuits and issues the Registration Certificate to the original layout-designs of a Semiconductor Integrated Circuits for their protection.

Achievements during 2011-12

Semiconductor Integrated Circuits Layout-Design Registry (SICLDR) was made operational with effect from 1st May 2011. The Gazette notification has been issued to "Bring-into-Force" Sections (1(1&2), 2, 3(2), 4, 6 to 31, 54, 56 to 92, 95 and 96 of the SICLD Act 2000. Also Gazette notification of Convention Countries under Semiconductor Integrated Circuits Layout-Design Act 2000 was issued.

Sponsored Projects on Semiconductor Layout Design

Under the Project entitled "Specialized Human Resource Development in IC Layout-Design" at Pune University, around 150 specialized manpower – M. Sc. (One full semester IC layout-design course) and P.G. Diploma Course in IC Layout-Design has been developed over a period of 3 years. 30 specialised manpower were trained under M. Sc. (one semester) IC layout-design course. The approvals for initiation of P.G. Diploma course are in process. In addition to this, prior art data-base for Digital ICs and Analog and Mixed IC Designs has been generated and loaded in the Registry under two projects "Development of Database for Digital IC Layout Designs" implemented at CDAC Noida and "Development of Layout Design Database for Analog and Mixed ICs" implemented at Pune University.

Diffusion of Semiconductor Layout Design IP matters

4 workshops were organized at CDAC, Noida and Pune University under the DIT funded projects for industry, academia and users on SICLD Act and IPR issues in IC Layout Design Registration matters related to complex designs and the large Design Rules Check errors and techniques for copy detection of Layouts. The information about the SICLD Registry was also show cased at ELITEX 2011.

Semiconductor Integrated Circuits Layout-Design website

Semiconductor Integrated Circuits Layout-Design web site has been developed, tested and up-loaded. This website contains information regarding the SICDL Act and Rules, notices and notifications issued by the Registry, SICLDR reports, monthly issues on the "Semiconductor Integrated Circuits Layout-Design Journal", the downloadable formats of various application forms, etc.

Semiconductor Integrated Circuits Layout-Design Journal

The "Semiconductor Integrated Circuits Layout-Design Journal" is published on the 1st working day of every month under the SICLD Act on the Semiconductor Integrated Circuits Layout-Design web site. This journal gives information regarding the applications received for registration of Semiconductor IC layout designs.

Internet Governance

Internet Governance encompasses all activities pertaining to the management of the Critical Internet resources and other Internet Protocol related technologies, applications, resources and services. This entails formulation of governing policies, programmes and processes for establishment of a stable and robust Internet Infrastructure.

Achievements during 2011-12

Some of the significant initiatives and achievements of the Department in this area include: Research & Development Initiatives in the areas of - Next Generation Network, Application Development, Multilingualisation of the Internet, Web Accessibility for all, Infrastructure establishment, International representation of India's public policy concerns.

Infrastructure establishment

Indian Registry for Internet Names & Numbers (IRINN): The National Internet Registry of India called Indian Registry for Internet Names & Numbers (IRINN) has been established within the premises of the Department and is under the final stages of operationalisation.

Research & Development Initiatives

Deploying Omnipresent Ethernet Based Data-Centers in Actual Networks - Validation of Project Periscope: The project envisages validating Omnipresent Ethernet Switch developed through the Department funded project PERISCOPE (Pragmatic Efficient Reliable Internetworking Solution using Consumer centric Omnipresent Ethernet) in a real network through deployment. MTNL Mumbai has agreed to deploy switches made using the Omnipresent Ethernet technology in setting up two of their data-centers in Mumbai.

Mobile IPv6 by ERNET and IISc Bengaluru: The project envisages demonstrating the mobility supported by IPv6 Protocol for seamless transfer from one form of network to another such as LAN to WAN, etc.

Assessment & Evaluation of Internet Proliferation & Impact

India the Impact of Broadband – Assessment Report: The project proposes to study the Impact of broadband/internet on - the economy especially to GDP growth, Social Empowerment including education, healthcare and rural commerce, Government services.

Multilingualisation of the Internet

Internationalized Domain Names – Implementation for Indian Languages: ICANN has delegated Country Code Domain Names in 7 Indian Languages and scripts namely Hindi (Devnagari), Bengali (Bengali), Gujarati (Gujarati), Punjabi (Gurumukhi), Tamil (Tamil) and Telugu (Telugu). The IDN ccTLD strings have passed the string evaluation test and have been published and is now under the Root Zone delegation process. The Domain Name Policy for registration of Domain Names has been

drafted in consultation with States and is published on the website of the Department & C-DAC.

Development Implementation of Internationalized Domain Name (IDN) Policies (ABNF & Language Tables) for Registrars and Making IDN 22 Official Languages Compliant by CDAC Pune: The project is to develop and test all the backend registration processing tools for registration of Domain Names in Indian Languages by Registrar/registry and front-end GUI for registrant and registrar. IDN floating Keyboards, language Look-up tables, software for registration of valid domain names without replication worldwide will be developed under the project.

Application Development

Development of Information Forensic Framework for Secure E-Voting System by Thiagarajar College of Engineering, Madurai: The project envisages investigating the various aspects of creation, operation and evolution of Internet governance system and evolving a new methodological approach for authentication, authorization and access control for facilitating e-voting. The Framework has been developed and some samples have been demonstrated.

Development of Intelligent Search Engine for Concept Extraction Contextual Data Retrieval" – CDAC Bengaluru and IIIT Bengaluru: The project envisages development of an Intelligent Knowledge backbone that would help academics, including researchers, students, teachers, academic committees, academic institutions etc. The System framework was developed and demonstrated, content populating and field tests are under process.

Ongoing projects

Next Generation Network

Virtualized Cloud Computing Infrastructure Using Light-trails and Very Fast Switching: The project envisages integrating and deploying innovations at the physical and data layer to meet stand-alone end-to-end service manifested for cloud computing needs.

Migration to IPv6 from IPv4: The Department is supporting workshops and seminars on the need for early adoption of IPv6, training of professionals and network operators in deployment of IPv6 and dual stack architectural setup of existing IPv4 network to make the network IPv6 ready and the development of applications and services that would increase the demand for IPv6 in the country.

Web Accessibility for all

An Open Source Web Browser for the Blind People: The project envisages development of an open source web browser with voice feedback for the blind with speech facilitation for navigation or data entry in a web page. Tools developed include Text extraction engine; Text to Braille transliteration system. Integration with Braille Devices and open source English TTS engine to the web browser is under process.

Assessment & Evaluation of Internet Proliferation & Impact

Global Internet Governance and Advocacy (GIGA): The project envisages initiating and conducting fundamental and applied research for Legal Systems and Instruments and its interface with Internet Technology in every branch of Law Civil, Criminal, Evidential, Fiscal and International and dissemination amongst Policy makers in Executive, Judiciary, Legislature, Academia, Industry, etc.

New R&D proposals initiated

Next Generation Network

Design and Development of a Dynamic Firewall Solution: The outcome envisaged is to design and develop a dynamic firewall that shall provide mechanisms for firewall auto re-configuration, formulation of adaptive rules and ensures the rule and policy consistency.

Design & Development of Voice based Internet Browsing System in Hindi for the Health Domain: The outcome envisaged from the project is to develop a voice enabled search system for Visually Impaired persons. As also providing user Interface to query in Hindi in both Textual and Spoken form on the World Wide Web for Education and Health Domains.

Shruti-Drishti - Advanced Technology for Visually Impaired using a Novel Approach of PicDhwani (Picture and Character Visualization through Sound): The project envisages to convert stream of images into sound captured by camera. Develop a prototype system and demonstrate the same through a mobile handset and to teach C-DAC-NISAL Language (C-DAC's Non-Invasive Sound Accessible Lemmatization Language) to a group of young blind children.

Design and Development of a Cooperative High Performance Traffic Generator for Time-Sensitive Network Analysis (GENESYS): The outcome envisaged is the Design and development of a Cooperative High Performance Traffic Generator to generate reliable and accurate traffic by combining the software flexibility with high performance hardware and render a wide range of traffic patterns (Network, Transport, and Application/Session Layers) for Next Generation Networks using FPGA(Field Programmable Gate Array) platform.

Characterization of UDT for Bulk Data Transfer Applications in High Speed and Wireless Networks – C-DAC Hyderabad: Investigating the usage of UDT for Bulk Data Transfer applications in High speed and wireless networks and its analysis report on usage of UDT for bulk data transfer applications and UDT support for identified applications, Security enabled UDT, APIs and Test reports.

Testing and Deployment of IDN Tools, Maintenance and Up-gradation of Policies and Assistance to NIXI – C-DAC Pune: Providing Technical support to the .IN Registry for roll out of Domain Names in all Indian Official Languages. Interface tools, language specific engines, doe domain name registration in Indian Languages, fonts, etc. Organizing Training and Workshops / conferences for awareness and adoption of IDNs.

Virtualized Cloud Computing Infrastructure using Light Trails and Very Fast Switching – IIT Bombay: Develop, deploy, test & validate technologies of light-trails and Omnipresent Ethernet layer towards cloud computing needs. Creation of test bed to demonstrate the first solution for performance measurement from end-to-end of a network.

International representation of India's public Policy Concerns

ICANN - Governmental Advisory Committee (GAC) Secretariat in Department New Delhi: The Department is a member of the Governmental Advisory Committee of the ICANN. The GAC is an Advisory Committee comprising representatives of national governments, multinational governmental organizations and treaty organizations and distinct economies. It is the key forum for discussing the public policy issues relating to the Internet concerning the standardization, protocols and technology and affecting the social and economic life of the countries.

IGF: India is a member of the Multi Stakeholder Advisory Group of the Internet Governance Forum of the United Nations. India's concerns on the issues of public policy on Internet and its Governance is appropriately voiced in the meetings of the IGF through regular participation, holding workshops and Dynamic Coalition meetings and multi-lateral and bi-lateral meetings.

ICT Measurement and Indicators

Reliable data and indicators on access and usage of ICT help Governments to design and evaluate ICT policies and strategies, compare their ICT developments with those in other countries and adopt solutions to reduce the digital divide.

Achievements during 2011-12

- The Committee on ICT Measurement & Indicators met a number of times to discuss various ways and means to develop suitable ICT Indicators.
- The Department has commissioned a study on e-Development Index (eDI). The study has been assigned to National Council of Applied Economic Research (NCAER). The study on e-Development Index (eDI) is conceived as a composite national Index with an objective / goal to measure the progress towards an Information Society captured by economic growth, employment, innovation, productivity growth, competitiveness, Revealed Comparative Advantage (RCA) and human welfare facilitated by ICT.

Results-Framework Document (RFD)

Government of India has approved the outline of a "Performance Monitoring and Evaluation System (PMES) for Government Departments" to measure the performance of the Government by preparing Results-Framework Documents (RFD) for all the Ministries/Departments every year, which provides a summary of the most important results that a Department / Ministry expects to achieve during a financial year.

Accordingly the Department has prepared RFD 2011-12 with a vision entitled 'e-Development of India as the engine for transition into a developed nation and an empowered society' with Six Core areas namely:

- e-Government
- e-Industry
- e-Innovation / R & D
- e-Learning
- e-Security
- e-Inclusion.

The Sixth core area, viz., e-Inclusion has been introduced as a new objective in the RFD - 2011-12.

Technology and Application Development

Media Lab Asia

Media Lab Asia (MLAsia) endeavors to bring the benefits of the information and communication technologies and other advanced technologies to the common man. It is operating through collaborations with other organizations and experts (Government, NGO sector, academia, individuals and Industry) for development & deployment of ICT tools.

Recently MLAsia has taken up the Project "IT Research Academy" (ITRA) for capacity building of R&D in ICTE. ITRA operates as a division of MLAsia.

National e-Governance Division (NeGD) has also been created as an autonomous business division within MLAsia, for taking up the tasks being carried out by the Programme Management Unit National e-Governance Plan (PMU-NeGP) of the Department.

Achievements during 2011-12

Projects completed

Rural Health Management Information System (RHMIS) **-** Health-Asociado™:

The system empowers the health workers at grass root level by strengthening health data collection from the field and follow ups (reminder, alerts) using handheld devices. Centralized database stores the collected data and serves as an input to plan the policies and decision making for the better health services.

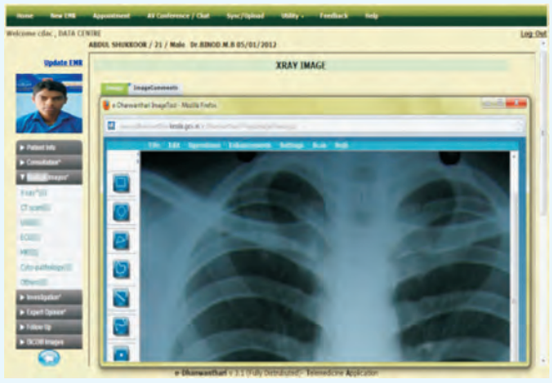
Web based application software is hosted at e-Governance data centre Thiruvananthapuram using URL www.rhmis.kerala.gov.in. 120 handheld devices (with application software) were provided to health workers at three blocks (20 PHCs/CHCs/BPHCs, 7.8 lakh population) of Mallapuram district, Kerala. 2.72 lakh population is registered in the year 2011-2012 and over all 7.22 lakh population is registered with the system. The Collaborating Agency is C-DAC, Thiruvananthapuram.

Low Cost mobile Telemedicine Van - mDhanwanthari :

The mobile telemedicine van (mDhanwanthari) has been implemented at 20 locations in Cherthala taluk of Kerala covering more than 4.34 Lakh rural population. The system is operating through KVM Hospital, Cherthala for the treatment of TB, Diabetic patients and mother & Child care. So far, more than 5000 rural patients have been benefited through the system during the period. The Collaborating Agencies: C-DAC, Thiruvanthapuram; KVM Hospital, Cherthala

Rural Telemedicine System - e-Dhanwanthari™ :

e-Dhanwanthari™ is well suited for providing care to under-served communities in the fields of diagnosis,



management of acute conditions and postoperative assessment of patients in remote areas. A specialist at one site delivers health care, diagnoses the diseases, provides therapy or consults with another physician or paramedical personnel at a remote site. The system has been integrated with 4 Speciality Hospitals Centers/Medical Colleges and 8 Remote Centers (CHC/PHC) in Kerala. More than 300 patients have been benefited from the system. The Collaborating Agency is C-DAC, Thiruvanthapuram

Development of embedded version of Sanyog (Iconic communication tool for persons affected with cerebral palsy & speech impairment)

Under this project, object based iconic communication interface has been enhanced for Bengali, Hindi and English. By object driven icon selection, the system can generate simple sentences in all the three languages. A USB interface has been designed for connecting the special access switches with the system. Embedded Sanyog has been tested at Linux based portable device. The Collaborating Agency is IIT, Kharagpur

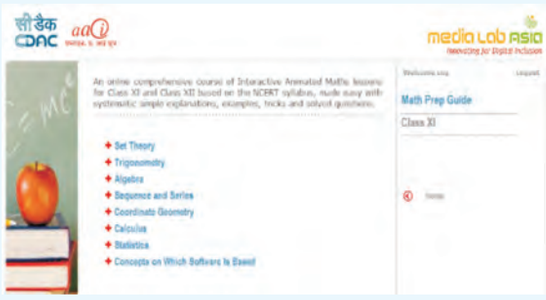
Balshiksha - Multimedia based pre-primary teachers resource kit for English and Hindi

A Comprehensive Integrated Multimedia based Pre-

primary Teacher's Resource Kit for Pre-Primary schools (Targeting Playgroup, Pre-Nursery, LKG & UKG) covering more than 200 modules has been prepared. The system can be used both by teachers and parents. The content has been integrated with voice over's, videos and interactive animations etc. The system is now available on www.balshiksha.in . The system is also available on mobile phone and standalone installation. The Collaborating Agency is C-DAC, Pune

Ganitmitra- Mobile and Internet based math prep guide application

The math prep guide software enables students to understand and solve the difficult Math questions with simple strategies. It also enables cracking a tough discrete quantitative problem by using easy algebra and common sense probability reasoning.



It provides Comprehensive chapter-wise manual (Class-XI & XII Mathematics syllabi) on the wireless mobile platform and internet in the most scientific manner. The system is now available on www.ganitmitra.in . The system is also available on mobile phone. The Collaborating Agency is C-DAC, Pune

e-vigyanshala- Mobile and internet based virtual laboratory for life science experiments for higher secondary education

More than 70+ Life Sciences experiments (for classes XI & XII syllabi) have been developed. It provides on screen instructions for navigation and has comprehensive Dictionary/vocabulary specific to an experiment. The content can be delivered through portal, mobiles and also

packaged on Multimedia Card & DVD's. The content has now been integrated with voice over's, videos and interactive animations etc. The system is now available on www.e-vigyanshala.in. The system is also available on mobile phone. The Collaborating Agency is C-DAC, Pune

Ongoing projects

Development of a set of alternative ICT models based on a study and analysis of the major ICT initiatives in agriculture in India to meet the information need of the Indian farmers

The project sponsored by NAIP, ICAR aims to study the past and present major ICT initiatives in agriculture in India. One national workshop on 'ICT in Agriculture – Gaps & Way Forward' and two regional workshops on 'Information Need of Indian Farmers' were organized. 'Consolidated Analysis Report on ICT Initiatives in Agriculture in India' and report on 'Information Need of Farmers' have been prepared based on the study and analysis of 26 ICT initiatives and primary data collection from 1300+ farmers from 57 villages of 12 States in India. The technical framework of the proposed ICT model i.e 'Integrated Information Dissemination System' alongwith its Functional Requirement Specification (FRS) is developed based on the major findings of this study. The Collaborating Agencies are National Institute of Rural Development, Hyderabad; Mudra Institute of Communication, Ahmadabad and Acharya N.G. Ranga Agricultural University, Hyderabad.

Gramin Gyan Kendra (GGK)

The project involved development of models for use of ICTs to improve social infrastructure and integrated rural development for livelihood enhancement. 27 multimedia contents in the area of agriculture, local craft and art, computer education and health care etc. have been developed. These contents have been accessed by 2600+ villagers through GGKs established under the project. Integrated Agri Services Programme (IASP) has been taken up through GGKs to provide agri advisory services (eSagu) along with information on weather, mandi rates and financial services etc. So far, 900+ farmers have been registered for eSagu advisory services, 1100+ farmers have availed information on weather and mandi rates. 2000+ agriculture advises have been delivered to farmers. The Collaborating Agencies are Banaras Hindu University and IIIT-Hyderabad

Chanderi Integrated ICT for development programme (CIIDP)

ICT & Social Entrepreneurship Programme:

Setup has been made for Block printing, weaving & embroidery work with required hardware. 110+ people trained in Embroidery work & Block printing on clothes. Training is going on for 45+ entrepreneurs in weaving process on looms, embroidery work & block printing on clothes. Till now 2500+ Chanderi weaving designs have been created in the centre.

Digital Tourism Promotion Programme:

Local Community Portal having social-cultural-historical-information on http://chanderiyaan.chanderi.org ; tourism portal on http://www.chanderi.org & Chanderi Product e-commerce portal on http://chanderiyaan.net have been made available. Mobile based application has been developed & ported on tourism website so that Pre tour & on tour information can be provided on mobile phones using GPRS to assist tourists. Virtual museum application has been developed for Chanderi monuments & ported on Chanderi tourism website.

ICT in Healthcare programme:

Web based telemedicine software e-Dhanwantari has been deployed at Chanderi PHC and Ashoknagar hospital to connect the existing public health facilities in Chanderi

with District Hospital, Ashoknagar. Medical consultations have been provided to more than 250 patients for basic medical test such as ECG, Spirometry, NIBP & SpO2 etc.

ICT in Education Programme:

Computer labs have been setup in 3 Madarsas & 10 schools. Internet connectivity has been provided by wireless network. 120 Madarsa students trained in basic computer skills & training is also going on for 60 Madarsa students in basic computing. Pre-primary educational contents for small children, virtual life science & math prep-guide applications have been installed in educational labs in schools to benefit Chanderi students. The Collaborating Agency is Digital Empowerment Foundation, New Delhi.

Content Generation for Capacity Building of persons with Blindness & Low Vision:

The project has been undertaken to empower Visually Impaired persons by making education easy for them by producing study material in Braille, audio, large print and E-text at graduate/post-graduate level. 184 titles (1915.5 hours) have been converted into Daisy audio books and 44 books (558 hours) have been created in synthesized voice in 2011-12 till December. It is benefiting a large cross section of Visually Impaired students. 21000 CDs of these audio books have been distributed during the period. The Collaborating Agency is National Association for the Blind (NAB), New Delhi

Comprehensive Satellite / Internet based National Network for Education, Training and Empowerment of the Differently-abled

The aim is to facilitate interactive program through Edusat based channel and information through Internet for students, parents, trainee teachers and professionals associated with and engaged in different areas of disabilities. The project has two parts:-

- **Navshikhar** - A distance learning network based on EDUSAT – The studio for channel "Navshikhar" has been set up at Rehabilitation Council of India (RCI), New Delhi. There is a regular telecast of programs on various disabilities related topics from 10:00 to 17:00 Hours from Monday to Friday. 473 Direct Reception System (DRS) centers at RCI recognized centers have been set up across the country. Setting up of 200 more centers is under process.
- **Punarbhava** - A Comprehensive Internet Portal- Portal provides information related to different disability issues. Work on making it accessible as per WCAG 2.0 guidelines is taken up. The Collaborating Agencies are RCI, New Delhi and ISRO.

Projects Initiated

Installation of 40 DRS (Direct Reception System) centers in NE region of the country for reception of EDUSAT based channel 'Navshikhar' in disability field

This project has been taken up on the basis of success of the project "Satellite/Internet based National network for education, training and empowerment of disabled" mentioned above. Collaborating Agencies are RCI, New Delhi and ISRO.

Deployment of "Punarjjani" in 100 schools in the country

ICT based integrated assessment tool 'Punarjjani' has been developed in collaboration with C-DAC, Thiruvananthapuram to empower special educators for easy, efficient, quick and regular assessment of mentally challenged children. The tool has been test deployed in 8 schools in the state of Kerala for last 2 years. The feedback from the schools has been favorable. MLAsia along with C-DAC, Thiruvananthapuram has now undertaken deployment of the tool in 100 special schools throughout the country. The Collaborating Agency is C-DAC, Thiruvananthapuram.

Deployment of CHIC (CAD tool for embroidery)

CHIC is a software tool which can be used by the artisans in making embroidery designs. It improves productivity, strengthens earlier design concepts and generates variety of employment and trade. Designs can be transferred from computer to different medium like clothes, paper etc.

Deployment of CHIC CAD has been done in Shahpur Jat, New Delhi; Kampilya, Farrukhabad, U.P.; National Institute For Entrepreneurship & Small Business Development (NIESBUD), Noida & Meerut, UP. 80+ artisans have been trained and more than 800 designs have been created using this tool. Training on CHIC software is being imparted on fashion designing course in embroidery design module at NIESBUD, MSME. Work is in process for deployment of the software in Kashmir & Pilukhuwa cluster for artisans. A project has been undertaken for deployment of tool in 100 locations in Delhi/ NCR region. The Collaborating Agencies are Draupadi Dream Trust, New Delhi; Sigma SciTech Ltd, Gurgaon and NIESBUD, MSME, Noida.

Test Deployment of Educational Content

Ganitmitra (Math Prep Guide) and e-vigyanshala (Life Science Experiments) have been test deployed at Hommerton Grammar School, Faridabad, Haryana. Balshiksha (Preprimary teacher's kit) has been test deployed at 3 schools in NCR. Teacher training has been provided during the deployment.

Test Deployment of Shikshan (Intelligent Tutoring System)

Shikshan has been deployed at Dept. of Business Administration, Lingaya University, Faridabad, Haryana. The Collaborating Agencies are iDaa Technologies Pvt. Ltd and Lingaya University, Faridabad.

Deployment of e-Galla

e-Galla has been test deployed at 5 rice mills in Kurukshetra district in Haryana and one MSME training center at Meerut, U.P. The Collaborating Agency is NIESBUD, MSME, Noida.

Other Projects

Development of MIS & Interactive Portal for National Trust

MLAsia developed the official website and MIS for National Trust, an autonomous organization of the Ministry of Social Justice & Empowerment for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. The website can be accessed at www.thenationaltrust.co.in, www.thenationaltrust.in. The Collaborating Agency is National Trust, MoSJE.

Technology Development for Indian Languages (TDIL) Programme

Standards in the Natural Language Processing (NLP) and Development of language resources are the key components of the advanced language technologies. TDIL Programme is taking initiatives in this direction by working with the international organizations. Many initiatives are being taken to develop linguistic resources and tools. The programme is also playing a catalytic role for wider proliferation of Indian language technology products and solutions by making them available to common people through Data Centre in addition to the resources for research for the language technology researchers.

The focus areas of the programme may be divided into following domains:

- Translation Systems
- Cross Lingual Information Access and Retrieval
- Linguistic Resources
- Human Machine Interface systems
- Language processing and Web tools
- Localization and content creation
- Standardization

Achievements during 2011-12

Technology Development

Five Sanskrit tools were launched on TDIL Data centre portal http://tdil-dc.in during 15th World Sanskrit Conference at Vigyan Bhawan held on 5th January, 2012.

Text to Speech (TTS) systems integrated with screen readers for six Indian Languages namely Hindi, Bengali, Marathi, Tamil, Telugu and Malayalam have been launched in public domain (http://tdil-dc.in) for free use by visually challenged section of the society.

Optical Character Recognition systems: Optical Character Recognition System for Punjabi and Hindi has been made available through http://tdil-dc.in to public for free and feedback.

Updated Machine Translation Facility: For English-Indian Languages (8 language pairs) and Indian Languages- Indian languages (4 language pairs) have been made available through TDIL Data centre http://www.tdil-dc.in.

Automatic Speech Recognition in Indian languages: Laboratory version of Automatic Speech Recognition (ASR) Systems for agricultural domain has been developed for six Indian Languages namely Hindi, Bengali, Assamese, Tamil, Telugu and Marathi.

Consortium Mode Projects –Phase –II: Phase –II of the Consortium Mode projects in the areas of (i) English to Indian Languages Machine Translation System, Indian Languages to Indian Languages Machine Translation System, Optical Character Recognition System. On-line Handwriting Recognition System, Cross-lingual Information Access and Text to Speech Systems in Indian Languages have been initiated having the objective of improved accuracy and with more Indian Languages.

Development of Language Technology Resources

Annotated Text Corpora and Speech Corpora: Annotated Text Corpora for 11 Indian languages i.e., Hindi, English, Gujarati, Punjabi, Oriya, Bengali, Telugu, Malayalam, Marathi, Urdu, Konkani and Tamil have been developed. Annotated Bodo Speech Corpora of 50 hrs

has also been developed.

WordNet: Wordnet for eleven Indian languages i.e. Assamese, Bodo, Bengali, Gujarati, Kashmiri, Konkani, Manipuri, Nepali, Oriya, Punjabi and Urdu is being generated.

Standardization

Unicode representation for 12 Indian scripts, used for representing 22 official languages of India including Vedic Sanskrit characters and symbols have been completed.

Newly adopted Indian Rupee Sign ₹ has also been encoded in the Unicode and ISO Standard. It has also been incorporated in the INSCRIPT and QWERTY Keyboard layout and submitted to BIS for final notification.

Best Practices for Internationalization of E-Gov Applications in Indian Languages have been released. The formal process for inclusion in E-Gov standards is being carried out by NIC.

Common Locale Data Repository (CLDR) for 4 more Indian Languages i.e. Marathi, Tamil, Telugu and Punjabi (totaling 11 Indian Languages) incorporated in CLDR 2.0 maintained by Unicode Consortium, USA.

The Department continues to participate in the Unicode Consortium, World Wide Web Consortium (W3C), and ELRA etc. to represent Indian scripts/languages in the futuristic standards/web technologies and recommendations. Standardization of International Phonetic Alphabet (IPA) for Indic languages; Internationalization of various W3C Standards namely Cascading Style Sheets (CSS), X-form and; Standards for voice browser are being analyzed for their adoption in Indic Languages

Dissemination

72 Indian Languages Resources and 16 Natural Language Processing (NLP) Software Tools have been made available through TDIL Data Centre Portal [http://tdil-dc.in]

TDIL Web-site: The TDIL website (http://tdil.mit.gov.in provides access to Indian language technology standards (Indian scripts, keyboard layout, font layout, etc), articles and reviews. The website also provides downloadable software and tools for Indian Languages.

Technical Journal of Indian Language Technologies: The VishwaBharat@tdil is a technical journal of Indian Language Technologies, which consolidates in one-place information about products, tools, services, activities, developments, achievements in the area of Indian Language software. All the issues are accessible through TDIL Web site.

Convergence Communications & Broadband Technologies

The next generation Communication, Network and Broadband technologies are making tremendous impact towards increased business productivity and social transformation. Broadband enabled internet applications have huge potential in practically all sectors of the economy and particularly in e-governance, e-health, e-learning, e-commerce and e-entertainment sectors. Numerous services and applications would evolve around the following: Broadband Access Network, Mobile and Wireless Network, Broadband Transport Network, CPE & Terminals, Management of Services and Network, Multimedia & Content and Security. The programme is aimed at supporting and developing capability in R&D in Convergence Communications, Broadband technologies and mission critical strategic areas. A number of academic institutions, industries, user organizations and research labs spread all over the country have been involved in the programme.

Achievements during 2011-12

Major projects completed during the year are development of Vehicle mount compact Tetra base-station, 4G Wireless standards and simulator, Indoor Personal Relays, Software Defined Radio for multiple channels, Cognitive Radio for efficient spectrum sensing algorithms, Wi-Max Quality of Service (QoS) test bed, Wireless Sensor Networks applications for transportation for which test beds were set up, Monitoring system using RFID tags in underground mines developed, Multi-media over IP, Ultra Wide Band transceiver with antenna, Smart Antenna for Wireless Applications.

Development projects are being implemented in emerging areas such as: High Performance Cognitive Radio Networks, Software Defined Radio, Innovation hub on Cyber-Physical Systems , LTE Test Bed, Rapidly deployable Wi-Max Wireless Mesh Network, Fiber to the Home, Vehicular Sensor& Mesh Network Based Intelligent Transportation System, Building Delay Tolerant Peer to Peer Network, Amateur Radio Advanced Digital Emergency Communication Network, Landslide Monitoring System for NE region using Wireless Sensor Networks (WSN), Low-cost WSN Monitoring System for Detection of Harmful Gases, WSN for underwater detection system, Android based application for Geo Profile, Multiple Language subtitles on DTH, Ultra-low Cost Microwave Imaging System using active RFID, Wireless Body Area Network for health monitoring, QoS provisioning in Wireless Networks, MIMO OFDM system approach for wireless networking and Mobile Adhoc Network (MANET)

Technology Development Council (TDC)

The prime objective of TDC programme is to promote and support research, design, development and engineering in the area of IT & Electronics. Currently, the projects in the following areas are being supported:-

i. IT Emerging Areas covering Perception Engineering, Ubiquitous computing, Promotion and development of Free and Open Source software, Bioinformatics

ii. High Performance Computing including Mobile computing, Cloud computing, Green computing and Digital Preservation

iii. Innovation Promotion & IPR

iv. Electronics System Development & Applications covering Industrial Electronics & Automation

v. Information Technology Research Academy Programme

Achievements during 2011-12

IT in Emerging Areas

Ubiquitous Computing

The National Ubiquitous Computing (UC) Research Initiative was pioneered by the Department which has led to the development of subsystem and components for Ubiquitous Computing Systems and Applications. Under this initiative, a landslide monitoring system has been developed and deployed in Munnar Mountains, Kerala, which works using solar power. A UC Test Bed, named PETUbi-Sim, has been designed and developed which provides virtual environment for developing ubiquitous networks and applications. Wireless networks like Wi-Fi, Bluetooth, GSM and Ubiquitous networks have been simulated using the simulator. Three new Indo-US joint R&D projects in Ubiquitous computing have been initiated.

Free and Open Source Software (FOSS)

The objective of Free and Open Source Software (FOSS) Initiative is to deal with the development and proliferation of Free and Open Source Software in the country. Under the National Resource Centre for Free and Open Source Software (NRCFOSS), Phase II project, various applications and systems have been developed. A software- as-a-service (SaaS) stack delivery model has been developed using only FOSS components. Several research papers have been published in International Conferences in the area of Mobile Computing, GNU/C compiler (GCC), Cloud Computing, etc. A National workshop on FOSS Desktop Accessibility was organised in August, 2011, at C-DAC, Mumbai. Deployment of Bharat Operating Systems Solutions (BOSS) in the country has progressed further in the area of e-governance and education. EduBOSS preloaded laptops for school students have been delivered to Tamil Nadu Government for distribution. A new project, BhartiSim – an Advanced Micro-Architectural Simulator has been initiated which will be developed and distributed as Free and Open Source Software to industry and academia. Development of a new component based operating system for cloud computing has been initiated.

Perception Engineering

The National Programme on Perception Engineering is a multi-institutional project, being implemented by – IIT-Bombay, IIT-Delhi, Jadavpur University, C-DAC, Kolkata, CEERI-Pilani, IIIT-Hyderabad. Some of the Perceptual models have been developed and being tested. Several workshops are organised by all the agencies involved, inviting participants from educational institutions and R&D organisations. Development of Perceptual systems for multimedia/video conferencing are being progressed with collaborative research among the participating institutes. Video mediated conferencing and perceptual robotics subsystems and components have been developed. E-nose and e-tongue have been developed by CDAC-Kolkata and are being tested with standards for calibration. National Brain Research Centre (NBRC) Gurgaon has recently joined as the 7th participating institute with four part projects on human brain perception and sensory behavior including performance assessment.

Bio-informatics

Some major outputs of this program are:

- Around 20 research papers published in national and international journals.
- Software tools/algorithms/databases generated viz., (i) Prediction of 3D structures of viral proteins (ii) Development of immune epitopes Database for Viral proteins (iii) An integrated drug target database developed which is designed to include all the information regarding the targets found in Plasmodium Falciparum (malaria) (iv) Small molecular inhibitors against three therapeutic targets involved in cancer (WWP1, Stat3, Stat5) identified in- silico, etc.

Five Centres are operational for Agri Bioinformatics Promotion. Some major Databases and Software tools developed under this Agri Bioinformatics programme are:

- Development of Database on Indian Wheat Genotype.
- Analysis of genomic and proteomic data of pathogen of coconut and araecanut for root wilt and yellow leaf disease.
- Database development in progress for molecular characterization and annotation of pigeon pea using comparative and structural genomics.
- Insilico characterization and classification of endangered and rare medicinal plants used by tribals in Gujrat.
- Analysis, Identification of Resistant / Antivirulance gene in crop genome with potential role in increasing their disease resistance.

Bioinformatics Resource and Application Facility (BRAF phase II) is operational at CDAC, Pune wherein Bioinformatics applications utilize the Garuda grid infrastructure and a grid-enabled Bioinformatics Resources (Computing Power, Databases and the

Software) provided to industry, academia, Usage Statistics. There are a sizeable number of users of BRAF both national and international. The usage percentage of machine is about 95%. Some major national users are Pondicherry University, University of Madras, RGUKT, Andhra Pradesh, Kannur University, Kerala, CAS, Chennai, IIT Chennai, JNU Delhi, IIT Mumbai, etc.

Virtual Observatory India

Virtual Observatory India developed by Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune and Persistent Systems, Pune is in operation. Data visualization and Data mining software tools developed will address many terabytes of data for making astronomical estimations and study on their co-relations. Mirrors or very large Astronomical data have been created. Software for plotting statistics, etc., have been made. There is close collaboration with related foreign organisations in this work. Phase I of this project have been completed earlier with some of the software tools as mentioned above. In the phase II part, 3D data mining and visualization, Grid computing, other special applications, refinement of earlier software are being progressed.

RFID Programme

RFID technology is rapidly gaining ground in all the major fields & has become a matured technology. A project entitled "Design & Development of an Object Tracking System for Environment Sensitive Items in Transit" was initiated to develop the technologies for monitoring transportation and storage of temperature sensitive items like Blood Bag, Food Articles, Medicines, etc. The project is being implemented by CDAC, NOIDA.

Self Recording Image Surveillance System (SRISS)

Self Recording Image Surveillance System (SRISS) is being designed and developed by CDAC, Thiruvananthapuram. The standalone embedded system for surveillance can be used in many areas, where image processing can be applied. The system when integrated with bio-metric devices and connected to the back end system can be used for applications like preventions of frauds in ATMs and intrusion detection in restricted, high security and strategic areas.

High Performance Computing

- PARAM Yuva with mass storage commissioned. The facility has been enabled as a Computational Resource on Grid. Applications in Bioinformatics, Materials Modeling, Aerospace, Weather Research and Forecast for regional weather (56000 villages) and climate change have been ported. Further research and porting of applications in different domains is under progress.
- Garuda Grid deployed on 64 institutions with NKN have been upgraded for service delivery and deployed.
- Developed Standards for mobile payments in close coordination with Mobile Payment Forum of India (MPFI). RBI ratified the standards. A Mobile payments certification lab was established at IIT Madras.
- A pilot test platform has been developed for voice enabled mobile banking transactions and in three languages to test the feasibility of using voice biometrics in banking transactions through mobile phones.
- A project to establish center of excellence for Digital Preservation with emphasis on developing tools, technologies, standards and best practices for long-term digital preservation in India is under progress.
- A project to develop ICT technologies for energy efficient and smart buildings with low carbon emissions is under progress.

Innovation and IPR Promotion

Technology Incubation and Development of Entrepreneurs (TIDE)

The Department in 2008 had launched a scheme for Technology Incubation and Development of Entrepreneurs (TIDE) in the area of Electronics & ICT. The scheme provides financial support for nurturing the techno-entrepreneurs as well as for strengthening the technology incubation activity at the institutions. 17 institutions are being supported under TIDE scheme. Around 66 start-up companies incubated across these centres.

Multiplier Grant Scheme (MGS) is 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 commercialisation. The scheme has been reviewed and extended till March 2013.

Patent and IPR

The objective is to develop requisite technologies, tools, utilities, processes, mechanisms and infrastructure so as to facilitate industry, R&D organizations as well as individual(s)/ professional(s) in acquiring, protecting, and globally commercializing Intellectual Property Rights (IPRs) in the E&IT sector. The major activities include technology development, provide facilitation services, and create awareness.

Achievements during 2011-12

A Scheme to Support International Patent Protection in Electronics & IT (SIP-EIT) by SMEs and Technology Start-Ups so as to encourage indigenous innovation and to recognize the value and capabilities of global IP and capture growth opportunities in the area of information

technology and electronics has been initiated. Under this scheme, 50% of the total costs towards filing international patent by SMEs / Start Ups will be reimbursed by the Department. 42 cases have been recommended under the scheme till date of which 5 have been recommended in the current financial year.

Facilitation Services are being provided for filing Patents (including International Patents), Copyrights, Designs and Trademarks in respect of creations / innovations of the Department's scientific societies and institutions which are implementing R&D projects funded by the Department. About 600 IPRs that include 150 Patents, 385 software copyrights, 5 designs and 59 Trademarks have been filed by the Department till December, 2011 and of which 350 IPRs have been obtained. During the year 15 Patents and 80 software copyrights were filed.

Technology development projects, which can augment IPR infrastructure, add efficiency to the IPR process, reduce piracy and help the IPR implementing agencies have been initiated/completed. The completed projects include: Text Plagiarism detection S/w tool- Amrita Univ. Coimbatore and Development of Semantic Web Portal for TKDL-MNNIT, Allahabad and Web based tool for e-verification of confusingly similar trademarks, Dayalbagh University, Agra and Web Based Patent Analysis and management- CDAC, Pune. Prior Art Search Centres have been set-up at the Department and CDAC Pune and started giving services to ICT innovators and researchers.

Towards creating awareness to enable the country to absorb modern IPR Culture and its benefits around 10 IPR clinics were organized. A comprehensive programme for creating IPR awareness in the ICT sector has been initiated by the Department. IIT Kharagpur has also been supported for developing a multimedia IP teaching tool for students and academia under this programme.

IT for Industrial Application

- Through Automation System Technology Centre (ASTeC) programme, infrastructure facilities have been created at CDAC, Thiruvananthapuram as nodal Centre and a number of technology modules have been indigenously developed for automation and control applications in the process industries. Some of the technologies/instruments developed and field tested satisfactorily are Multiloop Controller, General Purpose Controller, Low Power Controller, Open SCADA System, Wireless Sensor Network base and remote stations, Process Simulation Platform, Advanced Process Control Software Libraries, Common Communication Gateway, Colour Sensing System and Real-time Expert System. These technologies have been given wider publicity by way of showcasing the products in national and international technical exhibitions and now are ready for technology transfer to interested industries. Some of the technology modules are being deployed for field trials in two demonstration projects at thermal power plant and water treatment plant to demonstrate the deliverables.

- Under Intelligent Transportation System project, technologies of Wireless Traffic Control System (WTCS), Intelligent Parking Lot Management System (IPLMS), Red Light Violation System have been developed and field-tested. The technologies of WTCS and IPLMS are now ready for technology transfer. Also the concept of Traffic Congestion Management System using RFID and Networking technology has been demonstrated. Development of Second Generation Area Traffic Control System (CoSiCoSt 2G) has been progressed and an Open Source Traffic Simulator has been developed. Development activities were also progressed for the Real Time Traffic Counting & Monitoring System, Intelligent Transit Trip Planner and Real time Route Information System and Advanced Traveller Information System for Indian Cities.

- The technology development of an Online Surface Inspection System has been completed and it has been implemented at Bokaro Steel Plant for top surface scanning.

- Under Electronics for Agriculture and Environment (E-AGRIEN) project, creation of R&D Infrastructure has been progressed at nodal centre C-DAC, Kolkata. As part of E- ARGRIEN collaborative research 7 sub projects viz. Development of (i) Electronic Nose for monitoring Industrial Obnoxious Odorous Constituents generated from Pulp and Paper industries, (ii) Web Enabled Access of Agricultural Information, (iii) Application of Digital Image Processing Technologies in Tasar Sericulture, (iv) Handheld E – Nose, (v) Tools for a Decision Support System Framework for Tea Production System using a Wireless Sensors Network, (vi) Membrane Electrode Array Based Novel Sensing System for Rapid Taste Characterization of Food and Agro Produces and (vii)Electronic Olfaction for Biotechnology Applications have been taken up by CDAC- Kolkata jointly with other institutes/organisations.

- A new project initiated in March, 2011 on development of Climate Control System for Greenhouses used in Agri-Research has been progressed during the year.

- Also second phase of National Mission on Power Electronics Technology (NaMPET) has been initiated.

Information Technology Research Academy (ITRA)

IT Research Academy (ITRA) is a National Programme to build a national resource for advancing the quality and quantity of R&D in IT while institutionalizing an academic

culture of IT based problem solving and societal development.

The ITRA programme is being implemented by a separate Division of Media Lab Asia. A Project Steering and Implementation Group (PSIG) has been set up for initiating the ITRA activities.

Strategy Formulation Meeting (SFM) on "IT Based Innovations in Water Resources Sustainability" was organized from 28-30th September, 2011 in Delhi. The objective of the SFM was to define specific goals & principles and develop institutional/organizational framework, research thrust areas, implementation & assessment plan and plans for partnership, collaboration & mentoring.

Another Strategy Formulation Meeting on "Mobile Computing, Networking & Applications" was organized from 10-12th October, 2011 in Delhi. Both the meetings were attended by 100+ participants from academia, Government and industry, from India as well as abroad. As a sequel to these SFMs, Requests for Proposals (RFP) for both the focus areas were prepared and circulated. Till December 2011 about 30 proposals on "IT Based Innovations in Water Resources Sustainability" and about 60 proposals on "Mobile Computing, Networking & Applications" have been received and are being reviewed.

Medical Electronics & Telemedicine

Under Medical Electronics & Telemedicine Programme, activities relating to research and development in the area of medical electronics equipment, telemedicine and health informatics have been supported at different research and academic institutes in the country. The programme has supported development and deployment of indigenously developed low cost state-of-the art medical electronics equipment/ technology, creation of infrastructure to support production of medical electronic equipment in the country, deployment of web based telemedicine applications and solutions, supported research in various areas of health informatics and setting up of centres of excellence in specific areas of medical technology.

As part of the major initiative, development and deployment of 6 MV integrated Medical Linear Accelerator (LINAC) machine up for cancer treatment was taken up at SAMEER, Mumbai during 10th plan. As first phase of this activity, two machines (SIDDHARTH 1 & 2) were developed and commissioned at Mahatma Gandhi Institute of Medical Sciences (MGIMS), Wardha and the other at Regional Cancer Centre (RCC) Adyar, Chennai. These two machines are being used for treatment of cancer patients and feedback received is very good. During the second phase of this activity named as Jai Vigyan-II undertaken in 11th plan, which is currently ongoing, it has been envisaged to deploy four more 6 MV medical LINAC machines for cancer treatment in another four hospitals. In the Jai Vigyan-II, the first LINAC machine (SIDDHARTH-3) has been fabricated and final tests are being conducted at SAMEER, Mumbai. The development of sub-systems for the next three LINAC machines (SIDDHARTH- 4, 5 & 6) has been progressed and is in advanced stage of fabrication. These LINAC machines will be commissioned in the four identified hospitals.

In order to meet the requirement of LINAC tube indigenously, Department has funded another project to create special infrastructure facility required for batch production of 6 MV LINAC tube and LINAC machines for medical as well as industrial applications at SAMEER Navi Mumbai, Kharghar campus. This facility is ready and various test equipments including furnaces needed for manufacturing and testing of LINAC tubes and machines have been installed. After necessary certification from AERB and approval from local authorities, it would be possible to use this infrastructure facility to assembly, testing and evaluation of the complete medical LINAC machine.

To provide more comprehensive treatment options in radiotherapy for cancer patients, another project for development of an Advanced Medical LINAC System with dual photon and multiple electron energy beams has been supported at SAMEER, Mumbai. In this project development of the state-of-the-art Medical LINAC with beam of dual photon energy of 6 & 15 MV and electronic beam with energies of 6, 9, 12, 15 & 18 MV is carried out indigenously. The development of various sub-systems was progressed.

As part of telemedicine and health informatics activities, Wireless Medical Information Access Server (WMIAS) has been developed by Webel ECS Ltd in collaboration with IIT Kharagpur through funding from the Department for supporting access of Medical Information from anywhere using PC based and hand held devices. Personal Digital Assistant (PDA) and Mobile Phone based clients have been developed for exchange of medical information with WMIAS so that doctors and other medical personnel can access patients' relevant information even when they are on the move from ward to ward in the hospital. Telemedicine software developed was installed and made functional at multiple nodal hospitals. The project has been successfully completed.

As part of another initiative, National Resource Centre (NRC) for Telemedicine and Biomedical Informatics has been established at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow through funding from the Department. U.P. State Government also has provided funds for construction of the building and other infrastructure for the NRC. The centre has developed expertise and trained about 500 medical and paramedical professionals. Ministry of Health & Family Welfare has chosen it as National Resource Centre for implementation of country wide National Medical College Network (NMCN).

Also under a project funded by the Department, C-DAC, Thiruvananthapuram has developed and deployed a Decision Support System called "Doctor's Workbench" at Regional Cancer Centre (RCC), Thiruvananthapuram. This system enables the clinicians to access the

complete medical record of the patients at their desktop. The system was developed after a comprehensive consultation with doctors to ensure that all the data needed is available in the system. The system is operational in several clinics of RCC.

Electronics Systems Development & Applications

Achievements during 2011-12

Through Automation System Technology Centre (ASTeC) programme, infrastructure facilities have been created at CDAC, Thiruvananthapuram as nodal Centre and a number of technology modules have been indigenously developed for automation and control applications in the process industries. Some of the technologies/ instruments developed and field tested satisfactorily are Multiloop Controller, General Purpose Controller, Low Power Controller, Open SCADA System, Wireless Sensor Network base and remote stations, Process Simulation Platform, Advanced Process Control Software Libraries, Common Communication Gateway, Colour Sensing System and Real-time Expert System. These technologies have been given wider publicity by way of showcasing the products in national and international technical exhibitions and now are ready for technology transfer to interested industries. Some of the technology modules are being deployed for field trials in two demonstration projects at thermal power plant and water treatment plant to demonstrate the deliverables.

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The technology development of an Online Surface Inspection System has been completed and it has been implemented at Bokaro Steel Plant for top surface scanning. This is a first indigenous technology development attempt in a complex iron making process, which helps in detection of defects.

Under Electronics for Agriculture and Environment (E-AGRIEN) project, creation of R&D Infrastructure has been progressed at nodal centre C-DAC, Kolkata. As part of E- ARGRIEN collaborative research 7 sub projects viz., Development of (i) Electronic Nose for monitoring Industrial Obnoxious Odorous Constituents generated from Pulp and Paper industries, (ii) Web Enabled Access of Agricultural Information, (iii) Application of Digital Image Processing Technologies in Tasar Sericulture, (iv) Handheld E – Nose, (v) Tools for a Decision Support System Framework for Tea Production System using a Wireless Sensors Network, (vi) Membrane Electrode Array Based Novel Sensing System for Rapid Taste Characterization of Food and Agro Produces and (vii)Electronic Olfaction for Biotechnology Applications have been taken up by C-DAC, Kolkata jointly with other institutes/organisations.

A new project initiated in March, 2011 on development of Climate Control System for Greenhouses used in Agri-Research has been progressed during the year.

Second phase of National Mission on Power Electronics Technology (NaMPET) has been initiated in January 2012 with project duration of 60 months.

Electronics Components and Materials Development Programme

Electronic materials and components developed out of these materials are critical backbone of electronic hardware, and the equipments used in Information Technology (IT) and telecommunication sector. Innovation of advanced material and associated process technology enable the world to miniaturize electronics devices, which in turn contributes to the growth of ICT and electronics sectors. Electronic Materials Developments Programme (EMDP) focuses on sponsoring R&D programmes in the emerging field of material science and technology at leading institutions such as C-MET, IITs, IISc, CSIR labs, etc. The scope of the programme is to develop new materials, process methodologies and technologies leading to components or equipments. Thrust areas include photovoltaic, energy storage, information storage materials, chip components (resistors, capacitors, inductors), flexible electronics, sensors materials, electronics device packaging, lead free glass, paste, nano-technology and applications, fibre communication, biophotonics, green photonics, special optical fibers-photonic crystal fibers, optoelectronic packaging, nanophotonics, polymers for photonics, photonics sensors, etc. Some of the key areas focused include environmental impact during manufacturing, energy saving aspects of equipment operations and electronic waste management.

The ongoing projects are development of broadband magneto-dielectric nano-particles based Electromagnetic Interference (EMI) shielding materials, hybrid solar cells based on organic polymers and inorganic nano particles, design and development of piezoelectric multilayer actuator for micro valve, nanoscale magnonic crystals based GHz frequency filters and attenuators, pilot production of nano-PZT compositions and piezo-ceramic components for applications such as underwater SONAR transducers, ultrasonic cleaners and medical, polymer based sensors, prototypes aprons, glass sheets and curtains from lead-free x-ray absorbing materials, organic film transistors, single molecule biophotonic tool, differential reflectance modulation sensing for DNA detection, rare-earth doped fibers for high power fiber lasers, III-V-nitride materials for mid-infra-red opto-electronic devices, optical

isolators and optical switches using quantum dot base photonics glasses, fiber Raman sensors, blue Organic Light-Emitting Diode (OLED), innovative light extraction technology for white OLEDs, solid state lighting based on Ultra Violet (UV) LEDs and building up a base for photonic Manpower.

Under the environmental impact programme, ongoing projects are the development of an environmentally sound recovery process of metals from printed circuit boards and novel recovery and conversion of Waste Electrical and Electronic Equipment (WEEE) plastics to value added products.

Achievements during 2011-12

- Establishment of testing and certification facilities for the Hazardous Substances as per European Union (EU) directive of Restricting the use of Hazardous Substances (RoHS) at C- MET, Hyderabad
- Development of lead free x-ray absorbing coating materials for various applications at C-MET, Pune
- Synthesis of nano NTC material and development of chip-in-glass fast response thermal sensors at C-MET, Thrissur
- Oxide films and nanostructures for advanced sensors & energy systems at NCL, Pune
- Tunable and multi-wavelength fiber laser for fiber optic applications at IIT, Bombay
- Development of integrated optic single channel Add-Drop Multiplexer in SOI platform for fiber optic communication system and its packaging at IIT, Madras & SAMEER, Mumbai
- Developing ultra wideband optical sources from rare-earth codoped glass waveguides-fabrication and characterization at IIT, Delhi
- Development of a unified approach for realizing Fiber Bragg Grating with long term stability at IIT, Madras and IISc, Bangalore.
- Development of FBG Sensor system for electrical equipment.

Microelectronics Development Programme

Recognizing the importance of microelectronics as the leading edge technology-powering nation's growth, Microelectronics Development Programme was initiated in 1980s. The thrust of Microelectronics Development Programme has been to develop - core R&D capabilities, technologies and trained manpower in the country and use it as a catalyst for development of overall Semiconductor Industry in the country.

In addition to the ongoing R&D projects, three new projects have been initiated in this year.

Achievements during 2011-12

New Projects

- Design and Implementation of Low Power Analog front end Modules for wireless Sensor Networks –National Institute of Technology, Tiruchirappalli: The project aims at Design and Implementation of Low Power Analog trans-receiver suitable for implementation in Complementary Metal Oxide Semiconductor (CMOS) 180nm technology.
- Thermal Aware Testing of VLSI Circuits and Systems – Indian Institute of Technology, Kharagpur: The objective of the project is to develop strategies for ensuring low temperature during VLSI circuit testing and thermal aware scheduling for testing System-on-Chip (SoC) and Network-on-Chip (NoC) designs.
- Analog Mixed Signal and Radio Frequency Integrated Circuit (RF IC) Development and Test for Biomedical Application – Indian Institute of Technology, Bombay: The project aims at development of expertise in the design and testing of analog, mixed signal & RF ICs for bio-medical applications.

Design & Development

Developing Analog Mixed Signal Design Domain

Analog Mixed Signal Design is the backbone of the Integrated Circuit Designing. Accordingly four projects in this area have been supported at IIT Madras, IISc Bangalore, IIT Kharagpur and CEERI Pilani. These projects focus on different aspects / areas of Analog Mixed Signal Design. The focus of IIT Madras project is Ultra-High Speed data Communication and Data Conversion; IISc Bangalore on Wireless Communication; CEERI Pilani on Instrumentation Applications and IIT Kharagpur on Development of Computer Aided Design Environment for CMOS Analog Circuits. Some of the research results in these projects are as follows:

IISc Bangalore under the project "Centre for analog Mixed Signal Integrated Circuits" has fabricated 4 test chips in 0.13um process. Two of these are undergoing testing.

Following are the achievements of IIT Madras under the project "Centre for Analog Mixed Signal Integrated Circuit Design":

- A new family of active filters called Gm-assisted-OTA-RC filters have been conceived, designed, fabricated, tested and reported. A journal paper concerning this appeared in the IEEE Journal.
- An 11bit 15 MHz bandwidth oversampled single bit Analog to Digital Convertor with a

sampling rate of 1Giga Sample per second has been taped out. This chip was taped out in a United Microelectronics Corporation (UMC) 0.13um CMOS process through Europractice. The chip was functional and the results were presented at an International Conference.

- A 14bit 16 MHz bandwidth oversampled multibit ADC with a sample rate of 800 Msps has been designed and taped out in a 0.18um CMOS process. A paper based on this work was presented at an International Conference.
- Low spur Phase-Locked Loop (PLL) design: A new technique that reduces spurs in a PLL has been investigated. It was published as a full paper in the IEEE Transactions on Circuits and Systems.
- Adaptive Equalizer Design: A 10Gbps adaptive equalizer chip was taped out in 0.13um CMOS.

CEERI Pilani has designed, fabricated and tested a 10-bit ADC including instrumentation amplifier and other circuits in 0.35-micron technology.

IIT Kharagpur under the project "Design Automation of Analog VLSI" has developed a prototype software package (OpAmpDESIGN) for 2-stage op-amp circuit.

Digital Programmable Hearing Aid (DPHA)

C-DAC, Thiruvananthapuram has developed an Application Specific Integrated Circuits (ASIC) based DPHA. The ASIC has been targeted to 130 nano-meter technology. About 1632 nos. of Hearing Aid (Body Worn type) PCB have been assembled and tested and mechanical assembly of 617 units also completed. Earlier, field trials of Body Worn Type DPHA was carried out at leading hospitals/institutes like Ali Yavar Jung National Institute for Hearing Handicapped Mumbai, All India Institute of Speech and Hearing, Mysore, CMC, Vellore & MERF, Chennai.

CODEC (Coder-Decoder)

The building blocks for CODEC have been designed and fabricated at IIT, Madras.

Micro-Electro Mechanical Systems (MEMS) based Gas Sensor for Volatile Organic Compounds (VOCs) and Pollutant Gases

Process of standardizing the lift-off technique to define fine platinum lines for micro-heater and Platinum Resistance Thermometers (PRT) applications is underway.

Feasibility Report "Development of Indian Microprocessor"

A Study Team was constituted to carryout "Feasibility Study and preparation of draft proposals for India Microprocessor" by C-DAC, Bengaluru. Recommendations of the study report are being examined.

Facility for Low Temperature Co-fired Ceramics (LTCC)

This project has been supported jointly with National Programme on Micro and Smart Systems-Defence Research and Development Organization (NPMASS-DRDO) at CMET Pune. The activities related to auto-routing and placement, small line width (100 microns) preparation by screen-printing, Channel fabrication by milling machine and brazing of metallic pins on individual samples completed.

Re-configurable Techniques for Reconfigurable Computing Systems (RCS)

IISc Bangalore under the project "Reconfigurable computational Structures for CMPs/MS- SoCs Platform" has developed Architecture of a Meta-platform for Applications-on-a-chip (AOC) solutions and has synthesized the Meta platform on Field Programmable Gate Array (FPGA) board.

CEERI Pilani, under the project "Design and Development of System Level Re-configurable techniques for reconfigurable computing system" has developed a Real Time Operating System support with 3 partial reconfigurable regions. A bit stream coordinate translator tool for vertex – 4 FPGA also developed.

Other Technology Development Projects

Under the project "Design of an Embedded Processor for Smart Camera System" CEERI, Pilani and IIT Delhi have jointly developed and lab demonstrated the active smart camera having the capability to facilitate intelligent processing of captured images and purposive movement of the camera based upon visual feedback.

Software implementation of machine translation and text summarization for natural language processor application completed in a project supported at IIT, Kanpur.

Patents

During the year 2011-12, following 3 patents have been filed under the R&D projects:

1. Patent application for "A Secure Programming Interface for non-volatile Memory in an embedded device" by CDAC, Thiruvananthapuram.
2. Active filters called Gm-assisted-OTA-RC filed by IIT, Madras under Patent Cooperation Treaty (PCT).
3. Low Distortion Filters by IIT, Madras under Patent Cooperation Treaty (PCT).

In addition to above the following Patents under the R&D projects are being prepared/ submitted:

1. CEERI, Pilani – 2 patents under project "Design of an Embedded Processor for Smart Camera System".
2. IISc, Bangalore Analog Designs – 5 patents under the project Centre for analog Mixed Signal Integrated Circuits.
3. C-DAC, Thiruvananthapuram – One Patent application for "Programmable DSP SoC For Low Frequency Applications Incorporating Power Reduction Through Threshold Based Switching Technique and Macro Management".

Publications

37 papers have been published/presented in Journals, National/International conferences/workshops/ seminars. This included 3 papers, which were invited as a long version for the IEEE Journal of Solid State Circuits.

Nanotechnology

The projects initiated under nanotechnology initiatives programme of the Department have been progressing for the development of nano-materials, nano-devices, subsystem, system and human resource development in the area of nanoelectronics. The following are the achievements during the year:

New Projects initiated

Following new projects have been initiated during the year 2011-12

Centre for Nano electromechanical Systems (NEMS) and Nanophotonics at IIT Madras

The centre for Nano-Electro-Mechanical Systems (NEMS) and Nanophotonics is being created at IIT Madras with work focus on:

- RF Blade nanoresonator
- Biomolecular Detection System using
  - Silicon/silicon nitride Nanoresonator
  - Nanoporous membrane based particle sensor
- Nanophotonics components/ systems based on Silicon on Insulator (SOI):
  - Single-mode nanophotonic waveguide (Photonic Wire)
  - Microring Resonator with photonic nano wire waveguides
- Nanophotonics components/ systems based on GaAs/AlGaAs
  - Microcavity photonic crystal
  - Tuneable Fabry-Perot Filter
- Lamellar gratings for Fourier Transform Spectroscopy (FTS) Systems

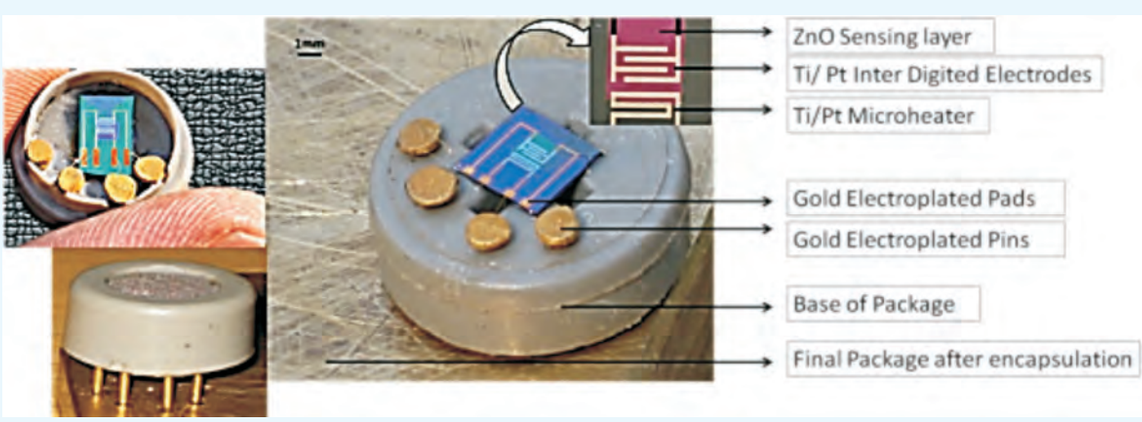
Centres of Excellence in Nanoelectronics Phase II – a joint project between IISc, Bangalore and IIT Bombay

The phase I project of Centres of Excellence in Nanoelectronics has been successfully implemented at IISc, Bangalore and IIT Bombay and based on this, Phase II has been initiated with the objective to consolidate, augment and maintain the national centres of excellence in nanoelectronics and to undertake basic and applied research in the emerging field of nanoelectronics. The project focuses on research in frontier areas of nanoelectronics, technology generation, closer interaction with industries for commercialization, and scaled up effort in high quality R&D manpower generation. The main thrust of Phase II is to accelerate research and development activities in new areas of nanoelectronics, including nano-materials and nano-structures for photovoltaics, neuroelectronics, futuristic memory (charge trap and nano-crystal flash memories) and logic devices (tunnel FETs, FinFETs, molecular electronics, and spintronics), micro and nano sensors (cantilever, optical and polymer based), integrated sensor systems, and a critical mass of highly trained manpower to propel these areas.

Indian Nanoelectronics Users Programme (INUP)

The R&D facilities of Nanoelectronics Centres at IISc and IIT Bombay are being utilized by the researches across the country through INUP. Following are the achievements:

- Two workshops (one each at IISc and IIT Bombay) have been organized. More than 150 participants from all over India attended the workshops. 8 Hands-on-Training have been organized (4 at IISc Bangalore and 4 at IIT



Bombay). 90 participants attended the Hands-on-Training.

- Around 310 researchers from more than 180 organizations across the country have been trained on nanotechnologies at different levels.
- 35 R&D projects from 32 institutions/ organizations across India have been identified/ undertaken by external researchers at IIT Bombay and IISc Bangalore.
- 13 R&D projects have been completed. The work in the projects includes areas of sensors, MEMS/NEMS, High K/Metal gate Stacks, organic field effect transistors, quantum dot floating capacitors, ultra wide band antennae, various device fabrication processes etc.

R&D work

R&D work has been done in various R&D projects across India in the area of CNTs for field emission devices, Nanosized SiC based quantum structures, Quantum-semiconductor-glass-nanocomposites, simulation of nano-devices, oxide based functional thin film nano-structures for Spintronics and quantum informatics, GaN, InGaN based quantum dots for LEDs, Nano silver oxide doped/ mixed with gold and copper for ultra high density storage devices, III/ V compound semiconductor based quantum dots technology, wide band gap semiconductors nanostructured materials and devices, semiconducting Single Wall Carbon Nano Tubes (SWCNTs), CNTs based Gas sensor and Multi-functional magnetic nano particulates for cancer therapy, High performance RF/Microwave compound semiconductor hetrostructure nano-devices on silicon, Nanostructured Shape Memory Alloy (SMA) and Ferromagnetic Shape Memory Alloy (FSMA).

Publications: About 100 articles/papers.

Digital Library

With the advent of digital technology and Internet connectivity, the library scenario is changing fast. Data available in physical form has been preserved digitally in Digital Library. Digital Libraries have the ability to enhance access to information and knowledge through Internet connectivity.

The Department has taken the Digital Library Initiatives and as part of this, copyright free books, manuscripts, theses etc. have been digitized. Most of the digitized data has been web enabled on Digital Library of India web site.

Achievements during 2011-12

- **Initiation of new Projects:** Two projects namely " Rajasthan Heritage: Digitization of Rare Books- 3rd Phase" at Banasthali Vidyapith, for digitizing 18 million pages and "Digitization of Documents (10 Million pages) available at Gujarat Vidyapith, Ahmadabad and Aligarh Muslim University, Aligarh" by C-DAC-Noida have been initiated.
- **Digitization:** 16.5 Million Textual pages have been digitized.
- **Recording:** 35 hours of audio/video on Hymn Recitations have been recorded.
- **Providing the Connectivity and Hosting of digitized data:** Bandwidth connectivity to Indian Institute of Sciences, Bangalore, has been provided. The digitized data has been hosted on Digital Library of India web for accessing.

Human Resource Development

HRD activities are targeted to ensure availability of trained human resources for the IT-ITeS and Electronics industry. Initiatives include identifying gaps emerging from the formal sector, planning programmes in non-formal and formal sectors for meeting these gaps.

The Department has set up a Working Group on Human Resource Development in Information Technology with the main objective to evolve long-term HR strategies and suitable approach for the implementation of these strategies. In pursuance, projects have been initiated for generation of quality manpower in the areas of Information Security and VLSI Design; and setting up of Regional Institutes of e-Learning and Information Technology (RIELIT) at Kohima (Nagaland), Agartala (Tripura) and Ajmer (Rajasthan) for creating skilled manpower in the area of Computer Science/IT.

A Scheme for Manpower Development for the Software Export Industry has been initiated under which various projects are being implemented.

The National Skill Development Policy has set a target of skilling 500 million persons by 2022. The Department has been given a target of skilling 10 million persons by 2022 in the domain of Information Electronics and Communications Technology. The Planning Commission had accorded 'in-principle' approval to the road map prepared by the Department for expansion of capacities of NIELIT and CDAC for achieving the set target. The Department is in the process of getting the Detailed Project Reports examined.

E-Learning

E-Learning is the learning facilitated and supported by Information Communication Technologies. It is one of the thrust area identified by the Department for imparting education using educational tools and communication media. The Department has been financially supporting R&D projects at various academic educational institutes, R&D Labs, etc., in the areas like (i) Real Time Video Compression and decompression techniques (ii) Developing content independent of platform and environment and (iii) Quality assurance in e-learning.

Achievements during 2011-12

Design and Development of Service Oriented Architecture based Standards Compliant e-Learning Framework with Personalized learning Features – C-DAC, Hyderabad

Activities related to literature survey, exploration of Rich Internet Application (RIA) framework and prototype demonstration of sample application, exploration of web mining related aspects, exploration of Personalized e-Learning Environment related aspects and identification of relevant services, incorporation of standards compliance features like SCORM conformant Course Organizer and QTI conformant Assessment, SCORM compliant content conversion tool have been completed. The activities pertaining to 'Software Requirements Specification' & Design of service oriented architecture for e-Learning framework are under review. Two workshops have been conducted on e-Learning standards & personalized e-Learning.

Design and Development of a Framework for Adaptive Instruction – C-DAC, Mumbai

The objectives of the project include (i) To develop an open source Framework for Adaptive Instruction (FAI) to deliver instructions in personalized manner (ii) To develop Adaptive Instruction for two sixth standard subjects and two IT courses using the framework and (iii) To set up an adaptive instruction framework server, etc.

Comprehensive study report on existing work in personalized adaptive learning, review and redesign of FAI, design of instruction markup language, language support for Hindi Content adoption of Course on Computer Concepts (CCC) subject of NIELIT and other subjects in the framework are progressing and workshop for creating awareness and collecting feedback has been conducted.

Video Compression and Decompression for e-Learning – C-DAC, Mumbai

The objective of the project is to improve the performance of video compression and decompression techniques based on H.264 for lower bandwidths (below 128 kbps) and to provide better quality of video and audio at lower bandwidths and lesser latency for E-Learning.

Image codec has been developed and tested. The codec is designed to be used for PPT transmission. Integration of codec with e-learning software Brihspati (a content management and delivery system developed

by IIT Kanpur) needs the codec in jar format. The image codec is now developed in Java and a jar file for the codec is created. ffmpeg which is existing video codec was tried and tested for the work. The concept has been tried out on the experimental set-up. Workshop on Beagleboard for Codec was organized.

Online Labs (Olabs) for School Lab Experiments

The objective is to offer a joyful interactive learning experience for the student and to provide an environment to extend, improve, refine and assist the learning and/or experimentation process.

Prototype implementation of Olabs framework has been completed. Also completed 24 lab experiments including related animation, simulation, question bank & related theory content. Similar, efforts are progressing for remaining 6 lab experiments. Pilot Schools (5 number) have been identified and initial demo given to use labs. Relevant hardware has been deployed in two of the schools.

Content generation, adaptation and distribution in m-learning environment for Mobile phone applications

The objective is to identify and develop mobile learning content and to adapt and render the developed content for mobile phones suitable for finishing school students. Also to develop mobile video streaming application and to deploy and distribute the mobile learning content to the students of finishing schools.

The pilot study on requirements, literature survey etc. has been completed. Online survey has been conducted to gather user requirements. The content structure has been identified and reviewed by experts. Setting up of the Studio for recording video lectures is in progress and some of the sample videos have been developed. Developed mobile video streaming application for J2ME and Android platforms. The admin module for student and content management has been developed.

Information Security Education and Awareness Project

The Information Security Education and Awareness Project is aimed at generation of manpower in the area of Information Security at various levels, train Government officials and create mass awareness.

Academic Activities: The academic activities are implemented through six Resource Centres (RCs- IITs at Madras, Guwahati, Roorkee & Kanpur, IISc. Bangalore, TIFR, Mumbai) as mentoring institutions and 33 Participating Institutes (PIs- include NITs, IIITs, Govt. Engg. Colleges, CDAC/NIELIT centres). These RCs and PIs are engaged in conducting various courses in Information Security (from Certificate Level to B.Tech., M.Tech. & Ph.D), Short-term training programmes and faculty updation, etc., till December, 2011, around 36,000 students have been trained/ undergoing training in various long-term/ short-term courses at RCs/PIs.

Awareness Activity: This is being implemented through CDAC, Hyderabad. 345 awareness workshops have been organized across the country covering about 13,862 Teachers/Parents/CSC/NGOs, etc., and about 32,811 school children/Engg./Degree college students. During these workshops, around 29,000 Awareness Kits (with promotional material and Hand Books) were distributed. 30 posters on various topics of Information Security Awareness were designed and around 71,500 posters were distributed to target users. Further, around 30,000 stickers were distributed in Mumbai during the Internet Safety Week 2010 in association with Mumbai Cyber Police, NASSCOM, and DSCI. A dedicated website for information security awareness (http://www.infosecawareness.in) has been developed. Course materials like guidelines for XP, Linux, wireless configurations developed. Several Security e-Books developed (Security Guidebook, Security Tool Kit, Children Hand Book, Guidebook for Teachers and Parents) and made available on the website. Hindi version of Security Awareness Handbook was also developed. In addition, Eight cartoon videos were developed for children.

Training of Government Officers: The project also aims at imparting training to the Central and State Government Officers on issues related to Cyber / Information Security which is being implemented through six implementing agencies (CDAC, ERNET India, NIELIT, CERT-In, STQC Dte., & NIC). Under this activity, training of seventy eight (78) Master Trainers was organized through IISc. Bangalore at ISTM, Delhi, IISc., Bangalore & CMU, USA. An advanced level training programme for a batch of 20 participants was organized at CMU, USA through IISc. Bangalore. One more batch of twenty (20) Master Trainers was trained at ISTM, Delhi. A modular courseware on Information Security (10 Modules) for short duration training programmes has been designed/developed through CDAC, Hyderabad. The courseware has also been integrated with e-learning tool (e-Sikshak) with complete audio integration and hosted through website by C-DAC Hyderabad. Various Training Programmes for Government Officers conducted by six (6) Implementing Agencies were continued.

Certificate in Information Security: A national level certification scheme for Information Systems Security professionals has been evolved with NIELIT, Gorakhpur as nodal centre. The scheme consists of three levels (both in regular as well as direct mode) viz. (i) Level-1: Certified System Security Analyst (CSSA) - Launched in July 2010; (ii) Level-2: Certified System Security Professional (CSSP) - Launched in January 2011; and Level-3: Certified Forensic Professionals (CFP)/ Certified Information System Security Auditor (CISSA)/ Certified System Security Solution Designer (CSSD) - Launched in October 2011. So far 381 candidates for Level-1 and 62 candidates for Level-2 have been registered. Two exams for Level-1 and one exam for Level-2 have been conducted and 21 candidates for Level-1 and 2 candidates for Level-2 have successfully cleared the same.

Scheme for Manpower Development for the Software Export Industry

The projects being implemented under the scheme are aimed to create course contents, generate mentors & quality faculties and skilled graduates in the Information Technology sector at various locations across India with a view to increasing the employability of the students. The Scheme covers Training of the Trainer's Program, Enhancement of quality of IT education in colleges, Virtualization of Technical Education, conducting specialized short term courses in IT-ITeS sector, setting up of National On-line Test System for Graduate Engineers in Information Technology, etc.

- Projects under the scheme are being implemented at C-DAC-Noida, IIIT-Allahabad, IIITM-Gwalior, IIIT-Bangalore, IIIT-Hyderabad, C-DAC Pune, C-DAC Hyderabad, State Government of Tamil Nadu and UP Technical University.
- Necessary training infrastructure like setting up of lab etc., has been created at IIIT-Allahabad, IIITM-Gwalior, CDAC-Pune, IIIT-Bangalore and CDAC-Hyderabad. 12153 faculties and 17669 students have been trained/undergoing training under these projects.
- CDAC- Noida has developed 'National Online Examination System' and it was launched on 21.11.2011.
- To achieve grid based virtualization of technical education in engineering colleges of Uttar Pradesh and Uttarakhand, UP Technical University, Lucknow has identified 14 nodal centers (Institutions) and necessary infrastructure has been set up at these institutions. The testing for delivery of video/audio lectures has been carried out among the nodal centers. Presently National Programme on Technology Enhanced Learning (NPTEL) course contents are being delivered in virtual mode.
- Under the above mentioned projects various workshops/seminars in IECT areas such as GIS, Rural Services Delivery and Contents, Expert System and their Application, E-Healthcare, Data Digitalization, Data Warehousing and Data Mining, Enhancing Creativity & Soft Skills for better Communication, Information Security & its Application, Open Source Technology for enhancement, productivity tools were conducted.

Development of North-Eastern Region

The Department through NIELIT (formerly DOEACC Society) has initiated projects for setting up Regional Institutes for e-Learning and Information Technology (RIELIT) at Kohima (Nagaland), Agartala (Tripura); and NIELIT Centres at Shillong (Meghalaya), Gangtok (Sikkim) and Itanagar (Arunachal Pradesh). These institutes/centres are aimed to create skilled manpower in the area of Computer Science and Information Technology and related disciplines for making available industry ready professionals and also cater to the needs of the respective States in the North-Eastern region. The achievements made in the projects are as under:

- NIELIT, Kohima Centre, Nagaland is conducting DOEACC 'O' & 'A' level (IT) and Hardware, CCC, BCA and other short-term courses. So far, 3099 students have been trained at Kohima and at extension centre at Chuchuimlang, Nagaland. The training activities have been shifted to the permanent campus at Mereima. The remaining construction works of boys hostel and community block are in progress.
- NIELIT, Agartala Centre is offering training courses of DOEACC (IT) 'O' & 'A' level, DOEACC CHM 'O' & 'A' level, ITeS & other sort-term training courses from a 7000 sq. ft. temporary accommodation, provided free of cost by the State Government of Tripura since December 2008. So far 1416 candidates have been enrolled/trained in various courses. Possession of 15 acres of land at Radha Kishore Nagar near Agartala from the State Government of Tripura has been taken for construction of permanent RIELIT campus.
- NIELIT, Shillong Centre has started short-term training courses at rented premises of 6000 sq. ft. since December 2009. Training courses of DOEACC "A" & "O" Level (Hardware) and "A" & "O" Level (Software), ITES –BPO and CCC has been started. So far 776 students have been enrolled/trained for various courses.
- NIELIT centre at Gangtok, Sikkim has started training courses at the rented premises covering of 10,000 sq.ft from December 2010. The centre is offering training courses viz. BCC, CCC, 'O' level in IT. Total 156 students have been enrolled/ trained for various courses.
- NIELIT centre at Itanagar, Arunachal Pradesh has started training activities in the rented premises since Feb'2011. The centre is offering training courses viz CCC, 'O' and 'A' level in IT and short term courses in IT. So far 158 students have been enrolled and 58 are trained.

IT Skill Development for the Disadvantaged Segments of the Society

Following three projects are approved for empowerment of rural youth belonging to SC/ST, Minorities and Women to be implemented by NIELIT in about 10 States and 1 UT of Puducherry:

(i) Training in Electronics Equipment Repair & Maintenance to improve the employability of the rural youth belonging to SC/ST & Minority Communities.

(ii) Training program on IT Skills to improve the employability of the rural youth belonging to SC/ST & Minority Communities.

(iii) Training program on ITeS/BPO (Customer Care and Banking) to improve the employability of the rural youth belonging to Women, SC/ST & Minority Communities.

The courses would be launched in select districts of the States of Uttar Pradesh, Bihar, Jharkhand, Orissa, Tamil Nadu, Rajasthan, Maharashtra, Jammu & Kashmir, Chhattisgarh and Kerala (for two projects only) and UT of Puducherry. Standard Operating Procedure (SOP) has been prepared for following uniform criteria for selection of Districts, Training Institutes and Candidates. NIELIT Centres have identified the districts where the training has to be conducted. Training has been launched at Jammu by NIELIT, Srinagar/Jammu Centre.

Other projects:

- Training Programmes on 'IT Enabled Soft Skill Enhancement to Improve Employability of Engineering and Management Students' by Anna University of Coimbatore and Chennai have been started. Syllabus was defined and course contents were developed. Currently Training programme is conducted covering aptitude, communication skills, time management and behavioral skills for the students from Engineering and MBA stream. Anna University of Coimbatore and Chennai have trained 10775 students out of which 8918 got placement.

- NIELIT Centre in Chennai has been established and currently operating from a 5500 sq. ft rented premises at ISTE Professional centre at Anna University Campus. The academic activities of the centre were launched from July 2010. Three specialized laboratories viz., VLSI & Embedded Systems, Information Technology, IT Applications with required H/W & S/W has been setup and Centre is conducting training in these specialized areas. In addition to DOEACC 'O' level course, various other short term courses are being offered at the Centre. The Centre has developed DOEACC - CCC course content (self - learning mode) in Tamil, Telugu & Kannada languages.

- A Project on "Local Capacity and Capability Building for the Union Territory of Puducherry" is being implemented by Puducherry e-Governance Society (PeGS). Under this project various short term courses like Web Application on .Net, Course on OOPs using C++, IT for Non IT Teachers, Web Applications on J2EE etc., have been conducted for more than 100 faculty members.

Special Manpower Development Programme in VLSI Design and Related Software (SMDP-II)

The Department in 2005 has initiated a Special Manpower Development Program in the area of VLSI Design and related software to generate the key catalyst ingredient for the VLSI design sector. This programme is currently being executed at 7 Resource Centers (RCs) and 25 Participating Institutions (PIs) with a total outlay of ₹ 49.98 crore for a period of seven years.

Major elements of the program are:-

- Establishing State-of-the art VLSI Design Laboratory.
- Generation of manpower in VLSI Design area at various levels.
- Instruction Enhancement Program (IEP) for faculties of PIs.
- Workshop involving International Guest Faculty & ZOPP Workshop.
- India Chip Program.
- VLSI Design Resource website and 7 sub sites at RCs.

Achievements during 2011-12

- Establishment of the VLSI Design Laboratories with State-of-the-art Harware platform and Electronics Design Automation (EDA) software environment in all PIs and RCs has been specialized.

- During the academic year 2010-11(i.e. ending on August 2011), about 5352 atudents at various levels (i.e.) B.Tech (3867), M.Tech (1436) & Ph.D.(49) in the domain of VLSI Design and Microelectronics were trained under this program.

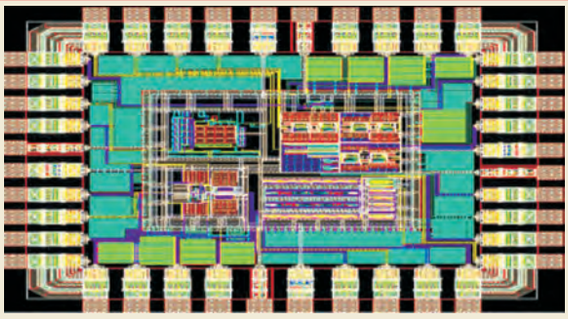
- Three Instruction Enhancement Programes (IEP), for the training faculty of PIs were conducted in the area of – Chip Design Integration and finishing, Analog/Mixed Signal Design and RFIC & System Design About 205 faculties/students of PIs and RCs were trained. An IEP on "Low Power Digital" would be conducted by IIT Kanpur during March 2012.

- The workshops involving International Guest Faculty on VLSI Interconnects & Signal Integrity; Cognitive Radio and CMOS RF Circuit and System challenges were organized at various RC locations during November 25-December15,2011 and January09-20, 2012 respectively. In these workshops, Prof. Ram Achar from Carleton University, Ottawa, Ontario, Prof. Eric Klumperink from University of Twente were invited to give a series of lectures on the current area of research. A total of 250 faculties/students of RCs and PIs were appraised of the cutting-edge research topics through these workshops.

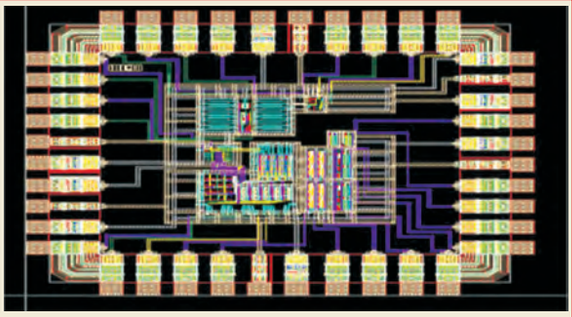
- ZOPP Workshop was held in IIT Kanpur during February 10-11, 2012, which was attended by the Coordinators/Co-coordinators of all RCs and PIs. During the workshop the on-going

programme was reviewed and the contours for the future prospects were drawn.

- Support has been provided for fabrication of two chips under India Chip Project for siliconization of analog and digital design done by students of IIT Kharagpur, NIT Durgapur, Bengal Engineering & Science University Shibpur and Jadavpur University.



Mixed(Analog & Digital) Design from four institutions



Mixed(Analog & Digital) Design from three institutions

- Institutions such as IIT Kharagpur, Bengal Engineering & Science University Shibpur, NIT Rourkela, VNIT Nagpur, MNIT Jaipur, MNNIT Allahabad, NIT Hamirpur, Dr. B R Ambedkar NIT Jalandhar, Department of Information Technology and CEERI Pilani have submitted analog and digital designs to Department for siliconization.

Development of Weaker Sections

The Government is committed to the development of weaker sections for their growth. Accordingly the Department has supported ICT projects for development of SC/ST community.

The list of such Projects (on-going) is as under:

- Empowering Schedule Tribes (ST) candidates using ICT tools – Goa.
- Empowering Schedule Castes (SC) candidates using ICT tools – Goa.
- High Skill training in IT for Schedule Tribes (ST) candidates to enhance their skills and empower them to participate in IT development community – Andhra Pradesh.
- High skill training in IT for Schedule Castes (SC) candidates to enhance their skills and empower them to participate in IT development community – Andhra Pradesh.
- Capacity Building for improving the IT literacy & employability of Schedule Tribes (ST) candidates in IECT area – Jharkhand.
- Capacity Building for improving the IT literacy & employability of Schedule Castes (SC) candidates in IECT area - Uttar Pradesh and Bihar.
- Training of graduate/under-graduate women and SC/ST candidates for various Job oriented courses – Chandigarh, Himachal Pradesh, Delhi & Uttar Pradesh.
- Capacity Building for IT skill based Self Help Groups (SHG) of North East Region (NER) - Tripura, Mizoram, Manipur and Sikkim.
- Capacity Development of Tripura Youth in IT Entrepreneurships – Tripura.
- Bachelors & Masters courses in computer applications – Manipur.
- Capacity building for training of women and ST youth in IECT in North East Region – Mizoram.

Gender Empowerment

Gender Empowerment through ICT has been one of the major initiatives of the Government. The objective of this initiative is to empower women through capacity building in ICT, entrepreneurship development and IT training so as to enhance their employability in IT-ITeS sector where the employment opportunities are growing. Department has supported ICT projects relating to empowerment of women. The list of such projects (on-going) is as under:

- Empowerment of women using ICT tools - Haryana.
- IT training programmes for women empowerment - Uttar Pradesh, Madhya Pradesh, Jharkhand, Orissa, Chhattisgarh, Rajasthan and Bihar.
- Training of graduate/under-graduate women and SC/ST candidates for various Job oriented courses – Chandigarh, Himachal Pradesh, Delhi and Uttar Pradesh.
- Capacity building for IT skill based economically weaker Women/SHG/Local Youth for Purba Medinipur district of West Bengal.
- IT Infrastructure creation in hostels for "Kasturba Gandhi Balika Vidyalaya" – Rajasthan.
- Capacity building for improving the employability of women in IECT area – Orissa.
- Chanderi Integrated ICT for Development Programme (CIIDP) - Madhya Pradesh.
- Capacity Building for IT skill based Self Help

Groups (SHG) of North East Region (NER) - Tripura, Mizoram, Manipur and Sikkim.

- Training of graduate/under-graduate women of NER in ITeS-BPO – North East Region.
- Capacity Development of Tripura Youth in IT Entrepreneurships – Tripura.
- Bachelors & Masters courses in computer applications – Manipur.
- Capacity building for training of women and ST youth in IECT in North East Region – Mizoram.
- Women Empowerment through value added skill development program in IECT – Aurangabad.

ICT for Empowerment of Differently abled

An Open Source Web Browser for the Blind People
The project envisages the development of an open source web browser with voice feedback for the blind with speech facilitation for navigation or data entry in a web page. Tools developed include Text extraction engine; Text to Braille transliteration system. Integration with Braille Devices and open source English TTS engine to the web browser is under process.

Development of embedded version of Sanyog (Iconic communication tool for persons affected with cerebral palsy & speech impairment)

Under this project, object based iconic communication interface has been enhanced for Bengali, Hindi and English. By object driven icon selection, the system can generate simple sentences in all the three languages. A USB interface has been designed for connecting the special access switches with the system. Embedded Sanyog has been tested at Linux based portable device. The Collaborating Agency is IIT, Kharagpur.

Content Generation for Capacity Building of persons with Blindness & Low Vision

The project has been undertaken to empower Visually Impaired persons by making education easy for them by producing study material in Braille, audio, large print and E-text at graduate/post-graduate level. 184 titles (1915.5 hours) have been converted into Daisy audio books and 44 books (558 hours) have been created in synthesized voice in 2011-12 till December. It is benefiting a large cross section of Visually Impaired students. 21000 CDs of these audio books have been distributed during the period. The Collaborating Agency is National Association for the Blind (NAB), New Delhi.

Installation of 40 DRS (Direct Reception System) centers in NE region of the country for reception of EDUSAT based channel 'Navshikhar' in disability field

This project has been taken up on the basis of success of the project "Satellite/Internet based National network for education, training and empowerment of disabled" mentioned above. Collaborating Agencies are RCI, New Delhi and ISRO.

Deployment of "Punarjjani" in 100 schools in the country

ICT based integrated assessment tool 'Punarjjani' has been developed in collaboration with C-DAC, Thiruvananthapuram to empower special educators for easy, efficient, quick and regular assessment of mentally challenged children. The tool has been test deployed in 8 schools in the state of Kerala for last 2 years. The feedback from the schools has been favorable. MLAsia along with C-DAC, Thiruvananthapuram has now undertaken deployment of the tool in 100 special schools throughout the country. The Collaborating Agency is C-DAC, Thiruvananthapuram.

Digital Programmable Hearing Aid (DPHA)

C-DAC, Thiruvananthapuram has developed an Application Specific Integrated Circuits (ASIC) based DPHA. The ASIC has been targeted to 130 nano-meter technology. About 1632 nos. of Hearing Aid (Body Worn type) PCB have been assembled and tested and mechanical assembly of 617 units also completed. Earlier, field trials of Body Worn Type DPHA was carried out at leading hospitals/institutes like Ali Yavar Jung National Institute for Hearing Handicapped Mumbai, All India Institute of Speech and Hearing, Mysore, CMC, Vellore & MERF, Chennai.

Adaptable e-Learning Accessibility Model for the Disabled

The objective is to carry out R&D in the area of providing a solution for accessibility for the disabled in the domain of E-Learning that would result in development of tools and products in the area of accessibility from the emerging and promising technologies.

C-DAC Bengaluru and C-DAC Hyderabad interacted with National Institute for the Mentally Handicapped (NIMH) to understand the processes and procedures followed by them in the Child Registration and Educational Intervention. Both C-DAC units have jointly conducted field study at NIMH to understand existing assessment, learning and promotion process for the disabled children. Modules identified from the user requirements captured are (i) Assessment child Profiling & IEP module (ii) Instructional Intervention module (iii) Learning Environment Module (iv) Domain expert System and (v) Administration module.

C-DAC units have also completed 'Use Case Design' as part of the First Phase of High Level Design Document (HLD). Some prototypes of Learning environments, Assessment and Tool Box modules have been developed.

ICT Vocational Centers for Skill Creation in the area of Information Technology for the Children with Disabilities

100 ICT Vocational Centers for training the physically challenged children have been set up in addition to 20 ICT Vocational Centres set up in Phase-I. The less privileged children in the proximity of these centers have learnt ICT

skills enabling them to seek employment and earn livelihood. The infrastructure at schools is connected to LAN and Internet and the project has been commissioned.

Setting up of ICT and Satellite based distant training facility for Mentally Retarded Children

For providing distance training to the special educators, parents and teachers of children affected with mental retardation, a project has been initiated at C-DAC, Thiruvananthapuram. The main objective is for creating infrastructural facilities for imparting distance training to the Teachers and other rehabilitation professionals in the field of special education using the EDUSAT. 8 Satellite Interactive Terminals (SITs) have already been set up and the teaching end studio at Thiruvananthapuram is also operational.

ICT Vocational Centres for Children with Disabilities-Phase II

After implementation of the pilot project by setting up of ICT centers in 21 schools in Tamil Nadu and NCR Delhi, ERNET India has implemented the second phase of the project. In this phase, select 100 schools spread throughout the country have been made disable friendly through setting up of ICT centres for students who are physically challenged, and those with hearing or vision impairment.

Infrastructure

Standardization, Testing and Quality Certification (STQC) Directorate

STQC Directorate has established a network of test laboratories spread across the country including North East region. The laboratories are equipped with state of the art standards and equipments. It provides Test & Calibration, Training and Certification services. Many national and international accreditations / recognitions have made STQC services widely acceptable at international level also. With this STQC has established itself as a premier organization for Quality Assurance in the field of Electronics and Information Technology (IT) in the country. The services are primarily being used by medium and small scale industries. Currently, STQC services are being utilized by more than 10,000 Organizations representing the entire segment of industry, Government Departments, R&D Organizations etc.

Services offered and locations of Laboratories / Centres are indicated below -

Besides providing services in a professional manner, STQC also supports government policies, initiatives and programs concerning Standardization, Quality Assurance and Management. Number of projects sponsored by the Department in the area of Software Quality Assurance, Information Security Management, Quality Assurance of Indian Language Technology & Products have been executed.

Achievements during 2011-12
STQC IT Services
Expansion and Strengthening of STQC IT Services

New IT Centers have been established at Mohali and Thiruvananthapuram. Test facilities in IT Centers at Delhi, Kolkata, Bengaluru, Hyderabad, Pune, Guwahati and Chennai have been strengthened. These centers are providing services in the area of IT Security, Software Testing, Website Quality, Software Quality Assurance Training and IT Service Management (Training and Certification). IT Centers at Kolkata, Chennai and Bengaluru have obtained accreditation from A2LA (American Association of Laboratory Accreditation), USA as per international standard.

Services offered	Laboratories / Centres	Locations
Test & Calibration	Electronic Regional Test Labs (ERTL)	Delhi, Kolkata, Mumbai, Thiruvananthapuram
	Electronic Test & Development Centres (ETDC)	Bengaluru, Guwahati, Hyderabad, Chennai, Mohali, Pune, Goa, Agartala, Jaipur, Solan
Software Testing	IT Centres	Delhi, Bengaluru, Hyderabad, Kolkata, Chennai, Pune, Guwahati, Mohali, Thiruvananthapuram
	Common Criteria Test Lab (CCTL)	Kolkata
	Bio-metrics Devices Test Lab (BDTL)	Mohali
Reliability Testing	Centre for Reliability (CFR)	Chennai
Training	Indian Institute of Quality Management (IIQM)	Jaipur
	Centre for Electronic Test Engineers (CETE)	Bengaluru, Kolkata, Hyderabad, Pune, Noida,
Certification	Regional Certification Centres	Delhi, Kolkata, Mumbai, Bengaluru

STQC IT Centres have executed Testing and Assessment of the following e-Governance, Defence and major IT Projects of Central and State Governments-

Services offered	Name of the Project
Conformity Assessment Services	• Biometric Device (Enrollment & Authentication) Testing, UIDAI • MCA 21, Ministry of Corporate Affairs • Crime & Criminals Tracking Network & Systems (CCTNS), NCRB, Ministry of Home Affairs

Services offered	Name of the Project
	• IVFRT Software Applications, Ministry of Home Affairs, Income Tax, Ministry of Finance • COMPACT and e-LEKHA, Ministry of Finance • Employee Provident Fund Organization, Ministry of Labour, Directorate General of Employment & Training (DGET), Ministry of Labour • CVC Software Application, CVC • TMR Backend Service, Trademark Registry Himachal Pradesh State Electricity Board (HPSEB), Himachal Pradesh • Rashtriya Swastha Bima Yojna (RSBY), Ministry of Labour • E-Procurement System, CRIS, Indian Railways • MP Excise, Madhya Pradesh • National Online Examination System (NOES), CDAC • CSC Monitoring Tool, Department of Information Technology • e-Biz for DIPP(Department of Industrial Policy & Promotion) • ITD-CPC Solution for Income Tax Department • E-District Projects: West Bengal, Orissa, Jharkhand, Bihar, Assam and Mizoram • SSDG-e-Forms-State Portal: Nagaland, Manipur, Meghalaya and Arunachal Pradesh • E-Procurement System: E-chips (Chhattisgarh), e-Auction (mjunction) • Integrated Treasury Solution (IOTMS), Orissa Government • Integrated Financial Management System, M.P. Government • CRISMAC-UBI, United Bank of India • IRCTC Web Services **Defence Projects** • Swati-WLR: Weapon Locating Radar for BEL, Bengaluru • Sharang-MFCS: Missile Fire Control System for DRDL, Hyderabad • Bharani-LLLR : Low Level Lightweight 2D Radar for LRDE, Bengaluru • Akshay: Doc. Review & Reliability Analysis for R&D Engineers, Pune • Trigun: Marine Domain Awareness • Samvad: Marine Operational Knowledge System for CAIR

Some of the major e-Security Testing jobs undertaken are:

Services offered	Name of the Project
IT Security Testing	• VA(Vulnerability assessment of Servers/Devices): UID Authority of India, mjunction (eProcurement and eAuction servers) • NSA (Network Security Assessment): Tripura SWAN, Meghalaya SWAN, mjunction • PT(Penetration Testing): Deptt. of Atomic Energy 240 IP addresses across the country in 19 locations, mjunction • Application Security: ERMS (Manipur Govt.), e-TIMS (Mizoram Govt.), IRCTC applications and Web Services, e-District (Assam and W.B.), W.B. PWD Portal, Ordnance Factory Kolkata, CRIS (35 websites), DAE, Eastern Coalfields, Banglar Bhumi (W.B. Government Land Reform), UNDP (Ministry of Steel), mjunction (e-Procurement System and e-Auction System), W.B. Government Portal Applications (3 Apps), CSI • Website Security Clerance: WB Govt. (Commercial Tax (4 apps), Fisheries Deptt, Agriculture Deptt., Labour Deptt.), Indo Tibetan Border Police, Raja Rammohan Roy Library, NERPC, Shillong

Following Websites were tested and recommended for Certification:

Services offered	Name of the Project
Website Testing and Certification	• NSDL e-Voting Website • CDSL e-Voting Website

Smart Card Testing covering Card Layout, Card OS, Software application for the following were conducted:

Services offered	Name of the Project
Smart card Testing	• DL/RC(NIC), Ministry of Surface Transport • National Population Register (NPR), Ministry of Home Affairs • e-Passport (NIC), Ministry of External Affairs • Rastriya Swastha Bima Yojana (RSBY), Ministry of Labour

STQC is one of the empanelled organisations for Information Technology security audit with Indian Computer Emergency Response Team (CERT-IN) and Public Key Infrastructure (PKI) audit with Controller of Certifying Authority (CCA). Third party Information Technology security assessment / training services are regularly provided for the e-Governance initiatives under e-Governance Conformity Assessment (e-GCA) project.

National facility for Quality Assessment of Biometric Devices

Unique Identification Authority of India (UIDAI) has been mandated to issue Unique IDs to every resident of the country. For the purpose of enrolment, large number of biometric devices (cameras, scanners and iris cameras) are being used extensively across the country in varied climatic conditions. UIDAI has signed a MoU with STQC for establishing national facility to ensure quality of these devices as per international standards. Two laboratories with state of art testing infrastructure have been established at Delhi and Mohali. 27 suppliers have been certified so far under the Bio-metric Devices certification scheme.

Common Criteria (CC) Testing

Common Criteria Security Test / Evaluation Laboratory as well as a Certification Scheme based on Common Criteria (ISO 15408) standard were established in the eastern region under a project. The Common Criteria Test Laboratory is fully operational and has undertaken the following activities.

Services offered	Name of the Project
Common Criteria Testing	• CC Evaluation Projects of HP3COM Router, FOX-IT Data Diode, • Ericsson Router • Product Security Testing of Checkpoint UTM-I • CC Training imparted to Indian Air Force (Delhi), SETS (Chennai), Ericsson (Bengaluru) & TEC (Delhi)

Test and Calibration Services

STQC laboratories have provided test and calibration services to a large number of industry, PSUs and Government organisations. Some of the Special Testing and Calibration projects undertaken during the period are indicated below-

- Carried out Accelerated Reliability Testing of Field Programmable Gate Array (FPGA) for Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam.
- Conducted Specialized In-House Certified Reliability Professional (CRP) Training programmes at Bharat Electronics Ltd. Bengaluru, Nuclear Power Corporation of India Ltd. Mumbai, C-DAC, Thiruvananthapuram, Mangalore Refineries and Petro Chemicals Ltd (MRPL), Mangalore.
- Reliability, Availability, Maintainability and Safety evaluation of Train Collision Avoidance System to be installed by the Indian Railways has been taken up.
- Tested the GPS-GSM based tracking system for online monitoring of vehicles for D.T.C, Anti theft system for two wheeler automobile, fuel dispensing system as per OIML, CCTV surveillance system, information kiosk, e-ticketing for Directorate General of Supplies and Disposals (DGS&D).
- Tested the Rotor boxes for windmills for export to Germany.
- Tested Sizzle Dining Set of Godrej make which was awarded the CII Design excellence Award-2011.
- Calibration services provided for the complete range of instruments to Tata Memorial Hospital, Mumbai as well as Cancer Research Institute ARACT, Navi Mumbai.
- The services include mainly calibration of Thermometers, Deep Freezers, Analytical balances, Water baths, Incubators, Centrifuges, Analytical Balances , Micropipettes, etc.
- Testing and calibration services of Energy meters to Maharashtra, Rajasthan, Chhattisgarh, Andhra Pradesh & Madhya Pradesh electricity boards and other manufacturers.
- A feature about STQC test facility is Development Assistance provided for about 110 products to ensure that the products meets EMI/EMC requirements as per International standards developed by electronics industries including master time generator for nuclear plants, cyclotron cancer treatment system, and remote patient monitoring system for rural areas, etc.

- Continuing participation in Space Programmes through Components Screening, Packages & Modules testing and Environmental testing. Carried out Screening of components: LCR devices, Discrete devices, ICs- digital & Linear of different packages leaded as well as SMDs for our major customer – Indian Space Research Organization. Conducted Qualification tests on Chip power inductors and chip varactor diodes.

- Screening of Isolators used for monitoring Electronic packages in GSLV/PSLV for Space organizations. Also carried out comprehensive evaluation of different modules used in PSLV for Vikram Sarabhai Space Centre, Thiruvananthapuram.

Solar Photo-Voltaic Panel and Products Test Facilities

Solar Photo-voltaic (SPV) Panels and products test facility are available at Bengaluru, Kolkata and Hyderabad. The facility at Kolkata includes Sun Simulator for opto-electronic testing of Solar Photo-voltaic Modules as per international IEC standard. The test facilities cover the electrical and optical performance of the products under a variety of environmental conditions, mechanical loading etc, as per applicable standards. The test schedules establish the quality and reliability of the products for a wide range of application environments.

Unique Explosive Atmosphere Compatibility test facility

Explosive Atmosphere Compatibility test facility for flameproof testing of explosion proof electro-technical products for use in hazardous atmospheres as per IEC standard has been established at Kolkata.

Extension of STQC Test & Calibration services overseas

STQC has also been providing overseas services in the areas of Product Safety Inspection & Certification, Testing and Calibration, Training on Quality Management System and IT Services. These services have been provided to various organisations in countries like USA, Germany, UAE, Poland, Austria, UK, Mauritius, Bangladesh, Sri Lanka, Qatar, Bhutan, etc. Range of services provided covers e-Security, safety testing, EMI / EMC, testing for explosive environment, Calibration, ISO 9000 certification and product certification.

Training services

Indian Institute of Quality Management (IIQM), a division of Electronics Test & Development Centre, Jaipur, operating under STQC provides training to industries and organizations in the area of Quality Management System (ISO 9001), Environment Management System (ISO 14001), Laboratory Quality Management System (ISO 17025 and ISO 15189), Information Security Management system (ISO 27001), IT service Management (ISO 20000) and also functions as an approved Training Organization recognized by IRCA, UK. Since its establishment in 1994, it has designed and launched several training programs in the area; has trained over 21000 professionals. IIQM has also launched a two years educational programme i.e., Master of Science in Quality Management (MSQM) under bilateral arrangements with BITS, Pilani.

Centre for Electronics Test Engineering (CETEs) have conducted following training programs:-

- Seven batches of orientation training programme on 'Electronics Manufacturing Technology' for ITI/Diploma cadre new recruits of Hindustan Aeronautics Limited (HAL), Hyderabad and Electronics Corporation of India Limited (ECIL), Hyderabad trained around 200 participants.

- Two batches of "Certified IPC Specialist" training programme as per IPC 610-E at Philippines and trained 22 participants.

- QMS Awareness training programmes, Internal Auditor and Lead Auditor courses as per ISO 9001:2008 exclusively for NRSC, ECIL, DRDL, Axiom Energy.

- Exclusive courses in the area of Soldering Technology for BrahMos (subsidiary of DRDL), Axiom Energy, Astra Microwave etc.,

- Two exclusive job-oriented training programmes for unemployed youth belonging to Schedule Castes category in association with A.P. State SC Corporation (RR District).

- Two Certified Calibration Professional courses have been conducted for development of skilled manpower for the industries. In addition, training provided to students of BITS, Pilani for their MS programme in Quality Management.

In overall, STQC have conducted more than 300 training programs on various quality management and technology subjects.

Development of SC / STs and Weaker sections

Training programs were conducted periodically for the benefit of SC/ST candidates. The program included Post Diploma in Test Engineering, Calibration and Maintenance of Electronic equipment (1 year), Industrial Automation (3 months), Networking Management (3 months), Certified Electronic Assembly Operators (3 months), Lab Technicians (3 months), Computer Hardware and Networking (3 months), Awareness on ISO 9001 / 14001, DOEACC `O` and `A` level.

Following training programs were conducted exclusively for their benefit:

- On-the job training to SC candidates with ITI qualification as a part of Training cum Employment programme of SC Development Directorate, Government of Kerala, Thiruvananthapuram.

- The services include mainly calibration of Thermometers, Deep Freezers, Analytical balances,

Water baths, Incubators, Centrifuges, Analytical Balances , Micropipettes, etc.

- Testing and calibration services of Energy meters to Maharashtra, Rajasthan, Chhattisgarh, Andhra Pradesh & Madhya Pradesh electricity boards and other manufacturers.
- A feature about STQC test facility is Development Assistance provided for about 110 products to ensure that the products meets EMI/EMC requirements as per International standards developed by electronics industries including master time generator for nuclear plants, cyclotron
- Four batches of practical-oriented training in the area of "Industrial Automation" exclusively for SC/ST students (sponsored by the Department), trained 80 students and most of them have got suitable employment after completion of the training.
- Job oriented training programmes for un-employed youth belonging to SC/ST in association with A.P State SC Corporation.
- The Department sponsored Industrial automation training courses for SC/ST students have been conducted.

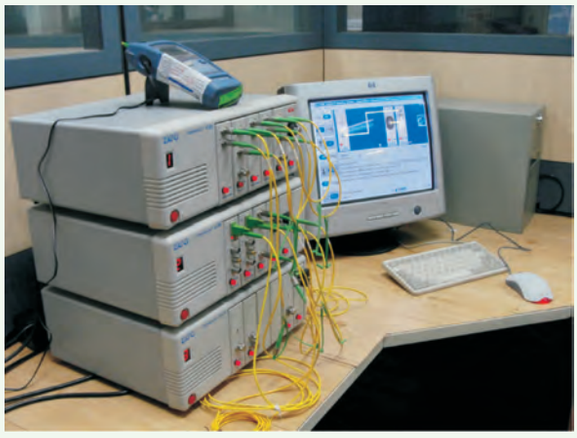
Certification services

STQC has launched a certification scheme for Quality Certification of Bio-metric Devices under UIDAI project. In addition, Internationally Accredited Certification Services are being offered for Quality Management System (ISO 9001) and Product Safety Certification to customers in India and abroad. It also offers International Certification services for safety of electrical products under IECEE-CB.

Activities in North-East region

Initiatives in Test & Calibration services

ETDC, Guwahati & ETDC, Agartala are the two laboratories under STQC Directorate, operating in the NE Region. Test & Calibration services are extended to the organizations located throughout the NE Region covering all the eight States towards improvement of Quality of their products and services. The services are received by most of the Small, Medium and Large Scale Industries covering the Industrial sectors like – Oil & Natural Gas, Refineries, Exploration units, Railways, Power Generation, Transmission & Distribution, Paper, Cement & Building material, Food & Beverages, Cosmetics, Cable & Conductors, Plywood, Carbon Products, Steel and Service sectors like – Telecommunication, Automobile, Service & Maintenance units, Hotels, Hospitals, Pharmaceutical & Pathological Laboratories etc. About 175-SSI, MSI & LSI organisations are the beneficiaries through these services.



Up-gradation and Creation of Test & Calibration Facilities

Calibration facilities in Thermal & Pressure parameter have been upgraded to meet the requirements of the industries such as Oil, Paper & Power sectors as well as the small scale Industries. The facilities for calibration of Electro-technical parameters are also upgraded to fulfill the requirement of Industries in the Power Sectors.

Initiatives in Computer education and IT Services

Towards generating IT educated manpower in the NE Region, both the laboratories have taken special initiatives by running DOEACC Accredited "O" & "A" Level computer courses for the benefits of the educated unemployed youths resulting into qualitative improvement of the IT manpower resources. Skill development training for Nurses in the field of Information Technology are also being conducted in the State of Tripura. Efforts are also being put up by facilitating support services towards Testing of SWAN Project implemented in the State of Meghalaya & Tripura. The laboratories are also providing Technical guidance in implementing State Service Delivery Gateway (SSDG) & State Portal (SP) in different States of North Eastern region.

Development of SC/STs and Weaker Sections

The Government is committed to the development of weaker sections for their growth. Accordingly the Department has supported ICT projects for development of SC/ST community.

The list of such Projects (on-going) is as under:

- Empowering Schedule Tribes (ST) candidates using ICT tools – Goa.
- Empowering Schedule Castes (SC) candidates using ICT tools – Goa.
- High Skill training in IT for Schedule Tribes (ST) candidates to enhance their skills and empower them to participate in IT development community – Andhra Pradesh.
- High skill training in IT for Schedule Castes (SC) candidates to enhance their skills and empower them to participate in IT development community – Andhra Pradesh.
- Capacity Building for improving the IT literacy & employability of Schedule Tribes (ST) candidates in IECT area – Jharkhand.
- Capacity Building for improving the IT literacy & employability of Schedule Castes (SC) candidates in IECT area - Uttar Pradesh and Bihar.
- Training of graduate/under-graduate women and SC/ST candidates for various Job oriented courses – Chandigarh, Himachal Pradesh, Delhi & Uttar Pradesh.
- Capacity Building for IT skill based Self Help Groups (SHG) of North East Region (NER) - Tripura, Mizoram, Manipur and Sikkim.
- Capacity Development of Tripura Youth in IT Entrepreneurships – Tripura.
- Bachelors & Masters courses in computer applications – Manipur.
- Capacity building for training of women and ST youth in IECT in North East Region – Mizoram.

Internet Exchange of India (NIXI)

Seven Internet Exchange Nodes are functional at Delhi (Noida), Mumbai, Chennai, Kolkata, Bengaluru, Hyderabad and Ahmedabad. The Internet Exchange nodes have been successful in ensuring peering of Internet Service Providers (ISPs) among themselves for the purpose of routing the domestic traffic within the country, instead of taking abroad, thereby resulting in better quality of service (reduced latency) and reduced bandwidth charges for ISPs by saving on International Bandwidth. The maximum volume of Internet traffic being handled by NIXI at present is 13Gbps.

All NIXI nodes are IPv6 ready with all its functional operations. NIXI also undertakes training and workshop for Network managers and other Technical engineers in co-operation with Asia Pacific Network Information Centre (APNIC).

Since 2005, NIXI also manages the .IN Registry (www.registry.in). At present, 87 Registrars have been accredited to offer .IN domain Name registration worldwide to customers. This has helped in proliferation of Web hosting in the country and enhancement of Indian language content on the Internet. Over 12 lakh .IN Domain Names have been registered till December 2011. Activity related to launch of registration of domain names in Indian languages is in progress.

NIXI has been entrusted with the responsibility for setting up the National Internet Registry (NIR) for India. NIR has been named as Indian Registry for Names and Numbers (IRINN). IRINN will be responsible for allocation of Internet Protocol (IP) address and Autonomous System (AS) numbers within the country. IRINN's operational readiness is expected to start operation after final approval from APNIC.

E-Infrastructure

E-Infrastructure comprises tools, facilities and resources that are needed for advanced collaboration and includes integration of various technologies such as Internet and broadband technologies, computing power, higher bandwidth provisioning, data storage, grid based resource sharing, cloud computing, etc.

Achievements during 2011-12

Establishment of Research and Training facility for Genome sequencing and Bio IT projects: Bio-IT Research & training facilities at Institute of Bio-informatics Applied Bio-technology (IBAB), Bengaluru is funded by the Department. The project objective is creation of professional manpower in Bio IT field, R&D in Bio-IT area and Knowledge sharing with national and international companies. Dry and wet labs have been commissioned and competency training has started.

ICT Vocational Centers for Skill Creation in the area of Information Technology for the Children with Disabilities: 100 ICT Vocational Centers for training the physically challenged children have been set up in addition to 20 ICT Vocational Centres set up in Phase-I. The less privileged children in the proximity of these centers have learnt ICT skills enabling them to seek employment and earn livelihood. The infrastructure at schools is connected to LAN and Internet and the project has been commissioned .

Setting up of ICT and Satellite based distant training facility for Mentally Retarded Children: For providing distance training to the special educators, parents and teachers of children affected with mental retardation, a project has been initiated at C-DAC, Thiruvananthapuram. The main objective is for creating infrastructural facilities for imparting distance training to the Teachers and other rehabilitation professionals in the field of special education using the EDUSAT. 8 Satellite Interactive Terminals (SITs) have already been set up and the teaching end studio at Thiruvananthapuram is also operational.

Setting up of ICT Centers in 250 Schools in rural areas of districts Ajmer and Jaipur in Rajasthan: To catalyze ICT skill development in schools in rural areas at an early age, a pilot project has been initiated in the rural schools of Rajasthan in the districts Ajmer and Jaipur for setting

up 250 ICT Centers in schools. The schools have been provided with hardware and software with internet connectivity. The content is under development and teachers are being trained for giving appropriate training to the school students.

Pilot project for Setting up Infrastructure for establishment of e-class room and e-Teaching Hub using EDUSAT: A pilot project for setting up e-class rooms and e-teaching hub for imparting quality education to engineering students at IETE Centers in rural areas and others has been completed with setting up of all the 11 Satellite Interactive Terminals (SITs) and teaching end equipment and all these Centers are operational.

Virtual Scalable Educational Services in Schools (VSESS): This is an ongoing project for demonstrating how the economic benefits of cloud computing as seen by business enterprises can be extended to educational institutions. As part of this project, 18 Senior and Senior Secondary KVS schools are being developed in first year for infrastructure development and demonstration of usage of cloud services.

Information Technology Investment Region (ITIR): To continue with the promotion of investment in PPP mode for IT-ITeS and Electronic Hardware Manufacturing (EHM) units in suburban and Tier II & III cities, Government of India notified the ITIR Policy to be followed up in each State/UT by providing for cost competitive infrastructure and matching social support services in the regions. This would entail co-sitting, networking and efficient usage of common infrastructures to boost setting up of export ventures and generate employment. During the period 2011-12, in response to the ITIR Policy resolution, the Department has received proposals from 4 States for creating modern townships in the Regions adjoining Bengaluru, Hyderabad/Ranga Reddy Districts, Kancheepuram and Bhubaneswar for seeking approval from the High Power Committee set up by the Government as per the guidelines in the ITIR Policy.

Establishment of Knowledge Web Repository in Kerala with SIEP and SPACE: The Knowledge Web Repository project proposed by Government of Kerala is to be set up by the State Institute of Encyclopedic Publications (SIEP) and Society for Promoting Alternate Computing & Employment (SPACE). The main objectives are for content identifiers and metadata management based on free and open source software and social networking support in Malayalam language. The wiki portal www.sarva.gov.in would be enhanced as local web repository for the student community and general public that helps create digital awareness in diverse fields of topical interests.

National Knowledge Network (NKN)

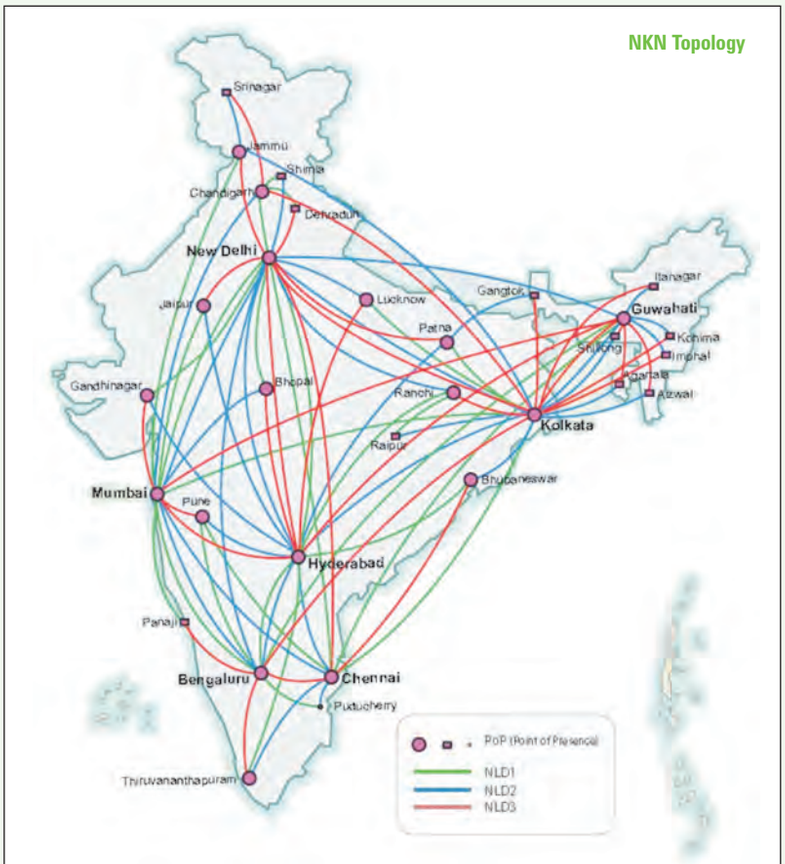
In March 2010 the Government approved the establishment of the National Knowledge Network (NKN) at an outlay of ₹ 5990 Crore, to be implemented by NIC over a period of 10 years.

Objective & Scope

The objective of the National Knowledge Network is to interconnect Institutions of higher learning with a high speed data communication network.

The application areas envisaged under the NKN cover: Agriculture, Education, Health, e-governance, Grid Computing (High Performance Computing).

The output of the NKN project will be a high capacity countrywide Infrastructure at education & research Institute level, to support education and research applications, and other application as envisaged by these institutions which require very high bandwidth. A high speed data communication network would be established, which would interconnect Institutions of higher learning. NKN will facilitate creation, acquisition and sharing of Knowledge resources among the large participating Institutions; collaborative research; Country Wide Class Rooms (CWCR) etc., and help the country to evolve as Knowledge Society.



Multiple 2.5/10G Connecting all the State Capitals & Gigabit Connectivity to all the Districts

Indicative Locational Map
Not to Scale

Features of the NKN

Network consists of an ultra-high speed Core (multiples of 2.5/10Gbps and upwards), and over 1500 nodes. It is scalable to higher speeds and more nodes also.

The Core shall be complemented with a distribution layer at appropriate speeds. The participating institutions can directly or through distribution layer connect to the NKN at speeds of 100 Mbps /1 Gbps.

Achievements during 2011-12

- NKN Points of Presence (PoPs) at Guwahati, Bengaluru, Belapur and Bhopal has been made operational. A total of 21 PoPs have been established so far.
- 82 core links have been established between various NIC/NKN PoPs.
- A total of 639 Institutions have been connected to NKN (this includes 172 National Mission on Education through ICT (NMEICT) links to Institutions which have been migrated to NKN). A total of 50 virtual classrooms have been setup so far.
- Network Ring which interconnects IARI, ICAR, NISCAIR, NISTAD, NPL, HRDG (CSIR) and IASRI at PUSA Campus, was completed and made operational, thus providing redundancy of link to all these institutes.
- NKN has conducted various technical workshops across the country for imparting the idea of NKN among institutes and also making them understand various uses of NKN.
- NKN network has been enabled for IPv6 and the IPv6 services have been made available to the end users.
- District links have been identified and allotted to the Telephone Service Providers (TSPs) for providing the required connectivity at district headquarter level.

Societies

Centre for Development of Advanced Computing (C-DAC)

Centre for Development of Advanced Computing (C-DAC) has today emerged as a premier Research & Development (R&D) organization of the nation in IT&E (Information Technologies and Electronics). It focuses on incubating, nurturing and strengthening national technological capabilities in the context of global developments in selected focus areas. In that process, it continuously works towards realizing nation's policy and pragmatic interventions and initiatives in Information Technology. As an institution for high-end R&D activities, C-DAC has been at the forefront of IT revolution. It is constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions in different sectors of the economy.

Achievements during 2011-12

High Performance Computing (HPC) and Grid Computing

HPC programs are focused towards building capabilities, systems, facilities and applications for nation's high performance computing requirements. C-DAC carried out technology developments in the areas of interconnect technologies, system software, Reconfigurable Computing Systems (RCS), Grid middleware, and various areas of scientific and engineering applications. It also continued its efforts towards building the National Grid Computing infrastructure and creating awareness among the potential users of grid technologies.

Significant achievements during the year in this area include the following:

- PARAM Yuva is now open for external use. In order to support the users, Yuva was augmented with scalable, high bandwidth Three-tier storage (Scratch, home and tape library) providing 100+100+600 Terabyte (TB) of space.
- Weather Research Forecast (WRF) Portal has been deployed at NCMRWF Noida for usage by researchers.
- HPC facilities and HPC applications installed at Centre of Excellence in Information and Communication Technology (CoEICT), Dar-es-Salaam Institute of Technology, Tanzania and Enterprise Incubator Foundation (EIF), Republic of Armenia.
- In order to encourage Engineering colleges to explore HPC technologies using their existing infrastructure, Open Source based HPC Cluster Solutions for Academic & Research Institutions, "ONAMA", has been deployed at engineering colleges in Maharashtra.
- Real time Weather Forecast up to village level for about 50000 villages across India: C-DAC developed the Weather Model. 3-day forecast is now available through InDG in 6 hourly interval over web as well as through mobile (Users: Agriculture Institutes, KSPB, Reuters, IAF, State Irrigation Departments, Farmers).
- Computational Fluid Dynamics Research: Parallel version of NEK 5000 from Argonne National Lab (ANL) (finite spectral element based) and TARANG (spectral method based) have been ported to PARAM Yuva in collaboration with IIT Kanpur. In the process, developed a fast parallel 2D FFT algorithm fine tuned for PARAM Yuva.
- Initiated Earthquake Simulation of Karad bridge and soil system in collaboration with College of Engineering, Pune (CoEP).
- C-DAC in collaboration with cancer Biomedical Informatics Grid (caBIG) has developed a grid-enabled web-based automated pipeline, ProtStruct, for ab-initio prediction of protein structures with an emphasis on cancer related proteins. The software is running on BRAF hosted at Pune and is being used by several organizations internationally.

- Garuda migration to NKN at 35 sites completed.
- Indian Grid Certification Authority (IGCA): setup by C-DAC as part of International Grid Infrastructure; issued about 400 grid certificates to the grid users.
- Garuda portal and workflow for Open Source Drug Discovery (OSDD) developed and deployed. 2500+ jobs executed successfully with 3000+ CPU hours.
- An MoU between C-DAC and Vikram Sarabhai Space Centre, Trivandrum for use of grid Garuda for computing intensive Space applications was signed.

Multilingual Computing and Heritage Computing

C-DAC's language technology products and solutions cover a wide range of applications such as publishing and printing, word processing in Indian languages, office application suites with language interfaces for popular third party software on various operating platforms such as Windows, Linux, and so on, electronic mail in Indian languages, machine translation using artificial intelligence techniques, language learning, video and television and multimedia content in Indian languages for subtitling, newsroom automation, multi prompter systems and online titling. Several of these have been developed and marketed not only for Indian languages but also for foreign languages like Tibetan, Bhutanese, Thai, Perso-Arabic and so on.

Significant achievements during the year in this area include the following:

- C-DAC's Official Website in multilingual (22 languages) consolidated form has been launched.
- The first volume of Marathi Vishwakosh (Encyclopaedia) of the Maharashtra Rajya Marathi Vishwakosh Mandal, has been designed and developed by C-DAC, and is freely accessible at http://www.marathivishwakosh.in
- Linguistic Resource Creation for major NE languages- Assamese, Bodo, Manipuri & Nepali- including dictionary, corpus and lexicon for machine translation.
- Enhanced Transliteration Engine to meet requirements of applications like UID.
- Beta version of English to Indian Language Machine translation system (Consortia based project of the Department) has been launched. It was also demonstrated in Tamil Internet conference 2010 and WWW 2011 World Conference.
- By adapting Angla-Bharati technology of IIT Kanpur, English to Bangla, Malayalam, Urdu and Punjabi Machine Translation Systems were developed with a lexicon of 50000 words in each. The same system is under field trial and is also being enhanced to support Telugu and Nepali.

Professional Electronics including VLSI and Embedded Systems

In the area of Power Electronics, the technology development efforts are focused towards designing of tools and components for power quality improvement, power supply modules, energy meters, distribution automation, remote inspection devices, etc. On the other hand, in the area of agro-electronics, the technology development efforts are focused towards development of tools for online, real-time quality estimation for food and agro products and automation of post-harvest processing of these products. Other initiatives in the areas of Real-time Systems, Embedded Systems and VLSI Design include sensors and sensor networks, embedded systems for multilingual and industrial applications and next-generation controllers. Framework of Academic, R&D and Industry collaboration have been set up under these.

Significant achievements during the year in this area include the following:

- Developed technologies for Wireless Traffic Control System, Intelligent Parking Lot Management System and Red light Violation Detection System.
- Energy Monitoring, Auditing and Forecasting system for Jaipur Vidyut Vitran Nigam Limited (JVVNL) and Madhya Gujarat Vidyut Vitran Nigam Limited (MGVVNL) completed.
- Body-worn Digital Programmable Hearing Aid has been developed using prototype ASIC. Production is being initiated for the first lot of 1000.

- A real time network monitoring and visualization tool DARPAN was successfully deployed. This tool is also used for Service Level Agreement (SLA) monitoring and has been in use for monitoring many major networks such as Ministry of Home Affairs' country-wide network, Kerala Secretariat WAN, Kerala SWAN etc.
- Developed colour sensor, wireless node with IP65 protection, multi-loop controller, advanced SCADA System and Industrial Controller.

- Prototypes of Smart Kitchen Cabinet, Smart Bed and LED Fixtures are field tested at C-DAC, Chennai Guest House.
- u-Sikshak, an ubiquitous learning application was released during ELITEX 2011.

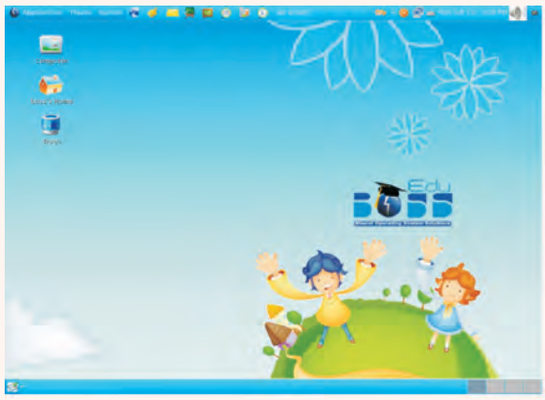
Software Technologies including FOSS

C-DAC's initiatives in this area include, Free & Open

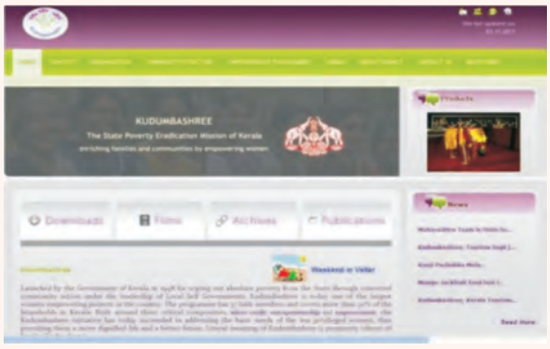
Source Software (FOSS), software tools and applications, software products for addressing digital divide, software products and solutions for e-Governance.

Significant achievements made during the year in this area include the following:

- BOSS Linux v4.0 localised to 15 Indian languages was released on February 26, 2011. BOSS system is being deployed in Chhattisgarh Online Information System for Citizen Empowerment (CHOiCE) project.
- EduBOSS 2.0 was released during Elitex 2011. This system is now deployed in several schools of Punjab and Haryana and in schools under Sarva Siksha Abhiyaan (Around 1.25 Lakh copies).



- A MoU has been initiated with NIC for BOSS Linux deployment in e-Gov applications across the country; MoU is also signed with CHiPS Chhattisgarh, Government of Tripura, Government of Bihar, ELCOT, Tamil Nadu, BSNL, Hyderabad and Indian Navy.
- An Integrated Assessment and Programming Tool for Mentally Retarded children PUNARJJANI has been developed and is ready for deployment.
- Kudumbashree, a Bilingual Portal for Women Empowerment of Kerala has been created. The portal is expected to benefit 36 lakh BPL families.
- e-Shikshak in Kannada language was launched by General Secretary, Kannada Ganak Parishat, Karnataka.



- India Development Gateway (InDG): Content & Services hosted in 10 languages; designed, developed and deployed 4 value added services (Solar Applications, Village Level Entrepreneur (VLE) corner, RTWF and Online quiz) for the end users; Assamese, Kannada and Malayalam languages added. Over 32000 farmers now getting market information through SMS.

Cyber Security and Cyber Forensics

Cyber security is one of the priority areas and proposes to deliver multilevel/multilayered security solutions to safeguard the Government Infrastructure. Solutions already developed in this direction are Cyber Forensics tools, Adaptive Intrusion Detection System, End systems security solution, document security solutions, Steganographic tools, etc. C-DAC continues to explore delivering the need of the hour Cyber Security Solutions.

Significant achievements made during the year in this area include the following:

- Cyber Check – India's first suite of Cyber Forensics tools, deployed in Mauritius and Syria. 1500+ Law enforcement officials and judges trained. Over 400 cases handled.
- Prototype Intrusion Prevention System (IPS) has been deployed at Weapons and Electronics Systems Engineering Establishment (WESEE) of Indian Navy. Flow analyzer component of IPS is pilot deployed at NKN-NOC at Delhi.
- Distributed Honeynet systems deployed at CERT-in, Punjab Engineering College Chandigarh, Tezpur University and Manipur University.

Health Informatics

C-DAC has developed a range of products and solutions for better health care services. These include Hospital Information System (HIS), Systems and Solutions for Telemedicine and Tele-education, Decision Support Systems (DSS) for Oncology and Ayurveda, and Software Libraries for Medical Systems and Standards.

Significant achievements during the year in this area include the following:

- The Mobile based Healthcare Information Service System (M-Care) has been developed and deployed at 20 Primary Health Centres in Tirur Taluka of Malappuram Dist, Kerala. It was awarded Second Best mHealth Project in the public voting category at eHealth World Awards 2011.

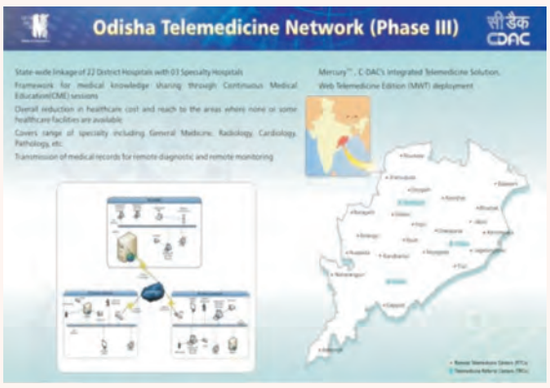
- 'Sunayanam', the Mobile Ophthalmology Unit, designed, fabricated with diagnostic and imaging equipment was inaugurated on 22nd February 2011.
- Low-Cost Mobile Telemedicine Facility deployed in Cherthala Taluk in Kerala State.

- Government of Rajasthan and RajCOMP have signed two Tripartite Agreements with C-DAC for the "AROGYA ONLINE" project. The agreements envisage replication of the Health Information Management System (HIMS) as implemented at SMS Hospital in 6 Associate Hospitals and 15 District Hospitals in the State.

- Odisha Telemedicine Network (Phase III): State-wide linkage of 22 District Hospitals and 3 specialty Hospitals.

Education & Training

C-DAC's education and training programs are based on finishing school model. Various courses offered under these programs are designed to produce industry-ready



professional for the IT industry.

Significant achievements during the year under this activity include the following:

- National Online Examination System: The modules pertaining to administration and monitoring of Online Examination have been incorporated. Hosted the system as a service during the year and conducted online examination for recruitment in ERNET and CCA. National Institute of Electronics and Information Technology (Formerly DOEACC) has been using this system for conducting Certificate in Computer Competency (CCC) examination across the country.

- The Certificate course in Hindi was launched during the Golden Jubilee celebrations of Central Hindi Directorate.

- Development of Cyber Forensics Training Facilities in the States of Sikkim, Meghalaya, Tripura and Assam are in progress.

- Conducted a number of training programmes in BOSS Open Source for teachers, Police and NIC Staff.

- Trained 2200 students from the minority communities across 15 states in various IT topics such as Java, Business Computing, etc.

- PACE has trained 32000 students covering the aspects of multilingual computing and solutions along with the existing market technologies.

- Around 4000 people trained through various Diploma and Degree programs.

- New M. Tech. Programmes initiated with Punjab Technical University (PTU), Cochin University of Science and Technology (CUSAT) and Gujarat Technical University (GTU).

- Signed an MoU with IGNOU to launch new academic programme Pan-India.

Special Initiatives for North-East India

To align with national initiative of uplift of North-East (NE) India, C-DAC has completed the few development projects during the year, which include:

- Comprehensive Spatial Decision Support System (Aranya) has been developed to facilitate forest management offices of Bodoland Territorial Area Districts (BTAD) Assam. The Tools include modules like Territorial forestry, Joint Forest Management (JFM), Social Forestry, Wildlife, working plan, village development plan and carbon calculator. This project has received 'e-North East Award 2011'.

- ICT infrastructure has been set-up in 10 remote tribal villages in East district, Arunachal Pradesh and started providing services to the community. This project has received 'e-North East Award 2011'.

- A Flood Response System (FRS) has been developed to facilitate District administration of Lakhimpur district in Assam to prepare plans for handling flood in the area.

- CAD training centres have been setup for weavers/artisans in Gangtok (Sikkim), Imphal (Manipur) and Aizal (Mizoram) to improve the skills of local artisans through technological upgrade for innovation in design.

- Multi-criteria and spatial data modeling for

identification of potential afforestation/ reforestation(AR) sites for claiming 'carbon credits' and analysis of futuristic land use dynamics has been developed.

- Two Cyber Forensics training labs have been setup in Assam and Tripura for State Police departments.

Software Technology Parks of India (STPI)

Background

Software Technology Parks of India (STPI) was established and registered as an Autonomous Society under the Societies Registration Act 1860, under the Department on 5th June 1991 with an objective to implement STP/EHTP Scheme, set-up and manage infrastructure facilities and provide other services like technology assessment and professional training.

Objectives of the Society

The objectives of the Software Technology Parks of India are:

- To promote the development and export of software and software services including Information Technology (IT) enabled Services and Bio-IT.
- To provide statutory and other promotional services to the exporters by implementing Software Technology Parks (STP)/ Electronics and Hardware Technology Parks (EHTP) Schemes and other such schemes.
- To provide data communication services including value added services to IT / IT enabled Services (ITeS) related industries.
- To promote micro, small and medium entrepreneurs by creating conducive environment for entrepreneurship in the field of IT/ITeS.

Achievements during 2011-12

Promotion of Development of software and software services

The STP scheme has been widely successful in promoting Exports of IT-ITeS Services. Exports made by STP registered units have grown manifold over the years. Upto the year 2010-11 more than 8000 units were registered under STP scheme (including 294 new units during the year 2010-11). As on 31st March 2011, 6554 units were operative out of which 5565 units were actually exporting.

As of now a total of 52 STPI centres/Sub-centres are operational across the country, out of which 45 centers are in Tier II and Tier III cities.

Provision of statutory services to the exporters

Interaction is on at various levels for the initiation of new sub-centers in the following Tier II & III locations; Aizawl, Agartala, Agra, Bhopal, Dhanbad, Jamshedpur, Goa, Jamshedpur, Surat and Varanasi.

Provision of data communication services

One of STPI's contributions to the software-exporting sector is provision of High-Speed Data Communication (HSDC) services. SoftNET, the state-of-the-art HSDC network, designed and developed by STPI is available to software exporters at competitive prices at all centres.

STPI provides the following HSDC services through its network:

- International private Leased Line Circuits
- Soft point services
- VSAT services
- Collocation services

SoftPOINT

The SoftPOINT service is the provisioning of "International Private Leased Circuit" (IPLC). IPLC's are digital circuits available for international data communications, which are used for data transmission, communication, etc. Secure and exclusive to the user, IPLC's are ideal for companies that have high volume of International data transmission.

SoftLINK

SoftLink is a service offering Internet access on a shared and dedicated basis. The service was launched to cater to the rising demands of the industry for better quality and committed services. Today SoftLink services enjoy a large customer base amongst STPI's datacom services. The total bandwidth up to December 2011 is around 680 2.048 Mbps E1s.

Last Mile Connectivity (Local Loop)

STPI has set up its own digital Microwave networks using Point-to-Point and Point-to-Multipoint microwave networks, which cater to the primary needs of the STPI units. With the addition of Point-to-Point radio networks, the network was further strengthened enabling the delivery of 2 Mbps, NxE1 links over the last mile under the STPI's overall control.

Project Management and Consultancy services

STPI is also providing project management consultancy services to the Central/State Governments and their organizations. Currently major consultancy projects undertaken are MP SWAN, J&K SWAN, computerization of Employment Exchanges for Government of Assam, IT Park Imphal project for Government of Manipur.

Promotion of small and medium entrepreneurs by creating a conducive environment in the field of information technology

STPI has been promoting SMEs and their cause by offering incubation services, organizing events, sponsoring/co-sponsoring events, participation in events, human resource development and export promotion efforts as follows:

Incubation Services

STPI has been providing incubation facilities to start-up units at its various centres. This has been of immense help to start up companies and entrepreneurs.

Organization of events

- Bangalore IT.Biz from 18th - 20th October, 2011 at Bengaluru.
- E-revolution 2011 from 22nd -23rd September, 2011 at Chandigarh.

Sponsorship/co-sponsorship of events

- "TiECON Delhi 2011" from 30th September to 1st October, 2011 at New Delhi.
- "ICC HR Conclave" conference on 4th May, 2011 at Kolkata.
- "Eastern India IT Fair (EIITF)" conference on 29th July, 2011 at Kolkata.
- "INFOCOM 2011" conference & Exhibition from 8th to 11th December, 2011 at Kolkata.
- "ICT East 2011" conference from 3rd to 4th August, 2011 at Kolkata.
- "NASSCOM Emerge out Conclave" conference on 12th January 2012 at Kolkata.
- "Connect 2011" held on 21st December, 2011 at Chennai.
- "7th North east Submit" from 6th -7th January, 2012 at New Delhi.
- "ISA Vision Summit 2012" from 7th -8th February 2002 at Bengaluru.
- "32nd APAN meet" from 22nd -26th August, 2011 at New Delhi.
- "e-World Forum" from 1st -3rd August 2011 at New Delhi.

Participation in events

- "NICT 2011" from 1st -2nd September, 2011 at Guwahati.
- "15th National Expo 2011" from 7th -11th September, 2011 at Kolkata.

- "India Telecom 2011" from 7th -9th December, 2011 at New Delhi.
- "e-India 2011" from 14th-16th December, 2011 at Gandhinagar.
- "NASSOM Annual Information Security Summit" from 6th - 7th December, 2011 at New Delhi.
- "Technologies meet 2011" on 24th June, 2011 at Thiruvananthapuram.

Society for Applied Microwave Electronics Engineering and Research (SAMEER)

Society for Applied Microwave Electronics Engineering & Research (SAMEER) is a Society of the Department with a broad mandate to undertake R&D activities in the areas of RF/Microwave Electronics, Electromagnetics and Millimeter Wave Technologies. SAMEER has two other Centers namely Centre for Electromagnetics located at Chennai and Centre for Millimeter Wave research at Kolkata. The headquarters of SAMEER is located at Powai, Mumbai.

Under various core and sponsored research programmes, SAMEER has done pioneering work in the areas of Linear accelerators, Atmospheric radar systems and RF /Microwave industrial systems. SAMEER has established a state-of-the-art Linear Accelerator infrastructure facility for batch production of Linac tubes for Medical Linear Accelerators at its second campus at Navi Mumbai. An Electronics Design Centre (EDC) for realizing System on Package (SoP) has been set up in the second campus of SAMEER Chennai at Perungudi. A comprehensive EM calibration and reference laboratory has been established at Taramani campus. A Compact Antenna Test Range (CATR) and a state-of-the-art millimeter wave laboratory have been established at SAMEER, Kolkata.

SAMEER has undertaken following core and sponsored projects during 2011-12

Development of Dual photon and multiple electron energy medical linac: SAMEER has ventured into developing a more advanced version of Dual photon Energy and multiple electron energy oncology system. Dual energy photon beams allow for more comprehensive treatment options in radiotherapy. This system is an advanced version of Medical Linac which makes use of two photon and multiple electron energies. It can be used for treating deep tumors with photon output and superficially located cancer with electron option. Considerable progress has been made in the development of various subsystems. The critical design of Beam bending magnets is completed.

6 MV Medical LINAC based integrated Oncology system under Jay Vigyan Mission (Phase II): The 6 MV linac is a basic workhorse for radiotherapy for cancer patients. In the Phase II of the Jai-Vigyan mission project, four units of 6 MV Linacs are being developed and deployed at various hospitals. The first unit of this series is undergoing final tests at SAMEER laboratories and the sub-systems for the next three units are in advanced stage of fabrication. Transfer of Technology of the type approved 6 MV Medical Linac to industry is under progress.

Stratospheric Tropospheric (ST) Radar: The Stratosphere-Troposphere (ST) Radar is being indigenously developed by SAMEER with state of art technology of active aperture. It will be installed at Guwahati university for NE region. ST Radar is a high resolution VHF mono-static Radar, which has added a new dimension to research in atmospheric dynamics. System, subsystems and components design and finalization including procurements is under progress. PDR is completed.

Adaptive OFDM Transceiver: Design and development of Adaptive OFDM transceiver has been taken up as a technology demonstration requirement. The modulation scheme will be dynamically controlled based on the channel conditions so that the data rate, efficiency and power will be optimized.

Multi Leaf Collimator (MLC): Multi leaf collimator (MLC) is an attachment used along with Medical Linac system. MLCs are used to provide conformal shaping of radiotherapy treatment beams. A proto-type assembly with six pairs each using SS steel has been developed.

Design and development of front end module at 60GHz: To design and develop a front end for wireless data link at 60 GHz, useful for ultra high speed secure short range point-to-point communications.

Linac Infrastructure: A special infrastructure has been built at Navi Mumbai, Kharghar campus to take care of future batch production of 6 MV Linac machine. This complex is built on approximately four acres of land in two phases.

Various sophisticated test equipments including furnaces needed for manufacturing and testing of linac

tubes and machines have been installed.

Ground based cloud profiling Radar operating in Ka band: Ka band subsystem development, testing, fabrication of antenna and all subsystems have been completed. Two digital receivers are fully completed and tested in integrated mode. Gigabit interface completed and tested. All TSG signals have been generated in FPGA and have been tested for its correctness.

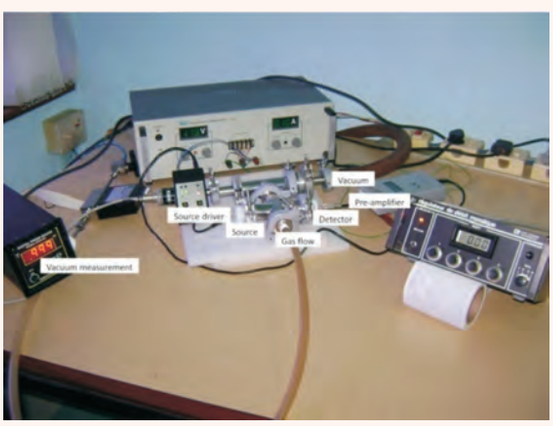
Design and development of indigenous digital ionosonde for ionospheric studies: System design completed and Single channel receiver lab prototype developed. DSP simulation completed and embedded software design under progress. DSP Software design completed.

Technology development for location of live subjects buried under/hidden behind various barriers: FFT algorithm for processing of breathing signal achieved. L-Band Antenna design has been simulated. Analog signal chain modules like Hertz narrow band filters and low noise amplifiers have been designed and tested.

Design and development of UWB sources, UWB antenna and testing for radiated susceptibility: Literature survey and design for Marx Generator and TEM Cell completed for testing Radiated susceptibility.

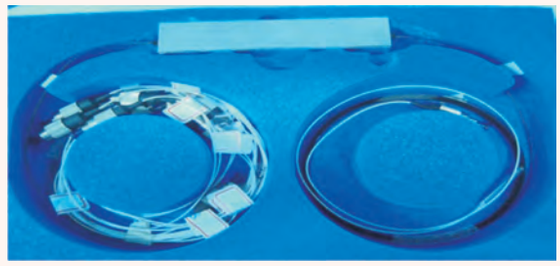
Indigenous technology development of the Imaging system: Algorithms to process raw image identified from literature. Block design for imaging system completed. Source for detector procurement identified.

Technology development of Frequency Multiplier at 94 GHz: Prototype has been developed. Initial testing has been carried out. Performance optimization completed.



Water Vapour detection Sensor: IR Laser Diode absorption based Water Vapour Sensor is being developed at SAMEER. Optical sensor will be developed to detect traces of water vapor at sub-ppm level based on Tunable Diode Laser Absorption spectroscopy (TDLAS). In this project, prototype sub-units of Infra-Red laser source at 1854 nm, corresponding detector and associated electronics were developed and tested.

A 12 bit ADC Data Acquisition unit was developed to enhance the sensitivity. The integrated subunits were tested from ambient to vacuum for water vapour sensing. System has been calibrated with High



Transition (HITRAN) database.

Packaging of integrated optic single channel add-drop multiplexer: The project objective is to develop a packaged integrated optic device that will add /drop few DWDM Optical channels in a fiber optic network. In this activity, Optical single channel add-drop multiplexer is developed at IIT Madras and packaged by SAMEER. The device is fabricated on Silicon-on-insulator material and is a Mach-zehnder interferometer. The alternate ITU channels are demonstrated to separate out through two output ports of the device. The single channel add-drop multiplexer is packaged with optical fiber interconnects.

Packaged integrated optic add/drop multiplexer

Development of millimeter wave antennas: The millimeter wave antenna is a critical component used in radar and communications. This activity is being pursued to enhance design competence in millimeter wave antennas by undertaking development of few complex millimeter wave antennas. Design optimization of Waveguide cross slot antenna in Ka band is in progress. Transreflector antenna at 60 Ghz has been designed. New dielectric rod antennas have been designed and fabrication is in progress.

Development of Doppler SODARs: Phased array Doppler sodar with remote operation was developed and delivered to IGCAR. Solar panel version also developed.

Test, measurement and Design consultancy services Calibration and reference to support EMI test instrumentation: The EMI/EMC facilities at SAMEER continued to enjoy the leading position in the country offering EMI/EMC Research, Test and Design services. The EMC Calibration Laboratory at SAMEER received the NABL accreditation for its calibration services, making it another first in the country. This is a major support to National / Regional Test Laboratories and industries as they can get the calibration services within the country itself, thus reducing the down time and cost involved. Around 725 EMC evaluation assignments were taken up for 200 industries during the financial year. Siemens has selected SAMEER as Technical consultant for solving EMI problems of all their medical electronics products.

National Institute of Electronics and Information Technology (NIELIT) (Formerly DOEACC Society)

NIELIT(formerly DOEACC Society), an Autonomous Scientific Society under the administrative control of Department of Information Technology, Ministry of Communications and Information Technology, Govt. of India was set up to carry out Human Resource Development and related activities in the area of

Information & Communication Technology. The Society has 15 Centres at Agartala, Aizawl, Aurangabad, Calicut (with Southern regional office at Pudukkottai), Chennai, Chandigarh (with 3 branches at Shimla, Lucknow & New Delhi) Gorakhpur (Eastern Regional Office at Patna, Bihar), Gangtok, Itanagar, Imphal, Srinagar/Jammu, Shillong, Kohima/chuchuyimlang, Kolkata and Tezpur/Guwahati with its Headquarters at New Delhi. One more NIELIT Centre is being set up at Ajmer.

The Society is engaged both in the formal & Non formal Education in the area of Information, Electronics and Communication Technology(IECT) besides development of Industry oriented quality education & training in the state-of-the-art areas, establish standards to be the country's premier institution for Examination and Certification in the field of IECT. It is also a National Examination Body, which accredits institutes/organizations for conducting courses particularly in the non-formal sector of IT Education & Training.

NIELIT Centres are conducting various long-term courses at Post-Graduate level in Electronics Design & Technology; Embedded Systems etc., which are not offered by Universities/Institutions in the formal sector. Other long term courses conducted by the Centres are Diploma Level in Electronics Production & Maintenance, Electronic Engineering, Computer Science & Engineering, Masters in Computer Application, Bachelor in Computer Applications etc., which are affiliated to respective State University/Technical Board. The NIELIT Centres are also engaged in national level scheme courses like DOEACC O/A/B/C level, Computer Hardware Maintenance O/A level, Bio-Informatics O/A/B level, Certification in Information Security, ITES-BPO Courses, IT Literacy Programmes and short term courses in the area of Information Technology, Electronics Design & Technology, Manufacturing Technology, Maintenance Engineering, etc. Besides the training activities, NIELIT Centres are offering consultancy services and software development.

National Level Examination and Certification Schemes

- **DOEACC Scheme on Computer Courses:** In the Non-Formal Sector, the Society is implementing the DOEACC Scheme on Computer Courses, a joint scheme of the then Department of Electronics (DoE), now Department of Information Technology and AICTE at the National Level by utilizing the facilities and infrastructure available with the institutions/organizations in the non-formal sector. Under the Scheme, 'O' Level (equivalent to Foundation Level), 'A' Level (equivalent to Advanced Diploma), 'B' Level (equivalent to MCA level) and 'C' Level (designed to be at M.Tech Level) are being offered. O/A/B Level courses are recognized by MHRD for the purpose of employment. Since inception of the Society more than 8.59 lakhs candidates have been registered, and about 1.66 lakh candidates have qualified the various DOEACC Computer Courses at O/A/B & C Level.

- **Scheme on Computer Hardware Maintenance Courses (CHM O/A level):** A scheme for computer hardware courses has been launched by NIELIT in hardware courses during 2006-07 in association with Manufacturer's Association for Information Technology (MAIT). The objective of the scheme is to generate quality manpower for computer hardware maintenance and networking by utilizing the facilities and expertise available with training institutes/ organizations in the non-formal sector. Under this scheme, Diploma in Computer Hardware Maintenance (CHM) – 'O' Level and Advanced Diploma in Computer Hardware Maintenance & Networking (CHM) – 'A' Level courses are offered. Nodal Centre for the Scheme is NIELIT Centre, Aurangabad

- **Scheme on Bio-Informatics Courses (BI-O/A/B level):** NIELIT has also launched a National Level Scheme on Bio-informatics, which is a fast growing discipline & has emerged as a cutting edge technology of the knowledge revolution. Under this scheme, NIELIT Centres are offering Bio-informatics 'O' level (Diploma Level), 'A' level (Post Graduate Diploma Level) and 'B' level (M.Sc Level) courses. The successful 'B' level students are awarded M.Sc.(Tech) Degree from West Bengal University of Technology (WBUT) after a Wet lab training program from WBUT. Nodal Centre for the Scheme is NIELIT Centre, Kolkata

- **Scheme on ITeS-BPO courses:** NIELIT has launched courses in the Customer care and banking sector to equip the students with the knowledge required to function as professionals in the ITeS-BPO industry. NIELIT Centres in the North-East and Jammu & Kashmir are offering ITeS-BPO (Customer Care) training programme. NIELIT Centre, Aurangabad has launched a Scheme on ITeS-BPO (Banking & Finance) course for the banking sector in association with Indian Institute of Banking & Finance (IIBF), Bombay.

- **Certification Scheme in Information Security:** NIELIT has launched a National Level Certification Scheme in Information Security with the support of Department under which certification at 3 levels are offered. Level-1 and Level-2 of the scheme viz. Certified System Security Analyst (CSSA) and Certified System Security Professional (CSSP) has been launched in July 2010 and January 2011 respectively. So far a total of 367 candidates have registered for Level-1 and 62 for Level-2. Level-3 Certified Computer Forensic Professional (CCFP), Certified Information Systems Security Auditor (CISSA), Certified System Security Solution Designer (CSSSD) was launched on October 5, 2011 for January 2012 batch. NIELIT Centre, Gorakhpur is the nodal Centre for this activity.

IT Literacy Programmes - Course on Computer Concepts (CCC)

NIELIT has been conducting Courses on Computer Concepts (CCC) since the year 1999. The course is designed to aim at imparting a basic level Computer appreciation programme for the common man. Owing to the quality of the course and centralized examination system, the course has been recognised by State Governments of Gujarat, Maharashtra and also by various other Government Departments for new appointments/ promotions. The CCC examination is currently being conducted online thrice in a year. Approximately 6.16 lakhs candidates have been appeared for the examination through online as well as offline mode (CD based) and more than 4.43 lakhs have been certified since inception. CCC course contents have been made available in 21 constitutionally recognised Indian languages through a dedicated web portal "http://elearn.doeacc.edu.in" for free access to the candidates.

IT Literacy Programmes - Basic Computer Course (BCC)

NIELIT has launched an IT Literacy Programme namely, Basic Computer Course (BCC), in view of the demand for a lower level course than the Certificate Course on Computer Concepts(CCC). It is a 36 hours course and there is no eligibility criteria for appearing for BCC. Students opting for this course will get the very basic knowledge of computer operation and applications including e-governance application required for day to day use. M/o Labour & Employment, Directorate General of Employment & Training, Government of India vide their letter No. DGE&T-19(19)/2010-CD dated 15.10.2010 has decided to make BCC course of NIELIT as one of the IT Literacy course compulsory for all the training schemes of DGE&T w.e.f. sessions starting from August, 2011. Govt. of Sikkim has accepted 'BCC' as the basic computer literacy certificate required for Govt. jobs.

IT Literacy Programmes - Awareness in Computer Concepts (ACC)

NIELIT is launching a new IT Awareness course viz; Awareness in Computer Concepts (ACC). ACC is an entry level course for common mass for learning the operations of Computers for accessing e-Governance Applications etc. It will be a 20 hours course consisting of 06 modules. There will be no examination; certificates of participation will be issued to the candidates on successful completion of their training.

Courses offered by NIELIT Centres

Formal Courses

M.Tech in Electronics Design & Technology (2 years duration at Aurangabad, Calicut & Gorakhpur Centres)

M.Tech in Embedded Systems (2 years duration at Calicut Centre)

MCA (3 years duration at Calicut, Srinagar, Aizawl & Imphal Centres)

BCA (3 years duration at Aizawl, Imphal, Kohima Centres)

Diploma in Electronics Production & Maintenance (3 years duration at Aurangabad Centre)

Diploma in Electronic Engineering (3 years duration at Imphal Centre)

Diploma in Computer Science & Engineering (3 years duration at Imphal, Aizawl Centres)

Diploma in Electronic Engineering & Telecommunication Engineering (3 years duration at Aizawl Centre)

Non-Formal - National level Scheme Courses

DOEACC 'O' / 'A' / 'B' / 'C' level IT Courses

Computer Hardware Maintenance 'CHM-O' / 'CHM-A' level

Bio-Informatics 'O' / 'A' / 'B' level

Certification in Information Security (Level 1/2/3)

ITES-BPO Customer care / Banking & Finance

IT Literacy Programmes (Course on Computer Concepts (CCC) /Basic Computer Course (BCC)/ Awareness in Computer Concepts(ACC)

Non-Formal Short-Term Courses on the following topics:

Electronics Design Technology

- Embedded System
- VLSI Design
- PCB Design and Fabrication
- Surface Mounted Device Technologies
- Fiber Optics
- VHDL Programming

Information Technology

- Computer Science and Applications
- Computer Hardware & Networking
- C, C++, Core JAVA & VB programming
- Internet & Web Page Designing
- Basic Multimedia
- Cyber Law

Manufacturing Technologies

- CAD and 3D Modelling
- CAM / CAE Tools
- Maintenance Engineering
- Consumer Electronics
- Telecom and Office Automation
- Process Control etc

Entrepreneurship Development Programme

New Initiatives

- Development of CCC course contents in 21 constitutionally recognised Indian Languages
- Launching of Basic Computer Course (BCC)
- Launching of Level-3 under National level

Certification Scheme in Information Security

- Launching of new IT- Literacy Course-Awareness in Computer Concepts (ACC)

Various activities / projects undertaken for Women, SC/ST, Minorities, Differently abled, Weaker Sections and NE Region

Sponsored Ongoing Projects:

- NIELIT is currently implementing a project on Training and Certification of one lakh Common Service Centre (CSC) Operators/ Village Level Entrepreneurs (VLE) in Course on Computer Concepts (CCC) of NIELIT.

  The project envisages training of 25000 women candidates in CCC by select VLEs in the States of Assam, UP, J&K, Maharashtra, MP, Tamil Nadu, Rajasthan, Sikkim, Bihar and West Bengal.

- NIELIT has undertaken Training of Rural Youths belonging to the States of UP, Bihar, Chattisgarh, Jharkhand, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Jammu & Kashmir, Kerala and UT of Puducherry in various courses for improving their skills and thereby employability. The training includes

  (a) Training of 48000 SC/ST/Minority Community candidates in various IT software courses

  (b) Training of 32400 SC/ST/Minority Community candidates in various Electronic equipment repair & maintenance courses

  (c) Training of 9000 SC/ST, Minority & Women in ITeS-BPO (Customer Care and Banking).

- NIELIT has undertaken a project for training 25000 Panchayati Raj functionaries in Basic Computer Course (BCC) with the financial support of M/o Panchayati Raj.

- NIELIT Centre Gorakhpur has undertaken a training project for training a total of 880 ST candidates at Jamshedpur, West Singhbhum in DOEACC 'O' level, Advance Diploma in Hardware, Networking and Information Security and Computer Application & Office practices.

- NIELIT Centre Gorakhpur has undertaken a training project for training a total of 2140 SC candidates at Gorakhpur, Patna, Allahabad, Gonda & Fatehpur in DOEACC 'O' level, Advance Diploma in Hardware, Networking and Information Security and Computer Application & Office practices.

- NIELIT is continuing to provide training to SC/ST job seekers registered with employment exchanges in DOEACC 'O' Level for increasing their employability with the financial assistance of Directorate General of Employment & Training (DGE&T). The fourth batch of training programme for about 2000 candidates is being offered at 21 select locations throughout the country.

- NIELIT, Chandigarh Centre has undertaken a project for training a total of 960 women candidates in Advanced Diploma in .NET Technology, Advanced Diploma in Java Technology (J2EE) and Advanced Diploma in Multimedia & Animation over a period of 2 years along with a Monitoring & Impact Assessment for IT for Masses Programme.

- NIELIT, Gorakhpur is implementing a project for Capacity Building for improving the Employability of Women in ICT area at Cuttack and Puri in Odisha. Under the project, a total of 1380 women candidates will be trained in Elementary Computer Education (Computer Applications and Office Practices) and DOEACC 'O' Level.

- A project undertaken by NIELIT, Guwahati Centre for training 4800 Women candidates of NE region in ITeS-BPO is under implementation. A total of 3200 candidates have been trained so far under this project.

- NIELIT Centres at Aizawl, Imphal, Kohima and Srinagar/Jammu are implementing a project to establish Computer Forensic Lab & Training Facility in NER and J&K State with an objective to create a Cyber Forensic Lab environment with appropriate tools and technologies to train Law Enforcement Agencies in the use of tools with appropriate procedure for investigation of Cyber Crimes in the border States of India.

NIELIT Schemes for SC/ ST and other Economically Weaker Sections

- **Scholarship Scheme for SC / ST / Female / Physically Handicapped candidates:** The NIELIT has got a large number of enrollments of candidates belonging to the SC/ST/Physically Handicapped including female candidates. Keeping in view the demand of the courses among the weaker sections of the society, NIELIT has a Scholarship Scheme for SC/ST/Physically Handicapped and Female Students who are pursuing O/A/B/C level courses of the NIELIT as a full time course through an Accredited Institute authorized to conduct the DOEACC Scheme Courses. As per the scheme, the candidates shall have to clear all the papers in the first attempt and the income of the parents of the students should not be more than ₹ 1 lakh per year from all sources.

Details of SC/ST and female candidates registered for DOEACC IT Software Scheme during 2011-12 are as under:-

Total Registered	=	29053
No. of Female Students	=	11027
No. of SC Students	=	1467
No. of ST Students	=	606

During the year, a total of 228 candidates have been provided scholarship in respect of July, 2010 exam. Scholarship applications for another 300 candidates of January, 2011 exam is under process.

- **Refund of Examination fee to the SC/ST candidates:** NIELIT is also providing examination fee refund to the SC/ ST candidates on successful completion of DOEACC O/A/B/C level.

Sl. No.	Activities	Target (2011-12) No. of Students to be trained	Achievements during the year 2011-12 (upto 31.12.2011) No. of students (Trained/ Undergoing training)	No. of students to be trained from 1st Jan, 2012 to 31st March, 2012
1.	DOEACC Scheme (Examination & Certification)			
	O/A/B & C Levels (Non-formal Sector of IT Education & Training) Half Yearly Examinations	15,000	4693	10307
2.	Training by NIELIT Centres			
	To Conduct Training for formal sector Long Term Courses (M. Tech, MCA, BCA, PGDCA, Diploma, Diploma in Electronics Engg. & Computer Science etc.)	1,800	1442	358
	To conduct training for non-formal Sector Long Term Courses O/A/B Level Course, Bio-informatics O/A Level Courses, Hardware Courses O/A Level	14,500	4466	10034
	Training for Short Term Courses of duration less than 1 year	14,000	12082	1918
3.	IT Literacy Programme (CCC course)	95,000	99664(appeared) 69277(qualified)	25000
	IT Literacy Programme (BCC course)	--	127(appeared) 108(qualified)	200

Other Major Achievements

- NIELIT, Calicut has launched M.Tech in Electronics Design and Technology(EDT)
- NIELIT, Srinagar/Jammu has launched PGDCA in affiliation with University of Jammu and trained 23 students
- NIELIT, Kohima conducted workshop cum awareness on Cyber forensics and Cyber Crimes for State Government Officials and Central Government offices located at Nagaland, Institutions. Altogether 91 officials participated in the programme.
- NIELIT, Kolkata has completed the Data Entry/ Validation / Processing and Tabulation Work for Computerization of Agriculture Census 2005-2006 & Input Survey 2006-2007.
- NIELIT, Kolkata has undertaken a Pre &Post Processing Examination work for West Bengal Police.
- NILEIT, Kohima was the institution partner and host for the 2nd "e-North East Award Summit" with the theme 'Empowering Communities in North East with inclusive ICTS' held on 25th November, 2011 in Kohima.

Centre for Materials for Electronics Technology (C-MET)

Centre for Materials for Electronics Technology (C-MET) has been set up as a Registered Scientific Society in March 1990 under the Department for development of technologies in the area of electronics materials. C-MET is operating with its laboratories at Pune, Hyderabad and Thrissur.

The main objectives of C-MET are:

- To establish technology up to pilot scale for a range of electronic materials and transfer the same to the industry for commercialization.
- To establish routine characterization facilities.
- To undertake applied research activities in the areas of operation.
- To establish National Data Base on Electronics Materials.

The mission of C-MET is to develop knowledge base in the electronic materials and their processing technology for the Indian industry and become a source of critical electronic materials, know-how and technical services for the industry and other sectors of the economy.

Achievements during 2011-12

Integrated Electronics Packaging

- Developed Micro-cryo-coolers in Low Temperature Co-fired Ceramic (LTCC)
- Established pilot plant production of ultra low loss microwave substrates for high power solid state amplifier design.

- Prepared ferrite samples of different stoichometry by chemical route.
- Dispensing trials with different batches of silver pastes were continued.

Nanomaterials and devices

- Optimized Q-CdS glass-nano-composites (cutoff range of 475-515 nm) with transmittance greater than 80 % for automobile application.
- Nano Al Powders synthesized by TAPR under different synthesis conditions were given to High Energy Materials Research Laboratory (HEMRL) for trials.
- Fabricated a transparent p-n hetero junction diode using n-type aluminum doped zinc oxide thin films and p-type copper aluminum oxide films on glass substrate.
- The NTC thick film compositions were fine tuned to get the resistance within the tolerance limit.

Ultra high purity materials

- Computer controlled melting and freezing facility (500 gm sample handling capacity) developed and used for purification/ crystallization experiments.
- 6H & 4H SiC seed crystals are analyzed for their bandgaps and Full Width at half Maximum (FWHM) values.
- Homogenisation experiments on 5N pure gallium were completed.

Materials for Renewable Energy

- Prepared CdS quantum dots with capping agent to improve the dispersion of inorganic particles into polymer and consequent efficiency of Hybrid Solar Cells.
- Prepared Q-CdS/CdSSe-glass nanocomposites as a photocatalyst for hydrogen generation. The experimental trials for water splitting are in progress.
- The N-doped anatase TiO2 (band gap 2.8eV) was synthesized using sol gel technique.
- Developed Carbon aerogel supercapacitor (up to 2.5 F) using carbon aerogel tapes and studied their capacitance, charge-discharge, leakage current, etc.

Piezo sensors and Actuators

- {001}, {111} and {110}-preferentially oriented PZT thin films of 2.0 μm thickness successfully fabricated on Silicon substrates.
- Established correlation between thin film texture and transverse piezoelectric coefficient, for thin film microactuators.
- Ring type ML actuator stacks of height 5 mm and 16 mm fabricated & samples sent for testing at LEOS, ISRO.

Research Performance Indicator during 2011-12

S.No.	Activity	Status
1.	Research publications in journals	33
2.	Conference presentations	50
3.	Invited talks	30
4.	Fellowships/visits (Abroad)	02
5.	International/ National conferences organized	01

Electronics and Computer Software Export Promotion Council

Electronics and Computer Software Export Promotion Council (ESC) is mandated to promote India's exports of Electronics, Telecom, Computer Software and IT Enabled Services. ESC offers a varied set of services to its members for accelerating exports.

Some of the services of ESC to the member exporters are as follows:

- Facilitates participation in Global Trade Shows / Expositions and Conferences.
- Undertakes Market Research / Studies and publicity Campaigns in major overseas markets.
- Facilitates business interface between Indian and foreign companies through Buyer – Seller Meets, and locates new business partners for Indian electronics, computer software and IT companies.
- Provides on-line facility for Data Search.

Participation in Global Expositions: During the year, the council has organised participation of Indian Companies in the following major international events abroad. They are:-

- ICT EXPO 13-16 April, 2011, Hong Kong.
- INTERNET WORLD 2011, 10-12 May, 2011, London
- CeBIT AUSTRALIA, 2011, 31st May – 2nd June, 2011, Sydney.
- Costa Rica Services Expo / Summit, 1– 2 June, 2011, Costa Rica.
- TICs 2011- Exhibition and Congress of Telecommunications, Internet and Information Technologies, 23-25, August, 2011, Argentina.
- 4th Indexpo 2011, Oman International Exhibition Centre, Muscat, Oman, 20-22, September, 2011, Muscat, Oman.
- The INTERNET SHOW, 27- 28 September, 2011, ABU DHABI.
- GITEX DUBAI, 9-13 October 2011, Dubai.
- CeBIT Hanover Hanover, Germany – March 6-10, 2012.
- ESC would also be organizing participation in Electronic Americas 2012 Sao Paulo / Brazil 28 March -01 April, 2012.

INDIASOFT 2012: As in previous years, ESC will be organizing the 12th edition of the annual IT event INDIASOFT 2012 during 21st to 23rd March, 2012 at Hyderabad, Andhra Pradesh, More details can be accessed from the Indiasoft 2012 website www.indiasoft.org

Seminars / Colloquiums: As trade and investment between India and Latin America continues at an accelerated pace, ESC organized a seminar by being the IT Partner at the inaugural Latin America India Investors Forum, hosted by LatinFinance on 17-18 November, 2011. The Council in association with ASSOCHAM organised a Colloquium on "Indo-Germany Business-Cooperation" on 2nd December, 2011 in New Delhi.

Publications: The Council also brings out the following publications for the benefit of its members :-

- ELSOFTEX, the monthly newsletter of ESC contains features of market surveys, developments in the international trade, business opportunities, changes in Government policies and procedures.
- ESC publishes annual Statistical Year Book which gives details of India's exports in the Electronics, Telecom and Software / services sector.
- ESC brings out reports of market surveys, importers' listings, directories, country reports, etc.,

ESC is a member of World Electronics Forum (WEF) and South East Asia Information Technology Organization (SITO). ESC has extensive network of counterpart organizations world over to leverage member companies' export interests in these markets. In the ESC network, there are over 50 World Trade Development Bodies.

ERNET India

ERNET India is serving education and research institutions by connecting them on Intranet and Internet using appropriate state-of-the-art technologies. Research & development and Training are integral parts of ERNET India's activities.

Network Infrastructure & Services

The ERNET network is a judicious mix of terrestrial and satellite based wide area network. ERNET India provides services through its 15 Points of Presence (PoPs) located across the country. All PoPs are equipped to provide access to Intranet, Internet and Digital Library through terrestrial leased circuits and radio links to the user institutions. The PoP at STPI Bengaluru provides Intranet and Internet access through Satellite.

ERNET network supports IPv4 and IPv6 Internet Protocol. IPv6 routing protocol OSPFv3, end-to-end Ethernet services, QoS (DiffServ), video conferencing, authentication and authorization have also been implemented on ERNET Network. ERNET provides services, namely, Network Access Services, Network Applications Services, Hosting Services, Operations Support Services and Domain Registration Services under ernet.in, ac.in, edu.in & res.in domains.

The network infrastructure is being upgraded both in terms of technology and capacity. At its Delhi PoP, ERNET India has installed mail security appliances with antivirus and anti-spam software. The aggregate internet bandwidth was upgraded to more than 630 Mbps. More than 1100 user institutions covering diverse application domains are now connected to ERNET network. A total of 6500 .in domains under edu.in, ac.in and res.in have been registered. It has also been hosting websites for the academic and research community.

Research Activities and ICT Projects

Trans Eurasia Information Network - TEIN3

The Trans-Eurasia Information Network (TEIN) initiative was launched at the Asia Europe Meeting (ASEM) Summit in Seoul in 2000 to improve Euro-Asian research networking. TEIN3 that started in 2009 has expanded its footprint to South Asia bringing the total number of partners to 18. Asian countries - Bangladesh, Bhutan, Cambodia, India, Nepal, Pakistan and Sri Lanka - are also connected/ being connected. In India, TEIN3 Point of Presence (PoP) has been co-located at ERNET PoP at Mumbai and is acting as the hub for connecting research networks in South Asia except Pakistan. From Mumbai, two high speed links of 2.5 Gbps each have been commissioned to Europe and Singapore providing direct connectivity to GEANT (the pan-European data network) and TEIN3 PoP at Singapore. India is now acting as the hub for connectivity between Europe and Asia-Pacific countries. The network of ERNET India is connected to TEIN3 PoP in Mumbai through National Knowledge Network (NKN). The connectivity to TEIN3 is being used by India for connecting to research and education networks worldwide for collaborative research.

EU-IndiaGrid2 - Sustainable e-Infrastructures across Europe and India

EU-IndiaGrid2 is the second phase of the EU-India Grid project which was initiated in January, 2010. There are six European partners and 10 Indian partners in this new project. The role of ERNET India in the new project is to provide network infrastructure support using TEIN3.

MyFIRE – Multi-disciplinary Networking of Research Communities in FIRE

MyFIRE (www.my-fire.eu) is an European Commission funded project launched in June, 2010 through the EU FP7 programme, under the ICT thematic priority **Future Internet Research and Experimentation (FIRE).** The project aims to ensure a balance between the requirements for researcher's collaboration and the stakeholder's expectations. MyFIRE project consortium includes four European partners (Inno TSD SA France, ETSI France, University of Edinburgh UK and Fraunhofer Germany), and four international partners from BRIC (IPT Brazil, ITMO Russia, ERNET India and BII China) countries.

Mobile IPv6 Test bed - Mobility between heterogeneous access networks

Mobile IPv6 test bed is a joint project between ERNET India and Indian Institute of Science (IISc) Bengaluru which is funded by the Department. Under the project, a WLAN access network testbed has been setup at ERNET Bengaluru with Mobile IPv6 Home Agent (HA), Mobile Node (MN) and Correspondent Node (CN) services configured using the UMIP MIPv6 stack. The seamless network layer mobility test between different WLAN subnets is completed.

6LoWPAN - Management and Monitoring of Wireless Sensor Networks

6LoWPAN is a joint project between ERNET India and IISc Bengaluru, funded by the Department. IEEE 802.15.4 Low-rate Wireless Personal Area Network (LoWPAN) standard supports wireless connectivity in low-cost devices that operate with limited computing resources and battery power. The objective of this project is to develop a prototype for monitoring and managing a 6LoWPAN based Wireless Sensor Network (WSN). An experimental 6LoWPAN testbed is setup at ERNET using TelosB motes with temperature, light and humidity sensors for development and testing.

Virtual Scalable Educational Services for Schools

The Department has approved in Nov., 2011 the implementation of the R&D project, "Virtual Scalable Educational Services for Schools - a pilot project". In the project, select Kendriya Vidyalayas from Delhi, Bengaluru and Chennai region will participate for which ERNET has signed an MoU with KVS.

Setting up Repository of Digitized Data under the Digital Library Initiative

The Department has funded a project titled "Setting up Repository of Digitized Data under the Digital Library Initiative". As part of this project, ERNET India is to set up a repository for hosting the digitized data and provide Internet bandwidth to three centres namely IISc (Indian Institute of Science) Bengaluru, International Institute of Information Technology (IIIT) Hyderabad and CDAC Noida. The digital repository has been set-up at ERNET PoP in Pune and all the available data from IISc Bengaluru has been downloaded and hosted in the new repository.

e-Linkage of Jawahar Navodaya Vidyalayas & Kendriya Vidyalayas

ERNET India has provided Internet connectivity to 31 remote Vidyalayas under Kendriya Vidyalaya Sangathan and had also provided connectivity to around 300 Jawahar Navodaya Vidyalayas under the Navodaya Vidyalaya Samiti.

Community Information Centres – Vidya Vahini (CIC-VVs)

CIC-VVs are operational in the Government schools located in Andaman & Nicobar Islands and Lakshadweep Islands with the dual purpose of imparting ICT based education and training in the schools as well as for providing citizen centric services to the people of the region. The VSAT link enables reliable Intranet and Internet connectivity including distance education in the region.

ICT Vocational Centres for Children with Disabilities-Phase II

After implementation of the pilot project by setting up of ICT centers in 21 schools in Tamil Nadu and NCR Delhi, ERNET India has implemented the second phase of the project. In this phase, select 100 schools spread throughout the country have been made disable friendly through setting up of ICT centres for students who are physically challenged, and those with hearing or vision impairment.

MoU with State Government of Rajasthan for establishing ICT Infrastructure at Schools in rural areas

This Memorandum of Understanding (MoU) is made between ERNET India and State Government of Rajasthan for establishing Information & Communication Technologies (ICT) Infrastructure in the Schools located in rural areas of Rajasthan. ICT Centres have been setup under the project in 250 Schools located in rural areas of Ajmer and Jaipur districts. The establishment of connectivity to the ICT centres is in progress.

e-Linkage of Krishi Vigyan Kendras under ICAR

Under an MoU, ERNET India has established a dedicated VSAT Hub and deployed Information Technology Infrastructure at 200 Krishi Vigyan Kendras (KVKs)/ Zonal Project Directorates (ZPDs) under ICAR to develop them into Information Hubs. E-Linkage of the remote 200 KVKs/ZPDs has been established with the VSAT Hub at ICAR Headquarters in New Delhi. The scientists and officials at each of the KVK/ZPD can access Internet, e-mailing and web services on 24X7 basis. The e-Linkage network is enabled for Video Multicast and IP telephony which allows each KVK/ZPD to watch Video sessions broadcast from the HUB and to have voice interaction among each other and the centre. The e-linkage facility had been operationalized. The facility is being used for scheduling talks, lectures and seminars delivered from the Hub by domain experts on weekly basis for officials of the KVKs/ZPDs. ERNET India is supervising the operation management and support of the Hub and also liaisoning with Department of Space (DoS), Department of Telecommunications (DoT) and Network Operations Control Centre (NOCC).

Campus Network at National University of Juridical Sciences, Kolkata

Under an MoU with the National University of Juridical Sciences (NUJS), Kolkatta, ERNET India has designed & setup a fibre optic based gigabit Campus Network

connecting academic, administration and finance wings. The work has been completed and is serving 814 user nodes. All blocks, hostels and guest house have been connected through fibre optic cable supporting 10Gigabit Ethernet Technology.

Agreement with ICAR for setting up a Centralized Data Center

A contract agreement had been concluded with Indian Council of Agricultural Research - National Agricultural Innovation Project (ICAR- NAIP) for setting up a centralized Data Centre for 274 ICAR institutes connected on ERNET through World Bank funding.

Video Conference Facility at various Institutes

ERNET India has taken up projects for setting up of video conference facility for various Institutions on turnkey basis including provisioning of bandwidth, maintenance & operational support. ERNET India is implementing/implemented the following Video Conference projects:

- VC facility for Govt. of UP at State Capital, 18 Divisions & 1 District of UP with a total of 21 sites.
- High Definition VC facility at 9 locations of Indian Meteorological Department.
- Deployment of VC facility at 11 locations of the Mahatma Phule Krishi Vidyapeedh, Rahuri.
- Tele-presence based High Definition Video Conference facility at 8 locations of Ministry of Earth Sciences (MoES).
- Video Conferencing facilities at 49 locations of Income Tax, 7 locations of DGS&D and 11 locations of the National Institute of Immunology (NII) under the Department of Biotechnology (DBT).

Conferences & Workshops

APAN (the Asia Pacific Advanced Network) refers to both the organization representing its members, and to the backbone network that connects the research and education networks of its member countries/economies to each other and to other research networks around the world. APAN coordinates developments and interactions among its members, and with peer international organizations, in both network technology and applications, and is a key driver in promoting and facilitating network-enabled research collaboration; knowledge discovery; telehealth; and natural disaster mitigation.

ERNET India is a primary member of APAN (the Asia Pacific Advanced Network) representing the education and research network of the country. During 22nd-26th August 2011, ERNET India organized the 32nd Asia Pacific Advanced Network Meeting at New Delhi. The workshop was attended by around 330 delegates from India and abroad.

National Informatics Centre

National Informatics Centre (NIC), an attached office of the Department, is a frontrunner in providing e-Governance services to the Government and common man alike. NIC's role has become crucial in the implementation of various National/State level ICT enabled initiatives and acquiring strategic control of these ICT applications on behalf of the Government. NIC has taken major initiatives in the design, development and operation of various e-Government projects in the areas of Agriculture & Food, Animal Husbandry, Fisheries, Forestry & Environment, Industry, Health, Education, Budget and Treasury, Fiscal Resources, Posts and Telecom, Transport, Water Resources, Court Management, Rural Development, Land Records & Property registration, Culture & Tourism, Imports & Exports facilitation, Social Welfare, Micro-level Planning, etc. NIC is rededicating itself to accelerate the e-Governance process in all sectors, especially the social sector, which impacts the life of the common man.

E-Governance Infrastructure

NICNET- E-Governance Network Backbone

NICNET, a nationwide computer and communication network of NIC, utilizes state-of-the art network technologies to provide connectivity to Central Government Ministries/Departments and all 35 States and 616 Districts of India. High Speed Terrestrial Circuits have resulted in enhancement of Terrestrial bandwidth of State Capitals to 100 Mbps/1Gbps and district connectivity to 34Mbps/100Mbps. Secondary link from different National Long Distance (NLD) for more number of key districts has been established. New Internet Gateways have been installed at Chennai, Mumbai and Shastri Park Data Centre. In the current year, last mile redundancy for NICNET has been extended to more number of districts and with installation of new Internet Gateways at selected locations, latency for Internet traffic has been reduced.

National Data Centres

NIC has setup a new National Data Centre at Shastri Park, Delhi, commissioned in June 2011, which provides shared hosting and co-location facilities to the Government Departments. Presently, the Centre has more than 240 racks, 500 Terabytes (TB) of Enterprise Storage and 200TB of mid-range storage. The Internet Data Centre (IDC) at Delhi has been operational since 2002. The Data Centre is ISO/ IEC 27001:2005 ISMS (Information Security Management System) certified and is hosting more than 4000 web based applications / websites of the Government in addition to providing co-location services. The storage capacity of the National Data Centre at Pune has been upgraded to 250TB Enterprise & 140TB mid-range storage. National Data Centre at Hyderabad acts as a Disaster Recovery site for IDC, Delhi, NICSI Data Centre and some NIC State Centres. It is also the Disaster Recovery site for NIC's Messaging Services. The data centre at Hyderabad has been expanded during the current year to accommodate 36 additional racks and enterprise storage capacity of 900TB.

National Knowledge Network (NKN)

The NKN is the state-of-the-art multi-gigabit pan-India network for providing a unified high speed network backbone for all knowledge related institutions in the country. A total of 682 institutes have been allotted under NKN out of which 462 institutes have been connected. The fiber for another 63 institutes has been laid and the commissioning work for these institutes is in progress. In addition, 50 virtual classrooms are created at various institutes across the country and the work for 16 such classrooms is in progress. 157 institutes have been migrated from National Mission on Education for Information and Communication Technologies (NMEICT) to NKN. NKN Points of Presence (PoPs) at Guwahati, Bengaluru, Belapur and Bhopal have been made operational. Integration work with respect to each end user organization is in progress. NKN network has been enabled for IPv6 and the IPv6 services and made available to the end users. District links have been identified and allotted to the TSPs for providing the required connectivity at district headquarters level.

Cyber Security

NIC provides cyber security for network, servers, applications and client systems by introducing security

appliances at the critical network segments of NICNET using network firewalls, Intrusion Prevention Systems, Application Firewalls, URL blocking etc. Solutions for Patch Management, Anti-virus, VPN/SSL are in place. Scanning of servers for vulnerabilities and hardening, source-code and blackbox scanning of applications are undertaken. Additionally, Security Auditing of networks and applications, Log analysis, Security Incident monitoring, Analysis and Response, Development of PKI enabled applications, etc., are also being carried out. NIC has formulated and circulated Cyber Security Policies, guidelines and Standard Operating Procedures (SOPs) for Government Offices/Ministries for handling of unclassified information.

Certifying Authority

A state-of-the-art secure infrastructure with biometric sensors, surveillance system of International standards has been set up at NIC Headquarters for housing the NIC Certifying Authority (NICCA). Symmetric Key Infrastructure for issuance of DL & RC Authority Cards for State Transport Authorities has been co-hosted and established in the common NICCA infrastructure. Besides issuing Digital Signature Certificates (DSC) in G2G domain, NICCA is providing Online Directory Services for DSCs and CRLs. NICCA is successful in expanding DSC usage in Government. E-Government Applications using NICCA DSC are DGS&D, MCA21, Bhoomi project, RSBY project, e-Office/e-File, Email, IVFRT, CourtNIC, PMGSY, MGNREGA, Pay & Accounts Offices and e-District project of Kerala State. Four new RA offices have been opened in NIC State Centres of Kerala, Madhya Pradesh, Rajasthan and Goa. Augmentation for four RA offices has also been carried out. To provide enhanced security feature in DSC and meet the CCA guidelines on interoperability, the CA software has been upgraded. From January 2012 onwards DSCs with key length 2048 bit and hashing algorithm SHA256 only are being issued.

Web Services

NIC is extending comprehensive World Wide Web services to Central and State Government Ministries & Departments in the areas of consultancy, web design and development, web hosting, value added web services for promotion of websites, enhancement of web sites & training. Hosting infrastructure is being provided to a large number of e-governance projects like CGHS, Panchayat Portal, Government accounting, Exam Results Portal, Online Counseling for Admission to various professional courses across the country. Live webcast services are being provided for various programs, events and conferences.

NIC Messaging Services

NIC provides messaging services to entire Central and State Governments. A Disaster Recovery site has been set up for this service at National Data Centre, Hyderabad. All the NIC messaging domains across India have been consolidated and provided addresses in the format of userid@nic.in or userid@gov.in. Today the service gives messaging cover to over 450 virtual domains.

NIC SMS Gateway Services

An SMS gateway has been setup to integrate the various applications hosted by NIC for sending alerts and updates. Since its launch in May 2010, over 230 applications have been integrated with the gateway. The SMS application is a Web- enabled Government to Business (G2B), Government to Citizen (G2C) and Government to Employee (G2E) interface. This was setup in NIC with the objective to build and operate SMS application for the employees and affiliates. Projects with scattered field-force can access and update centralised information database, anytime and anywhere from mobile phones using SMS.

Video Conferencing Services

Multipoint Videoconferencing services over NICNET are being provided from its 631 existing studios spread across India. The number of sessions held till December 2011 were Chief Information Commissioner (4500), Chief Ministers (48), Cabinet Secretary and Chief Secretaries Meetings (181), Election Commission related meetings (153). An average of 10500 multisite conferences with total of more than 1,70,000 site hours of VC sessions was conducted. Web based VC services were launched to provide low cost High Definition VC services from home broadband and Local PC/Laptop. Executive Video Conferencing Services (EVCS) were extended to all Director Generals of Central Para Military Forces (CPMFs) over secured communication channel. Videoconferencing facilities were upgraded with state-of-the-art technology at 130 districts.

Capacity Building

A number of training programs in Information Technology were conducted by National Training Centre, Hyderabad for a large number of NIC staff at State and District centres through Virtual Class Room (VCR)/Video Conferencing. NIC Training Unit (NICTU), Lal Bahadur Shastri National Academy of Administration, Mussoorie provided ICT related training to the officers of All India Services. During the year 2011, 366 sessions were taken for 1046 participants by NICTU faculty. NIC E-Learning Services over NICNET were used across NIC State and district centers. Total number of i-class and i-Meeting sessions held are 471 & 1003 with 3262 & 7202 participants respectively.

Products and Services

Bibliographic Informatics Services

The Indian Council of Medical Research (ICMR) Project on "National Databases of Indian Medical Journals" - IndMED and MedIND is being executed. A new web based application for facilitating online data contribution by journals has been developed. A data mining application that suggests MeSH Terms (from a Standard Medical Thesaurus) after analyzing metadata of articles published in the journal has been developed. These tools have dramatically reduced the intellectual efforts and time lag between publication of a journal issue and its inclusion in IndMED. Training programmes for Journal Editors at NIC HQs and other parts of the country were conducted.

Business Intelligence Services

As part of the Mobile based Fertilizer Monitoring System a Data Warehousing and Business Intelligence System was developed. Analytical reports on Dispatch, Sales, and Stocks across States/Districts level, at the dealer level and company level are generated and published on the fertilizer web portal. A Business Intelligence System on Foreign Tourists arrival and departure was developed and implemented for use by the Ministry of Tourism. The tourist's arrival/departure details are captured on a regular basis and data quality tests are performed before the Extraction, Transformation, and Loading (ETL) operation. A Business Intelligence System on Public Grievances for the Department of Public Grievances and Administrative Reforms was developed and implemented. Besides a dashboard depicting the gist of the grievance system, a number of analytical reports like department wise, category-wise, time-wise are also developed.

CollabCAD

For inducting CollabCAD in the design process at BARC (Department of Atomic Energy) and VSSC (Department of Space), advanced training and benchmarking has been conducted. Enhanced features such as the Constraint Solver and DOF Reporting, Assembly, Tolerance Analysis and Synthesis have been provided. These features have a profound impact on the manufacturing processes and help to increase productivity, control product quality and yield significant cost savings. Master Training Workshops were conducted for the CBSE faculty at New Delhi & Chennai in August/ September 2011. It is approved as a Model Project for the National Knowledge Network. The CollabMED project aims to connect the Primary Health Centres with expert radiologists and doctors in Centres of Excellence, by providing suitable tools and channels for data transmission and diagnosis. The initial version of CollabMED was released in October 2011 for testing.

Cooperative Core Banking Solution (CCBS)

The main objective of Cooperative Core Banking Solution (CCBS) is to provide basic banking facility in the rural areas of the country. The application is designed to facilitate disbursement of payments related to the social sector schemes (MGNREGA, Old Age Pension, etc.) to the targeted beneficiaries at the doorstep. It would also facilitate easy monitoring of fund disbursement and day to day position of fund distribution under these heads known at the apex level. With the implementation of CCBS, banks do not have to invest for creation of Data Centre or Disaster Recovery Centre The application is currently being implemented at: Meghalaya State Cooperative Bank, DCCBs of Uttarakhand, Sikkim State Cooperative Bank, Raipur DCCB of Chhattisgarh, one PACS in Rajasthan, and two PACS in Orissa.

Digital Archiving and Management

Online repository of Questions-Answers and Debates of the Upper House of the Parliament (Rajya Sabha) has been developed. Users can conduct multilingual full text search. 5,26,083 records from 1964 to 2011 have been uploaded and processing of earlier data is under process. The Botanical Survey of India (BSI) under Ministry of Environment and Forests, acts as the custodian of the country's floral wealth comprising about 45,000 plants. NIC has set up Digital Herbarium (DH) comprising an Imaging Studio as well as complete repository of high resolution images with search facility, at Kolkata and is doing the same at each of BSIs 13 other Herbaria. Also, an Indian Virtual Herbarium (IVH) has been developed at a central location with high speed Internet connectivity. An archive of clearance files of Ministry of Environment and Forests has been developed. An archive has been created for digital records of CAPART. A turnkey project for building an archive of digitized office records of Ministry of Corporate Affairs has been undertaken.

e-Governance Standards

Publishing of Meta Data and Data Standards-Demographic Ver. 1.1 for Person Identification and Land Region Codification has been completed. A draft document on the Institutional Mechanism for formulation of Domain specific Metadata and Data Standards has been prepared. A base paper and a draft of the MDDS for the Domain Panchayati Raj were prepared by the expert committee and the same has been shared with the State PR Departments for their review and comments. Localization Guidelines for implementation in e-Governance Applications were released by the Department. The document on Iris image data standard was published on e-Governance Standards Portal, in March 2011. The Expert Committee on IFEG completed its work on the Priority areas identified by the Department and submitted two reports, Technical standards for IFEG (Phase-I and Phase-II). The draft IFEG main document is under finalization. Draft document on new XML based PKI signatures has been prepared by the Expert committee set up by the CCA office. The document has gone through Public review.

e-Service Book

e-Service Book has been implemented in collaboration with Department of Personnel & Training for employees of 78 Central Government Ministries/Departments. Basic employee details in respect of about 26,900 employees at Delhi have been created. Management Information System (MIS) has been developed to generate reports to help in retirement, recruitment planning, policy compliance and other HR policy planning. With objective to extend the scope of e-Service Book project to all the Government of India employees including sub-ordinate, attached offices, constitutional, statutory bodies and also to enhance its functional scope, a Plan Scheme, formulated by DoPT with support of NIC has been approved by Planning Commission for ₹ 2482.45 Lakh.

e-Office

e-Office, a Mission Mode project of the Government is a product developed as a standard reusable product amenable to replication across the Government. The main services offered are e-File, Knowledge Management System (KMS), e-Leave, e-Tour, Personnel Information System, Collaboration and Messaging Services. The implementations which began in 2010 with the Ministries in the Central Government have now been extended to the State Governments and District Administrations.

e-Hospital

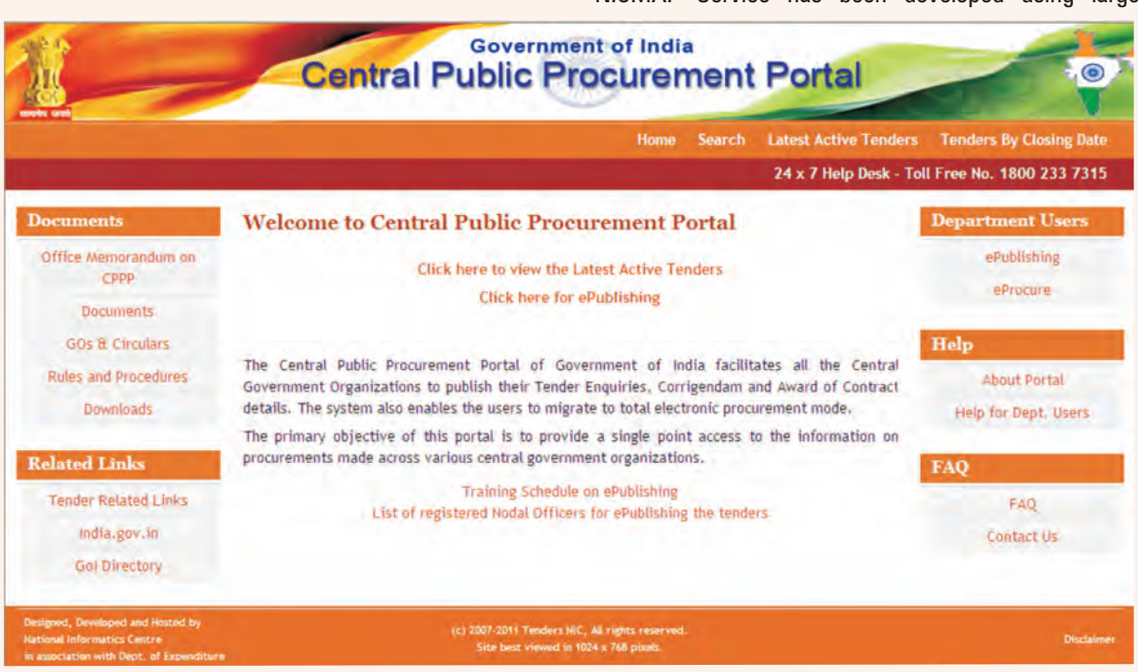
e-Hospital@NIC, a Hospital Management System is a workflow based ICT solution specifically meant for hospitals in Government Sector. This is generic software which covers major functional areas like patient care, laboratory services, work flow based document/information exchange, human resource and medical records management of a Hospital. It is made available to public hospitals in India as Software- as-a-Services (SaaS) for accelerated infusion/ adoption of ICT tools and Healthcare Standards by them. e-Hospital solution is also deployed in many individual hospitals. Already 11 hospitals across the country have this system in place.

General Information Service Terminal of National Informatics Centre (GISTNIC)

Various e-Governance projects were implemented under GISTNIC. e-Recruitment is an online, transparent and efficient recruitment system for Health Department Missing Persons is an online system to track and link missing and found persons. GCPS is the Girl Child Protection Scheme for online workflow automation for Women Welfare. Vidyawaan is an online Scholarships management for Top Class Education of Ministry of Social Justice and Empowerment. Online Scholarship Management System for Minority Welfare Department is also available. Transfers counseling is a transparent workflow system for transfer of teachers for Tribal Welfare Department. Hortnet is a farmer-centric workflow automation system to manage agri-horticulture projects. m-Foods is a Mobile based Food supply management system to support the Supplementary Nutrition Programme of the Government Aadharsha Rythu is a Mobile based advisory and Pests and spurious input alert services to the farmers. e-Medlabs is an Online diagnostic services including communicable diseases (A-H1N1, Hanta Virus, Vaccination scheduling for international travellers, water quality monitoring etc.,) Disha is the Creation and Management of Digital repository of public domain content to render Citizen centric Information Services. Agro-met is an Agro-meteorological Services online system linking field level workers and farmers.

GIS and Remote Sensing Services

NICMAP Service has been developed using large



heterogeneous spatial as well attribute data content from multiple sources and is an indigenous national initiative. It seamlessly integrates with other global map services. National GIS - NICMAP service is well supported by backend spatial (raster, vector, images, GPS, etc.) as well as non-spatial data (attributes), and high speed NICNET/NKN network backbone across the country. The data content is being upgraded continuously as collaborative and cooperative project mode with Central, State & District Departments around common base map which is rendered as service. National GIS NICMAP Service is being evolved as Common Service Delivery Platform for e-Governance & Planning.

Government e-Procurement Solution of NIC (GePNIC)

NIC has developed a generic e-Procurement System-GePNIC which can be easily adopted for all kinds of procurement activities such as Goods, Services & Works, by Government offices across the country. The major functionalities covered include: Registration of artment Government officials & Bidders in different roles, Tender Creation and Publishing, Corrigendum, Online Bid submission/ resubmission/withdrawal (which can be configurable), online Tender opening and decryption of Bids. The solution has strong in-built security features including two-factor Authentication with Digital Signature Certificates (DSCs). GePNIC is being implemented as a Mission Mode Project (MMP) on e-Procurement in 23 States. It is also being implemented for procurements under DGS&D, PMGSY, and PSUs. Around 97129 tenders, worth over ₹ 1,26,378 Crore have been processed till 31st December, 2011. NIC has set up the Central Public Procurement Portal (CPPP) http://eprocure.gov.in to provide a single point access to the information on procurements made by all Ministries, Departments, Central Public Sector Enterprises (CPSEs) and Autonomous and Statutory Bodies. The CPP Portal has e-publishing and e-procurement modules.

Smart Card

Certification of compliance for SCOSTA & SCOSTA-CL smart card as per DL, RC, NPR, RSBY, PDS, e-Passport applications has been done. Approximately 80 certificates of compliance have been issued. Key Management System (KMS) of DL & RC for different States where approximately 872 authority cards were issued. In National Population Register (NPR), the different modules developed were NPR Card data format and application standardization, KMS Application for Card personalization along with Hardwired Security Module and Verification application software. Central Server has been setup to assist coastal States/UTs for data collection, Authentication, Personalization and production of Biometric Identity cards and Key Management System for Fishermen.

Systems Software

Activities carried out under the implementation of the X-Form Processor and Feature Enhancement are On Line Processing, Off Line Implementation, X-Form Technology Integration with J2EE, Workflow Implementation of X-Form Instances, Creating X-Form Instances, Data Persistence, Deployment of X-Form and W3C XML Digital Signature Implementation. List of applications, where the technology was applied as POC were Annual Performance Appraisal Report of Scientist Form (Complete Application), Traveling Allowance Bill for Tour form, LTC Management System/LTC Advance Form, Checklist for reimbursement of medical claims form, Home Town Declaration for Leave Travel Concession Scheme form, etc. Other projects carried out were NIC Linux Distribution, Enterprise Asset Management (eAMS.Net) and Release of Non Consumable Module in the Department.

Telematics Development Promotion

National Population Register (NPR) for Coastal Software was developed and handed over to Office of Registrar General, India (ORGI) for generation of NIN (National Identity Number) & NPR cards in coastal areas. Socio Economic Caste Census (SECC) was started in June 2011 with MoRD, ORGI and Ministry of HUPA. The survey is running in 21 states as on December 2011. In house, Open Source E-Learning application was developed & customized. Around 6000 users are registered & are getting training to use SECC 2011 Application. SSC Recruitment Process (Skill Based Tests) is being computerized. UPSC Projects implemented were DAF (Detail Application Form) Application, E-admit Card Application. Online Application has been integrated with five associated banks of SBI. Online Recruitment Applications software for applying to various recruitment posts is running successfully. For Doordarshan, News Bulletins are prepared, telecast and archived using the Newsroom Automation System.

Web Based Admission Counseling

NIC is undertaking design, development/customization and operationalisation of web based interactive Online Counseling Processes for Admission to 1st Year of Professional Courses for 22 Central and State Boards. This operationalisation includes testing of the software application modules, conducting training sessions for the Counseling Officials. The operations are tracked and monitored on 24X7 basis to see that the servers allocated for the counseling work have been performed to its full potential and accessibility of the servers to the candidates in a smooth manner in providing satisfactory immediate auto-responses to the queries of the candidates. More than 80 lakh students have been registered for 12 lakh seats across the country.

Website Guidelines

Guidelines for Indian Government Websites (GIGW) were developed. GIGW have been adopted by DARPG and made an integral component of Central Secretariat Manual of Office Procedure (CSMOP). To take this initiative further a website has also been set up at http://web.guidelines.gov.in. Provision for online consultation for these guidelines and providing feedback is there on this website. The website has more than 12,000 registered users and latest update on the guidelines as well as new technologies, advancements and tools are shared with them through a monthly newsletter. Nationwide training was held to sensitize different stakeholders with respect to compliance of GIGW.

Major National Projects

Common Integrated Police Application (CIPA)

CIPA Software has been adopted by the Tamil Nadu Police for rollout at all the Police Stations in the State after customization as per their local requirements. The development teams have been setup both at NIC Headquarters, New Delhi and NIC Chennai.

Commercial Tax Computerization

NIC is implementing Value Added Tax (VAT) computerization system for State Commercial Taxes Departments in many States for the last few years. This year six North Eastern States namely Nagaland, Manipur, Mizoram, Tripura, Assam, Arunachal Pradesh and also Dadra & Nagar Haveli and Daman & Diu implemented the VAT software developed by NIC Karnataka. Now NIC is providing full support in computerization of VAT in 19 States. Some of the online services like e-Registration of Dealers, e-filing of VAT returns, e-filing of CST returns, e-Payment of Challan amount, e-Refund, on-line forms generation, etc., have been implemented in the VAT software. For the benefit of various stake holders related to VAT and upcoming Goods and Service Tax (GST), website of Empowered Committee of State Finance Ministers has been designed and developed to serve as single point source of information for stake holders.

CONFONET

CONFONET provides a single-window solution for automation of activities undertaken at the Consumer Forums at the National, State (35 State Commissions) and district level (600 district fora). Through the portal http://confonet.nic.in, consumers have easy access to information regarding cause lists, judgments, case status and case history. Quick search facility using case number, complainant name, respondent name, etc., and free text search for judgments is available. Currently around 319 locations are uploading Cause lists and 249 locations are uploading judgments to the central server. More than 240 locations are updating data on a regular basis.

Courts Information System (COURTIS)

A total of 9,281 courts are computerized (software is installed in 9,281 courts, hardware in 8,966 courts and LAN in 7,960 courts). Site preparation activity has been completed at 1,063 Courts, Local Area Network has been established at 2,625 courts, Computer hardware has been installed at 2,755 courts; Application software has been deployed at 2,740 courts; including the courts where computer hardware had been procured through previous schemes. Generator Sets have been procured to provide power backup at 2,281 courts; 8,300 district and subordinate courts across India have started providing the following key services like Case Filing, Registration, Case Allocations, Cause Lists, Daily Case Proceedings, Case Registrations, etc.

India Image

NIC offers Design, Development and Consultancy on Government Websites and Portals. Consultancy and support is given to Government Departments in designing new sites as well as enhancing existing websites. Number of existing websites of the Government were reviewed & redesigned to make them compliant with Guidelines for Government websites. These included Department of Urban development, Women and Child Development, Tribal Affairs, Department of Revenue, etc.

Immigration, Visa, Foreigners Registration and Tracking (IVFRT)

This project aims at implementing an integrated system for immigration, issuance of Visa in Missions and Foreigners Registration and Tracking [IVFRT]. The scope of the project includes 169 Missions, 77 ICPs (Immigration Check Posts), 7 FRROs (Foreigners Regional Registration Offices), and FROs (Foreigners Registration Offices) in the State/District Headquarters. IVFRT system has been implemented at 42 Missions. IVFRT modules have been implemented in 7 FRROs and 1 FRO.

Integrated Information System for Food Grains Management (IISFM)

The project, Integrated Information System for Food Grains Management (IISFM) was conceived with the scope Anytime & Any-where availability and share-ability of accurate food grains related data to aid the Decision Makers and Planners of Food Security. All the 170 FCI District Office inputs the fortnightly stock position of Central pool and State pool in the centralized DISFM application. The allocation details for various schemes and fortnightly stock transactions are fed by the FCI Districts. IRRS- Rapid Reporting System is a centralized web application which collects the

transactions of the depots receipt, scheme-wise issues, dispatches, storage loss and storage gain on daily basis. Depot Code Management System (DCMS) has automated the process of allotment of depot codes. DCMS has enabled to know the different type of depots owned / hired by FCI in the country. Both, IRRS and DCMS have been extended to different States to manage the depots and Stocks owned by the States / UTs.

Land Records Computerisation Project

The Computerization of Land Records (CLR) and Strengthening of Revenue Administration and Updation of Land Records (SRA &ULR) has been merged into a new scheme of National Land Records Modernization Programme (NLRMP). The focus of the entire operation is to consolidate and integrate the computerization done for Land Records and Registration and offer single window services to all the revenue services like copy of RoR, Cadastral Map, copy of Registered Deed, Non-encumbrance certificate, etc. NIC has provided system to integrate Land records, mutation, cadastral maps and registration. The system has provision for storing and processing of textual and spatial data together. The Bhunaksha system has been implemented in Tripura, Himachal Pradesh and Uttar Pradesh.

Limited Liability Partnership (LLP) Project

The LLP enables entrepreneurs, professionals and enterprises providing services of any kind engaged in scientific and technical disciplines, to form commercially efficient vehicles suited to their requirements. NIC has implemented the online e-Governance solution for the same. http://www.llp.gov.in, the portal of LLP is a virtual front office to access around 23 downloadable forms meant for various steps in formation and running of LLP and facilitates the users to upload the digitally signed e-forms alongwith enclosures/attachments, affix digital signature and payment of requisite fee through payment gateway by credit card or net banking. The complete internal office jobs are handled through this web based system and no paper files are created.

Mother and Child Tracking System (MCTS)

There are about 2.75 crore pregnant women in India at any point of time. The online MCTS has been made operational for all the States and UTs. The States have started entering the names of the mothers and children below 5 years in the online system. MCTS call centre has been setup to call the beneficiaries and validate their data. SMS services have also been introduced in the MCTS system. State MCTS coordinators can also send work plans to ANM/ASHA through SMS which gives the details of services to be provided to the beneficiary during a month.

National Portal of India

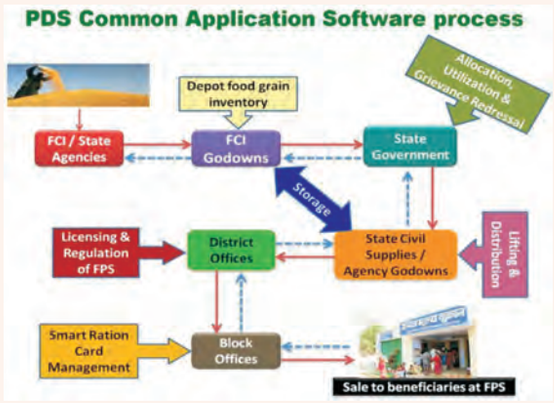
National Portal of India, (http://india.gov.in) provides a one stop source of Government information & services both in English and Hindi and it acts as a Gateway to over 7000 Indian Government websites. This portal is accessible to all, irrespective of technology or physical ability. Portal Content Framework has been developed to ensure that the contributors, belonging to any constituent of the Government at any level, contribute content in a pre-set standardized format through a web based CMS built on Open Source. Many demand based citizen centric initiatives like the NGO Partnership System, the Central Information Commission (CIC) Online and Public Opinion on National Testing Scheme (NTS) have been developed under the ambit of National Portal.

National Consumer Call Preference (NCCP) Portal

The National Consumer Call Preference Registry (NCCPR) (nccptrai.gov.in) designed and developed for TRAI as per new Regulation 2010 addresses concerns of customers who do not want to receive Unsolicited Commercial Communications (UCC) by blocking these calls and SMSs. Customers can dial or SMS to 1909 and register either in Fully Blocked or in Partially Blocked Category with one or multiple options from the predefined list of 7 categories. Customers can lodge complaint on UCC by sending SMS from same number to 1909. About 2159 Tele Marketers (TMs) are registered all over India to whom 1.6 lakh telecom resources are allocated and more than 15 crore customers are registered in NCCPR. 29690 UCC complaints are registered in which 25855 cases action is taken. Till now, penalty of about ₹ 10 lakh has been imposed and 1 TM has been blacklisted.

NREGA soft

The MIS for MGNREGA is a transaction level work flow based system encapsulating all the activities of all stakeholders of MGNREGA across the country. Recently e-FMS has been introduced to the system which links bank's CBS/NEFT system with NREGASoft .The system has been piloted in four States namely Karnataka, Odisha, Gujarat and Rajasthan. SMS interface has been provided to NREGASoft for sending SMS from the MGNREGA portal or sending SMS to get information from the MGNREGA portal.



Postal Life Insurance (PLI)

PLI Portal (http://postallifeinsurance.gov.in/) has been launched this year by Department of Posts. Services available on this portal are Premium calculator, revival calculator, type of policies, bonus rate of various policies, etc. Various modules like Claim Sanction view at HO Level, SMS Integration, Offline UA settlement, Offline Proposal feeding, Sanction of maturity/loan/revival from 450 divisions, etc. have been added in the PLI soft. PLI directorate has decentralized the sanction of maturity/loan/revival from its 450 divisions across the country. PLI/RPLI software has been modified to incorporate this facility. Director of Postal accounts (DAP) offices are doing the reconciliation of PLI receipt and claim vouchers for maturity/surrender/death/loan through its 17 offices across the country. Software has been developed to access all the claim vouchers online through DAP offices for its reconciliation. Data Extraction facility of PLI/RPLI policies for Actuary has been given to declare the bonus timely as well as prepare financial review, revenue account & balance sheet for the Directorate of Postal Life Insurance (DPLI) office.

Property Registration

Out of 4107 Sub Registrar offices in the country, around 3200 offices are computerized. Registration has been integrated with Land Records in the States of Karnataka, Haryana, West Bengal and Odisha.

Transport

Computerization of All RTOs/DTOs achieved in 32 States/UTs. 959 out of 975 RTOs (98%) have been computerized. Smart card based DLs/RCs are being issued from 24 States/UTs. 100% Connectivity achieved in 32 States. State Register (SR) established in all States/UTs. 941 of RTOs data replicated to SR. 940 RTOs' data replicated to National Register (NR). Citizen centric services based on NR and SR have been introduced in July 2011.

Sea Port Project

The Port Operations Management System (POMS), has been running at Kolkata Dock System (KoPT), Ennore Port Limited (Chennai) for last couple of years and the same is under implementation at Chennai Port Trust, Chennai.

Smart Card based Public Distribution System

e-PDS, an end-to-end computerization of Public Distribution System aims to make PDS delivery system more effective in terms of achieving food security, optimize subsidy costs, improve internal administrative efficiency and minimize transit losses and pilferage. NIC is providing support to the States/UTs in designing the standards for PDS processes, development and customization of Common Application Software (CAS).

CAS covers Allocation of Food grains, Ration Card Management System, Smart Card based sale of commodities at FPS, Dissemination of information through Web portal and SMS, FPS Management and Food Grains Movement monitoring. The States/UTs where PDS computerization is in advanced stage of implementation are Delhi, Gujarat, Kerala, Chhattisgarh, Puducherry and Chandigarh. the PDS computerization is in progress in Andhra Pradesh, Haryana, Meghalaya, Maharashtra, Uttar Pradesh, Bihar and Rajasthan

NIC Services to Central Ministries and Departments

Accounts Informatics

The Government e-Procurement Gateway website that facilitates electronic payments and acts as gateway between PAOs, Pr AOs and Accredited Banks, was inaugurated on 31/10/2011. Another set of 95 PAOs of Civil Accounts Organization have been included under NICNET Connectivity to form a part of Intra-CGA VPN. Annual Accounts module with the facility of Stage 1 entry of Appropriation Accounts and SCT Module of Finance Accounts has been released on e-Lekha software for Pr AOs. An Accounting Software for Central Board of Direct Taxes (CBDT) viz COMPACT-RAMS Ver. 6.0 has been developed that facilitates the incorporation of electronic Challans, Receipt Scrolls, Refund Challans, Date wise Monthly Statement, RBI Put Through and Refund Banker Scheme and compilation of their monthly accounts for uploading to e-Lekha. A Custom Challan File Movement System has been developed for Central Board of Excise and Custom (CBEC) to prepare the PAO-wise Daily Challan file which includes Imported Challans, Shipping Bills and Baggage. CompDDO application has been facilitated for generation of ePayment Bills in electronic format. Additional facilities for employees to compute their Income from House Property in Form 12C, Updating their saving details and income from other source details in Income tax calculation sheet to get the correct tax liability, Viewing their License Fee Deductions in selected financial year has been included in e-Samarth application.

Agriculture

AGMARKNET (http://agmarknet.nic.in) has expanded to 3000+ agriculture produce wholesale markets with the addition of 85 new nodes and replacement of obsolete systems in 194 markets during the year. Computerization of Agriculture Census 2005-06 and Input Survey 2006-07 were completed. Seednet India Portal(http://seednet.gov.in) and MIS for various national level schemes such as Rashtriya krishi Vikas Yojana (http://rkvy.nic.in), Macro Management in Agriculture (http://macrormgmt.dacnet.nic.in), Extension Reforms (http://extensionreforms.dacnet.nic.in), National Food Security Mission (http://nfsm.gov.in), National Horticulture Mission (http://nhm.nic.in), National Bamboo Mission (http://nbm.nic.in) and Horticulture Mission for North East and Himalayan States

(http://tmnehs.gov.in), have been strengthened. The DACNET intranet has been upgraded and all applications migrated to new environment. Online Land Use Statistics (LUS) and Crop Production Statistics (CPS) systems implemented (http://eands.dacnet.nic.in). Plant Quarantine Information System (http://plantquarantineindia.nic.in) has been implemented for effective delivery of plant quarantine services.

Animal husbandry

The National Animal Disease Reporting System (NADRS) Project (http://nadrs.gov.in and http://nadrsapps.gov.in) to record and monitor livestock disease situation in the country with a view to initiate preventive and curative action in a timely and speedy manner is being executed. The NADRS involves a computerized network, linking each Block, District and the States/UTs in the country to the Central Disease Reporting & Monitoring Unit for effective reporting of animal disease data from block level veterinary units. As part of the project, an Animal Diseases & Diagnostic Laboratory Work-Flow Application has also been developed. A web-based application System for Preparedness, Control and Containment of Avian Influenza has been implemented at animal disease diagnostic laboratories (http://avianflumonitoring.nic.in). Computerization of Central Herd Registration scheme (CHRS) (http://chrs.gov.in) is an application for registration and monitoring of elite cow and buffalo breeds. Registration and Licensing of Fishing Crafts (ReALCraft) (http://fishcraft.nic.in) system is available to create and maintain a National Database of all Fishing Vessels across the country, to electronically generate Registration Certificates and Fishing License to Fishermen.

Audit

NIC has been providing ICT support at CAG office and its field offices at Delhi, in development of software packages, Networking, Mail services, Website Hosting & management, etc. The activities undertaken were hosting and maintenance of web sites of CAG and its field offices, web based system for MIS on returns received from field offices, augmentation of On-line submission of Application of Chartered Accountant Firms for the year 2012-13, Augmentation of the software for Empanelment and Allotment of Auditors for PSU Audit for the year 2011-2012. Online Integrated DAK Management System has been developed. The software is being used for diarizing letters from the field offices located all over India. Online Audit Management System (AMS), a Business Intelligence System is under development for use in the IA&AD to manage the Audit process across all the wings.

Art and Culture

A dedicated website (http://rabindranathtaogre-150.gov.in) has been launched commemorating the 150th Birth Anniversary of Gurudev Rabindranath Tagore. Official website of the Ministry of Culture was re-launched in September 2011 to meet the website guidelines and with improved and aesthetic look and feel. For better protection and preservation of our recorded heritage there was a need to create a National Register on Monuments & Antiquities. National Mission for the Monuments and Antiquities (NMMA) is setup by the Government to locate and document this invaluable heritage. A website is developed to collect and showcase information about monuments and antiquities in the museums spread over the country.

Cabinet Secretariat

Results Framework Management System (RFMS) is a product developed for the Cabinet Secretariat. Citizen Charter was a major component developed in RFMS enabling 62 Departments of the Central Government to enter their charter in February 2011. Responsibility Centres have also been brought under RFMS. Kerala, Himachal and Karnataka have also embraced RFMS proactively. On international level, Sri Lanka and Kenya have shown interest in implementing RFMS software in collaboration with Performance Management Division (PMD). The RFD Compendium is also generated through RFMS Software.

Civil Aviation

LAN was upgraded at the Ministry of Civil Aviation with provision of 100 more net connections. Cyber Security & IPV6 Awareness workshops were held for senior officers. Centralised PQ System implemented. NICNET is implemented at Airports Economic Regulatory Authority (AERA). Web application for DGCA's Pilots Online Examination implemented. Maintaining software for the processes like issue of Flight Crew Licenses, Medical Examination System of pilots, Civil Aircraft Register Information System, Domestic Airline Schedule Information System, Comprehensive Payroll System, DGCAs Surveillance Information System, Accident/Incident Reporting System. VC facility is implemented in BCAS HQ and four of its regional offices.

Commerce and Industry

Video Conferencing (VC) facility and Network Operating Centre (NOC) catering to all Udyog Bhawan users are setup with high speed Giga-bit optical fiber based Local Area Network. In O/o Directorate General of Foreign Trade (DGFT), a system for online filing of request for Importer Exporter Code (IEC) as well as Policy Review Committee (PRC) are launched. Registration Cum Membership Certificate (RCMC) of Export Promotion Council (EPCs) was integrated for online paperless

processing of DGFT applications. Shipping Bill data from Customs was integrated for discharge of Export Obligation online. In O/o Directorate General of Supplies and Disposals, digitally signed online supply order by various indenters and online Registration application & Inspection call by various suppliers were made mandatory. In Department of Industrial Policy & Promotion (DIPP), Web-based interface is launched for industry to file the application for industrial approval and track its status. A comprehensive search interface for published and granted Patents and Trade Marks was launched. In Ministry of Mines, an online Registration system is implemented to register any individual, association of individuals, firm or company engaged in mining, mineral trading, etc. In Department of Public Enterprises, a database on National Survey of State Level Public Enterprises (SLPEs) is launched.

Customs

The Indian Customs EDI System (ICES) is migrated from host based architecture to multi-tier web based architecture. The application is deployed from the centralized data centre of Central Board of Excise and Customs (CBEC). ICES Version 1.5 was implemented in more than 108 customs location (including 35 migrated sites). Extensive training programmes were conducted for the users from these sites. The messages for integration with Customs trading partners namely Importers/Exporters/Customs House Agents, Banks, Custodians of cargo, Ports, CFS Operators, Airlines, Shipping Agents, CONSOL Agents, DGFT, Principal CCA, etc., were developed and released. The Centralised Directory Management module was designed and developed. New modules like baggage, transshipment were designed/developed and integrated with ICES 1.5. Implementation of Mandatory E-Payment Design and Development of Currency Declaration Form has been completed.

Election Commission

Election Commission of India (ECI) is using NIC SMS Gateway service in the Citizen Complaint Service and Poll Day monitoring service for redressing the Citizens Grievances and monitoring conduct of elections in an effective manner. Dissemination of Election Results to Public/citizens during General Election to Legislative Assemblies of five States namely Assam, Puducherry, Kerala, Tamil Nadu and West Bengal were carried out using NIC IDC, Delhi and Disaster Recovery Centre Hyderabad with mirroring of database at ECI headquarters to enable generation of different reports. Communication plan for Election Tracking (ComET) for these five States was designed and developed by NIC. GIS based thematic maps were prepared for election planning to visualize the field parameters. Video Streaming of Online poll day activities from selected polling booths during Assembly Elections for these States was carried out using NICNET for ECI. Video-Conferencing Sessions for Commission and other officers of ECI in multi point and point -to -point with different States CEO and other officials of different State Governments engaged to conduct elections were organised. The Security Audit for ECI applications (Electoral Roll Management System, Poll Day Monitoring System, Expenditure Monitoring System, Citizen Services, Officers internal site) was conducted. All the applications except Electoral Roll Management System (ERMS) are hosted at IDC.

Energy, Pharmaceuticals & Chemicals

A web based e-filing system was launched for Chemical Weapons Convention (CWC) Declarations for facilitating the concerned Indian Chemical Industry users to file their periodic CWC declarations online. Necessary services were extended towards the development/ implementation of Extended MIS & Revised Web Based Milestones Monitoring System for 11th Plan Projects under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). Development/implementation of Foreign Deputation Information System for Ministry of Power; Web-based Systems for monitoring the installation of Solar Photovoltaic/Solar Thermal Systems & Solar Water Heaters and subsidy provided to them under Jawaharlal Nehru National Solar Mission for Ministry of New & Renewable Energy , Audit Para Monitoring System and Incumbency MIS for Ministry of Coal were also completed. File Tracking System (new version) was implemented in Ministries/Departments of Power, Petroleum & Natural Gas, Pharmaceuticals and Chemicals & Petrochemicals. Other e-governance initiatives taken-up and completed include the customization and implementation of Online Stationary Request Management System (Department of Chemicals & Petrochemicals, Ministry of Power), Court Cases Monitoring System (Ministry of Power), Vendors Bill Processing (G2B) and Contingency Bills Processing Systems (Department of Chemicals & Petrochemicals). Facilitated active use of VC facility for review and monitoring of implementation of several national level schemes/projects.

Employee Provident Fund Organisation (EPFO)

Re-inventing EPF India has been implemented in 119 offices all over India. New modules on Internet based Balance enquiry and Claim status enquiry have also been implemented for all these offices. Training has been given to the Technical officers in EPFO in respect of application software in addition to the installation of OS/ database/ Application for the implementation of this project in various sites. These offices are technically been supported on a case to case basis by NIC team.

Environment and Forests

Online Consent Management & Monitoring System

allows industries for online application submission for Consent to Operate (CTO)/ Consent to Establish (CTE) and officials of SPCB for monitoring activities of SPCBs. GIS Based Emergency Planning and Response System (GEPR) improve emergency preparedness at the local level and assists in preparation of effective off-site management plan. Phase-III of the project is extended on web-GIS platform. Indian Virtual Herbarium System has been implemented at Botanical Survey of India, Howrah. By this project, India is showcasing the Type Specimens available in Indian Herbaria for Taxonomic Purposes worldwide as a commitment to the World. The objective is to digitally preserve Herbarium Sheets. 36 Environmental Information System (ENVIS) Centre Web Portals were re-designed on Common Template and Common Database Structure with an objective to fetch performance related data automatically by the ENVIS Focal Point Web Portal and to generate Reports. GIS for Indian State Basic Environmental Information Database is a web interface to retrieve, analyze data of environmental areas. GIS for National River Conservation Plan (NRCP) is web GIS software that provides a flexible tool to determine the potential of consumer product ingredient contributions to surface water quality of river Ganga and its tributaries. Development of "MIS for relocation of villages" was also done.

External Affairs

The new Consular Issuance System (CIS) module for Consular activities, Passport, Visa, Overseas Indian Card and attestation has been supported with updated versions in 29 Missions abroad. Integrated Missions Accounting Software (IMAS) has been implemented in all the 173 Missions abroad. Online Support for running OCI services in Missions and FRRO in India, and facility to address OCI issuance grievances is provided on 24x7 basis. The centralised web based Machine Readable Passport printing for 150 Missions abroad, prints around 500 passports daily. A new website has been developed for Indian Ocean Rim-Association for Regional Cooperation (IOR-ARC) summit.

Fertilizers

Phase I (Information visibility up to retailer level) of Direct Subsidy Transfer project has been implemented with launch of mobile based Fertilizer Monitoring System (mFMS). Overall objective is to disburse subsidy directly to the beneficiaries and to ensure availability of fertilizers in time and in sufficient quantity to the farmers. Supply chain consists of 139 fertilizer manufactures/importers, 30,000 wholesalers (approx.) and 1,70,000 retailers (approx) besides 12 Crore farmers (approx). mFMS is a centralized system with Web, Mobile and IVRS access channels, a Transparency Portal (http://mfms.nic.in) for benefit of the end users which provides daily stocks and sales/receipt of fertilizer in the supply chain. Training has been conducted at Centre, States and Disctricts for companies, wholesalers and retailers. Pilot roll-out of the project has been taken up for 7 districts and nationwide roll-out is also planned during Feb 2012.

Finance

As part of ongoing computerization work for the Budget Division, applications were developed for generation of Budget at a glance, Supplementary Budget and Detailed Demands for Grants. The second supplementary budget of year 2011-2012 was printed using the new application. The application on detailed demands for grants enabled the Budget Division to reconcile the data in DDGs with the data in SBEs. An application to capture Government Guarantees (pre approval process) was developed. The web site of Department of Financial Services was redesigned. A prototype of integrating village level banking amenities data (branches, ATMs, clearing houses, currency chests) with GIS with a view to enhance financial inclusion was developed using the data of Mewat and Bualandshahar Districts in association with GIS division. Data entry module to capture the data from State Level Bankers Committees was developed. Development of registration module of system for registration and reporting of manufacturers and wholesalers of psychotropic substances for Central Bureau of Narcotics (CBN) was carried out.

Food Processing

ICT Infrastructure was upgraded for efficient delivery of Web Based Applications, in-house Software and Intranet Solution. Internet Connectivity was improved from 2Mbps Leased Line based Connectivity to 10Mbps Optic Fiber Line based Connectivity. To improve network agility and network monitoring a new Cisco 2900 series Router was installed. State-of-art Video Conferencing Facility has been established to further improve monitoring and decision making of the Ministry of Food Processing Industries.

Forest Rights

Forest Rights MIS is a workflow based system to settle claim of Scheduled Tribes and other Forest Dwellers on forest rights. Around 11 lakh claims for land allotment and other livelihood rights have been settled. The details of the claimants and right transferred is available on the system.

Health and Family Welfare

Computerization of Central Govt. Health Scheme (CGHS) http://cghs.nic.in is aimed at computerizing all functions of the dispensary such as Registration, Doctors prescription, Pharmacy Counter, Stores, Laboratory, Indent, etc. The system has been implemented for the last 3 years in all the 24 cities of CGHS including Delhi/NCR covering 248 allopathic wellness Centres (WCs). On an average 40,000 patients are registered in CGHS WCs daily in all locations. The plastic card for

every individual CGHS beneficiary has been provided in Delhi/NCR.

Housing and Poverty Alleviation

BRIKS (Building Related Information Knowledge System) http://briks.gov.in has been redeveloped, security tested & hosted with advanced features. It contains 4 modules namely Building Permits Issued & Completed, Wages of Labour, Building Material Rate & Combined Schedule. Training Programmes were conducted in major States of the country as part of capacity building. Under JNNURM MIS, the entire Appraisal, Approval, Sanctions, Release of fund details for the various projects under Basic Services to Urban Poor (BSUP) & Integrated Housing and Slum Development Programmes (IHSDP) schemes were updated.

Human Resource Development

Automation for online submission of application forms for AIEEE & AIPMT organized by CBSE was completed. Online acceptance of application forms, payment gateway for the online payment through various banks interfaces, display on status of receipt of application forms, generation of hard copy of the application submitted, online publication of results, result processing, etc., are some of the facilities offered. Online Application System for Affiliation of Schools implemented for an online submission and retrieval of data relating to affiliation of schools for Approval of Middle Class Syllabus/ Provisional Affiliation up to Secondary/ Senior Secondary/ Additional Subject/ Extension of Provisional Affiliation and switch over up to Secondary & Senior Secondary levels for CBSE. National Portal on Sarva Shiksha Abhiyan was designed and developed. Using the portal application, data flow starting from District level upwards is being captured online. Feasibility study report has been prepared for the development of online MIS for Mid Day Meal Scheme.

Information Technology

E-file & E-Office are implemented in the Department as pilot project. Visitor pass system is hosted on Department's website. Conveyance/IT/account information/personal/Tour Leave Details/Employee Directory Module has been developed. A new web site based online data collection system was developed for data base of production & export of electronics items. Modifications were made in Parliament Question and Answers, EDB System for Intra-DIT, License Fee recovery modules. At present 1000 network Nodes are operational in the Department. Disaster Recovery (DR) for Network Operations Center (NOC) was created.

Information & Broadcasting

DAVP Audio Visual billing software has been integrated with TAM-ADEX for automatic bills approval. The Bulk SMS advertisement module is developed for creating media plan for empanelled Bulk SMS Agencies. DAVP advertisement software for print ads has been implemented for Odisha and Andhra Pradesh. The Press Information Bureau gives accreditation to all the eligible Indian and foreign journalists based in Delhi and its vicinity. A system to receive different types of applications and a processing module to process these applications was developed.

Minority Affairs

Waqf Management System of India (WAMSI) is implemented across 20 State/UT Waqf Boards for registration of Waqf Properties in various State/UTs. Digitization of Waqf Properties documents are also being carried out in these Boards.

National Human Rights Commission (NHRC)

Web version of Complaint Management System (CMS) was implemented at NHRC, Rwanda after its further customization in their local working environment and language. Visitor Management System (VMS) for Delhi High Court was made operational at the reception of the Court.

Panchayat Informatics

The software development of 12 Core Common Applications under e-Panchayat has been completed. Panchayat Enterprise Suite (PES) is under testing.

Pension and Pensioners welfare

Website of Central Pension Accounting Office (CPAO) is being enhanced continuously to include the latest information, of relevance to different stake holders of pension delivery chain viz., pensioners, banks, Ministries and other Government Departments. Tracking reports module was added, wherein all the PAOs are required to enter the details of 6th Pay Commission revision cases, fortnightly. Pensioner Grievance Management Information System (PGMIS) was enhanced to handle the grievances being received through the 5 seat call centre established in the CPAO. Software for pensioners of NPS-AR scheme was further enhanced and New Pension Scheme (NPS-AR) Pensioners accounts are directly credited through Government e-Payment Gateway (GePG).

Personnel and Administrative Reforms

Version 5.0 for Centralized Public Grievances Redress and Monitoring System (CPGRAMS) was released, which is now being used by over 2400 organizations. Web based IPR Archival System for IAS officers, Request Monitoring System, Delhi Official Directory, MIS for Domestic Funding of Foreign Training, Surplus Staff Redeployment Management System, Monitoring Systems for Staff Grievance Redress & IPR submission by DoPT employees, RTI Portal, ACC Vacancy Monitoring

System (AVMS) Integrated Document Management Information System (DMIS), have been developed and implemented.

Over 4000 Village Councils (VC) based hearings of appeals in Central Information Commission (CIC) were organized. Workshops/user training on Pensioners Portal, CPGRAMS, and Recruitment Management System were conducted to promote their implementation.

Planning Commission

MIS for Central Plan - a web-based Monitoring Information System being used for online data entry/updation by all Ministries/Departments for their Annual Plan discussion of Central Sector and Centrally Sponsored Schemes for 2012-13 and for the Twelfth Plan, MIS for Integrated Action Plan for selected Tribal and Backward Districts (IAP-MIS), a web-based application to facilitate online monitoring of various programmes, are the major MIS being widely used and have been developed in-house.

Posts

NIC has developed e-Post corporate service. Corporate Credit is a service wherein corporate customers can send text messages, scanned messages and bulk messages from their premises. e-Post Office portal enables its customers to carry out postal transactions such as electronic Money Order, Instant Money Order and purchase of Philatelic Stamps through the internet. Rural Price data collection portal has been developed to collect data from Post offices. In this system, prices of around 250 items are being collected from 1100 villages every month. Store management for Postal Directorate, Postal Account Current software has been implemented for Director of Accounts offices in Karnataka and 5 other circles. LAN with more than 1000 nodes was set up in Dak Bhawan. Project Arrow post office performance monitoring system has been extended to 15,000 post offices.

Prisons

The Web version of Prisons Management System [PMS] application software is made operational at Tihar Prison Complex on pilot basis. This application software has been security audited. The ICT setup required to implement the e-Prisons project has been created and the jails have started using the same at Ludhiana Central Jail, Puducherry and Madhya Pradesh.

Programme Implementation and Statistics

NIC has implemented the Member of Parliament Local Area Development Scheme's (MPLADS) Funds Sanction & Expenditure System at the Ministry level and the Works Monitoring System by more than 450 districts is being used. The features of the Twenty Point Programme Monitoring system were enhanced for monitoring of various performance indicators.

Rural development

File tracking system has been implemented in Department of Rural Development (DoRD) in July, 2011. AWAASSoft is a transaction level work flow based MIS system for Rural Housing Scheme. Different States are at different levels of implementation of AWAASSoft.

Rural Drinking Water

NIC has developed online Integrated MIS for the Department of Drinking Water and Sanitation, Ministry of Rural development. The database contains the latest position of water supply status and the quality of drinking water in 16,00,000 rural habitations of the country. Automatic SMS alerts have been built in the system. Citizen interface for locating nearest water quality testing laboratories and finding water supply status of their habitations have been introduced. The Total Sanitation Campaign (TSC) online MIS enables monitoring of sanitation coverage at the gram panchayat level.

Science and Technology, Biotechnology and Ocean Development

Under E-enabling of Nano Mission, the system developed captures, manages and monitors the complete life cycle of proposals and approved projects. Web enabled Project Management Information System (eProMIS) is a G2G, G2C application developed towards the promotion of e-governance by DBT. It enables proposal submission, evaluation, management, monitoring till closure.

High speed Internet connectivity through NKN was implemented for Ministry of Earth Sciences (MoES) and 14 attached offices. The NKN has provided 1 GHz High Speed OFC connectivity from the NKN POPs/State centres of the NIC. The NKN also provided dual high speed connectivity to the MoES offices viz., INCOIS, Hyderabad, IMD, Delhi, IITM, Pune and NCMRWF, Noida where supercomputing facilities are available.

Social Justice and Empowerment

On-line Complaint Monitoring Information System (CMIS) for the National Commission for Scheduled Castes (NCSC) has been designed and developed and feasible study for the development of Online Grant-in-Aid Monitoring System has been completed. Application software has been designed and developed for the e-Scholarship Schemes of the Ministry. System is being tested by the various educational institutes.

Telecommunications

On line registration of Other Service Providers (OSP) http://dotosp.gov.in is a web-based system for online registration of OSPs. The online Sale of Documents for Telecom Engineering Centre (TEC) is a portal through which documents can be delivered online and payment can be made online using SBI payment gateway. Website for Principal Controller of Communication Accounts, Delhi Region http://prccadelhi.gov.in was developed and hosted. Asset Management Portal was developed to create DOT asset records consisting of land and buildings across the country. Citizen's feedback Portal for National Telecom Policy 2011 Portal was developed to facilitate citizens to view proposed telecom policy and to submit their feedback on the proposed policy within stipulated time frame.

Textiles

New initiatives like implementation of e-office, development of skill exchange portal are taken up in the Ministry. Various G2G/G2E services like e-Service Book, Pension Book, Vigilance System, RFD, Public Grievances, e-reply are made operational. Participation of Trade & Industry in formulation of various textiles policies by inviting on-line feedbacks/comments on the website of the Ministry is encouraged.

Tribal affairs

Intra-Tribal portal integrated with the Comprehensive DDO system. Web-based Scheme Monitoring System is also developed for Monitoring of Schemes. Under Top-Class Education Scholarship System, scholarships are awarded to ST students. A web-based system is developed so that various colleges can submit their proposals online and get their sanctions. Web-site Maintenance is being carried out by Uploading of Sanction letters for various proposals, Consolidated Reports on Forest Right Act and on the status of NGO proposals received from State Governments.

Tourism

New website of Ministry of Tourism was launched on 22nd May, 2011. The site is supported by a customized CMS which enables various divisions of the ministry to update the related content online. Projects Monitoring Software- PMIS - is implemented for Central Financial Assistance (CFA) schemes of Planning Divisions of the Ministry. All major activities in the project from submission of project proposal, sanctioning, work progress submission, UC submission and CC submission is made online. Hospitality Development Promotion Board (HDPB) is set up for facilitating clearances of Hotel Projects in the country. The software is developed to enable HDPB and NOC clearing agencies for speedy clearances of NOC requests submitted by hotel project promoters.

Urban Development

NIC is involved in implementing e-Awas for Government of NCT of Delhi, Lok Sabha and Rajya Sabha Secretariats. The websites of MoUD and other organizations were maintained and regularly updated. CPWD website was further improved and the websites of the regional offices were integrated with it. Call Centre for receiving service requests from allottees of General Pool Residential Accommodation (GPRA), and information alerts through SMS were implemented. Periodic MIS reports were sent through e-mail to the senior officers. The system was enhanced to extend it to non-residential buildings in Delhi. The Ministry has approved for its implementation on PAN India basis for CPWD. SMS and email facility have been integrated with Automated System of Allotment for GPRA in Delhi. Downloading of e-Gazettes was made free by the Government on the request of Central Information Commission (CIC). Executive Video Conferencing System (EVCS) was used by Secretary of the Ministry for giving keynote addresses to various forums.

Water Resources Informatics

NIC has executed the computerization of 4th Minor Irrigation Census data. A Decision Support System has been developed to generate the reports (National/ State/ District/ Block level) of all the Ground Water Schemes (Dug well, Shallow Tube well & Deep Tube well) and Surface Water Schemes (Surface Flow Schemes & Surface Lift Schemes). An application for monitoring of physical and financial progress of Command Area Development & Water Management (CADWM) programme has been developed and implemented. e-Granthalaya software is being implemented at Central Ground Water Board (CGWB). Digitization of CGWB documents/ reports for creation of digital library is also undertaken. A software to share the gauge and discharge data between India & Pakistan Governments as per the Indus Water Treaty is operational and reports are being sent on monthly basis.

Women and Child Development

National Portal on Child Adoption (CARINGS) has been developed for adoptions within and outside the country. National portal on e-AWEDAN for GIA Schemes designed, developed and implemented for tracking and monitoring of NGO proposals supporting online submission, uploading of essential documents, backend processing. Portal for ICPS Schemes is for online submission of financial proposals from the State Government and monitoring the status of children in various homes. Under establishment of National Nutrition Platform through Interactive Voice Response System (IVRS), a communication network has been established for transmission of nutrition messages blast to all 14 lakh anganwadi centres.

Youth Affairs and Sports

GIS application on Sports facilities database has complete information about various sports facilities available in Delhi. OPEX London-2012 is a web portal towards preparedness of India for participation in London Olympics 2012 PRIMES (Performance Review Indicators Monitoring and Evaluation of Sportspersons) software was tested. National Playing Fields Association of India (NPFAI) site was re-designed. This site is being used for registering playfields with the NPFAI and has data of 2932 playfields.

NIC services to States and Union Territories

Andaman and Nicobar Islands

The website of Elections Department developed by NIC, Andaman with facility for Electoral Roll search was launched. The complete work flow process in "Issue of Commodities under Public Distribution System" to Fair Price Shops was computerized with an intranet based application. The details are also disseminated in website of A & N Administration in online mode. The new website of Andaman & Nicobar Administration was launched. The CIPPS national project of NIC for Passport process and printing was launched at Secretariat, Port Blair. The website of Andaman and Nicobar State Cooperative Bank developed by NIC, Andaman was launched. The water billing and accounting system developed by NIC, Andaman for rural areas was extended to 5 divisional offices of Andaman Public Works Department. The new website of Animal Husbandry and Dairying was launched. The e-Courts project was implemented at the District courts, Port Blair. The web based Software developed by NIC Andaman for Express Bus Advance Booking of Seats was launched at the Express Bus Terminal, Port Blair.

Andhra Pradesh

Software was provided for Electronically Deliverable Services(EDS) from KIOSKS. LRMIS 6.5 was released and Registration and Land records data was centralized at the State Data Centre. E-Courts software was rolled out in 12 districts. Class III digital certificates provided for 1500 Revenue Officers for EDS Project. Financial Accounting System was implemented for 130 Tribal Welfare Schools. System implemented included Web based monitoring, production and monitoring of the seeds for APSDC, Ambient Air & Stack Monitoring System for AP Pollution Control board, Web based admission counseling for Engineering, Polytechnic, etc., covering 5 lakh students. PDS-NIC software was implemented in 3 districts on pilot basis at 10 locations. GIS based school mapping system for Sarva Siksha Abhiyan was fully implemented. e-Procurement system was implemented for 5 Departments. Under E-PRI five central core modules were implemented. The Centre provided and implemented mFoods- Mobile Based Food Management System. An SMS based advisory on pesticides and spurious input alert services to the Farmers was implemented. A portal was created to track and link missing and found persons for Women & Child Welfare Department. Support was provided for Immigration project at RGIA, Shamshabad and FRRO office, Hyderabad. Links to all NIC District offices were upgraded to 34 mbps.

Arunachal Pradesh

Application has been developed to maintain the monthly accounts of State Government employees under New Pension Scheme. Trading license module was added to Jansuvidha software. TreasuryNet Project pilot phase is operational and new requirements added. Official web site of the Transport Department and Town Planning Department has been developed. The VATSoft software is being implemented and Dealer e-Registration and e-Returns module have been completed. Backlog data entry of VAT dealers is completed. GPF web application has been developed for dissemination of Annual GPF Statement to the Govt. employees. Official website of the Itanagar Bench of Guwahati High Court has been developed and hosted. Training on the MCTS application provided to various officials of the NRHM and the project has been implemented. Hardware installation done for NADRS project (111 sites) and training on Computer Basics provided to Veterinary officers. Data-entry, uploading and validation of 8th All India School Education Survey (AISES) Flash Schedule data done. Website of AG Office, Arunachal Pradesh developed. Website hosting services provided to Election Department and various Krishi Vigyan Kendras (KVKs).

Assam

Under Land Records project major modifications implemented in the software (Dharitree) and rolled out in 85 revenue circles in the State. Version 3.0 of the software e-Panjeeyan was launched and has been rolled out in 74 out of 75 Sub-Registrar Offices in the State. NREGASOFT has been effectively implemented in 219 Blocks and 15 districts are totally online. For Election support software was developed and implemented for Management of Candidate Affidavits, Complaint Monitoring S/W for CEO, generation of Voters Slip, Electoral Roll Management S/W, Modules for deployment of personnel & EVMs at district-level, SMS Based Poll Monitoring and Counting of Votes. Under e-Court project the software has been rolled out in 26 Courts, site preparation completed in 55 courts and LAN installation completed in 42 courts. WebGIS-based application for National Rural Health Mission (NRHM), Assam has been completed.

Bihar

The NICNET Last Mile Connectivity in Bihar has reached to 78 in numbers besides the 38 NIC districts Centres.

The NICNET up to the districts are being upgraded to 34 Mbps. NKN connectivity has been extended to IGIMS-Patna and NIT-Patna besides IIT-Patna and ICAR-Patna. VC services over NICNET are utilizing for review, monitoring and capacity building programmes of the Government. Websites of various Departments and organizations such as (e-Governance Nagrik Seva Kendra, i-BHUGOAL (GIS Framework), VAHAN & SARATHI, e-Registration (Property Registration), Chanakya (University Computerization), e-Procurement (PMGSY Tenders), MUDRA (Municipal Tax), e-Gazette (Gazette Publication) etc) hosted at http://bihar.gov.in,. Moreover, ELECON (Election), RACE (Energy Billing), Bhu-Abhilekh (Lands Records), Courts Computerization, GPF, Office of Lokayukta, Regional Passport Office Computerization, Custom Office (EDI) and Application software for Panchayati Raj Department are operational. NIC District Centers are extending technical support in the implementation of various projects of different Departments.

Chandigarh

GePNIC (e-Procurement), implemented since April 2011 has been made mandatory for all tenders. In the current financial year more than 4500 tenders worth over ₹ 1115 crore have been processed. Chandigarh State Wide Area Network (SWAN) is being extended to bring more and more offices under SWAN to facilitate the implementation of e-Governance projects. Smart Card based Public Distribution System has been successfully deployed in 13 FPS for disbursement of commodities. Government Financial Accounting System (GFAS) has resulted in integrating the Budget and the Treasury operations.

Chhattisgarh

GramSuraj Portal for State Government was launched. Online dealer registration facility for VAT and CST was implemented and C Form made online for dealers to apply. Real-time monitoring of Kerosene distribution to Fair Price Shops was started. COREPDS - Smart card based FPS automation and portability was implemented in 175 FPSs. Toll free based citizen helpline was installed for Housing Board. Priasoft, Planplus and National Panchayat portal of e-Panchayat were rolled out. Website and MIS for capturing the details of Self Help Groups of State Rural Livelihood Mission was hosted. Online works accounting including PWD physical progress monitoring was implemented. Over two lakh employees are getting salaries credited into bank account from treasury through online e-payment system. Driving License project (SARATHI) implementation at multiple centres through CGSWAN was commenced. A number of portals such as Agriculture Portal, AGRIMIS, Online Agriculture Subsidy processing, etc were developed and hosted. Appeal & Complaints monitoring in SIC computerized. e-Scholarship project was implemented. Site preparation, LAN, H/W procurement, metadata preparation was completed as part of implementation of Waqf Management System of India. Vidhan Sabha Question-Answer Monitoring System was developed and hosted.

Dadra & Nagar Haveli and Daman & Diu

Activities carried out include computerization of Sub-Register office (Bhoo-Panjikaran); Implementation of CT-MMP (VATSOFT), Bhoolekha (NLRMP) and e-Mamta. Technical support was extended for National Projects such as VAHAN, SARATHI, National Permit; NRSR, CONFONET, CIS, Agriculture Census, Pension Billing, COMPACT, e-Lekha and CDDO2PAO. Implementation support was provided for RealCraft, RACE (Electricity Computerization) and NADRS. Ration Card Management System was revamped. Websites were hosted for Institute of Hotel Management (IHM-Silvassa) and Police Department.

Delhi

e-Procurement (GePNIC) has been implemented in Delhi Government and 9941 tenders worth over ₹ 4230.29 crore have been processed during the current financial year. e-SLA for monitoring of delivery of citizen centric services of Delhi Govt. has been implemented with 70 services integrated. E-Counseling System has been implemented for DTU, NSIT for admissions to B.E programme 2011 and TTE for diploma level programme 2011. Targeted PDS project initiated & under implementation in Delhi-NCT. e-Clipping Monitoring System developed and under implementation by Directorate of Information & Publicity. e-Litigation System for court cases monitoring is currently under implementation. Very Important References Special Follow up (VIR-SFU) Monitoring system implemented in Lt. Governor's office. Support was provided to Delhi Govt. for Polio Immunization programme; Divisional Commissioners office and Revenue Districts of Delhi; Payroll -DDO-application & GPF Monitoring System.

Gujarat

Apno Taluko Vibrant Taluko (ATVT) is an online system developed to facilitate the Taluka Sarkar to deliver 162 services effectively and reliably to the common citizen. Web based Land Record and Registration is operational and integrated. Data from taluka servers were converted and migrated to central server. Online Job Application System OJAS is used to invite online applications for Government/jobs/tests. The Bar Code Ration Card and Coupon is introduced. The food coupons are generated at e-Gram /Cyber Cafe after finger print verification of beneficiaries. The online counseling is done for professional courses. Vahan and Sarathi are operational at all RTOs. District and Taluka Court Information is made operational and Case status is available on Internet. e-Mamta is supported as MCTS at National Level.

Goa

Accounts Online has been developed by NIC Goa for the Directorate of Accounts (DOA), Government of Goa. The online services are e-DDO (Online Fund Allotment System for the DDO) Salary of gazetted officers by ECS mode of payment, SMS services (intimation of salary credit, GPF balance). Both rural & urban Record of Rights (ROR) are computerized. Under the current version, DHARANI-II entire land records are now converted to UNICODE for all 12 talukas and digital crop survey has been carried out. For eighteen e-Services, online payment facility have been introduced for the Dealers. VATSoft has been enhanced with addition of Automated SMS & email to dealers and Online Issue of tickets to Casino owners. Six e-Services were introduced to facilitate the citizens. A new software module has been added to the Municipal Administration Software to facilitate Accrual Based Double Entry Accounting System. Also a workflow based Construction Licensing Module has been added.

Haryana

Online Budget Allocation, Monitoring & Analysis System for 6000 DDOs has been implemented. Financial Inclusion Electronic Benefits Transfer project for Social Welfare of 21 lakh Pensioners has been carried out. Live web casting was carried out from two booths during elections. Online off-campus counseling 2011 was conducted for 13 courses, OLET 2011 for 4 courses. Integrated HARIS, HALRIS and digitized Cadastral Maps for more than 80 villages of Ambala. Wakf Board Computerization and e-District MMP Pilot Rohtak were done. Smart Card based PDS Project biometrics enrolments was completed in four blocks. MeDLEaPR Medico Legal Examination and Postmortem Reporting software implemented for Health Departments. VAHAN was implemented at 74 sites and SARATHI at 71 sites. Web enabled Treasuries Workflow Integration was carried out in Cyber Treasury, EPS and e-Salary System. Other projects implemented include Socio Economic Census Survey, Mother and Child Tracking system, Lokayukta Office Complaints Monitoring System, e-DISHA, Integrated e-Office with Intra-Government Haryana Portal, Government e-Procurement System, e-Court Project, Workflow based Public Demands and CM Announcements Monitoring, Integrated e-Governance Infrastructure Management Project, NADRS, NKN Project.

Himachal Pradesh

e-Procurement project was extended to 11 more departments. Personnel Management Information System (PMIS) was developed and implemented across the State. Guidelines for PDF/A preparation and application of Digital Signature for Websites were prepared and implemented for e-Gazette Software. Web-enabled workflow based software for Irrigation and Public Health (IPH) developed and implemented. Panchayati Raj Institution (PRI) Profiler was released. Learners Driving Licenses through Lok Mitra Kendra (LMK) was implemented. Dealer Point Vehicle Registration Software implemented. HIMRIS & HIMBHOOMI were strengthened for implementation of Instant Mutations. 22 Modules of Finance & Treasuries Department were integrated. e-Attendance, a biometric based attendance system for HP secretariat was developed and implemented. Web-enabled workflow based software for Department of energy was developed. Employment Exchanges software was strengthened and implemented in 62 locations. Double Entry Accounting System implemented in 50 blocks. GPF & Pension information dissemination implemented for AG, HP. House Allotment MIS software developed and implemented.

Jammu and Kashmir

4 new NIC district centers were made functional. Automation of libraries at four libraries launched. Centralized software rolled out in 19 District & 13 Taluka courts. In Election Project, 15 Lakh EPIC generated. In Panchayat Election support provided for Electoral Rolls preparation, ballot paper design, randomization of polling staff, digitization of winning candidates, Photo Rolls of candidates for Election of BDC & MLC. e-Municipality project was implemented in 29 municipalities. Online Birth certificate implemented. Hajj pilgrims & District Plan computerized. In CPIS, pilot phase completed. Computerisation of Treasuries under MMP Pilot testing of software completed. Computerization of energy billing implemented in 75 Sub Divisions. VAHAN & SARATHI were implemented at 2 locations and data populated in State and National Register. GPF Software implemented at 20 districts & 3.50 lakh subscribers data available on website. Hospital MIS implemented at 4 locations. EPF computerized at 2 locations. MCTS and Challan MIS implemented. VC Network at 33 locations for J&K Police implemented. Developed & hosted the website of more than 25 Departments.

Jharkhand

Integration of Web based GPF Computerization with Integrated Treasuries Computerization has been carried out. e-Registration service was launched in the State under Commercial taxes. Incorporation of Digital Signature Certificate for the issuance of Certificates under e-Nagrik sewa was completed. Development and implementation support was provided for Vigilance Monitoring System. 8 Departments have joined the GePNIC system publishing around 600 tenders. Vidhan Sabha website and Lokayukta website were launched. The new GIGW compliant website of Simdega & West Singhbhum districts were developed and launched. Support was provided for conducting General Bye-

Election-2011 at East Singhbhum. Software for Drinking water and Sanitation Department was enhanced with SMS integration.

Karnataka

BHOOMI, Land Records Management System, has been PKI enabled. SMS has been introduced on the mutation status. NEMMADI application for delivering Rural Digital Services to the citizens on an average handles more than 40,000 transactions per day from 800 telecentres in the State. The application is being scaled up for delivering services from 5000 additional CSCs. The VATSoft application for the Commercial Taxes Department has been enhanced to deliver E-Services to the dealers. Panchatantra , the double entry accounting system has been implemented in all 5628 Gram panchayats. The software developed for the Bengaluru city corporation has been enhanced to handle on-line payment for property taxes. The SARATHI and VAHAN software for delivery of Driving License and Registration Certificate along with ODI replication for State Level and National Registry has been completed. The letter and file tracking software LPO is implemented in State Secretariat and hosted in the data centre. Financial and Stock accounting software (FIST) was implemented in 240 Whole Sale Points (Godowns) of Karnataka Food and Civil supplies Corporation. 2,30,000 children details were digitally signed for enrolment into Bhagyalakshmi scheme. 15,000 Fishing Vessels were registered using the RealCraft system.

Kerala

FRIENDS Re-engineered Enterprise Enabled System has been made functional at FRIENDS citizen centres in Kollam and Alleppey. E-District project, was implemented in two pilot districts of Kannur and Palakkad. A total of 2,81,000 e-applications processed and 2,30,000 digitally signed certificates issued. Salary of 2.7 lakhs employees has been processed through Service and Payroll Administrative Repository (SPARK). Under PMGSY - 139 E-tenders were floated. E-Procurement portal for Kerala was launched. OpenPearl-automates the activities of the Sub Registrar Offices of the State into a more enhanced web based application. Customized Vahan-Sarathi (SMART Move) was implemented in the 5 New Sub RTOs. RealCraft, web based system for issuing registration & license certificate to fishing vessels was rolled out in all 9 coastal States and 4 UTs. Other applications included GAINPF (Computerization of Government Aided Institutions Provident Fund) HSCAP, CAPnic, LCAP and vhsCAPnic centralised set allotment S/W.

Lakshadweep

New version of web-based application Plan Monitoring Information System (PLANMIS) has been developed and implemented for the Planning Department and is being used by all the Departments. Online application BanD MIS was developed to manage Birth and Death registration activities of Lakshadweep. Online Tapal Management Solution (OTMS) was developed and implemented. Court Case Information System was developed for Legal Special Cell, of the Lakshadweep administration for monitoring the pending cases and for updating the status of the cases filed by and against the Govt. E-Gov System was extended to all the offices of Department of Electricity. Under LAKPORT new modules developed and implemented to provide SMS services (Status of ship tickets, ticket cancellation, ship information) to public. A New module (Online Pre-Harvest Test System) designed and developed for Marine Products Development Authority under E-MPEDA.

Madhya Pradesh

NIC district centre was established in the new district Bhuranpur. Established 3500 nodes structured LAN at Satpura & Vindhyachal Bhawans respectively. Mantralaya Systems comprising Samadhan Online, Parakh, Samadhan Ek Din, Public Service Management System and other applications have been computerized and supported. Computerisation of Dist. and sub-ordinate Courts under e-Court Project is in progress. Under Land Records computerization issue of ROR & MAP upto Tehsil level is completed. Other systems include Chief Ministers Rural Housing Mission, e-Prosecution, Jail Computerisation, i-CCMES: Integrated - CAMPA Concurrent Monitoring & Evaluation System, MP Tribal Portal, Land Management System for Forest Dept., Web based system for Revised National Tuberculosis Control Program, e-Prashna a workflow based system for Vidhan Sabha, e-Mamta, e-Hospital, Wheat Procurement Monitoring System, National Animal Disease reporting System, Geomatics-based Application for Planning Rural Road Connectivity to Habitations under PMGSY, Forest Mapping for entire State, Chief Minister Gram Sadak Yojana , i-GeoAmpere for Power Distribution Networks.

Maharashtra

Computerisation of Public Distribution System (ePDS) is initiated. Digitisation of ration card data is started in all 357 Tehsils. State e-Procurement portal was launched. eOffice project is implemented in National Rural Health Mission (NRHM) offices at Mumbai, Pune. Web site registration and hosting services to Departments of State and Central Government. Software support for Social Economic Survey 2011 initiated in all districts of Maharashtra. National Land Records Modernization Programme (NLRMP) implementation is in progress in all 35 districts. Digital Signature Certificate, Tender Account creation, e-mail creation services, VC services to State and Central Government Departments have been provided. The fishing vessels registration and fishing

license software implemented in 6 coastal districts of Maharashtra. Panchayat accounting software implemented for Rural Development Department.

Manipur

VAHAN & SARATHI have been implemented for Transport Department. Applications implemented include Treasury Computerisation; Computerisation of Pension payment Systems; Energy Billing in Electricity Department; File Tracking System (FTS) in Manipur Secretariat; VAT in Department of Commercial Tax; Budget allocation and Expenditure Management (BEAMS) in Finance Department; Personnel Information System (CPIS); Payroll in Manipur Secretariat, e-PRI; PlanPlus; NSAP in Social Welfare Department; Scholarship in Waqf Board; IAY ; BRGF; MGNRESG; e-Court; Land Records; Case Monitoring System in Manipur Secretariat; Monitoring of Plan Scheme (NLCPR, SPA); NADRS in Veterinary Department; Mother Child Tracking System in Health Department; Online Filing of Entrepreneurs Memorandum (OFEM); AGMARKNET and CONFONET.

Meghalaya

The Co-operative Core Banking Solution (CCBS) for Meghalaya Co-operative Apex Bank Ltd was launched in October 2011. The portal of the Shillong Municipal Board and Online Grievances & Redressal System was launched. This application is integrated with SMS alerts. Workshops on "Building Employee Database" were conducted throughout the State. File Tracking System (FTS) has been implemented in 35 Departments within the Secretariat. Online application has been implemented for Meghalaya Public Service Commission; Election Dept; Issue of Certificates like Caste/Tribe, Residential, Domicile, Senior Citizens, Income and Permission to hold special events; Graduation seats in Architecture, Engineering and Pharmacology courses against State sponsored seats. TreasuryNET has been implemented in all Treasuries and Sub-Treasuries. The Centralized Pension Payment System has been implemented. VAHAN & SARATHI has been implemented. Connectivity has been established in all DTOs and the data has been replicated into the State Register. Ration Cards are being generated from a database of Family Identity Card (APL) for Shillong urban areas. Case Information System was implemented at Guwahati High Court in Shillong Bench.

Mizoram

Online Inner line pass for Home Department. was implemented. VATSoft was implemented. National projects implemented and supported included e-courts, VAHAN, SARATHI, PDS, AGRSINET e-tendering for PMGSY MIS for Minor irrigation, NREGA, JSY, IAY, IWDP, CONFONET and e-Mamta for Health Department. Websites were developed for a number of State Departments.

Nagaland

Web based Portfolio Investment Scheme (PIS) developed by NIC was implemented in the State Secretariat by Home Department. Online Inner Line Permit(ILP) System was developed for the district administration and is being implemented. Implementation of File Tracking System in the Nagaland Civil Secretariat Office Kohima is in progress. The online application for Society Registration is completed and implemented as a portal for data entry from Society Registration Cell, Home Department. E-Tendering/ e-Procurement is being implemented for the State PWD and was formally launched in November 2011. VAHAN and SARATHI are operational in all the districts. Online registration has been computerized for District level Employment Exchanges. MCTS project was rolled out in the State and online data entry is regularly done from all the district hqrs and block hqrs. Other applications implemented included Weather Information System, Village Profile, Arms License, NARDS, Inventory Monitoring System, Electoral Roll, MGNREGA, Passport, CCTNS, Land Record, CPS, Online Scholarship, Employees & Pensioners Database, etc.

Odisha

e-Counseling for Engineering, Lateral Entry, MBA, MCA & Pharmacy Courses of OJEE and Diploma Engineering for more than 1 lakh students has been conducted. Post-Matric Scholarship Registration Release And Network Automation (PRERANA) system has facilitated more than 2 lakh ST, SC, Minority, OBC/SEBC students. 11738 grievances have been redressed through e-Abhijoga (Centralised Public Grievance Redressal and Monitoring System- CPGRAMS) since its launch in 2011. A standardized district portal framework has been put in place in Odisha, which is based on the content architecture of the National Portal of India under NeGP. 1040 applications have been processed over the e-CMRF (Chief Ministers Relief Fund) portal. Odisha has hosted more than 35000 tenders over GePNIC e-Procurement System till December, 2011. MCTS, the name-based pregnant mother and child tracking system, has been implemented in 6688 Sub-Centres in Odisha. Till December 2011, 623342 mothers and 411041 children have been Registered in MCTS portal, along with 8286 ANM & 40899 Asha workers. GIS applications have been developed and implemented at Grass-root level using open source for nine districts of Odisha. Under Agriculture sector modules developed & implemented in Odisha include Pesticide Licensing System, Online Fertilizer Management system, Commercial Pest Control Licensing System, Pest monitoring system, Weather information system, etc.

Puducherry

PVATSoft was developed for the Commercial Taxes Department. A set of online services like ePayment of Taxes through Banks, Online Issue and Submission of forms, Online Registration (TIN) were introduced. Smart card based Driving License and RC were introduced at RTO, Puducherry. The Issue of Smart cards with biometric and photo for PDS was inaugurated. The inmates capture system has been implemented at the Central Jail at Puducherry. A finance portal covering the Budget and Planning and is made available for entire UT. Web based recruitment software has been developed and implemented. The RTPMS is the new system implemented for General Elections 2011. The compilation of Polling activities, events and data are made available from a comprehensive web enabled system. Software was developed and implemented for Pre Poll Activities of Assembly Election 2011 comprising of EVM Randomization and Polling Personnel Randomization.

Punjab

Web-Based Off-Campus Online Counseling for PSBTE-2011 and PTU was implemented for various courses. Implementation of e-Procurement was initiated in various Departments. Web Based Court Cases Monitoring System (eCCMSWeb) was launched in Punjab. e-File was implemented in Punjab Technical University. Prison Management System (PMS) and Visitor Management System (VMS) was implemented at Ludhiana Central Jail. District Information System for Election (DISE) and DISE Capsule module and Monitoring of Election Systems through SMS (MESS) was implemented. Punjab Public Grievance and Redressal Monitoring System (PB-PGRAMS) was customized to include usage in local language. Coordination with State Health Authorities was carried out for the implementation of Postmortem and Medico Legal Report System (MedLEaPR). Online Scholarship Management System for the Department of Welfare for SC, BC, OBC and Minorities for the Merit Cum Means Scholarship was implemented. Online Consent Management and Monitoring Application was implemented for Punjab Pollution Control Board. National Projects implemented included mFMS, SECC 2011, e-Entry Pass, PRIASOFT, e-Courts, CONFONET, MCTS, MGNREGA, IAY, SGSY. Smart Card Based Driving License and Registration Certificate for Vehicles was launched. SARATHI was implemented for Learners License. E-Salary has been developed.

Rajasthan

Integrated Financial Management System (IFMS) treasuries module was rolled out across the State for all treasuries and sub treasuries. Single window system (SUGAM) for grievance redressal and service delivery was launched in Jaipur. Online Answering Information System for State Assembly Questions has been inaugurated in Rajasthan State Assembly. Pregnancy, Child Tracking & Health Services Management System (PCTS) a web based online system was developed for Medical, Health & Family Welfare Department, Governmet of Rajasthan, for improving its services right upto the grass root level (Health Sub centre). Hospital Management for BPL Jeevan Raksha Kosh a web based on-line application, intended to facilitate free medical treatment to poor patients in any Government health facility at State, district or sub district level was implemented.

Sikkim

The SISCO cooperative bank computerisation has been implemented at the headquarters and its four branches. Online Property Registration Information System has been implemented in all subdivisions. Integration process of the property registration and the land record project has commenced. VAHAN and SARATHI have been implemented in the all the RTOs of Sikkim. The CATCH project for the Health Department to take every citizen basic health information online is being implemented. The online ERMS for the State Election Department is being implemented.

Tamil Nadu

Under GePNIC e-Procurement solution 89,667 tenders have been floated till December, 2011. Under Merit cum Means Scholarship System Students can apply for scholarship online. Online status, SMS alerts are sent to the students. The system covers 9969 institutions and last year 2 Lakh students had applied. State Election Commission Photo Electoral Rolls for 4.75 crore Voters Online Result Dissemination was implemented in 32 Districts, 385 Blocks, 161 Municipalities/Corporations and 525 Panchayats. Service Delivery Platform Reusable technology Components for Authentication, OTP, 2D Barcode methods have been released. Under e-Services of Commercial Taxes 264265 Dealers filed Returns. e-Services of Department of Transport resulted in 2,270 Hire purchase agreement applications filed & 20000 Heavy Vehicle drivers training certificate issued online monthly. E-Pension Workflow based system to handle transactions was implemented in Pension Pay Office, 40 STOs & 6 DTOs. Students Enrollment System for Department of School Education was implemented in 6892 State Board & 3657 Matriculation Board schools. Online consent for TNPCB was implemented to facilitate Industrialists who apply for consent/authorization. Online Scheme Monitoring System for Rural Department was implemented to monitor Physical and Financial Progress of works executed under various schemes. The system has been implemented in 385 blocks & 31 districts.

Tripura

Client-Server based Jami application for Land Records

Management was converted into 3-tier Web based Jami Ver.3.01 Unicode compliant application software, hosted at Tripura State Data Centre and operationalized for all 31 Revenue Circles. ISCII based RoR databases were converted into Unicode format. e-Procurement Solution (GepNIC) has been implemented in Rural Development Department and PMGSY cell of PWD in Tripura. Web based Court Cases Monitoring System was deployed and made operational for several Departments. Important Issue Monitoring System (IIMS) for the office of the Chief Secretary was deployed and implemented. Mother and Child Tracking System was implemented for one Block; and rollout for entire State is in progress. A workflow based Hospital Management System, e-Hospital Suite, have been replicated in hospitals in Agartala, Bhopal, Ernakulum, New Delhi, Shillong. Software Maintenance and Change request services also extended to all running applications including e-Suvidha, Vahan, Sarathi, RuralSoft@NIC, etc.

Uttarakhand

Cooperative Core Banking Solution (CCBS) software was implemented in Nainital district. Janadhar e-Sewa had been set up in the office of Chief Resident Commissioner at New Delhi. People of Uttarakhand living in Delhi can now apply online for their certificates. Janadhar module of e-District was started at 7 locations of Pauri district. Various applications are provided at Rajbhawan like Letter, file monitoring system, Vivekadheen Kosh Monitoring System and Inventory Management System. Under UKPSC project, Admit Cards/Mark Sheets download facility was provided for various examinations. In Commercial Tax Department citizen centric services viz., e-Registration, e-Challan through e-payment, e-Profile of dealers, e-Filing and web-based reports of check post data have been implemented. The application s/w for back-office automation had been implemented and all the 70 offices of CTD at 21 locations across the State were connected to SWAN. A web based Water Billing Software for Uttarakhand Jal Sansthan Developed and hosted. The Social Security Pension (SSP) web portal for automating the disbursement of Old Age, Widow & Disability Pension has been launched in the State. In Transport project State Consolidation Register (SCR) have been created along with State Register (SR). Uttarakhand has been linked with National Register (NR).

Uttar Pradesh

The e-District project was strengthened & more than 35 lakh digitally signed services were rolled out from 6 pilot districts. More CSCs & Lokvani Centres were associated for delivery of services at the village, block & tehsil level. Enhancements were carried out in the VAT Computerisation such as – e-Return filing, automated input tax credit, online TDF generation, NET payment and single window receipt & registration through Vyapari Suvidha Kendra established in 94 locations in the State. A major activity was the digitization of more than 12 crore Ration Card beneficiaries of the State and its availability on the Web. An SMS based system was deployed to track the food grain supply chain being delivered through 72000+ Fair Price Shops. Automated systems were deployed for old-age pension scheme, Gharib Arthik Madad Yojna, etc., that facilitate direct transfer of funds to the bank a/c of beneficiaries. A comprehensive system was implemented for online submission of UPPSC applications. Online counseling was carried out for admission to various colleges of the State. Vehicle registration & license issuance under transport, grievance redress through tehsil divas, etc., were implemented.

West Bengal

Under BHUCHITRA project, integration of land data and land map has been done in all 341 Blocks and RoR delivery with plot details and plot map introduced across the State. In VAT project, e-refund of tax for Dealers doing export, e-submission of F-16 for registration under composite dealers scheme and SMS integration with above e-services has been completed. Under ARISNET, Farmer Advisory Service based on Soil Health Card has been implemented with SMS integration. In VAHAN, e-payment of MV tax started in 10 RTO offices after State Vehicle Register of 27 lakh vehicles was created and Tax demand notice generated. In Caste Certificate (OSCAR) Project, e-services in filing applications, processing/viewing of applications was rolled out in 7 districts. Infrastructure was created in 22 District Courts and operation of e-court software started under e-Court Project; infrastructure was also created in 56 Taluka/Lower Courts, and application software deployed in District and Taluka/Lower Courts. In school education sector, child tracking system was implemented in 4 districts as a part of RTE 2009 Act compliance. In fishery sector, e-governance for fishermen welfare activities was launched. e-Procurement software was implemented in PWD, PHED and Irrigation Department this year.

Open Technology Centre (OTC)

OTC has provided Support Services like Staging Server facility, Security Auditing & Hand holding for State Portals (Arunachal Pradesh, Tamil Nadu, Tripura, Meghalaya), Odisha Public Health Organisation, Central Procurement Public Porta, e-Districts-TN MMP, DGCA for Vimanic Project & various portals of Karnataka and Pune. It also provided Consultancy & Training to Agri-MMP, e-Panchayat-MMP and e-PDS-MMP. Provisioning of Development & Staging environment using Virtualization at NDC, Pune was done. PoC on the usage of 2D barcode for Judicial Documents to e-Committee of Supreme Court of India, development of Secure SMS & WAP Gateway for Parliament, Creation of Software-Builds for

CIPA, CollabLand & CollabCAD (Delhi) and CIPRUS (TN) are some other activities of OTC. OTC provided consultancy, development of technology components, infrastructure & Development Environment for Service Delivery Platform. Consultancy on Development & Deployment Environment for CIPRUS Project and Integration of Central Authentication Services for Web-GIS for TN was undertaken. Enhancement of VAT offline for TN-Commercial Taxes was completed. Source Code Repository synchronization of BOSS-Linux with CDAC, Chennai Digital Certificate integration for Supreme Court of India, e-Districts Teams (Kerala & TN) were other activities. Training was provided to NIC teams on XForms, Drupal, PostgreSQL, awareness on Cloud-Computing and Digital Signature Implementation in OSS.

Software Development Unit (SDU), Pune

Finance Division, Govt. of Maharashtra has established a Virtual Treasury to receive tax and non-tax receipts on-line. The transaction takes place through the portal named Government Receipt Accounting System (GRAS). Integration with e-Courts, I-Sarita & portals of various banks has been achieved for all Government Receipts. GRAS has received more than 65000 challans worth ₹ 5700 crore in the year 2011-12. The e-Courts, national level web enabled project is developed at SDU, Pune. The package is implemented in Karnataka, AP and Kerala as per the requirement of the respective State in 2011-12. In Maharashtra, land parcel wise data is available for all 44000+ villages and 2.11 crore land parcels. The project for Integration of Land Records and Agricultural Census provides land records data to existing census application which prepares required census reports. Thus inter departmental data sharing has been achieved. SARITA3 for document registration has been implemented in Sub Registrar Offices (SRO). Soil Test Crop Response (STCR) based online fertilizer recommendations is an application developed for giving Online Fertilizer Recommendations based on STCR and Targeted Yield Concept.

National Informatics Centre Services Incorporated (NICSI)

National Informatics Centre Services Incorporated (NICSI) was set up in 1995 as a section 25 Company under National Informatics Centre with an aim to provide total IT solutions to Government organizations. NICSI continued its IT services to the whole of the Government sectors across India. The emphasis in the current year progressed from IT enabled services to e-governance services. NICSI's turnover increased in terms of value and number of projects. Major activities undertaken were Rollout of e-Procurement, e-Office, e-Hospital, implementation of National Knowledge Network, Creation of National Data Centre and Development Centre. NICSI continued its services to the major projects like UP SWAN, Passport Office, computerization of CGHS dispensaries and introduction of plastic cards to the CGHS beneficiaries, National Knowledge Network, mission mode projects like e-districts in a number of States. Comprehensive DDO S/W, Office Procedure Automation (OPA) S/W and File Tracking System (FTS) were implemented in a number of Government Departments. Major projects undertaken during the year are setting-up of high speed data processing centre in the various offices of Registrar General, India for Census-2011; facilitating UIDAI, Community Participation Unit of UP Jal Nigam for data centre setup; VC networking in J&K; facilitation for setting up of National Knowledge Network; Court Computerization, Counselling for admission in different courses, Integrated Finance Management System for Government of Rajasthan; Computerisation of Chief Election Office and Prisons in Punjab.

Highlights

NIC has leveraged ICT to provide a robust communication backbone and effective support for e-Governance at various levels including sub district level in many States. Under National Knowledge Network, 157 institutes have been migrated from NMEICT to NKN. 82 core links have been established between various NIC/NKN PoPs. Last mile redundancy for NICNET is extended to more number of Districts and new Internet Gateways are being installed at selected locations to reduce latency for Internet traffic.

GePNIC is being implemented as a Mission Mode Project (MMP) on e-Procurement in 23 States. It is also being implemented for procurements under DGS&D, PMGSY, various State Governments and PSUs. Around 97129 tenders, worth over ₹ 1,26,378 crore have been processed till 31st December, 2011.

NIC Certifying Authority has issued approximately 1,00,000 DSCs to the end users and SSL certificates for servers. Since April 2011, approximately 33,000 Digital Signature Certificates have been issued.

In the postal sector, e-Post corporate service has been developed which provides hybrid mail solutions to the customers and has options for credit payment (Post Paid). PLI Portal (http://postalifeinsurance.gov.in) has been launched having facilities such as Premium calculator, revival calculator, type of policies, bonus rate of various policies.

In the agriculture sector, more than 6000 desktops and servers were installed, connectivity was established at more than 5000 NADRS sites, and basic training was imparted to about 6000 Veterinary Officials.

Cooperative Core Banking System for Meghalaya Cooperative Apex Bank and DDCB, Nanital was inaugurated in October 2011.

Online repository of Rajya Sabha Debates developed by

Digital Archiving Group shall be one of the largest archives of its kind when it is complete. It contains well over 5 lakh records presently.

e-Payment System of Accounts Informatics, launched in October 2011 eliminates physical cheques and their manual processing and result in direct credit of dues from the Government of India into the account of beneficiaries.

Online portal of Chartered Accountants for Empanelment and allotment of PSU Audit is made available throughout the year to update the data and access the status of empanelment and audit allotment.

e-Office implementation has begun at Tamil Nadu and Andhra Pradesh at the State level and at 24 North Paragnas at the district level. In the Central Government, implementations in 16 Ministries and Departments have been initiated.

Web based interactive Online Counseling Processes were designed, developed/customized and made operational for Admission to 1st Year of Professional Courses for 22 Central and State Boards.

In the transport sector, National Register and National Transport Portal were released. SCOSTA compliant unified visual design of smart card based DLs/RCs to be used by all the States/UTs was unveiled in July 2011.

In the sector of Environment and Forests, the Online Consent Management & Monitoring System has been implemented in Punjab and Chhattisgarh State Pollution Control Boards and for J&K, Bihar & Orissa.

Building Related Information Knowledge System (BRIKS) Application has been implemented by Housing and Poverty Alleviation division in different States.

The stock position of nearly 1900 depots of Food Corporation of India (FCI) the Allocation and off take under various schemes are available online through the IISFM application. The application has received more than 14.5 lakh hits.

The Mother and Child Tracking System has already registered 1.49 crore pregnant women as on 13/1/2012.

International IT Support was provided for prisons of Mauritius.

Implementation and maintenance of MPLADS Monitoring system, Infrastructure Monitoring System and Twenty Point Programme Monitoring System are the important achievements of Programme Implementation and Statistics section.

e-ProMIS, a G2G and G2C application was opened to the public towards the promotion of e-governance by the Department of Biotechnology.

National Training Centre, Hyderabad conducted advanced technology oriented training programmes for NIC State centers upto district level through VCR/VC.

The Open Technology Centre provided Drupal Development Support to Project Teams on Other Open Source Solutions.

Elections Department Website with Electoral roll search was launched as part of National Voters Day 2011 celebration at Port Blair.

MIS for Small Tea Growers Software was developed and implemented in 14 districts of Assam.

Chhattisgarh State Beverage Corporations Godowns inventory was made online for online procurement of IMFL and distribution to licensees. Case Information System was implemented in 14 District and Session Courts.

NIC unit of Dadra and Nagar Haveli implemented computerization of Sub-Register office (Bhoo-Panjikaran) and CT-MMP (VATSOFT) in time bound manner.

NIC unit of Daman & Diu implemented online services for VAT like e-Registration, e-Payment, e-Return, etc.

e-SLA for monitoring of delivery of citizen centric services of Delhi Goverment was developed and implemented. 70 services of 22 Departments have been integrated with e-SLA software.

In Himachal Pradesh, e-Procurement was extended to 11 departments and more than 700 Officers / Officials / Bidders were trained. e-Attendance, a Biometric based attendance system for HP Secretariat was implemented.

New initiatives are introduced on completion of 10 years of Bhoomi Project in Karnataka. Electronic integration between KAVERI (Registration system) and BHOOMI has been achieved.

A video portal for the higher education department, http:// www.promelavya.kerala.gov.in was launched in Kerala.

NIC district centre was established in the new district Bhuranpur of Madhya Pradesh. E-scholarship portal for Orissa was implemented.

The online services of PVATSoft in Puducherry help the business community and the Government in such a way that payment of taxes are made easy resulting in effective revenue collection to the Government.

In Punjab, web Based Counseling was implemented for PSBTE and PTU. Web Based Court Cases Monitoring System (eCCMSWeb) was developed using Open Source Technology. E-Procurement was implemented in PWD.

In Rajasthan, 30 post offices were inaugurated remotely through video conference under project ARROW. Single

Window Clearance System has been implemented for the Government.

In Tamil Nadu, Merit Cum Means Scholarship system was launched for Minority Affairs in April 2011. Computerization of Tamil Nadu Local Body Elections 2011 for 4.75 crore voters was completed. Maternity Benefit Scheme computerization project was launched in December 2011.

The rollout of the UP e-District project in 6 pilot districts prompted the Government to extending the project in all the districts of the country. The e-Scholarship project of the state was showcased as a model for other states by the Ministry of Tribal Affairs.

In AGRISNET, Farmer Advisory Service based on Soil Health Card implemented in West Bengal with SMS integration. In school education sector, child tracking system implemented in 4 districts of West Bengal as a part of RTE 2009 Act compliance. Caste Certificate (OSCAR) Project rolled out in 7 districts.

Awards

A number of projects at National, State and District level have been given awards for their contribution to e-Governance.

SKOCH Digital Inclusion Award 2011 was given to Internet Data Centre for being rated amongst Top 30 ICT Projects in India.

National portal of India received the CSI e-Governance Special Recognition Award under the National Initiatives Category and E World 2011- Top public choice Award for the Best e-Governance Portal.

National Training Centre, Hyderabad received the Digital inclusion Award for Eucalyptus Cloud implementation.

The Election Department stall with Dynamic Electoral Roll search software bagged the First Prize in the Island Tourism Festival 2010 held in Jan 2011 at Port Blair, Andaman & Nicobar.

Andhra Pradesh State Unit bagged a number of awards. eWorld 2011 awards were given to Online Student Scholarship Management System, Girl Child Protection System, e-Hospital and mFoods. mFoods & NIC HORTNET were also given MANTHAN 2011 Awards. eIndia 2011 Awards were given to HORTNET, OSMS, e-medlabs.

Registration software (e-Panjeeyan) of Assam won a Special Award of Appreciation in CSI-Nihilent e-Governance Award 2011. Assam also received 3rd prize at National level under the Category of e-Governance implementation in the Panchayats on 24th April, 2011 (National Panchayat Day).

Web enabled Work Monitoring System of PHED Haryana helped the State in receiving Panchayat Empowerment & Accountability Incentive Scheme (PEAIS) National Award 2010-11, DIO Yamunanagar was presented national award for Outstanding contribution in Programme implementation of RSBY in May 2011.

e-Mamta of Gujarat received e-World award 2011 for improving maternal health care delivery through innovative use of technology and Information Weeks Edge Diamond Award for the year 2011. e-Jamin received project sustainability award at CSI.

Pancha Tantra System - Grama Panchayatha Online System of RDPR, Government of Karnataka and NIC, Bengaluru has got the GOLD award of National e-governance 2010-11 under the category - "Exemplary Re-Use of ICT Based Solutions".

i-GeoApproach (Internet Geomatics based Application for Planning Rural Road Connectivity to Habitations) Under Pradhan Mantri Gram Sadak Yojna (PMGSY) developed by Madhya Pradesh bagged International Special Achievement Award in GIS. New Defined Contribution Pension Scheme bagged CMs award for excellence for good governance.

CSI Nihilent Award was received by NIC District Centre Nanded, Maharashtra for implementing ICT based Citizen Services.

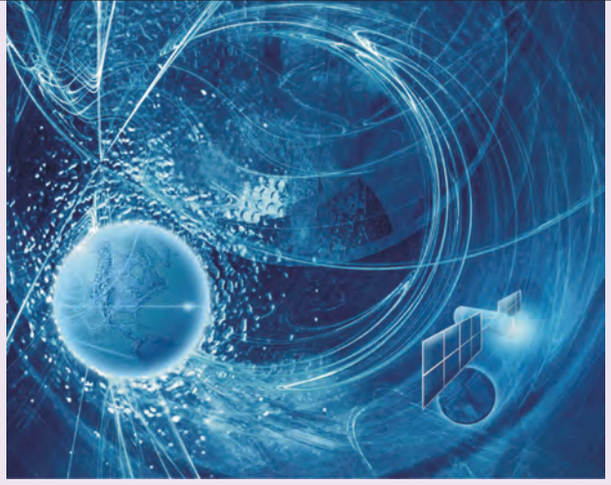
NIC Odisha received a large number of awards. e-World 2011 awards were presented to GePNIC, Standardization of District Portal and Online Passport Verification, Jharsuguda. SKOCH Digital Inclusion awards 2011 were given to e-Abhijoga and Block Economic Development & Planning, Khurda for Standardization of District Portal. e-Panchayat Puraskar-2011 was presented to the State Unit for PRIASOFT.

Punjab was ranked 3rd in the implementation of Panchayati Raj Accounting Software (PRIASOFT) by Government of India.

NIC Rajasthan has received the Best Public Choice Award for e-District initiative at e-World 2011. It also received the SKOCH Digital Inclusion Award 2011 for LRC Apna Khata District Pali, which also received CSI-Nihilent e-Governance Award.

NIC Tamil Nadu won various awards for GepNIC project. These were e-India 2011 Public Choice Award for - First implementation at MCL - First CII-IT Awards 2011 for Auto Tech evaluation for MCL e-Procurement System.

e-Hospital Suite of Tripura has received e-World 2011 Award.



Promotional Matters

Client's / Citizen's Charter

In accordance with relevant guidelines the Department prepared a Sevottam compliant Client's/Citizen's Charter and Grievance Redress Mechanism in February 2011. The Charter has nine sections and is hosted in Department's website: - www.mit.gov.in. The nine sections of the charter are as under:-

(1) Vision

e-Development of India as the engine for transition into a developed nation and an empowered society

(2) Mission

e-Development of India through multi pronged strategy of e-infrastructure creation to facilitate and promote e-governance, promotion of Electronics & Information Technology – Information Technology Enabled Services (IT-ITeS) Industry, enabling creation of Innovation / Research & Development (R&D) infrastructure in ICT&E, building Knowledge network and securing India's cyber space.

(3) Objectives:

- 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: Enabling creation of Innovation/R&D Infrastructure in emerging areas of ICT&E
- e-Learning: Providing support for development of e-Skills and Knowledge network
- e-Security: Securing India's cyber space

(4) Service Standards

The Department has identified 19 services with relevant Service Standards whose details are available in the website of the Department.

(5) Public Grievances Redressal Mechanism

In the Client's/ Citizen's Charter an officer of Additional Secretary level has been identified as Nodal Officer for Grievance Redressal and the Grievance Redressal process has also been stipulated.

As a part of implementing Public Grievances Redressal System, the Department has set up Public Grievances (PG) Cell for Grievances matters. The Centralized Public Grievances Redress System (CPGRAMS) is in operation in the Department. A link of PGPORTAL has been provided on the website of the Department. The portal also facilitates to received the grievances lodged online through Internet by the citizens from any geographical location. The system besides providing a faster access offer the following facilities to citizens:-

- Lodging online grievances
- Lodging online reminders
- Viewing the online current status of the grievance

The rate of disposal of grievances is 98%.

(6) Stakeholders / Clients

In the Charter the Department has identified the stakeholders/clients. They are as under:-

- Autonomous Societies / Companies of the Department
- NIC and STQC - Attached Offices of the Department
- Ministries / Departments of Government of India
- State Governments/Union Territories, PSUs
- Universities/Academic Institutions, R&D Labs
- Industry / Industry Associations relating to IT, ITeS & Electronics
- Common Business Organizations (CBOs)
- Citizens of India.

(7) Responsibility Centres

In the charter the Responsibility Centres are listed as below:-

- National Informatics Centre (NIC)
- Standardization, Testing and Quality Certification (STQC)
- Society for Applied Microwave Electronics

Engineering & Research (SAMEER)

- Centre for Development of Advanced Computing (C-DAC).
- Software Technology Parks of India (STPI)
- National Institute of Electronics & Information Technology (NIELIT)
- Centre for Materials for Electronics Technology (C-MET)
- Education and Research Network (ERNET) India
- Electronics and Computer Software Export Promotion Council (ESC)
- Controller of Certifying Authorities (CCA)
- Cyber Appellate Tribunal (CAT)
- Semiconductor Integrated Circuits Layout-Design Registry (SICLDR)
- Indian Computer Emergency Response Team (ICERT)
- Media Lab Asia (MLAsia).

(8) Indicative Expectations from Services Recipients

In the Charter indicative Expectations from Services Recipients have also been identified and they are as under:-

- Submission of complete valid DPR / proposals / requests.
- Timely submission of UCs in prescribed format.
- Submission of Electronic copy of project document for Mission Mode Projects.
- Submission of complete R&D grant proposals in prescribed format including revised proposals.
- Submission of complete applications.
- Timely response to deficiencies pointed out in application forms.
- Submission of complete Security Incident Reporting form.

(9) Month and year for next review of Charter

Next Charter review date: 30th November, 2012.

RTI Matters

The Department and its Attached /Subordinate Offices/Societies are separate "Public Authorities" in terms of Section 2 (h) of RTI Act, 2005. They have their own websites and each of these Public Authorities has its own CPIOs/ AAs. For any information relating of these Authorities, applications need to be submitted to the concerned CPIOs of these organizations as per provisions of RTI Act, 2005. There is an RTI Cell in the Department which is the receiving point for RTI applications and also deals with coordination of matters relating to RTI. All Public Authorities have also hosted relevant inputs/ documents required under Section 4 of the RTI Act. The relevant contents are reviewed and updated periodically by the concerned Public Authorities.

International Co-operation and Bilateral Trade

India is always willing to share its experience and expertise with other countries of the world, specially the countries of the developing world. In this direction, India is helping partner countries to achieve these objectives.

The Department has taken a number of initiatives to encourage sustainable development and strengthening partnerships with other countries which include promotion of international cooperation in the emerging and frontier areas of IT and Electronics, exploring ways to enhance investment and addressing regulatory mechanism. The cooperation efforts have been focused on extending the technical assistance in the area of IT infrastructure, networking, capacity building, HRD and e-government.

In the arena of Multilateral/Regional cooperation, the Department pays particular attention to cooperation with International Bodies like United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), United Nations Asia Pacific Centre for ICT (UNAPCICT), etc, and other Regions of the world like Association of South East Asian Nations (ASEAN), South Asia Sub-regional Economic Cooperation, India-Brazil-South Africa (IBSA), Africa-India Forum, Indian Ocean Rim Association for Regional Co-operation (IOR-ARC), etc. Broadly, it combines policy dialogue with project-based and other technical cooperation to seek synergies with other regions, policies, activities, as well as complementarities.

The Department has active Government-to-Government cooperation with many countries. The Department has concluded bilateral arrangements with a number of countries. These arrangements constitute a number of MoUs, agreements and Joint Working Groups to identify common interests, priorities, policy dialogue and the necessary tools for ICT collaboration. A status on bilateral arrangement is given in the following table:

Status	MoU/Active Cooperation (21)	MoU expired but active cooperation (8)	MoU Proposed
Asia	Bhutan, Vietnam, Malaysia, Mauritius, Egypt, South Korea, Brunei Darussalam, Uzbekistan, Kazakhstan, Saudi Arabia, Israel (11)	Myanmar, Maldives, Armenia (3)	Philippines
Europe	France, Russia, Ireland, European Union (No MoU but WG), Finland, Bulgaria, Tunisia (7)		Romania, Denmark, Spain, Moldova (4)
America	USA (No MoU but WG) (1)		
South America	Brazil, Columbia (2)		
Africa		Ghana, Tanzania, Seychelles, South Africa, Mali (5)	South Africa

A number of the Joint Working Group meetings were held with several countries like Russia, Uzbekistan, Malaysia, South Africa, France and USA during this year. The Working Groups meetings with these countries have witnessed enhanced government-to-government and industry-to-industry participation from the respective sides. These Working Groups broadly deliberated in areas like ICT policies and strategies, cyber security, techno parks, global workforce mobility, research collaboration in Free Open Source Software, Cloud Computing, RFID, Embedded System, New Generation Networks, Smart Cards, e-Governance, etc and Telecom and Media related issues for continual exchange of information and collaborative approach. The ICT industry also actively participated in these Working Group meetings.

During 2011-12, the International cooperation division was engaged in steering many projects including setting up of IT centres, promoting training and employment, developing IT based solutions to improve socio-economic development, sharing of the best practices, etc. Some of the major project activities and outcomes from bilateral cooperation with other countries are as follows:

The following projects have been completed during the year in African Countries:

- Centre of Excellence in ICT at Dar es Salaam,
- Centre of Excellence in ICT in Seychelles
- Centre of Excellence in ICT in Lesotho

The second Africa-India Forum Summit (AIFS-II) was held in May 2011 at Addis Ababa, Ethiopia. To raise the general level of proficiency of African youth in IT sector, 80 training positions at CDAC, Noida and Pune has been offered under ITEC programme of the Department.

The following projects have been completed during the year in CIS countries:-

- Centre of Excellence in ICT in Armenia
- Digital Learning Centre in ICT in Belarus
- Centre of Excellence in ICT in Turkmenistan

ASEAN - The 5th ASEAN + India Telecommunication and Information Technology Ministers' Meeting was held on 9th December, 2011 in Myanmar. The Hon'ble Minister of State for Communications and Information Technology led the Indian delegation. In the meeting, inter-alia, the following 3 proposals were endorsed:

- Setting Up of Information Technology Resource cum Study Centre for ASEAN & Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV) Countries;
- Provide assistance in IT curriculum development and IT teacher trainings to CLMV;
- Setting up of Centre of Excellence in Software Development and Training in CLMV and appropriate accreditation to these training courses.

Bilateral Cooperation with ASEAN countries -

- Joint ICT Talent Development Consultative Committee (JITDC) between India and Malaysia has been constituted and 2 meetings were held for IT skills training, talent development and greater engagement of Indian IT companies in Malaysia.
- India - Vietnam Advanced Resource Centre (ARC) in ICT at Hanoi executed within the time frame and inaugurated in September 2011.

Support for Conferences/Seminars

The Department provides financial support for organizing conferences/seminars/workshops/symposia, etc., at regional/national/international level to academia, research & development institutes, registered professional bodies and NGOs registered under the Societies Registration Act of 1860 to provide a platform for bringing together experts from industry / academia / R&D and other user community to discuss and share their expertise about technology trends in electronics and ICT sector. The information related to events, supported by the Department through Grants-in-aid, has been listed on Department's website.

During the year, about fifty proposals from various organizations like R&D institutions and academia from all

over the country were approved under the scheme. Through these events the latest information/trends in high tech areas like Nanotechnology, Nanomaterials, Sensor networking, Bioinformatics, Cyber crime and Security management, Optics & Photonics, Automation Science & Engineering, Cryptology, Pattern recognition & machine intelligence, mobile & pervasive computing, Mobile communication and computing, Computer vision & IT, Smart structure and materials, Liquid crystals, Mathematical & Computational models, etc., were shared by the experts and the papers were presented about the latest work being carried out in the related areas by International/National experts.

Office Automation

A new and enhanced version of the Intra-DIT portal in Open Source technology for the G2G and G2E services is implemented in the Department. This version of the Intra-DIT portal provides one stop access point for integrating all employee-related and other relevant information. The E-Office was implemented in the Department as a pilot project. A new application for generating the security pass for the Employees and Visitor's pass (for meetings after office hours in the Department) is developed and implemented. Application modules for personnel accounts and employees directory were enhanced. New features were implemented in application modules of Parliament Question and Answers, Electronics Display Board (EDB), Leave Salary & Pension Calculation and On Line License Fee recovery.

At present one thousand Nodes are operational in the Department. Disaster Recovery for Network Operation Centre was created in the Department.

Electronics Information and Planning Journal

The bi-monthly techno-economic journal 'Electronics Information and Planning' published by the Department is in its 39th year of publication. The journal has a wider readership among the Industry and users. Its coverage in all includes aspects of promotion of Electronics, including technology developments, applications, policies and data.

During the year, the journal covered in-depth analysis reports/articles by professionals, on the latest technology, such as:-

- Cloud Computing – an overview, issues, challenges and current developments.
- Security and Challenges in cloud computing adoption.
- OECD E-Government studies (Rethinking E-Government Services) User-Centred approaches.
- Making life easy for citizens and businesses in Portugal (Administrative simplification and E-Government).
- OECD Science, Technology and Industry Outlook, 2010.

To streamline the distribution and accounting systems, a computerized data base for the subscribers is being maintained.

Information and Documentation Centre

The Department maintains a scientific library called Information and Documentation Centre (I&DC) with latest books and journals. It also uses RFID based Library Information Management System to manage issue and return of books and journals. I&DC is also providing various other services like inter-library loan facility to the officials of the Department through DELNET (Delhi Library Network). Services are also provided to the retired officials of the Department and trainees who undertake some projects in the Department.

Information & Documentation Centre contains approximately 29,900 books on subjects like Electronics, Computer, IT Network, Computer Languages, Fiction, Hindi Books. I&DC is also procuring journals on subjects like IT, Electronics, Network Security, Computers and some general magazines both in Hindi and English. I&DC is also procuring around 200 books and approximately 100 journals per year. From the year 2011, a service like e-books has also been added in services.

The Department is spearheading the Library Consortium, Ministry of Communications and Information Technology (MCIT) and INTRA-MINISTRIAL initiative. Consortium of the Department (MCIT Consortium) comprises the participants from National Informatics Centre, C-DAC, NIELIT, SAMEER, C-MET, STQC, STPI, CCA, and ERNET India; C-DOT and Department of Posts. The Department is providing on-line access to various e-resources i.e. IEL, ACM Digital Library, ISO Standards to its users through MCIT Library Consortium.

Electronics & IT Industry Information System

The data received from Industries pertaining to production, exports, manufacturers and product directory and other statistics related to electronic IT industry are being maintained in an information system.

IT in Parliament

During the year a number of Parliament Questions on various issues in Information Technology and Electronics Sectors were handled. They are:

- National e-Governance Plan
- Cyber Crime in India
- Setting up of IT Units
- IT in Education Sector
- Electronics in Health and Telemedicine Programmes
- Hardware Industry in the Country
- Cloud Computing, Request for Quotation (RFQ) for biometric enrolment
- Exports in IT Sector
- Satellite Town Programme
- Growth of domestic IT-ITeS Market
- Mobile Service Delivery

- Draft National Policy on Electronics
- Amendment in IT Act, etc.

The Electronic Delivery of Services Bill, 2011 was introduced in Lok Sabha on 27th December, 2011. The Bill has been referred to the Parliamentary Standing Committee on Information Technology for examination.

The Department Related Parliamentary Standing Committee on Information Technology (DRPSC on IT) discussed and considered the Demands for Grants (2011-12) of the Department of Information Technology and laid its 23rd Report on the Table of the Lok Sabha & Rajya Sabha on 4th August, 2011.

The Committee discussed with the representatives of State Government of Sikkim on the progress of Implementation of National e-governance plan with reference to NKN/SWAN/SDC and CSC) in the State and also had discussion on Cyber Crime, Cyber Security issues, Right to Privacy, Consideration on IT Act in the State of Sikkim. The Committee also visited National Knowledge Network (KNK) Centre/SWAN Centre at Gangtok and Community Service Centre, Sherathang.

The Annual Reports 2010-11 and Audited Accounts of all Societies under the Administrative Control of the Department of Information Technology were laid on the Table of both the Houses of Parliament during the Winter Session, 2011 of Parliament.

Use of Hindi and Requisite Technology Development

During the year, the Committee of Parliament on Official Language visited NIC HQ, New Delhi, C-DAC, Noida, C-DAC. Mumbai, NIELIT Centre (Formerly DOEACC Society) Aurangabad and Software Technology Parks of India, Chennai under the administrative control of the Department to oversee the progress with regard to implementation of Official Language policy of Government of India. Various suggestions made by the Committee are being implemented by the respective organizations.

The first meeting of the reconstituted Hindi Salahkar Samiti was held on 29th August, 2011. Members of the Samiti gave various suggestions for the progressive use of Hindi in the Department and its attached and subordinate offices/societies. The Department is in process to implement the suggestions made by the Honourable members of the Samiti.

Under the Scheme of National Awards for original books on Electronics and IT in Hindi instituted by the Department, proposals were invited through advertisements in Newspapers published from various parts of the country. Under the National Award Scheme of the Department for books originally written in Hindi two authors have been awarded – Shri Santosh Shukla for his book entitled "Cyber Apradh" and Smt. Shashibala Banduni for her book entitled "Suchana Praudyogiki evam Vidyut Prabandhan".

Hindi fortnight was organized and various competitions were also conducted on this occasion and awards were given to the winners.

Subordinate offices of the Department were visited to review the progressive use of Hindi and guidelines were given to them on implementation of various provisions of Official Language Act/Rules.

During the year, various documents of the Department such as Annual Report, Performance Budget, Outcome Budget, Cabinet Notes, Notes for Standing Committees, Parliament Questions and Answers, Detailed Demands for Grants, Action Taken Report, etc., were translated from English to Hindi.

Electronics & IT Production (Calendar Year)

(₹ Crore)

Item	2006	2007	2008	2009	2010	2011*
1. Consumer Electronics	19,500	21,950	24,810	28,140	31,250	33,750
2. Industrial Electronics	10,100	11,530	12,530	14,560	16,550	18,300
3. Computer Hardware	12,500	15,100	14,090	14,600	15,000	16,100
4. Communication & Broadcast Equipments	9,200	16,400	24,630	29,900	34,300	39,200
5. Strategic Electronics	4,500	5,400	6,560	6,950	7,500	8,300
6. Electronic Components	8,600	9,420	11,440	13,220	19,750	24,050
Sub-Total	**64,400**	**79,800**	**94,060**	**107,370**	**124,350**	**139,700**
7. Software for Exports	132,025	158,550	203,240	231,800	260,700	316,500
8. Domestic Software	35,150	44,510	56,000	65,600	75,975	88,500
Total	**231,575**	**282,860**	**353,300**	**404,770**	**461,025**	**544,700**

*** Estimated**

Electronics & IT Production (Financial Year)

(₹ Crore)

Item	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12*
1. Consumer Electronics	20,000	22,600	25,550	29,000	32,000	34,300
2. Industrial Electronics	10,400	11,910	12,740	15,160	17,000	18,700
3. Computer Hardware	12,800	15,870	13,490	14,970	14,970	16,500
4. Communication & Broadcast Equipments	9,500	18,700	26,600	31,000	35,400	40,500
5. Strategic Electronics	4,500	5,700	6,840	6,980	7,700	8,500
6. Electronic Components	8,800	9,630	12,040	13,610	21,800	24,800
Sub-Total	**66,000**	**84,410**	**97,260**	**110,720**	**128,870**	**143,300**
7. Software for Exports	141,000	164,400	216,190	237,000	268,610	332,445
8. Domestic Software	37,000	47,010	59,000	67,800	78,700	91,765
Total	**244,000**	**295,820**	**372,450**	**415,520**	**476,180**	**567,510**

*** Estimated**

Electronics & IT Exports

(₹ Crore)

Item	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12*
1. Consumer Electronics	1,500	1,600	2600	3000	1,400	
2. Industrial Electronics	3,000	3,885	4200	3500	4,500	
3. Computer Hardware	1,500	990	1650	1900	1,300	
4. Communication & Broadcast Equipments	650	625	12280	7800	14,800	
5. Electronic Components	5,850	6,100	10500	9700	18,400	
Sub-Total	**12,500**	**13,200**	**31,230**	**25,900**	**40,400**	**44,400**
6. Computer Software	141,000	164,400	216,190	237,000	268610	332445
Total	**153,500**	**177,600**	**247,420**	**262,900**	**309,010**	**376,845**

*** Estimated**

Summary of Audit Observations

I. Summary of important Audit Observations for inclusion in the Annual Report of Financial Year 2011-2012 - NIL

II. The status of ATNs in respect of Audit Observations included in earlier Annual Reports:

Sl. No.	Year	No. of Paras / PAC reports on which ATNs have been submitted to PAC after vetting by Audit	Details of the Paras/PAC reports on which ATNs are pending		
			No. of ATNs not sent by the Ministry even for the first time	No. of ATNs sent but returned with observations and Audit is awaiting their resubmission by the Ministry	No. of ATNs which have been finally vetted by audit but have not been submitted by the Ministry to PAC
1.	2002-03	There are NIL PAC reports in respect of DIT on which ATNs are to be submitted	Nil	1	Nil
2.	2003-04		Nil	1	Nil
3.	2004-05		Nil	--	Nil
4.	2005-06		Nil	1*	Nil
5.	2006-07		Nil	1	Nil
6.	2007-08		Nil	--	Nil
7.	2008-09		Nil	2	Nil
8.	2009-10		Nil	--	Nil
9.	2010-11		Nil	--	Nil

*** Pertains to Commercial**

Department of Electronics and Information Technology - Annual Plan 2012-13

(₹ Crore)

S.No.	Schemes	Budgetary Support
	I. e-Government	
1	Electronic Governance	975.00*
2	National Informatics Centre (NIC)	754.00
	II. e-Learning	
3	National Knowledge Network	360.00
4	Manpower Development(incl. Skill Development in IT)	127.69
5	NIELIT (erstwhile DOEACC)	10.75
6	Education & Research Network (ERNET)	0.01
7	Technology Development for Indian Languages (TDIL)	35.00
8	Facilitation of Setting-up of Integrated Townships	0.10
	III. e-Security	
9	Cyber Security (including CERT-In, IT Act)	45.20
10	Controller of Certifying Authorities (CCA)	6.00
	IV. e-Industry (Electronics Hardware)	
11	Promotion of Electronics/IT Hardware Manufacturing	5.00
12	Standardisation Testing and Quality Certification (STQC)	120.00
	V. e-Industry (IT-ITeS)	
13	Software Technology Parks of India (STPI) & EHTP	2.50
	VI. e-Innovation/R&D	
14	Centre for Development of Advanced Computing (C-DAC)	203.40
15	Technology Development Council Projects (incl. ITRA)	79.00
16	Micro-electronics and Nano-Technology Development Programme	100.00
17	Society for Applied Microwave Electronics Engineering and Research (SAMEER)	42.94
18	Convergence, Communication & Strategic Electronics	25.00
19	Media Lab Asia	11.30
20	Component & Material Development Programme	25.00
21	Electronics in Health & Telemedicine	11.50
	VII. e-Inclusion	
22	IT for Masses	16.94
	Others	
23	Secretariat –Economic Services	43.67
	Grand Total	**3000.00**

* includes EAP component of ₹ 100.00 crore

Employees Structure (Total and SC/ST) as on 1-1-2012

(Department of Electronics and Information Technology including its Attached & Subordinate Offices)						
Group/ Class	**Permanent / Temporary**	**Total No. of Employees**	**SC**	**%age of Total Employees**	**ST**	**%age of Total Employees**
GROUP A	Permanent :					
	(i) Other than lowest rung of Class – I	2623	175	6.67	66	2.52
	(ii) Lowest rung of Class - I	374	26	6.95	29	7.75
	Temporary:					
	(i) Other than lowest rung of Class – I	8	0	0	0	0
	(ii) Lowest rung of Class I	-	-	-	-	-
GROUP B (Gazetted)	Permanent	350	38	10.86	25	7.14
	Temporary	396	64	16.16	18	4.55
GROUP B (Non - Gazetted)	Permanent	477	88	18.45	27	5.66
	Temporary	289	41	14.19	16	5.54
GROUP C	Permanent	493	125	25.35	30	6.09
	Temporary	52	7	13.46	2	3.85
GROUP D (Excl. Sweeper & Farash)	Permanent	285	138	48.42	22	7.72
	Temporary	8	3	37.50	0	0
Sweeper	Permanent	33	31	93.94	2	6.06
	Temporary	-	-	-	-	-
Farash	Permanent	18	3	16.67	1	5.56
	Temporary	-	-	-	-	-
TOTAL		**5406**	**739**	**13.67%**	**238**	**4.40%**

Government of India
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Department of Electronics and Information Technology

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