



United Nations

Division for Social Policy Development (DSPD)
Department of Economic and Social Affairs (DESA)



Toolkit on
DISABILITY for **AFRICA**

**INFORMATION AND COMMUNICATION
TECHNOLOGY (ICT) AND DISABILITY**



Toolkit on disability for AFRICA



INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND DISABILITY

TABLE OF CONTENTS

1. OVERVIEW	1
2. TECHNICAL CONTENT	3
2.A Background.....	3
2.B Legal Framework	4
2.C Making ICT Inclusive for Persons with Disabilities.....	6
2.D Policy Tools to Promote Inclusive ICT for Persons with Disabilities	11
Country Checkpoint	11
2.E Promoting ICT Accessibility with DPOs	15
3. SUMMARY & KEY LEARNING POINTS	17
4. USEFUL RESOURCES	18
4.B. Appendix A: Specific Applications and Services for Various Types of Disabilities and Situations.....	20
5. LEARNING ACTIVITIES	22
Session Sheet for the Trainer – ICT and Disability, Session 1	23
Learning Activity 2.A: The Importance of ICTs	24
Learning Activity 2.B: Member States’ Obligations on the Provision of ICT ..	25
Handout: CRPD Article 2: Definitions	26
Handout: CRPD Article 9: Accessibility.....	27
Handout: CRPD Article 21: Freedom of Expression and Opinion, and Access to Information	28
Session Sheet for the Trainer – ICT and Disability, Session 2.....	29
Learning Activity 2.C.: Fostering Social Inclusion	30



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List of acronyms

AT	Assistive Technology
CEDAW	Committee on the Elimination of Discrimination against Women
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CESCR	Committee on Economic, Social and Cultural Rights
CRPD	Convention on the Rights of Persons with Disabilities
CRPD	Committee on the Rights of Persons with Disabilities
CRC	Committee on the Rights of the Child
CRC	Convention on the Rights of the Child
CRC	Convention on the Rights of the Child
DFIs	Development Financing Institutions
DPOs	Disabled Persons Organizations
DSPD	Division for Social Policy and Development/UNDESA
EC	European Commission
G3ICT	Global Initiative for Inclusive ICTs
HIV/AIDS	Human Immunodeficiency virus / Acquired Immunodeficiency Syndrome
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic and Cultural Rights
ICF	International Classification of Function, The World Health Organization
ICT	Information and Communication Technology
ILO	International Labour Organization
ITCILO	International Training Centre of the ILO
IPU	Inter-Parliamentary Union
ITC	Information and Communication Technology
ITU	International Telecommunication Union
MDGs	Millennium Development Goals
MFI	Microfinance institutions
MSPs	Multi-stakeholder Partnerships
NAPs	National Action Plans
NGO	Non-Governmental Organization
NVDA	Non Visual Desktop Access
OHCHR	Office of the High Commissioner for Human Rights
OSISA	Open Society Initiative for Southern Africa

PCM	Project Cycle Management
PRP	Protracted Relief Programme
SABE	Self-Advocates Becoming Empowered
SDGs	Sustainable Development Goals
UDHR	Universal Declaration of Human Rights
UN	United Nations
UN DESA	United Nations Department of Economic and Social Affairs
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VOCA	Voice Output Communication Aids
WHO	World Health Organization



1. OVERVIEW

Module objectives

- ▶ To highlight the role of information and communication technologies (ICT) in fostering the social inclusion of persons with disabilities in all aspects of life.

Who is this module for?

This module is relevant to everyone who has an interest in disability or a responsibility for addressing issues of disability because of the nature of their work, including persons with or without disabilities in civil society, civil and public service, national human rights institutions, parliaments, development agencies, universities and the private sector.

What is this module about?

This module:

- ▶ examines the role of ICTs in the inclusion of persons with disabilities;
- ▶ reviews the accessibility barriers that limit their access and usage;
- ▶ reviews key provisions of the CRPD promoting ICT usage for persons with disabilities, ICT accessibility and assistive technologies;
- ▶ describes how information and communication technologies (ICTs) offer opportunities for fostering the social inclusion of persons with disabilities in all aspects of life;
- ▶ identifies approaches for making ICT inclusive for persons with disabilities;
- ▶ highlights key areas of policy-making to implement relevant CRPD requirements;
- ▶ provides guidance on key success factors for implementation;
- ▶ includes learning exercises to accompany the material; and
- ▶ lists key resources for additional reference.

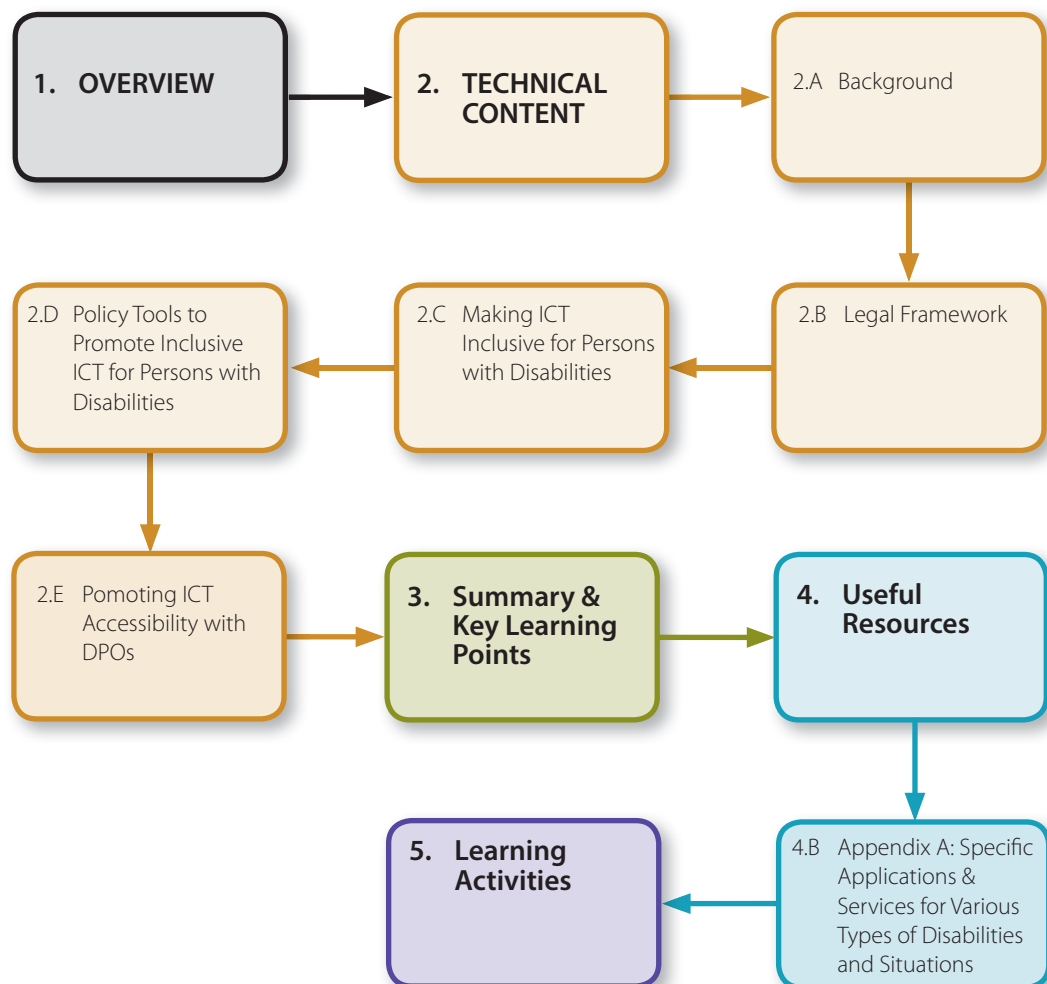


Learning objectives

On completion of this module, participants will have:

1. reflected on what information and communication technologies (ICTs) are, and how they contribute to the inclusion of persons with disabilities;
2. discussed the key provisions of the CRPD promoting ICT usage;
3. considered Member States' responsibilities for the provision of ICT for persons with disabilities;
4. described how ICTs can foster the social inclusion of persons with disabilities in all aspects of life;
5. identified approaches for making ICT inclusive for persons with disabilities.

Module map





2. TECHNICAL CONTENT

2.A Background

Definition

ICT (Information and Communications Technology - or Technologies) include any communication device or application such as radio, television, cellular phones, computers, satellite systems as well as network hardware and software and associated services.

Information and communication technologies (ICT), when accessible and available, can serve as critical enablers that allow persons with disabilities to realise full and effective opportunities to participate, on the basis of equality, in all aspects of society and development.² ICTs can help persons with disabilities have a greater access to knowledge and independent living. However, there are a few principles that should be taken into consideration while introducing ICTs. Whether one is considering the respective needs of rich and poor, rural and urban, those with access to the internet and those without (the digital divide), ICT has the power to bring people together but, where persons with disabilities lack access to ICTs, they can also leave people behind. Wi-Fi access is essential, as is access to a stable electrical supply. Technology advances quickly and ICT can quickly become obsolete (and examples provided given in the present module may also quickly become dated).

See Learning Activity 2.A. titled *The Importance of ICTs*



There are general basic principles that should be applied in respect of ICT and disability; first, ICTs needs to be accessible to all persons and not just to persons with disabilities. All persons ought to be able to access ICTs that help facilitate communication in different cultural, educational, and professional situations. Another principle is that particular forms or approaches to ICT should reflect the goal of fostering greater participation and inclusion. Where possible, technologies ought to be designed to be as inclusive as possible of everybody, as opposed to further development of certain technologies that would only be used specifically by persons with disabilities.

A further important principle relates to the level of independence and control persons with disabilities have in their use of ICTs. Indeed all people, including those with disabilities, have personal preferences for particular technologies and ought to be able to choose the ICT that best serves them.

These general principles may guide decisions about the types of technologies that should be used.

¹ <http://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies>

² United Nations Expert Group Meeting on Building Inclusive Society and Development through Promoting ICT Accessibility: Emerging Issues and Trends (Tokyo Japan, 19-21 April 2012), available at: <http://www.un.org/disabilities/default.asp?navid=46&pid=1596#backgroundnote>

2.B Legal Framework

A remarkable aspect of the Convention on the Rights of Persons with Disabilities (CRPD) is the way it identifies the need to ensure the accessibility of ICTs and the promotion of the usage of ICTs and assistive technologies for persons with disabilities.

Accessibility is one of eight fundamental principles³ in the CRPD. It is defined as a precondition for persons with disabilities to enjoy all rights and fundamental freedoms, including the rights to life and liberty, education, employment, cultural materials, sports and entertainment, political participation and movement.

Article 9 of the CRPD

For the first time in the history of disability law, Article 9 of the CRPD specifically highlights the obligation of Member States to ensure access to information and communication technologies (ICTs) at large on a par with the physical environment and transportation, thereby acknowledging the importance and universality of ICT application across all domains of life in today's information age.



**See Learning Activity 2.B. titled
*Member States' Obligations on the Provision of ICT***

The Importance of Access to ICT in the CRPD

Article 9 of the Convention explicitly articulates the right of persons with disabilities to access information and communications technologies on an equal basis and without discrimination. Furthering the definition of accessibility including ICTs, "Communication" is defined by the Convention as "including all possible means of communication that may eliminate barriers; the term includes languages, display of text, braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communications technologies" (Article 2). The CRPD also calls on Member States to encourage the private sector to deliver accessible products and services. It recommends provision of reasonable accommodation⁴ and states that denial of reasonable accommodation itself is a form of discrimination.

Accessibility provisions include general ICT accessibility requirements as per Article 9 as well as domain-specific accessibility stipulations found in different articles. These can be implemented by Member States through the adoption of a variety of measures targeted on holistic solutions both by framing and amending policies to make them inclusive, and by formulating specific policies to emphasise the need for accessibility. For instance, on the one hand the national policy for information and communication technology or e-governance should include a provision which identifies accessibility as one of the principles of the policy with specific strategies to address it, while on the other hand Member States may also formulate a separate policy which addresses in detail various aspects of ICT accessibility such as website or content accessibility, and clearly adopts standards and mandates adherence.

³ Article 3 of the Convention.

⁴ According to Art. 2 of the CRPD, "Reasonable accommodation means necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms;" <http://www.un.org/disabilities/default.asp?id=262>

Specific Provisions on ICT Accessibility – Examples of Implementation

Some of the CRPD's specific provisions on ICT accessibility direct State parties to the following:

Provision	Example
Ensure that persons with disabilities have equal access to the physical environment, transportation, information and communications, including information and communications technologies and systems (Article 9)	Examples of implementation include amending building by-laws to include physical accessibility stipulations, adopting mandatory national standards for web accessibility and rolling out large-scale training programmes for developers of public websites on web accessibility
Promote research, development and availability of new technologies suitable for persons with disabilities at affordable cost that will facilitate living and inclusion within the community; this includes ICTs, mobility aids, devices and assistive technologies. (Article 4 (G))	An example of this would be for Member States to customise existing assistive technologies in local languages and make them available at no or affordable costs. For instance, a project to customise the open source text-to-speech synthesiser e-Speak into any African language is a project which should take about 8-10 months and would immediately render indigenous voices available free of cost for bundling with screen readers such as NVDA or with mobile phones. Not only would this open up communication for those who cannot afford commercial screen readers or do not know English, but would also benefit non-disabled rural and illiterate mobile users.
Provide all information and communication in accessible formats, including cultural materials and television (Article 30)	Member States can do this by amending their Copyright Acts to permit conversion of all books into accessible formats for the benefit of persons with disabilities without the necessity of seeking permission, ensuring that all curriculum and publications are available in accessible electronic text and Braille/large print, promoting captioning for television serials, etc.
Promote accessibility of education, which include modes of communications, assistive technology etc. (Article 24)	This can be done by ensuring that adequate policies and programmes are launched to provide children in primary and higher education centres with access to assistive technology, accessible content, trained teachers and resource centres
Ensure the right to work and employment on an equal basis with others, providing a just favourable and equitable work environment (Article 27).	Member States should actively promote equal opportunity work policies and the employment of persons with disabilities in both the public and private sectors and provide support to employers for workplace accommodation.
Make international cooperation accessible to persons with disabilities and promote the sharing of accessible and assistive technologies. ⁵ (Article 32)	One example would be for countries to sign and ratify the Marrakesh Treaty ⁶ to promote international exchange of books in accessible formats.

⁵ <http://www.un.org/disabilities/default.asp?id=259>

⁶ <http://www.wipo.int/treaties/en/ip/marrakesh/>

2.C Making ICT Inclusive for Persons with Disabilities

This section will start by giving a few examples of the kinds of situation which hinder access for persons with disabilities and then describe how these can be addressed.

- You wake up in the morning and couldn't read your clock or agenda on your mobile phone.
- You are watching television, but cannot hear what the people on the screen are saying.
- You want to call your mobile service provider to enquire about your mobile bill, but are confronted with an interactive automated system which you cannot hear or understand and there is no one you can talk to.
- A fire breaks out in your building but you are trapped inside alone because you couldn't hear the evacuation announcement.
- You cannot read Automated Teller Machine (ATM) instructions or cannot reach the keyboard from your wheelchair and must give your PIN number to a stranger to retrieve cash at an ATM.
- You are trying to find information about a government service online but cannot read the document as it is an image file which your screen reader cannot understand and you cannot see the screen on your own.
- You are trying to navigate a web page but the constant flickering makes it difficult for you to concentrate and the complex layout of the information makes it difficult for you to understand what is being communicated.

ICT Inclusivity

ICTs have become the leading medium for communicating, transacting, informing, educating and entertaining all over the world. Usage of technologies such as television, radio, fixed and especially mobile telephony, has become a basic and indispensable feature in the lives of people across the globe. Subscriptions to mobile services worldwide are estimated to total seven billion at the end of 2015, of which 10% were in Africa. Internet usage has fast expanded with an estimate of over three billion users in 2015, of which 20% are in Africa. Every country and region of the world is benefiting from ICT's opportunities for economic and social development. It is hence imperative to ensure that persons with disabilities are not excluded from the use and benefits of ICTs.

A recent report issued for the High Level Meeting on Disability and Development held at the United Nations in September 2013 ranks the importance of ICTs for the inclusion of persons with disabilities as follows⁷:

**See Learning Activity 2.C. titled
Fostering Social Inclusion**



⁷ Source: ITU-G3ict-IDA-UNESCO-Microsoft Report "The ICT Opportunity for Persons with Disabilities"

Scale: 5 = most important to 1 = least important	Websites	Mobiles	TV sets	Radio	Other
Healthcare	3.3	3.1	2.9	2.5	2.7
Primary education	3.0	2.6	2.8	2.3	2.9
Secondary education	3.4	3.0	2.7	2.3	2.8
Tertiary, prof., lifelong education	3.7	3.4	2.9	2.4	2.8
Employment	3.7	3.3	2.5	2.2	2.7
Independent living	3.4	4.6	2.8	2.4	2.8
Government services	3.5	3.0	3.0	2.3	2.6
Participation: Political & public life	3.3	3.1	2.7	2.5	2.6

While ICTs and ICT applications and services can raise insurmountable barriers if not designed in an accessible way, new ICT solutions can also bring unprecedented supportive solutions for persons with disabilities: text-to-speech helps millions access the digital version of otherwise inaccessible print documents, GPS technology, image recognition, near field communications and Internet connectivity are new generating technologies supporting multiple innovations for independent living. The table above shows how much mobile technologies in particular contribute to the empowerment of persons with disabilities.

For ICTs to fulfil their promises for persons with disabilities and for Member States to comply with the CRPD, ICTs must be developed and deployed in a manner that is accessible to accommodate all types of impairment. The practical question for policy-makers is what those accessible solutions are. And since different groups face different challenges, how can all the different considerations be incorporated, especially if different requirements are needed (for instance the blind need audio or tactile output, while the deaf need texts or graphics). An additional crucial consideration is that, in the African context, particularly in rural areas, access to electricity - which is often required for the use of ICTs - may be lacking.

ICTs Accessibility Basic Principles

Remarkably, solutions exist and have in fact been implemented around the world addressing most disabilities. This section briefly explains what ICT accessibility and assistive technologies are and the importance of specific standards which have been developed for different technologies, services and content. In general, ICT products, content and services can be made accessible to most users with disabilities if there is provision for alternative modes of interaction; outputs in multiple possible formats; customization of configuration and settings; and compatibility with assistive technology.

Accessible interfaces are characterized by three basic principles. The user must be able to:

- ▶ perceive it (awareness and access to contents displayed);
- ▶ understand it (know what it means and how to interact with it);
- ▶ operate it (be able to interact with it in a certain way to produce intended/desired results).

To design accessible ICTs it is essential to consider the user perspective in all aspects - from the way equipment is designed to its use and where it is located or placed. The e-Accessibility Policy Toolkit for Persons with Disabilities defines 'accessibility' as:

A measure of the extent to which a product or service can be used by a person with a disability as effectively as it can be used by a person without that disability⁸.

In simple terms, a product is accessible if it can be used by everyone equally, including persons with all types of disability. While the task of ensuring that a product or service is completely accessible may sound challenging, it need not necessarily be so. For instance, the International Telecommunication Union (ITU) standard of merely providing a raised dot on the number 5 on the numeric key pad of phones is a great accessibility aid for blind persons to navigate and use phones. Similarly providing textual descriptions for images on websites (to aid blind persons using screen readers or persons with cognitive or comprehension problems) or pictorial address books, and text or video messaging service for the illiterate or deaf respectively, are extremely critical and easy accessibility features which can be incorporated without much difficulty.

Assistive technologies

On the other hand, certain types of disability require that assistive technologies be used to facilitate the interaction of the user with the ICT device. This may include alternative input devices for persons with reduced mobility, screen readers for visually impaired persons, augmentative (used to supplement natural speech rather than replacing it) and alternative (non-speech) communications solutions for speech- or writing-impaired persons, or icon-based interfaces for cognitively-impaired users, to name a few. Typically, the provision of assistive technologies requires a significant amount of service by qualified professionals including user assessment, selection of solutions, training, support and maintenance. Assistive technologies are primarily promoted through schools and universities, rehabilitation centres and as part of workplace accommodation services. In some cases persons with disabilities have access to these technologies while they are within these facilities, but not during the portions of their day they spend elsewhere. When those assistive technologies interact with devices and electronic content, issues of interoperability are critically important: the Web Content Accessibility Guidelines of the Worldwide Web Consortium, for instance, covers a wide range of disabilities and interaction. A screen reader can only read a web page if its content is designed and edited in an accessible format. A switch used by a paralyzed user may only operate if a web application allows full control via the traditional keyboard of a computer.

While assistive technologies cover a wide spectrum of solutions, increasingly applications are being developed to address a variety of daily living needs which can be downloaded and used with mobile phones. Some examples of accessibility and supportive features for different disabilities are given in Appendix A.

⁸ e-Accessibility Policy Toolkit for Persons with Disabilities, available at http://www.e-accessibilitytoolkit.org/toolkit/eaccessibility_basics/accessibility_and_the_purposes_of_icts

Making the National Information Infrastructure Inclusive of Persons with Disabilities

As the usage of ICTs become pervasive, policy makers can considerably improve the lives of persons with disabilities by ensuring that their national information infrastructure is made accessible. Such approach does not create additional cost to governments other than ensuring that the proper standards and methods are implemented by service providers, e-government agencies and by leading private sector content providers.

Channel	Description	Intervention areas
Mobile Phones	Mobile phones are a critical tool for persons with disabilities: they provide instantaneous access to information anytime at any location. The success of the mobile phone in Africa and the increasing number of mobile-based services available to citizens across the continent underscore the importance of making mobile phones and services accessible and useful to persons with disabilities. There are four primary areas in which accessibility interventions can be made – handset, software, services and content.	<p>Handset accessibility can be achieved through:</p> <ol style="list-style-type: none"> <i>General features</i> available on any phone such as visual or vibrating alerts and adjustable volume control for persons with hearing disabilities; tactile indicators such as the raised dot on the number 5 to aid in orientation and navigation for persons with blindness and low vision; voice recognition, auto text and touch screen for persons with dexterity problems, etc. <i>Specific exclusive features</i> such as screen readers, text-to-speech software and screen magnifiers, and candy bar design to avoid extra movements. <p>Software Accessibility can come either bundled with the operating system of the handset itself e.g. Android's screen reader Talk Back, Windows Eyes with Microsoft Office, or via third party applications for screen reading as well as different functions.</p> <p>Services: Examples of services and facilities which can be used by persons with disabilities include digital libraries for the blind like Open Library, Relay services enabling deaf communication over the phone, and also mainstream services such as multimedia and text messaging, video conferencing, captioning (phones such as i phones support playing of movies with captioning) etc., are also very useful. Additionally, even customer care services should be accessible to persons with disabilities.</p> <p>Content: While mobile phones offer a means of accessing content over the internet and via phone, it is important that these should adhere to web accessibility standards such as WCAG 2.0. For example, bill payments in accessible formats, advertisements including voice, text and multimedia as per the choice of the user, video and audio clips on U-tube and television with captions/subtitles and descriptions, will be completely accessible to persons with disabilities.⁹</p>
Television	<p>Television cannot be enjoyed by persons with vision and hearing impairments since its usefulness is dependent on sight and sound. Accessibility of TV¹⁰ requires universal design.</p> <p>The two main areas deserving attention to make TV viewing accessible are the equipment and the programme content.</p>	<p>Captions/Subtitles: Words displayed on a television screen that interprets the audio of a programme to let viewers who are deaf or hard of hearing understand the dialogue and action of a programme at the same time. Captions are of two types, closed (set by decoder and optional to viewer) and open (always on)</p> <p>Tele-text: refers to the inclusion of text information (News, Weather, Closed Captions etc.) by encoding it within a broadcast television signal. Special decoders or TV sets with integrated tele-text decoders can receive and display the data on the TV screen.</p> <p>Sign language: Sign language interpretation comprising the use of manual gestures, facial expression and body language to convey meaning is useful for people who are deaf and for whom sign is their primary language.</p> <p>Audio description: audio description describes what is happening on the screen. This could be changes of location, actions, facial expressions, gestures and so on to convey the context and set the scene. They are inserted between dialogues to avoid interrupting the flow of the programme.</p> <p>Equipment accessibility: includes accessibility of the remote control (simple and easy to use) and the set-top box both in terms of the remote control as well as the content - a visually impaired user should for instance have the option of obtaining audio feedback while navigating through the menu.</p>

⁹ ITU and G3ict, "Making Mobile Phones and Services Accessible for Persons with Disabilities", available at <http://cis-india.org/accessibility/making-mobile-phone-and-services-accessible-for-persons-with-disabilities.pdf>

¹⁰ Based on Making Television Accessible Report by ITU and G3ict available at http://www.itu.int/ITU-D/sis/PwDs/Documents/ITU-G3ict%20Making_TV_Accessible_Report_November_2011.pdf

Channel	Description	Intervention areas
Internet	<p>Web accessibility¹¹ is critical for persons with disabilities, as an inaccessible website cannot be read irrespective of any available assistive technology.</p> <p>For a website to be accessible, it must adhere to the Web Content Accessibility Guidelines (WCAG) 2.0¹² formulated by the World Wide Web Consortium, which form the universal basis for web accessibility. The WCAG 2.0 is based on 4 principles¹³:</p> <p>Perceivable: the user must be able to perceive the content through the senses - sight or hearing - either through the browser or with assistive technology such as screen readers.</p> <p>Operable: users should be able to interact with all controls and perform all functions through the keyboard, mouse or a supportive device.</p> <p>Understand: users should understand the function/ content and how to use it.</p> <p>Robust: a wide range of technologies and user agents should be able to access the content.</p>	<p>Some important web accessibility considerations are:</p> <ul style="list-style-type: none"> ▶ Text descriptions and explanations should be provided for images and graphics on web pages so that they can be read by screen readers. ▶ Creation of links to skip to content can provide persons using screen readers with a huge relief for from listening to a whole lot of useless or confusing content. ▶ Every function which has to be executed with a mouse should have a keyboard alternative. ▶ Links without any specific destination or without references such as "click here" should be avoided; there should not be sole reliance on colours to convey meanings. ▶ Since screen readers read content as it is in the code, web-page creators should ensure that content is read correctly on the page as well as in the code.
E-Publishing	<p>There are several standards for document accessibility such as Daisy and e-Pub, or even basic HTML or text which are completely accessible to persons using assistive technology.</p> <p>As a priority, such standards should be implemented in education and government.</p>	<p>Daisy¹⁴ stands for Digital Accessible Information System and is an international accessible multimedia publishing system. It provides digital books to persons with print disabilities in an accessible, feature-rich and navigable format. While other e-texts are in a single format, a Daisy book can include multiple formats such as text, audio and a combination of both and now even starting on video Daisy allows a reader to directly navigate to parts of a book such as headings, paragraphs, chapters etc.</p> <p>EPUB¹⁵ is the file extension of an XML format for reflowable digital books and publications, produced by the IDPF (International Digital Publishing Forum). EPUB allows publishers to produce and send a single digital publication file through distribution and offers consumers interoperability between software and hardware for unencrypted reflowable digital books and other publications. EPUB 3 incorporates DAISY accessibility features¹⁶ and should be promoted to the greatest possible extent by State parties to the CRPD to facilitate access to e-books by persons with disabilities.</p> <p>The portable document format (PDF) can be made accessible using Adobe Acrobat 9 pro or by saving as fully accessible documents. The PDF/UA (PDF/Universal Accessibility) is the informal name for ISO 14289, the International Standard for accessible PDF technology.</p>

¹¹ www.w3.org/WAI/

¹² <http://www.w3.org/TR/WCAG20/>

¹³ <http://webaim.org/articles/pour/>

¹⁴ <http://www.daisy.org>

¹⁵ <http://en.wikipedia.org/wiki/EPUB>

¹⁶ <http://www.daisy.org/daisypedia/epub-daisy-standards-under-revision>

Emergency Response and Disaster Preparedness

Persons with disabilities are one of the most disadvantaged communities during times of emergency, since the communications divide, coupled with inaccessible response systems, facilities and services makes it impossible for them to be included in any emergency or disaster service. Apart from ensuring the physical accessibility of shelters, services and transportation, for which there exist guidelines and best practices, ICTs play a critical role in this domain.

A whole range of ICTs exist to carry out emergency communication, such as television and radio, fixed and mobile telephony, text messaging and SMS, and internet-based resources and services such as websites, video, instant messaging over the Internet, Voice over Internet Protocol services, web conferencing, social media which allow for instant communications, instant photo and video capture and sharing, and satellite communications. The biggest benefit to using ICTs for disaster preparedness and planning is hence the ability to create and deliver content in multiple formats through multiple media.

Ensuring that all emergency communications are accessible is a critical obligation of Member States of the CRPD. In Japan, statistics show that the death toll among persons with disabilities during the most recent tsunami was more than twice the death toll of the general population, often due to lack of awareness of the impending disaster.

2.D Policy Tools to Promote Inclusive ICT for Persons with Disabilities

One common misbelief encountered in many countries, which hinders the progress of ICT accessibility, is the idea that implementing accessibility is the exclusive task of the Ministry in charge of the disabled and social welfare since it relates to persons with disabilities. However, given the fact that ICT usage cuts across and commonly binds together implementation strategies for all spheres of activity - be it education, employment, health, social welfare, transportation or finance - the implementation of accessibility will naturally fall independently within the purview of each separate Ministry. To have a comprehensive solution to accessibility needs in a country, the government must consider both including it within the overarching national framework for information and technology, identifying it as a strategy in all relevant policies and legislation such as education, as well as creating the necessary exclusive policies to address accessibility issues in greater detail, such as having a national policy on electronic accessibility.

Country Checkpoint

1. Is ICT mentioned in your country's main Policy Act that addresses disability?
2. Does the main Policy Act on information and communication technology address issues of disability or are the words 'accessibility' or 'universal design' mentioned?



Some important measures to promote ICT accessibility are described below:

Public Procurement

Public procurement can be used as an important tool for implementing accessibility within the national ICT ecosystem. It can be justly argued that what is procured from public funds, or is used by or for the public in any way, must necessarily be usable and accessible to every member of the public. Requiring specific accessible ICT technical design standards helps ICT vendors focus on accessibility as part of mainstream design requirements. It can also help foster innovation through competition, consequently lowering costs and building local capacity to produce accessible goods and services. There are many different types of public procurements, varying from a single item purchase such as a computer or landline phone to a service contract such as designing a website and different approaches (for instance accessibility statements/mandatory training including accessibility as part of contract terms etc.), which are suitable for different types of procurement. Several countries such as the United States, Denmark, Ireland, and Canada have brought out ICT procurement toolkits.

Licensing

Including accessibility as a precondition of a licence can be an effective way of ensuring accessibility of a product or service. For instance, in Sri Lanka telecom service providers are required to provide accessibility to emergency services to persons with disabilities under their service licence. Ofcom in the United Kingdom applies the same principle for the licensing of operators. This is usually implemented, in the case of telecommunications services, by the telecommunications regulator. Similarly, in all other government contracts or licences, governments may include accessibility as necessary criteria, especially in the issue of wireless and broadcast licences. Breach of licence terms can result in termination of contract or imposition of penalty with a time frame to ensure compliance.

Incentives

There are a variety of ways through which governments can implement ICT accessibility amongst their ministries and departments, as well as industry actors. These could be in the form of mandatory policies, negative measures such as imposing a penalty for non-adherence, or positive measures such as offering incentives such as tax breaks, preferred choice in tenders, instituting awards etc. In general, the preferred approach could be to incentivize voluntary adherence. Some of the ways in which innovation and investments by organizations in ICT accessibility can be supported by the government include:

- ▶ Matching funds. Governments can offer to match funds to purchase certain assistive technologies. For instance, in the U.S, the federal government matches funds for the state governments to provide assistive technologies (ATs) for persons with disabilities. Another example could be to match funds for academic institutions purchasing these technologies.
- ▶ Centralized budgets in governments or other organizations to pay for accommodation so that individual agencies or departments are not concerned about cost of ATs when hiring persons with disabilities (currently implemented at IBM and Microsoft internally).
- ▶ Tax breaks for investments in ATs.

- ▶ Consolidating government needs so that software companies have an incentive to invest in localizing AT.
- ▶ Direct subsidy of end-users for their purchase of ATs Incentives (ADIP scheme by the Indian Government subsidizes purchase of ATs for all persons with disabilities up to INR 6000).
- ▶ Institute awards for employers of persons with disabilities or in different domains of accessibility such as the most accessible website servicing persons with disabilities.

Welfare and Health Insurance Programs

In several countries, national and State-level programmes fund the medical and rehabilitation needs of persons with disabilities. For instance, Medicare¹⁷ is a national social insurance programme administered by the U.S. federal government for adults over 65 years of age and younger people with disabilities which provides coverage for some kinds of ATs. However insurance companies do not often mention coverage of ATs except in some cases when they are medically required.

In countries where such public health insurance programmes are limited, there is often little or negligible budget for providing social security or purchasing rehabilitative devices, or they may be restricted to prosthetic limbs or crutches but may not extend to ICT-based devices. The situation with insurance companies is also dismal, with very few or almost no companies funding purchase of ATs and even requiring persons with disabilities to pay a higher premium even if they wanted to insure their own person. There is a dire need and potential for government to play a role in ensuring that there is provision to support every person with a disability by equipping them with the necessary AT and training in its use.

Education, Training and Awareness-Raising

In addition to different measures, there also needs to be a multi-pronged approach in terms of strategies. Government authorities must spend time, effort and money variously on raising awareness among their own employees and the public of the need to create an inclusive and barrier-free society; sensitise their staff to respond to the needs of persons with disabilities; carry out capacity-building activities such as accessibility training to facilitate implementation of accessibility; include accessibility in the curriculum of training institutions to make way for long term integration; audit existing and new programmes for accessibility and regularly monitor its implementation; support DPOs and NGOs in aiding persons with disabilities; engage in research and development of low-cost indigenous supportive solutions in local languages to cater to local needs; and build up the capacity of trainers and resource centres to train people in using these technologies. This life cycle of accessibility implementation and integration needs to be followed through in each domain of activity. For instance, if one is talking of implementing web accessibility across all government websites, the various steps which need to be undertaken are as follows:

- ▶ Carry out an audit of all government websites to check for accessibility.
- ▶ Draw up a road map for making these websites accessible which clearly outlines various levels of accessibility to be achieved over various phases.
- ▶ Clearly identify the national standard for web accessibility.

¹⁷ <http://www.medicare.gov/>

- ▶ Articulate the need to adhere to the identified national standard or code for accessibility through a policy document.
- ▶ Identify a body to oversee the implementation these steps.
- ▶ Train web developers of government websites in web accessibility and follow up with a second training course after a couple of months within which time the web developers should have made changes to their websites to make them more accessible.
- ▶ Monitor web accessibility on a regular basis.

Funding Mechanisms including Universal Service Funds (USFs)

Common funding mechanisms for accessible and supportive ICTs include the following:

- ▶ The ministry or department responsible for the implementation of the national disability policy should itself have a budget from which it can disburse funds to persons with disabilities or their organizations for various activities such as purchase of assistive technologies, education programmes, rehabilitation, accessible content creation, training or research.
- ▶ Budget for each ministry or department to carry out accessibility initiatives such as making their websites accessible including training their web developers and conducting an accessibility project connected with the responsibility of that ministry or department (such as converting text books into accessible formats under the Ministry for Education).
- ▶ A dedicated national fund in support of workplace accommodation financed by taxes paid by employers who do not meet minimum employment quotas of persons with disabilities. France for instance has a 6% minimum quota and its national disability fund has grown substantially over the years.
- ▶ National lottery. Spain has a national lottery, the profits of which go to the ONCE Foundation which funds organizations of persons with disabilities and accessibility programmes.
- ▶ Universal service funds for telecommunications exist in almost every country to fulfil universal service obligations.¹⁸ For many years USFs have focused on promoting connectivity to rural and unconnected populations. These funds are usually very large. Over the past few years an increasing number of countries have expanded their definition of Universal Service to explicitly cover accessibility for persons with disabilities to the information society through telecommunications and broadband. There are several countries which have made strides in this area and have either incorporated this in the policy mandate itself, or have made use of the fund by just directly funding projects. Some of the ways in which they are being used in different countries include purchasing assistive technologies, connecting schools, setting up resource centres in educational institutions, subsidising the cost of broadband and fixed telephony for families with persons with disabilities, providing library services to the blind, and a number of other projects.

¹⁸ A definition of universal service is given in a paper brought out by the ITU in 1998 which states “universal service is the long-term objective of making communication facilities available to every member of society on an individual or household basis, and it is used in particular in the regulatory legislative framework to indicate the obligation of telecommunication operators to provide their services to the entire population.” Elements and principles of the Information Society, www.itu.int/osg/wsis-themese/access/.../IS%20Principles.doc

- ▶ Other sources of funding include independent donor agencies which are among the leading supporters of accessibility/disability-related initiatives. The United Nations Voluntary Fund on Disability supports the activities of disabled persons' organizations in developing countries.¹⁹ Bilateral aid agencies such as USAID which have funds earmarked for programmes in support of disability can cover accessibility projects.
- ▶ Corporate social responsibility initiatives are also a good source for funding ICT accessibility. CSR programmes also help in raising awareness and capacity in the private sector on the opportunity to incorporate accessibility within their own organizations and workplaces.

While many creative opportunities to fund accessibility exist, resource mobilization, when not directly related to programmes, can backfire. Indeed, it is not uncommon for a percentage of national funds which are earmarked for disability by a ministry, department or national dedicated fund to go unutilized for many years. It is therefore essential to ensure that resource mobilization be designed with specific objectives and resource allocation processes.

2.E Promoting ICT Accessibility with DPOs

In developing countries the reality is quite often that more of the work of promoting the independent living needs of persons with disabilities and finding practical solutions to cater to their requirements within a limited resource environment is done by Disabled Persons Organizations (DPOs). Hence government agencies should seriously consider supporting and promoting the work of DPOs and NGOs as a primary strategy for addressing accessibility. This will help achieve immediate results since there is already a direct connection with the beneficiaries and a minimum resource infrastructure in place with knowledge and trained manpower to cater to relevant needs. For instance, allocating a portion of the national budget to enable blindness organizations to undertake conversion of books into accessible formats would go a long way towards ensuring that books become available to persons with print disabilities in a timely manner and in relevant formats. DPOs are often able to find innovative and frugal solutions to addressing specific challenges, such as providing portable screen readers or other supportive software which can be carried around and used on multiple computers by persons with disabilities who are otherwise forced to use cyber-cafes or service centres. Mobile phones have proved to be the ultimate technology to connect the disabled since they have features and services which cater for persons with any disability and can be used to read, write, connect to the Internet, talk and navigate independently. The only challenge remains to ensure that text-to-speech technology and content has to be created in local languages and this is something which has to be done by each country in its own in partnership with DPOs and the private sector. Only investment in local technologies can reduce costs and create indigenous capacity to serve long-term needs. Also, once certain basic infrastructure such as local language voices is in place, it will address needs across a wide range of technologies and uses and will not have to be redone. Developing countries should consider piggy-backing on existing international open-source technologies such as Non Visual Desktop Access (NVDA) screen readers and e-speak text-to-speech software for customisation and deployment. Also, negotiating with service

¹⁹ General information on the fund can be found at: <http://www.un.org/disabilities/default.asp?navid=8&pid=29>

providers to lower costs of technology in return for a larger sale volume has successfully brought down the cost of technology in many countries.

Hence there are many ways in which governments need to intervene and work to implement ICT accessibility, both through policy and government processes, as well as through other channels. However, the most important lesson from observing global practices and trends is that all successful initiatives have been through a partnership between Government, DPOs and the private sector to create a truly inclusive world.

3. SUMMARY & KEY LEARNING POINTS







The present Module highlights the important opportunities offered by ICTs to foster the social inclusion of persons with disabilities in all aspects of society and development. It details the relevant provisions of the CRPD, which require States Parties to promote ICT usage for persons with disabilities, ICT accessibility and the adoption of assistive technologies.

The Module reviews the barriers that can prevent persons with disabilities from accessing and using ICTs, and offers guidance on how to design policies and measures to make ICTs inclusive for persons with disabilities, including concrete examples and tools for successful implementation.



4. USEFUL RESOURCES

-  United Nations Convention on the Rights of Persons with Disabilities, available at: <http://www.un.org/disabilities/default.asp?navid=12&pid=150>
-  Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled available at: <http://www.wipo.int/treaties/en/ip/marrakesh/>
-  Secretariat for the Convention on Rights of Persons with Disabilities at: www.un.org/esa/socdev/enable
-  Universal Service for Persons with Disabilities: A Global Survey of Policy Interventions and Good Practices, by G3ict-CIS, available at: http://g3ict.org/resource_center/publications_and_reports/p/productCategory_whitepapers/subCat_0/id_193

Accessibility resources

-  e-Accessibility Toolkit for policy makers, by ITU-G3ict, available at: www.e-accessibilitytoolkit.org
-  Making Mobile Phones and Services Accessible for Persons with Disabilities, report by ITU-G3ict, available at: http://www.itu.int/ITU-D/sis/PwDs/Documents/Mobile_Report.pdf
-  Making Television Accessible Report, by ITU- G3ict, available at: http://www.itu.int/ITU-D/sis/PwDs/Documents/ITU-G3ict%20Making_TV_Accessible_Report_November_2011.pdf
-  UN Enable- Frequently Asked Questions available at: <http://www.un.org/disabilities/default.asp?navid=23&pid=151#sqc10>
-  UNESCO global report: opening new avenues for empowerment: ICTs to access information and knowledge for persons with disabilities, available at: <http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/unesco-global-report-opening-new-avenues-for-empowerment-icts-to-access-information-and-knowledge-for-persons-with-disabilities/>
-  UNESCO ItrainOnline website provides accessible web design training and tools at: <http://www.itrainonline.org/itrainonline/english/usability.shtml#Web%20Site%20Usability%20and%20Accessibility%20-%20Accessibility>
-  Ireland's ICT procurement toolkit, available at: <http://www.universaldesign.ie/useandapply/ict/itprocurementtoolkit>
-  EU, 112-the Single European Emergency Number, General Fact Sheet 44 available at: http://ec.europa.eu/information_society/doc/factsheets/044-112-blue-en.pdf

Standards and Guidelines

- 📖 W3C Web Accessibility Initiative available at <http://www.w3.org/WAI/>
- 📖 Webaim, web accessibility initiative, available at: <http://www.webaim.org>
- 📖 Website of the DAISY Consortium available at: <http://www.daisy.org/about-us>
- 📖 Daisy and Emergency preparedness, available at: <http://www.daisy.org/daisypedia/daisy-and-emergency-preparedness>
- 📖 Section 508: “Electronic and Information Technology Accessibility Standards”, available at: <http://www.access-board.gov/sec508/standards.htm>

Accessibility Projects

- 📖 Daisy Lanka Foundation: Talking Textbooks for Blind Students:
<http://www.daisy.org/member/226/DAISY%20Lanka%20Foundation>
- 📖 R-Cast: In-Class Use of Mobile Phones for Children with Disabilities in Japan:
<http://edict2010.in/files/2010/09/mobile-phone-and-sped-2010-web-version.pdf>
- 📖 Jamaica Universal Access fund donates equipment to the deaf:
<http://jis.gov.jm/universal-access-fund-donates-ict-equipment-to-the-deaf/>
- 📖 Universal Access fund in Pakistan launches project for enabling persons with disabilities: <http://www.usf.org.pk/newsdescription.aspx?44>

4.B. Appendix A: Specific Applications and Services for Various Types of Disabilities and Situations

Vision: Accessibility features such as font and high contrast colour options and screen readers came with operating systems such as Windows, Linux and Apple iOS. There are also several third-party software options, both proprietary and open-source, such as screen readers like Jaws, NVDA or Windows Eyes for personal computers, Talks and mobile speak for mobile phones, Zoom text (magnifier), and the e-Speak text-to-speech synthesizer. An example of an innovative App is the LookTel Money Reader which recognizes currency and speaks aloud the denomination enabling persons with visual impairment to check the value of bank notes and use money quickly. Borrowing and reading digital books on computers, mobile phones and e-book readers such as Daisy readers and the Kindle are very popular with persons with vision impairment. There are digital libraries such as the Open Library²⁰ or Bookshare.org which have books in Daisy format for persons with print disabilities.

Physical and motor difficulties: There exist both hardware solutions such as mouth sticks²¹, head wands²² and sip-and-puff switches²³, as well as software to adjust the way that the keyboard or mouse alternative responds to input.²⁴ Open source solutions such as Dasher and FXC software allow users to customize their operating system and use solutions such as touchscreens, switches, voice recognition and on-screen keyboards, among others.²⁵ There are also several Apps which support the specific needs of persons with physical disabilities; for instance Wheelcrowd is an application which helps in searching for wheelchair-accessible places such as restaurants and other facilities around a neighbourhood. Wheelmate²⁶ is a free App which provides wheelchair users with an overview of the closest wheelchair-friendly toilets and parking places. While those have emerged in countries where smart phones were available, the fast expansion of the African mobile market and expected continued decrease of the cost of handsets suggests that similar services are likely to appear.

Hearing or speech impairment: There are several hardware and software technology options such as hearing aid couplers, text teletypewriter, voice recognition, sign language, captioning and relay service which are extremely helpful for users with hearing loss. The mobile phone also provides the possibility of facilities such as text and multimedia and video sign language messaging, and Apps such as Trippo Voice Magix²⁷ which translates keyed-in messages into 30 languages and displays the translated text or speaks out the translated sentence. This can also be directly emailed or posted online as required and is optimized for both the iPhone and Android. MobileSign²⁸ is a British sign language lexicon that provides information on more than 4,000 signs and is available on both Google Play and Apple Store.

¹ <http://openlibrary.org>

²¹ A hard stick held in the mouth by the user and used to type on the keyboard.

²² A stick that is strapped to the head of the user who moves his head to operate the keyboard.

²³ This device uses the breath of the user as on and off signals and uses the information to control various actions from operating a wheelchair to navigating a computer.

²⁴ http://www.e-accessibilitytoolkit.org/toolkit/promoting_assistive_technologies/solutions

²⁵ <http://abilitynet.wetpaint.com/>

²⁶ Available at: <http://lifecenter.ric.org/index.php?tray=content&tid=top2&cid=6769>

²⁷ Available at: <http://www.christopherreeve.org/site/c.mtKZKgMWKwG/b.6133757/k.38B9/2010Travel.htm>

²⁸ Read more at <http://www.mobilesign.org/>

Reading and Communication: Standalone devices are available for people with reading and communication difficulties for e.g. Voice Output Communication Aids (VOCA) (for speech difficulties), eBook readers (for reading difficulties) and spelling aids for people with reading difficulties such as dyslexia. Tools such as RapidSet and Washer enable users to change the text styles to make reading easier. Certain other software packages such as VuBar, RedPlease, and Bookreader add extra tools to the system to support reading. In addition there are many commercial and proprietary technologies that enhance the computer with special features. Examples of such hardware tools include Daisy readers and Kurzweil machines and examples of software tools are Dragon Naturally Speaking and TexthelpRead. A Special Phone¹ is an App which makes it easy for persons with disabilities to make emergency calls. The person just needs to key in the number on the magnified keypad in the App and shake the phone to make the call. For speed dialling, users can store up to six emergency numbers that can be called by shaking – once for contact one, twice for contact two and so on. The app can also recognize voice commands in different languages and dialects even in surroundings where there is a lot of background noise.

Examples of ICT Applications and Services for Persons with Disabilities (including demos)

Visit and discussion of Bookshare.org (www.bookshare.org)

Demo of money reader on iPhone or Android [for example, <http://www.looktel.com/moneyreader>]

Demo of information service for persons with physical disabilities.

Visiting participants' websites with a screen reader or using accessibility checkers to check participants websites.

¹ <http://www.christopherreeve.org/site/c.mtKZKgMWKwG/b.6133647/k.284D>



5. LEARNING ACTIVITIES

Session Sheet for the Trainer – ICT and Disability, Session 1

Technical Content 2.A.: Background

Learning Activity 2.A.: The Importance of ICTs

Technical Content 2.B.: Legal Framework

Learning Activity 2.B.: Member States' Obligations on the Provision of ICT

Handout: CRPD Article 2 - Definitions

Handout: CRPD Article 9 – Accessibility

Handout: CRPD Article 21 – Freedom of Expression and Opinion, and Access to Information

Session Sheet for the Trainer – ICT and Disability, Session 2









Technical Content 2.C: Making ICT Inclusive for Persons with Disabilities

Learning Activity 2.C.: Fostering Social Inclusion

Video: The World Bank, ICT Facilitates Social Inclusion:

<https://www.youtube.com/watch?v=Z0weChJT6uo>

Session Sheet for the Trainer – ICT and Disability, Session 1

	Key Messages	See the summary and key learning points.
	Objectives	By the end of this session, participants will have: <ul style="list-style-type: none"> - reflected on what information and communication technologies (ICTs) are, and how they contribute to the inclusion of persons with disabilities; - considered Member States' responsibilities for the provision of ICT for persons with disabilities.
	Room Arrangement	Set up for plenary discussion and cabaret style for small group work.
	Activity	10 mins – Presentation: What do we mean by ICTs? 30 mins – Group work & plenary discussion LA 2.A. 20 mins – Presentation: Introduction to Articles 9 and 2 20 mins – Group work around LA 2.B. 10 mins – Summary and wrap-up
	Duration	90 minutes
	Notes for a Training Team	This session is organized around two Learning Activities as outlined in the activity. For LA 2A – divide the participants into groups, and have them focus on one of the three issues on the task sheet. During feedback and discussion, be sure to fill in any learning gaps. For LA 2B – you can use the handouts (Articles 2 and 9) as support for your input. You can also use Article 21 for additional support.
	Task Sheets	Learning Activity 2.A.: The Importance of ICTs Learning Activity 2.B.: Member States' Obligations on the Provision of ICT
	Handouts	Handout: CRPD Article 2 - Definitions Handout: CRPD Article 9 – Accessibility Handout: CRPD Article 21 – Freedom of Expression and Opinion, and Access to Information



Learning Activity 2.B: Member States’ Obligations on the Provision of ICT

Objective: To consider Member States’ responsibilities for the provision of ICT for persons with disabilities.

In your group look at the table and provide examples from your own experiences. Notice where there are gaps and speculate if the gaps relate to your lack of knowledge or the government’s inactivity on the provision.

Task

Provision	Examples
Ensure that persons with disabilities have equal access to the physical environment, transportation, information and communications, including information and communications technologies and systems (Article 9)	
Promote the research, development and availability of new technologies suitable for persons with disabilities, at affordable cost that will facilitate living and inclusion within the community; this includes ICTs, mobility aids, devices and assistive technologies. (Article 4 (G))	
Provide all information and communication in accessible formats, including cultural materials and television (Article 30)	
Promote accessibility of education which include modes of communications, assistive technology etc. (Article 24)	
Ensure the right to work and employment on an equal basis with others, providing a just favourable and equitable work environment (Article 27)	
Make international cooperation accessible to persons with disabilities and promote the sharing of accessible and assistive technologies. (Article 32)	

You have 20 minutes to complete this activity. There will not be a formal feedback of each discussion, but be ready to share your thoughts in the discussion.





Handout: CRPD Article 2: Definitions

For the purposes of the present Convention:

"Communication" includes languages, display of text, Braille, tactile communication, large print, and accessible multimedia along with written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communications technology.

"Language" includes spoken and signed languages and other forms of non-spoken languages.

"Discrimination on grounds of disability" means any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. It includes all forms of discrimination, including denial of reasonable accommodation.

"Reasonable accommodation" means necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure for persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms.

"Universal design" means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. "Universal design" shall not exclude supportive devices for particular groups of persons with disabilities where this is needed.



Handout: CRPD Article 9: Accessibility

1. To enable persons with disabilities to live independently and participate fully in all aspects of life, State parties shall take appropriate measures to ensure for 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, in both urban and rural areas. These measures, which shall include 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. State parties shall also take appropriate measures to:
 - (a) 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) 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) provide training for stakeholders on accessibility issues facing persons with disabilities;
 - (d) provide in buildings and other facilities open to the public signage in braille and in easy to read and understand forms;
 - (e) 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) promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information;
 - (g) promote access for persons with disabilities to new information and communications technologies and systems, including the internet;
 - (h) 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.



Handout: CRPD Article 21: Freedom of Expression and Opinion, and Access to Information

State 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:

- (a) 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.
- (b) Accepting and facilitating the use in official interactions 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.
- (c) 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.
- (d) Encouraging the mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities.
- (e) Recognizing and promoting the use of sign languages.

Session Sheet for the Trainer – ICT and Disability, Session 2

	Key Messages	See the summary and key learning points.
	Objectives	By the end of this session, participants will have: <ul style="list-style-type: none"> - described how ICTs can foster the social inclusion of persons with disabilities in all aspects of life; - identified approaches to making ICT inclusive for persons with disabilities.
	Room Arrangement	Video set-up including speakers, projector, computer. Tables for small group work with 4-6 people.
	Activity	5 mins – View short video in plenary, with reflections and discussion. 35 mins – Group work around LA 2.C. – Fostering Social Inclusion 45 mins – Feedback and summary.
	Duration	90 minutes
	Notes for a Training Team	Use the YouTube video (https://www.youtube.com/watch?v=Z0weChJT6uo) to introduce ICT and social inclusion. Conclude with some slides to identify where to get more examples and technical inputs (see references). If participants have internet access and computers, suggest they use the following link to support their research: www.e-accessibilitytoolkit.org
	Task Sheets	Learning Activity 2.C.: Fostering Social Inclusion
	Handouts	N/A

