



Introduction

Information and Communication Technology (ICT) is increasingly recognised as an essential tool of development – a tool which empowers the poor by enhancing skills, increasing productivity and improving governance. The success of ICT-enabled development (or e-Development) is measured not only by the diffusion of technology, but also by advances in development itself.

The contribution of ICT can be viewed at two different but interrelated levels: ICT growth and ICT diffusion. The former refers to the contribution in output, employment, export earnings, etc., resulting from production of ICT related goods and services that are limited to just one segment of the economy. The latter refers to IT-induced development through enhanced productivity, competitiveness, growth and human welfare resulting from the use of this technology by different sectors of the economy and society.

International research findings in the context of developing and developed countries reveal that unlike old technologies (radio, television, etc.) which are more demand driven, ICT is more supply driven and leaves greater scope for diffusion agents (Non-Government Organisations or NGOs, Government, private sector and other actors) to influence the diffusion process. Firstly, unlike earlier technologies, investment in the Internet, personal computers, etc. essentially complements investments already made in communications technologies like satellites, telephone and cable TV networks. Secondly, newly developed software technology in India has replaced the requirement of broadband and thus provides full connectivity in rural areas. Thirdly, ICT is multi-user by nature, which, in turn, leaves scope for Internet kiosks, Internet cafes and Community Information Centres (CICs), providing access to many.

In India, the IT sector has not only grown in size but also complexity. Indian States resemble little nations. So, it is important to take regular stock of e-Readiness at the

country and State/ Union Territory levels to ascertain the status of underlying infrastructure, human resources, policy regime, environment climate, etc. and arrive at the steps needed to be taken to optimise the potential. Before we introduce our e-Readiness methodology, it would be instructive to look at the various e-Readiness assessment models used elsewhere.

1.1 Literature Review

Various e-Readiness assessments have been carried out over the past few years. We take a brief look at the work done in this field.

- **McConnell International's Risk e-Business: Seizing the Opportunity of Global e-Readiness**

The framework is designed to assess a country's capacity to participate in the global digital economy. The report analyses a country's e-Readiness on the following dimensions: connectivity (infrastructure, access and pricing), e-Leadership (Government policies and regulations), information security (intellectual property, privacy, electronic signatures), human capital (ICT education, available skilled workforce), and e-Business (competition, political and financial stability, foreign investment, financial infrastructure) climate.

- **CSPP's Readiness Guide for Living in the Networked World**

This self-assessment tool is designed to help individuals and communities determine how prepared they are to participate in the 'Networked World'. It does not examine any given country, but presents a tool which is generally applicable. Measurements are divided into five categories: Infrastructure, Access, Applications and Services, Economy and 'Enablers' (policy, privacy, security, and ubiquity).



The report provides a series of 23 questions. For each question, the users choose from a set of answers, which represent four progressive 'stages' of development. The assessment produces a rating that indicates which of four progressive stages of development the community is at for each of the five categories listed above.

- **CID's Readiness for the Networked World: A Guide for Developing Countries**

The Center for International Development (CIDS) at Harvard University developed this guide for Government policy makers to assess the state of networked readiness of a community. This guide measures 19 different categories, covering the availability, speed, and quality of network access, use of ICTs in schools, workplace, economy, Government and everyday life, ICT (telecommunications and trade) policy, ICT training programmes, diversity of organisations and relevant online content. The guide rates the 'stage' a community is in for each of the 19 categories. Descriptions are given of the parameters it has to meet in a particular stage. The Guide does not offer prescriptions for improved readiness.

- **The Economist Intelligence Unit e-Readiness Rankings, 2006**

The Economist Intelligence Unit's (EIU) new e-Readiness model tallies scores for 68 nations across six (Connectivity and Technology Infrastructure, Business Environment, Consumer and Business Adoption, Social and Cultural Infrastructure, Legal and Policy Environment, Supporting e-Services) categories. These include a total of 100 separate quantitative and qualitative indicators. Each variable in the model is scored on a scale from one to ten. Where possible, the variables rest on quantitative, statistical data while others reflect qualitative assessments by the EIU country analysts. The EIU e-Readiness Ranking for 2006 places India at 53rd (49th in 2005) and 10th in the Asia-Pacific region.

- **APEC's (The Asian Pacific Economic Co-operation) e-Commerce Readiness Assessment**

The major goal of this tool is to help Governments develop their own focussed policies, adapted to their specific environment for the healthy development of e-Commerce. Six categories of variables are examined to assess readiness:

1. Basic infrastructure and technology - speed, pricing, access, market competition, industry standards, foreign investment.
2. Access to network services-bandwidth, industry diversity, export controls, credit card regulation.
3. Use of the Internet-in business, Government, homes
4. Promotion and facilitation-industry-led standards.
5. Skills and human resources-ICT education, workforce.
6. Positioning for the digital economy-taxes and tariffs, industry self-regulation, Government regulations, consumer trust.

Participants are asked 100, multiple-choice questions grouped into the six categories listed above. The possible answers indicate progressive levels of e-Readiness for a country. Hence, the assessment is based on opinions of individuals. Scores are given for each category and no overall score is given. The guide does not provide a comparative assessment of nations.

1.2 Analytical Framework for the Report

The Networked Readiness Index (NRI) Framework 2004-05 used in this Report is based on the following broad parameters that are further classified into sub-indicators:

Environment for ICT offered by a given country or community-market, political/regulatory, infrastructure.

Readiness of the community's key stakeholders to use ICT-individual readiness, business readiness, Government readiness.

Usage of ICT among these stakeholders- individual usage, business usage and Government usage.

This Framework has evolved from the *e-Readiness Report 2003* and is similar to the one used in the *e-Readiness Report 2004*. Feedback based on interactions and discussions with the various stakeholders reveal that the methodology is now acceptable to them. Hence, it was applied this year as well. But this report, unlike the former, not only gives the e-Readiness Index but also analyses the progress over the last two years. In the process it helps policy planners identify the areas of improvement.

The Framework has been used because of its potential not only to evaluate a State's relative development in the



use of ICT, but also to facilitate a better understanding of its strengths and weaknesses in the area. Principal Component Analysis (PCA) has been used to arrive at the Composite Index. PCA is a way of defining patterns in data, and expressing the data in such a way as to highlight their similarities and differences. Since patterns in data can be hard to find when it is of a high dimension and the luxury of graphical representation is not available, PCA prevails as a powerful tool for analysing data. The other advantage of PCA is that once these patterns have been found, the data can be compressed, i.e., its dimensions can be reduced without much loss of information. This technique is used to arrive at a Sub-Group Index from the indicators in each group, as well as an Aggregate Index of groups for every state.

We complement the quantitative approach of the PCA with a qualitative analysis of several case studies. Through case studies we examine whether the e-Governance/e-Readiness initiatives have integrated or empowered the marginalised sections (Sen's Approach); whether the 'value addition' to information, the intermediate product, has been maximum (Brown's Approach) and whether the initiative is sustainable, scalable at a sufficient pace and, finally, whether the initiative is profitable so that the private sector can become a partner in the development process.

1.3 ICT and Economic Development

The Indian Government, in its development role, has been performing four principal responsibilities related to ICT. First, it began carefully nurturing its booming ICT industry. India has emerged as a powerful global player in the ICT market. Since the 1980s, overseas majors have been sourcing software and services from India. The effort is supported by industry groups like NASSCOM (National Association of Software and Service Company), MAIT (Manufacturers' Association of IT Companies), CII (Confederation of Indian Industry) and CSI (Computer Society of India). ICT has displayed remarkable resilience. Despite a downward trend in global spending, it recorded 26 per cent growth rate and emerged as the fastest growing segment of the Indian economy in 2002-03 with a turnover of \$12.7 billion and exports touching an all time high of \$10 billion. As per NASSCOM estimates IT/ITES exports revenue was \$17.7 billion during 2004-05.

Second, substantial policy changes have been made in the ICT/telecommunications environment to increase the reach and potential public access to resources. India made a head start in the liberalisation process in its telecommunication sector in 1991. The New Telecom Policy, 1999 and the amended Telecom Regulatory Authority of India Act, 2000 cleared hurdles for a level playing field in telecom and its regulation. The announcement of the Internet Service Provision Policy in 1998 marked the demise of State monopoly over Internet provision. The New Telecom Policy simulated the development of telecom, especially in rural areas. Almost every State now has its own IT legislation.

Third, the Government gave Research and Development (R&D) a new thrust. While the Centre for Development of Advanced Computing (C-DAC) developed Param Padma, the largest tetra- scale supercomputer in Asia (outside Japan), the Indian Institute of Science took active interest in developing the Simputer. Efforts at the National Centre for Software Technology (NCST) focussed on developing low cost information processing and creating R&D institutions to develop tools and technologies for Indian language support. Other leading centres of excellence in ICT include: The Technology Information Forecasting and Assessment Council (TIFAC), Software Technology Parks of India (STPI), Technology Development Council (TDC), National Informatics Center (NIC) and the Department of Electronics Accreditation of Computer Courses (DOEACC).

The fourth and most important Government role has been in the applications of ICT to achieve good governance. As State Governments gear up to appear SMART (Simple, Moral, Accountable, Responsive and Transparent) in India, they seem to increasingly turn to ICT to enable e-Governance. ICT helps in overcoming cultural barriers, bridging economic inequalities and opening up intellectual pursuits to the benefit of common man. At the same time it promotes openness, accessibility, accountability, connectivity, democracy and decentralisation, which are attributes essential for effective social, economic and political development. Better delivery of services to citizens, improved interaction with business and industry, citizen empowerment through access to information and more efficient governance through access to information are the different ends achieved by the Government.



As a result, this sector has not only grown in size in India but also in complexity. India's share in the global market for outsourcing software grew from 11.9 per cent in 1991 to 18.5 per cent in 1999, reflecting a total market growth of 55 per cent¹. However, the importance of e-Readiness cannot be gauged only by technology penetration or average Internet access. Returns from e-Readiness are realised when countries use ICT to boost economic and social development. The diffusion of ICT across India has been encouraging. Urban India is relatively well connected to multiple knowledge gateways. However, rural India needs impetus. Though ICT infrastructure in rural India is steadily growing as part of recent State - sponsored initiatives, its impact on human development would depend much on the efficacy of multifaceted interlinkages across State, market and civil society institutions in rural India.

In rural India, access to ICT is provided using shared public access mode in the form of Info-kiosks, a rural version of cyber cafés available in cities. Info-kiosks act as the information and communication interface for all stakeholders. They provide basic communication facilities like Internet connection and telecommunication services, besides other computing services to the villagers. However, to tap the maximum potentials of ICT for holistic development and to ignite the rural development process with a knowledge revolution, Info-kiosks need to be equipped with not just robust and reliable connectivity and electrification, but also with appropriate content and applications, efficient human resources and creative management.

1.4 Macro Analysis of the Indian IT sector

1.4.1. Growth of the Indian IT Industry and Expected Industry Size

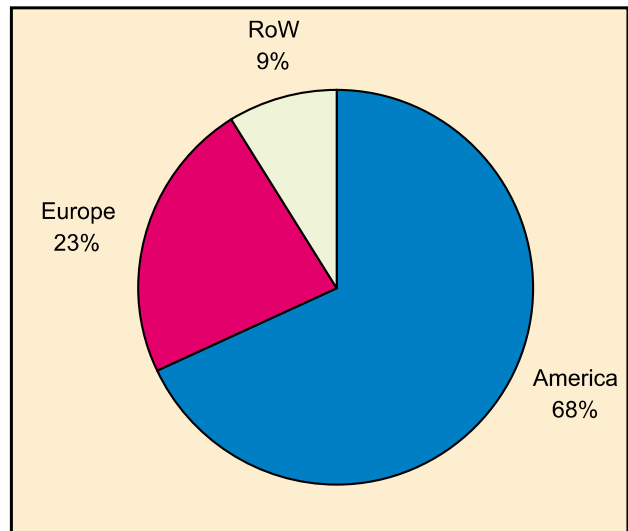
The NASSCOM Strategic Review, 2006 indicates that the Indian IT-ITES (Information Technology Enabled Services) sector continues to chart double-digit growth and is expected to exceed \$36 billion in annual revenue in financial year 2006 (FY06). The IT-ITES industry continues to grow five times as fast as the global IT services industry, clocking a compound annual growth rate (CAGR) of 28 per cent since FY 1999-2000. Of this, software and services exports are estimated to grow by 32 per cent (CARG), to reach \$23.4 billion in FY06.

The industry grew steadily in FY05. Along with the increased presence of Indian IT companies across the globe, new service lines emerged and the industry reached the next level in services offered. Mergers and acquisitions by Indian players was also a key feature. In spite of the growth seen so far, it is estimated that less than 10 per cent of the addressable market for globally sourced IT-ITES has been captured, indicating significant headroom for growth. NASSCOM has forecast that a growth rate of over 25 per cent is expected to continue and would help Indian IT-ITES exports exceed \$60 billion by FY 2010.

1.4.2 Service Exports from India 2004-05

Exports accounted for 64 per cent of aggregate earnings of IT-ITES in 2004-05. India's IT-ITES exports totalled \$17.7 billion in 2004-05. Of this, 68 per cent were to the US, 23 per cent to Europe (of which 14 per cent headed for UK) and 9 per cent to the rest of the world. NASSCOM estimates that in 2005-06 Indian IT exports (including hardware and software in addition to services) would exceed \$23.9 billion compared to \$18.2 billion in 2004-05.

Figure 1: The Indian IT-ITES Service exports



Source: NASSCOM Strategic Review 2006

Europe and the US remain the key markets, accounting for over 90 per cent of IT-ITES exports. However, export earnings from markets other than the US and the UK

¹ C. Qiang, G. Clarke and N. Halewood, "The Role of ICT in Doing Business," in ICT Trends Report, (Washington DC: World Bank, 2005).



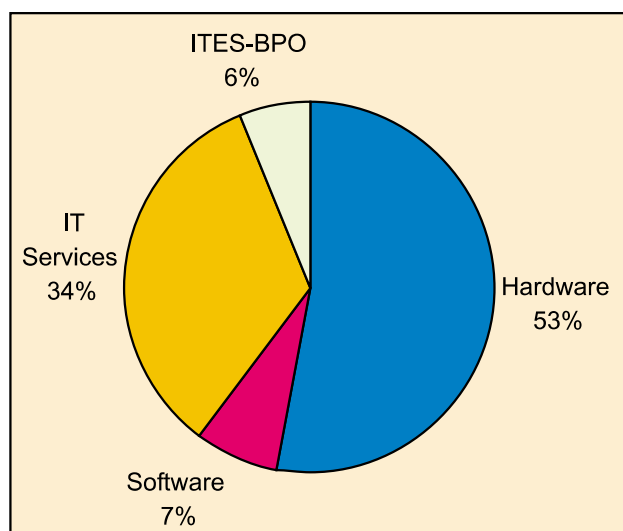
are also witnessing significant double-digit, year-on-year growth. While Indian service providers have built delivery centres in key source markets like the US, they are expanding their footprint in specialist locations like China for engineering and design, South Africa for insurance and near-shore locations like eastern Europe and Mexico. Apart from companies in the US, organisations from Europe, South-East Asia, Australia, Japan, Hong Kong, New Zealand, etc. are also reaching out for Indian software expertise.

1.4.3 Domestic IT-ITES Market

India continues to be one of the fastest growing IT and telecom markets. It grew by 24 per cent in 2003, providing tremendous opportunities for IT and telecom vendors and service providers. In 2003, India was ranked 21st among IT spenders and could move up to the 14th position in 2008.

The domestic IT-ITES market was valued at US\$10.2 billion in 2004-05 and is expected to exceed \$12.4 billion, growing at nearly 22 per cent in the current (2005-06) fiscal. The IT services segment in the domestic market is expected to touch \$4.5 billion in 2005-06, exhibiting an 11.5 per cent CAGR over 2001-2005. The domestic IT-ITES or BPO segment is showing a CAGR of 60 per cent over 2002-2006 and is expected to be \$0.9 billion in 2005-06.

Figure 2: Domestic IT-ITES Market 2004-05



Source: NASSCOM Strategic Review 2006

The IT Software and Services export segment is a key driver of the overall IT market. The Indian IT sector,

enlarging from \$1.73 billion (Rs 5,450 crore) in 1994-95 to a \$13.5 billion (Rs. 64,200 crore) industry in 2001-02, has depended heavily on software and services exports for its healthy year-on-year growth and for a larger share of the Indian GDP pie. In terms of share of GDP, the IT industry's slice has risen from 0.59 per cent in 1994-95 to 2.87 per cent in 2001-02¹. The NASSCOM Strategic Review puts the software (IT-ITES) sector's contribution to GDP at 4.8 per cent in financial year 2005-06.

The software industry has been slowly moving up the value chain from Programming to Systems Analysis and Design. More offshore work is now being executed in India. R&D centres and manufacturing (albeit only assembling of components) facilities are being set up in India by MNCs. New policies and plans with fiscal incentives, modifications in export-import policies and support for infrastructure are now driving foreign investment and focussing on providing impetus to software and hardware sectors of the IT industry – both domestic and export. This is also creating changes in the grey market.

However, infrastructure and finance appear to be the main deterrents to growth. The hardware sector, on the other hand, was relegated to the background and has not made much progress. While “manufacturing” in the Indian IT industry means merely assembling, some component manufacture does take place for non-IT applications.

1.4.4 Size and Scope of Global Opportunity

Forecasting India's sustained leadership position in the global outsourcing industry, the NASSCOM –McKinsey Report 2005 estimated that India had till that point in time addressed only 10 per cent of a potential market whose size exceeds \$300 billion. The report estimated that almost 35 per cent of this opportunity (or \$10 billion) is expected to be relocated from source countries to low-cost offshore locations like India. It expects that the Indian IT and BPO industries could grow at an annual rate greater than 25 per cent and generate exports of about \$60 billion by 2010. The report predicts that innovation by industry players in India could accelerate growth and add an additional \$15-20 billion in export revenue over the next 5-10 years.

² <http://www.witsa.org/profiles/IndianSoftwareScenario.pdf>.



In outsourcing, services like Hardware and Software Maintenance, Network Administration and Help Desk Services are expected to account for more than 45 per cent of the \$150-180 billion addressable market for off-shoring, and are likely to be drivers of growth. Today's service lines, such as Application Development and Maintenance and R&D Services, have already reached penetrations of 30-35 per cent and are not likely to show dramatic growth.

In the addressable market of \$120-150 billion for global off-shore BPO services the Report predicts that the growth is expected to be driven by traditional industries (Retail, Banking, etc.) and cross-industry functions such as Human Resources, Finance and Accounting.

India continues to be the offshoring destination of choice. The NASSCOM Strategic Review 2006, based on an A.T. Kearney Global Services Location Index for 2005, lists India at the top of the table of 40 nations.

1.4.5 Employment trends

Indian software and services industry's strong value proposition – existence of a large, English speaking and technically qualified manpower, competitive billing, high productivity gains and scalability – which had helped the country emerge as a key IT services outsourcing destination, continue to hold her in good stead. These intrinsic strengths and advantages gave India a leg up in the burgeoning ITES-BPO space as well, taking it beyond the realm of IT services.

The total number of IT and ITES professionals employed in India has grown from 284,000 in 1999-2000 to over 1 million in 2004-05, expanding by over 200,000 in the last year alone. NASSCOM expects this number to reach 1,287,000 in 2005-06.

1.4.6 Break-up of Professionals in the IT industry

Most of the new recruits in the industry are fresh graduates, indicating the availability of a large pool of resource each year as opposed to the poaching witnessed in other industries. A break-up of the 1 million professionals in different sectors indicates that the number of employees in the ITES-BPO segment has witnessed the highest levels of growth over the past few years – which may be attributed to the tremendous growth in demand. ITES companies recruited approximately 100,000 professionals in 2004-05. Companies in the IT software exports sector recruited 75,000 professionals in 2004-05, compared to 65,000 in 2003-04.

In addition to a 1.3 million strong workforce employed directly in the industry, Indian IT-ITES is estimated to have helped create an additional 3 million jobs through indirect and induced employment. Indirect employment includes expenditure on vendors, including telecom, power, construction, facility management, IT, transportation, catering and other services. Induced employment is driven by consumption expenditure of employees on food, clothing, the utilities, leisure, health and other services.

Table 1: Break up of Professionals Employed in Indian IT and ITES Sectors

	2001-02	2002-03	2003-04	2004-05
Software Exports Sector	170,000 (32.6%)	205,000 (30.6%)	270,000 (32.1%)	345,000 (33.0%)
Software-Domestic Sector	22,000 (4.2%)	25,000 (3.7%)	28,000 (3.3%)	30,000 (2.9%)
Software- in House Captive Staff	224,250 (42.9%)	260,000 (38.8%)	290,000 (34.5%)	322,000 (30.8%)
ITES-BPO	106,000 (20.3%)	180,000 (26.9%)	253,500 (30.1%)	348,000 (33.3%)
Total	522,250	670,000	841,500	1,045,000

Source: NASSCOM



1.5 Policy Measures: Evolution and Current Status

Contrary to general perception, the importance of promoting software development, particularly for export, had been recognised by the erstwhile Department of Electronics (DoE). Suitable policies and programmes were put in place as far back as 1972 (Parthasarathi and Joseph, 2002). During a period when very high tariff and non-tariff barriers were the rule, firms were permitted to import computer systems duty-free and no clearances were required for firms involved in software exports. Moreover, restrictions on Foreign Direct Investment (FDI) notwithstanding, totally foreign-owned companies were permitted to set up software export operations, provided they located themselves in the Santacruz Electronics Export Processing Zone (Government of India 1972). Later, in January 1982, a Software Export Promotion Policy was initiated by the Department of Electronics (Government of India).

The Computer Policy of 1984 gave further thrust to software development by underlining the need for institutional and policy support on a number of fronts. The policy, for example, called for the setting-up of the Software Development Promotion Agency (SDPA) under the Department of Electronics. The import of inputs needed for software development was further liberalised.

After 1984, world ICT trade was expected to reach \$100 billion by 1990, more than half of which was estimated to be in software. India's software export projections were based on a target of \$300 million, which corresponded to about 0.6 per cent of the world's software trade. Based on this, it was felt that there was a need for more concrete policies for the promotion of software development and export. Thus, in 1986, an explicit policy was announced identifying software as one of the key sectors in India's agenda for export promotion, and, underlining the importance of an integrated development of software for the domestic and export markets (Government of India 1986). The policy had the following objectives:

- Promote rapid growth of software exports to a take a quantum jump and capture a sizeable share of the international software market.
- Promote the integrated development of software in the country for domestic as well as export markets.

- Simplify the existing procedures to enable the software industry to grow at a faster pace.
- Establish a strong base for the software industry in the country.
- Promote the use of the computer as a decision making tool; to increase work efficiency and to promote appropriate applications which are of development catalysing nature with due regard to the long-term benefits of computerisation to the country as a whole.

To achieve the objectives, the Policy, emphasising the need to simplify existing procedures, provided various commercial incentives to software firms. These included tax holidays, income tax exemption on software exports, export subsidies and duty-free import of hardware and software for 100 per cent export purposes.

With the initiation of economic reforms in the early 1990s, the Finance Ministry made an assessment of new industrialisation. This highlighted the fact that, apart from the general orientation of industries towards export markets, India's comparative advantage was in software and not hardware. Therefore, a major thrust was consciously given to software exports. Accordingly, new policy measures were initiated *inter alia* for the removal of entry barriers for foreign companies, lifting of restrictions on foreign technology transfers, participation of the private sector in policy making, provisions to finance software development through equity and venture capital, reforms for faster and cheaper data communication facilities, and the reduction/ rationalisation of taxes, duties and tariffs, etc. (Narayanamurthy 2000).

The first National Workshop on ICT focussed on IT policies and their implementation, was organised at the Administrative Staff College of India (ASCI), Hyderabad in October 2001. In the context of improving ICT performance in India, it was strongly felt that the following were needed:

- Enhancing citizen awareness on the potential of ICT services/application.
- Upgrading IT skills of Government employees.
- All States/Union Territories must adopt common standards.
- Common evaluation methodology must be evolved for hardware and software selection to drive maximum benefit from investment.



- Continuous experience sharing between State and Union Territory Governments on projects.
- Sufficient resources to be allocated to build reliable ICT infrastructure.

The Approach Paper to the Tenth Plan (Government of India, 2001) had been prepared against a backdrop of high expectations arising from the recent performance of GDP growth. The GDP growth rate improved from an average of about 5.7 per cent during the 1980s to about 6.5 per cent between 1997 and 2002, making India the second fastest growing major economy. A substantial part of this buoyancy was due to the growth in the Services sector led by ICT and telecom. The Tenth Plan stressed the need for defining the development objectives not just in terms of increases in GDP or per capita income, but broader parameters which enhance human well being. It attempted to focus on inter-State inequities and underlined the strategies to overcome the regional disparities in deferring economic growth rates. The Tenth Plan emphasised those sectors which were most likely to create high employment opportunities, such as construction, real estate housing, modern retailing and IT-enabled services, etc. Moreover, it recognises the comparative advantage of brainpower to absorb, assimilate and adopt spectacular developments in system integration and technology and harness them for national growth in the knowledge-based global economy. Technology and knowledge could be a tool to give India a competitive advantage in the new global economy, provided policies to harness human resource strengths and capabilities are in place.

The plan identified telecommunications as a critical part of infrastructure in the emerging, knowledge-based economy. It attributed the importance of telecommunications to the dramatic growth of IT and its potential impact on the rest of the economy because India was perceived to have a comparative advantage. To maintain this, the Telecommunication Policy moved its focus to the convergence of data, voice and image transmission, the use of bandwidth and high-speed Internet connectivity.

The Government tried to improve the IT infrastructure in India by tackling the shortage of proper power supply and the huge gap between demand and supply of bandwidth. With respect to infrastructure development, of the 23 proposed recommendations of the first

workshop on ICT, 19 were characterised as “ongoing”. On the proposal for making available updated information at the panchayat level, the National Informatics Centre (NIC) was involved in the creation of online databases (NICNET) for access by the public. In an inaugural session of the ASSOCHAM (Associated Chambers of Commerce and Industry of India) Summit on “India in a knowledge Millennium” held in 1999, the then Prime Minister declared that “knowledge-based society will enable us to leapfrog in finding new and innovative ways to meet the challenges of building just and equitable social order and seek urgent solution.” (Venkatsubramaniam, n.a.)

The Task Force, which was constituted at the very beginning of this Millennium, suggested the maximum number of recommendations in the developmental sector – 45. Even though the Task Force suggested the creation of citizen charters and the development of a smart card programme, the Action Taken Report (ATR) ruefully noted that only 59 wings of the State apparatus had notified the charter and that no mention was made regarding their effectiveness and implementation. For creation of e-Governance, the Government had to first train the manpower for operations and assess the need of technical personnel to maintain the system. Moreover, the Government was launching awareness programmes to explain to people the advantages of IT, as people participation was deemed a necessary input for the success of the programmes. Also, the Government had to ensure proper physical and mechanical infrastructure for their transformation (Jayanth, 2000). Subsequently, the Government adopted a strategy to explain the concept of IT to society, why it was needed, and how it could transform lives. This was done by spreading information networks in villages as well as through establishment of computer service centres or computer information centres.

Along with policy reforms by the Central Government, various States enacted their own IT policies to promote ICT. These generally focussed on the key issues of infrastructure, e-Governance, IT education and means to create environments to engender IT proliferation.

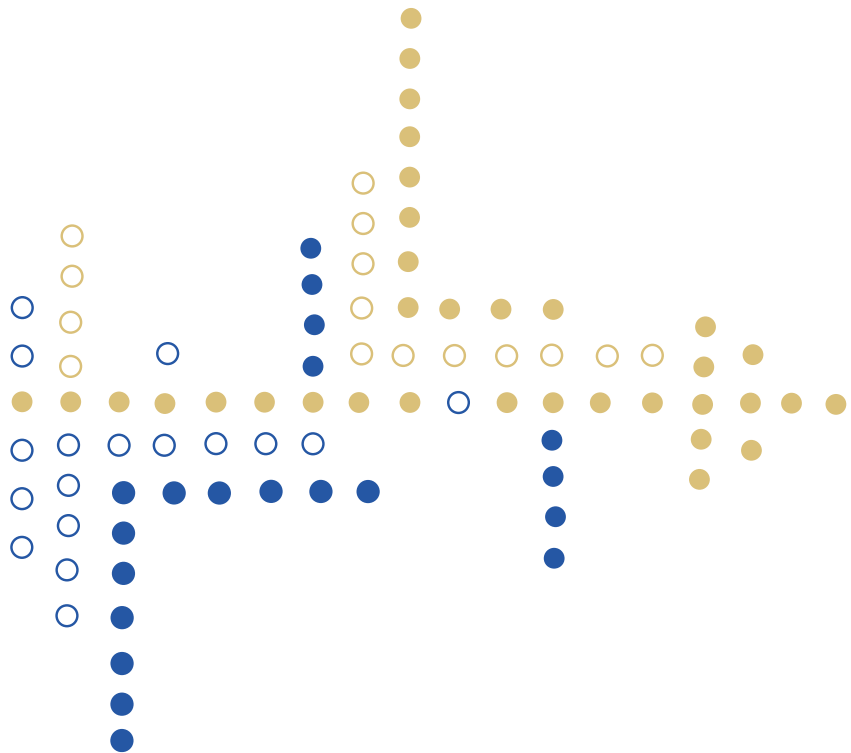
In addition, the Government introduced certain institutional interventions. Several national task forces studied all aspects of IT over the past few years and most of their recommendations were acted upon. More significantly, chief executives of leading private IT



companies were roped into these task forces. A number of Government agencies involved in different aspects of IT were brought together into an integrated Ministry of Information Technology. It was followed by an IT Act to deal with a wide variety of issues relating to the IT industry (Parthasarathi 2001).

One notable improvement was the establishment of Software Technology Parks of India (STPI) under the Ministry of Communication and Information Technology to provide the necessary infrastructure for software export. STPI acts as a single window service for software exporters and incubation infrastructure to small and medium enterprises (SMEs). Among the first were the parks at Bangalore, Pune and Bhubaneswar, which were set up in August, October and December 1990,

respectively. In 1991, four more STPs were started by the DoE at Noida, Gandhinagar, Thiruvananthapuram and Hyderabad. Today, there are 18 such parks in different parts of the country and they play a significant role in software exports. The total number of units registered with the STPs increased from 164 in 1991 to 5,582 in 1999, accounting for about 68 per cent of India's IT exports. In 2006, STPI commissioned new centres at Jammu (Jammu and Kashmir), Jodhpur (Rajasthan) and Siliguri (West Bengal). With the addition of these three new centres, STPI now has 47 centres across the country. By December 31, 2005, a total of 6,129 units were operational and 4,088 were exporting. STPI member units exported software worth over Rs 74,019 crore during 2004-05. Software exports are estimated to be around Rs 95,000 crore during 2005-06.



E-Readiness Index of the States in India 2005

