CONTENTS

Overview ........................................................................................................... 1
Industry Profile ................................................................................................. 6
Initiatives in Information Technology Sector ................................................... 17
Technology and Application Development ....................................................... 32
Human Resource Development ....................................................................... 50
Infrastructure .................................................................................................. 57
Societies ............................................................................................................. 65
National Informatics Centre ........................................................................... 84
Promotional Matters ....................................................................................... 114
Appendices ....................................................................................................... 119
Electronics and Information Technology
The year 2009 was marked by extraordinary policy response to unprecedented global economic crisis. With the help of the policy support, the Global economy is now emerging from the crisis and GDP growth rates are starting to improve. The Indian economy after slowing down in 2008-09 is estimated to grow at 7.2 per cent in 2009-10 as compared to 6.7 per cent in 2008-09.

For the Indian IT- BPO industry, the downturn in 2008-09 signalled the beginning of a new world order and a paradigm shift in the way IT-BPO industry operates. The industry viewed this crisis as an opportunity, by not only exhibiting resilience but also sustaining its growth.

The revenue aggregate of IT-BPO industry is expected to grow by over 5 per cent and reach US $ 73.1 billion in 2009-10 as compared to US $ 69.4 billion in 2008-09.

The Indian software and services exports including ITeS-BPO exports is estimated at US $ 49.7 billion in 2009-10, as compared to US $ 47.1 billion in 2008-09, an increase of 5.5 per cent. The IT services exports is estimated to be US $ 27.3 billion in 2009-10 as compared to US $ 25.8 billion in 2008-09, showing a growth of 5.8 per cent. ITeS-BPO exports is estimated to grow from US $ 11.7 billion in 2008-09 to US $ 12.4 billion in 2009-10, a year-on-year (Y-o-Y) growth of 6 per cent.

The US & UK remained the largest export markets (accounting for about 61 per cent and 18 per cent respectively) in 2009-10. Over the past few years, revenue growth from US has lagged other geographies, but in 2009-10, the trend has reversed, with this geographic region driving revenue growth. Historically, US has displayed increased IT spending. The impact of the recession has been felt the most in the US, and consequently cutting costs and increasing competitiveness through outsourcing is once again the focus here.

The Continental Europe and the UK have lagged overall revenue growth as companies based out of these regions are yet to firm up growth plans post recession. Indian vendors are actively developing the Asia Pacific region with a growth rate of 10 per cent in 2009-10. Japan and Middle East offer significant untapped potential.

Though the IT-BPO sector is export driven, the domestic market is also significant. The revenue from the domestic market (IT Services and ITeS-BPO) is also expected to grow to US $ 14 billion in the year 2009-10 as compared to US $ 12.8 billion in 2008-09 an anticipated growth of about 9 per cent. BPO demand in the domestic market has witnessed noticeable growth over the past few years.

The IT-BPO sector has showcased India’s ability to build global firms with world-class business practices that are capable of catering to the most sophisticated and demanding customers. The industry has been a front-runner in practicing good corporate business
practices as well as maintaining high quality standards, which has helped position the country as a trusted business partner. This is corroborated by the fact that approximately 75 per cent of Fortune 500 companies are engaged with the industry currently.

A continuous emphasis on quality has been a key factor driving the success of the Indian IT-BPO sector. Companies have aligned their internal processes and practices to international standards and have built robust quality processes that deliver essential benefits such as increased productivity and efficiency. An increasing number of IT-BPO companies continue to adopt global standards such as ISO 9001 (for Quality Management) and ISO27000 (for Information Security). India-based centres (both Indian firms as well as MNC-owned captives) account for the largest number of quality certifications achieved by any single country.

The industry has significantly contributed to empowering the diverse human assets and raising aspirations. IT-BPO sector has enabled an environment for innovation and provided necessary impetus to IP creation. The industry has enhanced India’s credibility as a business destination and put India on the global map. The Industry has facilitated social development, contributing over US $ 50 million towards Corporate Social Responsibility (CSR) activities in 2008-09.

The total IT Software and Services employment is expected to reach 2.29 million in 2009-10 (excluding employment in Hardware sector), as against 2.20 million in 2008-09, a growth of 4 per cent YoY. This represents a net addition of 90,000 professionals to the industry employee base in 2009-10. The indirect employment attributed to the sector is estimated to be about 8.2 million. Furthermore, the industry has been a front-runner in diversity at the workplace (over 30 per cent of employees are women, over 60 per cent of industry players employ differently abled people).

The IT-IT eS industry’s contribution to the national GDP is estimated to increase from 6.0 per cent in 2008-09 to 6.1 per cent in 2009-10.

With the advent of 2010 a new decade begins. The outlook for the IT-BPO Industry for this decade is positive, as 2010 has signalled the revival of outsourcing within core markets, along with the emerging markets increasingly adopting outsourcing for enhanced competitiveness.

India has a 51 per cent market share of the offshoring market. There is tremendous headroom for growth as current offshoring market is still a small part of the outsourcing industry. Significant opportunities exist in core verticals (BFSI) and geographic segments (US) and emerging geographic (Asia Pacific) and verticals markets such as retail, healthcare and Government. Development of these opportunities can triple the current addressable market and can lead to Indian IT-BPO revenues of US $ 225 billion in 2020. The Industry also has the potential to transform India by harnessing information technology for inclusive growth.

**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. NeGP consists of 27 Mission Mode Projects (MMPs) encompassing 9 central MMPs, 11 State MMPs and 7 integrated MMPs that span multiple backend Ministries/Departments. It also includes 8 program support components aimed at creating the right governance and institutional mechanisms, core infrastructure, policies & standards and the necessary legal framework for adoption of e-Governance in the country. It is implemented at the Central, State and Local Government levels.

**State Wide Area Networks**

The Government has approved the Scheme for establishing State Wide Area Networks (SWANs) across the country. 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 2Mbps per link.

SWAN proposals from 33 States/UTs have been approved. As of January 2010, the SWANs in Haryana,
Himachal Pradesh, Punjab, Tamil Nadu, Gujarat, Karnataka, Chandigarh, Delhi, Tripura, Puducherry, Lakshadweep, Kerala, Jharkhand, West Bengal and Sikkim have been rolled out. SWANs in other States/UTs are in various stages of implementation.

**State Data Centres**

The State Data Centre Scheme for establishing Data Centres across 35 States/UTs across the country was approved by the Government on 24th January 2008, over a period of 5 years. The concept is to create State Data Centres for the States to consolidate infrastructure, services and application to provide efficient electronic delivery of G2G, G2C and G2B services. These services can be rendered by the States through common delivery platform seamlessly supported by core Connectivity Infrastructure such as State Wide Area Network (SWAN) and Common Services Centre (CSC) at the village level. The Department has approved the proposals received from 31 States/UTs.

**Common Services Centres**

The Government has approved the Common Services Centres (CSC) 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. As of January 2010, number of CSCs rolled out in 27 States of India is 60,837.

It has been decided that the Common Services Centers will be suitably repositioned to be a network of Panchayat level Bharat Nirman Common Services Centers, to provide Government services to the citizens in rural areas. Accordingly, the CSCs are to be leveraged for various services for Bharat Nirman and flagship Schemes like NREGA, NRHM and SSA.

**Capacity Building Scheme**

In order to provide a mechanism for adequate capacity building and training for end user, a Capacity Building Scheme has been approved in January 2008. This envisions establishment of institutional framework for State Level Strategic decision-making including setting-up of State e-Governance Mission Team. A permanent CB Management Cell (CBMC) has been established.

**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 undertake backend computerization to enable the delivery of these services through Common Service Centers.

The Department has approved 14 Pilot e-District projects covering 37 districts. In Uttar Pradesh, Tamil Nadu and Assam, pilot project has been launched/gone live in all the pilot districts.

**Electronics / IT Hardware Manufacturing**

Electronics Hardware Manufacturing continues to be a thrust area for the Government. The Special Incentive Package Scheme (SIPS) that was announced on 21st March 2007 to encourage investments for setting up Semiconductor Fabrication and other micro and nano technology manufacture industries in India has received very positive response from prospective investors. The Department has received 19 applications under SIPS, involving an investment of about Rs. 161,000 crore, over a period of next 10 years. “In- principle” approval has been issued to 13 applications, out of which 5 applications have reported financial closure in excess of Rs. 1,000 crore.

A Task Force was set up by the Department in August 2009 to suggest measures to stimulate the growth of IT-ITeS and Electronics Hardware Manufacturing Industry. It has submitted its report in December, 2009.

**Information Technology Research Academy (ITRA)**

Indian IT Industry is now a global IT hub. There is an urgent need for strengthening the existing educational institutions as well as the new institutions
that are being established by the Government in terms of qualified faculty resources to meet this demand of IT industry. Accordingly the Department is setting up an IT Research Academy to build a national resource of highly qualified personnel. National and International experts will be engaged for mentoring and establishing research capabilities in the country. In addition to strengthening the R & D base in IT and electronics, this programme will generate a pool of Ph.Ds and researchers of high calibre to support the academic and R & D institutions in the country and also meet the growing demand of high calibre manpower by the Industry.

**The Information Technology (Amendment) Act 2008**

The Information Technology (Amendment) Act, 2008 has been enforced and rules of important sections have been notified in October, 2009 which addresses the needs of National Cyber Security. The Act upgrades the existing legal framework to instil confidence of the users and investors in the area of Information Technology in the country. This Act interalia adds provisions to the existing Information Technology Act, 2000 to deal with new forms of cyber crimes like publicizing sexually explicit material in electronic form, video voyeurism and breach of confidentiality and leakage of data by intermediary and e-commerce frauds.

**Cyber Security**

With the passage of Information Technology (Amendment) Act 2008, Indian Computer Emergency Response Team (CERT-In) has been designated as Nodal agency for coordinating all matters related to cyber security and emergency response. It is now assigned with the task of oversight of the Indian cyber space for enhancing cyber protection, enabling security compliance and assurance in Government and critical sectors and facilitating early warning & response as well as information sharing and cooperation.

A training center in forensics has been set up at Kerala police to facilitate cyber crime investigation. The setting up of forensic center at Central Bureau of Investigation is in progress.

**National Knowledge Network**

Government had decided to establish a National Knowledge Network with scalable multi gigabit capabilities which will connect 1000 nodes covering all universities, research institutions, libraries, laboratories, hospitals and agricultural institutions across the country. The initial phase of the National Knowledge Network was inaugurated by the Hon’ble President of India on 9th April 2009.

In the initial phase, a core Backbone consisting of 15 Points of Presence (PoPs) has been established with 2.5 Gbps capacity. Around 45 institutions of higher learning and advanced research have already been connected to the network and 6 virtual classrooms have been set up.

**Indian Languages Technologies**

To enable wide proliferation of ICT in Indian languages, the Department has taken a major initiative to make available Software tools & fonts in various Indian languages freely to the general public. Software tools & fonts for 22 constitutionally recognized Indian Languages have been released in public domain for free mass usage.

**Research & Development**

The Department has taken various initiatives towards promotion of technology innovation and commercialization in the field of Electronics & Information Technology. The Technology Incubation and Development of Entrepreneurs (TIDE) scheme launched to strengthen the technology incubation centers at the institutions of higher learning has been further expanded to cover 12 TIDE centers and 2 virtual incubation centers in addition to already approved 15 TIDE centers.

**Nanotechnology Development**

In the field of nanotechnology, the Department has taken steps to build institutional capacity and infrastructure for Research & Development. It has also focused on human resource development in the area of Nanoelectronics for making India a front-
runner in this revolutionary area with all pervasive applications. Towards this, Department has initiated a major project entitled “Indian Nanoelectronics Users Programme (INUP)” at IIT Bombay and IISc Bengaluru.

Centre for Development of Advanced Computing

Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Department for carrying out R&D in IT, Electronics and associated areas. C-DAC commissioned a High Performance Computing (HPC) system called PARAM “Yuva”, having Peak Performance of 54.01 Tera Flops (TFs). ‘PARAM Sheersh’ Supercomputing Facility at North Eastern Hill University (NEHU), Shillong has been set up to address scientific and engineering research in strategic areas in North East region.

PARAM “Yuva” is targeted to support a number of critical applications in Science and Engineering with partner institutes within academia and research labs.

National Informatics Centre

National Informatics Centre (NIC) of the Department, a premier S&T organization, has been playing a substantial role in using ICT to streamline internal Government functions and facilitating implementation of e-governance. Accordingly, NIC has been engaged in setting up of Internet/Intranet Infrastructure, preparing IT Plans and developing IT enabled Services including G2G, G2B, G2C and G2E portals. NICNET, the communication network of NIC, has been extended to cover more than 3000 nodes in Wide Area Network. The network operations incorporate Cyber Security, Internet Data Centre, Disaster Recovery Centres, Certifying Authority, Video-Conferencing, etc. Guidelines for Indian Government Websites were released to ensure standardisation and usability. VAT computerization was enhanced to facilitate many e-services including e-payments and implemented in a number of states. GePNIC, the e-procurement solution of NIC has been implemented in many states; 10631 tenders amounting to Rs. 24,471 crore has been hosted on Orissa portal only.
The Department of Information Technology (DIT) in the Ministry of Communications and Information Technology is inter-alia responsible for formulation, implementation and review of national policies in the field of Information Technology. All policy matters relating to silicon facility, computer based information technology and processing including hardware and software, standardization of procedures and matters relating to international bodies, promotion of knowledge based enterprises, internet, e-Commerce, information technology education and development of electronics & coordination amongst its various users are also addressed by the Department.

**Major Policy Initiatives**

The Information, Communication Technology and Electronics (ICTE) is the world’s largest and fastest growing Industry. With its impact in raising productivity, increasing efficiency in delivery of services and improving lifestyle, it is considered as a key enabler in development and is globally being accepted as a “Meta-resource”. The competitiveness of various industries is increasingly being determined by their ability to integrate ICTE in their business processes.

Indian electronics hardware production increased from Rs. 50,500 crore in 2004-05 to Rs. 97,260 crore in 2008-09, with a cumulative annual growth rate of 17.3%. The production of electronics hardware in the country is estimated to grow from Rs. 97,260 crore in 2008-09 to Rs. 109,940 crore in 2009-10, registering a growth of 13%. The slower rate of growth of production during 2009-10 is attributed to the global economic slowdown.

The demand for electronics hardware is being fuelled by the relatively high growth rate of the Indian economy, aspirations of the younger generation and the large middle class in India with increasing disposable incomes. Thus, there is a big opportunity for stepping up production of electronics hardware in the country. India has the potential to develop and manufacture electronics hardware for the global markets and gain higher global share besides meeting the country’s future requirement in the converging areas of information, communication and entertainment.

The Government has identified growth of electronics hardware manufacturing sector as a thrust area and has taken a number of steps on an on-going basis for promotion of this industry in the country. The major initiatives taken by the Government are:

**Special Incentive Package Scheme (SIPS)**

In order to create a conducive environment for the high technology, capital intensive semiconductor Industry and other high tech electronic items, attract global investments as well as bridge the viability gap due to lack of adequate infrastructure and ecosystem, a Special Incentive Package Scheme (SIPS) was announced by the Government on 21.3.2007. A set of
Guidelines was issued on 14.9.2007. The Scheme is available upto 31.3.2010.

The Scheme has received a very encouraging response. In-Principle letters have been issued to thirteen (13) Solar Photovoltaic (SPV) applicants, who met the basic technical qualification criteria laid down in the notification for SIPS and taken specified preliminary steps towards project implementation. Five applicants have indicated having achieved Financial Closure of more than Rs.1000 crore.

Task Force to suggest measures to stimulate the growth of IT, ITES and Electronics Hardware Manufacturing Industry in the country

In view of the enormous opportunities ahead and need to sustain the growth of this sector in the wake of prevailing global economic downturn, the Department constituted a Task Force in August 2009, to make recommendations covering strategies to augment the growth of the IT software and IT enabled services sector in the context of global developments; the steps needed to accelerate domestic demand for electronics hardware products, IT & IT enabled services and boost domestic manufacturing in Electronics hardware sector. The Task Force has submitted its Report on 11th December, 2009. The recommendations contained in the Report cover Electronics Systems Design & Manufacturing (ESDM); Software & Services; and Strategic Electronics, the crucial sub-sectors of the ICTE value chain.

As per the Report of the Task Force, the demand for electronics hardware in the country is projected to increase from the present US $ 45 billion in 2009 to US $ 125 billion by 2014 and US $ 400 billion by 2020. The electronics hardware production is projected to grow from about US $ 20 billion in 2009 to US $ 100 billion by 2014 and US $ 400 billion by 2020, with exports growing from about US $ 4.4 billion in 2009 to US $ 15 billion by 2014 and US $ 80 billion by 2020.

The Task Force has suggested several measures for rapid growth of the industry and has defined a roadmap for the industry in the medium and long-term. The overall goal is to arrive at a shared Government-Industry Vision of what the sector should aspire to achieve in next few years, particularly in terms of investment, contribution to GDP and employment. The Department is in the process of taking up the recommendations for appropriate implementation on a fast track basis, so that the IT and Electronics Industry in India achieves the targets as envisioned by the Task Force.

Other Policy Measures

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% in the electronics hardware-manufacturing sector are under the automatic route.

The general Export Promotion Capital Goods (EPCG) Scheme allows import of capital goods for pre-production, production and post-production (including CKD/SKD thereof as well as computer software systems) at 3% customs duty, subject to an export obligation equivalent to 8 times of duty saved on capital goods imported under EPCG scheme, to be fulfilled in 8 years reckoned from authorization issue-date.

However, the Zero duty Export Promotion Capital Goods (EPCG) Scheme is available to exporters of electronic products. It allows import of capital goods for pre-production, production and post-production (including CKD/SKD thereof as well as computer software systems) at 0% customs duty, subject to an export obligation equivalent to 6 times of duty saved on capital goods imported under EPCG scheme, to be fulfilled in 6 years reckoned from authorization issue-date.

The export obligation under EPCG Scheme can also be fulfilled by the supply of Information Technology Agreement (ITA-1) items to Domestic Tariff Area (DTA) provided the realization is in free foreign exchange.

Supplies of Information Technology Agreement (ITA-1) items and notified zero duty telecom/electronic items in the DTA by Electronics Hardware Technology Park (EHTP)/ Export Oriented Unit (EOU)/ Special Economic Zone (SEZ) units are counted for the purpose of fulfillment of positive Net Foreign Exchange Earnings (NFE).
Special Economic Zones (SEZs) are being set up to enable hassle free manufacturing and trading for export purposes. Sales from Domestic Tariff Area to SEZs are being treated as physical export. This entitles domestic suppliers to Drawback/ Duty Entitlement Pass Book (DEPB) benefits, CST exemption and Service Tax exemption. 100% Income Tax exemption on export profits is available to Special Economic Zone (SEZ) Units for 5 years, 50% for next 5 years and 50% of ploughed back profits for 5 years thereafter.

The salient features of the existing tariff structure/policy applicable to electronics hardware Industry are brought out below:

**Customs**

- Peak rate of basic customs duty is 10%.
- India is a signatory to the Information Technology Agreement (ITA-1) of the World Trade Organization. Therefore, the basic customs duty on all the specified 217 tariff lines is 0%.
- All goods required in the manufacture of ITA-1 items have been exempted from customs duty subject to actual user condition.
- Customs duty on specified raw materials and inputs used for manufacture of electronic components and optical fibres / cables is 0%.
- Customs duty on specified capital goods used for manufacture of electronic goods is 0%.
- Basic customs duty on set-top boxes is 5%.
- Basic customs duty on LCD panels for manufacture of LCD televisions is 5%.
- Parts, components and accessories of mobile handsets including cellular phones are exempted from customs duty.

**Central Excise**

- The mean rate of excise duty (CENVAT) is 10%.
- Microprocessors, Hard Disc Drives, Floppy Disc Drives, CD ROM Drives, DVD Drives/DVD Writers, Flash Memory and Combo-Drives are exempted from excise duty.
- Parts, components and accessories of mobile handsets including cellular phones are exempted from excise duty.

**Production Profile**

The Software and Services Industry which is export driven continues to dominate Electronics & IT Industry. In 2009-10, the Indian Software and Services industry exports witnessed a moderate but sustained growth. The total value of software and services export is estimated at Rs. 235,080 crore (US $ 49.7 billion) in 2009-10 as compared to Rs. 216,190 crore (US $ 47.1 billion) in 2008-09, an increase of 8.7 per cent in rupee terms and 5.5 per cent in dollar terms. The production and growth trend of the Indian Electronics and IT-ITeS industry since 2004-05 has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (Rs. crore)</th>
<th>Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>152,420</td>
<td>28.9</td>
</tr>
<tr>
<td>2005-06</td>
<td>190,300</td>
<td>24.9</td>
</tr>
<tr>
<td>2006-07</td>
<td>244,000</td>
<td>28.3</td>
</tr>
<tr>
<td>2007-08</td>
<td>295,620</td>
<td>21.2</td>
</tr>
<tr>
<td>2008-09</td>
<td>372,450</td>
<td>25.9</td>
</tr>
<tr>
<td>2009-10*</td>
<td>411,220</td>
<td>10.4</td>
</tr>
</tbody>
</table>

* Estimated

The performance of Electronics & IT industry in 2009-10 has shown sustained growth. However, the growth rate in 2009-10 is lower than 2008-09 due to the adverse impact of severe global recession on Software and Services exports which dominates the Industry profile and constitutes about 57 per cent of its revenue aggregate. Notwithstanding this, the fundamentals of the IT-BPO Industry continue to inspire confidence in Investors as indicated in net increase in employment in the sector. The Industry has responded remarkably well to the global downturn.

The production performance of various industry groups in the Electronics hardware and Software & Services Sector in 2009-10 is given below:

**Consumer Electronics**

Indian industry is picking up again after the slowdown in the world economy. Rebounding
consumer sentiments, strong demand for consumer durables and stimulus package have played a significant role in reversing the deceleration that set in more than a year ago.

During 2009-10, the production of consumer electronics industry is estimated to be Rs. 30,150 crore as against Rs. 25,550 crore in 2008-09, registering a growth of about 18%. Within this industry, the colour television segment is the largest contributor. The Colour Television market is estimated at 15.15 million units in 2009-10 an increase of 8.4% over 2008-09. Size-wise, the 21 inch CTV segment continues its dominance, having a 65% market share. In addition, about 5 million 14 inch CTV units have been supplied to Electronics Corporation of Tamil Nadu Limited (ELCOT), for free distribution by the Tamil Nadu Government.

Within the colour television industry space, the LCD television market continues to grow at a fast pace. In 2009-10, the LCD TV market is expected to expand to 1.40 million units, an increase of 57% over the previous year. The price decline due to lower import duty on LCD panels and the introduction of smaller entry size models has widened the consumer base for LCD TVs. This upsurge in LCD TV growth is likely to result in 2.7 million to 3 million units in 2010. Supporting a strong 2010-projected LCD TV sales are IPL cricket, FIFA world cup and Commonwealth Games. The surge in demand for LCD TVs is resulting in substantial increase in the value share of this segment of the colour TV portfolio of major companies.

The DVD player market is in a transition phase. The increasing popularity of DTH is posing stiff competition to the DVD player market. With the availability of more than 100 entertainment and news channels and movies-on-demand, DTH services are gradually cutting into the DVD player market share pie and it is felt that this trend shall continue in the times to come. The DVD player total market size is estimated at 6.2 million units in 2009. The market has decreased by 11.5 percent from 7 million units in 2008. The organized segment comprises 80 percent of the market.

The Home Theatre segment has shown good
growth in 2009-10. It is expected to grow to 200,000 units registering an increase of 30% over the previous year.

Strong DTH growth has been another characteristic of 2009 and this is expected to sustain in 2010 and beyond as well. DTH draws it sustenance from extensive geographical reach and ability to cater to urban audience that is moving away from cable as well as rural areas. Given the potential in our rural sector, the share of DTH segment is likely to grow further.

**Control, Instrumentation and Industrial Sector**

This segment of Electronics/IT industry includes critical hardware technologies and systems with built-in software. It is a very challenging area which is multi-disciplinary in nature requiring high level of technical skill in designing systems for applications in a variety of industrial sectors of the economy. Whereas we have a good amount of expertise in conceptualizing such systems and its erection and commissioning, the sector is very largely dependent on import of critical hardware and associated software. Large projects are implemented with total import of C&I packages from abroad without any knowledge of its design. In most cases, this leads to higher initial cost and a much higher maintenance cost in the long run. This process is continuing for a long time now.

The Department through its Industrial Applications Programme is trying to support this sector, particularly the SME sector, by providing proven indigenous technologies wherever possible. During the year, several technologies developed through national collaborative programme have been applied for field demonstration. This includes energy related equipment for improvement of electric power quality, controllers in the area of automation systems, equipment for railway traction, etc. A large collaborative programme on Intelligent Transportation System which includes various technology modules for application in the road transportation sector has also been launched during the year.

During the year 2009-10, the production of this segment is estimated to be Rs. 13,630 crore, as against Rs. 12,740 crore in the fiscal year 2008-09, registering a growth of about 7 per cent.

**Computer Industry**

The total PC sales during the first half of 2009-10 (April - September 2009), with desktop computers, notebooks and netbooks taken together, were 3.71 million units, registering a growth of about one per cent over the corresponding period in the last fiscal year. Out of this total PC sale, the total sale of desktops is estimated at 2.61 million and that of notebooks & netbooks at 1.1 million. While desktop sales have declined by 11%, that of notebooks & netbooks have grown by 43% over the same period of last year.

In the enterprises, the overall consumption in the PC market was led by telecom, banking and financial service sectors, education and households segments. Verticals such as BPO/IT-enabled services, retail and the Government, which traditionally account for significant proportion of the IT market, were very conservative in their IT spends in First half (April-September) of 2009-10.

The first-half of the current fiscal also witnessed deviations from the traditional downward trend in pricing for IT products as the US dollar continued to be significantly strong compared to the rupee. This was mitigated, to an extent, by price drops due to technology reasons and also due to intense competition.

Going forward, with signs of revival in the domestic economy, the industry is expected to show positive growth for PCs and other IT products for the fiscal 2009-10. PC sales are expected to cross 7.3 million units in 2009-10.

The overall production figure for this segment of the industry in 2009-10 is estimated to be Rs. 14,430 crore, a growth rate of 7 per cent.

**Communication and Broadcasting Sector**

The Communication Technology has taken a big leap forward and received the national recognition as the key driver for development and growth. The gross telephone subscribers in the country reached about
562.21 million as of December 2009 (mobile telephone subscribers about 525.16 million) as compared to 384.79 million (mobile telephone subscribers about 346.89 million) as of December 2008. The overall teledensity reached 47.89 per cent in December 2009 as compared to 33.23 per cent in December 2008. India is the second largest in the world in terms of gross telephone subscribers. At the end of December 2009, total broadband connections in the country have reached 7.83 million. The broadband subscribers are expected to be around 20 million by 2010.

India has currently achieved a distinction of having the world’s lowest call rates (1-2 US cents) and the fastest growth in number of wireless phone subscribers (about 14 million per month).

Apart from All India Radio, there were 248 FM Radio stations in operation as on 30th September 2009.

Apart from free Direct-to-home (DTH) service of Doordarshan, there are 6 private DTH licensees. All the six private licensees are offering pay DTH services to the consumers as on 30.09.2009. Total number of reported registered subscribers being served by the private DTH operators is 17.34 million as on 30th September 2009. At the end of September 2009 quarter, there were 7.34,016 number of set top boxes (STBs) installed in the Conditional Access System (CAS) notified areas of Delhi, Mumbai, Kolkata and Chennai.

The estimated production figure for this segment for the year 2009-10 is estimated to be Rs. 31,390 crore as against Rs. 26,600 crore in 2008-09, a growth of about 18 per cent.

**Strategic Equipment**

The strategic electronic sector envelops satellite based communication, navigation and surveillance system, radars, navigational aids, sonars, underwater electronic system, 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.

This is expected to be a growth year for military and aerospace semiconductors, as despite currently reduced military spending in some sectors and the troubled global economy, suppliers will likely be pushing forward in anticipation of end-product growth coming to the market over the next few years. This growth is due to technological advances which are driving demand, because of changes in national military policies and as a result of the substantial backlog of undelivered orders in aerospace. Prior to the era of computers and consumer electronics, military electronics consumed almost all of the world’s semiconductors. Although the market share of military electronics semiconductor consumption has been reduced to a smaller fraction, semiconductors nonetheless perform critical roles in this industry.

In the overall industrial market, which includes military and aerospace application markets, more designs are using digital signal processing, sensors, analog circuitry for automation, measurement, security and other growing areas in the industrial market. While end equipment shipment volumes are lower and growth is limited, the increasing electronics content, requiring semiconductors, is driving an average growth rate of 5 per cent per year for Mil/Aero chips. The forecast for military and aerospace semiconductors shows year 2010 to be a growth year for this market, with revenue likely to approach US $ 2.6 billion.

The production figure for this segment for the year 2009-10 is estimated to be Rs. 6,980 crore, registering a growth rate of about 2 per cent.

**Electronics Components**

The production figure for this segment for the year 2009-10 is estimated to be Rs. 13,360 crore, registering a growth rate of about 11 per cent.

The demand in the Consumer Electronics and Mobile segment in India has maintained its growth trend. The Indian CPT market stood at 17.19 million in 2009 an increase of 5% from 16.38 million in 2008. Domestic production increased from 10.5 million to 13.07 million. Due to sharp increase in local production, imports declined by 26% and were 4.12 million.
There is a major shift in 21 inch CPTs from conventional to Flat Screens with their quality in excess of 3.7 million. With decline in global demand for CRT TVs, India will be the largest user of this technology in coming few years with demand spreading to rural areas. India is also likely to become the global hub for manufacture of CRT TVs.

The EMS sector which had suffered a decline in sales in the early part of the year has recovered. The large global EMS companies who made large investments in India and have faced a tough situation in the market are attempting to raise their output to levels at which they were two years ago.

**Software and Services Sector**

The Indian Information Technology - Information Technology Enabled Services (IT-ITeS) industry has continued to perform its role as the consistent growth driver for the economy. The IT-ITeS industry has shown remarkable resilience during 2009-10. Despite the global economic slowdown, the IT-ITeS industry has geared itself by increasing its cost efficiencies, utilization rates, diversification into new verticals and shift in terms of new business and pricing models. The other key factor driving the sector’s sustained performance was forays into emerging markets like Latin America, Europe and Asia. India is regarded as the premier destination for the global sourcing of IT-ITeS, accounting for almost 51% of the global sourcing market size of US$ 94 billion in 2009. India now has a 62% share of the global technology services market (IT Services, Engineering Services and R&D) of about US$ 58 billion and a 32% share of the Global Business Outsourcing Market of about US$ 37 billion.

The Indian software and services exports including ITeS-BPO are estimated at US$ 49.7 billion (Rs. 235,080 crore) in year 2009-10 as compared to US$ 47.1 billion (Rs. 216,190 crore) in year 2008-09, a 5.5% growth in dollar terms and 8.7 % in rupee terms. However, the ITeS-BPO export revenue from India grew from US$ 17.7 billion (Rs. 80,180 crore) in year 2004-05 to US$ 47.1 billion (Rs. 216,190 crore) in year 2008-09 with a CAGR of over 29%. Over the last two decades, it is for the first time that the growth rate of IT-ITeS export has declined to single digit. ITeS-BPO is the fastest growing segment within the Indian IT-BPO sector. This segment is estimated to grow at 6% and to generate exports revenues of the order of US $ 12.4 billion (Rs. 58,650 crore) in year 2009-10 as compared to US $ 11.7 billion (Rs. 53,700 crore) in year 2008-09. There has been a marginal growth in the exports of Software Products and Engineering Services, which is estimated to reach US $ 10 billion (Rs. 47,300 crore) in year 2009-10 from the level of US $ 9.6 billion (Rs. 44,060 crore) in year 2008-09.

Indian IT-ITeS exports are well diversified across a wide range of mature and emerging vertical markets. Banking, Financial Services and Insurance (BFSI) remains the largest vertical market accounting for over 40% of the Indian IT-ITeS exports in year 2009-10. Growth in emerging verticals such as retail, healthcare and utilities is likely to be three times faster than core verticals. Other industries that will see growth include telecom, manufacturing, etc.

The Indian BPO sector has not only added scale in the last five years but has also matured significantly in terms of scope of service offerings, buyer segments served and service delivery models. BPO has also become a logical extension for IT companies and all leading IT vendors are developing integrated offerings. In fact, BPO is considered to move up the value chain to provide high-end services such as business analytics and other knowledge-based services through a mix of re-engineering skills, technology-enabled platforms, new operating models and increased depth of services.

With the BPO going strong for the past few years, the Knowledge Process Outsourcing (KPO), which may be called the highest level of the BPO, is still at a nascent stage of development in the country. It is expected that emergence of the KPO market will offer high-value services in off shoring and help the Indian ITeS Industry to climb the global value and knowledge chain. The Knowledge Services export revenue is estimated to reach US $ 1 billion (Rs. 4,730 crore) in year 2009-10 from US $ 0.6 billion (Rs. 2,690 crore) in year 2006-07 recording a CAGR of about 19 per cent. Skilled manpower and multilingual capabilities combined with the advantages of lower costs can help the country
Software Exports

Rs. Crore

80,180 104,100 141,000 164,400 216,190 235,080


emerge as a front-runner in KPO globally. India has a large pool of skilled manpower like chartered accountants, doctors, MBAs, lawyers, research analysts, etc., which would add value to the global KPO business and its high-end processes like valuation research, investment research, patent filing, legal and insurance claims processing, online teaching, media content supply, etc.

There is always a ‘first mover’ advantage. Countries like Vietnam, Philippines, Malaysia, China and Central & Eastern European countries offer IT-BPO services at competitive rates. Such countries are progressively promoting IT-BPO business by offering various incentives and tax benefits. Hence, it becomes imperative to develop KPO not only to ensure that we move up the value chain but also increase marginal revenue vis-à-vis the BPO. The transition from the BPO to the KPO, which offers a high quality of human capital and ICT enablement, can be relatively smooth as our IT-ITeS companies are well established.

The US and the UK remain the key markets for Indian IT-ITeS exports (excluding hardware), accounting for about 80 per cent of the total exports in the IT-ITeS sector. However markets across Continental Europe and the Asia Pacific are also witnessing significant year-on-year growth. This trend towards a broader geographic market exposure is positive for the industry, not only as de-risking measure but also as a means of accelerating growth by tapping new markets. Over 600 Multinational Companies have been sourcing product development and engineering services from their centres in India. The growing nature of responsibilities and ownership assumed by these India based resources are helping India to evolve into a strategic hub for R&D.

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 about US $14 billion (Rs. 66,200 crore) in year 2009-10 as compared to US $12.8 billion (Rs. 59,000 crore) in 2008-09, an anticipated growth of 9% in dollar terms and 12% in rupee terms. BPO demand in the domestic market has witnessed noticeable growth over the past few years and...
Electronics & IT Exports
continues to be the fastest growing segment. The
domestic BPO revenue is estimated to increase from
US $ 1.93 billion (Rs. 8,900 crore) in year 2008-09 to
about US $ 2.29 billion (Rs. 10,800 crore) in year
2009-10, a growth of 18.6% in dollar terms and 22%
in rupee terms.

Indeed, the phenomenal growth of the Indian IT-
ITeS sector has had a perceptible multiplier effect
on the Indian economy as a whole. In addition to
the direct positive impact on National Income, the
sector has grown to become the biggest
employment generator and has spawned the
mushrooming of several ancillary industries
such as transportation, real estate and
catering. Consequently, this sector has created a
rising class of young consumers with high
disposable incomes, triggered a rise in direct-tax
collections and propelled an increase in consumer
spending.

The total number of IT and ITeS-BPO
professionals employed in India has grown from 0.52
million in 2001-02 to 2.20 million in 2008-09.
However, the Indian IT sector saw slow hiring for
most part of the fiscal but this picked up a little in
the third quarter. The global economic crisis sharply
reduced the demand for IT services offered by Indian
companies as clients tried to cut costs. The total IT
Software and Services direct employment is
estimated to grow by 4% and cross 2.29 million in
2009-10 (excluding employment in Hardware
sector). This represents that a net 90,000 additional
jobs have been created in year 2009-10 as
compared with 200,000 in the previous year. The
indirect employment attributed by the sector is
estimated to be about 8.2 million.

The IT-ITeS industry has created career
opportunities for the youth, provided global exposure
and offered extensive training and development.
Furthermore, the industry has been a front-runner in
diversity at the workplace (over 30 per cent of
employees are women, over 60 per cent of industry
players employ differently abled people).

In order to continue support to the software industry,
the Income Tax benefits under Sections 10A and 10B
of the Income-tax Act for STP Units and 100% EOUs in IT sector was extended by one more year i.e. upto the financial year 2010-11.

**Electronics & IT Exports**

During the year 2009-10, electronics and IT exports are estimated to be Rs. 266,330 crore, as compared to Rs. 247,420 crore in 2008-09, showing a growth of 7.6 per cent. The software and services industry witness a moderate but sustained growth and the total value of software and services exports are estimated at Rs. 235,080 crore (US $ 49.7 billion) in 2009-10, as compared to Rs. 216,190 crore (US $ 47.1 billion) in the year 2008-09, an increase of about 8.7 per cent in rupee terms and 5.5 per cent in dollar terms.
E-Governance

Background

e-Governance is increasingly being viewed as the route for governments to strengthen good governance, for it not only improves efficiency, accountability and transparency of government processes, but it can also be a tool to empower citizens by enabling them to participate in the decision-making processes of governments.

Services provided through the various e-Government initiatives assist governments in reaching the yet ‘unreached’ and thereby contribute to poverty reduction in rural and remote areas by increasing access to critical information and opportunities. At the same time, this process also enables involvement and empowerment of marginalized groups through their participation in the government process.

The National e-Governance Plan was approved in May 2006 with a vision to “Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realize the basic needs of the common man”.

State Wide Area Networks (SWANs)

The Government has approved the Scheme for establishing State Wide Area Networks (SWANs) across the country, at a total outlay of Rs. 3334 crore to be expended by the Department under Grant-in-Aid of Rs. 2005 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 Hqrs, in a vertical hierarchical structure with a minimum bandwidth capacity of 2Mbps per link.

SWAN proposals from 33 States/UTs have been approved, with a sanctioned total outlay of Rs.1964.97 crore from the Department. The State of Goa and UT of Andaman & Nicobar Islands have implemented Wide Area Networks outside SWAN Scheme.

As of January 2010, the SWANs in Haryana, Himachal Pradesh, Punjab, Tamil Nadu, Gujarat, Karnataka, Chandigarh, Delhi, Tripura, Puducherry, Lakshadweep, Kerala, Jharkhand, West Bengal and Sikkim have been rolled out. SWANs in other States/UTs are in various stages of implementation. All the SWANs are expected to be completed by August 2010.

To monitor the performance of SWANs, the Department has mandated positioning Third Party Auditor (TPA) agencies by the States/UTs. 9 States i.e. Haryana, Himachal Pradesh, Punjab, Gujarat, Karnataka, Kerala, Tripura, Orissa and West Bengal have empanelled the Third Party Auditor (TPA)
agencies for the monitoring of the performance of the SWAN in their respective State.

**State Data Centres (SDCs)**

The State Data Centre Scheme for establishing Data Centres across 35 States/UTs across the country was approved by the Government on 24th January 2008 with a total outlay of Rs.1623.20 crore towards the Capital and Operational expenses over a period of 5 years. The concept is to create State Data Centres for the States to consolidate infrastructure, services and application to provide efficient electronic delivery of G2G, G2C and G2B services. These services can be rendered by the States through common delivery platform seamlessly supported by core Connectivity Infrastructure such as State Wide Area Network (SWAN) and Common Services Centre (CSC) at the village level.

State Data Centre would provide many functionalities and some of the key functionalities are Central Repository of the State, Secure Data Storage, Online Delivery of services, Citizen Information/Services portal, State Intranet Portal, Remote management and Service Integration, etc.

Since the approval of the SDC Scheme by the Government, the Department has approved the proposals received from 31 States/UTs at a total outlay of Rs. 1378.00 crore.

RFP of 18 States viz., Orissa, Tripura, Gujarat, Maharashtra, Nagaland, West Bengal, Puducherry, Sikkim, Meghalaya, Haryana, Rajasthan, Jharkhand, Kerala, Andhra Pradesh, Uttar Pradesh, Manipur, Andaman & Nicobar Islands and Tamil Nadu has been approved by the Department. 11 States have completed the bid evaluation, out of which 3 States (Orissa, Tripura and Gujarat) have issued the award of contract to the selected bidder, 2 States have issued the LOI to the selected Bidder (Maharashtra, Nagaland) and 6 States (Puducherry, Sikkim, Meghalaya, Haryana, West Bengal & Rajasthan) are in the process of issuing LOI to the selected bidder. Bid process is in progress in 4 States (Jharkhand, Kerala, Andhra Pradesh & Uttar Pradesh). RFP of 7 States are under review/finalisation for approval by the Department.

**Common Services Centres (CSCs)**

The Government has approved the Common Services Centres (CSC) 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 Rs 5742 crore with the Government of India contribution being Rs 856 crore and State Governments contribution being Rs 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 (Karnataka and Goa) and two Union Territories (Andaman & Nicobar Islands and Chandigarh). The CSC Project is under implementation in thirty-one States at a total cost of Rs.1752.47 crore.

The CSC Scheme is being finalized in Lakshadweep, Daman & Diu and Dadra & Nagar Haveli. In the NCT of Delhi, the CSC like centers are already existing. As of January 2010, 60,837 CSCs have been established across the country.

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. All the CSCs are expected to be connected by June 2010.

Further connectivity of 2500 CSCs situated in remote areas of NE States and other areas is also being addressed by NIC as the implementing agency, by using VSAT.

The issue of enabling Service Delivery is being addressed by earmarking funds to the tune of Rs.400 crore for establishing State Portals and State Services
Delivery Gateway in the States/UTs.

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. In pursuance of the Hon'ble President’s address to the Joint Session of the parliament in June 2009, it has been decided that the Common Services Centers will be suitably repositioned to be a network of Panchayat level Bharat Nirman Common Services Centers, to provide Government services to the citizens in rural areas. Accordingly, the CSCs are to be leveraged for various services for Bharat Nirman and flagship Schemes like NREGA, NRHM and SSA. The Department has initiated discussions with various Ministries to finalize the modalities of leveraging the CSCs for delivery of services for various Bharat Nirman Schemes and other flagship projects of Government of India.

The SSDG and e-Forms on State Portal

The e-Forms application will enable citizens to download forms and submit their applications electronically with the help of Electronic Forms hosted on the State Portal (SP) and routed by a common State Services Delivery Gateway (SSDG). This initiative facilitating Electronic Service Delivery will provide significant benefits to the citizens, especially in the form of a single gateway to citizen for service delivery. Thus holistic and harmonious use of the Common Services Center (CSC) along with the other common infrastructure (SWAN, SDC) and technology across the States/UTs for all applications and services shall be achieved.

In line with the NeGP strategy, the e-Forms project has been planned centrally and implemented at the State/UTs level. Each States sends a proposal for the implementation of the e-Forms project, and the Department reviews this proposal on the basis of Guidelines it has issued in this regard.

Achievements during 2009-10

- Approval of State/UTs proposals and release of funds to 14 more States/UTs in addition to 14 States/UTs already approved in 2008-09.
- Empanelment of 5 Consultants and 5 Implementation Agencies.
- e-Forms Proof-of-Concept demonstrated.
- Consultants selected by 27 States.
- Template RFP prepared and shared with the States/UTs.
- FRS and RFP Preparation in advanced stages by the States/UTs.

Capacity Building

To realize the NeGP vision, 27 Central, State and Integrated Mission Mode Projects (MMPs) along with 8 support components have been identified in NeGP. The focus has been service delivery to citizens. Capacity Building is one of the important components of NeGP for establishing internal capacity within the Government framework essentially at the States/UTs level.

The nature of State e-Governance initiatives being service focused and the scale with multiple projects statewide, present a considerable enhancement in the aspiration levels. Major managerial and technological challenges are therefore envisaged. This also requires consistent strategies for integration, resource optimization, prioritization and resolving conflicts and overlaps. Thus specialized skills are required at the States/UTs as well as Central level, to provide technical support to the policy & decision-making process, the overall management of the programme and leveraging the external industry resources, etc.

For both, to support the policy & planning as well as leveraging external resources, the skills that are typically needed are in the areas of Programme Management, Developing Business and Financial Models, Technology, Enterprise Architecture, Business Process Re-engineering and Change Management. In this context, Capacity Building (CB) has been included in the ‘implementation approach and methodology’ of NeGP and it addresses the ‘Human Resource Development’ and ‘Training’ components of NeGP. The CB Scheme aims at:

- Establishment of an institutional framework such as State e-Governance Mission Team (SeMT).
- Setting up of an Empowered Committee (EC) under the Chairmanship of Secretary-IT.
Setting up of a CB Management cell.

Strengthening of Training Institutions in States/UTs.

Achievements during 2009-10

An independent business division called National e-Governance Division (NeGD) has been established within Media Lab Asia, a section 25 Not-for-Profit company earlier established by the Department. NeGD is expected to play the role of a central agency for coordination and implementation of CB Scheme as envisaged under the Cabinet Approval for the CB Scheme.

The existing NeGP-PMU of the Department has been taken over by NeGD and all activities of NeGP-PMU including Capacity Building Management Cell are now being dealt directly by NeGD.

A permanent CB Management Cell (CBMC) has been established within NeGD that has taken over the roles and responsibilities of CBMC earlier being supported by a team of consultants deployed through National Institute of Smart Government (NISG).

NISG has been selected as the agency for outsourcing the Recruitment and HR Management activities of NeGD. NISG is now expected to assist NeGD in establishing SeMTs across all 35 States and UTs by hiring personnel on deputation or through open market.

Phase 1 of orientation/training activities for political and policy level, SeMT and Central Team members level has been started. Political and policy level orientation named as “e-Governance Leadership Meet” has been conducted for the following States: Meghalaya, Sikkim, Manipur, Nagaland and Orissa.

State e-Governance Mission Team (SeMT) have already been set up through temporary staffing services of empanelled agencies in 22 States/UTs.

Specialized training, Phase II at project level to various officials of all States/UTs has been approved by the Empowered Committee. National Institute of Smart Government is the implementing agency.

Horizontal Transfer

“Horizontal Transfer of Successful E-Governance Initiatives” aimed at spreading the benefits of e-Governance across the country to identify and replicate major successes that have been achieved in some States is being implemented. In the first phase, projects on Land Records, Transport and Registration were taken as they have potential for improving significantly Government-to-Citizen services.

Achievement during 2009-10

Land Records Computerization Projects

(i) Pilot Project implementations is progressing well in the State of Meghalaya.

(ii) Roll out in the entire State of Assam on Public Private Partnership model is being carried.

Computerization of Property Registration

(i) Pilot project is progressing well in the State of Meghalaya.

(ii) Roll out in the entire State/UT on Public Private Partnership model has been completed in Punjab and Puducherry.

(iii) Roll out in the entire State on Public Private Partnership model is being carried out in Rajasthan.

Computerization of Transport System at RTOs

Roll out in the entire State on Public Private Partnership model is being carried out in Punjab.

India Portal

India Portal Project, http://india.gov.in is a Mission Mode Project under the NeGP to provide a single window access to the information and services of the Indian Government at all levels from Central Government to State Government to District Administration and Panchayats for the Citizens, Business and Overseas Indians.

The specific achievements made under this project during the year are summarized as:

- india.gov.in is now accessible to all users irrespective of device in use, technology or ability. It has now been built, with an aim, to provide maximum accessibility and usability to its visitors. All information on this Portal is accessible to people.
including disabled. Even person with visual disability can access this Portal using assistive technologies, such as screen readers and magnifiers. The portal adheres to the Guidelines for Indian Government Websites and conforming to WCAG 2.0 “AA” level.

- ISO certification against Quality Characteristics (functionality, reliability, usability, efficiency, maintainability and portability).
- Release of Guidelines for Indian Government Websites. New Guidelines Compliant website of the Department is also being developed.
- Development of NGO-Partnership System (NGO-PS) to encourage Citizens’ Participation in the process of governance. The National Portal of India has developed a special web interface known as NGO Partnership system to improve transparency in government function by monitoring the funds granted to Non Governmental Organizations under various welfare schemes. This system is now being monitored by the Planning Commission.
- Number of Case Studies on different aspects and functionality of the India Portal has been presented both in the National as well as International Conferences.
- Under Content Enhancement the following documents are uploaded/provided online- Forms – 6430, Acts – 2043, Rules – 1292, Schemes – 1300, Services – 1500, Documents – 7000.

### Standards for e-Governance

Government of India (GoI) has set-up an institutional mechanism to evolve Standards for eGovernance. The key objective of this standardization activity is to enable collaboration and integration across various e-Governance applications. The e-Governance standards will ensure seamless information flow, interoperability of applications and cross-departmental process integration with e-governance operations.

### Achievements during 2009-10

- Portal for publishing and collaboration on standards has been developed (http://egovstandards.gov.in).
- Meta data and Data standards for person identification and land region codification and Localization standards (Unicode 5.1 and Open Font Format) have been notified.
- Draft Interoperability Framework for e-Governance applications are under preparation.
- 6 Draft Guidelines on Security are being finalized after the public review.
- Conformity Assessment Framework Guidelines have been prepared for ensuring quality.
- The Task Force on the eForms has prepared two reports on the Policy and Roadmap.
- Standards for facial image and fingerprint image are under preparation by the Expert Committee.

### National e-Governance Service Delivery Gateway (NSDG)

The National e-Governance Service Delivery Gateway (NSDG) aims to achieve a high order of interoperability among autonomous and heterogeneous entities of the Government (in the Centre, States or Local bodies), based on a framework of e-Governance Standards. NSDG, as a messaging middleware, acts as an intelligent hub and routes service requests from a Service Seeker (Service Access Provider) to a Service Provider (typically a backend Government department that puts up its service for electronic delivery) and in return sends the response back to the Service Seeker through the Gateway.

The gateway achieves integration amongst diverse set of applications built on varying platforms through compliance with a set of e-Governance Specifications-Interoperability Interface Protocol and Interoperability Interface Specifications (IIP/IIS) that are based on open standards such as the W3C XML and SOAP specifications.

**NSDG “go-live” happened on August 14, 2008.**

### Achievements during 2009-10

- Design & Development of National Services Directory (NSD).
- Upgradation of NSDG solution to conform to updated e-Governance Standards.
- Design & Development of Connectors in Java & Dot.NET.
Design of Disaster Recovery Solution for NSDG.
A proof of concept demonstration for
- E-Filing using Java & Microsoft web applications.
- Inter gateway communication with MOA21 gateway
- End to end integration of e-Forms with Department Services
- Deployment of NSDG solution at NICSI, Delhi and NIC, Hyderabad.
- Security Audit of NSDG Solution at NICSI, Delhi.

Assessment

Assessment is one of the important components of NeGP. It is planned to undertake summary/detailed assessment of e-Governance projects in respect of their effectiveness and sustainability. Process for creation of impact assessment of e-Government projects at State and National level was initiated through the empanelled research agencies.

Achievements during 2009-10

- Successful completion of e-Readiness assessment 2009.
- Impact assessment of e-Governance reforms carried out under the Ministry of Urban Development’s JNURM programme at 4 locations (Delhi, Mumbai, Kolkata and Hyderabad)
- Baseline study of eDistrict project in 5 States (Uttar Pradesh, West Bengal, Maharashtra, Madhya Pradesh and Tamil Nadu)
- Impact assessment study of State MMP Commercial Tax in 10 States (Assam, Sikkim, West Bengal, Tamil Nadu, Chhattisgarh, Andhra Pradesh, Gujarat, Rajasthan, Delhi and Uttar Pradesh).

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 14 Pilot e-District projects covering 37 districts. In Uttar Pradesh, Tamil Nadu and Assam, pilot project has been launched/gone live in all the pilot districts. In Madhya Pradesh and Bihar, application development is under progress. In Orissa, Mizoram, Jharkhand, West Bengal, Maharashtra and Kerala, System Integrator has been selected. In Punjab, Haryana and Uttar Pradesh, process for selection of System Integrator is in process.

e-Bharat Project

To support National e-Governance Plan (NeGP), GoI has been carrying out a dialogue with World Bank for possible programme management and financial support (called “e-Bharat project”).

The project is expected to contribute to: Improving government effectiveness; Empowering marginalized communities; Increasing fiscal revenues; Reducing public procurement costs; and Promoting private sector-led growth through PPPs. Discussions with respect to funding mechanism and project design are currently underway.

India Development Gateway (InDG)

India Development Gateway (InDG) is a nationwide initiative that seeks to provide responsive and credible information, products and services in local languages catering the needs of rural communities. As part of this initiative a multilingual platform (www.indg.in) has been established for knowledge sharing with information, products and services in 6 languages (Hindi, English, Tamil, Telugu, Marathi, Bengali) on 6 identified verticals (Agriculture, Health, Primary Education, e-Governance, Rural energy and Social Welfare). Some of the major initiatives taken include content management through offline and online mode, establishing a network of partners for content sharing and outreach activities and capacity building of village knowledge center operators for leveraging ICT for knowledge dissemination in rural areas. The major achievement during the year 2009-10 are as under:

- ‘Social Welfare’ Sector has been included as 6th Vertical in the portal.
- Completed the customization of “Buyer-Seller Platform (e-Vyapar)” and hosted on the InDG portal for the benefit of CSC operators and other stakeholders.
Dynamic Market Information service has been extended to 13 markets covering 159 crops. SMS facility has been integrated.

Partnerships have been established with organisations like National Institute for Rural Development, NAIP-ICAR, National Institute of Nutrition at various levels.

2 multilingual off-line products have been developed and released for public use.

Content Consortia Guidelines have been developed for extending the region specific content development process across States.

e-Governance Conformity Assessment Centres (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, Bangalore, Hyderabad, Delhi, Kolkata, Pune/Mumbai, Guwahati) to provide the requisite facilities for testing, audit and certification. Kolkata and Bangalore Centers are accredited internationally by A2La, USA for software testing. The eGCA center are also providing services to various e-Governance projects (both mission mode and other projects) covering following areas:

- Smart Card Certificate along with NIC.
- Website Quality Certification.
- Capability approval of website designer and developer.
- Information Security Management Certificate.
- Information technology Service Management Certification.
- Software testing and Quality Evaluation.

Open Technology Centre (OTC)

The Department has initiated the setting up of an Open Technology Center through National Informatics Centre (NIC), aimed at giving effective direction to the country on Open Technology in the areas of Open Source Solutions, Open Standards, Open Processes, Open Hardware specifications and Open Course-ware.

Achievements during 2009-10

- Involved in supporting the standardization activity for Policy, Interoperability Framework, MDDS, Localization etc.
- Open source support for data replication.
- Cooperation with Education Institutes for induction of Open Technology for Live Issues/Problems involving research activity.
- Detailed Study and implementation of Database.
- Research and Development on X-Forms Technology.
- Analysis and Migration of legacy application to Open Source.
- Technical Consultancy & Hand Holding of Services on Open Technology.
- Study and Guidance on Component Based Application Development.
- Conducted various training programmes and workshops.

Project “Establishment of BOSS Support Centres & Business Development (NRCFOSS)"

National Resource Centre for Free & Open Source Software (NRCFOSS) in C-DAC Chennai has developed GNU/Linux Operating System distribution named as Bharat Operating System Solutions (BOSS) with wide Indian languages support. The project “Establishment of BOSS Support Centres & Business Development (NRCFOSS)” has been initiated for proliferation of BOSS in the country through building support centres and business development. Following achievements have been made during the year 2009-10:

- BOSS Support Centres have been established at CHIPs Chhattisgarh, ELCOT Tamilnadu and NIC-OTC (Open Technology Centre) Chennai. The already established BOSS Support Centres at C-DAC Centres and at the Department fully operational.
- BOSS is being deployed in States of Chhattisgarh, Tamilnadu, Bihar, Tripura, Punjab and Kerala in various e-Governance and office applications.

Open Technology Centre (OTC)
Training programmes/workshops have been organized for officials in these States.

- C-DAC continued training programmes for officers of Indian Navy as part of MOU. So far, BOSS has been installed in over 500 systems at various Navy locations and over 300 officials have been trained.
- As part of the promotional activity for BOSS, a series of workshops-cum-demo titled “Open Source Demystified” were organized in Bangalore, Chennai, NOIDA, Hyderabad, Mohali, Mumbai, Thrivananthapuram and Delhi during Aug-Sep. 2009. Also, BOSS sessions were organized for government officials from Manipur and Mizoram in the training programmes organized by Indian Institute of Public Administration (IIPA), New Delhi.
- A National Workshop on BOSS was organized by C-DAC, Kolkata in association with Hi-tech Institute of Technology, Bhubaneswar during April 2009.
- So far around 2000 BOSS implementations are completed in 90 Engineering colleges/Universities in different States/UTs. Around 60,000 BOSS DVD/CDs have been distributed in various BOSS forums/events and 20,000 downloads have been reported from http://bosslinux.in.
- MOU has been signed with CII-Shiksha for proliferation of BOSS Linux in Primary and Secondary Schools.
- A TV commercial on BOSS Linux Desktop edition have been produced.

**R&D in e-Governance**

The Consortium Mode Projects in language technology continued to be supported and the Alpha versions of following systems have been developed:

- English to Indian Languages Machine Translation (5 language pairs viz., English-Bengali; English-Urdu; English–Hindi; English-Malayalam; English-Marathi).
- Cross-lingual information access (4 language pairs; viz., English-Hindi, English-Marathi, English-Tamil, English-Bengali)
- Optical character recognition in major Indian languages.
- On-line handwriting recognition systems.

**Awareness & Communication**

The success of NeGP hinges not only on accessibility and availability to the information and various services but also on awareness regarding the Programme, effective branding of NeGP and finally on a communication strategy that addresses the above two. The major activities during the year were:

- The first conference of ICT Ministers to discuss the topical issues related to Speeding-up Delivery of e-Services, Institutional Framework for e-Governance Projects and speeding up of e-Infrastructure required for the delivery of e-Services was organised by the Department at Vigyan Bhawan on 27th of Oct, 2009. More than 250 stakeholders in e-Governance took part in the deliberations.
- State Level NeGP Advocacy Workshops were organized in 2 States: Gujarat-25th June, 2009 and Madhya Pradesh-7th May, 2009.
- 3 Zonal Level NeGP Advocacy Workshops were organized in Madhya Pradesh: Bhopal-6th April, 2009; Rewa-13th April, 2009 and Gwalior-21st April, 2009.
- The Department participated in the following Industry Conferences with an objective of furthering the cause of e-Governance: e-India Conference, Hyderabad; ASSOCHAM e-Governance Summit, Delhi; Government Technologies Conference & Expo 2010 and e-States Conference, Rajasthan.
- A short film on Common Service Centres (CSC) was produced for showcasing the CSC experience.
- NeGP Informational posters were developed and dispatched to Govt Offices/e-Government implementers.

**Other Projects**

- eG-SWARAJ – Gram Swaraj Digital Approach: This is an eGovernance initiative for creation of digital database of multiple thematic layers and development of decision support system for various natural resources management. This is being implemented by JSAC, Ranchi, Jharkhand and likely to be completed by March 2010.
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. System design and hardware procurement has been completed and application software is under testing.

Development of GIS based Integrated Infrastructure, Resource and Utility, Planning & Management system (IIRUPM) for Assam State: On pilot basis initiated the 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 AMTRON, Assam. Six modules out of eleven have been developed.

Integrated Land Management and Administrative Planning (ILMAP) in East and South Districts of the State of Sikkim: 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. System requirement specification has been prepared and application software development activities under progress.

Development of Digital Land Resource Information System for Integrated Land Management for Mizoram State: On pilot basis 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. System requirement specification has been prepared and hardware procurement is under process.

HILLARIS-(Hill Area Resource Information System using Geographic Information Technologies): A Spatial Decision Support System to Udhagamandalam District, The Nilgiris) is conceptualized to build GIS data layers at micro level with all attributes relevant to them and with number of end-user modules are to be hosted in WEB environment accessible by district authorities using GPS data capturing survey and Remote Sensing data processing technique through Digital Image Processing and Digital Photogrammetric methods for Hill Area Development. This is being implemented by Bharathidasan University, Tiruchirappalli. Spatial Decision Support System has been developed and is under testing.

Cyber Security

A holistic approach is followed to secure Indian Cyber Space. The approach includes R&D, legal framework, security incidents - early warning and response, best security policy compliance & assurance, International cooperation and security training. It focuses on capacity development, strengthening of process framework and development of technology through R&D programme and implementation of early watch and warning mechanism for Cyber Security incident prevention, response and mitigation.

R&D initiative is aimed at promotion of basic research, technology demonstration, proof of concept along with indigenous development of technology in the area of Cyber Security. The programme also includes establishment of test bed projects for enhancing indigenous skills and capabilities in the area of information security. The R&D programme is carried out by implementing major initiatives with the help of R&D organizations. Thrust areas of research and development identified include Cryptography and cryptanalysis; Network...
and Systems Security; Security Architectures; Vulnerability and Assurance; Monitoring, Surveillance and Forensics.

During the year 2009-10, R&D projects were initiated in the areas of (i) Biometrics, (ii) Speaker verification based person identification system for access control, (iii) Securing web applications (iv) integrated security risk management system for enterprises networks, (v) Establishment of computer forensic labs and training facility in the North East Region, (vi) Development of framework for implementing information security management within Government and (vii) effective techniques using data mining techniques to counter cyber crimes incidents. Training center in forensics has been set up at Kerala police to facilitate cyber crime investigation. The setting-up of forensic center at Central Bureau of Investigation is in progress.

Advanced version of cyber forensics tool kit namely Cyber Check was developed and released to Law Enforcement Agencies. Biometrics systems for authentication, human identification and face recognition systems have been developed and validated. Development of Prototype for Intrusion Prevention System has been completed and performance testing is being carried out.

Legal Framework – The Information Technology (Amendment) Act 2008

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 compute related offences. With several new forms of computer crime, misuse and fraud taking place, a need was felt and efforts were made to strengthen the legal framework and provide amendments.

The said Information Technology Act 2000 was amended through the Information Technology (Amendment) Act 2008. The amendments were enforced on 27.10.2009. The amendments deals with new forms of Cyber Crimes like publicizing sexually explicit material in electronic form, video terrorism, and breach of confidentiality and leakage of data by intermediary and e-commerce frauds. The rules of important sections under the Act were also notified and enforced. The formulation of rules for additional sections under the Act is in the process.

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.

In the Information Technology (Amendment) Act 2008, CERT-In has been designated 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 white papers 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 of the following:

<table>
<thead>
<tr>
<th>Activities</th>
<th>From 1st April to 31st Dec 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Incidents handled</td>
<td>6828</td>
</tr>
<tr>
<td>Security Alerts issued</td>
<td>21</td>
</tr>
<tr>
<td>Advisories Published</td>
<td>44</td>
</tr>
<tr>
<td>Vulnerability Notes Published</td>
<td>117</td>
</tr>
<tr>
<td>White papers / Case Studies Published</td>
<td>1</td>
</tr>
<tr>
<td>Trainings Organized</td>
<td>15</td>
</tr>
<tr>
<td>Indian Website Defacements tracked</td>
<td>5639</td>
</tr>
<tr>
<td>Open Proxy Servers tracked</td>
<td>2149</td>
</tr>
<tr>
<td>Bot Infected Systems tracked</td>
<td>2611087</td>
</tr>
</tbody>
</table>
CERT-In has taken steps to implement National Information Security Assurance Programme (NISAP) to create awareness in government and critical sector organizations and to develop and implement information security policy and information security best practices based on ISO/IEC 27001 for protection of their infrastructure. For communicating with these organizations, CERT-In maintains a comprehensive database of more than 1000 Point-of-Contacts (PoC) and Chief Information Security Officers (CISO). As a proactive measure, CERT-In has also empanelled 40 information security auditing organizations to carry out information security audit, including the vulnerability assessment and penetration test of the networked infrastructure of government and critical sector organizations. The technical competency of the empanelled organizations is regularly reviewed by CERT-In with the help of a test network.

CERT-In is also conducting cyber security mock drills to assess the preparedness of organizations in the critical sector to withstand cyber attacks.

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

To facilitate its tasks, CERT-In has made collaboration arrangements with IT product vendors, security vendors and Industry in the country and abroad. This collaboration facilitates exchange of information on vulnerabilities in relevant products, developing suitable countermeasures to protect these systems and providing training on latest products and technologies. CERT-In in collaboration with CII, NASSCOM and Microsoft have created a portal “secureyourpc.in” to educate consumers on cyber security issues.

CERT-In has established collaborations with international security organizations and CERTs of other countries 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), Asia Pacific CERT (APCERT) and Anti-Phishing Working Group (APWG).

As part of this collaboration, CERT-In has successfully participated in ASEAN CERTs Incident Handling Drill (ACID 2009) held in July 2009 involving CERTs from Asia Pacific region and Europe.

Creating security awareness among Indian IT infrastructure organizations is one of the important role 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 members 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 to spread the cyber security awareness and facilitate interaction with various user groups. A survey on “State of Data Security and Privacy in the Indian Industry” has been conducted in association with DSCI and KPMG.

CERT-In has established the facility for Computer Forensics for investigation of cyber crimes and to provide hands on training to the law enforcement agencies and judiciary. CERT-In is cooperating with defence, banks, judiciary and law enforcement agencies in training their officials as well as extending the support in investigation of cyber crimes.

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

In the Information Technology (Amendment) Act 2008, CERT-In has been designated to serve as the national agency to perform the functions in the area of cyber security: CERT-In has been 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 Organizations 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.

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. The Root Certifying Authority of India (RCAI) set up by the Controller of Certifying Authorities (CCA) is the root of trust for authentication of electronic transactions. Repository of Digital Signatures Certificates issued by CCA to the licensed CAs and the Certificates issued by the licensed CAs are the other components of the technical infrastructure that has been established and is being operated by the CCA. The Disaster Recovery Site of CCA is also fully operational.

The total number of Digital Signature Certificates issued in the country grew to more than 13,50,000 by December, 2009. Eight Certifying Authorities were operational during this period.

Interoperability Guidelines for DSC were prepared after consulting the various stake holders and the international experts in this area.

Office of CCA participated in the annual meeting of the APKIC held in Taipei, Taiwan in November 2009 and the second Executive Group meeting held in Beijing, Hongkong in June, 2009. CCA lead a delegation comprising some of the Indian Certifying Authorities and C-DAC, Bangalore to Mauritius for implementing the provisions of MoU signed with ICTA Authority of Mauritius for implementation of PKI in Mauritius. Workshops and Seminars were held during the visit.

An agreement has been signed with Microsoft for distribution of CCA’s Root Certificate in Microsoft Browser (Internet Explorer). The Root Certificate will be pre-installed in the Microsoft Browser for ease of establishment of trust.

The request for proposal (RFP) for setting up an Online Certificate Verification Service (OCVS) has been prepared.

Under the Nationwide PKI Awareness programme, One-day seminars were held in Chennai, NITK Surathkal, Guwahati, Tezpur, Shillong, Kottyam in Kerala, Goa and Pune. Officers from CCA participated in imparting Training Programmes on Digital Signatures/PKI at various institutes like Delhi Judicial Academy, National Police Academy, Indian Institute of Public Administration and various other academic institutes.

Fresh Panel of auditors for auditing the operations of the CAs (which includes the pre-license audit for fresh applications, Annual compliance Audit and the renewal audits) has been prepared.

Efforts are being made for upgradation of standards being followed in the PKI implementation in India. Gazette Notification has been issued for legally discontinuing the use of MD5 as one of the Hashing Algorithms.

The servers for RCAI operations have been replaced with new state-of-art servers. A secure dedicated point-to-point data com link between the primary site of CCA and the Disaster Recovery Site (Bangaluru) has been established. The responses against RFP for establishment and maintenance of web infrastructure for the Data Centre are being evaluated.

Study on exploring the possibility of integration of Digital Signature Certificates in Mobile communication was carried out.

Cyber Appellate Tribunal (CAT)

As per the IT Act 2000, any person aggrieved by an order made by the Controller of Certifying Authorities and an Adjudicating Officer can prefer an appeal to the Cyber Appellate Tribunal (CAT). During the year, 8 appeals were filed. Hearing was held from time to time. One appeal has finally been disposed of.

The office and Court of the CAT was inaugurated in July 2009 at its new location at LIC Building, Connaught Place, New Delhi.

With a view to provide awareness amongst the concerned State Government officials, Chairperson,
CAT has been interacting with the concerned authorities, Adjudicating Officers of different States. The Chairperson also participated in a number of National level training programmes, seminars/conferences relating to Cyber Security/Crime issues etc., and also delivered talks at national forums.

The Semiconductor Integrated Circuits Layout-Design Act 2000

The Semiconductor Integrated Circuits Layout-Design Act (SICLDA) 2000 provides for protection of Semiconductor Integrated Circuits Layout-Designs and for the matters connected therewith or incidental thereto. As per the provisions made under SICLDA, a Registry known as the Semiconductor Integrated Circuits Layout-Design Registry (SICLDR) has to be established to facilitate examining the received chip layout-design IPR applications and issuing the registration to the qualifying layout-designs.

During the year, the setting up of the technical resource - Data Center (DC) of SICLDR was progressed. Two projects in the area of “Creation of data base of prior-art in IC Layout Designs” were initiated and first module of prior-art data in Analog and Mixed IC Designs and Digital IC Designs is collected for porting to SICLDR Registry. Work on creation of dedicated prior-art data base at SICLDR Registry facility through porting and testing of the modules generated through the R&D projects was initiated and first version of prior-art library realized for use in screening of the incoming chip IP applications. A project on “Matters of Semiconductor IC Layout Design Registrations” was completed. Action on bringing into force further sections of the SICLDR Act to operationalize the Registration of Applications was taken. Diffusion of information on IC layout Design Registration matters was continued.

Internet Governance

Introduction

The growing awareness of the social, economic and political impact of the Internet has brought the question of Internet Governance in the central stage. 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 implies formulation of regulatory and governing policies of shared principles, norms, rules, decision making procedures and programmes that shape the evolution and use of the Internet by Governments in cooperation/consultation with the private sector and civil society concerning their respective roles.

Some of the Initiatives of DIT in this area include the following:-

Internet Exchange of India (NIXI)

Seven Internet Exchange Nodes have been operationalised at Bengaluru (Karnataka), Hyderabad (Andhra Pradesh) and Mohali (Chandigarh) to add to the existing National Internet Exchange of India (NIXI) hubs at Chennai, Kolkata, Mumbai and Noida. The Internet Exchange nodes have been successful in ensuring the Internet traffic originating within India resulting in improved traffic latency, reduced bandwidth cost and better security.

Four NIXI nodes located at Mumbai, Noida, Chennai and Bengaluru are IPv6 ready with all its functional operations available online to the member ISPs. In addition NIXI is also organizing training and workshops for Network managers and other Technical engineers through training support from Asia Pacific Network Information Centre (APNIC).

IN Internet Domain Registry

The Registry http://www.registry.in for the country code Top Level Domain (ccTLD) Name .IN is managed by the National Internet Exchange of India (NIXI). More than 73 Registrars have been accredited to offer .IN domain Name registration worldwide to customers. It has in turn also helped in proliferation of Web hosting in the country and Indian language content in the Internet. 5.5 lakhs .IN Domain Names have been registered till November 10, 2009. Two Data Centres have been established in Delhi and Chennai towards disaster management. Activities for enhancing the
registry for registration of domain names in Indian languages are underway.

Establishment of Governmental Advisory Committee (GAC) Secretariat

A Governmental Advisory Committee (GAC) Secretariat of the Internet Corporation for Assigned Names and Numbers (ICANN) has been set up in the Department. 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.

Internationalized Domain Names (IDN)

ICANN has announced on October 27, 2009 that it is now ready to allow Country Code Top Level Domain Names (ccTLDs) in a few non-Latin scripts. The Department will be submitting request for Hindi and other Indian languages. The Domain Name Policy for registration of Domain Names has been drafted.

Migration from IPv4 to IPv6

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.

Nationwide Quality of Service (QoS) Network Test Bed

A Multi Protocol Label Switching (MPLS) network testbed has been established among the 7 institutions to demonstrate Quality of Service assured network based applications and services. The project has also evolved traffic engineering principles and standards/protocols and Traffic monitoring tools for QoS assured network based services and applications viz., Distance Education, IP telephony and Videoconferencing.

Develop a Self-Managed Network Solution

The functions of network measurement and monitoring, intelligent analysis, decision making and automatic implementation of the decision will be realized through this project by C-DAC, Bangalore. Network monitoring and probe tools have been developed. Traffic monitoring and analysis deploying these tools in both LAN and WAN networks are being experimented for demonstration of a self-managed network.

New projects initiated by the Department are: -

Next Generation Networks

Pragmatic Efficient Reliable Internetworking Solution Using Consumer-Centric Omnipresent Ethernet by IIT Bombay, Mumbai: The project envisages development of Next generation Internet design, deploying the technologies of Optical Networking, Carrier Ethernet, and high-speed communication systems.

Mobile IPv6 by ERNET and IISc, Bangalore: 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.

Future IT enabled applications & services

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.

Development of Intelligent Search Engine for Concept Extraction Contextual Data Retrieval” – CDAC Bangalore and IIT Bangalore: The project envisages development of an Intelligent Knowledge backbone that would help academics, including researchers, students, teachers, academic committees, academic institutions, etc.

Multilingualisation of the Internet

Development Implementation of IDN Policies (ABNF & Language Tables) for Registrars and Making IDN Indian
**Languages Compliant by CDAC Pune:** The project is to develop and test all the backend registration processing tools for registration of Domain Names in all the 22 constitutionally recognized 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.

Some of the initiatives of the Department in the area of E-Infrastructure include the following:

**Information Technology Investment Regions (ITIR)**

Information Technology Investment Regions (ITIR) scheme has been notified in the Gazette of India under which each State in India can set up an integrated township for facilitating growth of IT/BPO and Sunrise Industries with world class infrastructure in India.

**Trans Eurasia Information Network –Phase 3 (TEIN3) under EU Co- operation**

Trans Eurasia Information Network – Phase-3 (TEIN3) is being set up under India EU Cooperation on Information Society Technologies (IST) Programme, to link ERNET India with European Research Network GEANT Network in Europe. Presently bandwidth of 175 Mbps connectivity is operational to various academic and R&D institutions to share research data.

**ICT measurement and Indicators**

Reliable data and indicators on the access and use of ICTs 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.

The joint ITU-DIT National seminar on “ICT Measurement and Indicators” was held in New Delhi, on 12-14 May 2009 by the Department.

The seminar provided a forum for national and international experts and stakeholders to discuss ICT indicators and topics important to national policymaking and made suggestions and recommendations to improve the availability of ICT statistics in India. The seminar was attended by more than 70 participants.
Media Lab Asia

Media Lab Asia, a not-for-profit company of the Department is innovating for digital inclusion with an aim to bring the benefits of ICT to daily lives of common man in the area of Education, Empowerment of the disabled, Healthcare & Livelihood generation. It works in collaboration with academic and R&D institutions, industry, NGOs and Governments in this endeavor. Media Lab Asia is also identifying technologies that can be taken to the land for deployment. Through its projects, Media Lab Asia has reached to 1500 locations and is touching the lives of 1 Million people. The major achievements in different areas during the year are as under:

ICT for Healthcare

Development and pilot Implementation of resource healthcare delivery system through web based telemedicine using ICT- e-DHANWANTARI™ : The project focuses on development and implementation of a model for taking telemedicine for addressing primary healthcare with the help of web based telemedicine software (eDhanwanthari). The overall architecture is distributed among 4 Telemedicine Specialty Centers and 8 Telemedicine remote Centers and Data centers in the State of Kerala. Pilot deployment has been done. More than 600 rural patients have already benefited from the tele-consultations. The advanced telemedicine facility was provided to children, TB Chest, Ortho, neuro, and other general patients. EMR of the patients is useful for post consultation and disease pattern analysis.

Development and pilot implementation of resource shared rural health management and information infrastructure using ICT- Health-Asociado™ : Health-Asociado™ envisages empowering health services at grass root level by strengthening the health data collection and information system using handheld devices. A centralized server is used for storing the collected data and its analysis using statistical methods. This also enables automated generation of the work plan based on the data entered by the health workers. The system will cover three Blocks (Vettom, Valavannur and Kulipuram) of Tirur Taluk, Mallapuram, Kerala with 7.8 lakh population. 2.98 lakh persons have already been covered. 30-40% time saving of health workers and other officials have been achieved.
Development of Low cost feature rich terminal and its deployment in multiple applications UNI-TERM™: The telemedicine terminal adds a new dimension to remote diagnosis and patient care. It supports voice and video based communication over broadband IP connections while supporting a broad range of medical devices. A variety of Medical information from devices such as Ultrasound scanners, ECG Machines, Digital Stethoscopes, Digital Microscope, etc., can be accessed either directly or through the Hospital Network and is used for remote consultation. It includes productivity applications such as DICOM Image viewer, Standard image editors, scanner interface and an embedded browser to run browser enabled applications. This terminal can also be modified & used as a ‘Video Surveillance System’. The system has been tested at Medical College, Trivandrum for Telemedicine application.

ICT for Empowerment of Disabled

Content Generation for Capacity Building of Persons with Blindness or Low Vision: The content is being generated in accessible format like e-text, Braille, Daisy, large print and audio for text books for graduate/post graduate level visually impaired students. 321 hours (30 Nos.) of English Audio Daisy Books and 347 hours (30 Nos.) of Hindi Audio Daisy books have been generated for Inclusive Education. 11 books in Hindi and 27 books in English have been converted into e-Text. 10 books have been generated in synthesized voice. 20,000 copies of CDs of these books have been distributed.

SAFA™: SAFA™ (Screen Access for All) is a screen reading software in vernaculars to enable the visually impaired persons to operate PC using speech output support for MS Word applications in windows environment. It has been used by more than 1,000 visually impaired regular users in Hindi and English. A helpline is run to provide support to SAFA users. 18 SAFA training sessions at different organizations have been conducted throughout the country benefiting 215 persons of various age groups. Work is going on to incorporate support for more applications and Indian languages.

A Comprehensive Satellite/Internet based National Network for Education Training and Empowerment of the Disabled: Media Lab Asia, together with ISRO, has set up content creation facility in the area of different disabilities. The content are being telecast through EduSat based channel “Navshikhar” regularly for all stakeholders in disability field. 470 RCI/MSJE recognized Institutions are connected to Navshikhar. Regular transmission of programs is being conducted from Monday to Friday from 10:00 Hrs. to 17:00 Hrs. Additionally an interactive Internet portal “Punabhava.in” is providing all the relevant information in different disability issues. Portal is being regularly updated and is being made accessible as per W3C guidelines.

Sanyog: Sanyog is an alternative and argumentative iconic-based communication system for persons with neuro-motor disorders. Object based iconic communication interface is being enhanced in Bengali, Hindi and English. By object driven icon selection, the system can generate simple sentences in all the three languages. Embedded and the WinCE based version of the system for Windows based PDAs with SMS facility is also being developed. The soft keyboard based version of Sanyog using WinCE is also under development.

Visually impaired women empowerment through Shruti Drishti: The objective of this project is to deploy the Shruti-Drishti (Text to Speech & Text to Braille) software with the associated required hardware along with support and training in 40 special schools for visually impaired women throughout the country. PC’s with accessories and Shruti-Drishti Software have been supplied to the schools benefiting 4000 blind students (including 2314 female blind students) and 80 teachers.

Supply installation and commissioning of computerized Braille transcription system at the blind schools throughout the country: The aim of this project is to address the reading, writing, printing and learning Braille needs of visually impaired persons and fulfil the dearth of content in accessible formats in schools. Computerized Braille Transcription System has been installed in 36 schools where 80 teachers have been trained and around 3000 students have been benefited.
ICT enabled integrated assessment tool for mentally retarded children - Punarjani™: This project aims at providing a web based aid to the teachers for the progress assessment and evaluation of the MR children and analysis of the results. The tool has been installed in 8 schools in the state of Kerala on a pilot basis. It is benefiting around 850 Mentally Retarded students.

ICT for Education

ICT in rural schools in Mizoram to 100 schools in the state- (North-East): The objective of the project is to implement ICT in rural schools of Mizoram and to empower the teachers in Govt. Schools in rural areas of Mizoram with Computer Aided Teaching facility to enhance the concept clarity and interest in the teaching learning process. 1400 capsules on subjects of Physics, Chemistry, Biology, including practicals & Maths for classes XI and XII, and Science & Technology, History, Civics, Geography, and Maths for Classes VII to X are being provided to 100 schools. 13000 teachers & students are expected to be benefited.

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 is being prepared. The system comprising of Alphabet Tracing – stroke-by-stroke and provides its pronunciation. Chapters are based on concept and dramatized through visual audio and video/animation. Exhaustive practice and Exercises are also incorporated, so as to enable the children fun learning including rhymes and Story Telling. It offers step-by-step guidance for every concept. The content can be delivered through portal and mobiles, also packaged on Multimedia Card & CD’s. The alpha version is available on Web & WAP. The framework of the system is ready.

Design, development and deployment of mobile and internet based math prep guide application: The math prep guide software enables students to understand and solve the difficult Maths 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 on the wireless mobile platform in a scientific manner to take on the examination. The content can be delivered through portal, mobiles, Multimedia Card & CD’s. The alpha version is available on Web & WAP. The framework of the system is ready.

ICT for Livelihood Generation

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 has been sponsored by National Agricultural Innovation Project of ICAR, Ministry of Agriculture, Govt. of India to the consortium led by Media Lab Asia with National Institute of Rural Development, Hyderabad, Mudra Institute of Communication, Ahmedabad and Acharya N.G. Ranga Agricultural University, Hyderabad as partners. Experience sharing workshop, involving the stake holders such as 118 eminent scholars from 96 organisations has been organized. Field study of selected initiatives has been initiated.

Establishment of Chanderi weavers ICT resource centre in Chanderi, Madhya Pradesh

The project aims at providing various livelihood and soft skills through ICT based empowerment and facilitation of textile weavers in Chanderi community. The following activities are carried out:

- **Digital Preservation**: - CAD software tool has been deployed and 80+ traditional weaving designs digitized and preserved. In addition more than 125 apparel designs have been made.
- **ICT based Training**: - In design making at Weaving Level, Cloth Design, Apparel Design and Textile Design & Finished Product Design, 120 persons including women’s and Childs have already been trained and training is also going on for 500 more students in Vocational skills.
- **Marketing by use of ICT**: - For marketing of local community products and to create Exclusive Outlet of the finished products e-Commerce enabled website is being developed to sell Chanderi products through Internet. Finished
products created through the Center will be showcased at Raja Rani Mahal, Chanderi.

**Chanderi Integrated ICT for development programme (CIIDP):** MLAsia is also doing ICT in Healthcare, Education and Livelihood generation based activities with deployment of its technologies. Out of various components, the progress made in 2 important areas of intervention is as follows:

- **ICT & Social Entrepreneurship Programme:** Training is going on for 50 entrepreneurs in ICT social enterprises such as Block printing, embroidery & tailoring and design development component, Jacquard block printing machine usage etc.

- **Digital Tourism Promotion Programme:** Local Community Portal is being created with Dynamic site having social-cultural-historical-information in digitized form. Mobile based information is being developed so that pre tour & on tour information can be provided on mobile phones to assist tourists.

**Interactive Portal for Livelihood Generation of Migrant Workers:** The migrant worker’s portal has been developed by MLAsia as a project funded by Cybermate Infotech Limited (CIL), Secunderabad. This portal aims at computerizing the process of livelihood generation and training of the unorganized sector workers and fulfil the requirement of the client (contractor/ recruiters/ Household) through Front Level Agencies such as NGOs, SHGs, Hardware Shop owners & PCO operators, etc. The System registers a worker and a client online and allows them to maintain their account online. The portal also provides a platform for financial and vocational related services.

- **eGalla™:** eGalla™ is focused and designed for the lower mid-segment of the Indian retail market. eGalla™ will focus on how to provide the opportunity and the necessary innovative tools / devices which will empower shopkeepers to increase their customer base and profit margins. It can also be utilized as a very effective tool for aggregation of order for pharma products, commodities and merchandise of general stores, etc., by a godown / depot / sales office. eGalla™ has been tested in shops in Mumbai with the hardware and software. A database for 7000 commodities has been compiled. Mobile interface with the system is also developed. The technology is ready for transfer and large scale deployment is being organised.

- **Development of Cost effective solution for community radio station (CRS) and deployment for livelihood generation:** 5 CRSs at following five State Agriculture Universities have been installed and commissioned:
  
  i. Narendra Dev University of Agriculture & Technology – Faizabad (UP)
  ii. Birsa Agriculture University – Ranchi (Jharkhand)
  iii. Tamil Nadu Agriculture University – Coimbatore (TN)
  iv. CCS Haryana Agriculture University – Hisar (Haryana)
  v. Indira Gandhi Krishi Vishwavidyalaya – Raipur (CG)

  1000 hours of content in field Agriculture & Allied Sciences; Women & Child Empowerment; Health & Hygiene; Livelihood generation; Career Counseling & Entertainment has been created and is being broadcasted through RBS (Radio Broadcasting Software) developed under the project.

  Training to 125 persons has been imparted to make them radio professionals (radio jockey). Two National Level Workshops on capacity building for CRS were organized under this project. These workshops were attended by more than 250 agricultural experts from SAUs & KVKs.

- **Investigating eSagu™ based multimodal services to roll out integrated agri services programme:** The project envisaged by Media Lab Asia was to investigate eSagu-based multimodal agri-service platform to facilitate the implementation of Integrated Agri-Service Program (IASP). eSagu™ system has been operationalized at four centers by collecting subscription fees. A tripartite MOU (MLAsia, IIIT & Department of Rural Development, Govt of AP) has been signed for providing horticulture advices under NREGS programme. The Prototype of software for IASP has been developed. Crop Manuals for 5 Crops (Cotton, Chilly, Paddy, Mango, Citrus) are ready and training manuals have been prepared for - Mobile Camera and
Digital Camera usage for coordinators, Operation Manual for Agriculture Scientists and Coordinators.

Chetana – Women Empowerment & Child Development:
The project has been taken up under ‘Women Empowerment and Development of SC/ST and is conceptualized with an appreciation of the important and innovative role that IT can play in the development of communities. The project considers community as a producer rather than a consumer of content. It involves rural communities in producing “locally relevant” content using locally available resources & facilities, sharing it through local cable TV, laptop screenings, Ashwini Platform etc. Over 140 video modules have been produced so far. The project has set up Chetana Community TV Centers in 8 villages in two districts of Andhra Pradesh. An interactive portal www.projectchetnana.com has been created to disseminate the information to more people at large.

Technology Development for Indian Languages Programme (TDIL)

Indian Language Technologies-Overview

Language technology development in India has today reached a stage, where it has a potential to generate utility applications, benefiting the masses, which will enable people to access and use IT solutions in their common language. The Department has further encouraged users and developers of Language Technology solutions by providing certain basic information processing tools like fonts, open office, e-mail client, internet browser, dictionary, conversion utilities, etc., free of cost, which will motivate users to use them to solve their basic problems and help developers to build advanced solutions. This will definitely boost up and leapfrog Indian language technology development and their deployment.

The world is in the midst of a technological revolution nucleated around Information and Communication Technology (ICT). Advances in Human Language Technology will offer nearly universal access to information and services for more and more people in their own language. India is a multilingual country with 22 official languages and 10 scripts. It is therefore essential that tools for information processing in local languages are developed and be made available for wider proliferation of ICT to benefit the people at large and thus paving the way towards “Digital Unite and Knowledge for all”.

Focus Areas

Development of technologies in multilingual computing areas involves intensive indigenous R&D efforts due to variety of Indian languages.

The focus areas of the TDIL 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 2009-10

- National Roll-Out Plan: Software Tools and Fonts for 6 Indian Languages viz. Bengali, Manipuri, Santhali, Konkani, Sindhi and Kashmiri languages has been released in public domain in Sep 2009. CDs including the 16 released earlier viz., Hindi, Tamil, Telugu, Assamese, Kannada, Malayalam, Marathi, Oriya, Punjabi, Urdu, Gujarati, Sanskrit, Bodo, Dogri Nepali and Maithili languages, thus completing the 22 constitutionally recognised Indian languages. These software and tools are freely downloadable from the website http://www.ldc.gov.in.

- Consortium Mode Projects: Alpha versions of English to Indian Languages Machine Translation, Cross-lingual Information Access, Optical Character Recognition and On-line Handwriting Recognition systems are being developed for few Indian Languages through six consortium mode projects.

- UNICODE: Unicode Standard is a 16-bit storage encoding standard which is being used internationally by the Industry for the development of Multilingual Software. The Department is the voting member of the Unicode Consortium to ensure the adequate representation of Indic scripts in the Unicode Standards. DIT finalized the
changes in the Unicode Standard and majority of changes have been accepted and incorporated in Unicode Standards version 5.1. Ten additional Characters has been recommended for inclusion in the next version of UNICODE for representation of Kashmiri Language in Devanagari and Perso-arabic script.

**Web Internationalisation, Standardization and World Wide Web Consortium (W3C) India Initiative:** Most of the future Web Applications would be Internet / Intranet based. Adoption of World-Wide Web Consortium (W3C) standards in Indian languages would enable e-content / dynamic applications and services to be seamlessly accessed independent of devices, platforms and geographical locations. In the initial phase, Web Internationalization for Indian languages would be carried out in a phased manner and in Devanagari to begin with. Some of the standards which have been taken up in the first phase are:
1. Script Grammar for 10 Indian languages.
2. Common locale data repository for major Indian languages.
3. Language tag representation for all Indian Languages.

**Development of Pronunciation Lexicon in Indian languages**

Consortium mode project for the development of Pronunciation Lexicons in Indian Languages is being initiated. The pronunciation lexicon would be an important resource for development of Speech processing technologies in Indian languages.

**Human Resource Development in Indian Languages**

Under this initiative M.Tech in Computational Linguistics/ Knowledge Engineering/ Language technology and PG Diploma in Language Technology courses is being run at six premier universities/institutions to fulfill increasing demand of trained manpower in the area of Natural Language Processing. About 30 students are expected to be trained in the area of Natural Language Processing (NLP).

**Information Dissemination**

**TDIL Web-site:** The TDIL website (http://tdil.mit.gov.in) is bi-lingual UNICODE compliant (English and Hindi). It provides access to Indian scriptures, standards (Indian scripts, keyboard layout, font layout, etc), articles and reviews. The website also provides downloadable software and tools in 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.

**Convergence Communications & Broadband Technologies**

The programme is aimed at supporting and developing capability in R&D in Convergence Communications, Broadband technologies and mission critical strategic areas. Under the programme financial support is provided to projects/schemes for undertaking research, development and study in the areas of Convergence, Communication, Broadband technologies and Strategic electronics. A number of academic institutions, industries user organizations and research labs spread all over the country have been involved in the programme.

**Achievements during 2009-10**

Major projects completed during the year included development of TETRA (TErrestrial Trunked RAdio) based secure communication system, Ultra Wide Band Transceiver, SIP Telephone, Communication system for coal mine, video messaging on mobile, RF shield for mobile handset and WSN for agriculture monitoring, Wi-Max for Test Bed, Autonomous vertical profiler, Autonomous Buoy system and RF bug detector.

Development projects are being implemented in emerging areas such as Next Generation Wireless Communication Systems, Wi-Max, Wireless Sensor Network, Software Defined Radio, Smart Antenna,
Broadband on power lines and on Cable TV network, Resilient Packet Ring Technologies, Wi-Fi Broadband backbone for NE region, UWB radio, WiMAX QoS networks, etc.

During the year new projects in the areas of Tetra Wi-Max base station, mesh networks, Wireless 4G communication, Wireless Sensor Networks for underwater and gas detection, Digital Communication Network, Broadband Technologies, BPL Modem, Antenna, IP based technologies, SDR Cognitive Radio, Converged Network, FMC & mobile computing, ICT applications for strategic needs in civil and defence sector, navigational aids on Land/ Air/ Underwater communications and disaster management are planned for initiation.

**Technology Development Council (TDC)**

The TDC programme supports technology development in the emerging areas of Information Technology, Free / Open Source Software, e-Commerce, IT applications in the Industrial sectors, Bio-informatics and IPR promotion. Major achievements in various areas are summarized below:

**National Resource Centre for Free & Open Source Software (NRCFOSS)**

The NRCFOSS (National Resource Centre for Free & Open Source Software) project initiated by the Department promotes FOSS in India with the twin objectives of helping to bridge the digital divide and strengthening India’s software/IT industry. NRCFOSS Phase I (2005-2009) was carried out by C-DAC and the AU-KBC Research Centre, Anna University Chennai. Several milestones have been achieved out of this project including our own GNU/Linux Operating system distribution “Bharat Operating System Solutions – BOSS” with Indian languages support, National Help-Desk for FOSS, National FOSS Portal and HR Development in FOSS.

**Bharat Operating System Solutions (BOSS)**

- NRCFOSS Centre has brought out the enhanced version of Debian based GNU/ Linux localised desktop distribution BOSS version 3.1 that supports 18 Indian languages - Assamese, Bengali, Bodo, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Oriya, Punjabi, Sanskrit, Tamil, Telegu, Urdu and comes with BharateeyaaOO office package. BOSS 3.1 comes with features like support for integrating mobile Internet devices, multimedia support, cameras and scanners, USB devices, on-line dictionary, Internet tools etc. BOSS GNU/ Linux comes with GPL license and nominal support/service fee is charged. BOSS can be downloaded for installation from http:// www.bosslinux.in. All versions of BOSS released so far are available for free download.

- BOSS GNU/ Linux Advanced Server has been brought out with enhanced security features such as NMAP utility for network exploration or security auditing and SNORT utility for network intrusion detection and prevention. BOSS Linux Advanced Server has been certified by Linux Foundation, USA for LSB 3.2 compliance.

- NRCFOSS has made extensive efforts for adoption of BOSS in the country by way of creating awareness through training/workshops and providing handholding support resulting in BOSS proliferation in many states. BOSS has contributed by providing a large number of people with affordable legal software in their own language that they can use on their PCs.

- NRCFOSS has also brought out an educational variant of BOSS named as EduBOSS targeted towards school children. EduBOSS is packed with bundled applications and learning tools with demo in Mathematics, Physics, Chemistry, Geography including World map and Planetarium besides educational games for children. EduBOSS is being implemented on a pilot basis in some schools in Kerala through the State’s IT@Schools programme. EduBOSS is expected to popularize FOSS tools among children and students.

**NRCFOSS Portal**

NRCFOSS portal is operational with domain name http://www.nrcfoss.org.in. The portal has been developed using open source tools and components, like Mambo, MySQL and Apache web server. The
portal reflects all the activities and events of NRCFOSS. It also has a repository of organizations working in FOSS, FOSS user groups in India, links to FOSS portals & websites and FOSS localization projects. Detailed information about products and publications from NRCFOSS is available in the portal along with a list of available Linux drivers for various devices.

NRCFOSS Help-Desk

Qualitative Support is critical to the success of FOSS deployment and adoption. National Help-Desk facility has been set up for providing support to users on phone, (National HELPLINE: 18004250455), email (bosshelp@mit.gov.in) and on-line support (http://www.boss-linux.in). This support is accessible through a network of NRCFOSS/CDAC Centres spread across the country.

NRCFOSS Phase II Project

Project NRCFOSS Phase II was launched in May 2009 with a duration of three years in consortium mode led by C-DAC Chennai and executed by C-DAC (Chennai, Mumbai, Hyderabad, Delhi), AUKBC Research Centre Chennai and IIT (Bombay, Madras) with the following objectives:

- R&D on specific FOSS technologies & solutions such as operating systems, compilers, SaaS (Software as a Service), interoperability, etc.
- FOSS technology development, deployment, adoption, assessment, etc.
- Education and certification in FOSS at the university and professional levels.
- Creation of FOSS repositories/Knowledge Banks and databases for educational, training and research purposes, initially in the areas of education, scientific applications, mobile platforms and e-governance.
- Setting up of Centre of Excellence for Mobile Internet Devices.

Open Source Walk-in e-learning Solutions laboratory

An Open Source Walk-in e-learning Solutions laboratory with focus on standards compliance and offering certification course in Open Source Software has been established at CDAC Hyderabad as part of NRCFOSS Phase II. A shell script has been developed for easy installation of various e-learning and content management systems on BOSS.

GCC Resource Centre

GCC (GNU Compiler Collection) Resource Centre, IIT Bombay is working on improvising upon generic data flow analyzer (GDFA), machine descriptions and implementation of a code generator. The Centre is also conducting workshops on GCC on regular basis.

Human Resource Development

NRCFOSS has initiated various measures to augment the availability of FOSS aware manpower. The steps include introduction of FOSS in formal engineering curriculum, use of FOSS alternatives in the educational arena, support for non-formal training in FOSS through certification/validation programmes and FOSS based student projects. FOSS subjects have been introduced as core paper in Anna University Coimbatore and as electives in various other universities and autonomous institutions. Other colleges/Universities are in pipeline for introduction of FOSS electives in curriculum.

FOSS Web Design engineer (FWDE) Certification Examination was developed and launched at AUKBC Research Centre with a trial run of the system.

Emerging Areas of IT

Ubiquitous Computing

The Research Initiative in Ubiquitous Computing (UbiComp) and enabling technologies at C-DAC and select academic institutions has progressed. Key achievements in the area include:

- “Pollution Monitoring and Evaluation using Sensor based Wireless Mesh Network for the protection of Public spaces” at IIM Kolkata. The target mesh architecture with GSM routers has been designed, specific field trials and environmental tests have been conducted. A proof of concept system for
the temperature and humidity measurements using lab scale wireless sensor networks has been developed and field trials completed.

- "Design and Development of Ubiquitous Computing Test Bed and development of Application Software" at IISc Bangalore. A standard configuration of the UC Test Bed has been developed and is under testing with various applications.

- The Department established Ubiquitous Computing Research Centres at three centres of C-DAC at Hyderabad, Chennai and Bangalore. The centers are working on proof-of-concept applications in the areas of Dry-land Agriculture, e-learning, intelligent rooms, etc. A workshop under the name ‘Ubicomp India – 2010’ was organized at Chennai in January 2010. The achievements of the centers in different areas including sensor nodes, applications using WSN in the areas of agriculture, intrusion detection and vehicle parking, U-Learning applications and Grid-Ubiquitous (GrUb) computing, security framework addressing privacy and trust, context-aware computing, health applications, etc., were showcased.

- "Wireless Sensor Network for Real-Time Landslide Monitoring" at Amrita University, Kollam, Kerala progressed. The site preparation is under progress for installing sensors in the hilly landslide prone areas.

Perception Engineering Programme

Perception Engineering is an emerging interdisciplinary field of research where technology developments are motivated by human perception based models and algorithms. The Department initiated a research project in the area of perception engineering involving six institutions, i.e. CEERI-Pilani, IIT-Delhi, IIT-Bombay, Jadavpur University – Kolkata, IIT- Hyderabad and C-DAC- Kolkata.

A workshop at NBRC, Gurgaon and IIT-Delhi was organised during December 2009. Approach papers on Perceptual Video Conferencing, Perceptual Robotics Models and Perceptual mechanism in Olfaction and Gustatory experiments/testing with respect to tastes and smells etc., were presented at the workshop.

Virtual Observatory – India

The Virtual Observatory – India, Project of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune was completed during the year. This project has generated Virtual Observatory related data in the area of astronomy and astrophysics. The project incorporated new ideas for data representation and visualization for astronomical studies. Several software tools and data mining applications have been developed to facilitate the same.

Multi Application Smart Cards

The project on development of standards and reference implementation of associated hardware and software for Smart Card readers and terminals at IIT, Kanpur has been progressed. The specifications have been finalized and a prototype reader/ terminal for contact and contact less Smart Cards has been developed. The prototype has been tested on a few Smart Card Operating System for Transport Applications (SCOSTA).

The project on development of next generation operating system for Smart Card based on SCOSTA has been progressed. Contact less Smart Card Interface on SCOSTA has been developed. PKI is being implemented based on RSA Cryptography standard PKCS v2.1. The system has been tested on a few SCOSTA applications.

Scientific Computing & Nurturing New R&D Areas

Projects in the area of Grid computing have been progressed. Research issues in Grid Virtualization, Semantic/ knowledge Grid, Grid Scheduling and Grid resource monitoring are being addressed under the project on “Advanced Computing Research and Education” at the Madras Institute of Technology, Anna University, Chennai. A Resource Broker incorporating SLA monitoring has been developed and tested in an application.
The project on "Coupled Climate Models on Grids" at IISc, Bangalore has been progressed. Different components of coupled climate system, namely the atmosphere, ocean, land surface, and sea-ice have been parallelized and implemented on a local grid consisting of multiple clusters. A model for implementation of the same on Garuda Grid is being designed.

Technology Incubation and Development of Entrepreneurs (TIDE) scheme

With a view to enable young entrepreneurs to initiate technology start up companies for commercial exploitation of know-how in the area of Electronics and IT, the Department had initiated a Technological Incubation and Development of Entrepreneurs (TIDE) scheme at institutions of higher learning. The scheme provides financial support for nurturing techno-entrepreneurs as well as for strengthening the Technology Incubation Centre. Under the scheme, 14 technology incubation centers have been supported so far.

The expansion of the TIDE scheme has been approved to include 12 more TIDE centres and 2 virtual incubation centres.

National RFID Programme

The National RFID Programme is being implemented jointly by IIT Kanpur, C-DAC, Noida and SAMEER Mumbai. One of the deliverables of the programme was to display an RFID enabled Postal Bag Tracking System for the Department of Posts.

The RFID based parcel tracking system is presently running at Delhi, Mumbai and Chennai centers of Department of Posts.

Digital Preservation

A project has been initiated at C-DAC, Pune to develop tools for digital preservation management of Heritage Archives for the museums.

Bio-informatics

Three Centres of Excellence for Bioinformatics Research and training were set up at Pondicherry University, Pune University, Institute of Bioinformatics and Biotechnology, Bangalore. These centres have initiated research in areas of protein structure prediction, modelling of folding mechanism of proteins, development of databases for immune epitopes for diseases such as Dengue, Sars, HIV etc. In addition, these centers are generating relevant skill sets by conducting modular courses and workshops/ seminars to serve the needs of Bioinformatics industry.

A Project Bioinformatics Resource and Application Facility is implemented at CDAC, Pune wherein open source Bioinformatics applications are grid-enabled and hosted on Garuda Grid for use by industry, academia as well as Research community. A web portal (GYPSY) has been developed for accessing the Bioinformatics Applications as part of BRAF. Various Bioinformatics software tools and database developed through DIT sponsored projects at various agencies (IIT Delhi, Kerala University, IBAB Bangalore, Anna University) such as (i) Eco_MP: Genome scale Metabolic Pathway database for E-Coli, (ii) REC–DB: Re-annotated Ecoli database, (iii) Software to facilitate information collection for genes, (iv) A prostrate specific mammalian gene expression database, (v) A Web-enabled Protein Structure Prediction Software with application in drug discovery etc., are hosted in the national repository Bioinformatics Resource and Application Facility, CDAC for free access.

Projects are progressing in the North East region at IIT Guwahati, NEHU Shillong and Assam Agricultural University for creating biodiversity inventory of medicinal plants. A project on Tea Bioinformatics at Tea Research Association, Toklai, Jorhat has been initiated.

Five centres are operational under Agri-Bioinformatics Promotion Programme. Research initiatives are being implemented by the centres in areas such as (i) Development of algorithm for gene annotation and isolation of genes in coconut ecosystem (ii) Establishment of a database of DNA-based markers in wheat (iii) Bioinformatics approaches for identification and characterization of Resistant/Avirulence gene in crop genome.
A mega project Development of a Computational Workflow for High throughput Genome Analysis project is supported at CDAC Pune with the objective to build a high-throughput drug discovery pipeline using workflow environment. For this the SRS / Design of workflow and Design of protocol to study from genome to pathways using a case study has been completed.

**Industrial Electronics Applications Development**

**Intelligent Transportation System (ITS):** A national collaborative programme on Intelligent Transportation System (ITS) covering various technology modules of this technology has been formally launched from October, 2009. An Expert Group has already identified 8 technology modules to be developed, as per an agreed methodology, by IIT-Bombay, IIT-Madras, IIM-Kolkata and C-DAC, Thiruvananthapuram who will play the nodal role. Initial design activities on all the 8 modules have already started.

**Automation Systems Technology Centre (ASTeC):** The national collaborative programme under the project called Automation Systems Technology Centre (ASTeC) has completed two projects. These are Multiloop Controllers and Color Sensing Systems which could be used in many process control industries. Already action for commercial manufacturing of these products has been initiated. Various other development on embedded controllers, open SCADA, etc., have been progressed further. A national workshop has been recently conducted at Chennai to disseminate the outcome of this project and to collect further data from industries and academics for the benefit of the on-going activities.

**National Mission on Power Electronics Technology (NaMPET):** The programme is scheduled to be completed on 31st March, 2010. During 2009-10, major field application projects have been progressed to commissioning and demonstration stage. The STATCOM project for power quality improvement is being demonstrated at IT Park, Thiruvananthapuram. The hardware system to connect renewable energy sources like wind, solar and biomass to the grid is being tested in West Bengal. The projects for Railway traction are now under final assembly which will be taken up for installation before March, 2010. Through this programme, an attempt has been made to enhance design expertise of critical electronics hardware systems for industrial applications specifically for energy related equipment. R&D infrastructure has been established or upgraded at 11 engineering institutes of repute and a networking mechanism between academics, industry and R&D scientists involved in this area has been established.

**Intellectual Property Rights (IPR) Promotion**

Facilitation services are being provided by filing Patents (including International Patents), Copyrights, Designs and Trademarks in respect of creativities / innovations of the Department’s scientific societies and grantees. About 410 IPRs that include 127 Patents, 227 software copyrights, 5 designs and 59 Trademarks have been filed by the Department till date, of which 250 have been obtained. During the year 15 Patents, 9 software copyrights and 8 trademarks were filed.

A scheme to Support International Patent Protection in Electronics & IT by SMEs and Technology Start-up was initiated earlier. 37 cases have been supported under the scheme till date of which 18 were supported in the current financial year.


A framework consisting of a semi-automatic Traditional Knowledge acquisition and machine-learning system for construction of ontology for design and implementation of a semantic search on tribal Medicinal system has been developed at MNNIT, Allahabad. Integration of the same with the database of Santhali Medicinal system is progressing.

Anna University, Coimbatore has developed a software package to find out Verbal similarity between the Trademarks based on phonological analogies, pronunciation, spelling and conceptual closeness.
Web enabling of the same, with testing on last three years Indian trademark database, is progressing.

Extension of text based plagiarism detection Engine to detect source-code plagiarism is progressing at Amrita University, Coimbatore.

A project has been initiated at Vels University, Chennai, to create a repository of student projects of 20 Engineering colleges and identify patentable inventions and usage thereof.

Prior Art Search Centers at Pune and Delhi are being set up to develop expertise and facilitate inventors in ICT sector in prior art search.

**Free & Open Source Software (FOSS) Initiative**

The National Resource Center for Free/Open Source Software (NRCFOSS) has been established to provide design, development and support services to the FOSS community in the country and also strengthen the global FOSS ecosystem by contributing to the open source pool.

FOSS initiatives by the Department has resulted in our own GNU/Linux Operating System distribution BOSS with wide Indian languages support (desktop as well as server variants); network of BOSS Support Centres spread across India; creation of FOSS trained community of 2500 students and 300 teachers and introduction of FOSS electives in select Engineering colleges/universities.

**Medical Electronics & Telemedicine**

**6 MV Integrated Medical Linac for Cancer Treatment**

In the first phase of this activity for development and deployment of medical Linear Accelerator (LINAC), two machines have been commissioned- one at Mahatma Gandhi Institute of Sciences (MGIMS), Wardha and the other at Regional Cancer Centre (RCC), Adyar. These two machines are regularly used for treatment of cancer patients. The second phase of this activity for developing four more machines is in progress and the first machine from this phase is likely to be available by October 2010.

**Radiation Field Analyser**

The Department has also initiated projects to develop LINAC - related equipment. One such project is the development of the Computer controlled Radiation Field Analyzer (RFA) at the Variable Energy Cyclotron Centre (VECC), Department of Atomic Energy, Kolkata. RFA is used as an accessory of LINAC for Quality Assurance. This equipment is primarily used for measuring and calibrating dose distribution for radiation therapy treatment of cancer patient with LINAC.

Two laboratory prototypes of the RFA have been developed and field-tested in the hospitals having Medical LINAC. The technical documentation has been completed.

**Pulse Oximeter**

Pulse Oximeter is a non-invasive device to measure oxygen saturation, which is the percentage of hemoglobin saturated with oxygen. The project for the development of pulse oximeter has been completed and the prototypes fabricated have been clinically tested at various hospitals in the country. The technology of this product has been transferred to M/s Rajasthan Electronics Instruments Ltd., Jaipur for commercialization.

**Medical Image Anlayser for Cervical Cancer – CerviSCAN**

Under Indo-Swedish collaboration, a project on Electronic Health Record (EHR) was initiated last year. During this year a project on development of Medical image analysis for cervical cancer has been initiated. The objective of the project is to develop an efficient, reliable and cost effective Medical Image Analyzing system for analyzing and investigating the cervical smear images for early detection of cervical cancer. The end product can be used as an automated system in population screening.

**Telemedicine pilot projects**

Under the telemedicine pilot projects initiated by the Department, several telemedicine referral centers and nodal centers have been established in Tripura,
Punjab, Himachal Pradesh, Tamil Nadu and West Bengal. The projects at Tripura, Himachal Pradesh, Tamil Nadu and West Bengal have been completed. These telemedicine centers are being used for providing tele-consultation facilities to patients at remote and rural areas.

**Initiatives in the North Eastern region**

The following projects were initiated in the northeastern region:

- Deployment of Telemedicine at remote CHC/PHC in Tripura

**Electronics Components and Materials Development Programme**

Electronic materials and components are critical backbone of electronic hardware, Information Technology (IT) and telecommunication equipments. Innovation of advanced materials 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, technologies leading to components or equipments. EMDP also focuses the environmental impact during manufacturing, energy saving aspects of equipment operations and electronic waste management. Thrust areas include photovoltaic, energy storage, phosphor, information storage materials, chip components (resistors, capacitors, inductors), sensors materials, electronics device packaging, lead free glass, paste, etc.

The following ongoing projects were progressed during the year: development of multi-layer coatings of (GeTe, SbTe) and metal films for high density optical storage devices for the end user industry, lead free thick film using RuO₂ based nano size complex materials for thermal sensors, development of liquid crystalline polymers such as polysulfones for application in electronics, lead free X-ray absorbing materials, developing low cost, optically active polymers materials for information storage, using polycarbonate (PC) based blends and composites for industry use, cost effective processing technology for recycling and reusing of electronic waste to recover the valuable metals and to reduce the environmental hazards caused by such waste, metal oxide nanostructures based hybrids for potential application as energy conversion devices at advanced sensors and energy systems, p-type ZnO thin films for application of electronic device, metal-insulator/polymer nanocomposites for high-permeability GHz-frequency inductors, Tunelling Magneto Resistance (TMR) material and system for high density data storage technology and spintronic devices, nano NTC material synthesis and development of chip in glass as fast response thermal sensors.

During the year, following new projects have been evolved with financial support by the Department:

- Preparation of Carbon Aerogel and Development of Aerogel capacitors for Electronic Applications at C-MET, Thrissur.
- Development of Concentrator based Photo Voltaic Systems, C-MET, Hyderabad.
- Development of Piezo-ceramic Multilayer actuator for automobile fuel injection system at C-MET, Thrissur.
- Microbial degradation of the electronics wastes: A green chemistry approach at University of Pune and C-MET, Pune.
- Planar and Non-planar feeds to the multi-layer Dielectric Resonator Antenna, IIT Kharagpur.
- Design & Development of Piezoelctric Multilayer Actuator for MEMS based Micro valve at C-MET, Thrissur.
- Fabrication of resistive switching elements based on oxides as a basic building block of Resistive RAM, S.N. Bose National Centre for Basic Science, Kolkata.
- Solid Electrolyte based Gas sensors, Dept. of Instrumentation, IISc, Bangalore.
- Synthesis of TiO₂ nanomaterials for application in Electronics, at C-MET, Pune.
- Synthesis and Development of Broadband EMI shielding materials using Magneto-dielectric
Nanoparticles, Department of Physics, Tejpur University, Assam.

Microelectronics and Nanotechnology Development Programme

Nanotechnology and Microelectronics are the core areas of IT and electronics and strategically very important with applications in all spheres of human life.

Microelectronics

The thrust of the Microelectronics Programme has been to develop R&D capability to acquire competence and to use it as catalyst and resource base for development of Microelectronics sector in the country.

In addition to the ongoing R&D projects, two new projects have been initiated in this year. Following are some of the achievements this year.

New Projects

(i) “Development of Advanced Processing Capabilities in LTCC” at C-MET, Pune: A project has been initiated jointly with National Programme on Micro and Smart Systems (NP-MASS) to develop capability for handling advanced Low Temperature Co-fired Ceramic (LTCC) applications such as microfluidics, 3D HF circuits, microsensor packaging, etc.

(ii) “Development of MEMS based Integrated Micro Gas Sensor for VOC and Pollutant Gases” at CEERI, Pilani: A project has been initiated at CEERI, Pilani for development of solid-state gas sensors for Volatile Organic Compounds (VOCs) and pollutant gases using Micromachining technology.

Design & Development

Analog Mixed Signal Domain

In order to develop capability for Analog Mixed Signal Design, some projects were initiated in this area earlier and some of research results in these projects are as follows:

- Two chips for distortion compensated active-RC filters incorporating the “assisted opamp technique” have been designed, fabricated and characterized. These chips are relevant for high-speed communication systems.
- Two high performance delta-sigma analog to digital converters (ADC) were designed and fabricated. These converters incorporate novel techniques for reducing power dissipation. The chips were designed and fabricated in a 0.18um CMOS process.
- A low noise amplifying mixer has been designed and fabricated using 130nm CMOS RF technology and Verilog RTL of the digital baseband has been designed and fabricated and is being tested on a Field Programmable Gate Array platform.
- A 10-bit DAC using current-steering architecture has been designed, fabricated using 0.35-micron technology and characterized. This chip would be used as part of the signal conditioning circuit for the pressure sensor being developed.

Digital Programmable Hearing Aid (DPHA)

- An Application Specific-Integrated Circuit (ASIC) based DPHA design has been completed under the project on the development, fabrication and productionization of ASIC based Digital Programmable Hearing Aid (DPHA) and its field deployment. The technologies and foundries were finalized for fabrication of the ASIC. A shuttle fabrication run of the ASIC is now scheduled in the near future.

Reconfigurable Computing Systems

Recognizing the importance of Reconfigurable Computing Systems, some projects were initiated earlier for capacity building in this area. Some results in these projects are as follows:-

- A Comprehensive methodology for Real-Time Reconfigurable system has been developed for software defined radios for wireless application.
- An Architecture of Reconfigurable Application Specific Instruction-set Processor (RASIP) for Software Defined Radios has been designed and some blocks of CDMA and GSM have been implemented in this design.
Cooling Techniques for chips

- A synthetic jet based assembly has been designed, fabricated and characterized for cooling of electronic chips. A patent has been filed for this design.

Patents/ Copyrights filed

- Low Power Continuous-time Delta-Sigma Converters- Indian patent.
- Method and Apparatus for Low Power Continuous-time Delta Sigma Modulation- Indian patent.
- A synthetic jet actuator and a semiconductor module comprising the same- Indian patent.
- A method and system-on-chip fabric- Indian patent.
- A software package for Thermal-ware Placement and Routing for Standard Cells - Indian Copyright.

Publications

More than 37 papers have been published/presented in Journals/National/International conferences/workshops/seminars.

Nanotechnology

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

Capacity Building

The following have been achieved in the Indian Nanoelectronics Users Programme (INUP): -
- Two workshops on “Nanofabrication Technologies” one each at IIT Bombay and IISc, Bengaluru were organized. More than 300 participants from all over India participated in the workshops.
- About 275 researchers have been trained on nanotechnologies at different levels at IIT Bombay and IISc, Bangalore.
- 24 R&D projects from various institutions across India have been identified/undertaken by external researchers from all over the country at IIT Bombay and IISc Bengaluru.

Nanoelectronics Infrastructure

Establishment of a Nanoelectronics Centre at IISc Bengaluru housing nanofabrication and characterization systems for nanoelectronics capacity building in the country through technology development and generation of expertise is nearing completion. This facility is available for use by researchers across the country. A nanoelectronics center is already made operational at IIT Bombay.

Nanoelectronics Research

Some of the results are as follows:-
- Development of prototypes of nanocrystalline silicon MEMS pressure sensors has been taken up based on the technology developed earlier.
- A Novel process flow for realization of a highly sensitive nano-particle based piezo-resistive polymer composite cantilevers has been realized at sub 100°C process temperature. Using this technology, a laboratory prototype has been developed for detection of explosive molecules.
- A Technology has been developed for sensing cardiac markers such as myoglobin using nano-mechanical cantilevers. Prototypes are being developed for applications involving cardiac monitoring in hospitals.
- A novel Tunnel FET structure called the Sandwich Tunnel Barrier Field Effect Transistor (STBFET) has been developed which overcomes the fundamental sub-threshold scaling limits with conventional CMOS devices. This is useful for future scaling of CMOS supply voltages to below 0.5 V for ultra low power applications.
- A nano-particle based accelerometer has been realized that can measure acceleration levels down to a few mG values.
- A Non linear optics system for generating laser induced periodic structures for various passive components, deflectors, wavelength filters, couplers, mode converters has been developed and is being commissioned.
A microstereolithography system for rapid prototyping of 3D objects has been built. Studies have been conducted on preparation of polymer samples using this technique.

Laboratory prototypes have been developed for Tin oxide based gas sensors including a micro-heater and ASIC for controlling the sensor operating temperature.

An Ultrasonic Nozzle based Spraying System has been developed for the growth of nanoparticles and nano structured thin films. This system has been used for the growth of SnO₂ nanoparticles upto 5 nm.

Quantum Dots of semi-conducting materials like CdS and CdSSe have been grown in silica glass matrix and using these Quantum Dots, 475 nm and 575 nm optical cut off filters have been developed which have various applications such as for Space and Railways.

**Transfer of Technology**

The technology developed for detection of TNT vapors using fluorescence quenching principle is being explored for commercialization.

**Patents filed**

The patents filed during this period include the following:-

- The fully automated dynamic gas sensing measurement set up- Indian patent.
- Sandwich Tunneling Barrier FET- Indian patent.
- An IGBT device with plugged-in SCR for robust ESD protection in FinFET technology – US patent.
- A Novel Architecture for Improving Slew Rate in FinFET-based Op-Amps and OTAs - US patent.
- Dual Gate STI DeMOS for improved mixed signal and hot carrier behavior- US patent.
- Low-Energy Successive Approximation Register Analog to Digital Converter Technique and Circuit-Indian patent.
- Process for Novel Multi-ferroic based MEMS Actuators functioning at Room Temperature- Indian patent.
- A Novel Process for the reductive polymerization of 3,4-ropylenedioxythiophene derivatives-Indian patent.
- Microcantilever Based Biosensor with Electrical Read-out Method- Indian patent.

**Publications**

About 170 research papers have been published/presented in International and National journals/conferences on Nanotechnology.

**Photonics Development Programme**

The range of Application areas covered by Photonics mainly include Communication, Sensing, Display, Imaging, Bio-Sciences & Medical, Defence, Industrial Applications, etc. The new upcoming and latest state-of-the-art technology areas majorly include Biophotonics, Nanophotonics, Polymer for Photonic, Photonic Crystal Fibers, Green Photonics, etc. The project supported are:-

**Biophotonics and Photonics for Health Care:** Under the project Construction & Multi-site Commissioning of Multiple Fluorescence Correlation Spectrometers (a single molecule Biophotonics tool) at TIFR, Mumbai, the systems are installed in 11 different organizations in the country to be utilized for various Biophotonics studies. The scope of the project has now been enhanced to include developing...
technology for lifetime determination by TCSPC (Time Correlation Single Photon Counting). Under the project Clinical Evaluation of Polarized Fluorescence Spectroscopy for early diagnosis of cancerous and pre-cancerous lesions, IIT Kanpur, system for obtaining freshly biopsied cervical tissue & characterizing it optically worked out. The fluorometric measurements and analysis have been done for around 46 samples and probe design is being finalized.

**LPWG (Long Period Waveguide Grating):** Under the project Long Period Waveguide Grating based Integrated Optic Wideband Tunable Notch Filter using silica-on-silicon, CEERI Pilani, the design, optimization and fabrication of LPWG based wideband Tunable Notch Filter on silica-on-silicon for WDM applications was aimed at. The LPWGs in silica-on-silicon have been realized and reported for the first time internationally. Some of the devices fabricated have been packaged at SAMEER. The technology has been established for the fabrication of this device. Nine publications and conference papers have resulted from this work.

**Optical Amplifier:** The project Design and Development of Mid-stage Access EDFA at IIT (D) and Optiwave Photonics, Hyderabad aims to realize two units of MSA EDFA modules with desired specifications. At IIT(D), simulation studies completed to work out the pump power, signal power and ASE power variation along the length of the fiber and optimum length of 9-11 meters fixed for the amplifier fiber. At Optiwave, work towards improving the control circuit by modifying the values of the components completed. Characterization of the transit response is completed.

**Material Growth and Component Development Technology:** The project Growth of dilute III-V-nitride materials for mid-infrared Optoelectronic devices aims to ascertain the possibility of using Liquid-Phase Epitaxy (LPE) for growth of dilute III-V-N alloys. Reproducible LPE growth of InAsN with Nitrogen content upto 0.2-0.3% done. Growth of InGaAsN layers with very low Ga content has been established. The project Molecular Beam Epitaxy of Gallium Indium Nitride Arsenide & related materials for 1.3 micron communication Lasers aims to work on GaInNAs and demonstrate edge emitting lasers on GaAs substrate. The material synthesis runs carried out. GaAsN & InGaAsN synthesized. Structures such as SQW, DQW & Edge-emitting laser grown.

**Optical Fibre and Fibre Lasers:** Under the project Fabrication of Rare Earth Doped Fibers for High power Fiber lasers through Nanoparticle Deposition, the MCVD system integrated with high temperature RE-Vapor Delivery system has been received and is being made operational. Experiments carried out to investigate mechanism of formation of oxide particles. Experimental setup for measuring the photo darkening in the fiber is being set up. Under the project Tunable and Multi Wavelength Fibre Laser for Fibre Optic Applications from IIT (Bombay), the construction of a continuous wave ring cavity fiber laser without any intra-cavity filter has been done. Modeling and experimental results on tuning the laser by changing the reflectivity of output coupler as well as the intra-cavity loss obtained.

**Green Photonics:** Initiative being taken. Sub-group on Green Photonics with special emphasis on Efficient Lighting has been recommended by the Working Group on Photonics.

**Optical Sensors:** The project Development of FBG Sensor system for detection and location of hot spots in electrical equipment at CSIO Chandigarh is being executed jointly by CSIO and ERDA Vadodara. The earlier FBG sensor installed by ERDA in a live transformer is being monitored for long term effects. Recently fabrication and characterization of FBG sensor arrays on CGCRI fiber and commercial fiber for comparative studies has been carried out by CSIO. These FBG sensors sent to ERDA for further experimentation and installation in transformers. Software for interfacing the Interrogator developed by ERDA.

**Optoelectronic Packaging:** SAMEER worked closely with CEERI to package the Silica-on-Silicon waveguides. Work on developing technology for packaging Silicon photonics devices is being done in collaboration with IIT, Madras. SAMEER is also involved in the project on Ultra Wideband optical sources from rare-earth codoped glass waveguides. In this SAMEER will be working closely with IIT (Delhi).
The facility is used by CEERI, BITS, Pilani, IIT(M), IRDE, NeST, etc.

**FBG (Fibre Bragg Grating):** Under the project development of a unified approach for realizing Fiber Bragg Grating with long term stability at IIT Madras & IISc Bangalore the Algorithm for Decay prediction from Growth Data which enables prediction of the lifetime and decay parameters of the FBG based on the change in refractive index and Bragg wavelength vs. time during growth had been formulated. Besides the Indian patent filed earlier, an International PCT patent is also being filed.

**E-Commerce**

The ongoing project Mobile Payment Certification lab has progressed. IIT Madras has developed a payment architecture and message formats for mobile payments inter-operability conforming to the RBI guidelines.

A project has been initiated to develop a “Test Platform for voice enabled Mobile Banking using multi-lingual voice interface and carrying out Reliability and Efficacy Study” at the Telecom Centre of Excellence, IIT Madras.

**Digital Library**

Libraries are the storehouse of knowledge. Digital Libraries have the ability to enhance access to information and knowledge through Internet connectivity. They also Bridge barriers of time and space.

The Department has taken the Digital Library Initiatives and as part of this, copyright free books, manuscripts, and theses, etc., have been digitized. Most of the digitized data has been web enabled on Digital Library of India web site - http://www.new.dli.ernet.in.

**Achievements during 2009-10**

Four projects namely “Development of Web Portal and digitization of manuscripts, journals, books and documents pertaining to Mahatma Gandhi” by C-DAC, Noida, “Digital Archiving for preservation of rare manuscripts at various monasteries in Sikkim” by Namgyal Institute of Technology (NIT), Sikkim, “Digital Library Mega Center: Content Creation in Tibetan, Sanskrit and English” at IIIT, Allahabad and “Setting up a Repository of digitized data, providing connectivity (for one year) to 3 Nodal Centers and hosting of digitized data” at ERNET India have been initiated.

(i) **Digitization:** 11.5 Million Textual pages and 31,124 images have been digitized.
(ii) **Recording:** 395 Hours of Audio, 150 Hours of video and 4 Walkthrough of monument have been recorded.
(iii) **Providing the Connectivity and Hosting of digitized data:** Bandwidth connectivity to Indian Institute of Sciences- Bangalore, President House library-Delhi, IIT-Hyderabad, IIT-Allahabad and C-DAC, Noida has been provided. The digitized data has been hosted on the website.
Human Resource Development

HRD activities are targeted to ensure availability of trained human resources for the manufacturing & service sectors of electronics and IT industry. Initiatives include identifying gaps emerging from the formal sector, planning programmes in non-formal and formal sectors for meeting these gaps. 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 for e-Learning and Information Technology (RIELIT) at Kohima, Nagaland and at Agartala, Tripura for creating skilled manpower in the area of Computer Science/IT. A Scheme of Manpower Development for the Software Export Industry had been initiated under which various projects are being implemented. The Working Group on Human Resource Development in Information Technology, setup by the Department is in the process of evolving long-term HR strategies and suitable approach for the implementation of these strategies for significantly increasing the number of well-trained professionals in line with economic projections, for various IECT and related areas.

E-Learning

E-Learning 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 in the following thrust areas under E-Learning at various academic educational institutes, R&D Labs.

(i) Real Time Video Compression and decompression techniques
(ii) Developing authoring tools in Indian languages
(iii) Developing content independent of platform & environment
(iv) Quality assurance in e-learning

Design & Development of e-Learning Contents for e-Security Solutions Developers at C-DAC, Noida

The objective is to provide overall in-depth knowledge of all security concepts involved at different security levels viz., Desktop security, Network security and Server end security. The e-security contents for all 3 categories i.e. for 1st category (i.e. for Post Graduate/ Engineering students), 2nd category (i.e. System Administrators/ Officers in charge of e-security) and for 3rd category of users (i.e. Scientists) has been developed and hosted on C-DAC, Noida/DOEACC websites. Training is being conducted through e-learning mode to the first category of about 1000 users through constant support for queries via email and also through feedback monitoring and corrective actions. Approximately 200 users from the 2nd and 3rd category have also registered themselves for online training in the e-security area. The project has been recently completed.

Training of Teachers in E-Learning by DOEACC Society – Imphal Centre

The aim of this project is to propagate the knowledge on e-learning and its applications among
teachers to integrate e-learning methodology and approach with teaching and learning for improvement in educational methodologies (pedagogies). A Computer laboratory for training of students in e-learning has been set up. The centre has trained 121 teachers, belonging to colleges and schools, in e-learning methodology of teaching and content development. The project has been completed.

**Brihaspati phase – 2: Development of Open source content delivery tools with advanced features at IIT, Kanpur**

The objective of the project is to improve the existing Brihaspati architecture and development of Brihaspati_sync, which is an online live lecture delivery tool. Under Brihaspati-2, which is an open source, free Learning Management System (LMS), the latest release is updated on sourceforge.net. The source code can be downloaded from sourceforge.net. So far 35 activities/tasks have been completed of which some of activities are course expiry if course is not accessed for a certain configurable period. The features are French, German, Italian, Korean, Russian, Telgu, Marathi, Urdu, Bangla, Hindi user interfaces; backup and restoration; academic calendar – admin input module; web based interface for Brihaspati_sync related database information; assignment submission module; Quiz Generation Module; Group management system within courses; multilingual chat and whiteboard GUI; multithread discussion board; Research Repository added; online Registration; update email is sent periodically to users; documentation update etc.. The project has been completed.

**National Competitiveness in Knowledge Economy**

This is a multi-institutional project being implemented through IIT, Roorkee. The participating organizations in the project are (i) IIT, Roorkee (ii) IIT Madras, Chennai (iii) National Productivity Council (NPC), New Delhi and (iv) International Management Institute (IMI), New Delhi. The project was initiated with the following broad objectives:

(i) Mapping the directions of transition from industrial economy to knowledge economy
(ii) Developing strategies of change management for transformation from industrial age to information age
(iii) Identifying new knowledge streams/disciplines likely to emerge in the evolving knowledge economy and suggesting specialized courses to help meet manpower requirements of the knowledge economy.

All project components like conducting of Symposium, International Conferences, Seminars, Workshops, Brainstorming Sessions, Competitions, Commissioned Research and Consultancies etc., are progressing.

**Information Security Education and Awareness Project**

The Information Security Education and Awareness Project is aimed towards development of human resource in the area of Information Security at various levels (Certificate Level to B.Tech, M.Tech & Ph.D Level). This activity is presently being implemented through 6 Resource Centres (RC) as mentoring institutions and 33 Participating Institutes (PI). The project also has a component on awareness which is being implemented through C-DAC, Hyderabad. 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 (C-DAC, ERNET India, DOEACC Society, CERT-In, STQC Dte., & NIC).

Various courses in the area of Information Security - B.Tech & M.Tech (retrofit), New M.Tech. in Information Security, M.Tech in Computer Science with specialization in Information Security, short-term courses/training programmes have been continued at all the RCs/PIs. So far, around 25,000 students have been trained/undergoing training in various long-term/short-term courses at RCs/PIs.

The training programmes for government officers were continued through the six implementing agencies. A modular courseware on Information Security (10 Modules) for short duration training
Programmes has been designed/developed and tested by C-DAC, Hyderabad with e-learning tool (e-Sikshak).

Information Security awareness workshops were conducted through the participating institutes. So far 50 workshops have been organized across the country covering about 2400 Teachers/Parents/CSC/NGOs, etc., and about 8200 school children/college students. During these workshops, around 5600 Awareness Kits (with promotional material and Hand Books) were distributed. 25 posters on various topics of Information Security Awareness were designed and around 10,000 posters were distributed to target users. A dedicated website for information security awareness (www.infosecawareness.in – beta version) has been developed.

A three level Certification Scheme for Information Systems Security Professionals has been designed for implementation through DOEACC Society. Level-1 of the Scheme viz., Certified System Security Analyst (CSSA) has been announced by DOEACC Society.

Scheme for Manpower Development for the Software Export Industry

The projects 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. The achievements so far are indicated as under:

- Various projects under the scheme are being implemented at C-DAC-Pune, C-DAC-Noida, C-DAC-Hyderabad, IIIT-Allahabad, IIITM-Gwalior, IIIT-Bangalore, IIIT-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, C-DAC-Pune, IIIT-Bangalore and C-DAC-Hyderabad. The construction for training infrastructure is in progress at IIIT-Hyderabad.

- Various ICT training programme are being conducted in the area of Information System & Cyber Security, Geo-informatics, Language Computing, System Software Design, Application Software, VLSI Design, Embedded System Design, Wireless & Mobile Computing, Multimedia Creation, Advanced Computing, Management skills, Personality development, IT Outsourcing, e-Contents development, Data Structure, Software Development, Faculty Updation Programme in various areas. So far, 5309 students/faculty have been trained/undergoing training.

- The first phase of development of ‘Online Examination Software’ has been completed. The testing of this software is in progress. The first online examination on this platform was conducted on 11-12 July 2009 for entrance of students for Post Graduate Diploma (PGD) programs of C-DAC, Noida, where 400 students appeared in 4 slots for 2 days. Another examination was conducted in September 2009 for 200 students for PG Courses.

- Summer school courses were conducted on e-Healthcare, Experts Systems Applications & Global Banking and Finance in e-World. International seminar on Empowering visually impaired through ICT and a workshop on Content development in Advertisement and Brand Management through IT Tools were conducted. Training has been conducted for teachers/research scholars/professionals in the areas of GIS, Expert Systems, e-Healthcare, Global Banking, e-Content development & delivery and Advertisement & Brand Management. Also conducted training for farmers/Knowledge Workers in the area of Tele Agriculture, Tele Education, Tele Medicine, Land & Water Resource advisories, e-Governance services & Weather advisories.

- UP Technical University, Lucknow has identified Nodal Centers in Uttar Pradesh and in Uttrakhand. The necessary infrastructure has been setup at these Nodal Centers. The first trial of dissemination of grid based virtualization of technical education has been completed successfully between the
in addition to the above the following projects have been initiated:

- ‘Setting up of ICT Academy Kerala (ICTACK)’ with the primary objective to train faculties in Engineering, Arts, Science, Polytechnic and ITIs and support roll out of mass based HR programme for graduates. Action has been initiated for implementing the project by the State Government.

- ‘IT Enabled Soft Skill Enhancement Training Programme to Improve Employability of Engineering and Management Students’ by Anna Universities of Coimbatore and Chennai.

Development of North-Eastern Region

The Department through DOEACC Society has initiated projects for setting up of Regional Institutes for e-Learning and Information Technology (RIELIT) at Kohima (Nagaland), & Agartala (Tripura); and DOEACC Centre at Shillong (Meghalaya). Further, setting up of a DOEACC Centre at Gangtok (Sikkim) has been approved and action for implementation has been initiated. These institutes/centers 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 and the North-Eastern region. The achievements made in the projects are as under:

- RIELIT, Kohima, Nagaland is conducting DOEACC ‘O’ & ‘A’ level (IT) and Hardware, CCC, BCA and other short-term courses. So far 1802 students have been trained at temporary RIELIT center at Kohima and at Extension Center of RIELIT at Chuchuiriang, Nagaland. The construction of the main campus at Merima - the Academic Block, Administrative Block, Hostels etc., is in progress. Shifting of training activities from temporary site to the permanent RIELIT campus, Merima has been initiated.

- RIELIT, Agartala, Tripura is conducting training programmes such as DOEACC (IT) ‘O’ & ‘A’ level, DOEACC CHM ‘O’ & ‘A’ level and ITeS-BPO from temporary accommodation provided by the State Government of Tripura since December 2008. A total of 125 candidates have been enrolled in various courses. Admission procedures for second batch - Jan 2010 have been initiated for enrolling about 150 candidates. Land for setting up of the permanent campus has been taken over from the State Government and fencing of the site is completed. Action to finalize Project Management Consultant (PMC) has been initiated.

- DOEACC Centre, Shillong has started operations from rented premises. So far 19 trainees have undergone ITeS training. Admission process for DOEACC ‘O’ & ‘A’ level (IT) and Hardware courses has been initiated during the academic session 2010.

- Setting up of a DOEACC Center at Gangtok, Sikkim has been initiated. Action regarding renovation of the rented premise for setting up of class rooms/ labs, hiring of faculties, etc., have been initiated.

Special Manpower Development in VLSI Design and Related Software

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 Centres (RCs) and 25 Participating Institutions (PIs) with a total outlay of Rs. 49.98 crore for a period of five years. A ZOPP—Objective Oriented Project Planning workshop is conducted every year, involving all the stakeholders of the program for smooth implementation of the project.

The major achievements during the period from April to December 2009 are as below:

- Two Instruction Enhancement Programme (IEP), for the training faculty of PIs were conducted in area of FPGA Laboratory and System Modeling Using System C/VHDL/Verilog. About 32 faculties of PIs were trained.

- Financial support was provided to faculty of PIs as well as students to present technical papers in
National and International conferences.

- VLSI Design Resource website of 7 RCs have been created.
- Support has been provided for fabrication of two chips under India Chip Project for siliconization of design done by students of RCs and PIs.
- During the academic year 2008-09 (i.e. ending on August 2009), about 5067 students at various levels (i.e.) B. Tech, M. Tech, & PhD in the domain of VLSI Design and Microelectronics were trained under this program.

**Development of Weaker Section**

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

The lists of such Projects (on-going) are as under:

3. Capacity building for training of women and ST youth in IECT in North East region – Mizoram.
4. Bachelors & Masters courses in computer applications – Manipur.
7. Capacity Building for IT skill based Self Help Groups (SHG) of North East (NE) region (Tripura, Mizoram, Manipur and Sikkim).
8. Capacity Building, Education and skills Development for 1680 Women and SC/ST in IT using Language Technology as medium through a network of C-DAC GIST PACE Centres - Gujarat.

**Gender Empowerment**

Gender Empowerment through ICT has been one of the major initiatives of the Government. The objective of the initiatives 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 19 such projects (ongoing) is as under:

1. Advance level course in the area of ICT for improving the employability of Women Candidates, Gorakhpur – Uttar Pradesh.
2. Women Empowerment through ICT - Kerala.
3. ICT tools for education of girls in 5 Government Women Colleges - West Bengal.
4. Training of Graduate / Undergraduate women of NER in ITeS – BPO – Assam.
5. Training of Graduate / Undergraduate Women Candidate for ‘O’ and ‘A’ level at DOEACC Centers, Kolkata, Gorakhpur, Srinagar and Jammu.
6. Establishment of ‘Chanderi Weaver ICT Resource Centre’ (CWICTRC) - Madhya Pradesh
7. Skill enhancement computer training and resource Centre in Women Colleges – Kerala.
8. ICT enabled Anti-Poverty programme to create Women entrepreneurs in BPL families – Orissa.
10. Capacity Building for IT skill based Self Help Group (SHG) of North East (NE) region (Tripura, Mizoram, Manipur and Sikkim).
11. Visual Impaired Women Empowerment through Shruti Drishti – All India.
13. Capacity building for training of Women and ST youth in IECT in North East region – Mizoram
15. Chanderi Integrated ICT for Development Programme (CIIDP) - Madhya Pradesh.
18. Women Empowerment through value added skill development program in IECT DOEACC Society – Aurangabad.
19. Professional IT & Electronics Course for upliftment of ST Youth & Women- Mizoram.

**ICT for Empowerment of Differently abled**

**Content Generation for Capacity Building of Persons with Blindness or Low Vision:** The content is being generated in accessible format like e-text, Braille, Daisy, large print and audio for text books for graduate/post graduate level visually impaired students. 321 hours (30 Nos.) of English Audio Daisy Books and 347 hours (30 Nos.) of Hindi Audio Daisy books have been generated for Inclusive Education. 11 books in Hindi and 27 books in English have been converted into e-Text. 10 books have been generated in synthesized voice. 20,000 copies of CDs of these books have been distributed.

**SAFA™:** SAFA™ (Screen Access for All) is a screen reading software in vernaculars to enable the visually impaired persons to operate PC using speech output support for MS Word applications in windows environment. It has been used by more than 1,000 visually impaired regular users in Hindi and English. A helpline is being run to provide support to SAFA users. 18 SAFA training sessions at different organizations have been conducted throughout the country benefiting 215 persons of various age groups. Work is going on to incorporate support for more applications and Indian languages.

**A Comprehensive Satellite/Internet based National Network for Education Training and Empowerment of the Disabled:** Media Lab Asia, together with ISRO, has set up content creation facility in the area of different disabilities. The content are being telecast through EduSat based channel “Navshikhar” regularly for all stakeholders in disability field. 470 RCI/MSJE recognized Institutions are connected to Navshikhar. Regular transmission of programs is being conducted from Monday to Friday from 10:00 Hrs. to 17:00 Hrs. Additionally an interactive Internet portal “Punabhava.in” is providing all the relevant information in different disability issues. Portal is being regularly updated and is being made accessible as per W3C guidelines.

**Sanyog:** Sanyog is an alternative and argumentative iconic-based communication system for persons with neuro-motor disorders. Object based iconic communication interface is being enhanced in Bengali, Hindi and English. By object driven icon selection, the system can generate simple sentences in all the three languages. Embedded and the WinCE based version of the system for Windows based PDAs with SMS facility is also being developed. The soft keyboard based version of Sanyog using WinCE is also under development.

**Visually impaired women empowerment through Shruti Drishti:** The objective of this project is to deploy the Shruti-Drishti (Text to Speech & Text to Braille) software with the associated required hardware along with support and training in 40 special schools for visually impaired women throughout the country. PC’s with accessories and Shruti-Drishti Software have been supplied to the schools benefiting 4000 blind students (including 2314 female blind students) and 80 teachers.

**Supply installation and commissioning of computerized Braille transcription system at the blind schools throughout the country:** The aim of this project is to address the reading, writing, printing and learning Braille needs of visually impaired persons and fulfill the dearth of content in accessible formats in schools. Computerized Braille Transcription System has been installed in 36 schools where 80 teachers have been trained and around 3000 students have been benefited.

**ICT enabled integrated assessment tool for mentally retarded children- Punarjani™:** This project aims at providing a web based aid to the teachers for the progress assessment and evaluation of the MR children and analysis of the results. The tool has been installed in 8 schools in the state of Kerala on a pilot basis. It is benefiting around 850 Mentally Retarded students.

**ICT Vocational Centers for Skill Creation for the Children with Disabilities**

20 ICT Vocational Centers for training the physically challenged children were set up in Phase-I. The infrastructure at schools is connected to LAN and Internet. In the Phase II, the centers set up in Phase I
are being maintained as well as the project has been launched for setting up 100 ICT Vocational Centers in different parts of the country. The project is being implemented through ERNET India.

**Setting up of ICT based distant training facility for special educators / parents of differently abled children**

For providing distance training to the special educators, parents and teachers of children affected with mental retardation, a project has been initiated with the following main objectives:

i) To provide infrastructure facility for imparting distance training for the Teachers and other rehabilitation professionals in the field of special education coming in the region of EDUSAT southern foot print.

ii) Design and implement innovative programmes for the parents of differently abled persons and introduce the use of ICT in the programmes for children with Mental retardation and associate disabilities.

**Creating “Knowledge Data Centre (KDC) at Anna University, Chennai**

The project envisages establishment of a Knowledge Data Centre to provide services like e-education, digital library & technology resource centre for students and community of Tamilnadu. The project is in the final stage of implementation.

**ICT Vocational Centres for Children with Disabilities-Phase II**

After successful implementation of the pilot project, in which ICT centres were setup in 21 schools - 10 in Tamil Nadu and 11 in NCR Delhi - ERNET India initiated the second phase of the project. In this phase it is proposed to implement vocational centers in 100 locations across the country. Children with multiple disabilities, Spastics and Physically Impaired are also being covered in this phase.
Infrastructure

Standardization, Testing and Quality Certification (STQC) Directorate

Introduction

Standardization, Testing, Quality and Certification (STQC) Directorate has established itself as a premier organization for Quality Assurance in the field of Electronics and Information Technology (IT) in the country. It provides Testing, Calibration, Training and Certification services through its network of test laboratories spread across the country. Additionally, Indian Institute of Quality Management (IIQM) at Jaipur, Center for Reliability (CFR) at Chennai and four Regional Certification Centers have been rendering specialized services in the respective areas. Many national and international accreditations / recognitions have made STQC services widely acceptable at international level also. The services and locations of laboratories / Centres are indicted below:

<table>
<thead>
<tr>
<th>Services offered</th>
<th>Laboratories / Centres</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test &amp; Calibration</td>
<td>Electronic Regional Test Labs (ERTL)</td>
<td>Delhi, Kolkata, Mumbai, Thiruvananthapuram</td>
</tr>
<tr>
<td></td>
<td>Electronic Test &amp; Development Centres (ETDC)</td>
<td>Bengaluru, Guwahati, Hyderabad, Chennai, Mohali, Pune, Goa, Agartala, Jaipur, Solan</td>
</tr>
<tr>
<td>Software Testing</td>
<td>IT Centres</td>
<td>Delhi, Bengaluru, Hyderabad, Kolkata, Chennai, Pune, Guwahati</td>
</tr>
<tr>
<td>Reliability Testing</td>
<td>Centre for Reliability (CFR)</td>
<td>Chennai</td>
</tr>
<tr>
<td>Training</td>
<td>Indian Institute of Quality Management (IIQM)</td>
<td>Jaipur</td>
</tr>
<tr>
<td></td>
<td>Centre for Electronic Test Engineers (CETE)</td>
<td>Bengaluru, Kolkata, Hyderabad, Pune, Noida.</td>
</tr>
<tr>
<td>Certification</td>
<td>Regional Certification Centres</td>
<td>Delhi, Kolkata, Mumbai, Bengaluru</td>
</tr>
</tbody>
</table>
Achievements during 2009-10

STQC Information Technology (IT) Services

STQC IT Centres have been rendering services for last five years successfully. It is equipped with software tools for test automation. A number of projects sponsored by the Department in the field of Software Quality Assurance, Information Security Management, Indian Language Technology Products and Quality Certification has been executed. STQC has also developed Quality Assurance Framework (QAF) along with Conformity Assessment Requirements (CARE) for the National e-Governance Programme (NeGP). Some of the major achievements are as follows:

Software Testing and Evaluation

**IT Centre, Delhi:** A large number of eGovernance projects from state and central ministries have been undertaken. This includes Ministry of Corporate Affairs (MCA21) Annual Audit, India Portal (National Informatics Centre, New Delhi), e-Procurement System (CRIS, Ministry of Railways), Rashtriya Swastha Bima Yojna (Ministry of Labour), Agriculture Portal, Human Resource Management System, e-class and Commercial Data Vault (Govt. of Uttarakhand, Dehradun). IT Centre, Delhi is the leading laboratory for creating test processes and domain based test case designing.

**IT Centre, Bengaluru:** The Centre undertook testing of various software systems namely SPARK (Service and Payroll Administrative Repository of Kerala), e-payment-website (Commercial Taxes, Govt. of Kerala), E-Learning (Infotech Corporation of Goa Ltd), National Population Register (Bharat Electronics Limited), Income Tax (Income Tax Deptt.-CPC-eFiling) and Jeevan Project (Govt. of NCT of Delhi). In addition, mission critical software of Defence projects were evaluated for quality.

**IT Centre, Hyderabad:** The Centre carried out independent Verification & Validation, Code Walkthrough and Review of Design document (along with IT centre, Chennai) for the Electronic Counter Measure part of Ellora. The centre also completed functionality, security and performance testing of Combined Entrance Test Software for Web based Counseling for seat allotments for the professional colleges in Andhra Pradesh (AP).

**IT Centre, Kolkata:** The Common Criteria (CC) Test Lab, at IT Centre Kolkata, was accredited by American Association of Laboratory Accreditation (A2LA, USA) for EAL2 evaluation capability last year. India has become a signatory to Common Criteria Recognition Arrangements (CCRA). The Lab aims to meet the needs of the Government and industries for evaluation and certification of IT security products. IT centre, Kolkata also undertook third party audit for Quality and Security assurance for important eGovernance mission mode and other projects like Passport Seva Project, eChips, eDistrict Assam, eNibandhan Jharkhand etc. The testing of some of these projects is in progress.

**IT Centre, Chennai:** The Centre undertook Application Security Auditing / Testing for the Web-Portals of Commercial Tax Dept. (Govt. of Tamilnadu), Tamilnadu Police Housing Corporation Ltd., Online Learning System of National Instructional Media Institute (Govt. of India), Tamilnadu Veterinary & Animal Sciences University and Transport Department (Govt. of Tamilnadu).

**IT Centre Pune:** The Centre obtained accreditation for ‘International System Examination Board/International Software Testing Qualification Board (ISEB/ISTQB) Intermediate Certification Course in Software Testing’ by taking lead role. The Centre also conducted Testing and Evaluation of e-Governance projects of Maharashtra state namely GRAS and BEAMS.

Website Quality Certification Scheme

During the year, Website Quality Certification Scheme was developed and operationalized. The scheme envisages improving the quality, accessibility and security of Government websites. A series of training programs, information brochures and guidebooks have been developed for the clear understanding of the stakeholders. A couple of websites including National Portal and Ministry of Social Justice and Empowerment were certified and a few more are in the final leg of testing.
In order to facilitate smooth compliance of e-Gov State Portal project, activity of Capability Approval was initiated to recognize capable solution providers. Separate workshops on Capability Approval were conducted for major players.

**Workshops conducted on ‘Quality Assurance of e-Governance Solutions’**

Workshops conducted to promote quality concepts in e-Governance in different parts of India which included Madhya Pradesh (Bhopal), Delhi, Karnataka (Bengaluru), Kerala (Thiruvananthapuram), Sikkim (Gangtok) and Punjab (Mohali).

**Intermediary Scheme for Empanelment of External Training Organizations**

STQC has launched an Intermediary Scheme for Empanelment of External Training Organizations to conduct STQC Training Programs. The programs will be conducted by Intermediaries either with STQC Faculty or by their own approved Faculties. Initially 13 STQC Programs have been offered under the scheme. About 10 organizations have approached STQC. Two of them have already been empanelled and the process for remaining applicants is in progress.

**Formulation of e-Governance – Information Security Assessment Framework**

Following Guidelines and documents have been prepared by IT centre, Kolkata.

**Information Security**

STQC is the first accredited Certification agency in India to conduct ISMS certification and has certified many organizations in India and abroad. Number of training programmes on information security have been designed and delivered. These courses are also accredited by international agencies.

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

**IT Services Management (ITSM)**

Service level compliances are integral part of the core components of eGovernance. In order to improve the quality of IT services such as Web services, Facility Management, Internet, BPO Services etc., STQC initiated a certification scheme in respect of Certification of Service Level Competence. The international accreditation from itSM foundation (itSMF), UK and RvA Netherland were maintained this year also. Additionally, itSMF and IRCA accredited training programs for ISO 20000 auditors are continuing both in India and abroad.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Document No.</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ISF 01</td>
<td>Information Security Assessment Framework</td>
</tr>
<tr>
<td>2</td>
<td>GD 100</td>
<td>Guidelines for Security Categorization of e-Governance Information Systems</td>
</tr>
<tr>
<td>3</td>
<td>GD 200</td>
<td>Catalog of Security Controls</td>
</tr>
<tr>
<td>4</td>
<td>GD 201</td>
<td>Baseline Security Controls for Low Impact Information Systems</td>
</tr>
<tr>
<td>5</td>
<td>GD 202</td>
<td>Baseline Security Controls for Medium Impact Information Systems</td>
</tr>
<tr>
<td>6</td>
<td>GD 203</td>
<td>Baseline Security Controls for High Impact Information Systems</td>
</tr>
<tr>
<td>7</td>
<td>GD 300</td>
<td>Guidelines for Information Security Risk Assessment and Management</td>
</tr>
</tbody>
</table>
Accredited Test and Calibration Services

Fourteen STQC Laboratories (ERTL/ETDC) have been rendering accredited test and calibration services to the industry across the country for more than 27 years. During last year, Test and Calibration services were provided to Micro, Small and Medium Enterprises (MSMEs), Govt. organisations namely Defence, Space, Atomic Energy, Railways etc. and users in the areas of Electronics and Information Technology.

ERTL(North), Delhi: For the benefit of customers the Lab got scope of accreditation extended for Thermal calibration using Fixed Point Cells, Optical calibration and Pressure calibration. Also, got Scope of testing extended from Bureau of Indian Standards for Compact Fluorescent Lamps as per Indian Standards (IS). The Lab established test facility for noise measurement of Diesel Generating sets and got accreditation from Central Pollution Control Board. The Lab has also established Frequency calibration facility up to 40GHz, CISPR detector calibration as per CISPR 16-1 and Radiated emission measurement up to 18GHz.

ERTL(East), Kolkata: The Lab provided testing facility for Solar Photo-voltaic Modules. The testing facilities are in the process of up-gradation. The facility will be a national infrastructure in line with the objectives of National Solar Mission Program. The Lab also established test facility for flameproof testing of explosion proof electro-technical products for use in hazardous atmospheres as per IEC standard. During last year, the Lab has evaluated Solid State Block Proving system and Electronic Interlocking system, which are being inducted by the Indian Railways. In addition, a test report issued on an indigenous electronic product as per IEC standard has been accepted by European Notified Body for certification. This will enable the product to be sold in the European market without further testing.

ERTL(West), Mumbai: The Lab established high precision facility for calibration of standard resistors and shunts. The Lab was also engaged in promotional activities relating to quality and reliability amongst manufacturers and users. During the year, four e-bulletins were issued on the following subjects such as Safety testing, EMI/EMC testing, Calibration and Environmental / Durability testing.

ERTL (South), Thiruvananthapuram: The Lab installed 3-Ton Combined vibration and climatic test chamber and Thermal shock chamber. During the year, the Lab has provided test facilities for Space Applications such as Qualification test conducted on chip capacitors as per MIL standard to Vikram Sarabhai Space Centre (VSSC). The screening facilities established in the Lab was accredited by VSSC for screening of Microelectronic devices of different packages such as Small Outline Integrated Circuits, Leadless Ceramic Chip Carrier and Flat Packs. The Lab undertook and completed screening of SMD resistors (modules/packages) for flight applications for VSSC. Also, Tested & Evaluated Advance Telemetry Systems power modules (qty. 60 nos) used in GSLV/PSLV and Advance Telemetry Data Acquisition units (qty. 55 nos).

ETDC, Guwahati: The Centre has obtained national accreditation in the field of Mechanical, Thermal & Optical calibration also. The state-of-the-art high precision calibration facilities were extended to the health sectors such as Hospitals, Healthcare units, Clinical & Pathological laboratories. The Laboratory has recently established a unique facility for Environmental Gas Emission Monitoring & Analyzing System. This will enable to create Carbon Foot Print and baseline data for environmental analysis and Carbon Trading by various State Govt./Public Sector Undertakings of North Eastern Region.
ETDC, Hyderabad: Mission Critical equipments developed for Indian Railways, Defence and Space sectors were tested both for short term and long term tests (extending up to 3 months duration) in the Centre. The equipment included Central Interlocking unit, DC link Isolation switch, Sense and Break unit; Tele-command receiver, S Band receiver & Satellite Data Simulator; Integrated communication equipment, Safety armament and MIG 27 Sub-assemblies.

ETDC, Chennai: Type tested and calibrated number of High Accuracy Tri-vector meters for various Electricity Boards in South India. The Centre tested Chocolate Fountain for safety parameters as per IEC 60335-2-15 and Indirect Ophthalmoscope as per IEC 60601-1. Safety testing of Micro Surgical Bipolar coagulator is in progress as per IEC 60601-1. In addition, Reliability Analysis of Heavy Weight Torpedo System (Varunastra for NSTL, Visakhapatnam), 9 KW Starter Generator by Parts Count Method (HAL, Lucknow) and VHF/UHF Digitally Tunable Band Pass Filters were completed during the period.

ETDC, Mohali: The Centre established accredited power energy calibration system with an accuracy clause of 0.02. In order to facilitate Battery Capacity Testing, a jig for carrying out current discharge of 1.2A for five batteries at a time as per applicable Indian Standard was developed. A team of officers visited 72 industries for marketing of services mainly in the state of Himachal Pradesh and Uttaranchal.

ETDC, Pune: Carried out comprehensive evaluation of different modules used in Polar Satellite Launch Vehicle (PSLV) for Vikram Sarabhai Space Centre (VSSC), Department of Space, Thiruvananthapuram. The centre also provided vibration and EMI/EMC testing facilities to the Automobile Sector for import substitution.

ETDC, Goa: The Centre provided accredited calibration service to public sector undertakings like Nuclear Power Corporation (Kaiga), Goa Shipyard and private sector organisations like Tata Consultancy Services.

Training Services - Knowledge-based skill-oriented

Indian Institute of Quality Management (IIQM), Jaipur: Launched a new five days course on IT Service Management System (iSMF) Auditor / Lead auditor training course based upon ISO 20000 standard. This course got the international approval of IRCA (UK). With this addition, IIQM, Jaipur is now offering four internationally approved training courses in the area of Quality Management, Information Security Management and IT Service Management Systems. IIQM also offers two years off campus Master’s program in Quality Management in collaboration with BITS, Pilani. Total 155 candidates got enrolled in last batch indicating a growth of 20%.

CETE, Bengaluru: Custom made quality programmes conducted for pathologist / medical professionals engaged in Health Care. Also, disseminated knowledge about Quality Assurance to promote International Accreditation for diagnostic Laboranories (ISO 15189). Enhanced its outreach to train Doctors and Specialists all over India. In addition, organized eight modules for 120 students of BITS, Pilani for their MS programme.

CETE, Kolkata: Conducted 40 courses for different industries in which 170 participants attended. In addition, 15 programmes have been organized on skill based training for academic institutions in which 200 participants attended. 300 students from different engineering colleges have undergone project based training. The Centre also conducted joint program with Calcutta University on ‘Advanced Diploma in Medical Instrumentation’.

CETE Hyderabad: Conducted exclusive training programmes of 2-4 weeks duration on ‘Electronics Manufacturing Technology’ for Graduate / Diploma
Certification Services

Internationally Accredited Certification Services are being offered for Quality Management System (ISO 9001), Environmental Management System (ISO 14001) and Product Safety Certification to customers in India and abroad. It also offers International Certification services for safety of electrical products under IECCE-CB. The STQC certification services have been re-accredited up till Nov. 2013 by RvA, Netherland in recently concluded assessment. In order to address the growing need of industry, first ever pilot project for OHSAS (Operational Health and Safety) Certification as per BS18000 was taken up.

Services in the North-East Region

ETDC, Guwahati made efforts to promote and create awareness of its newly inducted Information Technology (IT) Services in the North-East Region by conducting Information Technology (IT) oriented training programs. This Centre played lead role towards generating IT educated manpower by conducting DOEACC “O” & “A” level long term courses for the benefits of the educated unemployed youths of the society residing in North East region. A high-end training program on Optical Fiber Network Maintenance Management for communication engineers was also conducted during the period. The Centre has also taken major initiative to cover all the North-East states by delivering Test & Calibration services both In-house and on-site.

ETDC, Agartala is putting thrust towards exploring the IT Training services for the various organizations situated in the state of Tripura to help building up their Information Technology savvy Manpower. Besides this, efforts are on towards marketing of its Test & Calibration services suitable to the needs of the industries in the state of Tripura.

ERTL(East), Kolkata provided calibration services to eight airports of the Eastern and North-Eastern regions for instruments used in maintenance of Navigation and Communication equipment.

STQC Overseas Services

Safety Testing of Chest Freezer as per IEC 60335 has been carried out for a Dubai, UAE based Company by ERTL(West), Mumbai.

ERTL(East), Kolkata completed number of in-house as well as on-site testing projects for products of overseas manufacturers from Austria, Bahrain, Canada, China, Germany and UK. Many of these products will be used in mechanization programme of Indian mines. The Lab has provided on-site calibration service to a number of test laboratories in Bangladesh to support their accreditation by National Accreditation Board for Testing & Calibration (NABL), India.

Fourteen jobs were executed for customers from Australia and China by ERTL(North), Delhi.

Conducted training programs on Information Security Management System (ISO 27001) Lead Auditor/ Auditor course at MAURITIUS and itSMF Internal Auditor (ISO 20000)’ course at Bangkok (Thailand) by IIQM, Jaipur. These Programs are of International repute and are approved by IRCA, UK.

Participation as Head of Indian Delegation in ISO/SC7 Meeting

STQC participated and chaired ISO/SC 7 meeting held in Hyderabad. ISO SC 7 is the Software and System Engineering Sectional Committee (SC) of International Organisation for Standardization (ISO) responsible for preparation of International Standards in Information Technology (IT) Sector. 230 foreign delegates from various member countries also participated in the meeting. Two new proposals, one on Software Quality Assurance and another on ITeS / BPO standard, initiated by India were accepted by SC 7 and a Study Group was formed.
Development of SC/STs and Weaker sections

STQC Directorate conducted exclusive training programs 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, DOE ACC ‘O’ and ‘A’ level. 472 candidates were benefitted through these training programs. ETDC, Guwahati also organized a few Computer Awareness Training programme for SC/ST/OBC sections of the society.

CETE, Hyderabad conducted course on Certified Electronic Assembly Operators for students exclusively under financial assistance of National Scheduled Caste Finance Development Corporation, New Delhi.

ERTL(South) imparted on-the-job training to participants (possessing ITI qualification) as a part of Training cum Employment programme of Scheduled Caste Development Directorate, Govt. of Kerala, Thiruvananthapuram.

Computer Awareness Training programme was organized at ETDC, Agartala for the benefit of SC/ST/OBC/weaker sections of Tripura.

Growth in Revenue Earning

During the financial Year 2009-10, a major initiative taken was to strengthen STQC IT services to keep pace with the Policies and Programs of the Department. These services included certification and training in the area of Website Quality Certification, Information Security Management System, Software Quality Assurance and Information Technology Service Management. At the same time conventional STQC services like testing, calibration, certification and training were also consolidated and expanded. Due to these initiatives, revenue earning still shows a healthy trend. The revenue earning, which was Rs.38.4 crores approximately during 2008-09 is expected to reach Rs.42 crores during 2009-10.

Internet Exchange of India (NIXI)

Seven Internet Exchange Nodes have been operationalised at Bangaluru (Karnataka), Hyderabad (Andhra Pradesh) and Mohali (Chandigarh) to add to the existing National Internet Exchange of India (NIXI) hubs at Chennai, Kolkata, Mumbai and Noida. The Internet Exchange nodes have been successful in ensuring the Internet traffic originating within India resulting in improved traffic latency, reduced bandwidth cost and better security.

Four NIXI nodes located at Mumbai, Noida, Chennai and Bengaluru are IPv6 ready with all its functional operations available online to the member ISPs. In addition NIXI is also organizing training and workshops for Network managers and other Technical engineers through training support form Asia Pacific Network Information Centre (APNIC).

National Knowledge Network (NKN)

One of the important recommendations of the National Knowledge Commission (NKC) is to inter-connect all knowledge institutions through high speed data communication network. This would encourage sharing of knowledge, specialized resources and collaborative research. A High Level Committee (HLC) is coordinating and monitoring the establishment of the NKN.

NKN will enable scientists, researchers and students from diverse spheres across the country to work together for advancing human development in critical and emerging areas. NKN is expected to encourage a larger section of research and educational institutions to create intellectual property. NKN would enable use of specialized applications, which allow sharing of high performance computing facilities, e-libraries, virtual classrooms and very large databases.

Health, Education, Grid Computing, Agriculture and e-Governance are the main applications
identified for implementation and delivery on NKN. Applications such as Countrywide Classrooms will address the issue of faculty shortage and ensure quality education delivery across the country.

**Current Status of Initial Phase**

In the initial phase, a core Backbone consisting of 15 Points of Presence (PoPs) have been established with 2.5 Gbps capacity. Around 45 institutions of higher learning and advanced research have already been connected to the network and 6 virtual classrooms setup.
Societies

Centre for Development of Advanced Computing (C-DAC)

Overview

The Centre for Development of Advanced Computing (C-DAC) has emerged as a premier Research & Development (R&D) organization in Information Technologies and Electronics. As an institution for high-end R&D activities, C-DAC has been constantly building capacities in emerging/enabling technologies, and innovating and leveraging its expertise, caliber, skillsets to develop and deploy IT products and solutions for different sectors.

High Performance Computing (HPC) and Grid Computing

After commissioning of PARAM Yuva, C-DAC continues to build competencies towards Petaflop Computing, shared HPC facilities, grid computing, e-Science resources, etc., for solving grand challenge problems and research applications. C-DAC is working in close conjunction with associated communities in academia, research laboratories and industries in this endeavour. Significant achievements during the year in this area include the following:

- C-DAC’s HPC Resource Management Engine (CHReME): An HPC portal was launched in Thiruvananthapuram to do the HPC resource management. The Portal has been deployed at NCMRWF and COEICT, Tanzania. Beta Versions installed at NEHU and NEIST.
- Second phase of Bioinformatics Resource and Application Facility (BRAF) has been completed; “GENOMEGRID”, a portal for grid enablement of genome sequence analysis released; “iMOLDOCK”, a cluster-based/ grid-based portal which provides an interface to Molecular Docking software released; Prototype software for the workflows for genome analysis is ready.
- EQ-Check, a Computer Aided Seismic Checking and Design of Concrete Structures Software developed in collaboration with SGSITS-Indore.
- OpenSees, a Free Open Source Software has been ported on HPC cluster and validated. It facilitates Finite Element Modeling of structures like bridges.
- Grid middleware based on GT4 supporting service oriented architecture (SOA) has been deployed at selected resources of Garuda as prototype. Quality of Service and enhanced security features has been introduced. Portal version 1.3 has been released.
- OpenEye (Molecular Docking) achieved a speedup of 1.75 times using three GARUDA clusters (32 procs each) for GSK-3 molecule.
- Improved processing time for processing one set of Radar data (9GB) for the DMSAR application using the new resources of GARUDA (272 cores)
Operational phase of Grid Garuda has been initiated and some partner sites have migrated to National Knowledge Network.

Multilingual Computing and Heritage Computing

C-DAC has played leadership role in this field. C-DAC benchmarked its capacity in language computing by launching various fonts and tools in Indian languages in partnership with other research laboratories and academia. A whole range of new and emerging tools and technologies including Machine Assisted Translation (MAT), Optical Character Recognition (OCR)/Optical Hand Recognition (OHR), Cross Lingual Information Retrieval (CLIR), Indian language browser, speech interfaces (text-to-speech, speech-to-text and speech-to-speech), and search engines have been developed and supported in major Indian languages. Significant achievements during the year in this area include the following:

- EILMT: The web application with Alpha 2.0 version for tourism domain was released in the month of July 2009 for three language pairs i.e English to Hindi, Urdu and Oriya. Alpha version 3.0 of EILMT system was released in September 2009, which also includes English to Bangla language pair. Alpha version 4.0 of EILMT system was released in September 2009 which includes English to Marathi pair.
- IDN for IN Registry - Implementation support for Kannada and Telugu completed.
- Digitization of above 2 Million pages from around 5 thousand Rare and Copyright Free Books has been completed.
- Ten Rig-Veda, YajurVeda and Sama-Veda manuscripts transcription completed.
- Gist-Trans-phonetic transliteration engine (G-TRANS) developed for Web portals, e-mail, Blogs in Indian Language.
- Design and developed enhanced INSCRIPT keyboard standard supporting Unicode 5.1 & above.

Professional Electronics including VLSI and Embedded Systems

C-DAC has developed several tools and technologies for sectors like power, industry automation, communication, agriculture and automotive industry. The technology development efforts in power sector are focused towards designing of tools and components for power quality improvement, power supply modules, energy meters, distribution automation, remote inspection devices, etc., through NaMPET (Phase I). Similarly in agriculture sector, the technology development efforts are focused towards development of tools for online, real-time quality assessment for food and agro products and automation of post-harvest processing of these products. Significant achievements during the year in this area include the following:

- ‘Dhruv’, the prototype system completed comprising a vehicle equipped with a Portable TETRA Base Station (PTBS) and a transportable VSAT system for reliable communication system for the relief and rescue teams operating in the disaster struck area.
- Area Traffic Control System (ATCS) was extended, adding 5 Junctions and 17 Cameras in Jaipur.
- Development of Software Defined Radio (SDR): Re-configurable radio, supporting multi-band and multi-standards was undertaken in collaboration with SAMEER, Chennai.

As part of the NaMPET mission, an Advanced Power Electronics Lab established at Bengal Engineering & Science University (BESU).
Acoustic Landmine Sensor System for the Research and Development Establishment (Engineers), Pune, has been developed. The system helps to detect anti-personnel and anti-tank mines. Two units handed over for field trials.

Software Technologies including FOSS

The agenda of developing eco-system for Free and Open Source Software (FOSS) was progressed. Deployment of BOSS at schools across the country was initiated. With the proven technologies/applications in the e-governance sector, C-DAC gave focus on developing standards, architecture and contemporary technology driven delivery for e-Governance infrastructure, applications and services on public private partnership mode. Significant achievements made during the year in this area include the following:

- National Service Delivery Gateway (NSDG): Demonstrated integration between eForms, Gateway and Department Back-office; demonstrated successful communication between NSDG & MCA21 gateway. This serves as a milestone in establishing eGovernance Service Delivery across Nation in a transparent and efficient way.
- Development of Enhanced version of KAVERI-BHoomi integration solution completed.
- Development of Works & Accounts Management Information System (WAMIS) for Rural Department, Government of Orissa completed. GAURI – Stamps & Registration Software for Goa, Statewide rollout started with Second installation at Margao.
- India Development Gateway (InDG): ‘Social Welfare’ has been added as 6th Vertical and 2 more languages, (Assamese and Kannada) are being included in InDG portal; An MoU was signed with NIRD and NIN to offer InDG and e-Learning Services; Dynamic Market Information services has been expanded with additional 6 markets and value added services; Multi-stakeholder workshop organized at Guwahati in June 2009.
- BOSS Proliferation: Conducted training programs in Mumbai, Kochi, Vishakhapatnam & Noida for Navy officials. Conducted administrator level training programme in Chennai. Around 300+ officials have been trained. More than 1.25 Lakhs copies of BOSS GNU/Linux deployed including in 46000 desktops covering 4965 schools.

Cyber Security and Cyber Forensics

C-DAC is working towards developing tools and technologies in this important area to deliver multilevel/multilayered security solutions to safeguard Government cyber infrastructure. These include cyber forensics tools, adaptive intrusion detection system, end systems security solution, document security solution, and steganographic tools. They have to be upgraded and monitored continuously as the attacks keep growing with changing times and technologies. Significant achievements made during the year in this area include the following:

- Cyber Forensics Indigenous tools: Technical support for analysis of over 200 cyber crime cases and more than 30 training programmes for Law Enforcement Officers, Judiciary etc., have been carried out. The Next Generation Forensic Tool, OSVAC, (a GUI based memory analysis tool that can extract digital artifacts from a memory dump) developed.
- Face recognition software: Face Recognition Engine version 4.0 has been developed using
texture attributes around biometric landmark points and shape parameters.

- Development of Steganalysis algorithm for five more steganography tools has been completed.
- Generalized solution of Malware Prevention System (MPS) for Windows and Linux operating systems is implemented.
- Intrusion Prevention System (IPS): N@G, Know Your Network (KYN) has been deployed and being used at various government networks in the country.
- Honeypot: Prototype of Active Honeypot demonstrated to CERT.
- Information Security and Education Awareness (ISEA): 41 workshops conducted across the country through Participating Institutes of ISEA; More than 300 members participated in Network Security training under ISEA Govt. Officers Training programme. Conducted three (5 Months) certification courses in association with JNTU, Hyderabad.

- PKI Outreach Programme: Conducted various programs across the nation for creating PKI awareness.

Health Informatics

C-DAC continued to improve its HIS (Hospital Information System) and telemedicine applications and health infrastructure during this year. National roll-out for cancer-net and African telemedicine programs have been initiated. Development of SDK (Software Development Kit) libraries for international standards in healthcare domain, DICOM (Digital Imaging and Communications in Medicine) and HL7 (Health Level 7), have also been initiated. Significant achievements during the year in this area include the following:

- Network of leading hospitals established with ‘Sanjeevani’ (e.g. PGI, AIIMS, SGPGI, IGMC, PGI Rohtak, SCB Cuttak). Telemedicine Networks established in Punjab (19 sites), Himachal (21 sites). ‘e-Sanjeevani’ application launched on CSC on June 2009.
- DICOM & HL7 SDK v1.1 released on Sept 01, 2009 with several enhancements, optimizations
- Deployment of Telemedicine solutions for eight hospitals and Cancer Institute (WIA) Adyar, Chennai has been completed. The network is currently being used for Tele-consultation and Tele-Education activities. Development of Doctor’s Work bench completed.

- A web based integrated Telemedicine solution, ‘e-Dhanwanthari’ has been completed. Deployment at 12 hospitals completed.

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:

- Trained 3200 students on our various training programmes through ACTS and its network.
- Around 8000 personnel trained under our Corporate training programme.
- Designed and launched following PG Diploma courses:
  - PG Diploma in Information System & Cyber Security (DISCS)
  - PG Diploma in System Software Design (DSSD)
  - PG Diploma in Healthcare Informatics
- Continue to conduct formal education such as M. Tech, MCA etc. in affiliation with the various universities.
- TechSangam: An initiative of C-DAC to collaborate with Academia to enable faculty in latest technologies & thereby create Industry ready manpower. Around 275 colleges have become part of this initiative.
- Prepare Future: 430 faculty got trained under faculty updation programme.
- Signed an agreement with Ministry of External Affairs (MEA) for establishment of India – Tanzania Centre for Excellence in ICT at Dar es Salaam, which will train around 1000 aspirants every year on various computer technologies.
- Under the India-Myanmar Centre for Enhancement of IT Skills (IMCEITS), Yangon, Myanmar, trained 470 students in two Certificate & two Diploma programmes.
- Training ten Master Trainers from Myanmar & six Master Trainers from Tanzania on the different high end PG Diploma programmes.
- Satellite Center: An umbrella MoU between Motilal Nehru National Institute of Technology (MNNIT), Allahabad and C-DAC Pune was signed to collaborate in R&D for different areas of mutual interest like e-Learning, Semantic web, high end IT training, etc.

**Software Technology Parks of India (STPI)**

Software Technology Parks of India was established and registered as an Autonomous Society under the Societies Registration Act 1860, under the Department of Information Technology, Ministry of Communications and Information Technology, Government of India 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 development of software and software services.
- To provide statutory services to the exporters by implementing STP/EHTP Scheme.
- To provide data communication services including various value added services to IT industries and corporate houses.
- To provide Project Management and Consultancy services both at national and international level.
- To promote small and medium entrepreneurs by creating a conducive environment in the field of Information Technology.

Key achievements of the organization are as follows:
Promotion of Development of software and software services

The STP scheme has been widely successful and the exports made by STP registered units have grown manifold over the years. During the year 2008-09 more than 10,000 units were registered under STP scheme. During the year 2008-09, 572 new units were registered under STP Scheme. As on 31st March 2009, 8455 units were operative out of which 7214 units were actually exporting. During the year from April to December, 2009, 347 STP units registered under STP scheme.

Provision of statutory services to the exporters across the country

In an effort to achieve its prime objective of promotion of development software and software services as well as to provide statutory and incubation services to industry, major thrust was given to establishing of new centres as well as revamping existing centres, as briefed below:

- **Gurgaon Centre**

  STPI launched an ambitious project to enhance Gurgaon Network Operating Centre (NOC) and Incubation centre, from a mere G+1 floor building to G+7 building (5410 sq.m) at an additional cost of Rs 22.72 Crores. CPWD has been entrusted with the responsibility of its construction.

- **Shillong Sub Centre Phase II**

  STPI Shillong has developed the incubation space of 465 sq. mtrs in addition to the existing incubation.

- **Construction of Buildings in PPP model**

  STPI has been engaged in launching construction of buildings on land in its possession (leased to it by State governments) in Hyderabad and Kolkata. In Hyderabad, Incubation project in the 1.5 acres land being developed under PPP Model.

Interaction is on at various levels for the initiation of

[Indicative Locational Map]
new sub-centers at various Tier II & III locations; such as: - Aizawl, Agartala, Agra, Bhopal, Belguam and Shimoga, Gulbarga, Expansion of Hubli Incubation and Creating “IT Destination – Mysore”

As of now a total of 51 STPI centres/Sub-centres are operational across the country. Out of these 51 centers, 44 centers are in Tier II and Tier III cities.

**Provision of data communication services**

One of STPI’s remarkable contributions to the software-exporting sector is provision of High-Speed Data Communication (HSDC) services. SoftNET, state-of-the-art HSDC network, designed and developed by STPI is available to software exporters at internationally competitive prices. Since its inception, STPI is credited with setting up its own International Gateways at 45 locations for providing HSDC links to the software industry.

Local access to International Gateways at STPI centres is provided through Point-to-Point & Point-to-Multipoint microwave radios for the local loop, which has overcome the last mile problem and enabled STPI to maintain a high up time of nearly 99.9%. The terrestrial cables (fiber/copper) are also used wherever feasible. These communication facilities immensely contribute to the development of offshore software activities and act as the backbone for the success of these enterprises.

STPI provides the following HSDDC services through its network:

- International Private Leased Circuits (IPLCs)
- Shared Internet Services
- VSAT Services
- Value added 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.

**Access Network/ Last Mile Connectivity (Local Loop)**

To address this shortfall, 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 customers. 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.

**Provision of Project Management and Consultancy services**

**CGSWAN Project, Govt of Chattisgarh**

STPI – Bhilai has been providing PMC services to Govt. of Chattisgarh for Chattisgarh State Wide Area Network (CGSWAN) which envisages bandwidth connectivity up to block level. Currently project execution is in progress.

**MP-SWAN Project, Govt of Madhya Pradesh**

STPI – Indore has been providing PMC services to Govt. of Madhya Pradesh for Madhya Pradesh State Wide Area Network (MP-SWAN) which envisages bandwidth connectivity up to block level. Currently project execution is in progress.

**Project Monitoring Services to Ministry of Youth Affairs and Sports**

STPI is providing professional services for development, installation, commissioning, Application Support, Support services, Value added features and enhancement, Data updation, Hardware and Software support of Project Monitoring tools and generation of MIS Reports for
Ministry of Youth Affairs and Sports, Commonwealth Games 2010, Delhi.

Jammu & Kashmir SWAN Project, Govt of Jammu & Kashmir

STPI Srinagar has been providing PMC services to Govt. of Jammu & Kashmir for J & SWAN Project which envisages bandwidth connectivity up to block level. Currently project execution is in progress.

Following projects are being undertaken during the year.

a) STPI Guwahati is providing the consultant services for Computerization of Employment Exchanges in the state of Assam for Govt. of Assam.
b) STPI Guwahati is providing the consultant services for IT Park Imphal project for Govt. of Manipur.
c) STPI Guwahati is providing the consultant services for Broadband Wireless Network of AIDC, Assam.

Khajane VSAT Network

STPI – Bangalore worked as a Consulting and Project management agency for KhajaneNET Project of Department of Treasuries, Govt. of Karnataka through which all the treasuries across the state of Karnataka were interconnected over a VSAT network with the hub at Bangalore.

Currently STPI-Bangalore is providing operation and maintenance service for this network. A Customized Fault Report Management System developed by STPI is deployed to track Service Level Agreement (SLA) and also trouble calls.

Terege Project

STPI – Bangalore provided PMC services to Terege Project of Department of Commercial Taxes, Govt. of Karnataka through VSAT network with hub at Bengaluru. The network connected nearly 91 branches across the state for collection and consolidation of the VAT (Value Added Tax) transactions data on daily basis. Currently, the Centre is providing operation and maintenance service for this network.

As an extension of the above project, STPI-B also designed a network to connect 22 Check posts spread across the state of Karnataka, with a hybrid model consisting of VSAT, Leased Lines and Dial up connections. The integration of Check posts into Terege reduced the time taken to check each vehicle and helped in bringing transparency in commodities checking. These Check posts electronically issue entry and exit passes to the vehicles carrying goods. Presently, 70% of the sites have been connected.

Bhoomi VSAT Network

The project envisages networking of 203 taluk offices of Revenue Department across the state of Karnataka on VSAT and electronically processing the land records and revenue transactions. STPI-Bangaluru is providing network design consultancy services and Project Management services for this project.

Municipal Network Project

Department of Municipal Administration is a nodal agency for Government of Karnataka to supervise the function of municipalities, work out suitable human resource policies, monitor the tax collection of Urban Local Bodies etc. STPI Bangalore has been providing technical services such as Operation & Maintenance Services for Data Centre, IT Management Services, Help Desk Support Services, Storage Area Network (SAN) Services and Internet services. Presently STPI Bangalore is providing IT Operations and Maintenance Support.

Satellite Monitoring Services

STPI-Bangalore has provided Satellite Monitoring Services for Europe Star and Panamsat by providing all the required infrastructure facilities such as Space, Uninterrupted clean power and Air conditioning for the co-location of the equipments.

The well trained staff of STPI-Bangaluru staff is providing 1st level support on 24/7 basis and also performs regular maintenance activities such as calibration, performance testing, etc.

- Europe Star

Teleport facility is located in the STPI, Network
Operation Center- STPI Bangalore has been monitoring the downlink signals covering the ISN Region (India/Nepal/ Sri Lanka) through the CSME facility (Communication System & Monitoring Equipment).

- The Panamsat

Teleport facility is located in the STPI Network Operation Center- STPI Bangalore has been monitoring the downlink signals covering the IOR (Indian Ocean Region) through the CSME facility (Communication System & Monitoring Equipment).

Promotion of small and medium entrepreneurs by creating a conducive environment in the field of Information Technology

Historically 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 exports promotion efforts as follows:

Incubation services

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

Organization of events

a) STPI Noida organized Hindi Workshop with NARAKAS on August 7, 2009 at V V Giri Labor Institute, Noida.
b) STPI Chennai participated as a co-host in CONNECT MADURAI-2009 at Madurai organized by Confederation of India Industry on 5th December 2009.
c) STPI Bangalore along with Government of Karnataka organized IT.Biz 2009 as a Co-Host.
d) STPI Bangalore had IT SME Growth meeting on 7th May, 2009 in Mysore and IT interactive Meet on 15th May 2009 in Mangaluru and Manipal.
e) STPI Bangalore had organized Incubation Day on 25th Sept, 09 to provide valuable guidance and support through expert talk to nurture entrepreneurs.

Sponsorship/co-sponsorship of events

a) STPI Noida sponsored Northern India International Trade Fair-09 held on October 6-13, 2009 at Dehradun.
b) STPI-Guwahati sponsored NICT 2009 organised by ABP Group for IT Awareness on 28 & 29 August, 2009 at Guwahati.
c) STPI-Kolkata Co-sponsored 12th National Expo at Kolkata held on Sept 2-6, 2009.
d) STPI-Kolkata Co-sponsored ICT East 2009 organized by CII at Kolkata held on August -2009.
e) STPI-Kolkata Co-sponsored NASSCOM CEO Summit organized by NASSCOM at Kolkata held on Sept 15-16, 2009 at Kolkata.
f) STPI-Chennai supported the 9th edition of India’s premier ICT event ‘Connect 2009’ Exhibition cum conference, organized by the Confederation of Indian Industry and supported by Government of Tamil Nadu and Ministry of Communication & Information Technology from 11th September 2009 to 13th September 2009

Participation in Events

a) STPI Noida participated in Destination Uttrakhand 2010 held on October 10-12, 2009 at Dehradun.
b) Participated in India International Trade Fair-2009 held on November 14-27, 2009 Pragati Maiden, New Delhi.
c) Participated in Telecom India – 2009 held on December 3-5, 2009 at Pragati Maiden, New Delhi.
d) Participated in “Open Day/workshop” conducted by Bio-Tech Park, Lucknow on December 24, 2009.
f) STPI-Rourkela & Ranchi participated in CIE, CII Seminar and Explitrom 2009 NIT.
g) STPI Bhubaneswar participated at BangaloreIT.biz 2010 with Orissa State Govt.
h) STPI led the delegation to UK & Japan in the month of September & November 2009 respectively with the objective of creating larger visibility to the Indian Semiconductor Industry & attracting potential investors to the sector in India.
MTNL STPI Joint Venture

STPI is implementing the project for ‘India.in’ portal and associated services including free email and web hosting services. The free e-mail service under the India.in portal would be provided in Indian regional languages along with Hindi and English.

STPI has formed a Joint Venture Company with Mahanagar Telephone Nigam Limited (MTNL), named MTNL-STPI IT Services Limited (50:50 equity partnership) to implement the India.in portal and associated services. MTNL with its huge customer base would bring in the requisite expertise in management and servicing end users which is vital for the success of India.in with following activities.

- Setting up of the unique Internet Data Center (IDC), facilitating to launch portal services offering information repository, email services, web hosting, content syndication, application and data hosting through the portal india.in. Also aimed to provide collocation services, which will be as per Tier III compliance.

Under above project, MSITS has already completed the creation of physical infrastructure required for the near Tier III Data Center. M/s TCS has already been handed over around 1200 Sq Ft of Data Center for hosting of Racks for ‘Passport Sewa’ Project of Ministry of External Affairs.

SAMEER also Developed Radio frequency sub-system and High performance antenna for use in Software defined radio for supply to C-DAC.

Large bandwidth and high performance antennas developed and 3 technical papers published in peer technical journals. These antennas were demonstrated to potential users like DRDO and ISRO.

RF dryer to Tocklai Tea Research Institute in Jorhat, NE region and Medical disinfection system for Tripura were supplied.

SAMEER also Developed and demonstrated Ka band power divider and Frequency Multiplier Modules for possible application in W band communication requirements and as per user agency requirements.

SAMEER developed DSP based smart antenna solution for the first time in India and demonstrated for various applications including active array apertures.

During this period SAMEER Conducted 225 assignments for test and 12 assignments for technical consultancy for Electromagnetic Interference/ Electromagnetic Compatibility to about 125 industries across India. Thermal design analysis carried out for Indian Satellites and technical analysis report submitted to M/s ISRO.

Research on dual energy linear accelerator for comprehensive cancer treatment is pursued and techniques for high energy beam bending is developed in association with Pune University.

RF dryer for variety of applications developed and demonstrated to Industries in India and abroad. With a collaborative arrangement with University of Saskatchewan, Canada, high performance dryers design has been taken up and interacted with national agencies for supply.

SAMEER has delivered RF communication system for reliable data transfer to defence agency and the same has been integrated with the end application module and tested successfully. Upgraded version of the system has been taken up for development.
SAMEER provided technical guidance to M.Tech and M.S graduate students for their project work at all the three centers, (Mumbai, Chennai, Kolkata).

SAMEER Conducted 3 day workshop on EMC by design at SAMEER, Chennai in June 2009, which was participated by 90 delegates from Industry and research institutions. The Electromagnetic Compatibility laboratory at Mumbai accredited to National Accreditation Board for Testing & Calibration Laboratories (NABL) for international recognition.

**DOEACC Society**

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, Electronics & Communication Technology (IECT). The Society has 12 Centres at Agartala, Aizawl, Aurangabad, Calicut (with Southern Regional Office at Pudukkottai), Chandigarh (with 3 branch offices at Shimla, Lucknow & New Delhi), Gorakhpur (with Eastern Regional Office at Patna, Bihar), Imphal, Srinagar/Jammu, Kohima/Chuchuyimlang, Kolkata, Shillong and Tezpur/Guwahati with its Headquarter at New Delhi. Two more Centres at Chennai (Tamil Nadu) & Gangtok (Sikkim) are being set-up.

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

**DOEACC Scheme on Computer Courses**

The Society is implementing DOEACC Scheme on Computer Courses 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.

**IT Literacy Programme - Certificate Course in Computer Concepts (CCC)**

DOEACC has been conducting Courses on Computer Concepts (CCC) since the year 1999. The course is designed to aim at imparting a basic level appreciation programme for the common man. The course has been recognized by State Governments of Gujarat, Maharashtra and also by other Government Departments for new appointments/promotions. The CCC examination is currently being conducted online thrice in a year. Approximately 3.1 lakhs candidates have appeared for the examination through online as well as offline mode (CD based) and more than 2.2 lakhs have been certified.

**Courses offered by DOEACC Centres are given below:**

**Formal Courses**

- M.Tech in Electronics Design & Technology (2 years duration at Aurangabad, Calicut Centre)
- 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 Centre)
- Diploma in Electronic Engineering & Telecommunication Engineering (3 years duration at Aizawl Centre)

**Non-Formal Courses**

- DOEACC ‘O’ / ‘A’ / ‘B’ / ‘C’ level IT Courses
- DOEACC ‘CHM-O’ / ‘CHM-A’ level H/W course
- Bio-Informatics ‘O’ / ‘A’ / ‘B’ level
- ITeS-BPO customer care / Banking
- Course on Computer Concepts (CCC)
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

**MoU with NCPUL**

An MoU is being entered into with National Council for Promotion of Urdu Language (NCPUL), M/o HRD, Govt. of India for conducting training programmes namely DOEACC ‘O’ level, CCC, Basic Course in Computers (BCC) and 1 year Diploma in Computer Application, Multilingual DTP & Financial Accounting and also for providing Infrastructure and Technical manpower at 265 CAM-DTP existing Centres and 50 new CAM-DTP Centres throughout the country.

**Development of CCC course contents in Regional Languages**

The CCC course contents in English, Hindi and Punjabi have been developed. It is also hosted on the website of DOEACC society for free delivery in e-learning mode. The Marathi version is about to be completed. The Kashmiri, Urdu, Bengali, Assamese, Tamil and Malayalam versions are under process of development.

Launching of Online Course

An online advanced course in .NET Technologies was conducted by DOEACC Centre, Calicut with an intake of 34 students. This is the first online course by DOEACC Society. The course was delivered in e-learning mode using a Learning Management System (LMS). The students accessed the learning content with a login provided to them at their home/office. Online test and assignments were conducted and the work was evaluated on a weekly basis to ensure quality of the training.

Launching of Certification Scheme in Information Security

As part of launching a National Level Certification Scheme in Information Security under the ISEA Project of the Department, the training for Level 1-Certified System Security Analyst (CSSA) has been announced.

Projects for N-E Region

**Project under Capacity Building and Technical Assistance Scheme of DONER:** DOEACC Society is implementing a project to train about 235 candidates of N-E Region in various courses of DOEACC Society through its Centres at Guwahati, Imphal, Kohima and Kolkata Centres. Under the project, free lodging facility will be provided so as to attract candidates from weaker sections and remote locations of the region.

**Certificate Course in Digital Media Creation:** DOEACC Centre, Kolkata is training 57 youths from N-E region on Digital Media Creation with the financial assistance of DONER.

Public Private Partnership in the IT Sector

**MoU with Cypress Semiconductor Corporation, USA:** DOEACC Centre, Calicut has entered into an MoU with Cypress Semiconductor Corporation, USA for providing technical training and development of Intellectual property and for setting up of a joint programmable System-on-Chip (PSoC) mixed signal array with configurable digital and analog blocks’ at DOEACC Centre, Calicut with the approval of Administrative Ministry.
Opening up of New DOEACC Centres

Setting up of DOEACC Centre, Gangtok (Sikkim) with financial support of the Department: The Department has approved a project for setting up of DOEACC Centre, Gangtok over a period of 4 years.

Programmes aimed at Empowerment of Women

Training of Graduate / Under-graduate women candidates for ‘O’ & ‘A’ level at DOEACC Centres at Kolkata, Gorakhpur, Srinagar & Jammu: Under the project, DOEACC Centres will be training 400 Graduate / Under-graduate women candidates in DOEACC ‘O’ & ‘A’ level courses over a period of 2 years at 3 locations.

Training of Graduate / Under-graduate women candidates for ‘O’ & ‘A’ level at DOEACC Centre Chandigarh and its extension Centres at Shimla, Lucknow and Delhi: Under the project, DOEACC Centre, Chandigarh and its branch offices located at Shimla, New Delhi & Lucknow will be training 600 Graduate / Under-graduate women candidates in DOEACC ‘O’ & ‘A’ level courses over a period of 2 years.

Advance Course in Software Development for Women: Under the project, DOEACC Centre Gorakhpur will be training a total of 150 women over a period of 3 years. The candidates will be trained in .NET, Java and Linux so that the candidates get employment as software developer and programmer in IT industries.

ITEs-BPO Course (Customer Support Programme): Under the project, DOEACC Centres in N-E Region will be training a total of 4800 women candidates over a period of 3 years.

Programmes for SC/ST and other Economically Weaker Sections

Training of SC/ST Job Seekers registered with Employment Exchanges in DOEACC ‘O’ Level courses: DOEACC Society is providing training to about 2000 SC/ST job seekers registered with the Employment Exchanges throughout the country (20 locations) with the financial support of Directorate General of Employment & Training (DGET), Ministry of Labour & Training. The candidates are being trained in 2 batches.

Training of students from Minority Communities

DOEACC Centre, Calicut and Regional Office at Pudukkottai is conducting training programme for the students belonging to Minority Communities with the financial support of Ministry of Minority Affairs. A total of 66 students were trained up to December, 2009 under this scheme.

DOEACC Scholarship Scheme for SC/ST/OBC/ Female/Physically Handicapped and other Economically Weaker Sections

The society has got a large number of candidates belonging to the SC/ST/OBC and other weaker sections of the society including female candidates enrolled and qualified in the courses. Keeping in view the demand of the courses among the weaker sections of the society, DOEACC Society has a Scholarship Scheme for SC/ST/Physically Handicapped and Female Students who are pursuing O/A/B/C level courses of the DOEACC Society as a full time course through an Accredited Institute authorized to conduct the DOEACC 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 Rs.1 lakh per year from all sources.

Details of SC/ST and female candidates registered for DOEACC IT Software Scheme during 2009-10 are as under: -

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Registered</td>
<td>38013</td>
</tr>
<tr>
<td>No. of Female Students</td>
<td>14489</td>
</tr>
<tr>
<td>No. of SC Students</td>
<td>1037</td>
</tr>
<tr>
<td>No. of ST Students</td>
<td>372</td>
</tr>
<tr>
<td>Differently abled</td>
<td>95</td>
</tr>
</tbody>
</table>

During the year, a total of 696 candidates have been provided scholarship in respect of January, 2008 & July, 2008 exams. Released Scholarship payment for another 264 candidates of January, 2009 exam and received 364 nos. of Scholarship applications of July 2009 exam which are under process.
Achievements during 2009-10

### Sl. No. | Activities | Target (2009-10) No. of Students to be trained | Achievements during the year 2009-10 (upto 31.12.2009) No. of students (Trained / Undergoing training)
--- | --- | --- | ---
1. | DOEACC Scheme | 20,000 | 5,813 (July ’09 Exam qualifiers)
2. | DOEACC Centres | 1,599 | 1,140
3. | 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 | 12,730 | 4,687
4. | Training for Short Term Courses of duration less than 1 year | 11,168 | 5,918
5. | ITES-BPO Programme | 1,500 | 703
6. | IT Literacy Programme (CCC course) | 90,000 | 88,722 appeared in CCC examination. 66,076 qualified in CCC examination.

Other major Achievements

- 19 DOEACC Bio-Informatics ‘B’ level qualifiers were awarded M.Sc.(Tech) degree by West Bengal University of Technology(WBUT). Another 51 students are expected to complete the MSc(Tech) by March 2010.
- One candidate awarded PhD (Engg.) by Dr. B.A.M. University out of the 8 candidates registered to avail the research facility undergoing research at DOEACC Centre, Aurangabad.
- DOEACC Centre, Aurangabad signed an MoU for collaborative/ sharing of resources of academic/ research & related services with following organizations:-
  (i) Marathawada Institute of Technology (Aurangabad).
  (ii) Confederation of Marathwada Industries and Agriculture (CMA).
- DOEACC Centre, Chandigarh has developed and implemented following Interactive Voice Response System (IVRS) for various departments:
  (i) Developed and Implemented system for National Rural Health Mission for capturing information on female feticide and gather information about various immunization/ health services provided.
  (ii) Developed and Implemented system for Department of Water Supply and sanitation, Punjab to facilitate villagers to register their complaints regarding water supply (Quality and Adequacy).
  (iii) Developed software for U.T. Administration, Chandigarh for registering complaints of various Engineering & Environment related departments.
- DOEACC Centre, Gorakhpur has launched web site http://eshiksha.edu.in for web based education.
- DOEACC Centre, Gorakhpur has developed course material for “Training of Teachers in e-learning” and hosted on the web-site.
- DOEACC Centre, Kolkata is engaged in processing & tabulation work for the entire country with respect to VIIth Agricultural Census 2005-06 and VIIth Input Survey 2006-07. Around 10 crore data records are being prepared from Census/ Survey schedules and compiled for generating agri-statistics on land usage, extent & source of irrigation, live stock, usage of inputs (like fertilizer, manure etc.).
DOEACC Centre, Kolkata is processing for Recruitment Examination including Answer Script Evaluation using self-developed image-processing application software mainly for recruitments in Govt since 2002. States like West Bengal, Tripura & Meghalaya and also some other States & Central Govt. agencies are engaging the Centre for such work. The Centre is processing for recruitment of around 17 lakh candidates in total.

DOEACC Centre, Calicut has entered into tie-up with Kerala State IT Mission to launch 12 training programmes under DOEACC Skill Certification Scheme (DSCS) in IT and Multimedia through Akshaya Centres all over Kerala.

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 viable technologies in the area of electronic materials. C-MET is operating with its laboratories at Pune, Hyderabad and Thrissur.

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.

Achievements during 2009-10

Integrated Electronics Packaging

- Electroplated bumps of Sn-Ag-Cu with 25mm dia and 75mm pitch prepared. A UBM consisting of electroplated Ni and Cu used. Optimization of bump formation process is in progress.
- Cu-cladding cycle is optimized in the vacuum laminating press and a peel strength of 9 lbs/in is obtained for Cu-cladded PTFE/RE$_2$O$_3$-Nb$_2$O$_5$ composites.

Nanomaterials and devices

- Nanopowders of Aluminum were synthesized by TAPR at different power(250-300 A) and chamber pressure and characterized by SEM, EDX and AFM and XRD.
- Based on preliminary results for the formation of Ag$_2$Se nanocrystals (average size 10-20 nm and Ag: Se ratio 2:1), further experiments executed by variation of surfactants and temperature.
- Prepared Fe-Pt nanoparticles with phase purity (fcc), as confirmed by XRD and having magnetic coercivity of the order, 6 Koe.
- Nanosized NTC powder was prepared through SHS method.
- The reliability studies of NTC thermistors carried out.
- Prepared stable precursor solution for fabricating zinc tin oxide thin films by spin coating and initiated the coating of transparent films using the precursor solutions.

Ultra high purity materials

- 7 N pure Ga achieved.
- 6 N pure Zn produced by multiple vacuum distillations.
- Specifications of process equipment for Bi frozen Trial zone refining experiments on 4N pure Bi were carried out to obtain ultrapure Bi.
- Hafnium process steps demonstrated to QC team of VSSC.
- Hydrogen reduction of tantalum chloride conducted.
- Signed MOU with DMRL for the development of “Ultra high quality Silicon Carbide single crystals for advanced Electronic devices” and with VSSC, Trivandrum for “establishment of extended pilot plant facility of Hafnium Sponge”.

Materials for Renewable Energy

- Prepared RF gels using Ni-acetate (instead of Na$_2$CO$_3$).
- Prepared carbon aerogel based electrodes using selected carbon aerogel composition and studied their electrical properties.

Piezo sensors and Actuators

- Unimorph actuators fabricated.
- Highly-crystalline, crack-free and dense PZT Thin-films have been achieved. The PZT thin-films exhibited excellent dielectric characteristics.
- Optimization of piezo to non-piezo layer thickness is under progress.

Intellectual output during the year 2009-10

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Research publications in journals</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Conference presentations</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Invited talks</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Awards and Honors</td>
<td>2</td>
</tr>
</tbody>
</table>
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 are as follows:

- Facilitates participation in Global Trade Shows / Expositions and Conferences.
- ESC facilitates business interface between Indian and foreign companies through Buyers – Seller Meets, and locates new business partners for Indian electronics, computer software and IT companies.
- For facilitating foreign trade, ESC provide on-line facility for Data Search.

Target & Achievements during the year 2009-10

<table>
<thead>
<tr>
<th>Targets</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>India Soft 2010</td>
<td>As in previous years, ESC will be organizing the 10th edition of INDIASOFT series i.e. INDIASOFT 2010 on 10th, 11th &amp; 12th March, 2010. B M Birla Auditorium, Statue Circle, Jaipur, Rajasthan. More details can be accessed from the INDIASOFT 2010 website <a href="http://www.indiasoft.org">www.indiasoft.org</a>. INDIASOFT 2010 will witness convergence of IT experts/professionals/entrepreneurs/outsourcing agents from global markets, besides a host of renowned Indian companies. Comprising of International Exhibition and Conference, INDIASOFT 2010 is meant to facilitate joint ventures, collaboration and strategic alliances for outsourcing with overseas buyers. Over 100 Indian IT companies will be showcasing their IT products and services at INDIASOFT 2010. Around 200 software &amp; services buyers from over 40 countries including USA, Canada, EU, Middle East, Japan, China, Korea, LAC, Africa, CIS, ASEAN region etc will be participating at INDIASOFT 2010.</td>
</tr>
<tr>
<td>Publications</td>
<td>1 ELSOFTEX, the monthly newsletter of ESC contains features of market surveys, developments in the international trade, business opportunities, changes in Government policies and procedures. 2 ESC publishes annual Statistical Year Book which gives details of India’s exports in the Electronics, Telecom and Software/services sector. 3 ESC brings out reports of market surveys, importers’ listings, directories, country reports, etc., for the benefit of its members.</td>
</tr>
<tr>
<td>Participation in delegations abroad</td>
<td>The Council organized some delegation visits abroad:- 1 Delegation visit to Colombia (November 9-10, 2009) 2 Delegation visit to USA (12th November, 2009) 3 Delegation visit to Kenya &amp; Tanzania (30th November – 5th December 2009)</td>
</tr>
<tr>
<td>Export Facilitation and Business Support Centre (EFBSC)</td>
<td>The Council launched its second Export Facilitation and Business Support Centres (EFBSC) in Fairfax Virginia USA under the Market Access Initiative (MAI) Programme on 8th June 2009. The 5 member companies started reaping benefits.</td>
</tr>
</tbody>
</table>
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 operates its leased line network through 15 Points of Presence (PoP) spread across the country serving high speed Internet customers across the country. All the connectivities to the customers are monitored round the clock 365 days a year to continuously evaluate and maintain the highest uptime and performance.

ERNET continuously strives to induct the latest technologies and services in its network and facilitate the users in their Research. Some of the initiatives taken by ERNET in this regard include: -

- All ERNET infrastructures are IPv6 enabled across the country.
- The core routers and switches are being upgraded to 1Gbps and 10Gbps capabilities.
- Internet Backbones have been augmented to provide enhanced experience to the customers.
- A network of fiber based Multi Protocol Label Switching (MPLS) service for Last mile connectivity at customers location is rolled out to provide scalability, reliability and robustness at user locations.
- International connectivity to the European Research network is enhanced to 175Mbps.
- A node of 2.5 Gbps connectivity to the Trans-Eurasia Information Network (TEIN3) connecting Indian Education and Research community to South Asia at Singapore and 2.5Gbps to Europe is in advance stage of establishment at ERNET Mumbai.

The various other projects being handled by ERNET India are as under: -

**National Quality of Service (QoS) Test Bed**

The Department has funded a project for establishing a nationwide IP based QoS network. ERNET India in association with premier institutions including IITs, IISc and C-DAC initiated the project. To test and experiment the concept of QoS, applications like IP Telephony and Video Conferencing for distance learning / e-Learning have been chosen.

ERNET India has set up QoS enabled network testbed among institutions with 2Mbps link from its backbone. The participating institutions are linked to each other with Label Switch Paths (LSPs) for carrying out the experiments and studies on the testbed. ERNET India has also deployed MPLS on its backbone to ensure better control on bandwidth for delivering services and the project has been completed.

**e-Linkage of Universities under UGC Infonet**

Under UGC Infonet, 157 Universities are connected over ERNET Backbone and 3 Universities are to be connected with 2Mbps leased line. All the 160 Universities are proposed to be upgraded to 2 Mbps (1:1) link. Till date the connectivity of 133 universities has been upgraded to 2 Mbps (1:1) link. ERNET India is maintaining a web site for UGC Infonet project. The website also provides bandwidth utilization graphs of the various Universities.

**Community Information Centres – Vidyavahini (CIC-VVs)**

CIC-V Vs 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 centers enable schools to have unlimited web access to Internet applications, e-contents on variety of topics such as arts, economics, biographies, history, languages, mathematics, philosophy, etc. The VSAT link enables distance education. Under this project, 69 nos. of CIC-V V sites are operational and 2 more will be setup after readiness of the school buildings.

**MOU with Kendriya Vidyalaya Sangthan**

ERNET India has signed a Memorandum of Understanding with Kendriya Vidyalaya Sangthan under the Ministry of Human Resource Development to strengthen the computer education programme at their Kendriya Vidyalayas. The project will setup KVS-Net connectivity of remote Vidyalayas under KVS, providing internet access.

**ICT Vocational Centres for Children with Disabilities-Phase II**

After successful implementation of the pilot project, in which ICT centres were setup in 21 schools - 10 in Tamil Nadu and 11 in NCR Delhi - ERNET India initiated the second phase of the project. In this phase it is proposed to implement vocational centers in 100 locations across the country. Children with multiple disabilities, Spastics and Physically Impaired are also being covered in this phase.

**e-Linkage of Jawahar Navodaya Vidyalayas**

Navodaya Vidyalaya Samiti (NVS) under the Ministry of Human Resource Development has planned to provide connectivity, IT infrastructure, training and course curriculum content to all Jawahar Navodaya Vidyalayas spread across the country. ERNET India has provided Broadband VSAT connectivity of 128Kbps to 101 Navodaya Vidyalayas in Phase I and connectivity of 256Kbps to 100 Vidyalayas in Phase II. Under Phase III, 70 more schools all over the country have been provided connectivity through VSAT and this is being extended to 30 more schools across the country.

**e-Enabling of Krishi Vigyan Kendras under ICAR**

Under an MoU, ERNET India is setting up a satellite hub and deployment of Information Technology Infrastructure at 200 Krishi Vigyan Kendras (KVks)/ Zonal Coordinating Units under ICAR. Site preparation work, UTP LAN and electrical cabling, air conditioning, etc., have been completed at all 199 KVk/ZCUs. The IT Infrastructure at each KVk consisting of a server, desktop PCs, printers, scanner and LAN switch has already been delivered at 100KVks/ZCUs. The establishment of dedicated Satellite Hub of ICAR is in progress. The site survey at 200KVks/ZCUs for remote VSATs is in progress. 1382 officials from 200KVks/ZCUs have been trained on Internet, emailing, use of computer, web site development and operations of local area network.

**Agreement with ICAR for setting up a Centralized Data Center**

An agreement with Indian Council of Agricultural Research - National Agricultural Innovation Project (ICAR-NAIP) had been concluded for setting up a secured Centralized Data-Center for 274 ICAR institutes connected under National Agricultural Technology Project (NATP).

**Setting up of video conferencing facility**

ERNET India has implemented projects for setting up the Video Conferencing facility at multiple locations of organizations like DGS&D and National Institute of Immunology (NII), New Delhi. Order for provision of video conferencing at various Govt. Offices of UP Govt. has also been placed and its implementation is underway.

**BELIEF II - Bringing Europe’s Electronics Infrastructure to Expanding Frontiers**

BELIEF II is an EU FP7 project spanning over 24 months, starting April 2008, with the aim of
supporting the goals of e-Infrastructure projects to maximize synergies in specific application areas between research, scientific and industrial communities. It is a consortium project of 7 institutions including ERNET India; Metaware SpA, Italy; CNR- ISTI, Italy; University of Athens, Greece; Escola Politécnica da Universidade de São Paulo (PUSP), Brazil; Brunel University, UK and Meraka Institute, South Africa. BELIEF-II will coordinate the efforts of many e-Infrastructure projects to further enlarge the e-Infrastructure Community.
National Informatics Centre

National Informatics Centre of the Department, a premier S&T organization of Government has been providing informatics support to Central Ministries, State Government and District Administrations for the last few decades. For many years NIC has played substantial role in using ICT to streamline internal Government functions and is now facilitating implementation of e-governance towards effective citizen services. As a major step in ushering in e-Governance, NIC has been involved in supporting the government in areas of Internet/Intranet Infrastructure and IT empowerment of officers at all levels, preparing IT Plans for Sectoral Development and developing IT enabled Services including G2G, G2B, G2C and G2E portals.

A country-wide satellite based communication network NICNET has been set up as backbone network infrastructure for Government informatics providing linkages in 35 States/Union Territories and 616 districts. The network infrastructure links over 3000 nodes in Wide Area Network and about 50000 nodes of Local Area Network with a dense coverage of the North Eastern part of the country. The network operations incorporate Cyber Security, Internet Data Centre, Disaster Recovery Centres, Network Operations facility, Certifying Authority, Video-Conferencing and capacity building set up across the country. ICT support in terms of planning, software design, development and roll out is provided to almost all Central Government Ministries, Departments, State Governments and District Administrations.

A wide range of Services are provided through NIC that include Network Services, Video Conferencing, Web Services and Messaging Services, Data Centre Services, E-Commerce, e-learning, office automation, IT Consultancy Services, Digital Archiving, GIS and training. NIC has successfully implemented many major National level e-Governance projects in various sectors such as National Knowledge Network, National Portal of India, Transport, Land Records, Property Registration, NREGA, ePRI, Treasuries, VAT, e-Procurement, Geographic Information Systems, Foodgrains Management, AGMARKNET, Passport and Immigration, etc.

E-Governance Infrastructure

NICNET – E-Governance Network Backbone

NICNET, a Nationwide 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. This high bandwidth network forms the backbone in the country to support e-governance initiatives in various sectors, and plays a pivotal role in decentralized planning, improvement in Government services, wider transparency of national and local Governments and improving their accountability to the citizens.

NICNET utilizes variety of technologies including terrestrial and VSAT networking to provide connectivity across the country and is now extending
to the grassroot level. Mode of connectivity is decided based on suitability depending on factors such as user requirement and terrain. State Wide Area Networks (SWAN) in a number of states are also being integrated with NICNET. Wireless Metropolitan Area Network (MANs) and Local Area Networks (LAN) have also been established in various government setups to access the NICNET services.

State Capitals are connected to National Capital by high speed links of upto 155 Mbps links on Optical Fibre Cable (OFC). Districts are all connected to respective state capitals through leased lines. The existing 2 Mbps Leased data circuits from State Capitals have been enhanced to 34 Mbps for 174 districts. Leased circuit connectivity has been provided to 1318 Post Office across the country. Over 50,000 nodes of Local Area Networks in Central Government offices and State Government Secretariats are operational including 6500 nodes in NE States. The Integrated Network Operations Centre (INOC) at Delhi manages and monitors all NIC Centres in States, Districts & Bhavans. INOC has been equipped with a Video Wall for effective monitoring of the network services. Facility Management Services are provided at NIC HQ, States, Districts and Bhavans.

NICNET is operating on two satellites, Intelsat 906 and INSAT 3A with 2300 DVB technology VSATs and 650 SCPC DAMA VSATs. VSAT network covers all NIC state and district centers as well as various projects such as e-Kosh & e-Panchayat in Chhattisgarh, GRAMSAT in Orissa, Sub Division Offices in North Eastern states and blocks in Jammu & Kashmir. Video-Conferencing services over NICNET presently connect 700 locations. 10 DVB VSATs are under deployment to act as a backup under EVCS project to give continuous VC service for the Secretaries in the Northeastern states and Lakshadweep.

### Data Centres

NIC has setup large Data Centres at Delhi, Hyderabad and Pune (in progress) which provide shared hosting and co-location facilities to the Government across India. Besides this, Data Centres are also operational in all NIC State Centres to cater to the e-governance requirements of the states.

NIC has its Internet Data Centre at Delhi equipped with approximately 450 servers, state of art storage infrastructure and high speed network connectivity. The Data Centre has got ISO/ IEC 27001:2005 ISMS (Information Security Management System) certification for Web Hosting Service, Database Hosting Service, Co-location Service, Storage Service, Backup Service, and Webcast Service. The Storage Capacity has been upgraded from 160TB to 260TB to accommodate more & more applications and provide Disk to Disk backup for critical applications.

The facilities at the National Data Centres at NIC, Hyderabad established in 2008-09 were expanded to include 150TB of SAN storage with 2.5 GBPS connectivity to NICNET and 344 Mbps direct link to Internet. The Centre is providing hosting services and also acts as Disaster Recovery Centre (DRC) for IDC at NIC Delhi. It is also acting as a Disaster Recovery Site for applications hosted in Gujarat and Rajasthan.

### National Knowledge Network

NIC has been designated as the Implementing Agency for National Knowledge Network (NKN) which aims at connecting stakeholders in Science & Technology, Higher Education, Research & Development and Governance with speeds of the order of gigabits per second. NKN will result in a high capacity countrywide Infrastructure at education & research Institute level, which will be available 24x7 to support education and research applications and other applications as envisaged by these institutions requiring very high bandwidth. 45 Institutions were connected and six virtual classrooms established at 6 IIT’s during 2009-2010. It is proposed that 33 additional institutes will be connected to the National Knowledge Network and all IITs will have virtual classrooms by the end of March 2010.

### Web Services

NIC is extending a comprehensive World Wide Web services to Central and State Governments Ministries & Departments. Important websites of NIC include India Image Portal, Government of India Web Directory, Districts Portal, Exam Results Portal, Government Policies Portal, Tenders Portal, Portal related to offices of President of India and Prime
Minister Office. Hosting infrastructure support is being provided to a number of large scale e-governance projects like National Rural Employment Guarantee Scheme, Department of Drinking Water supply Project, E-Lekha Project, AGMARKNET Project, Admission Counseling projects at central and state level for seat allocation during admissions in various professional and technical programmes. Live webcast services are being provided for various programmes, events and conferences. Some of the recent events webcast include Independence Day and Republic Day Celebrations, Union Budget Speech, Parliament Proceedings, PIB Conference.

NIC Messaging Services

A comprehensive web based Messaging Service (http://mail.nic.in and http://mail.gov.in) has been extended to all the Ministries and Departments of Govt of India. During 2009-10, a fully operational Disaster Recovery site has been set up for this service at National Data Centre, Hyderabad. The service is available over web and Post Office Protocol (POP), using a Secure Socket Layer (SSL) channel and supports all popular email clients like Microsoft Outlook and Thunderbird. NIC provides virtual messaging domains also and provides service to over 350 domains.

Video Conferencing (VC) Services

Videoconferencing services over NICNET are being provided from its 540 existing studios spread across India. In current year, Videoconferencing services were expanded to 90 additional districts thereby covering all districts in India. VC services are being used by Hon’ble President of India, Hon’ble Prime Minister, Chief Information Commissioner, Chief Ministers of various states, Cabinet Secretary and Chief Secretaries, Central and State Government departments at all levels. An average of 5000 multisite conferences with total of more than 1,50,000 site hours of Videoconferencing sessions are being held through NICNET.

Virtual Class Room are being setup for IITs over National Knowledge Network (NKN). NIC has already completed Pilot setup in 6 IITs viz., IIT Madras, IIT Bombay, IIT Guwahati, IIT Patna, IIT Hyderabad and IIT Gandhinagar. Executive Videoconferencing Systems (EVCS) network has been setup for the offices of Cabinet Secretary, Secretaries to Government of India, Chief Secretaries of various States and Administrators of UTs and Chief Post Master Generals of postal circles. NICNET connectivity is being extended to all DGP offices and a reliable, secure audio visual communication channel is being established with EVCS network. Videoconferencing facilities are being upgraded with state of art technology at 186 districts by providing a High Definition Videoconferencing systems.

Cyber Security

NIC provides necessary security for network, servers, applications and client systems by introducing security appliances at the critical network segments of NICNET using network firewalls, Intrusion Detection Systems/Intrusion Prevention Systems, Application Firewalls etc. Additionally, work is being done in the areas of Formulation of NICNET Security Policies, Restructuring of the network, Patch Management, Anti-virus Services, Secure Communication Establishment using VPN/ SSL, Scanning of servers for vulnerabilities and hardening, Security Auditing of networks and applications, Log analysis, Security Incident monitoring, Analysis and Response, Development of PKI enabled applications, etc.

Certifying Authority

NICCA issues all classes of certificates viz. Class I, Class -II and Class III and more than 28000 DSCs (individual & device) have been issued till date. NICCA is expanding its reach further and has opened seven Registration Authorities (RA) at NIC Bangalore, NIC Bhubneshwar, BARC Trombay, Mumbai, ECIL Hyderabad, NIC Lucknow, NIC Chandigarh, VECC, Kolkata.

GIS and Remote Sensing Services

“National GIS Web Portal” has emerged as a common single window system for spatial data infrastructure and services. The information is available up to village level. The same is being
leveraged and enhanced for better and higher application services for various government users. The above Spatial Data Infrastructure has been leveraged to State with setting up of ICT infrastructure for GIS based services in States.

GIS services have been expanded at National, State and District Level deploying spatial and non-spatial data available with NIC for E-governance and planning purpose for critical sectors such as health, education, water, soil and agriculture, environment, telecom, mineral, postal communication and so on. Digital Spatial Data has been enriched in terms of accuracy of village locations & Boundaries, Gram Panchayat Boundaries for Backward Area Index Mapping Enhancement of Raster as well as Vector GIS services through Image Integration with better visualization.

Utility Mapping

Under the Computer Aided Digital Mapping Project for Six Cities, the aerial photography with extended area has been completed for Ahmedabad, Bengaluru, Chennai, Hyderabad and Kolkata. Base map compilation and linkage of attribute data collected in the field to the base map features for Mumbai, Hyderabad, Chennai and Ahmadabad completed. The utility agencies are able to access the base map data located at the central map server to overlay their utility network on the digital base map for location identification. NIC has developed “Modified Property Tax Module” and “Grievance Module” for GHMC, Hyderabad as part of the project. The Modified Property Tax Module can identify the structure on the map and detect the changes in the structure and assess the tax for modified structure. The Grievance Module allows marking the location of fault on the map and registers the complaint online on the roads, street lights and dumper bins etc. Under the Computer Aided Digital Mapping Project (Delhi), base map updating for South Delhi is completed and south-west Delhi is in progress from aerial photography of the year 2002. The extension of ground control for NE and NW Delhi is completed. The digital base map is being accessed by Delhi Jal Board, Delhi Police, Delhi Traffic Police on 24 X 7 basis.

Computer Aided Design (CAD)

CollabCAD support (a CAD/CAM/CAE solution that can be used by the strategic sector, industries and educational institutions) and training centres have been set up in various educational institutions to provide trained manpower to the industry. The institutes will act as support centers for industry in their proximity besides training the students. Agreement has been signed between NIC and CBSE for Support and Training of CollabCAD to help CBSE to introduce CollabCAD in the course curriculum of the Engineering Graphics course for Class XII from 2010-2011 session. CollabCAD was launched for the industries in 2009.

Capacity Building

Government Informatics Training Programme

Training Division at NIC Hqrs conducted update training programmes in J2EE, Advanced.Net, Postgres, MS SQL Server, Advanced Linux, Windows Server, Secure Application Development, Web Hosting Services, SVN, Mantis, Hibernate, JUnit, Wicket Framework, Xforms, using Virtual Classroom technology, in which over 900 NIC officers from all over India participated. Management Development Programmes were conducted at IIM Indore and ISTM Delhi in which 75 NIC officers participated. Project Management Programmes were also conducted for 40 participants. Sponsored programmes included workshops on e-Governance (DOP&T sponsored) and Trainer’s Training programme in Hindi. Sectoral training programmes covered Application of IT in Library Sciences, e-Granthalaya and PlanPlus Trainer’s Training. Various technology components like design tool, digital signature, live application with workflow have been developed and disseminated through training Programmes.

e-Governance Standards

Government’s policy on open standards is in the final stage of approval and release. Metadata and Data Standards for Person Identification and Land Region Codification have been notified and released. Encoding & Fonts standards identified by the Expert Committee on Technology standards in Indian
Languages have been notified and released. Draft Data standards for Finger print image, Facial image prepared by Expert Committee are under review. The Expert Committee on Digital signature prepared two drafts on Technical Specification of Enhancements to Digital Signature related Standards for e-Governance Applications and Guidelines for Incorporation of Digital Signatures.

Draft documents on e-Gov Security Assessment Guidelines for Risk level wise categorization, Catalogue of Security controls, Baselines controls, guidelines for Implementation of security controls, assessment of effectiveness, Risk management etc., have undergone public review, and the revised documents have been submitted for approval for their release. Expert Committee on Technology Standards in Interoperability Framework for e-Governance (IFEG) has identified standards in priority areas and submitted its interim report on the openness of these by vetting them against mandatory characteristics of draft policy on open standards. The core group of task force submitted two reports on Draft e-Forms Standards & Policy and Draft Road map for e-Forms Standards implementation. Institutional mechanism for standards formulation was released for adoption.

**e-Learning Solutions (NIC-IELS)**

The NIC IELS over NICNET has been implemented and is operational. Over 12000 Live Sessions have been conducted over the NIC WebConnect E-learning Services. TeleEDU project was launched for the students of North East to attend lectures on science subjects for professional entrance examinations.

**National Training Centre, Hyderabad**

Training programmes through Virtual Classroom for NIC state centers on topics like Advanced LINUX, PostgreSQL, Advanced .NET, MS SQL Serve, J2EE, Windows Server and IIS Administration, Secured Application Development, SOA Web Services and Grid Computing were organised. Web Service Repositories are being created towards an e-governance grid of India. Architectural methodology for adopting Grid and Cloud technology for e-Governance Projects was devised and Eucalyptus enabled Cloud Architecture for Data Centers of NIC was implemented.

**NIC Training Unit, LBSNAA, Mussoorie**

NIC Training Unit (NICTU) Lal Bahadur Shastri National Academy of Administration, Mussoorie provides ICT related training to the officers of All India Services during all the training programmes conducted at the Academy. During year 2009, seven courses conducted for officers of IAS and other services in which more than 250 sessions of training were conducted and training imparted to about 700 officials. During Mid Career Training Programme for IAS Officers Phase III, NICTU has conducted the ICT modules in collaboration with Duke University, USA. During Mid Career Training Programme for IAS Officers Phase IV, NICTU has conducted the ICT modules in collaboration with Maxwell School of Syracuse University, USA and Indian Institute of Management, Bangalore (IIMB). Reading material for E-governance module for IAS Professional Course Phase I (2008 Batch) prepared. Software have been developed for Store & Supply Inventory Management, Inventory Management for Souvenir shop at LBSNAA, Chronical Patient Monitoring, Monitoring of Physical Fitness of Officer Trainees, Laundry Management and Reception call recording as per the requirement of the Academy.

**Security**

Steps to improve physical security of NIC installations in the country have been taken up. Chief Security Officer (CSO) & State Security Officers at NIC State Centres have been nominated. Tender process was taken up to establish District Surveillance System in NIC.

**Major National Level Projects**

**Analytics & Modeling**

A Business Intelligence (BI) System for CGHS was developed by creating a data warehouse of the data from the existing system. A number of analytic reports are being generated. The BI system for Haryana Counseling board has been developed and implemented.
Common Integrated Police Application (CIPA)

CIPA Software rollout at 4000+ Police Stations across all the States/UTs has been completed. 400 more Police Stations in U.P. are proposed to be covered by March 2010. Consolidation of the Police Stations databases at the State level has been implemented at Tamil Nadu and Puducherry, besides Delhi. Web-based software interfaces based on the consolidated State Database for use by the higher authorities have also been developed by these States.

Courts Information Systems-COURTIS

Under e-Courts MMP, site preparation has been completed at 1031 out of 1542 court complexes. For 532 District court complexes, Purchase Orders for H/w & LAN have been issued and at 260 DC complexes H/w has been delivered. LAN work has been completed at 170 DCs. 434 System Officers have been deployed at various DCs and 500 System Assistants are in the process of getting deployed. Under ICT upgradation of HCs & SC, H/w has been delivered and installed at 19 HCs & SC. LAN work is in progress at all HCs. Application S/w implemented at 7 HCs for pilot testing.

Enterprise Application Integration

A system has been implemented for creation of e-Service Book for central government employees. e-Service Book for about 25,000 employees from central ministries/departments based at Delhi were initialized with basic employee data provided by ministries/departments. The system is being used for populating employee details from physical service records maintained at respective ministries/departments. eHRAadm/Leave system was extended for Union Public Service Commission and IAS officers of Haryana State besides already operational at Department of Personnel & Training, Department of Information Technology, Dept. of Economic Affairs, Ministry of Environment & Forest and NIC.

File Tracking System

File Tracking System (FTS) is developed to monitor the pendency of receipts and files and assist in their easy tracking. It is based on the Manual of Office Procedure and is a proven system for Government/Semi-Government Offices and Public Sector Organizations. The file movement and tracking system involves the entire stages from diarisation to finally archival of files. The product supports the complete electronic file movement with encryption of content and digital signature. The FTS has been implemented in over 50 departments.

Government e-Procurement Solution of NIC (GePNIC)

GePNIC provides online tender creation, publishing, Bid Submission, Bid Opening, Technical Evaluation (Offline), SOR Based Financial Evaluation, Communication and Publication of Award of Contract Information. The solution has strong in-built security features including two factors Authentication with Digital Signatures and Bid Encryption at Client end. GePNIC has been implemented in many departments of Orissa, West Bengal, Uttar Pradesh and Haryana. It is now being implemented for Pradhan Mantri Gram Sadak Yojana (PMGSY) procurements in 15 states, including the North Eastern states.

India Image

India Image Programme is aimed at establishing government presence on the web. NIC offers Design, Development and Consultancy on Government Websites and Portals. Some of the recent additions under this programme include Helpline Portal of Rashtrapati Bhavan, NGO Partnership System (http://ngo.india.gov.in), CIC Online website (http://rti.india.gov.in) and Web Ratna Awards Sites (http://webratna.india.gov.in). The Rajya Sabha website was also redesigned.

Intellectual Property and Know-How Services

NIC has hosted the most comprehensive and the largest database on patent bibliography, containing more than 54 millions patent references published by more than 72 patent issuing authorities across the globe since 1980 to serve the Research and Development organizations both in Government and Private Sectors. The database is available for on-line access free of cost on 24x7 basis. To support the end-users a step further, NIC
is subscribing DVD-ROMs from United State Patent Office, European Patent Office and World Intellectual Property Organization. NIC in collaboration with National Research Development Corporation, a unit under DSIR, and Defence Research and Development Organization, is participating in the national workshops to spread the IPR awareness.

**IntraGOV**

Intra Government portal (IntraGOV) is a framework that embraces G2G and G2E transactions and solutions and has been conceived as the instrument for the Next Generation Government. It goes beyond web sites that are primarily for dissemination of information and pave a platform for personalized, role based, secure access to internal information for the employee that is accessible through any browser. Personalised services are enabled and employees receive electronic notifications of services and transactions based on their needs and contingencies. Above all, it is embedded with a Content Management Framework (CMF) which can enable employees to create their own content and submit the same for review and publication. With a single platform, the entire organization can collaborate, share documents in any format electronically, thus making it a strategic asset to the Government departments supporting its core businesses and enhancing efficiency. The IntraGOV portal has been deployed in over 35 departments both at the Central and State levels.

**Limited Liability Partnership (LLP) Act Project**

The Ministry of Corporate Affairs has entrusted NIC to develop and implement an e-Governance Solution for Limited Liability Partnership (LLP) Act. This is a fully online solution where all the 25 forms relating to formation & registration of LLP are made available for online entry using digital signatures. Its a comprehensive workflow based system with number of features that includes DSC signatures & validations, downloadable forms with pre-fill and re-submission features, Netbanking & online payment gateway, view public document, fully automated back office, role management, etc.

**National Do Not Call Registry**

The National Do Not Call (NDNC) Registry portal (http://ndncregistry.gov.in) is fully operational to restrict Unsolicited Commercial Communication (UCC) on mobile/telephone numbers. Search facility has been provided to telecom subscribers to find status of registration of their number in NDNC Registry database and to telecom operators to search the telephone number of a Telemarketer (TM) who has violated UCC regulation. Currently, there are 26,600 Registered TMs and 60 Million Telephone Numbers are registered in NDNC Registry database. On an average, 160 Million telephone numbers are scrubbed by TMs per day. About 43,000 No. of telephones used by TMs have been disconnected (both registered and unregistered) and about 39,000 TMs have been imposed higher financial penalties for UCC violation.

**National Portal of India**

National Portal Project, india.gov.in is a Mission Mode Project under the National E-Governance Plan to provide a single window access to the information and services of the Indian Government at all levels for the Citizens, Business and Overseas Indians aggregating over 5000 Indian Govt. websites both in English and Hindi. The National Portal is ISO certified against Quality Characteristics (functionality, reliability, usability, efficiency, maintainability and portability) as per the ISO 25051:2006 and ISO 9126:2001 and 2003. The Portal is universally accessible as per the W3Cs WCAG 2.0 level AA and complying with Guidelines for Indian Government websites.

**National Rural Employment Guarantee Act (NREGA)**

NREGASoft is a Local Language enabled, workflow based and transactional system. A worker by entering his job card number or by putting his thumb on biometric device can exercise his rights of demand for work or lodging complaints and can see his entitlements on his own. The major enhancements are done for Labour budget module for next year projections, Social audit module, Customization of cost estimation module for Rajasthan, Sound based Workers information system, Grievance redressal
module, Post office/Bank Payment module, Data sharing with other organizations through Web services, etc. As on date, the portal has around 9 crore job cards and more than 20 crore workers information, more than 2.5 crore muster rolls, information on 64409 social audits and Minutes of meeting of 56090 social audits, around 1211 complaints and their redressal status.

Software Development Unit

NIC has set up a Tier-III type Data Centre at Pune. Government Receipt Accounting System has been developed for Finance Department, Government of Maharashtra, to facilitate on line payments of all taxes for state government through internet banking service. Development of state specific modules Permit & Enforcement of VAHAN is completed. Site preparation and networking of 7 more wellness centers of CGHS is completed. All Dispensaries in Pune are computerized. GIS enabled Decision Making tool for Implementation of Forest Rights Act, 2006 is a website for storing details of approximately 3.03 lakh claims and claimants, and the GIS data of each land measured using GPS devices. NIC also developed a web based SMS alert system for sending urgent messages to the field staff.

Systems Software Division (SSD)

The National N-DPLIM Portal for evolving technologies, solution architecture, training and dissemination of technologies pertaining to National Digital Preservation & ILM was designed and developed. Design and Development of electronic Record Management System with the Integration of Full Text Search Engine like Lucene along with Filters for PDF, Text, Doc: file etc. was done. Implemented NICs Corporate Records as Administrative Document Repository. The asset management Eams.net application implemented at Dit is web enabled, role based and workflow oriented.

Unique ID Project (UID)

Expenditure Finance Committee (EFC) memo was prepared for the UID authority of India under guidance of Secretary, Planning Commission and Principal Adviser & DG (Mission) of UIDAI. UIDAI website was developed and published.

Website Guidelines

NIC has developed “Guidelines for Indian Government websites” to support the entire life cycle of a website. These guidelines focus on making government websites up-to-date, citizen centric & disabled friendly. While formulating these guidelines, international standards & best practices have also been taken into account. These guidelines were released in February 2009 and have been adopted by DARPG as an integral component of Central Secretariat Manual of Office Procedure (CSMOP). The guidelines also form the basis for obtaining Website Quality Certification from the Department. Complete text of the guidelines along with latest updates can be accessed at http://web.guidelines.gov.in.

NIC Services to Central Ministries and Departments

Accounts Informatics

A web based application was launched to enable the processing and finalization of revision of over 6 lakhs pension cases through e-Filing. In CompDDO provision for generating digitally signed ECS payments, generation of encrypted database backup has been included along with the necessary modifications in the Pension module as per 6th CPC recommendations. Workflow for the Controller Offices to register the digital signatures of PAO offices and provision for dual signature for large payments has been included for e-payments through COMPACT and e-Lekha.

COMPACT-REVACT has been deployed for all revenue PAOs of Central Board of Excise and Customs. Also Operationalised P-CBEC, a centralized web application, synchronized with COMPACT-REVACT, for maintenance of accessed wise ledgers and availability of consolidated data.

Agriculture

AGMARKNET facilitates collection of daily market information from APMCs and is being disseminated in English and 11 Indian languages. Data is being
shared with the Forwards Market Commission (FMC) who are installing electronic display boards at select APWMs for displaying daily market information. Under PPIN (Plant Protection Informatics Network), web based Plant Quarantine System has been designed and developed to facilitate online filing of application by traders, workflow of inspection and approval and issuance of Phytosanitary Certificates, Import Permit and Import Release Orders. Seednet India Portal, Rashtriya Krishi Vikas Yojana (RKVY), Agricultural Marketing Infrastructure, Grading and Standardization (AMIGS), Release Monitoring System for Department of Agriculture, Animal Husbandry, Dairy and Fisheries, workflow based systems for National Horticulture (NHM) and Bamboo Missions (NBM), Retail Prices Monitoring System, Crop Production Statistics Information System, Land Use Statistics Information System, etc., have been developed and implemented.

**Animal Husbandry**

The website of Department of Animal Husbandry Dairying & Fisheries (DADF) was redesigned to provide better citizen interface and transparency in Government functioning. For the 18th Livestock Census, detailed information received from 34 states through Quick Tabulation Plan on category/breed-wise livestock population along with age, sex-composition, etc., and provides disaggregated information on poultry, animal operated agricultural implements and machinery and fishery statistics. Computerization of Central Herd Registration Scheme (CHRS), Data Management and Networking on Preparedness, Control and Containment of Avian Influenza, Fisheries Information System Network (FISNET), National Animal Disease Reporting System (NADRS), etc., have been taken up for implementation.

**Audit**

Hosting and maintenance of web sites of CAG and its field offices, Web based MIS on Returns received from field offices, augmentation of on-line submission of Application of Chartered Accountant Firms for the year 2010-2011, augmentation of the software Empanelment and Allotment of Auditors for PSU Audit for the year 2009-2010. Online Integrated DAK Management System are some of the activities undertaken.

**Central Excise and Service Tax**

The EASIEST (Electronic Accounting System in Excise and Service Tax) under G2B and G2G developed and launched to facilitate the assesses to enter the challan information for electronic transfer by the banks to the Central Board of Excise and Customs (CBEC) and to its associated offices for revenue based MIS, revenue reconciliation between PAO and Department. Remote Challan Management is also added. e-Management of Revenue Data developed for the Directorate of Data Management, CBEC for collection, compilation and MIS of Customs, Central Excise and Service Tax revenue information has been extended to All Commission rates. Data Management Module is added for Users.

**Central Vigilance Commission (CVC)**

Enrichment of Vigilance Cases Monitoring System, CVO Profile Information System, Complaint Monitoring System, Annual Report, Departmental Inquiries Proceedings and the CVC Website has been effected. Electronic Clearing System (ECS) for all payments (salary, arrear and honorarium) using COMPDDO have been implemented.

**Central Information Commissioner (CIC)**

NIC Develops and Implements CIC Online under the aegis of National Portal of India, online submission of RTI Appeals and Complaints to CIC by citizens and integration of the same with the internal Comprehensive Workflow Based System for processing of RTI Appeals and Complaints and generation of various MIS and exceptional reports. Video Conferencing facility was established for the Commission to facilitate & promote VC based hearings towards efficient disposal of RTI related appeals & complaints.

**Chemicals and Petrochemicals**

A web enabled system has been developed to facilitate on line capturing of production data of various chemicals and petrochemical products from about 45000 manufacturing companies producing from their various plants.
Civil Aviation

Air Travel Information System has been developed for maintaining a database of Grant of relaxation cases to travel by airlines other than AI. Crisis Management Plan (CMP) has been prepared to deal with cyber related crisis coordination. At Directorate General of Civil Aviation (DGCA), office automation systems have been implemented. DGCA and Bureau of Civil Aviation Security (BCAS) websites regularly updated.

Coal

A Web based system to capture Coal Blocks Applications on line from the prospective customers with offline database utility in processing the applications for allotment of Coal Blocks has been developed and is under implementation.

Commerce and Industry

G2G, G2B and G2C interface further strengthened in the Department of Commerce. ICT based solutions provided for performance monitoring of Special Economic Zones, Anti-dumping investigation findings, monitoring of WTO related issues and monitoring of quick estimates of commodity wise exports/imports. Electronic Payment system for office of Chief Controller of Accounts (CCA) is operational. Revision Application System introduced to reduce the delays in processing and providing analysis of the causes of delays. The Mineral Concession Approval System was enhanced to capture the post approval information on the implementation of the Mineral Concessions. In Department of Industrial Policy & Promotion (DIPP), Front Office and Back Office Web based systems for Intellectual Property Offices (IPO) in India has been re-engineered. The e-Filing systems integrated with Payment Gateway and Digital Signature Solutions are made operational for Patent and Trademark applications. Digitisation of old Patent & Trademarks records has been taken up and 0.2 million Patent and 77000 Design records are digitized. Digital database of over 2 Lakh patent records and 15 Lakh Trade Marks has been created and made available on the website of IPO (http://ipindia.gov.in). For Office of the Economic Adviser, New Wholesale Price Index (WPI) series is being implemented and parallel trial run are being conducted on regular basis. First time, On-line WPI prices are being collected. Web based system developed and implemented for Rajiv Gandhi Udyog Mitra Yojana, The scheme objective is to provide handholding support and assistance to the potential first generation entrepreneurs through the selected lead agencies.

Culture & Art

Cultural Atlas of India has been developed to document and disseminate information on various forms of cultural heritage prevalent in the country. Web site for National Archive of India (NAI) has been developed.

Digital Archiving and Management

First phase of digitization of Rajya Sabha for the periods 2000-01 and 2004-2007 have been completed. The debates are searchable in English, Hindi and Urdu. A DVD version has also been developed. Pilot project for Knowledge Repository of Inter-State Council Secretariat ISCS@Digital Repository has been developed using Dspace. A Virtual Herbarium (IVH) & Digital Herbaria (DH) for the Botanical Survey of India (BSI) has been developed. A prototype for E-Documents Archival & Retrieval Management Information System (e-DARMIS) has been developed, which envisages opening single point access to Public Records (i.e., any documents like Files, Reports, etc) scattered at different Records Rooms.

Election Commission

Dissemination of election results to public/ citizens during General Elections to Lok Sabha and State Legislative Assemblies was carried out. Communication Plan for Election Tracking (ComET) was designed and developed by NIC. GIS based thematic maps were prepared for election planning to visualize the field parameters for effective conduct of elections. GIS based static maps for all Parliamentary Constituencies and Assembly Constituencies spread across the country were prepared and hosted at ECI web site. NIC field units were involved in providing support for pre-election activities (uploading of affidavits filed by the candidates, randomization/ deployment/ allocation
of EVMs, micro observers, polling personnel, etc) and post-election activities (uploading the votes polled on the day of the counting).

**Energy**

A web based Milestones Monitoring System for Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY) - Flagship Programme of Govt. of India - has been developed and implemented. The data on milestone parameters is being captured on line through a web-based system. The system provides facility to capture basic details as well as quarterly milestone details and generates various national and state wise reports.

**Employee Provident Fund Organization (EPFO)**

Development and testing of the “EPFO Modernization System” was completed. Subsequently system has been made Live at 7 EPFO offices and parallel run has commenced at another 10 EPFO offices.

**Environment and Forests**

A Web Based GIS on National River Conservation Plan (NRCP) is being developed for Ganga and its tributaries. Online Consent Management & Monitoring System for State Pollution Control Boards has been developed for collection, collation and dissemination of information.

**External Affairs**

A new Passport Management system has been implemented in Passport Offices at Bhubaneswar, Kolkata, Guwahati, Jaipur and Jammu. Outsourcing of Passport and Visa applications were computerized at Indian Missions at Moscow, Madrid, Toronto, Vancouver, Riyadh, Dubai and Kuwait. A pilot project on computerized emergency certificate monitoring and printing modules was implemented in Jeddah, Saudi Arabia. Online Visa application registration system developed and implemented on pilot basis at HCI Islamabad. The selection of Yatris for Kailas Manasarovar Yatra was done through computerized random selection. Support was provided to the Ministry in setting up of IT centres in Mynamar, Botswana and Tajikistan. Integrated Mission Accounting System software was implemented in 57 Missions. The website of MEA Foreign Service Institute was redesigned and website for Indian Mission/ Posts at Kabul, Bhutan, Bhutan, Islamabad, Phuentsholing were developed and hosted. The official Web Site of Ministry of External Affairs, which serve as a useful instrument in dissemination efforts of Government of India was modified and maintained.

**Fertilizers**

Web Based Fertilizer Consumption Information System, National Project on Management of Soil Health and Fertility, Office Notifications Management System, etc., have been implemented.

**Finance**

Online Central Assistance Monitoring System was developed and implemented to capture the recommendations made by various Ministries/Departments for release of funds against their schemes and monitor the releases vis-a-vis availability of funds. Work flow based E-Bills processing system was developed. E-Purti system was implemented for issue and inventory management of stationery items. The direct tax code feedback system was developed to facilitate public to submit their comments and rate the direct tax survey and to compile the comments for presentation.

**Food Processing**

Online Complaint Monitoring System and Online Stationery Monitoring System have been designed, developed and implemented (web enabled monitoring system for reviewing the expenditure and monthly progress). A website for National Meat & Poultry Processing Board (NMPPB) was designed, developed and launched.

**Food, Public Distribution and Consumer Affairs**

Technology solution using Smart cards, Fingerprints, Smart Card Transaction Terminal/ Point of Sale Terminal is being provided for implementation of the
pilot scheme on Introduction of Smart Card based delivery of essential commodities under TPDS in Haryana and Chandigarh (UT). Application modules for Allocation and off take of grains, Fair Price Shop (FPS) licensing and Public Grievances Management are also developed as part of the project. Computerization & Computer Networking of Consumer Forums in the Country (CONFONET) is also being implemented. Nearly 1000 food grain depots out of approximately 1600 depots have adopted the computer based stock management system and their stock data is available through Net. Integrated Information System for Foodgrains Management (IISFM) is a major step towards PDS computerization as this captures Central Pool stocks for Procurement, Storage, Movement & Distribution of food grains across the country.

**Forest Rights**

Forest Dwellers Rights Act Management Information System (MIS) has been operationalised. The workflow based system captures the claims details for individual and community rights, processes for approval to generate Pattas/Title online. The system has appeal sub-system to handle appeal flow and tracking system for online tracking of the claim applications.

**Health and AYUSH**

Computerization of Central Govt. Health Scheme (CGHS) was extended to 102 dispensaries outside Delhi in 6 locations namely Mumbai, Pune, Nagpur, Hyderabad and Chennai. The introduction of plastic cards for every individual CGHS beneficiary with the barcode number has started. Additional modules under implementation include claims processing of individual beneficiaries, diagnostic centers, permissions, etc. Web based Inventory management system for the Medical Stores Organization (MSO) and General Medical Stores Depots (GMSDs) have been implemented on pilot basis.

The OncoNET India Project envisages connecting of 27 Regional Cancer Centres with associated Peripheral Cancer Centres to provide early cancer diagnosis/detection, treatment and follow up for cancer patients. The project is currently under implementation and equipment is being sent to the sites. Online allotment and Display System of Central Quota of UG/PG Medical/Dental seats was carried out for 2100 MBBS and around 225 BDS seats in 127 colleges across India as well as 3300 MD/MS/ Diploma Post graduate seats in 99 disciplines and 162 PG Dental seats in 22 Dental Colleges across India. The website of the Morarji Desai National Institute of Yoga (MDNIY) was launched and web site for National Medicinal Plant Board (NMPB) has been revamped.

**Home Affairs**

Integrated IPS package for more than 3600 IPS officers all over India was implemented which automates the functions of police division of MHA including Executive official records of IPS officers. Web-based system for Monitoring the Calamity Relief / and National Calamity Contingency Fund (NCCF) has been developed.

**Housing and Urban Poverty Alleviation**

JNNURMMIS software has been developed to enter all the projects, appraisals, sanctions, releases and their tracking. Building Related Information and Knowledge System (BRIKS) has been operationalised.

**Human Resource Development**

For All India Pre-Medical Test and All India Engineering Entrance Examination for CBSE, online submission of applications with payment gateway for online payment of fees through credit/debit cards was launched. Around 4 lakh candidates have submitted their applications for examination online. Web based Counseling processes have been designed and developed and the respective counseling boards have been provided operational support for smooth handling of counseling process. The portal for e-filing of applications for copyright registrations, has been designed indicating the stages of processing of copyright registration, information on copyrights already issued etc. ICT infrastructure committee for National policy formulation in ICT in Schools has been assisted in the finalization of basic infrastructure within the cost proposed for each school.
International Cooperation

Under Lao People’s Democratic Republic (PDR) - India Bilateral Cooperation on Information Communication Technology, third and final year of MCA programme is in progress at Guru Gobind Singh Indraprashtha University for students of Lao PDR.

Information & Broadcasting

A system for automation processes for Audio Visual spots of DAVP has been implemented. The Newsonair Portal developed for AIR-News Service Division is used for Dissemination of Audio, Regional language bulletins, Election Results etc. Online Services through the Registrar of Newspapers for India (RNI) website for Publishers and stake holders have brought in transparency in the services of RNI. Software has been developed for monitoring of status of TV Channels, Teleports, FM stations and Community Radio Stations. This software provides for online applications, status checking, etc., and has resulted in transparent and efficient collection of revenues.

Library Services

e-Granthalaya, the library Management Software for automation and networking of libraries have been implemented in many libraries. Regular training programmes for working librarians in India on Implementation of e-Granthalaya Software were organized at NIC Centres as well as user premises. Multilingual and web based version of e-Granthalaya is stabilized and made operational. A Consortium of Libraries of the Ministry of Communications and Information Technology has been formed.

National Human Rights Commission (NHRC)

Complaint Management System was enhanced. Draft Proceedings Module has been developed for consultants and advocates to reduce redundancies in proceedings of the cases. CMS has been implemented at Uganda National Human Rights Commission, Kampala; Human Rights Commission of the Maldives, Male; and National Centre for Human Rights, Amman, Jordan. National Human Rights Institutions Forum (NHRIF) website was designed and website of NHRC is being revamped. Human Rights Complaint Network [HRCNet] for State Human Rights Commission (SHRC) in is the process of implementation in various States.

Official Language

Technical support is provided to the Department for its bilingual portal. Support provided for processing of Hindi Teaching Scheme examination results i.e. Prabodh, Praveen, Pragya, Hindi typing, Hindi Stenography. IntraChti is being developed for Central Hindi Training Institute. NIC implemented software for maintaining Seniority Lists for Central Official Language Service, web-based Hindi enabled Office Procedure Automation (OPA) package in the Department, Quarterly Progress Report Monitoring Systems to monitor the progress of use of Hindi in Ministries/Departments.

Parliament

E-file System, Web Based Assurances MIS, Consultative Committees MIS, Employee Portal for Rajya Sabha Secretariat, Circulars, Events, Tenders and Press Releases Publishing System, etc., have been implemented. New websites launched included Intranet Portal for Rajya Sabha Secretariat, Hindi Website of Lok Sabha, English and Hindi Website of Rajya Sabha, Rajya Sabha Debates, Who’s Who of 15th Lok Sabha.

Panchayat Informatics

Study for e-PRI, including Information & Service Need Assessment study, Business Process Re-engineering and DPR preparation was undertaken in 38 districts of 27 states. NIC has submitted a proposal to the Ministry for developing 12 Core and Common software applications for use by panchayats across the country. PlanPlus which was already under implementation has been adopted by more than 60,000 planning units. PRIASoft has been formally accepted by Ministry of Panchayati Raj & CAG to be implemented as part of the e-PRI MMP.
Pension and Pensioners Welfare

CPAO website was restructured to provide a Single Window interface for banks for e-scrolls, PAOs for e-ppo and e-Authority and pensioners for their pension case query, Grievances and changes in their address, Bank, phone No. etc. Web Report made available on CPAO Web site for PAOs/Pr. AOs for all the pension cases received and authorised to banks by CPAO. SRS for Grievances Module developed and got approved from CPAO. BSR Code implemented in PARAS. It is a unique code for each Paying Branch of Bank, disbursing pension to Central Civil Govt. Pensioner. With this implementation, CPAO moved towards e-ppo and e-Scroll implementation.

Personnel and Administrative Reforms

e-Service Book project has been undertaken to cover over 25000 employees from 78 Ministries / Departments and Name based e-mail ids have been created for over 14230 employees. Developed & implemented Helpline Portal for Rashtrapati Bhavan to facilitate the public in sending their grievances / requests to the Hon’ble President of India online. Developed EPFiGMS (EPFO Grievance Management System) for Employees Provident Fund Organization (EPFO) covering 4 Zonal offices, 40 Regional Offices and around 100 sub regional offices all over the country. Also completed the development of Public Grievances Redress and Monitoring System for Haryana and Rajasthan States on pilot basis and the same is under testing. Web based Telecom Consumer Grievance Monitoring System (TCGMS) for TRAI has been developed to enable telecom subscribers to register their grievances for redress by the respective telecom operators. Developed & Implemented ACR-BASIS for digitization, storage and retrieval of ACRs of IAS officers. Maintaining a directory of National Resource Persons (Master Trainer (MT)/ Recognised Trainer (RT)) across the country for State Administrative Training Institutes (ATIs). Enrichment of Central Staffing Scheme (CSS) Processing System by developing a local module facilitating data entry and retention of eligible officers wishing to shift from non CSS posts to CSS posts, ACC Vacancy Monitoring System (AVMS), ACC Proposal Monitoring System (APMS), DMIS/FTS, IAS ER Sheet, RTI Portal, IntraMOP portal by adding Knowledge Management Centre, Fillable PDF forms, Health corner have been created.

Petroleum & Natural Gas

A web based Overseas Projects Information System has been developed and the same is under implementation for M/o Petroleum & Natural Gas for monitoring the physical and financial progress of overseas projects related to Exploration & Production (E&P), Refinery & Pipelines (R&P) and Marketing taken up by the Oil Sector PSUs.

Pharmaceutical

Work-flow based Integrated MIS to automate work processes of National Pharmaceutical & Pricing Authority (NPPA) has been developed. The system facilitates interactive online capturing and dissemination of information to various stakeholders besides office automation and is under implementation.

Planning Commission

MIS-CPLAN is being used for online-data entry/ updation by all Ministries/Departments for the Annual Plan 2010-11 and the Eleventh Plan. The MIS on Left Wing Extremism Districts (MIS-LWE) is a web-based application to facilitate online monitoring of progress of sectoral schemes for 33 LWE districts. MIS reports are generated for Projects submitted for Appraisal to Expenditure Finance Committee. MIS on National Human Development Report – 2009 (NHDR2009) is a web-based system depicting National and State-wise tabulation, analysis, GIS maps on various parameters. Non-Government Organisation (NGO) Partnership System is a web-based portal for Voluntary Organisations & Non-Government Organisation (NGO), under the aegis of National Portal of India. The existing database of NGOs/VOs has been migrated to NGO Partnership System for online registration of NGOs.

Posts

A Wide Area Network for Department of Posts (DOP WAN) has been established connecting 1318 post offices across the country. Data Centre for DOP at Delhi and Disaster Recovery Centre at Hyderabad have been established. The web based Project ARROW Monitoring System has been extended to
cover many more areas of operation in 1724 post offices. Head Post Offices (HPOs) have been enabled to access the Postal Life Insurance (PLI) and Rural PLI systems. Daily fund flow from 820 HPOs could be monitored for investment purposes. An offline module for proposal entry has been developed to speed up the data updation and approval process for insurance policies. To formulate the Consumer Price Index – Rural (CPI-R) by Central Statistical Organization (CSO), DOP is collecting monthly prices of around 450 items from 1183 villages across the country. Software has been developed to enter this data online by the postal staff every month and to transfer the same to CSO. Software has been developed to monitor the movement of mails including parcels and registered articles through freighters. Workflow based Pension software and Postal Accounting Current (PACS) have been implemented in Gujarat and Karnataka circles respectively to speed up the existing manual processes. Training has been given to 5 circles for both these applications and roll out to other circles is in process. Enumeration Information System, Speed Post Routing Tracking System, Mail Volume Monitoring System between Mail Offices, etc. have been developed and are in operation. Instant Money Order (IMO) services have been extended to more than 2200 post offices. Corporate e-Post has been developed to enable users to send bulk e-Post messages. The Rural Post Offices across the country have been digitised. As a pilot project, boundaries of all divisions and Pin Codes as well as latitude & longitude of all post offices in Delhi have been mapped. Extending this to cover the entire country is under process.

**Prisons**

The project involves setting up of LAN and connectivity at the Central Jail and District Jails in the states and development of necessary software for prison management. This has been implemented in 3 States and are under process in 8 States.

**Programme Implementation and Statistics**

The Member of Parliament Local Area Development Scheme (MPLADS) Monitoring System was revamped. The Fund sanction sub-system was further enhanced to facilitate faster releases through RTGS to 780 Members of Parliament through 430 nodal districts. The Central Project Monitoring System (CPMS) was enriched with role-based access to maintain a live database of more than 900 projects with an estimate cost of more than 6 lakh crores. The Twenty Point Programme (TPP-2006) system was further enhanced in terms of targetable/ non-targetable items for monitoring various performance indicators including generation of English and bilingual reports. A pilot project for capturing Basic Statistics for Local Level Development (BSLLD) and generation of pre-defined aggregation reports for State/ UT was completed.

**Rural Development**

The National Land Records Modernisation Programme (NLRMP) is being addressed by Bhunaksha and CollabLAND to meet the regional requirements of integrating land records with cadastral maps. Property Registration has been computerised in 2476 Sub-registrar offices of the country. Integration of Registration and Land Records mutation has been implemented in the states of Haryana, Himachal Pradesh, Karnataka and Andhra Pradesh. NSAP (National Social Assistance Programme) MIS for three central pension schemes, namely, IGNOAPS for old age, IGNWPS for Widows and IGNDPS for Disabled pensioners has been developed. State level trainings were held and almost 900 officials were trained from State and District level.
Operationalisation has started in few pilot states, with hand-holding support from NIC. The Integrated Management Information System (IMIS) and Total Sanitation Campaign have been modified and enhanced. The Nirmal Gram Puraskar Online Information System facilitates selection of Award winners through a detailed work flow process.

Science and Technology, Biotechnology and Earth Sciences

E-enabling the Nanomission comprises the Application Software captures, manages and monitors the complete life cycle of proposals and approved projects. SAARC Science and Technology Portal has been designed and developed. INTRAMOES Portal was designed and developed with latest features as per the e-governance guidelines.

Shipping, Road Transport and Highways

Regional offices of the Roads wing were integrated with the Ministry on NICNET. Project monitoring system was tested and implemented at 4 ROs on pilot basis. Advisory support was rendered to CRRI for implementation of GIS based National Highways Information System. Networking Plan for Directorate General Border Roads (DGBR) HQ was prepared. Computerized Job Monitoring System was implemented for Border Roads Organisation (BRO). Officials of the Ministries of Shipping as well as Road Transport & Highways were trained on various aspect of IT including CAD for the technical officers of Roads Wing.

Social Justice and Empowerment

The website of the Ministry has been redesigned incorporating the universally accessible guidelines of W3C and includes the information like Constitutional Provisions, Legislations, National Policies, Parliamentary Committees, International Cooperation, Publications, Photo Gallery, Rates of the Scholarships Schemes and Video and Audio clippings of the Ministry’s Schemes etc.

Telecommunications

Web based claim settlement management system for Universal Service Obligation Fund (USOF) has been developed. Various Chief Controller of Accounts (CCA) offices across the country are submitting the Universal Service Provider (USPs) claim to USOF directorate for its approval and disbursement. USOF web site has also been developed. Software for the Licensing Finance (LF) Branch of DoT is developed for the collection, recovery and assessment of License Fees, administering Bank Guarantees and other relevant financial conditions of commercial Licenses issued by DOT to the telecom operators. Application Software is developed for online registration of Other Service Providers (OSP) with DoT.

Telematics Development Promotion Program

Online Electoral Roll Management System was developed for CEO, Delhi. Real time counting trends and results were given to Doordarshan for their special live Election Programme for Lok Sabha and State Assembly telecast through NICNET and SMS from the counting centers. Development for integration of UPSC SOAP application with payment gateway was completed. Online Staff Selection Commission typing test was completed and the support provided for SSC website renovation.

Tourism

Workflow based Projects Monitoring Information System (PMIS) has been developed to automate the process of scrutinizing, approval, sanction and release of fund by the ministry. Tourist Statistics Information System keeps the statistics on various counts. Year to year comparison is made to find out the increasing or decreasing trend of tourists. The data is received on monthly basis from Immigration Bureau.

Transport

VAHAN and SARATHI software are rolled out at RTOs/DTOs at various States. Smart Card based Driving Licenses (DL) and RCs are being issued.

Water Resources Informatics

A Decision Support System has been developed to generate the reports (National/ State / District/ Block level) of all the Ground Water (Dugwell, Shallow Tubewell & Deep Tubewell) and Surface Water
(Surface Flow Schemes & Surface Lift Schemes). VOICE System (Vigilance On line Information System for Empowerment) has been designed and developed. An e-governance application for Command Area Development (CAD) wing for monitoring physical project progress and expenditure monitoring is in progress.

Youth Affairs and Sports

PYKKA-MIS has been developed and implemented to capture complete life cycle of the implementation of the PYKKA scheme starting from proposal submission, approval, fund management and finally competition management. PRIMES (Performance Review Indicators Monitoring & Evaluation of Sportspersons) is a web based monitoring system for monitoring the performance of Players for ensuing Commonwealth Games and future national and international events. Sports Authority of India (SAI) Portal designed and hosted to disseminate various facets of SAI functioning. National Playing Fields Association of India (NPFAI) application has been developed to provide information pertaining to playfields across the country and allied facilities in these fields. National Anti-doping Agency (NADA) website has been launched.

NIC Services to State and Union Territories

Andhra Pradesh

NIC provides network facilities to IITs, Dept. of Atomic Energy, Centre for DNS & Finger Print Detection, C-DAC Hyderabad, ANGRA University under NKN Project. Virtual Classroom setup at IIT, Hyderabad. VSNL gateway for Internet access enhanced from existing 74 Mbps to 784 Mbps. All the PAO Offices and CGHS Dispensaries in and around Hyderabad have been provided with MPLS network connectivity. Commissioned Video Conferencing facility in all the 23 Districts, Secretariat and office of the Chief Secretary and Chief Postmaster General. Existing 1Gbps link from Hyderabad to Delhi has been upgraded to 2.5 Gbps. New firewall was implemented on the existing system to enforce data security.

A Web based counseling for admission of students into various Engineering, MCA, MBA and polytechnics colleges was successfully conducted during the academic year covering about 4,74,046 students. PRAJAVANI for Speedy redressal has been extended to 5 more districts and integrated with SMS gateway. SMS based Passport Status Verification System, tracking of Mobiles, Vehicle & Stolen Vehicles implemented. SMS Based Complaint Receiving System as a supplement to existing Dial 100 facility has been implemented in Hyderabad and Cyberabad Commissionerates and rolled out to other states like Jammu & Kashmir and Kerala. A Web enabled application developed and hosted for the AP Labour Welfare Board for monitoring fund collection and disbursement under various Welfare Schemes. National Employment Portal Operationalised for all the 43 Employment Exchanges with about 1 lakh online registrations made since July 2009. Online data entry from 400 subdivisions, divisions, circles across AP and head office of Rural Water Supply Department on ongoing works and Assets has been completed. RWS Village Census data has been mapped with Habitation status data. Online Scholarship Management System has been integrated with bank Server Messaging Service for generating alerts to students. An Information Portal for Girl Child Protection Scheme under the Department of Women Development and Child Welfare in association with LIC, Hyderabad. Online Training Management & Monitoring System for Health & Family welfare implemented.

Andaman and Nicobar Islands

BIRDS project for Online registration of Births and Deaths was implemented in 48 out of 96 registration units in the UT, with facility for Birth Certificate checking on the Internet. “PROMISE” a web based MIS with dynamic graph facility was launched for monitoring of execution of 70 important projects, across 20 departments. VAHAN and SARATHI have been implemented. The web based project for disseminating details of “Issue of Commodities under Public Distribution System to Fair Price Shops” was launched. The details of Commodity Issues from Godowns to FPS shops in the entire A & N Islands are entered through the Web, so that citizens can find out the availability of PDS items in their locality.
Arunachal Pradesh

NIC provided technical support during Lok-sabha and Assembly election 2009 in terms of e-mail, internet and VC service, training to the State Govt officials in the operation of EVM machines, timely submission of various data to the ECI and CEO. Provided display of election results to the public. Remote monitoring of voting process in selected voting centres in Tirap and West Kameng districts done. Sarathi software has been implemented in five and Vahan software has been implemented in seven DTO offices. The tele-education project was launched with the objective to impart quality coaching to class XII science students in preparation for various entrance examinations. This project was implemented in three selected govt. higher secondary schools of the State. MIS for NLCPR projects for the department of planning is under implementation. The CIPA project has been implemented in 29 police stations in various districts; implementation is in progress in another 12 police stations.

Assam

Vahan and Sarathi implemented in twelve DTOs where smart-card-based DL & RC are being issued. e-Registration project enhanced and implemented in Kamrup Metro (Guwahati) Sub-Registrars’ Office. The Dharitree software is being rolled out to cover about 150 Revenue Circles. Counting Management software developed and used successfully in forty eight counting centres on the day of counting. MIS for PPP projected for the department of planning is under implementation. The CIPA project has been implemented in 29 police stations in various districts; implementation is in progress in another 12 police stations.

Bihar

Web enabled Software ISHPAT (Integrated software for High Court, Patna) and District Activity Monitoring Software - JOAS (Judicial Officers Activities Monitoring System) has been implemented. For Patna High Court Reception cum- Information Centre has been launched to provide multi-purpose facilitation as G2C services. E-Certificates e.g., caste, income, residential, land ownership are being delivered through 534 established Block Informatics Centres. G-FACTS (Government Financial Accounting Centres) have been implemented at DRDAs and Block level for financial transactions. Vahan and Sarathi Project has been rolled-out in 20 districts in Bihar. Chanakya (Registration & Examination Module) has been implemented in Patna University Colleges. NIC is extending technical support for implementation of PlanPlus, National Panchayat Portal. Revenue Administration for Computerized Energy (RACE) Billing is running smoothly in 10 divisions of Patna Electric Supply Undertaking through 31 counters reaching more than 3 lakhs energy consumers. Bar code and ATP (anytime payment) facility has been introduced for improved service delivery. e-Procurement project has been initiated with Rural Construction Department (RCD) for PMGSY scheme. Training has been held for its implementation. Bhawishyanidhi application software has been implemented in 28 locations to cover 4 lakhs employees of Bihar Government.

Chandigarh

E-Governance initiative of Chandigarh Administration to provide “multi-service single-window convenience” in the form of 28 services through the eSampark centres, successfully completed 5 years of operations in which 22.34 lakh transactions involving cash transaction of Rs. 951 crore was recorded in the calendar year 2009. Chandigarh State Wide Area Network (CSWAN) has resulted in closely knitting the various departments of Chandigarh Administration. Smart Card based Ration Card for Public Distribution System will be rolled out in February 2010. SARATHI and VAHAN have been fully implemented and the applicants are being given smart card based licences and registration certificates with Key Management System (KMS) to ensure authenticity and security. The process of creation of State Consolidation Registers and State Registers is in progress.

Chattisgarh

The Cadastral Mapping Solution BHU-NAKSHA has been implemented on pilot basis for one village and its rollout all over the state is under progress. This software has also been customized for Haryana for
implementation in two districts. Further, the tool has been demonstrated to the Governments of Orissa and Bihar. VAHAN and SARATHI have been implemented in 14 and 8 districts respectively. The Property Registration computerization project has been running in Bilaspur. Internet enabled payroll system integrated with Treasury, has been implemented. Deposit works database is developed for monitoring by departments. Computerised Draw of lots software for Excise Department is implemented to prioritize allotment of 2000 liquor shops to prospective bidders out of 10 lakh applicants. PHED call centre has been established where the citizens can register the complaints related to drinking water supply on a toll free number. Rural Engineering Services (RES) Works and Accounting system designed. E-court s/w modified according to the workflow of district courts and provided to all the district courts for implementation. A fully online software to issue the subsidy to the farmers based on various criteria is implemented. A fully online software for sanctioning & monitoring of funds in Agriculture Department through Agri Budget has been implemented. Fully online softwares have been delivered to monitor the data with respect to fertilizer, seed, area sown, rain, loan, fertiliser licence etc., for Kharif & Rabi seasons; Hospital reporting System, for 16 district Hospitals & 136 Community Health Centres based on various parameters. Currently offline at PHC level with a facility to upload to server and online from CHCs of the State.

**Dadra & Nagar Haveli**

Computer based Single Window System implemented in Silvassa Collectorate for monitoring applications for 32 types of certificates and services from 12 departments. Single Window Investor Friendly Terminal (SWIFT) in District Industries Centre acts as an interface between industries and UT Administration. Web Site, File tracking System, Water Billing System, Birth & Death Registrations, Property Tax System have been implemented for Silvassa Municipal Council. S/w has been developed for monitoring & disbursement of scholarship to 8000 students for Education Department. Web based application s/w for registration of job seeking unemployed youths with database size of up to 37000 records have been developed for Employment Exchange. VAHAN, SARATHI and Integrated Diseases Surveillances Program implemented. For District Panchayat, 4th Minor Irrigation Census, 18th Live Stock Census, PMGSY, NREGA, Widows Pension and Old Age Pension implemented. Imparted guidance to UT Administration for establishing UTWAN & SDC.

**Daman & Diu**

ICT Support Services to Election Department during General Election were provided. Technical support extended for VAHAN, SARATHI, NRSR, CONFONET, CIPA, CIS, Input Survey, Agriculture Census, NSAP, Poverty Line Survey, CONTACT, Pension Billing, Sales Quota Tracking, COMPACT, e-Lekha, FishNet RealCraft, etc. Replicated Water Supply Billing System at Silvassa (DNH). Daman.nic.in web site updated to include information regarding all the department on separate sections. Websites are being developed for Electricity Department, Police Department and Govt College. Implementation of RACE (Electricity Computerization), VatSoft, DARAHANI, Renewal of Ration Card, are going on. Managed and maintained locally developed projects like RBD, RIMS, SWIFT etc. Provided Technical Support in finalizing the DPR and related activities for SWAN. Extended network connectivity to the Post Office and GDPWAN.

**Delhi**

Delhi Government SWAN Connectivity increased to 75 locations with 2 Mbps Leased lines. Delhi Government has been provided connectivity with secured and authenticated broadband (Tri Band-DG) facility (increased to 550 locations). Counseling for admission to diploma level programme (2009-2010) by Board of Technical Education was done through Web Based System. District Information System for Election (DISE) implemented for Lok Sabha Elections 2009. BTF Monitoring System for Delhi Government is under implementation. CM Compliance Monitoring System of Bhagidari issues through Videoconferencing implemented. National Portal content work for Delhi is being done.

**Goa**

DC*Suite has been implemented in the South Goa District. Taluka*Suite has been implemented in all
the five talukas of the South Goa District. XGN (Extended Green Node) s/w has been implemented in the Goa State Pollution Control Board. Extended ICT support for the General Election 2009 and International Film Festival of India 2009.

Gujarat

The web based counseling for admission for five courses i.e BE, Pharmacy, Diploma, MBA and MCA was conducted. MOU is signed between NIC and Directorate of Technical Education. SARATHI and VAHAN Software are implemented in fifteen and five districts respectively. The web based application for dealer registration for various categories of vehicles is implemented at Ahmedabad and Surat. The Ration Card System, Land Records are operational in all talukas. The ROR@village is operational in more than 3000 gram panchayats where the record of right copy is provided at gram panchayat level. Similarly web based City Survey Information System (CSIS) is operational in all 66 city survey offices. Web based Janseva application is operational in more than 150 talukas. The XGN (extended green node) is operational in Gujarat Pollution Control Board and being replicated in Himachal Pradesh and Uttarakhand. The DLIMS (Drugs Logistics Information System) for central medical Store Organisation is made operational at regional depots. The Registration of Documents (ReD) system is implemented in all 150 sub-registrar offices. The lok fariyad at jansamparak office of CM is made operational. The Pension Authorisation and Voucher Auditing system for Dept. of Post is implemented at Ahmedabad. TEAM (Taluka Enabled Automated Monitoring) system to compile various types of statements from taluka to district to state is developed and made operational for Revenue, Disaster and Entertainment departments.

The computerization of Social Justice & empowerment Department (SJED) field offices is being undertaken and initially bar coded caste certificate module along with photograph is introduced in 21 districts. A generic system for district court (based on Maharashtra) is made operational at Patan, Gandhinagar. The district court case status and orders is made available on internet for selected courts. The High Court of Gujarat used online application process for their recruitment procedure. Software support provided to district administration in Election Computerization work for various phases of election during Lok Sabha Election-2009. The MIS for monitoring of Mid Day Meal scheme is developed and made operational in two districts. A monitoring system for coastal taluka for implementation of various department schemes called Sagar Khedu is developed and implemented. A web based ISMART (Integrated Scheme Management Application Repository) system for Tribal Department is developed and implemented in selected talukas.

Haryana

Smart Card based Ration Cards (ScbRC) & TPDS Project as pilot project has been implemented in Haryana. Government electronic Procurement (GeP) System was launched with 137 live tenders. Integrated On-line Entrance Test and on-line Off-Campus Counseling for Admission to 11 professional courses implemented. e-Tourism for on-line Tourist Rooms and Facilities Booking and Management System implemented with internet payment gateway interface. Web enabled Treasuries Workflow Integration (MMP - e-Kosh21), implemented. HaPPIS (Haryana Pensions Processing & Information System) for Transfer of pension to Banks for Electronic Banking Transfer for disbursement for 16 lakh pensioners deployed. IntraGov Haryana Portal has been integrated with e-Office Suite. Haryana has achieved dynamic Integration of LR, PR and to integrate LR with Cadastral Maps. Workflow based State Annual Budget for 2009-10 completed.

GIS maps of State, districts & blocks customized with village points/boundaries and important layers to create GIS database for Mewat & Palwal districts. Locations of CSCs digitized on village Maps. High Court and District and Sub-Districts courts have been automated. e-Passport Project implementation support was given to RPO Chandigarh. EPFO computerization project for managing beneficiary, contribution, Pension and Claims processing, implemented at Karnal. CIPA implemented at all Police stations. e-PRI MMP Information and Services Need Assessment (ISNA) Study completed and Report submitted. Executive Video Conferencing Systems (EVCS) installed at Chief Post Master General (CPMG) office and organized VC based reviews for
project Arrow. NIC Registration Authority (RA) has been setup at Chandigarh to process digital signature applications and issuance of Digital Signature Certificates (DSCs) locally. The Haryana electoral data and BPL families database established. Interactive and comprehensive dynamic employees Portal for Office of Accountant General Haryana for GPF information & pensions implemented.

**Himachal Pradesh**

Technical and software support provided to the HP Election Department during the General Elections 2009. The SMS gateway has been incorporated in e-Samadhan for grievance lodging and redressal to provide the citizens with auto-alerts. CIPA implemented in all Police Thanas of the State. Land Records software integrated with the Registration software and implemented in all operational Tehsils of the State. Web based ePraman made operational in all 131 tehsils and 31 Sub-divisions. 10 RTOs, one STA and RTO Flying Squad Offices have been covered for the implementation of Sarathi & Vahan including the Permit Module. Pathkar software for routes and time table has been prepared and implemented. SMS gateway interface added in the Shastr (Arms Licensing Software) workflow and implemented in all Districts. Integrated Pay & Accounts software implemented covering about 1.75 lakhs employees of State Government. The Electronic Clearance System (ECS) and Arrears module added in the Pensioner Information system(ePension). Online Registration of unemployed youth enabled directly on the Job Portal. The eTenders software is being implemented in the HP PWD for the PMGSY tenders.

**Jammu and Kashmir**

Public Grievance Web-based Monitoring System “Awaz-e-Awam” launched. Complete ICT based support provided during Lok Sabha Elections, 2009. For Transport project, VPN Connectivity provided to 6 ARTO offices for updating the state register. Implementation of SMS complaints registering system at Police Control Room Jammu in addition to dial 100 facility for the citizens of J&K. e-Court replicated across the state up to Tehsil level (Munsiff court). Hospitals Management System launched at district Kathua. Single Windows System within the District Magistrate office launched at district Kathua for issuance of Gun licenses and various certificates issued from DC office. Generation of GIS Maps of Jammu with village boundaries and indicating the 2002 Census data completed. 22 maps for planning dept. generated indicating the major facilities available within the respective districts. Under Police Network Project, 2 MBPS connectivity provided to 33 locations in the Police department along with Video Conferencing facility at all the Zone Hqs. Implemented 2 MBPS connectivity to 20 Post Offices. Cashless transaction system implemented in eight major Treasuries, having Jammu & Kashmir Bank as payment gateway. Implemented 4th Minor Irrigation Census.

**Jharkhand**

Web based application was developed for total IT support for the Lok Sabha and Vidhan Sabha elections -2009. Under VAT Computerisation, the Return Filing was made e-enabled. The Jharkhand Government extended the Govt. service e- NaGRiK sewa to the CSCs for the issue of Certificates like- Birth, Death, Income, Caste, Nationality, etc. Under Treasury Computerisation, Value Additions like “SMS to GPF/ CPS Contributors", Alerts on Advance drawsal, Communication interface for the DDOs have been added. A web based application developed for maintaining all old and new data of the Government officials for vigilance clearance. Criminal Records Investigation System for CID department has been developed. Modules for PIS, Swajal Dhara & Total Sanitation program, etc., were completed and deployed. New web based developments were done for Revenue Court cases monitoring and Arms Licensing softwares. Application for Jharkhand State SC Development Corporation has been completed. Live stock census was completed.

**Karnataka**

NEMMADI, the single window system for delivery of 42 G2C services, operational in 177 talukas, has been enhanced and tested in one pilot district. Under BHoomi project, Integrated Mutation Process with PKI have been rolled out. Bhoomi has been integrated with Kaveri for Auto generation of transaction, with Mojini for survey map and with Banks. Under VAT Computerisation, a number of e-
services, like e-filing, e-CST forms, e-VAT forms has been developed and deployed and more than 40,000 dealers are using this currently. The Panchatantra software has been developed for the activities of Grama Panchayathas of Karnataka, is implemented in 200 GPs so far. Bruhat Bangalore Mahanagare Palike (BBMP) - Birth & Death certificates with digital signatures, Trade Licence registration, issue & renewal including on-line registration through payment gateway, web based revenue billing and collection system have been implemented. BELE system for agriculture department to capture the data related to field offices has been developed. Vaahan and Saarathi implemented in all 55 RTO and ARTO offices and started issuing smart cards for RC and DL. A web enabled scholarship information system for social welfare department of Karnataka has been implemented. PLO (Paperless Office), web-based workflow system to monitor/track letter/file works in intranet & over internet for public access, is implemented in few districts. INTRAMINE, a workflow system to manage the issue of various leases & permits for Mining, Quarry & Reconnaissance for department of Mines & Geology is developed. Postal Accounts Current System (PACS), to capture the government transactions with banks from postal units implemented in Karnataka postal circle and rolled out to 5 more circles. Karnataka Appellate Tribunal (KAT) activities were made online with Filing, cash counter operation, cauelseit generation.

Kerala

Websites for Kendriya Vidyalaya Idukki, Indian Meteorological Department (IMD) Trivandrum, Kerala Prisons, Ernakulam district Court developed and hosted. Mobile friendly results website launched. BPL SURVEY 2009 Software implemented across the State. E-District project covering 42 Services across 9 departments has been taken up in two pilot districts of Kerala. Corporate ePost has been implemented in the Chief Minister’s Office for sending acknowledgements for the grievances received. Service and Payroll Administrative Repository for Kerala (SPARK) project is being implemented in all government departments for about 3 lakhs employees. Soil Conservation Network Information System is developed for the field offices of Soil Conservation Unit of the Department of Agriculture. SPECS is a Client Server application developed for Computerizing the Survey and Census Activities of Economics and Statistics Department. A web based application developed for Finance Department for automating the Issuance of Letter of Credit and is being used by 215 Divisions of cheque drawing departments. Online counseling 2009 completed for Engineering, Medical, higher secondary, Lateral Entry Admission to B. Tech courses. Ration card management system implemented across the state and central database of all the ration cardholders has been created. Software developed for the electronic transfer of Treasury data to the Accountant general office for voucher level compilation. On-line processing of scholarship of directorate of collegiate education implemented.

Lakshadweep

State Wide Area Network (SWAN) provided to all the 10 inhabited islands of Lakshadweep. The Computerisation of helicopter daily manifest was also carried out during the current year. Advance Ship Ticket Reservation for the Port Shipping & Aviation department, Inventory Management System for Department of Electricity, Electoral Roll Management System (ERMS), PRISM, Digitisation of Employment Services, Official website of Lakshadweep Administration are few applications which are being supported for its smooth running. PlanMIS V2.0, a web-based application for generating monthly schematic budget plan for the department of Planning and Statistics has been implemented.

Madhya Pradesh

Four new district informatics centres (DIC) have been established at Anuppur, Sheopur, Singrauli and Alirajpur thus taking the total NIC district centres in MP to 49. Establishment of 2.5 Gbps National Knowledge Network Backbone at NIC, MP Bhopal and 900 nodes GIGABIT LAN at National Institute of Technical Teachers & Research Centre under Ministry of HRD, GOI, Bhopal have been completed. Established Leased Line based Network for
Department of Forest (17 locations) & Department of Post (Phase-II - 47 locations). Implemented work-flow based Education portal for Rajya Shiksha Kendra; an online database of 1,10,000 schools and more than 3.5 lakh employees. E-scholarship web portal implemented for post metric scholarship. Health Information System for CBHI has been designed, developed. Election Management & Information System (EMIS) for Parliament Election 2009 and implementation of Communication Plan across the country during Lok Sabha elections for CEC was executed. CIPA implemented in around 300 police stations. Geomatics-based Application for Planning Rural Road Connectivity to Habitations under PMGSY, Forest Mapping for entire state, web based e-Pdms for monitoring of allotment, lifting and distribution of commodities covered under PDS, net based integrated co-operative development project for Dept. of Co-operation have been implemented.

**Maharashtra**

Mumbai segment of National Knowledge Network of 2.5/1.0 Gbps connectivity between IIT Mumbai, TIFR, BARC launched. ICT infrastructure has been set up for Medical Admissions Counselling and B.Sc Hotel Management Admissions. Technical assistance given to Govt. of Maharashtra for integration of State wide area network with NICNET. Preparation of Project Management Plan and Cost estimates for Department of Fisheries Project of Vessel Registration and Licensing for six coastal districts. ICT support provided for the Lok Sabha and Assembly election in 2009 at State and districts. Implemented Dept. of Post Project in 100 Post offices and CIPA Project in 358 Police Stations. MIS for all departments using Status Information Management System, NSAP in districts, e-Procurement system for PMGSY in all districts have been implemented.

**Manipur**

Operation and Maintenance of NICNET at State Unit and District Centres with 2 MBPS LL circuits, SWAN and SDC, WiMax in the district centres, operation and maintenance of VC in the offices of Chief Secretary and DGP. 2 MBPS LL were provided to Director of Census, Director Postal Services and State Department. Operation and Maintenance of LAN, MAN (with RF & Wimax) in Imphal city area covering all Govt offices. Software Projects implemented are NREGA, e-PRI, e-Procurement in PMGSY, File Tracking System in Manipur Secretariat, CPIS-Manipur in all departments, Computerisation of Pension Payment System, TreasuryNet, Land Records, Registration, Smart Card in Transport Dept (VAHAN & SARATHI), e-Court, IDSP, CONFONET, Energy Billing System, Payroll in GAD and Education Department, Sarva Shiksha Abhiyan, PAPAS (Protected Area Permit Application System) Online monitoring of Projects in Planning Department, AGMARKNET, etc.

**Meghalaya**

e-Services like e-Waybill, Online Dealer Search, Online Commodity Search, MIS Reports, etc., have been implemented for Commercial Taxes Department. Interoperability between Treasury & Taxation have been established. Sharing of CST data between VAT Server and TINXSYS Server have been automated. The online Treasury Computerisation has been implemented in all Treasuries and Sub-Treasuries in East Khasi Hills, West Khasi Hills, Jaintia Hills and Ri Bhoi Districts of Meghalaya e-learning services has been provided to 7 schools. CIPA has been implemented in Police Stations. Land record & Land Registration computerisation projects were initiated on a pilot basis at East Khasi Hills District. Developed megIFMS, a Financial Management & Information Portal to provide the overall picture of the financial transactions by various DDOs across the state on daily basis. Developed a web based application “Personal Leave Attendance Salary Management Application (PLASMA)” to manage the Personal Information of the State Government Employees.

The Pension Automated System has been implemented in Shillong. The implementation of Contractor & Supplier Information System of the Web Based MIS for PHED has been completed. The customization of VAHAN 2.0 in connection with the computerization of State Transport department has been completed. The Energy Billing Systems have been implemented at Jowai Revenue Division. The implementation of the Hospital Management System in Ganesh Das Hospital, Shillong. Generation and printing of the Family Identity Ration cards to the
respective households in urban areas, computerization of the City Civil Court under the e-Court project and Computerization of the Meghalaya Public Service Commission has been completed. IT support was provided to District Administration & CEO's Office during the Lok Sabha election 2009.

**Mizoram**

Various central projects like Vahan, Sarathi, State registry, CIPA, Treasury computerization, online SAD, Agmarket, Agrisnet, Land records, NREGA, etc., have been implemented. Installed EVCS at Chief Secretary office.

**Nagaland**

NICNET is having a bandwidth of 45 MBPS (PGCL) as primary link and 45 mbps (BSNL) for backup. 2MBPS Lease Line to seven districts Hqrs. has been commissioned out of Eleven Districts. 40 RF nodes provided to state government Directorates in the state capital. Wimax implemented in the five districts of the state for Tele education project. Online registration system has been implemented at Regional Employment Exchange, Kohima. Sarathi and Vahan s/w for vehicle registration and driving license has been rolled out to the all the RTOs/DTOs. Web based Weather Information System for Agri and Allied Dept implemented. Traffic Offence Monitoring System Software has been implemented. The s/w for Randomisation of polling officials was customized locally and distributed to all the 12 Election districts. Extended technical help in the Lok Sabha and Bye Elections of 4 Constituencies. The BRGF Plan Plus Workshop conducted and district level training imparted in 5 districts. The s/w for monitoring NREGA, IAY, DDWS, NSAP, etc., have been implemented.

**Orissa**

GePNIC has been implemented in Orissa, which has resulted in substantial increase in bidders’ participation base. More than 2500 departmental officers and more than 5500 bidders have been imparted training in usage of GePNIC software. Recently, GePNIC was launched at Mahanadi Coalfields Limited.

A standardized district portal framework, which contains a solution towards e-Government transactions for districts across the country has been developed and is under roll out. Automated Local Fund Audit System (ALFA) for complete workflow of the Audit tasks of various institutions, Guarantee Fee Monitoring System, etc., have been implemented. SUBIDHA(State Urban Bodies Integrated Data Handling & Access) for providing online Grievance Redressal, Kalyan Mandap Reservation System, Online Birth, Still Birth & Death Registration System, Marriage Registration System, Holding Tax Monitoring System, water tariff Billing Application, etc., have been implemented for Municipal Corporations of Bhubaneswar, Cuttack, Berhampur, Khurda and Puri. Based on the Delimitation, 21 Parliament Constituency boundaries and 147 Assembly Constituency boundaries of Orissa were reorganized and then Geo-referenced. For Ganjam district all 2469 Polling Station locations have been mapped along with communication network. All the 87 Regulated Market Committees (RMC), 8 RMC-cum-Sub-Market and 221 Submarkets in Orissa are mapped along with rail & road network in GIS environment for better visualization of locations and instant retrieval. All the Districts, Blocks, GPs and Villages of BRGF districts have been mapped spatially for identifying bad sectors, critical gaps and other parameters of planning.

**Puducherry**

PSWAN was made operational in Puducherry. Implementation of Mission Mode Projects like Sarathi, Vahan, CIPA, Employment Exchange portal was carried out. CIPA has been implemented in 38 Police Stations. Systems implemented include VAT Computerization, Payroll for 80 departments in Puducherry UT. 35 Websites for State/Central Government Departments were designed, developed and hosted. PDS Automation is in progress including compuerization of Ration Cards and issue of permits for distribution of PDS commodities across all FP Shops. System for Online Monitoring of Expenditures for Govt is in progress. Support was provided for the General Elections 2009.
**Punjab**

IIT-Ropar has been provided with 100 Mbps Fiber Connectivity and Video Conferencing facility under National Knowledge Network project. LAN and WAN over VPN configured at 22 sites under projects for Dept. of Posts, Immigration, DAC, Pay & Accounts, etc. Developed an Integrated prototype system IMIS (integrated Information Management System) for Department of Water Supply and Sanitation. Executed Web based counseling projects covering all the B.Tech/B.Pharmacy Degree courses in 84 colleges of 4 Universities and all the diploma courses in 88 institutes all over the State. Designed and developed online system to monitor the Election process on the polling day using SMS gateway. Developed & implemented DISE software for Parliamentary Elections in states of Punjab, Himachal, Delhi, Karnataka, Mizoram and Chandigarh UT. Implemented VAHAN & SARATHI in 10 DTOs and 20 SDM offices and extended the implementation of SUIDHDA and Jan Aushadhi software to districts. Personnel Information System was customized for DGP Office (Intelligence), Punjab.

**Sikkim**

Land Record Information System-Online Mutation is implemented in 10 subdivisions of Sikkim. Online Property Registration Information System has been implemented in one subdivision in a pilot basis. IT support has been provided to E-court, Confo-net, India portal, Election, RTO projects. All the layers like, village boundaries, roads, land use, forest, etc., are separated from the national database to create a geo-database for the state of Sikkim under Multi-Layered GIS Project Upgradation. Under Integrated Disease Surveillance Project, IDSP computer cell and training room have been set up in all 4 district hospitals, state health secretariat and all medical institutes. Now all the weekly reports are being submitted through the web-based software. The ongoing VAT Computerisation Project is enhanced and audit modules being handed over to the user for testing. VAT return process is already computerized and the dealers are filing the VAT returns in the computerized system.

**Rajasthan**

BPL Jeevan Raksha Kosh system for management of hospital facilities for BPL patients has been implemented for more than 450 government health institutions. VAHAN has been implemented in 35 RTO/DTO offices with VPN over broadband connectivity. Personnel Information system has been deployed for Police department. SecOnline, the Intra Secretariat application has been developed and implemented for entire Government Secretariat. Prison Management System has been deployed in 8 central jails. Online counseling for admissions to B.Ed. Colleges was taken up. Elections Management Software was implemented. Pregnancy, Child Tracking and Health services management system has been deployed for all the government health institutions in the state numbering more than 13000. Digitisation of khasra maps under NLRMP has been initiated in Tonk district. Linking of land registration data with Jamabandi has been established at 14 locations in Jodhpur district. E-Procurement implementation has been started for PMGSY tenders. Digital signatures have been issued to more than 700 users.

**Tamil Nadu**

National Knowledge Network nodes have been provided in Tamil Nadu to IIT Chennai, IGCAR Kalpakkam, Anna University, Nethralaya, IMSc and C-DAC Chennai. Online Scholarship Application for Backward Classes was developed and applications for more than 2.0 lakhs Students have been filed. Revenue software was designed and developed under eDistrict Programme. Application has also been developed for schemes for Social Welfare Dept. STALL Software was implemented in 98 RTOs for Online Learner’s License issue. Dealer point Registrations was implemented for RTOs. Testing of e-payment integration module is in progress. e-filing of VAT Returns to VAT Dealers for Commercial Tax has been extended to 2.10 Lakhs assesses in Tamilnadu. Every month more than 60 Lakhs records are being captured through this system. Online e-Payment implemented for Dealers and more than Rs 1100 Crores of Tax collected per Month through e-payment. NREGA Scheme is implemented in all the 385 blocks of the state. GePNIC Software for e-tendering was
implemented for Mahanadhi Coalfields Limited, Orissa. eTendering for PMGSY for 15 states has been taken up. More than 14,000 Tenders of 38,000 Crores have been floated in five states. District GIS project has been initiated for Cuddalore and Nagapattinam districts. Under Chennai Utility Mapping Project 192.5 sq km of spatial 3D data at 1:1000 scale has been hosted. Digitisation of Field Measurement Book (FMB) record was implemented in 28 districts using CollabLand and integrated with Non Spatial Application – Tamil Nlaml. More than 200+ Survey officers are using the application and 3,10,802 FMBs captured so far. “CARE (Central Application REceivig) Centre” was implemented to facilitate the industries in Tamil Nadu to file applications and to expedite the process of issue/authorization at a single point. e-Governance Portal for Directorate of Technical Education and Productivity Portal for National Productivity Council has been designed and hosted. Online system for arriving at monthly PDS Allotments has been made available. Pregnancy & Infant Cohort Monitoring System for Directorate of Public Health was developed.

**Tripura**

Workflow based License Monitoring System has been implemented in Factories and Boiler Dept Web based Energy Billing Systems have been rolled out across the state. Land Records Information System (Jarni Ver. 3) has been rolled out in another 3 new revenue circles in remote hill areas. Workflow based e-Hospital solution has been rolled out in Dr. Ram Mohanor Lohia Hospital, New Delhi and Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania. Tripura State Wide Area Network, totaling 61 Points of Presence (PoPs), have been completed and fully operational. SMS based Agromet Advisory Services (Met) for ICAR-Tripura Centre has been developed and deployed. SMS based Electoral Information and Poll Monitoring System for GE-2009 was developed and implemented and subsequently rolled out in Assembly Bye Election in Tripura, Tamilnadu and Himachal Pradesh.

**Uttarakhand**

UK-SWAN project is almost in the final stage of completion by establishing around 135 POPs in all the 13 Districts, 84 Tehsils and 95 Blocks in the state. LAN in all the District Collecterates have been established. Networking of all the 28 Treasuries carried out. Conducted Online Counseling for admissions in various B-Tech and Diploma courses during 2009-10 in the state. Completed the task of disseminating the results online of Panchayat & Urban Local Bodies elections held in the state. Technical support also extended to State/district administration during Lok-Sabha 2009 elections. Developed and hosted the website of Kumbh-Mela 2010. Augmented Online Treasury Computerisation implemented in the state by sharing the data between Commercial-Tax, Budget, Treasuries and also to ensure electronic clearing system through the banks. Completed the MIS development work and training has been imparted to their officials in around 14 batches for Uttarakhand Jal Sansthan/ PeyJal-Nigam under Rajiv Gandhi National Drinking Water Mission Programme project. Vahan & Sarathi applications were rolled out in 13 locations. Update of Land Records Data through web-services from Tehsils/Districts to Central Server at NIC-UK has been rolled out. Maintenance support extended to existing LR system besides initiatives undertaken to implement the newly launched National Land Records Modernization Programme (NLRMP) of Govt.of India in the state. Computerization of Property-Registration project extended and now around 14 SROs have been computerized in the state. Implemented e-filing of returns in the state.
project, SMART Card based Driving License system in the entire state, Food & Ration Card Computerization, e-Prashashan – U.P. Secretariat Computerization and addition of more services to the e-District platform are under implementation.

West Bengal

BHUCHITRA maintains land records data and village level scaled maps showing plot maps with demarcation and is being rolled out to all 341 block offices. Digitisation of maps is in progress, 41000 maps have been digitised and integrated with Record of Right (ROR). Computerization of Registration of Documents (CORD) has been rolled out to all 237 Registration offices of the State.

EXPERT system is implemented in the Excise Directorate to create, store, analyse and disseminate data. Software has been implemented in around 10,000 Government offices for generation of Pay bills, Yearly Salary Statement, Form-16, Gradation List, etc. IMPACT facilitates Registration, Return filing and processing, Audit, Assessment, introducing e-services for VAT. The National Employment Exchange Portal has been implemented by digitization of about 60 lakh Registration details. Providing information through SMS service and payment of tax/fees through payment gateway has been integrated with SARATHI and VAHAN. National Portal for Missing Children has been developed as a pilot project.

Postal activities are supported by extending connectivity to 75 post offices, installing an EVCS system at the CPMG Office as well assisting in deployment of various application software. Immigration Control System has been extended to 9 more Indo-Bangla check posts.

Open Technology Centre (OTC)

OTC is a nodal agency for Open Technology related activities in e-Governance applications managed by NIC/NeGP and promotes the use and adoption of Open Source tools/software. The activities include recommending open source software stack for development/deployment and provisioning support services. Also OTC acts as coordination centre for the technology committees setup to recommend standards for the NeGP applications. Technical advisories provided in the form of proof of concepts/ experiments for identification of tool set for the development of state portal for Tamil Nadu state. Consultancy is given to migrate the Legacy applications such as OPA to Open Source Applications. Migration of some of the modules of EPFO application was carried out. Data replication was carried out by using Open Source Tool Replication tool “SymmetricDS” for Land Records Project and for some municipalities of Tamil Nadu.

ONLINE verification services based on the replicated data is provided. Hand Holding Services are provided to Smart Card Based Public Distribution System (PDS).

OTC has contributed toward the design and architecture of “Service Delivery Platform” which will be a platform for availing and providing services in the domains of G2G, G2B and G2C. OTC has explored the XRX (X-Forms REST Xquery) technology and developed proof of concept applications based on XRX for the Commercial Taxes Department, Tamil Nadu. On the Open Source Promotion front, OTC had conducted a technology workshop on “Components Based Software Development”, organized series of training programs on various Open Source Technological areas/Tools. OTC has recommended a set of Open Source Tools to be included in BOSS Operating System. OTC has formulated procedural details for providing live problems/issues faced in the implementation of e-Gov Applications as student projects. On a pilot basis, OTC has already engaged few colleges for facilitating Student project Initiative.

National Informatics Centre Services Incorporated (NICSI)

National Informatics Centre Services Inc. (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 sector 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. 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) S/W were implemented in a number of Government departments.

Major projects undertaken during the year are Implementation of ERP S/W in Indraprastha Power Generation Co Ltd., Setting up of Uttarakhand SWAN, Broadband connectivity to 2500 CSCs using VSAT in the North-East, Below Poverty Line (BPS) Unique ID project of Ministry of Labour, Setting up of Disaster Recovery Centre for Director of Treasuries UP, Computerization in Petroleum & Explosive Safety Organization Nagpur, Computer Aided Learning Project for Orissa Primary Education Program Authority, BPR Study for the infrastructure needs of Panchayati Raj Institutions in States/UTs, GIS Infrastructure Development for the Dept of Economics & Intelligence, UP. Computerized Project Monitoring System (PMS) for NICSI was developed and made fully operational. PMS helps right from project initiation to stage-wise progress of the project to its closure. NICSI e-procurement S/W hitherto being used by the States of Orissa, Tamilnadu and UP was implemented for its own tender processing.

**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. Wide range of ICT services offered by NIC includes NICNET, a Nationwide Communication Network with gateway nodes at more than 80 Departments of the Government of India, 35 State/UTs and 616 Districts to service ICT applications. NICNET has played a pivotal role in decentralized planning, wider transparency of national and local Governments, improvement in Government services and accountability. NIC assists the Central and State Governments in implementing e-Governance projects and endeavours to ensure that state-of-the-art technology is available to its users in all areas of ICT.

In order to ensure that the government benefits from the latest technologies, NIC is constantly upgrading NICNET facilities. In 2009 the existing 2 Mbps Leased data circuits from State Capitals to districts were enhanced to 34 Mbps in 174 districts. 1318 Post Offices were also connected through 2 Mbps leased circuits. All Districts of India are now covered with NIC’s Videoconferencing Services and NIC’s Infrastructure has capability to connect all Districts of India (over 600 districts) in one Videoconference. In the last year state of art VC facilities were provided in 186 Districts over NICNET. National Knowledge Network was expanded with connectivity provided to over 50 institutes and virtual classrooms setup in 6 IITs. The data Centre facilities at Delhi and Hyderabad were upgraded to enhance the storage facilities and a new Data Centre is being set up at Pune to cater to the increasing demand. Additionally, mini data Centres in NIC State Units were also upgraded and storage capacity enhanced.

Web services were continued across India and numerous websites were launched at Central, State and District Levels while existing sites were maintained, updated and enhanced with facilities to ensure that the sites are more citizen centric & disabled friendly. Guidelines for Indian Government Websites were released to ensure standardisation and usability. Some important Citizen Centric Sites launched include Helpline Portal of Rashtrapati Bhawan and CIC Online for lodging of RTI Complaints. The Rajya Sabha Debates Portal was launched by the Vice President of India.

As part of NIC’s citizen centric e-governance initiatives, programmes for citizen service were enhanced in existing districts and new programes launched in a number of districts. UP was the first state to implement e-District system in 6 districts. The Worker’s information module added to NREGASoft now allows accessibility to any worker from a kiosk with his thumb and see/hear the required information in his local language. E-Governance initiative of Chandigarh Administration to provide “multi-service single-window convenience” in the form of 28 services through the eSampark centres, completed 5 years of operations in which 22.34 lakh transactions involving cash transaction of 951 crores was recorded in the calendar year 2009. As part of 100 days agenda of Department of Personnel & Training, the task of implementing e-Service Book system was accomplished.
GePNIC, the e-procurement solution of NIC has been implemented in many government departments of Orissa, West Bengal, Tamilnadu, Uttar Pradesh and Haryana. It is now being implemented for Pradhan Mantri Gram Sadak Yojana (PMGSY) procurements in 15 states, including some North Eastern states. As on date 10631 tenders amounting to Rs 24471 crores has been hosted on Orissa portal.

Support for major MMP projects continued. VAHAAN and SAARTHI were rolled out across the country. VAT computerization was enhanced to facilitate many e-services including e-payments and implemented in a number of states. Number of Police Stations under CIPA increased in each state. Software implemented earlier was constantly updated to use the latest technologies and provide improved access. e-filing of VAT Returns to VAT Dealers for Commercial Tax has been extended to 2.10 Lakhs assesses in Tamilnadu and Rs 1100 crores of tax collected per Month through e-payment. eCourts MMP has been launched.

During the General Elections 2009 and all State Assembly election held in the last year, NIC provided ICT support across the country. This support includes capture, transmission and display of results as well as hosting of election data. Implemented DISE Randomization Software for election department for Parliamentary Elections in states of Punjab, Himachal, Delhi, Karnataka, Mizoram and Chandigarh UT.

The GIS and Remote Sensing Services were provided to a variety of sectors such as posts, sports, telecom, water, agriculture etc. An Open Source GIS Web Portal was released. Spatial Data infrastructure was transformed for public domain GIS services.

Under services to Department of Posts, NIC has set up their data centre & disaster recovery centre, established the DOP WAN and connected all Chief Post Master Generals through VC. Software support has been provided to digitise the PLI workflow, extending iMO and ePost services, electronic transfer of monthly CPI-R data, implementation of Pension and PACS, etc.

Under e-Governance Solution for Limited Liability Partnership (LLP) Act, a comprehensive workflow based system has been deployed where all the 25 forms relating to formation & registration of LLP are made available for entry using digital signatures.

Development and hosting of interactive web portal for monitoring the training of probables for Common Wealth games 2010. Application for acceptance of online applications for AIEEE 2010 and AIPMT 2010 along with online payment gateway has been designed and launched successfully. Web based Counseling application for Central and State Boards for admission to professional courses has been developed and operated upon.

Integrated Pay & Accounts software implemented in Himachal Pradesh covering about 1.75 lakhs employees of state government. Cashless transaction system implemented in eight major Treasuries, having Jammu & Kashmir Bank as payment gateway. The Panchatantra software has been developed for the activities of Grama Panchayathas of Karnataka and is implemented in 200 GPs so far. Ration card management system implemented across Kerala state and central database of all the ration card holders has been created. Implemented work-flow based Education portal for Rajya Shiksha Kendra which is an online database of 1,10,000 schools and more than 3.5 lakh employees of Madhya Pradesh.

NIC’s Open technology Centre continued to promote the Open Technologies and provide solutions to various programmes. Support was given for Land Records, CIPA and Transport e-governance Projects. Migration from ORACLE to Open Source RDBMS for EPFO Project was carried out. OTC developed expertise in XRX technology and developed an application for Commercial Taxes Department Tamil Nadu Government.

Awards

A number of NIC Projects at State & District Level have been given awards for their contribution to e-governance.

Palakkad District has won the state E-Governance Award from Government of Kerala for the best Digital
File flow System. The SAND project of Thrissur District, has won the first place in the citizen service online/e-filing category in Kerala State governance awards 2009. Kannur District of Kerala got the special award under district category in the CSI e-Governance award 2008-09.

Computerization of Public Distribution System in Chattisgarh received National e-Governance Award 2009 (GOLD). Computerization of Paddy Procurement and PDS was recognized as Overall Best IT Implementation 2009 by PCQUEST.

CPIS-Manipur received Prime Minister’s Award in the year 2009.

GepNIC has bagged G2B Initiative of the year 2009 – e-India Award, India-Tech Excellence Award - 2009 for the Orissa Implementation and also reviewed by World Bank and Asian Development Bank.

e-Lekha was declared the winner of the Silver Award for the National Awards for e-governance 2008-09 in the category “Exemplary Horizontal Transfer of ICT based Best Practice”.

AGMARKNET was identified as one of the select programmes of ‘Innovations in Administration’ by the Department of Administrative Reforms and Public Grievances (DAPRG).

E-Gram project, Rajasthan has received the Manthan Award under e-Governance category.

Education portal of Madhya Pradesh won e-governance award of the State Govt., CSI e-Nihilent and Manthan awards for the year 2009. GeoAmper-Geomatics-based Application Model for Planning Electricity distribution to Rural Entities won GoMP state e-Governance Award.

Indian Patent and Trade Marks automation project has been awarded Silver Medal for National e-Governance Award in 2008-09 under the category- Trade & Industry.

e-Governance Award was given to Karnataka under the category ‘Exemplary Usage of ICT by PSUs’ for the year 2008-2009.


CSI E-Governance Award for Jalgaon district.

Bihar State Centre was given Prime Minister Award for Excellence in Public Administration.

SUBIDHA Project has been nominated by Govt of Orissa for Municipal IT India 2009 Award and Web Ratna Awards 2009.

Budget estimation allocation and monitoring system (BEAMS), has been awarded with the ‘Rajiv Gandhi Prashaskiya Gatimanata Abhiyan’ of Maharashtra for the year 2008-2009 and was shortlisted for national e-governance award for 2008-2009.
Promotional Matters

Citizen’s Charter

Vision

Pursuit of Excellence in Information Technology sector for the benefit of all citizens.

Objectives / Goals

The Citizen’s Charter embodies the commitment of the Department of Information Technology to introduce a greater measure of transparency, responsiveness and accountability in functioning of the Department. The Department is committed to provide easier and faster access to the latest on Communications and Information Technology like information regarding research and development activities, Indian electronics and IT industry, e-Governance, human resource development, international cooperation, language technologies, cyber security initiatives and so on. Department of Information Technology in the Ministry of Communications and Information Technology is responsible for formulation, implementation and review of national policies in the field of Information Technology. All policy matters relating to silicon facility, computer based information technology and processing including hardware and software, standardization of procedures and matters relating to international bodies, promotion of knowledge based enterprises, internet, e-commerce and information technology education and development of electronics and coordination amongst its various users are also addressed by the Department. Further, the Departments website i.e. www.mit.gov.in contains detailed information pertaining to its organizational aspects, visions, thrust areas, annual plans, R&D activities etc.

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

Attached offices

- Standardization Testing and Quality Certification (STQC) Directorate.
- National Informatics Centre (NIC)

Section 25 Companies

- Media Lab Asia
- National Informatics Centre Services Inc (NICSI) under the control of NIC
- National Internet Exchange of India (NIXI)

Autonomous Societies

- ERNET India
• Centre for Development of Advanced Computing (C-DAC)
• Centre for Materials for Electronics Technology (C-MET)
• DOEACC Society
• Society for Applied Microwave Electronics Engineering and Research (SAMEER)
• Software Technology Parks of India (STPI)
• Electronics and Computer Software Export Promotion Council (ESC)

Statutory Organizations

• Controller of Certifying Authorities (CCA)
• Cyber Appellate Tribunal (CAT)
• Computer Emergency Response Team (CERT-In)
• Semiconductor Integrated Circuits Layout-Design Registry (SICLDR)

Functioning of the Department

The Department liaises with the Electronics and IT Industry, Industry Associations, etc.

• The Department functions on a user-friendly approach to meet the expectations of the community at large. All decisions are taken based on the advice of expert committees, consisting of independent experts drawn from stakeholder community.
• A responsive grievance redressal machinery has been set up in the Department and is transparent in all its activities.
• The Department has an efficient mechanism for review and monitoring of its activities at periodic intervals.

Grievances Redressal Mechanism and RTI Matters

As part of implementing public grievances redressal system, the Department has set up (i) Public Grievances/Relations Cell, (ii) Right to Information (RTI) Cell in the Department headed by a Joint Secretary for Grievances and Nodal Officer & Appellate Authority for RTI matters. The above Cells are supervised by a Deputy Secretary level officer functioning as the Public Grievances Officer and Central Public information Officer. The Public Grievances Redress System (PGRS) is in operation in the Department and it is being maintained by the Public Grievances/Relations Cell.

The Department Head Quarters as well as all the constituent units under its control have launched their Web sites and have also hosted relevant inputs/documents required under Section 4(1)(b) of the RTI Act. The relevant contents are reviewed and updated periodically by the concerned public authorities.

International Co-operation and Bilateral Trade

The International Cooperation division of the Department is mandated to carry out international cooperation activities in the IT sector. It is a recognized fact that Information and Communications Technology (ICT) can help to enhance the sustainable socio-economic transformation of societies. There is a need to bridge the gap between people with effective access to digital and information technology and those with very limited or no access at all. In this direction, India is helping partner countries with the objective to enhance bilateral and multilateral cooperation with other countries and international bodies.

The bilateral cooperation is focused on over 25 priority countries in Middle East region, Africa, Asia, Latin America, Europe, North America, etc. Given due recognition to India’s strength in IT sector, several countries in South America, Caribbean region, Africa and CIS regions are approaching the Indian government for seeking technical assistance in the area of IT infrastructure, networking, capacity building, Human Resource Development (HRD), e-government etc. The Department has been extending technical support to the Commonwealth of Independent States (CIS), African, Middle East and Caribbean countries in capacity building for IT skills with financial assistance provided by the Government of India.

In 2009, the International Co-operation 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 best practices, etc. Along with, various collaborative efforts have been
made to encourage sustainable development and strengthening partnerships to promote international cooperation in the emerging and frontier areas of information technology, explore ways to enhance investment and address the regulatory mechanism. The Working Group meetings with US, EU, France, Tunisia, Russia, Republic of Korea, Brunei Darussalam, etc have witnessed enhanced Government-to-Government and Industry-to-Industry participation from respective sides. Useful deliberations were held in important and emerging areas like cyber security, global workforce mobility, Free Open source Software, RFID, New Generation Networks, Smart Cards, e-Governance, etc. and Telecommunication.

The Department has entered into a number of bilateral MOUs with various countries like Mauritius, Tunisia, Republic of Korea, Finland, etc for cooperation in Information Technology sector. The Department has initiated a number of projects like setting up of IT centres for IT skill development in Belarus, Lesotho, Armenia and Turkmenistan. A project on Networking of Madagascar President’s Office with other offices and organizations is under implementation which is being implemented by ERNET India. Feasibility studies to set up IT centres for Saudi Arabia, Seychelles and Azerbaijan have been conducted and submitted to MEA for their consideration. The IT centre in Tanzania has been commissioned with seven Community Information Centres (CICs) and training programs have commenced.

The Department’s interaction with various multilateral forums like World Trade Organization (WTO), United Nations (UN) and its Bodies (UNESCO, UNCTAD, UNDP, ECOSOC, ESCAP, APCICT etc.), Commonwealth, SAARC, ASEAN, World Bank and Asian Development Bank (ADB), Development Gateway Foundation (DGF) has played a vital role to showcase India’s strength in ICT sector, protect its interests and to explore business opportunities for Indian industry. India has been a member of the Governing Council of APCICT since its inception. Indian officials have been participating in the training programs/workshops/etc organized by APCICT.

ADB under South Asia Subregional Economic Cooperation (SASEC) has initiated SASEC Information Highway and Research and Training Network projects with SASEC member countries with the objectives to enhance regional connectivity, establish community e-center and information sharing and HRD. The project ‘Empowering the Rural Areas through Community e-Centers’ under which 20 CeCs to be established (5 each in 4 SASEC member countries) has been completed. The DGF funded project, “ICT Research and Training Centre for Bridging the Digital Divide” has resulted in the development of several useful tools, products and applications like ECKO (a community centric portal), Vartalaap (Virtual classroom), Vyapar/Pradarshani (application for exchange of information regarding rural products and services), e-Forms (a form designing tool for rapid data collection), etc.

**WTO-GATS Services Negotiations**

The services negotiations under the General Agreement on Trade in Services (GATS) of the World Trade organization (WTO) are going on. India has submitted Request-Offers to the WTO member countries and the same are being negotiated with an objective to achieve full liberalization for market access and non-tariff barriers to trade, permitting foreign direct investment, introducing simple and flexible visa regime enabling easy movement of professionals for rendering various services and bridging in transparency in domestic regulations. The negotiations in all the service sectors are still in progress and are expected to conclude soon. Department of Commerce in the Ministry of Commerce and Industry is the chief negotiator from India.

**Office Automation**

In an integrated manner provided necessary software, hardware and networking support to the users of the Department for activities including the delivery of various online e-office services. The LAN in the Department has been converted into VLAN.

The new version of Intra-DIT Portal for G to G and G to E services uploaded. In addition to already available services through the portal, made available e-Profile update, Issuing On-Line Visitor Pass, Telephone Bill details, 6th Pay Commission Arrears for
DIT employees, eHRAdm-on-line leave applications processing. Also made available software packages for various other activities such as Budget, ‘Cast & Accounts’ and ‘Pay & Accounts’, which helped in smoothing the operations.

Public / Staff Grievances Redress

A total of 12 cases relating to staff grievance were received during the calendar year 2009, out of which 7 cases were redressed. A total of 19 public grievances were received out of which 13 were redressed during the year.

Electronics Information and Planning Journal

The bi-monthly techno-economic journal ‘Electronics Information and Planning’ published by the Department is in its 37th 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, OECD E-Government Studies-Denmark, The Convergence of IT and Microfinance, etc. To streamline the distribution and accounting system, a computerized data base for the subscribers is being maintained.

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. A monthly summary report on Indian Economy and IT-IT eS Industry is being compiled.

IT in Parliament

During the year 2009, a number of Parliament Questions on various issues in Information Technology and Electronics Sectors like Incentives to STPI Units, E-district project, Promotion of Electronics, Investment in E-governance, Achievement of Information Technology,Pornographic Websites, Development of IT in Indian Languages, Tax Holidays to IT Industry, Mission Mode Project from Kerala, Hacking of Websites, Revival of IT Sector, Innovative practices in IT Sector, Public Domain Software, Open Standard Formats, IT Export Piracy in Cyber World, KSWAN Project, Grid Computing System, Common Service Centre, Special Course for Cyber Crime, Village Knowledge Centre, Websites for Indian Languages, Junk Mail on Internet, Task force on IT, Sale of Computer, Manpower for IT Sector, Promotion on Internet on Rural Areas, Semiconductor Policy and Hardware Manufacture in India etc., were answered in both the Houses of Parliament.

The Standing Committee on Information Technology discussed and considered the Demands for Grants (2009-10) of the Department. In compliance of the direction of the Hon’ble Speaker of the Lok Sabha and Hon’ble Chairman, Rajya Sabha Hon’ble Minister of Communications and IT made a Statement on status of Implementation of each recommendation’s made by the Standing Committee on IT.

Notification under Sub-section(3) of 87 of the IT Act, 2000 regarding (i) Cyber Regulation Appellate Tribunal (Salary, allowance and other terms and conditions of service of Presiding Officer, Chairperson and Members) and (ii) appointment of the date of enforcement of the Information Technology (Amendment) Act, 2008 were laid on the Table of both the Houses of Parliament.

The Annual Reports 2008-09 and Audited Accounts of all Societies under the Administrative Control of the Department were also laid on the Table of both the Houses of Parliament during the Winter Session, 2009.

Use of Hindi and Requisite Technology Development

During the year, the Committee of Parliament on Official Language visited the Electronics Test & Development Centre, Chennai; Software Technology Parks of India (STPI) Headquarters, New Delhi; Electronics Regional Test Laboratory (North), New Delhi and ERNET India, New Delhi, under the administrative control of the Department, to oversee
the progress with regard to implementation of Official Language Policy of the Government. Various suggestions given by the Committee are being implemented by the respective organizations. Action taken reports on the inspections during the previous years as well as the period of report were also reviewed and sent to the Committee in respect of DOEACC Centre, Jammu; Centre for Development of Advanced Computing (C-DAC), Kolkata; C-DAC, Pune; STPI, Navi Mumbai and STPI Headquarters, New Delhi.

Under the scheme of National Awards for original books on Electronics & IT in Hindi instituted by the Department, three books were selected for the awards for the year 2007 and cash prizes were given. Two proposals for original writing of books on Electronics & IT under the Financial Assistance Scheme were also approved. Nominations for awards for the year 2008 were invited.

MOUs for cooperation in the field of Information Technology were continued to be signed during the year in bilingual/trilingual form with various countries. Hindi books worth over Rs. 73,000/- were purchased during the year for the library of the Department. During Hindi fortnight, various competitions were organised and prizes awarded.

Subordinate offices of the Department were visited to review the progressive use of Hindi and guide them on implementation of various provisions of Official Language Act/Rules.
## Appendix I

### Electronics & IT Production (Calendar Year)

(Rs. Crore)

<table>
<thead>
<tr>
<th>Item</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consumer Electronics</td>
<td>16,500</td>
<td>17,500</td>
<td>19,500</td>
<td>21,950</td>
<td>24,810</td>
<td>29,000</td>
</tr>
<tr>
<td>2. Industrial Electronics</td>
<td>8,300</td>
<td>8,600</td>
<td>10,100</td>
<td>11,530</td>
<td>12,530</td>
<td>13,410</td>
</tr>
<tr>
<td>3. Computers</td>
<td>8,680</td>
<td>10,500</td>
<td>12,500</td>
<td>15,100</td>
<td>14,090</td>
<td>14,200</td>
</tr>
<tr>
<td>4. Communication &amp; Broadcast Equipment</td>
<td>4,770</td>
<td>6,300</td>
<td>9,200</td>
<td>16,400</td>
<td>24,630</td>
<td>30,190</td>
</tr>
<tr>
<td>5. Strategic Electronics</td>
<td>2,850</td>
<td>3,070</td>
<td>4,500</td>
<td>5,400</td>
<td>6,560</td>
<td>6,950</td>
</tr>
<tr>
<td>6. Components</td>
<td>8,700</td>
<td>8,530</td>
<td>8,600</td>
<td>9,420</td>
<td>11,440</td>
<td>13,030</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td>49,800</td>
<td>54,500</td>
<td>64,400</td>
<td>79,800</td>
<td>94,060</td>
<td>106,780</td>
</tr>
<tr>
<td>7. Software for Exports</td>
<td>75,000</td>
<td>97,000</td>
<td>132,025</td>
<td>158,550</td>
<td>203,240</td>
<td>230,360</td>
</tr>
<tr>
<td>8. Domestic Software</td>
<td>20,500</td>
<td>27,000</td>
<td>35,150</td>
<td>44,510</td>
<td>56,000</td>
<td>64,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>145,300</td>
<td>178,500</td>
<td>231,575</td>
<td>282,860</td>
<td>353,300</td>
<td>401,540</td>
</tr>
</tbody>
</table>

* Estimated
## Electronics & IT Production (Financial Year)

(Rs. Crore)

<table>
<thead>
<tr>
<th>Item</th>
<th>2004-05</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consumer Electronics</td>
<td>16,800</td>
<td>18,000</td>
<td>20,000</td>
<td>22,600</td>
<td>25,550</td>
<td>30,150</td>
</tr>
<tr>
<td>2. Industrial Electronics</td>
<td>8,300</td>
<td>8,800</td>
<td>10,400</td>
<td>11,910</td>
<td>12,740</td>
<td>13,630</td>
</tr>
<tr>
<td>3. Computers</td>
<td>8,800</td>
<td>10,800</td>
<td>12,800</td>
<td>15,870</td>
<td>13,490</td>
<td>14,430</td>
</tr>
<tr>
<td>4. Communication &amp; Broadcast Equipment</td>
<td>4,800</td>
<td>7,000</td>
<td>9,500</td>
<td>18,700</td>
<td>26,600</td>
<td>31,390</td>
</tr>
<tr>
<td>5. Strategic Electronics</td>
<td>3,000</td>
<td>3,200</td>
<td>4,500</td>
<td>5,700</td>
<td>6,840</td>
<td>6,980</td>
</tr>
<tr>
<td>6. Components</td>
<td>8,800</td>
<td>8,800</td>
<td>8,800</td>
<td>9,630</td>
<td>12,040</td>
<td>13,360</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>50,500</strong></td>
<td><strong>56,600</strong></td>
<td><strong>66,000</strong></td>
<td><strong>84,410</strong></td>
<td><strong>97,260</strong></td>
<td><strong>109,940</strong></td>
</tr>
<tr>
<td>7. Software for Exports</td>
<td>80,180</td>
<td>104,100</td>
<td>141,000</td>
<td>164,400</td>
<td>216,190</td>
<td>235,080</td>
</tr>
<tr>
<td>8. Domestic Software</td>
<td>21,740</td>
<td>29,600</td>
<td>37,000</td>
<td>47,010</td>
<td>59,000</td>
<td>66,200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>152,420</strong></td>
<td><strong>190,300</strong></td>
<td><strong>244,000</strong></td>
<td><strong>295,820</strong></td>
<td><strong>372,450</strong></td>
<td><strong>411,220</strong></td>
</tr>
</tbody>
</table>

* Estimated
# Electronics & IT Exports

## (Rs. Crore)

<table>
<thead>
<tr>
<th>Item</th>
<th>2004-05</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consumer Electronics</td>
<td>1,150</td>
<td>2,000</td>
<td>1,500</td>
<td>1,600</td>
<td>2,600</td>
<td></td>
</tr>
<tr>
<td>2. Industrial Electronics</td>
<td>1,500</td>
<td>2,300</td>
<td>3,000</td>
<td>3,885</td>
<td>4,200</td>
<td></td>
</tr>
<tr>
<td>3. Computers</td>
<td>1,200</td>
<td>1,025</td>
<td>1,500</td>
<td>990</td>
<td>1,650</td>
<td></td>
</tr>
<tr>
<td>4. Communication &amp; Broadcast Equipment</td>
<td>350</td>
<td>500</td>
<td>650</td>
<td>625</td>
<td>12,280</td>
<td></td>
</tr>
<tr>
<td>5. Components</td>
<td>3,800</td>
<td>3,800</td>
<td>5,850</td>
<td>6,100</td>
<td>10,500</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>8,000</strong></td>
<td><strong>9,625</strong></td>
<td><strong>12,500</strong></td>
<td><strong>13,200</strong></td>
<td><strong>31,230</strong></td>
<td><strong>31,250</strong></td>
</tr>
<tr>
<td>6. Computer Software</td>
<td>80,180</td>
<td>104,100</td>
<td>141,000</td>
<td>164,400</td>
<td>216,190</td>
<td>235,080</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88,180</strong></td>
<td><strong>113,725</strong></td>
<td><strong>153,500</strong></td>
<td><strong>177,600</strong></td>
<td><strong>247,420</strong></td>
<td><strong>266,330</strong></td>
</tr>
</tbody>
</table>

* Estimated
Summary of Audit Observations

Para No. 9.9 of Audit Report No. CA 13 for the year 2007-08 – Irregular re-appropriation
The Department issued orders for re-appropriation of funds of Rs. 5.00 crore or more without prior approval of Secretary (Expenditure) and also without reporting to Parliament aggregating Rs. 238.35 crore during 2005-06 to 2007-08.

Para No. 9.11 of Audit Report No. CA 13 for the year 2007-08 – Surrender of Unspent provision.
Department did not surrender Rs. 51.28 crore under Revenue section out of unspent provision of Rs. 324.58 crore during 2005-06 to 2007-08.

Utilization Certificates for the grants-in-aid of Rs. 828.59 crore released by the Department upto 31st March 2007 in 454 cases were pending from the grantee institutions as on 31st March 2008. These relates to the year 2001-02 onwards.

Action Taken: Action Taken Note has been sent to Office of the Principal Director of Audit for vetting. The vetted comments awaited.

Para No. 3.1 of Audit Report No. CA 16 of 2008-C-DAC- Noida – Infructuous expenditure due to non-commercialization of technology.
Failure of Centre for Development of Advanced Computing to develop “Set Top Boxes with Conditional Access System” resulted in infructuous expenditure of Rs. 1.18 crore.

Action Taken: Action Taken Note has been sent to Office of the Principal Director of Audit for vetting. The vetted comments awaited.

Para No. 3.2 of Audit Report No. CA 16 of 2008- C-DAC-Noida – Non-commercialization of broadband access system for rural communication.
Execution of a project without studying the cost effectiveness of equipment to be developed resulted in non-fulfillment of the objective of providing low cost broadband access system for rural communication, thereby rendering the expenditure of Rs. 1.31 crore wasteful.

Action Taken: Action Taken Note has been sent to Office of the Principal Director of Audit for vetting. The vetted comments awaited.

Para No. 3.3 of Audit Report No. CA 16 of 2008 – C-DAC- Pune- Unfruitful expenditure due to non-finalization of lease deed on acquisition of land.
Failure of Centre for Development of Advanced Computing (C-DAC) to ensure finalization of the lease deed within the validity period and to make payment to Pune Municipal Corporation (PMC) without signing lease deed resulted in unfruitful expenditure of Rs. 72.06 lakh paid as premium and Rs. 16.18 lakh incurred on security for the land. Further, C-DAC also incurred loss of interest amounting to Rs. 45.66 lakh as premium paid to PMC remained idle due to non-commencement of construction activities.

Action Taken: ATN under process
## Department of Information Technology Annual Plan 2010-11

### (Rs. Crore)

<table>
<thead>
<tr>
<th>SCHEMES</th>
<th>Budgetary Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. R&amp;D PROGRAMMES</strong></td>
<td></td>
</tr>
<tr>
<td>1 SAMEER</td>
<td>38.00</td>
</tr>
<tr>
<td>2 Microelectronics &amp; Nanotechnology Development Programme</td>
<td>100.00</td>
</tr>
<tr>
<td>3 Technology Development Council (incl. ITRA)</td>
<td>79.00</td>
</tr>
<tr>
<td>4 Convergence, Communications &amp; Strategic Electronics</td>
<td>25.00</td>
</tr>
<tr>
<td>5 Components &amp; Material Development Programme</td>
<td>25.00</td>
</tr>
<tr>
<td>6 C-DAC</td>
<td>180.00</td>
</tr>
<tr>
<td>7 Electronics in Health &amp; Telemedicine</td>
<td>16.00</td>
</tr>
<tr>
<td>8 Technology Development for Indian Languages</td>
<td>35.00</td>
</tr>
<tr>
<td>9 IT for Masses (Gender, SC/ST)</td>
<td>14.00*</td>
</tr>
<tr>
<td>10 Media Lab Asia</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>R&amp;D Sub-Total</strong></td>
<td><strong>522.00</strong></td>
</tr>
</tbody>
</table>

| **II. INFRASTRUCTURE DEVELOPMENT**           |                   |
| 11 STQC                                      | 85.00             |
| 12 STPI & EHTP                               | 2.50              |
| 13 Electronic Governance                     | 1030.00*          |
| 14 Cyber Security (including CERT-In, IT Act) | 40.00             |
| 15 Controller of Certifying Authorities (CCA) | 9.00              |
| 16 ERNET                                     | 10.00             |
| 17 Promotion of Electronics/IT Hardware Manufacturing | 2.50             |
| **Infrastructure Sub-Total**                | **1179.00**       |

| **III. HUMAN RESOURCE DEVELOPMENT**          |                   |
| 18 DOEACC                                    | 10.00             |
| 19 Manpower Development (incl. Skill Development in IT) | 113.00           |
| 20 Facilitation of Setting-up of Integrated Townships | 1.00             |
| **HRD Sub-Total**                            | **124.00**        |
| 21 Headquarter (Secretariat & Building)      | 35.00             |
| 22 NIC                                       | 700.00            |
| 23 National Knowledge Network                | 100.00            |
| **Grand Total**                              | **2660.00**       |

* includes EAP component of Rs. 3.33 crore

* includes EAP component of Rs. 100.00 crore
**GROUP A**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Other than lowest rung of Class I</td>
<td>Permanent</td>
<td>2547</td>
<td>162</td>
<td>6.36</td>
<td>64</td>
<td>2.51</td>
</tr>
<tr>
<td>(i) Lowest rung of Class I</td>
<td>Temporary</td>
<td>401</td>
<td>38</td>
<td>9.47</td>
<td>26</td>
<td>6.48</td>
</tr>
<tr>
<td>Temporary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Other than lowest rung of Class I</td>
<td>Permanent</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>(i) Lowest rung of Class I</td>
<td>Temporary</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**GROUP B (Gazetted)**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>352</td>
<td>26</td>
<td>7.38</td>
<td>14</td>
<td>3.97</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>360</td>
<td>53</td>
<td>14.72</td>
<td>33</td>
<td>9.17</td>
<td></td>
</tr>
</tbody>
</table>

**GROUP B (Non Gazetted)**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>127</td>
<td>15</td>
<td>11.81</td>
<td>6</td>
<td>4.72</td>
<td></td>
</tr>
</tbody>
</table>

**GROUP C**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>536</td>
<td>132</td>
<td>24.62</td>
<td>33</td>
<td>6.16</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>35</td>
<td>4</td>
<td>11.43</td>
<td>1</td>
<td>2.86</td>
<td></td>
</tr>
</tbody>
</table>

**GROUP D**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>303</td>
<td>146</td>
<td>48.18</td>
<td>21</td>
<td>6.93</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>9</td>
<td>2</td>
<td>22.22</td>
<td>1</td>
<td>11.11</td>
<td></td>
</tr>
</tbody>
</table>

**Sweeper**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>39</td>
<td>36</td>
<td>92.31</td>
<td>3</td>
<td>7.69</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Farash**

<table>
<thead>
<tr>
<th>Group/Class</th>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>18</td>
<td>5</td>
<td>27.78</td>
<td>1</td>
<td>5.56</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>2</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>Permanent / Temporary</th>
<th>Total No. of Emp.</th>
<th>SC</th>
<th>%age of Total Employees</th>
<th>ST</th>
<th>%age of Total Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>5199</td>
<td>703</td>
<td>13.52</td>
<td>228</td>
<td>4.39</td>
</tr>
</tbody>
</table>