

Accessibility in Information Technology and Communication

Base Line Report
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About the Base Line Study

The aim of the Study was to understand the current scenario vis-à-vis 'Information Technology (IT)' and 'Information and Broadcasting (I&B)' for people with disabilities in India.

Specific Objectives of the Study

- To study the existing IT and I&B Policies/Programmes/Schemes which could and should affect the lives of people with disabilities.
- To study the reach of these Schemes and to analyse their impact with respect to the actual needs of people with disabilities.
- To study the relevant budget allocations and their utilisation especially in relation to people with disabilities.
- To list out emerging concerns and basic recommendations for further discussion/analysis by the subject experts and policy makers.

Methodology

In order to understand the current status and prepare a base line report, the following methodology was followed:

- Listing of all concerned Ministries and then narrowing it down to a few most relevant Ministries.
- Studying the Programmes and Schemes of the short-listed Ministries from their Annual Reports (2007-2008), websites, and advertisements in newspapers.
- Studying any other relevant document/report/paper prepared by Government/NGO/Individual.
- Extracting the relevant portions from the XI Five Year Plan, Persons with Disabilities Act, 1995 and the UN Convention on the Rights of Persons with Disabilities.

Scope & Limitations of the Study

The report attempts to provide basic information on the role and the status of IT and I&B for disabled people in the country as per the efforts of the Government, based mainly on the information available in the Annual Reports (2007-2008) of Department of Information & Technology (under the Ministry of Communication & Information Technology) and the Ministry of Information & Broadcasting. It also provides information about the initiatives that are being planned in this area based on the Eleventh Five Year Plan. Even though the focus of the Study was on the Government initiatives, we have included some information about initiatives taken by the NGO sector. However, the information is limited, as it was outside the scope of this Study.

The Research Team

The Research Team for the project comprised of Rama Chari, Sakshi Broota and Priya Varadan.

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Information Technology

INTRODUCTION

The importance that Information Technology (IT) plays in people's lives today cannot be overstated. IT is used in facilitating education, disseminating information and supporting creative endeavours of various kinds. It is also used as a tool for entertainment and a means of connecting people to each other regardless of distance. In such a scenario, it is necessary that this tool be accessible to people from all walks of life so as to make the country's economy robust, lively and fulfilling for all. One of the requirements that would have to be satisfied is that IT tools and accessories are accessible to people regardless of their physical, mental, intellectual and economic conditions and educational backgrounds. While IT is slowly becoming accessible to persons with widely differing economic and educational backgrounds, much remains to be done for persons with disabilities.

The sections in the Eleventh Five Year Plan that were referred to were IT & IT-Enabled Services (pg. 251) and Information Technology (pg. 431) in Volume 3 and Empowering Persons with Disabilities (pg. 130) in Volume 1. The Information Technology Annual Report 2007-2008 was also referred to. These documents were studied in order to see what was being done by the respective departments to reach out to this segment by the way of products and programmes. The existing policies and systems were analysed with respect to people with disabilities to see if they were adequate. Finally, the budget allocation and utilisation for this segment in the department was looked into. Apart from these two documents, some of the work done by the NGO sector and the private sector in developing inclusive policies and assistive technologies was studied. Note that, in the Eleventh Plan, the sections IT & IT-Enabled Services and Information Technology have no reference to disability while the Annual Report of the Department of Information Technology, as we shall see, addresses the issue somewhat.

1. Government Machinery, Structure and Policies

The Ministry of Communication and Information consists of three Departments. They are:

- Department of Telecommunications
- Department of Posts
- Department of Information Technology

The **Department of Telecommunications** handles policy, licensing and coordination matters relating to telegraphs, telephones, wireless, data, facsimile and telematic service and other like forms of communication.

The **Department of Posts** handles matters relating to the introduction, development and maintenance of all services by the Post Office including those based on cable, radio and satellite communications channels provided that these matters do not amount to broadcasting, narrowcasting, cable and radio networking services and are also not governed by the Indian Telegraph Act, 1885 and the rules made there under, and not exclusively allotted to any other Department.

The **Department of Information Technology (DIT)** (<http://www.mit.gov.in/>) handles all matters related to IT, Electronics and the Internet. Some of the functions of DIT are (for a comprehensive list, see the Annual Report 2007-08):

- The Allocation of Business Rules Pertaining to DIT
- Policy matters relating to Information Technology, Electronics and Internet (all matters other than licensing of Internet Service Provider)
- Promotion of Internet, IT and IT enabled services
- Assistance to other departments in the promotion of E-Governance, E-Commerce, E-Medicine, E-Infrastructure, etc.
- Promotion of Information Technology education and Information Technology-based education.
- Electronics Export and Computer Software Promotion Council (ESC)
- National Informatics Centre (NIC)
- Initiatives for development of Hardware/Software industry including knowledge-based enterprises, measures for promoting IT exports and competitiveness of the industry

2. Government Initiatives

2.1 Potential of the IT Sector

The importance of the IT sector can be gauged by the impressive list of facts and figures listed out in the first chapter of the Annual Report. Some of these are:

- Though the IT-BPO sector is export driven, the domestic market is also significant. The revenue from the domestic market (IT Services and ITESBPO) is also expected to grow to about US\$ 11.7 billion in the year 2007-08 as compared to US\$ 8.2 billion in 2006-07 an anticipated growth of about 42.7 per cent. The total (IT Industry including Hardware) size of the domestic market is expected to cross US\$ 23.2 billion in 2007-08, as against US\$ 16.2 billion in 2006-07, a growth of 43 per cent Year-on-Year (YoY).
- The total IT Software and Services employment is expected to reach 2.0 million mark in 2007-08 (excluding employment in Hardware sector), as against 1.63 million in 2006-07, a growth of 22.7 per cent YoY. This represents a net addition of 375,000 professionals to the industry employee base this year. The indirect employment attributed by the sector is estimated to about 8.0 million in year 2007-08. This translates to the creation of about 10 million job opportunities attributed to the growth of this sector.
- As a proportion of national GDP, the IT-BPO sector revenues have grown from 5.2 per cent in 2006-07 to an estimated 5.5 per cent in 2007-08. The outlook for Indian IT-BPO remains bright, and the sector is well on track to achieve its aspired target of US\$ 60 billion in export revenues and US\$ 73 - 75 billion in overall software and services revenues by 2010. Key factors underlying this optimism include sufficient demand, strong fundamentals and a favourable policy environment.

Some of the policies and schemes of the Department of Information Technology (DIT) will be discussed below. Note that only those areas that seem to be of direct social relevance to the concerns of disabled people and other minority groups have been highlighted. These initiatives have been grouped accordingly. The sections are Citizen Centric Services, Educational Services, Medical and Health Care Services, Livelihood Generation and Miscellaneous Activities. Some successful initiatives are then listed under the heading Indicative List of Successful Initiatives in the States.

2.2. Citizen Centric Services

These initiatives are aimed at using IT for providing services of various kinds to the common man. It would be most important to have these initiatives made accessible to disabled persons due to the essential nature of the services being computerised.

National e-Governance Plan (NeGP)

The Government of India accords high priority to improve the quality of life of the citizens by providing basic services at their doorsteps and has formulated a National e-Governance Plan (NeGP) covering 27 Mission Mode Projects and eight support components to be implemented at Central, State and Local Government levels. At the State level, the Mission Mode Projects (MMP) would include services like road transport, land records, commercial taxes, employment exchanges, agriculture, civil supplies, treasuries, land registration, policy and education, while at Central level, it will cover areas such as insurance, central excise, National ID, pensions, e-Posts, banking, passport, visa and income tax. The Annual Report states that the National e-Governance Plan would be implemented at an estimated cost of Rs. 23,000 crore over five years.

State Data Centres (SDCs)

State Data Centres have been identified as one of the important elements of the core infrastructure for supporting e-Governance initiatives under NeGP. It is proposed to create data repositories/data centres in various States/UTs so that common secured data storage could be maintained to serve a host of e-Governance applications. The Annual Report states that the Government has approved the scheme in January 2008 at an estimated cost of Rs. 1623.20 crore to cover 28 States/6 UTs across the country. Around 20 State Data Centres are expected to be set up and operationalised during 2008-09.

Common Service Centres (CSCs)

A Scheme to facilitate establishment of broadband internet enabled Common Service Centres (CSCs) in rural areas of the country has been approved by the Government. The CSCs are one of the three infrastructure pillars of the National e-Governance Plan and would serve as the physical front end for delivering Government and private services at the doorstep of the citizen. In the review of the X Plan, the Government envisaged the establishment of more than 100000 CSCs across the country at a total cost of Rs. 5742 crore and that the CSCs would be established in a honeycomb pattern covering all the 600000 villages in the country for delivery of content and services such as e-governance, education, entertainment, telemedicine, agriculture, etc.

Horizontal Transfer of Successful e-Governance Initiatives

For spreading the benefits of e-Governance across the country, this Department has taken initiatives to identify and replicate major successful projects that have achieved citizen centric objectives in some States. The Annual Report states that in the first phase, projects on Land Records, Transport and Properties Registration were taken up as these have potential for improving significantly Government-to-Citizen services.

Information Technology Investment Regions (ITIR)

There is a need to develop infrastructure facilities in tier 2 and tier 3 cities, as there is little scope of building additional commercial space in the five tier 1 cities, New Delhi, Bangalore, Hyderabad, Mumbai and Chennai. An important initiative in this direction has been taken in order to encourage setting up of IT Investment Regions, which could include new integrated townships. The Annual Report states that the challenge before the Government is to add commercial office space at the estimated rate of 25 million square feet and obtain commensurate expansion of business infrastructure, residential space and other amenities and facilities every year to keep pace with the demands. Initiatives to make these office spaces accessible would need to be accorded priority.

National Informatics Centre (NIC)

The Annual Report also discusses the National Informatics Centre (NIC) which is the nodal Science & Technology organisation providing network backbone and e-Governance support to the Central Government departments, States, Union Territories and District Administrations in the country. It provides security, sets up video-conferencing, and among its major national level projects are computerising land records, introduction of IT into Courts, providing global patent information (website is patinfo@hub.nic.in), creating central database of residents across the country and generating a unique number for identifying each resident, development of library software for networking of libraries (see the websites <http://egranthalaya.kar.nic.in/> and <http://mcitconsortium.nic.in>) and so on.

The Societies chapter in the Annual Report also discusses other IT related Government institutes such as CDAC (Centre for Development of Advanced Computing) which also creates solutions in the field of IT, NIXI (National Internet Exchange of India), SAMEER (Society for Applied Microwave Electronics Engineering and Research), DOEACC, C-MET (Centre for Materials for Electronics Technology) and ERNET (Education and Research Network) India.

2.3. Educational Services

The important theme here is to digitise information and educational material and make it widely available.

Digital Library of India

Libraries are the storehouse of knowledge as they maintain the book and other knowledge resource available - mostly in printed form. However, with the advent of digital technology and Internet connectivity, data available in physical form can be preserved digitally in the Digital Library and can be accessed through Internet connectivity. Under the Digital Library project copyright free books, manuscripts, and theses etc., have been digitised. Most of the digitised data has been web enabled on Digital Library of India. The Annual Report says that the Digital Library of India, which is hosted by the Indian Institute of Science, Bangalore, provides free access to many books in English and Indian languages and has digitised more than 2.97 lakh books containing a total of approximately 80.7 million pages till September 2007 (the website is <http://www.new.dli.ernet.in/>).

Library Automation

e-Granthalaya has been developed by NIC as a standardised and robust library automation software. Already implemented in about 1000 libraries, it is going to be rolled out to a large number of libraries in the country (see the website <http://egranthalaya.kar.nic.in/>).

Creation of a National Knowledge Network

A National Knowledge Network can go a long way in bringing India in the forefront of education, S&T, innovation, etc. National Research and Education Networks are driving the pace of collaboration, innovation, and discovery amongst scientists. The Annual Report says that an allocation of Rs. 100 crores has been made in the year 2008-09 for implementing the scheme.

Technology Development in Indian Languages

India is a multilingual country. There is, therefore, a need to provide user-friendly and cost effective tools, applications, and content that enable access to ICT infrastructure in Indian languages. The issues relating to linguistic data resource, content creation, language processing tools, and such technologies as optical character recognition, text-to-speech, speech recognition, cross-lingual information retrieval, and machine translation in multilingual environment are being addressed. To make available the fruits of IT development to the common man, fonts and software tools for some of the Indian languages such as Hindi, Tamil, Telugu, Assamese, Kannada, Malayalam, Marathi, Oriya, Punjabi, and Urdu have been released in public domains. There is need for developing similar software tools and fonts for other languages in the coming years. The Annual Report states that software tools and fonts for 10 Indian languages namely Hindi, Tamil, Telugu, Assamese, Kannada, Malayalam, Marathi, Oriya, Punjabi and Urdu languages have been released in public domain. These software and tools are also free downloadable from the website <http://www.ildc.gov.in>.

School Connectivity

This initiative is present in the XI Plan. It essentially points out that education infrastructure needs to be strengthened and upgraded. In the first phase, broadband access needs to be provided to every school. There are 1,08,000 government and government-aided schools in India. All these schools need to be put on the network progressively. The Annual Report is silent on the status of this initiative.

Content in Schools

Portal GYANPEDIA.IN Content in School (CIS) initiative is aimed at enabling school education in India through content creation, aggregation and dissemination using ICT tools and a bottom up approach. The objective of the project is to provide a Virtual Platform for country wide content exchange

programme for School Community - children as well as teachers. The target is to cover 300 schools in seven Districts of 3 States through the project.(see <http://www.gyanpedia.in/>).

CAPES

Another interesting project has been the development of CAPES (Computer Aided Paperless Examination System) by the National Informatics Centre (NIC) which was used for on-line entrance test to Haryana MCA (Master of Computer Applications), Pharmacy, LEET (Engineering), LEET (Pharmacy) and BHM and CT courses. The CCC (Certificate Course on Computer concepts) CAPES exam was also successfully taken by 30,000 candidates at 100 centres across India including 33 Community Information Centres in the North-East.

DOEACC Society

DOEACC Society, an Autonomous Scientific Society of Department of Information Technology (DIT), was set up to carry out Human Resource Development and related activities in the area of Information & Communication Technology. The Society has 10 Centres at Aizawl, Aurangabad, Calicut (with Southern regional office at Pudukkottai), Chandigarh (with 3 branches at Shimla, Lucknow & New Delhi) Gorakhpur, Imphal, Srinagar/Jammu, Kohima/Chuchuyimlang, Kolkata and Tezpur/Guwahati with its Headquarters at New Delhi. The Society is engaged both in formal and non formal education in the area of Information, Electronics and Communication Technology (IECT) besides development of Industry oriented quality education and training in 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 also a National Examination Body, which accredits institutes/organisations for conducting courses particularly in the non-formal sector of IT Education & Training. DOEACC Centres are conducting long-term courses (both Formal & Non-Formal) courses and short-term courses in the area of ICT and projects sponsored by DIT/Department of North-Eastern Region (DONER). A few initiatives mentioned in the Annual Report involving disabled persons and a few others are given below.

- The programmes under Women Empowerment
- Training of Graduate & Undergraduate women in DOEACC O/A level courses
- Women Empowerment in Information Electronics and Communication Technology at DOEACC Centre, Gorakhpur.
- DOEACC 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 implemented following schemes for the financial assistance to the Women/SC/ST/OBC and other weaker sections of the Society:

The Society has introduced a Scholarship Scheme for SC/ST/Physically Handicapped and female students who are pursuing O/A/B/C Level of courses of the DOEACC Society as a full time course through an Accredited Institute authorised to conduct the DOEACC Courses. Details of SC/ST and female candidates registered during April, 2007 to January, 2008 are as under:

- No. of Female Students = 16193
- No. of SC/ST Students = 1476

It can clearly be seen that no disabled persons have received scholarship under the scheme.

Use of ICT in Vocational Education and Training

Media Lab Asia has initiated a project to evolve a national programme for application of ICT for Vocational Education & Training. This is in continuation of work to evolve a plan for application of ICT for Vocational Education & Training where more than 2500 vocations have been identified. Another project that has been mentioned has been the setting up of 10 ICT Vocational Centers in Tamil Nadu and 10 in the NCR region for physically challenged children where the less privileged children in the

proximity of these Centres have learnt ICT skills enabling them to seek employment and earn their livelihood. The infrastructure at these schools is connected to LAN and Internet to explore the world wide web (www). Possibility to expand the scheme on all India basis to 100 more centres is being explored.

2.4. Disability Initiatives

National Interactive Disability Portal

Media Lab Asia in collaboration with Rehabilitation Council of India (RCI) has developed a comprehensive Interactive portal. The portal contains the following information:

- National Disability Register
- Online courses through Learning Management System (LMS) run by RCI
- Repository of Braille ready-Text, Audio files, etc.
- List of MSJE offices, Special Schools, NGO's Special Educators
- All Government policies, schemes and circulars related to disabled people
- Availability of Assistive Devices & its details
(see <http://www.rehabcouncil.nic.in/helpsite.htm> and <http://www.punarbhava.in>)
- Programmes of RCI

Satellite and Internet based national network for education, training and empowerment of the Disabled

Satellite uplink and studio has been set up at RCI premises. The Direct Reception System (DRS) facility at 220 centres has been installed and the regular live interactive tele-conferencing programme has started from October 2007.

ICT enabled Integrated Assessment Tool for Mentally Retarded Children

This is a project to develop "ICT enabled Integrated Assessment Tool for Mentally Retarded Children" which has been taken up in collaboration with CDAC, Thiruvananthapuram.

ICT for Empowerment of Disabled

Media Lab Asia (<http://www.medialabasia.in/empowerment-of-disabled.html>)

Media Lab Asia has been promoted by the Department of Information Technology, Govt. of India as a not for profit company. The objective of the company is to bring the benefits of ICT to the common man. It started with the functional activity areas such as the World Computer (Affordable, ubiquitous computing and access devices), Bits for All (Low Cost, High Bandwidth connectivity) and Tomorrow's Tool (Rurally relevant applications). However it was later changed to application areas such as ICT for Healthcare, Education, Livelihood, Empowerment of Disabled and Wireless Connectivity. Some of the products offered by Media Lab Asia for disabled people are given below:

Website Empowerment through Shruti-Drishti

This project is to enable visually impaired to access electronic documents in speech and Braille form. Deployment work of "Shruti-Drishti" – system developed under DIT grant has been taken up in collaboration with CDAC Pune and Webel Mediatronics Limited.

Screen Reading Software - SAFA (Screen Access for All)

Media Lab Asia and NAB (National Association of the Blind) Delhi have jointly developed the screen reading software named SAFA. This is an open source software and supports many Indian languages. It is being provided free of charge by NAB Delhi. The users have the option of purchasing additional Text To Speech (TTS) software for better synthetic voice output from SAFA. SAFA can detect the

text language on the fly and calls the relevant TTS for speaking it. So now one can have a multilingual document and read it with SAFA at one go without having to change or install TTS again and again. The latest version of SAFA is supporting the following TTS in different Indian languages:

- eSpeak – English, Hindi, Tamil
- Shruti – Hindi, Bengali
- VAACHAK – English, Hindi, Marathi
- Ashrir – Bangla, Marathi, Tamil, Telugu

To add to this list, the developers have made it very easy to add any new language in SAFA whether Indian or foreign. As and when the TTS software becomes available for any new language such as Sinhala, all that will be required to do is some changes in the SAFA configuration file and after that SAFA will start supporting that language with speech. This kind of configuration can be done by the user itself. SAFA is being developed and refined continuously as per the features wish list and feedback received from users.

A Comprehensive Satellite/Internet based National Network for Education, Training and Empowerment of persons with disabilities

A number of organisations have shown their interest in deployment and commercialisation of Sanyog (Indian Language based Communication Tool for children with cerebral palsy), Shruti (Vernacular Speech Interface for people with visual Impairment) and Vaani (Vaani is a communication device for empowerment of the persons with speech impairment enabling them to select and play pre-recorded messages of their choice). Test deployments have been done at AADI (The Spastics Society of Northern India, Delhi) under Public-Private Partnership (PPP) model including requirement enhancement. Information on Sanyog, Shruti and Vaani are available at the website of Media Lab Asia (<http://medialabasia.in/>). Sanyog is described below.

Sanyog

Sanyog is a multilingual Augmentative & Alternative Communication System, developed at Media Lab Asia research hub at IIT Kharagpur, to serve individuals with speech impairment and neuromotor disorders. It allows individuals to form and localise their own messages. The system is comprised of a Natural Language Sentence Generator, Icon Interpretation and Disambiguation, Text to Speech System, a predictive virtual keyboard, facility to store and retrieve frequently used messages, and varied access switches. The system has been deployed at IICP, Kolkata; AADI, New Delhi and Manovikas Kendra, Kolkatta, where it is being used by a number of students with special needs, facilitating improved communication with teachers and parents.

The input device in the case of Sanyog is a switch based system. The software offers the user with the option to use a dual switch interface or a single switch interface depending on the motor abilities of the user. In the dual switch interface mode, one switch controls navigation and the other is used for selection. In the single switch interface mode, both navigation and selection is done by the same switch. The software is structured into three different modes based on the needs of the user

- Stored Messages section allows the user to select prerecorded messages which will be read out using a Text to Speech (TTS) system inbuilt in the software.
- The Iconic Communication Interface allows the user to form sentences using an icon based system. These sentences can then be read out using the TTS facility.
- The Keyboard Interface provides a predictive virtual keyboard and can be used to type in sentences.

Sanyog also has the feature of Personalisation where the icons used in the iconic communication or the stored messages (both icons and texts) used in the prestored message based communication can be personalised according to the user's likes and dislikes. A Personalisation interface is provided with the system for the purpose. Currently the system has support for Hindi, Bengali and English.

Webel Mediatronics Limited

(WML - A Government of West Bengal undertaking) (<http://www.webelmediatronics.in/brlads>)

WML is engaged for last 25 years in development, manufacturing and turnkey project execution in the areas of Studio and Broadcasting Systems, Industrial Electronics, Information Technology Applications and various systems for disabled people.

Some of the products that they have developed are - Automatic Braille Embosser, Tactile Reader & E Library, Braille Keyboard & E Classroom. They have also developed Text to Braille and Braille to Text Transcription Software, Braille Writer, Mathematics Braille Transcription Software, WML Screen Reader, which is compatible with Windows, etc. for visually impaired people.

IT tool to help people with cerebral palsy

Webel's latest innovation, the audio-visual software, christened '**Pictorial**', has specially developed keypads that help cerebral palsy children communicate their feeling by selecting pictures. The software and keypads could be attached to any computer. For children who cannot use hands, Webel has developed foot-switches that can be used to select pictures for expressions. The software has a database of 2000 pictures to select from and the Indian Institute of Cerebral Palsy has provided Webel with these specially designed icons. In each icon, there is a sound file, which can generate audible expressions. By clicking on any icon, the user will be able to play the sound file and make people understand their feelings. The software has a pair of specially designed hand switches for two hands. While one switch would be used to scroll through the pictures, the other switch would be for selecting an expression or pressing the 'Enter' button. Similar mechanism is in place for the foot switches.

Redesign and fabrication of motor wheelchair

The electronically controlled motor wheelchair is being developed by CDAC, Thiruvananthapuram in collaboration with Webel Mediatronics Ltd. (WML), Kolkata. The motor wheelchair has been put to extensive field trials at National Institute for Orthopaedically Handicapped (NIOH), Kolkata. WML, Kolkata would be fabricating eight wheelchairs under the project for field trials at various places in the country and subsequent production.

2.5. Medical and Health Care Services

Sehat Saathi - Portable Model of Primary Healthcare Delivery

Sehat Saathi is a rural telemedicine system that can be used to extend medical care to patients in the remote parts of the country. The model provides for front-end contact through a suitably trained non-medical person; back end support from doctors, pathologists and other health professionals for diagnosis and treatment. The pilot deployment of Sehat Saathi (Ophthalmology module) telemedicine software has been done at Primary Health Centre (PHC) Chaubepur (Kanpur) in collaboration with Ministry of Health and Family Welfare. An expert eye treatment provided to more than 700 patients over a period of 6 months. The transfer of technology of Sehat Saathi system is in progress.

Low Cost Mobile Telemedicine Facility at Cherthala - Alappuzha district of Kerala

The objective of the project is to develop a model for affordable mobile telemedicine system for primary healthcare. A Mobile tele-clinical van with necessary medical equipments goes in a predefined schedule to the rural areas (20 villages in Cherthala taluk). The mobile telemedicine van will have a basic set of medical diagnostic equipments, a Doctor, Nurses, Lab technicians and driver cum attendant. The wireless connectivity is provisioned between the van at specified locations and the hospital for connecting the patients to the doctors at the hospitals. The design of the Mobile van has been completed and the development and deployment of the system is in progress.

Rural Health Management Information System

A project has been taken up for developing a model for IT based health services at grassroot level by strengthening the health data collection and synthesising relevant information for healthcare management at 20 PHCs/CHCs/BPHCs of Tirur Taluk of Mallapuram, Kerala. Handheld devices are used by health workers for capturing data from the field. The data collected by the health worker will be uploaded in the network. This will form a health database for the Health Management Information System. This data can be used for timely reports, alerts, work plan and other purposes like research, census etc. A pilot deployment of handheld devices has been done by Media Lab Asia for health data collection by health worker at Ballabgarh, Haryana with AIIMS, New Delhi.

Other Initiatives

- Development of wireless integrated biomedical devices for rural healthcare
- Adaptive & Automatic Insulin Pump
- Resource shared healthcare delivery system using telemedicine at Tirur Taluk Mallapuram, Kerala:
- Development of low cost feature rich telemedicine terminal
- Personal use respiratory devices

2.6. Livelihood Generation

Project Chetna

This project aims to build enabling ICT platforms for empowering women and children in rural communities. Deliverables of the project include multimedia content on 10 development themes i.e., Life Skills, Compulsory Education, Health, Nutrition, Child care, Age care, HIV/AIDS, SHG (Self Help Groups)/VO (Voluntary Organisation) capacity building, Content for women entrepreneurs, Legal rights & duties, Financial literacy and Livelihood skills. As a part of its strategy and attempt to serve the communities better and empower them, 3 Community Radio Stations and 8 Community TV Centres are being established.

e-Galla

This is a Low Cost Retail Management System. The purpose of this project is to develop a low cost retail management system for small and medium retailers.

Other Initiatives

- Development of cost-effective solution for Community Radio Station (CRS) and its deployment for livelihood generation
- Community Radio and TV System for community development
- Digital Ecosystem for Agriculture and Rural Livelihood
- Digital Craft Revival: CHIC is a Computer Aided Design (CAD) tool for enhancing the productivity of the Chikankari designers

2.7. Miscellaneous Activities

Open Technology Centre (OTC)

To facilitate use of open technologies in e-governance and strategic applications and services, OTC has been set up at Chennai. It has provided DSpace, an open-source archival solution, for archival of speeches, video, and audio speeches of Members of Rajya Sabha. It has archived documents of speeches in Urdu and Hindi in addition to English.

Computer-aided Digital Mapping Project for Six Cities

This initiative was evolved during the Tenth Plan. The six cities are Ahmedabad, Bangalore, Chennai, Hyderabad, Kolkata, and Mumbai. The benefits of this project include better services to citizens at large and better preparedness for disaster management. The project involves the preparation of digital maps along with the digital mapping of utilities such as water, sewage, electricity, roads, communications, gas, pipelines, etc. The Annual Report is silent on the current status of this scheme.

e-Readiness

The Department of Information Technology regularly takes stock of e-Readiness at the country level and States/UTs level to ascertain the status of underlying infrastructure, human resources, policy regime, etc. It also provides various steps needed to optimise environment and to reach full potential. The Annual Report says that the e-Readiness Assessment reports of States/UTs was released in 2008 by NCAER (National Council of Applied Economic Research). The highlights of the 2006 Report prepared by NCAER include Input-Output Multipliers for ICT for States and Union Territories and Assessment of e-Readiness of select central Ministries that are implementing projects under NeGP. One of the key features of the report is the use of the Social Accounting Matrix to assess impact of ICT on social dimensions such as poverty. See <http://www.ncaer.org/featuredproject2.html>.

Other activities

The Department of Information Technology has other initiatives whose headings, as given in the Annual Report, are listed below.

- Semiconductor Manufacturing Industry
- Setting up of Integrated Modern Townships for Sunrise Industries including IT And BPO
- Cyber Security
- Indian Computer Emergency Response Team (Cert-In)
- Government Departments Security
- Regional Cyber Security Research Centre (Rcsrc)
- Increasing Efficiency of E-Governance Investments
- Information Security Education And Awareness Project
- Scheme for Manpower Development for the Software Export Industry
- Development of Weaker Sections
- Gender Issues

Thrust Areas for R&D in IT Sector in the Eleventh Plan. Some of the major thrust areas for R&D in the Eleventh Plan include ubiquitous computing, Radio Frequency Identification (RFI), high performance computing, grid computing, high performance networking, bio-informatics, open source software, software engineering, web technologies, electronics, nanotechnology, photonics, microelectronics, industrial electronics, automation electronics, embedded systems, and electronics material development programme.

2.8. Indicative List of Successful Initiatives in the States

Some successful initiatives mentioned in the Review of the X Five Year Plan are given below in the table.

Government Initiatives

Project	Initiative of Government of
Computerisation of the Registration Department	Andhra Pradesh (AP), Himachal Pradesh (HP), Tamil Nadu (TN), Uttar Pradesh (UP), Bihar, Maharashtra, Karnataka, Tripura, Delhi, Sikkim, Punjab
Computerisation of Transport Department	About 500 RTOs/DTOs in various States
Computerisation of district administration and Citizen Centric Services	Assam, Meghalaya, Kerala, UP, Haryana, Punjab
Back-end PRI Solutions: INFOGRAM, e-gram, e-Panchayat, Asthi, Panchlekha, etc. (Village Panchayat)	Goa, Gujarat, AP, Karnataka, Madhya Pradesh (MP), etc.
Computerisation of Land Records	Karnataka, TN, MP, Assam, West Bengal, (WB) Rajasthan, Chhattisgarh, Uttarakhand, Manipur, Haryana
Integration of property registration and land records administration	Haryana
Online Monitoring of NREGS	All States
Computerisation of Treasuries	Rajasthan, Chhattisgarh, Maharashtra, UP, Manipur, Haryana, Kerala, Himachal Pradesh
e-Municipality	Maharashtra
Monitoring of Construction of Permanent Shelters for Earthquake and Tsunami Victims	A&N Islands
Employment Exchange	Lakshadweep, Gujarat
Common Integrated Police Application	Around 1800 police stations across States
e-Courts (court orders, cause list, e-filing in Supreme Court)	Supreme Court, 21 High Courts; being extended to 13000 subordinate Courts in States
Passport System	Passport offices in States
VAT (Value-added Tax Computerisation)	WB, Sikkim, Haryana
AGMARKNET	2800 Agricultural Mandis in various States
National Panchayat Portal	Portals of all PRIs across the States
PRI accounting software	Orissa, MP, etc.
Rural Bazar (Web store to promote marketing of Rural Products)	TN, Goa, Tripura, etc.
Information systems for Poverty Alleviation Schemes	UP, Orissa, AP, etc.
Rural Water Supply & Sanitation/PHED Computerisation	Arunachal Pradesh, UP, MP, AP, Rajasthan, TN, etc.—20 States
e-post	Post Offices in States
Instant Money Order	Post Offices in States
Co-operative Bank Information Network	Bihar
Computerisation and Networking of Consumer Forums	All States
Integrated Information System for food grains management	All States

3. Assistive Technologies by NGOs and Private Sector

Some initiatives in the area of Information Technology for disabled people from the private and NGO sectors:

Saksham (<http://www.saksham.org/>)

The Saksham Charitable Trust in New Delhi has been established with the sole purpose to empower people belonging to the marginalised sections of the society. Some of the aids and appliances meant for blind people are the Saksham Talking Mobile Phone (priced at Rs. 10,000/-) with a limited scheme in place to distribute mobile phones at a cheaper price and the Way Finder Access software (priced at Rs. 9700/-) which is a GPS based navigation system.

IBM Accessibility (<http://www-03.ibm.com/able/>)

Some key accessible products and services offered by IBM are:

- IBM ThinkPad® - Is IBM's brand of award-winning mobile computers with a smart design and intuitive functionality. Design features include smart latches and sticky keys to allow one-handed operation; hardware buttons to control volume; button and key layout that require minimal dexterity and little force to operate; and the ability to instantly enlarge objects and screen fonts by simultaneously pressing the Fn key and the space bar on new ThinkPad models.
- IBM Lotus® Notes® 6 - Provides a messaging and collaboration platform with an intuitive environment. Lotus Notes includes features such as keyboard support for mobility-impaired users and setting configuration support for users with low vision.
- IBM Asia Pacific Web accessibility services - Provide consultation to help clients define internal guidelines and processes to maintain Web accessibility. The services can include easy Web browsing technology, an easy-to-use, on demand Web access tool. Easy Web browsing technology provides a user-friendly Web interface with character enlarging, reading of text aloud at the selected mouse location and optimisation of Web pages by changing font sizes and background colors according to users' preferences. Easy Web browsing technology runs from the Website using a secure method and automatically downloads and sets up the required software components.

4. Analysis and Emerging Issues

The relevant sections in the Eleventh Five Year Plan viz. IT & IT-Enabled Services have no specific section on disability. There are paragraphs which discuss the inclusion of gender issues (women), the rural sector and the health sector.

The UN Convention on the Rights of Persons with Disabilities has three articles, namely Article 8, Article 9 and Article 21, which deal with awareness, accessibility and access to information. These Articles are comprehensive regarding what role the State must play in promoting the rights of disabled persons in society (Details given in Annexure). It would be necessary to include the provisions mentioned in the Articles in the designing stage of all schemes taken up by the Department of Information and Technology for the common man.

Education & Livelihood

The Ministry has taken some initiatives in promoting education for people with disability using IT - setting up of ICT vocational centers; CDAC has been involved in developing an assessment tool for mentally retarded children, language based communication tool Sanyog, etc. The DOEACC Society claims to have a 'Scholarship Scheme to SC/ST/Physically Handicapped and Female Students' but in the Annual Report there is no data regarding the number of disabled students who received the scholarship.

There are many other important initiatives to digitise information and educational material. Digital library, school connectivity, making online web based CAPES (Computer Aided Paperless Examination System), etc. These initiatives/programmes should be made disabled friendly so that students with disability are not left behind in the digital world. Projects like the portal Gyanpedia.in that addresses the need for good educational content, Project Chetna, e-Galla and so on are some of the initiatives meant for the other disadvantaged communities, which needs to be made accessible to disabled people.

Web accessibility

The issue of web accessibility has not been addressed in the Annual Report or in the Eleventh Plan. All the plans related to computerisation, e Governance etc. will have little meaning if they are not accessible to people with disability. Like the physical infrastructure requires to be designed keeping the needs of disabled people, similarly, websites & applications have to be designed in a manner for people with disabilities to access them. Poorly designed websites & applications can create unnecessary barriers for people with disabilities, just as poorly designed buildings prevent some from entering. Designers may not realise how simple features built into a web page will assist someone who, for instance, cannot see a computer monitor or use a mouse.

One example of a barrier would be a photograph of a Minister on a website with no text identifying it. Because screen readers cannot interpret images unless there is text associated with it, a blind person would have no way of knowing whether the image is an unidentified photo or logo, artwork, a link to another page, or something else. Simply adding a line of hidden computer code to label the photograph, for example "Photograph of Prime Minister Dr. Manmohan Singh" will allow the blind user to make sense of the image. For hearing impaired people, websites should have captioning for audio, supplemental illustration. Similarly, there should be consistency in navigation, appropriate language level for people with cognitive disabilities. (Information regarding Web Accessibility Features and Standards can be gathered from <http://www.w3.org/WAI/>)

Almost all Government websites are inaccessible for people with disabilities. DIT has so many initiatives on computerisation of crucial services like district administration and citizen centric services, land records, e-post and so on. Accessibility to these sites would be invaluable for disabled persons. Making systems like Rural Bazar (which is a web store that promotes rural products), Rural Soft (which contains information on poverty alleviation schemes) and e-Galla (low cost retail management system) accessible can be invaluable for budding entrepreneurs with disability. Further, there are many schemes like the Digital Library, National Knowledge Network, State Data Centres, Common Service Centres and so on which, being citizen centric, would benefit even the common man to a great extent if made accessible.

As shown by the Accessibility Survey for websites of Indian Companies listed on NYSE and NASDAQ by Barrier Break Technologies (<http://barrierbreak.com/report.php>), none of them are following the web accessibility standards. A wish list prepared for DIT by Nirmita Narasimhan and Rahul Gonsalves is given in the box below.

Wish list prepared for Department of IT for NCPEDP (National Centre for Promotion of Employment for Disabled People) by Nirmita Narasimhan and Rahul Gonsalves

- The Government should consider coming out with a National Policy for Electronic Accessibility, since this will overarch all existing legislations and be applicable to accessing information over all mediums ranging from the mobile phones to computers.
- This legislation should recognise the most recent release of the Web Content Accessibility Guidelines (WCAG) (currently version 2.0) as the standard to conform to.
- The Government of India should lay down inter-departmental rules to ensure that all Government websites (both Central and State) conform to this Policy or atleast to the WCAG. Existing websites should be redesigned and made accessible.
- In the event that the Government comes out with a GIF, it should include conformance to the WCAG as an essential component.
- NASSCOM should ensure that public listed companies should have accessible websites. Government should have a policy to encourage even private organisations to adopt the WCAG 2.0 guidelines. The Government should fix a time line within which all websites are to be made accessible.
- There should be training camps for all developers of government websites to ensure that they are made conversant with the accessibility requirements of WCAG 2.0.
- The drive to make sites accessible should be a national drive and include participation of the State Governments and Union Territories as well.
- Web accessibility awareness should be made a component of all computer training courses, starting from the school to courses in institutions like the NIIT.

Development & Dissemination of Assistive Technologies

Assistive Technologies are great enablers for persons with disability. There have been some initiatives in this regard by the Government & NGOs, however, there is a lot more that needs to be done.

Many websites list out the various technologies for disabled people but many of them are not available in India. Even if they are available, they are very expensive and beyond the reach of the majority of disabled people in India.

One of the most widely used screen reader is JAWS as it is compatible with Microsoft Office. Trainings are also given for using JAWS in NGOs. However, the cost of purchasing JAWS is huge. One JAWS license cost about Rs. 50,000/- . There are screen readers that are available freely. Media Lab Asia offers the free open source SAFA screen reader that is obtainable from the National Association for

the Blind, Delhi. Webel offers the WML Screen Reader which can be used with the Windows Operating System but the website is silent regarding the cost.

These screen readers are not popular with the users. It is up to the Government to popularise these technologies and the Linux Operating System and provide suitable training programmes to make these widely used.

For individuals with speech impairment and neuromotor disability, certain augmentative communication tools have been developed by Medial Lab Asia and WML. The Government should ensure that such technologies are widely disseminated.

There are many sophisticated technologies available abroad. However, they are quite expensive. "Given the fact that a lot of these products are imported, the prices increase by at least 40 to 45%. This puts them out of the reach for most disabled people here. There is an urgent need for the government to subsidise these products," Ram Agarwal, CEO, Karishma Enterprises. (Source: Three big challenges enabling the differently abled, Neeraj Gandhi, Express Computers, 14th July 2008).

The knowledge base of the disability sector is also very limited in this regard. There is a huge gap with respect to human resources availability to train people in assistive technologies. There has to be a concerted effort and a strategic plan to promote the use of assistive devices in the country.

Health

In the area of health, the Government has introduced initiatives like the Sehat Saathi - Portable Model of Primary Healthcare Delivery (which is a rural telemedicine system that is used to extend medical care to patients in the remote parts of the country), development of wireless integrated biomedical devices for rural healthcare, the low cost Mobile Telemedicine Facility at Cherthala - Alappuzha district of Kerala, Rural Health Management Information System and others. These schemes need to include and cater to the concerns of disabled people too in a concerted manner.

Budget

In the Annual Report, the Budget earmarked for large scale initiatives undertaken by the departments only is given.

The Budget for the Department of Information and Technology for 2008-2009 is Rs. 1716 crore of which the National Knowledge Network has been allocated Rs. 91 crore, NIC (which helps develop assistive technologies) been allocated Rs. 360 crore, IT for masses (including SC/ST and Gender) has been allocated Rs. 6 crore and Electronics in Health and Telemedicine has been allocated Rs. 12.33 crore. There is no mention of disability in the Budget.

The proposed Gross Budgetary Support (at current prices) in the Eleventh Plan for Department of Information and Technology is Rs. 12496 crore.

Following are some of the relevant Budget Heads:

- IT for Masses (Gender/SC/ST): Rs. 156 crore
- Media Lab Asia: Rs. 300 crore
- E- Governance: Rs. 4992 crore
- Human Resource Development: Rs. 405 crore
- NIC: Rs. 2300 crore

5. Recommendations

- To fully **implement the relevant articles of UN Convention on the Rights of Persons with Disabilities (UNCRPD)**, namely Article 8, 9 and 21, in those sections applicable to the Department of Information Technology.
- An **Ordinance** should be passed to ensure that all Government and other websites used by the public comply with Web Content Accessibility Guidelines (WCAG).
- **Earmark 3% of the total budget** toward inclusiveness for disabled persons in all e-schemes meant for the general public as mandated in XI Plan.
- Make **all resources meant for the public disabled friendly** (like the Digital Library, National e-Governance Plan (NeGP), Service Centers, State Data Centres and so on).
- **Promote extensively the use of assistive devices/technologies** along with suitable training programmes across the country. Build human resources to provide training for disabled people in using assistive technologies.
- Government should give **subsidy and tax exemptions** to assistive technology manufacturers to bring the costs down.
- **Disseminate Assistive Technologies** through ADIP and other schemes.
- Make **CAPEs (Computer Aided Paperless Examination System) disabled friendly** and introduce this scheme to administer other government and non-governmental exams throughout the country.
- Make **suitable guidelines for hardware and software development** for the public to ensure that they are disabled friendly by construction.
- Make the **health care initiatives** meant for women and children in rural areas accessible to the disabled people and to include disability issues and concerns.
- **NASSCOM should ensure that public listed companies should have accessible websites.** Government should have a policy to encourage even private organisations to adopt the WCAG 2.0 guidelines. The Government should fix a time line within which all websites are to be made accessible.
- Have a **Monitoring Committee** under the IT Ministry to screen websites/software/tools/applications for accessibility regularly.
- There should be **training for all developers** of Government websites to ensure that they are made conversant with the accessibility requirements of WCAG 2.0.
- The **Web accessibility should be made a component of all computer training courses**, starting from the school to courses in institutions like the NIIT.
- Make the **National Knowledge Network disabled friendly** in order to encourage research opportunities among disabled people in various institutions of higher learning
- **eReadiness Assessment Report should include disability.**

Information and Broadcasting

INTRODUCTION

The importance of the work of the Ministry of Information and Broadcasting in people's lives today can be seen in through the areas of involvement of the Ministry (which is given in the next section). Apart from catering to the entertainment needs of various age groups, they also focus on issues like environment, health care, illiteracy, women, children and disadvantaged sections of society. The Ministry also reaches out to a very wide section of people including those in remote areas. It plays an important role in disseminating information regarding the schemes and projects of the Government and other autonomous institutions to people from all walks of life, thus being a crucial link in the economic growth and prosperity of the country. However, much more needs to be done for persons with physical and mental impairments. Among the main difficulties is to reach out to this section with information regarding the schemes meant for them and to sensitise non-disabled people to the concerns of disabled people so that integration into the economic mainstream becomes simpler and enriching for all.

In this report, we study the policies and schemes of the Eleventh Five Year Plan and the Annual Report 2007-2008 of the Ministry of Information and Broadcasting keeping in mind the concerns and needs of the disability sector. This report has the following sections. First, the structure and role of the Ministry of Information and Broadcasting has been detailed out so that the reader is aware of the functions and goals of this department. Then, in the Current Scenario, we discuss the policies and systems that support and cater to people with disability as well as those policies which can include disability issues in the Eleventh Five Year Plan and the Annual Report. Finally, we present the analysis and the recommendations.

1. Government Machinery, Structure and Policies

The Ministry of Information and Broadcasting (<http://www.mib.nic.in>) consists of four wings. They are:

- Information Wing
- Broadcasting Wing
- Films Wing
- Integrated Finance Wing

The **Information Wing** handles policy matters of the print and press media and the publicity requirements of the Government. It also looks after the General administration of the Ministry and the cadre of the Indian Information Service. It has eight media units and two autonomous organisations under it. These are listed in the table below along with a brief mention of their objectives.

S.No.	Name of Media Unit	Function
1.	Press Information Bureau (PIB)	Development of press relations to disseminate the policies of the Government
2.	Directorate of Advertising and Visual Publicity (DAVP)	Advertising and Visual Publicity for the Government
3.	Registrar of Newspapers of India	Implementation of Press and Registration of Books (PRB) Act, 1867
4.	Directorate of Field Publicity (DFP)	Disseminate policies of the Government through interpersonal communication
5.	Publications Division	Publication of books and journals
6.	Research, Reference and Training Division	Research, training and manpower development
7.	Song and Drama Division	Disseminate policies of the Government through interpersonal communication
8.	Photo Division	Photo coverage of Government events and important functions
S.No.	Autonomous Organisations	Function
1.	Press Council of India	To preserve the freedom of the press and improve and maintain the standards of newspapers and news agencies in India.
2.	Indian Institution of Mass Communication	Training and manpower development.

The **Broadcasting Wing** handles matters relating to the electronic media. It formulates policies and frames rules and regulations for public service broadcasting, cable TV, private TV channels, FM and Community radio and so on. It consists of :

- One subordinate office, namely, the Electronic Media Monitoring Centre which monitors TV channels to check violation of the cable TV Networks Regulation Act, 1995,
- One autonomous organisation, namely, Prasar Bharati which itself consists of Doordarshan and All India Radio,
- One public sector organisation, namely, the Broadcast Engineering Consultants India Limited (BECIL) which provides technical consultancy and solutions in the field of broadcasting.

The **Films Wing** handles matters relating to the Film Sector. It is involved in the production and distribution of documentary films, development and promotional activities relating to the film industry. It consists of four subordinate offices, three autonomous organisations and one public sector organisation. These are listed in the table below.

S.No	Subordinate Office	Objective
1.	Films Division	Documentary film production
2.	Central Board of Film Certification	Certification of films
3.	National Film Archive of India	Preservation of films
4.	Directorate of Film Festivals	Promotion of good cinema
S.No	Autonomous Organisation	Objective
1.	Film and Television Institute of India, Pune	Manpower development
2.	Satyajit Ray Film and Television Institute, Kolkata	Manpower development
3.	Children Film Society of India	Promotion of children's cinema
S.No	Public Sector Undertaking	Objective
1.	National Films Development Corporation	Film finance

The **Integrated Finance Wing** looks after the finance aspects of the Ministry including the budget, Plan coordination and Operation & Maintenance activities.

The Ministry of Information and Broadcasting is essentially involved in :

- catering to the entertainment needs of various age groups
- focusing the attention of people on issues of national integrity
- environmental protection
- health care and family welfare
- eradication of illiteracy
- issues relating to women, children and other disadvantaged sections of society

The mandate of this Ministry, as listed out in the Annual Report, is as follows:

- Broadcasting Services through All India Radio (AIR) and Doordarshan (DD) for the people, including Indians abroad
- Development of Broadcasting and Television services
- Import and Export of films
- Development and promotion of film industry
- Organisation of film festivals and cultural exchanges for the purpose
- Advertising and Visual Publicity on behalf of the Government of India
- Development of Press relations to disseminate the policies of the Government of India
- Administration of the Press and Registration of Books Act, 1867
- Dissemination of information about India within and outside the country, through publications and media on matters of national importance
- Research, reference and training to assist the media units of the Ministry
- Financial assistance to distinguished artistes, musicians, instrumentalists, dancers, dramatists etc. who have substantially contributed to the Ministry's institutions
- International relations in respect of broadcasting and news services

2. Government Initiatives

As mentioned in the Introduction, in the Eleventh Plan, disability has not been mentioned in the Telecommunication section. However, in the section dealing with disability (Eleventh Plan, Volume 1, pg.133), we find the following texts which mention the setting up of a captioning centre to provide subtitles and a need to focus on awareness drives.

- The needs of persons with hearing and/or speech impairment have been relatively neglected so far. In the Eleventh Plan, a determined effort will be made on mainstreaming this segment. The interventions planned will provide access to information in all its forms. A large number of sign language interpreters need to be developed for hearing impaired people to access health, employment and legal services. Subtitling and captioning of all recorded information and similar support services is also essential. Therefore, during the Eleventh Plan period a Sign Language Research and Training Centre will be established which will be devoted to the development and promotion of sign language and training of teachers and interpreters. A National Captioning Centre will also be set up to provide sub-titling and captioning services.
- Detection of mental disabilities and disorders is critical to addressing mental well being through both preventive and curative measures. It is vital to recognise that physical disabilities usually coexist with, and lead to, mental disturbance and ill health. The Eleventh Plan will emphasise and adopt a multi-pronged, cross sectoral approach to identifying, preventing, managing, treating and rehabilitating persons with mental disabilities. **There will be a focus on awareness drives, defining the various kinds of disabilities, generating valid census data, inclusion in all areas of development, and community based treatment and rehabilitation approaches.** Efforts will be made to strengthen and develop trained human resource to address the growing magnitude of mental disabilities. There will be emphasis on research to generate relevant data and culturally valid rehabilitative measures.

Some of the major activities (for an exhaustive list please refer to the Annual Report, 2007-2008 issued by the Ministry) undertaken by the Ministry of Information and Broadcasting are described.

2.1. Information Wing

This wing is by far the most important as far as disability issues are concerned. Most of its activities have to do with disseminating information regarding the policies and schemes of the Government of India to the common man through the media and other means like public information campaigns and so on. Only some of the activities of the various divisions of this wing are described keeping in mind the concerns of persons with disability. For a more comprehensive account, please refer to the Annual Report.

1. Press Information Bureau (PIB) (www.pib.nic.in)

PIB is the nodal agency of the Government to disseminate information to the print and electronic media on Government policies, programme initiatives and achievements. PIB also functions as an interface between the Government and the media and so it also provides feedback to the Government regarding people's reactions as reflected in the media. PIB disseminates information through different modes of communication such as Press Releases, Press Notes, Feature Articles, Backgrounders, Press Briefings, Photographs, Press Conferences, Interviews, Press tours, Audio Visual clippings and so on. The information material is released in English, Hindi, Urdu and other regional languages and reaches about 8,400 newspapers and media organisations all over the country. The only mention one finds in the XI Plan is the completion of the National Media Centre which is a project of PIB. Some of the activities of this sector, as given in the Annual Report, are mentioned below.

Public Information Campaigns (PIC)

These campaigns are conducted by the PIB with DFP participation and are aimed at disseminating information regarding the flagship programmes of the Government to the common man particularly in rural and remote areas. The full list of the components of PICs is given below. Each PIC is held for a five day period and hosts stalls from which information and details on how to avail of the benefits under the programmes is made available. Public opinion and feedback are collected during these campaigns and forwarded to the concerned Ministries for necessary action. The Annual Report also states that 35 PIC campaigns were organised till December, 2007. It has been estimated that around 75 thousand people on an average have visited each PIC.

Components of PICs:

- Bharat Nirman – package for the development of Rural Infrastructure
- National Rural Employment Guarantee Act
- National Rural Health Mission
- Sarva Shiksha Abhiyan
- Mid Day Meal Programme
- Jawahar Lal Nehru National Urban Renewal Mission
- Right to Information Act
- Prime Minister's new 15 point Programme for the Welfare of Minorities
- Integrated Child Development Service Scheme
- Tribal Welfare

e-Governance

The website of PIB is an important source of information for small and medium newspapers. It has been redesigned to incorporate new features. PIB also has six sister websites in six different languages which are Tamil, Malayalam, Kannada, Telugu, Bengali and Mizo. IntraPIB, an intranet web portal for PIB has been upgraded with new features like PIB Clipping Service and so on.

Media Interactive Series

Also conducted by the PIB, these are held in selected State capitals where issues such as infrastructure, socio-economic development, development schemes and so on are discussed with the media. Important Union Ministers and senior officials are invited to these events.

2. Directorate of Advertising and Visual Publicity (DAVP)(www.davp.nic.in)

In the X Plan, the Directorate of Advertisement and Visual Publicity, with its function of providing multi-media publicity to Government's development programmes and policies in various fields, and achievement in these areas, focused on the need for technological upgradation of its communication equipments and modernisation of its programme designs. Some of the activities and achievements, as given in the Annual Report, are mentioned below.

Multi Media Campaigns

Multi-media campaigns like Health for all, Rural Development, Aids Awareness, Service Tax, Income Tax, Prevention of Child Labour and so on were launched by the DAVP during the year in association with other concerned Ministries when necessary.

Audio-Visual Advertisements

Conducted by the Audio-Visual cell of the DAVP, these publicity campaigns are undertaken through radio and video sponsored programmes, jingles and audio-video spots on AIR, Doordarshan, private TV channel, radio channels and through DFP units on various issues of social and national relevance like Women & Child development issues, AIDS awareness, Family welfare, National Rural Health Mission and so on. The Annual Report says that some important AV campaigns undertaken by the Audio-Visual Cell of DAVP were Family Welfare, AIDS Awareness, Women and Child Development issues, Welfare Schemes and so on.

Release of Advertisements

A total of 12,992 advertisements were released to various newspapers throughout the country during April to December, 2007. Of these, 1213 were display advertisements and the rest were classified

advertisements. Some important display advertisements were Pulse Polio Day, World Health Day, World AIDS Day and so on.

e-Governance.

DAVP has modernised its operations in various areas such as payments through Electronic Clearance System(ECS) for press advertisements and release orders for display advertisements to facilitate remotely located newspapers and publications. Release orders for audio and video advertisements are also being released electronically.

3. Directorate of Field Publicity (DFP) (www.dfp.nic.in)

In the Tenth Plan Directorate of Field Publicity (DFP) set goals for increasing its coverage, computerisation of regional offices, creation of local software for effective communication, and streaming of its feedback mechanism. Some of the major policy initiatives taken include:

- Indian editions of foreign scientific, technical, and specialty magazines, periodicals, and journals were allowed.
- Foreign investment up to 100% in publishing companies publishing speciality magazines was allowed.
- 26% foreign equity in Indian firms publishing newspapers and news and current affairs periodicals should be allowed.

The XI Plan states that it is necessary to redefine the objectives of the DFP and reposition its network to reach remote, inaccessible, and strategic areas for effective reach and publicity.

Some of the major activities of DFP are the publicity of programmes such as PIC, RTI, STI, Family Planning, Female Foeticide, Polio, Avian Flu, Gender Issues, Child Marriage and so on. It has also undertaken special campaigns for the Ministry of Social Justice and Empowerment for the benefit of disabled persons and SC/ST communities underlining various schemes and facilities targeted towards them. The DFP also organised programmes on events such as World Health Day, Girl Child Day, National Nutrition Week, Teachers Day, World AIDS Day and so on. Some of the achievements, as mentioned in the Annual Report, are given below.

Achievements

- No. of film shows organised - 21088
- No of song and drama shows conducted - 1295
- No of special programmes organised - 5485
- No. of communication programmes organised - 28,104
- No. of photo exhibitions - 17,314
- No. of public opinion gatherings - 4,382

e-Governance

To facilitate its working DFP has adopted ICT in a very big way. All the regional offices have been computerised for quick and easy accessibility and communication of feedback etc.

4. Publications Division (www.publicationsdivision.nic.in)

The Publications Division publishes books and journals on matters of national importance and selected speeches of the Presidents and Prime Ministers of India at a reasonable price. It also publishes the Employment News to make available information about job opportunities in the Government Sector (this is described below) and aims to enter the field of e-publishing through multi-media interactive CDs on subjects of cultural heritage.

The XI Plan mentions that the Press and Registration of Books Act 1867 needs to be revisited to make it in tune with contemporary needs.

Publication of Employment News

The Publications Division produces the weekly Employment News/Rozgar Samachar in English, Hindi and Urdu. Commanding an average circulation of six lakh copies, the journal focuses on employment opportunities in government and semi-government organisations/departments/public sector undertakings/autonomous bodies, banks and universities. Across the country the weekly has

a network of about 311 agents and 4500 direct subscribers. The website of Employment News is provided with state of the art search engine which enables viewers to quickly retrieve material from the website. The website is providing counseling service on an interactive to youngsters throughout the country where questions are answered by specialist career counselors. Over 65000 youngsters are now getting free services provided by the website. The website has also entered into an arrangement with IIT Kharagpur for marketing space on the website.

e-Governance

To facilitate users the Employment News has been made online and is getting a very good response. Sales Emporia are also being upgraded and computerised. As a process of ongoing e-governance, regular upgradation and computerisation of the Editorial, Business, Production and Administration units are being undertaken to increase efficiency.

5. Song and Drama Division (SDD)

In the X Plan, the Song and Drama Division (SDD)—being related to publicity, education, and entertainment through the traditional media of folk music, dance, theatre, and puppetry—targeted at extensive use of traditional media for communication and modernising its facilities for programmes and designs. The XI Plan says that the modernisation of SDD's infrastructure in view of its importance needs to be emphasised.

In the Annual Report, some of the achievements and relevant activities of this division is mentioned below.

ICT activities in Hill/Tribal/Desert/Sensitive and Border Areas

The Division presents programmes in these areas with a view to creating awareness regarding developmental activities, inculcating a sense of belonging to the country and to encourage participation in the developmental process. Performing troupes are chosen among the local people.

Achievements

- No. of shows presented - 10,000
- No. of song and light shows - 22
- No. of programmes in tribal areas - 419
- No. of ICT activities - 153
- No. of shows on CMP - 650
- Activities in J&K - 270
- Activities in identified districts - 433

e-Governance

Efforts are on to modernise the working of the Division by use of ICT under the XI Plan.

Some miscellaneous initiatives for the Information Sector, as stated in the XI Plan, are given below.

- In recognition of the importance of traditional media units, emphasis should be on the use of IT-enabled applications and other technological advancement for increasing their reach.
- There is a need for promoting partnership with the private sector in the field of traditional media units for bridging the information gap.
- The issues pertaining to Intellectual Property Rights in the information sector need to be addressed.
- Strengthening the organisational set up of the Registrar of Newspaper for India (RNI) in North East and Central Zones.
- Transformation of the IIMC into a global school in journalism.

2.2. Broadcasting Wing

The Indian Entertainment and Media industry is one of the fastest growing sectors in India. This is also one of the sectors experiencing rapid technological changes with new modes of delivery of content coming up in the form of IPTV (Internet Protocol TV), mobile TV and Headend-in-the-Sky (HITS) (which is digital mode of delivery of content using satellites). This sector is projected to grow from an estimated size of Rs. 437 billion to rupees one trillion by 2011 with a cumulative annual growth rate of 18% over the next five years. On the television industry side, this annual growth rate is

projected to be 22% while on the radio side it is projected to be at the rate of 28%. Out of 110 million TV households in India, 70 million are cable and satellite homes and the remaining 40 million are served by the public broadcaster, Doordarshan. The television broadcasting setup consists of 1398 analogue terrestrial transmitters and 4 digital transmitters in public sector, 6000 Multi-System Operators, and 65000 local cable operators in private sector, 3 digital DTH satellite television operators in public and private sector. In the radio sector, there are 132 million radio sets. The total radio coverage by population has reached 99.13%. The radio broadcasting infrastructure consists of 229 AIR (All India Radio) analogue terrestrial radio Medium Wave and Short Wave stations, 42 private FM stations out of 264 analogue private terrestrial stations, and one private satellite radio, that is, World Space.

One of the key developments has been the transition from an analogue mode of content creation, transmission and distribution to a digitalised mode. The process of digitalisation makes it possible to offer a whole range of new channels and applications along with a convergence of audio-video and data services within the same bandwidth occupied by a single channel in the analogue mode. The question of whether there should be a date for completely switching over to the digital mode is presently engaging the attention of the Government. However, a national digitalisation plan will have to be gradual and will have to provide for simultaneous provision of digital and analogue service. It is to be noted that much of the television production and transmission of satellite TV channels is already using digital technology. However, on the distribution side only a few of the Multi System Operators are using the digital technology. The XI Plan mentions a few initiatives regarding the transition to the digital format which are given below.

- Mobile media solutions on a fast track basis should be implemented to provide variety in entertainment platforms.
- Digital transmission to be encouraged through Headend in the Sky.
- Common Regulator for Information, Communication, and Entertainment (ICE) Sector. The earlier initiative to create a 'Convergence Commission' with a 'carriage bureau' and a 'content bureau' needs to be revisited. In the context of the general movement of technology in the direction of convergence, that is (i) convergence of network platforms (viz., broadcast, satellite, cable, telecom) carrying similar kinds of services and (ii) merging of consumer devices such as telephones, televisions, PCs, all capable of triple-play, is a pointer that increasingly all carriage networks and devices will be able to carry all kinds of contents. It, therefore, makes sense to have a single regulator. At least this issue of a single regulator for telecom and broadcasting sectors deserves to be revisited.
- Committee on ICE (Information, Communication and Entertainment) in its report on Going Digital recommended a stepwise migration path from the present analogue broadcasting economy to the digital one.

Some of the activities undertaken by this wing been (for a comprehensive list refer to the Annual Report, 2007-2008 issued by the Ministry) described. Very few of the activities mentioned in the Annual Report have disability concerns in them and few of the other activities are amenable to inclusion of disability concerns. Hence, only a few interesting initiatives will be given.

Satellite Radio: At present M/s Worldspace India Private Ltd., a wholly owned subsidiary of M/s Worldspace Asia Pvt. Ltd., Singapore is providing these services. Some of the activities of Worldspace are carrying out software programming activities in India in the fields of educational, sports and entertainment, to import digital satellite receivers and other accessories, to establish a call centre, to set up a customer care centre in all major centres and so on.

Community Radio: This is distinct from public service broadcasting and it serves to bring small communities together and focuses on the common man's day-to-day concerns and aspirations. The scheme can work as a powerful means of rural empowerment especially when focused on disadvantaged communities like dalits, rural women and handicapped persons. The Annual Report says that presently permission has been granted to 21 applicants which includes 7 NGOs, 5 agricultural universities and 3 KVKs (Krishi Vigyan Kendras). Presently 29 Community Radio Stations are operational, 28 of which are operational under the old guidelines and one institution viz. Delhi University was given permission under the new guidelines.

Mobile TV. Set up in Delhi, TV transmission to mobile phones is done by using the DVB-H standard. Programmes of eight DD channels can be received on DVB-H enabled mobile phones. Doordarshan plans to increase the number of channels from the present 8 to 16.

e-Procurement

Under the National e-Governance Plan (NeGP), Doordarshan has envisaged to incorporate e-procurement in its procurement process. To begin with this is proposed for stand alone items of equipment.

Some miscellaneous initiatives in the XI Plan for the Broadcasting Sector for the next five years are mentioned below.

- Public Service Broadcasting should focus on developmental programmes of the government and bringing in social awareness.
- Reorganisation of Prasar Bharati.
- With the re-emergence of radio as a medium of profound reach and impact, especially FM radio, AIR needs to forge partnerships with private FM players to expand and effectively utilise this medium.
- Establish an International Channel through PPP.
- Facilitating emergence of India as an important source for high-quality animation-based content.

2.3. Films Sector

The Films Wing handles matters relating to the Film Sector. It is involved in the production and distribution of documentary films and development and promotional activities relating to the film industry. The Films Division produces documentaries, short films, animation films and news magazines from its headquarters in Mumbai, films on Defence and family welfare from its Delhi unit and short fiction films for rural audiences from the regional production centers at Kolkata and Bangalore. The aims and objectives of the Division, as stated in the Annual Report, are to educate and motivate people in the implementation of national programmes and to project the image of the land and the heritage of the country to Indian and foreign audiences. The Division caters to nearly 8500 cinema theatres all over the country and to the non-theatrical circuits like units of the Directorate of Field Publicity (DFP), field units of the Department of Family Welfare, Doordarshan, mobile units of the State Governments, Educational institutions, film societies and voluntary organisations. The X Plan review mentions that although the Indian film industry produces over a 1000 films a year, it has a negligible share in the global film industry revenues. Therefore, it requires a strong policy support to achieve a place of prominence in the world market. The activities of the film institutes, such as Satyajit Ray Film and Television Institute (SRFTI), Kolkata; Film and Television Institute of India (FTII), Pune; and IIMC were focused on modernisation of training infrastructure and improvement in quality of training. IIMC has introduced TV journalism in its curriculum in response to growing demand for this discipline from the student community. Some of the initiatives mentioned during the XI Plan are given below.

- Formulation of a National Digital Policy for entertainment sector.
- Revamping of Cinematograph Act of 1952 to address the emerging technologies and new challenges.
- Need to encourage film tourism for targeting the opportunities in global film sector.
- Building up a Centre of Excellence for animation, gaming, and special effects through PPP mode projects.
- Transforming FTII and SRFTI into global film and television schools.
- Encouraging the industry in creating new markets abroad and developing existing markets by supporting participation in film markets and festivals.

The section on Films in the Annual Report mentions that the documentaries range in theme and topic from agriculture to art and architecture, industry, food to festivals, health care to housing, science and technology to sports, trade and commerce to transport, tribal welfare to community development and so on. No mention has been made regarding disability issues. The new initiatives of this division mention the production of documentary films to commemorate the 150th Anniversary of India's independence and the publication of quarterly magazine called Documentary Today. Since the other activities of this sector are not concerned with disability issues, they will not be mentioned further.

3. Analysis and Emerging Issues

The media plays an important role in creating awareness and disseminating information. It is also used for education, entertainment and for keeping one up-to-date with the happenings in society. However, it is clear from the Annual Report of the Ministry of Information and Broadcasting, very little has been mentioned regarding disability.

Media Accessibility:

The Ministry is able to reach out to a very large proportion of the population with its TV channels, radio coverage, periodicals, PICs, Media Interactive Sessions, advertising, publications, community radio, song and drama troupes, films and so on. However, many of these mediums are not accessible to people with disabilities. TV is not accessible for people with hearing disability if there are no subtitles. An interactive session is meaningless if there is no sign language interpreters which would enable hearing impaired people to participate. Similarly, periodicals are not of any use for people with visual disabilities if it is not available in alternate formats like Braille, talking books and e-books. Advertising on social issues should have appropriate language levels for the benefit of people with cognitive disability. Employment News which is a weekly publication of the Publications Department has been made online. It should not only be made accessible but should also be available in alternate formats like Braille for those who do not have access to computer. All broadcasting and disseminating information mediums should be made accessible to disabled people.

Information Dissemination:

There are several policies and schemes for disabled people in the country. Due to a lack of awareness, many of these schemes go unutilised. Recently, India ratified UNCRPD, which has several important provisions for disabled people. It is important that people are made aware about their rights through various mediums. There has been no campaign organised by the Ministry to disseminate information about the Schemes or Disability Rights. Campaigns for AIDS Awareness, Female Foeticide and others are mentioned but not disability. Community radio has played an important role in informing and empowering people, especially the poor and vulnerable groups, and gives a voice to the defenseless. It can be effectively used to disseminate information about disability.

Awareness Creation:

In rural and urban areas, one major issue for disabled people is the ignorance and insensitivity exhibited by those who are non-disabled. Media plays an important role in changing the way disability is perceived in the country. Specific awareness campaigns should be organised to sensitise the community.

The Directorate of Field Publicity (DFP) organises very many public opinion gatherings and communication programmes. Including disability issues in these would be a major boost to disabled persons by ensuring that their voice is heard.

Implementation of UN Convention :

The UN Convention on the Rights of Persons with Disabilities (UNCRPD) has three articles, namely Article 8, Article 9 and Article 21, which deal with awareness, accessibility and access to information. These Articles are comprehensive regarding what role the State must play in promoting the rights of disabled persons in society. It would be necessary to include the provisions mentioned in the Articles in all schemes set out by the Department of Information and Technology to reach out to the common man.

e-Governance

The different departments of the Information Wing, namely, PIB, DAVP, DFP, Publications Department and so on are keen on e-governance and going digital. Clearly all these initiatives would become much more robust and would expand their reach if they were made accessible.

Budget

The Budget for the Ministry of Information and Broadcasting for 2008-09 is Rs. 700 crore of which the Information Sector has been allocated Rs. 50 crore and the Broadcasting sector has been allocated Rs. 484 crores.

The total projected Gross Budgetary Support (in Current Prices) in the Eleventh Plan for the Ministry of Information and Broadcasting is Rs. 5439 crore. For the Information Sector, it is Rs. 314 crore; for Films, Rs. 450 crore has been allocated and for Broadcasting Sector, the allocation is Rs. 4675 crore.

There is no mention of disability in the Budget of the Ministry.

4. Recommendations

- **Implement the relevant articles of UN Convention on the Rights of Persons with Disabilities**, namely Article 8, 9 and 21, in those sections applicable to the Ministry of Information and Broadcasting.
- Include **disability issues in all the PICs** (Public Information Campaigns) conducted. The topics that are taken up, for example Bharat Nirman (programme for development of rural infrastructure), NREGA, Integrated Child Development Service Scheme and so on lend themselves readily to inclusion of various disability issues from making infrastructure disability friendly to changing attitudes towards disability. Disabled people could be featured as using these services, thus giving a positive message of inclusion.
- **Mandatory distribution of all latest information**, schemes, notices and judgements regarding disability to recognised NGOs and the Panchayati Raj Institutions (PRIs) in all districts of the country. Advertisements regarding the same to be published and announced on a regular basis in all national and regional newspapers and radio.
- **Make the website for Employment News accessible.**
- Include the **World Disability Day** in the Display Advertisement list of the DAVP (Directorate of Advertising and Visual Publicity). The audio visual cell of the DAVP can be instructed to hold AV campaigns highlighting different disability issues by screening videos and so on. Have more advertisements and jingles on TV and radio on disability related issues and programmes. However, care to be taken that disabled people are portrayed sensitively and not with pity or as heroes.
- Make **documentaries on the theme of disability.**
- Have **the daily News in all Government TV channels in Sign Language.**
- All **Government functions and events to have a sign language interpreter on stage** for the benefit of audiences with hearing disability.
- Make **subtitles and captioning mandatory for all programmes** on all Government television news and education channels.
- A **sub-committee** (under existing screening committees which are regulated by the Electronic Media Monitoring Centre) to be formed to screen all films, television serials, radio programmes, news channels and other television programmes, to ensure that characters with disabilities are depicted in the right light and there is no misinformation being conveyed about disability through these powerful mediums of information.
- Include **disability issues in DAVP's public opinion gatherings** and communication programmes.
- Include disability issues in the **Media Interactive Sessions** since these sessions discuss socio-economic development, infrastructure and development schemes.
- **e-Governance schemes** taken up by the departments of this Ministry should be made disabled friendly.
- Promote a **community radio channel linking NGOs and other organisations** (both government and private) working with and for disabled people across the country. This could help in disseminating disability related information more widely.
- Earmark **3% of the total budget** towards inclusiveness for disabled persons in all schemes meant for the general public.

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Annexure

RELEVANT SECTIONS OF UN CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES

Three articles of the UN Convention on the Rights of Persons with Disabilities (UNCRPD) which concern the Department of Information Technology and the Ministry of Information and Broadcasting are given below for reference.

A. Article 8 - Awareness-raising

- (1) States Parties undertake to adopt immediate, effective and appropriate measures:
 - (a) To raise awareness throughout society, including at the family level, regarding persons with disabilities, and to foster respect for the rights and dignity of persons with disabilities;
 - (b) To combat stereotypes, prejudices and harmful practices relating to persons with disabilities, including those based on sex and age, in all areas of life;
 - (c) To promote awareness of the capabilities and contributions of persons with disabilities.
- (2) Measures to this end include:
 - (a) Initiating and maintaining effective public awareness campaigns designed:
 - (i) To nurture receptiveness to the rights of persons with disabilities;
 - (ii) To promote positive perceptions and greater social awareness towards persons with disabilities;
 - (iii) To promote recognition of the skills, merits and abilities of persons with disabilities, and of their contributions to the workplace and the labour market;
 - (iv) b) Fostering at all levels of the education system, including in all children from an early age, an attitude of respect for the rights of persons with disabilities;
 - (b) Encouraging all organs of the media to portray persons with disabilities in a manner consistent with the purpose of the present Convention;
 - (c) Promoting awareness-training programmes regarding persons with disabilities and the rights of persons with disabilities.

B. Article 9 – Accessibility

- (1) To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:
 - (a) Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces;
 - (b) Information, communications and other services, including electronic services and emergency services.
- (2) States Parties shall also take appropriate measures:
 - (a) To develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public;
 - (b) To ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities;
 - (c) To provide training for stakeholders on accessibility issues facing persons with disabilities;

- (d) To provide in buildings and other facilities open to the public signage in Braille and in easy to read and understand forms;
- (e) To provide forms of live assistance and intermediaries, including guides, readers and professional sign language interpreters, to facilitate accessibility to buildings and other facilities open to the public;
- (f) To promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information;
- (g) To promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;
- (h) To promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

C. Article 21 - Freedom of expression and opinion, and access to information

States Parties shall take all appropriate measures to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice, as defined in article 2 of the present Convention, including by:

- (1) Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost;
- (2) Accepting and facilitating the use of sign languages, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions;
- (3) Urging private entities that provide services to the general public, including through the Internet, to provide information and services in accessible and usable formats for persons with disabilities;
- (4) Encouraging the mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities;
- (5) Recognising and promoting the use of sign languages.

List of Abbreviations

3G	Third Generation
ADIP	Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances
AIR	All-India Radio
BECIL	Broadcast Engineering Consultants India Limited
C-DAC	Centre for Development of Advanced Computing
CAGR	Compound Annual Growth Rate
CIC	Community Information Centre
CSC	Common Service Centre
DAVP	Directorate of Advertising and Visual Publicity
DD	Doordarshan
DFP	Directorate of Field Publicity
DIT	Department of Information Technology
DTH	Direct To Home
FTII	Film and Television Institute of India
I&B	Information and Broadcasting
ICE	Information, Communication and Entertainment
ICT	Information and Communication Technology
IPTV	Internet Protocol Television
IT	Information Technology
ITES	IT-enabled Services
ITIR	Information Technology Investment Regions
NASSCOM	National Association of Software and Service Companies
NCPEDP	National Centre for Promotion of Employment for Disabled People
NeGP	National e-Governance Plan
NGOs	Non-Governmental Organisations
NIC	National Informatics Centre
PIB	Press Information Bureau
PIC	Public Information Campaigns
SC	Scheduled Caste
SDC	State Data Centres
S&T	Science and Technology
ST	Scheduled Tribe
UT	Union Territory
YoY	Year-on-Year