ITU Regional Workshop on ICT Accessibility for Persons with Disabilities for the Africa Region

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MEETING INFORMATION AND COMMUNICATIONS TECHNOLOGY ACCESS AND SERVICE NEEDS FOR PERSONS WITH DISABILITIES:

MAJOR ISSUES FOR DEVELOPMENT AND IMPLEMENTATION OF SUCCESSFUL POLICIES AND STRATEGIES

BACKGROUND PAPER

June 2008

NOTE

Written by Cynthia D. Waddell, Juris Doctor (ICT Expert for Persons with Disabilities, International Center for Disability Resources on the Internet <Cynthia.Waddell@icdri.org>), the background paper was originally prepared for the seminar Sharing Experience on Best Practices and Services for People with Disabilities, held on 17 September 2007 in Geneva, Switzerland. This paper has been updated and includes the addition of the Arab Region based on presentations at the first Arab Regional Conference on Sharing Experience on Best Practices in ICT Services for Persons with Disabilities held in Cairo, Egypt, 13-15 November 2007. Unless stated otherwise, the views expressed in this paper are those of the author, and do not necessarily reflect those of the ITU or its membership.

This paper, together with the others developed within the framework of ITU-D Special Initiatives activities concerning ICT initiatives and activities for persons with disabilities, can be found at http://www.itu.int/itu-d. The ITU-D Special Initiatives Unit is headed by Asenath Mpatwa <Asenath.Mpatwa @itu.int>.

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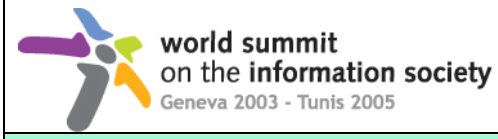
TABLE OF CONTENTS

I. Introduction



Key Documents in this Chapter

2003 Geneva Declaration of Principles
Geneva Plan of Action
2005 Tunis Agenda
Tunis Commitment
2006 Resolution 56 (WTDC-06) Global Initiative on "Access to Telecommunication Services for People with Disabilities"
2007 UN Convention on Rights of Persons with Disabilities

The United Nations World Summit on the Information Society (WSIS) has completed two phases where key documents address information and communications technology (ICT) access and service needs for persons with disabilities. The first phase was held in 2003 in Geneva and the second phase was held in 2005 in Tunis. The Geneva Declaration of Principles states that in building the Information Society, particular attention is to be paid to the special needs of persons with disabilities. It also addresses capacity building, and provides that the "use of ICTs in all stages of education, training and human resources development should be promoted, taking into account the special needs of persons with disabilities and disadvantaged and vulnerable groups."[1]

As a result, the Geneva Plan of Action, Action Line C2 Paragraph 9(e) on ICT infrastructure, requires national e-strategies to address the special requirements of persons with disabilities, using appropriate educational, administrative and legislative measures to ensure their full inclusion. Paragraph 9(f) on ICT infrastructure also encourages the design and production of ICT equipment and services so that persons with disabilities have easy and affordable access. It specifically promotes the development of technologies, applications and content suited to their needs as guided by the Universal Design Principle and the use of assistive technologies. On the issue of access to information and knowledge,

[1] Geneva Declaration of Principles, Building the Information Society: A Global Challenge in the New Millennium, WSIS 2003, at http://www.itu.int/wsis/docs/geneva/official/dop.html.

Action Line C3 Paragraph 10(c) calls for the promotion of research and development to facilitate accessibility of ICTs for all and Paragraph 10(g) encourages research on the Information Society, including innovative forms of networking, adaptation of ICT infrastructure, tools and applications that facilitate accessibility of ICTs for all.[2]

The second WSIS phase produced the Tunis Agenda for the Information Society for implementation and follow-up. Paragraph 90 reaffirmed the commitment to providing equitable access to information and knowledge for all with the target completion date of 2015 for building ICT capacity for all and confidence in the use of ICTs through the improvement and delivery of relevant education and training programmes and systems including lifelong and distance learning. It also noted that special attention would be paid to the formulation of universal design concepts and the use of assistive technologies that promote access for all persons, including persons with disabilities.[3]

Paragraph 91(a) of the Tunis Agenda noted the intrinsic relationship between disaster reduction, sustainable development and the eradication of poverty and those disasters undermining investments are a major impediment to sustainable development. It identifies the important enabling role of ICT at the national, regional and international levels and the need to promote technical cooperation and enhance country ICT capacity. It points to the need for utilizing ICT tools for disaster early-warning, management and emergency communications, including the dissemination of understandable warnings to those at risk.[4]

Finally, the Tunis Commitment states that particular attention is to be paid to persons with disabilities and that

> We shall strive unremittingly, therefore, to promote universal, ubiquitous, equitable and affordable access to ICTs, including universal design and assistive technologies, for all people, especially those with disabilities, everywhere, to ensure that the benefits are more evenly distributed between and within societies, and to bridge the digital divide in order to create digital opportunities for all and benefit from the potential offered by ICTs for development.[5]

The following year, the 2006 World Telecommunication Development Conference (WTDC-06) was held in Doha, Qatar. During that conference, a new special global initiative was created on "Access to Telecommunication Services for People with Disabilities." The conference also requested that the International Telecommunications Union (ITU) Development Bureau support

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[2] The Geneva Plan of Action, WSIS 2003, at http://www.itu.int/wsis/docs/geneva/official/poa.html
[3] Tunis Agenda for the Information Society, WSIS 2005, at http://www.itu.int/wsis/docs2/tunis/off/6rev1.html#fui.
[4] *Ibid.*
[5] Tunis Commitment, WSIS 2005, paragraphs 18 and 20, at http://www.itu.int/wsis/docs2/tunis/off/7.html.

Member States in implementing information and communications technology (ICT) initiatives and activities for persons with disabilities within its work programs, particularly Study Group 1, Question 20/1 (SG 20/1).

On 30 March 2007 the United Nations Convention on Rights of Persons with Disabilities opened for signature. As Member States become signatories, the ITU mandate for Member State support becomes especially relevant and appropriate. As of 18 June 2008, there were 129 signatories to the Convention with Kenya being the most recent African Member State to not only sign the Convention when it opened for signature, but to also ratify the Convention on 19 May 2008.[6]

Because of these mandates, the ITU Development Bureau, in collaboration with rapporteurs for SG 20/1, organized a seminar and workshop in Geneva and Cairo respectively in 2007. These events focused on facilitating stakeholders to "Share Experience on Best Practices and Services for Persons with Disabilities" and enabled participants to:

- Dialogue on how to bring about necessary conditions for persons with disabilities to enjoy the same opportunities in life as the rest of the population by creating global awareness on the importance of accessible ICT as a means:
  a) For economic and social integration to enable persons with disabilities to have the same opportunities in life as every one else;
  b) To bridge the digital divide and provide equal access to all; and
  c) To serve as a medium to exercise fundamental rights;

- Share experiences with countries who have implemented policies, strategies and actions to eliminate obstacles in accessible ICT services faced by persons with disabilities; and

- Invite partnership and support from ITU Member States, Sector Members, Associates and other stakeholders to work with the ITU Development Sector to jointly promote and achieve the integration of persons with disabilities into the Information Society.

This background paper is intended to provide a synopsis of the major issues in meeting ICT accessibility for persons with disabilities and supports the ongoing ITU Development Bureau work programs, ICT initiatives and activities for persons with disabilities. After the introduction, Section II provides a background on the disability perspective by discussing what is meant by ICT accessibility for persons with disabilities. Section III examines the major issues in developing and implementing successful policies and strategies for accessible ICT. Following this review, Section IV provides a snapshot of the current accessible

[6] See United Nations Enable website at http://www.un.org/disabilities/countries.asp?navid=12&pid=166 .

ICT situation in Africa, Asia Pacific, Americas and Europe, while Section V offers several best practice examples in accessible ICT policy, regulatory or legal framework. This is followed by Section VI which discusses the potential role of the private sector in meeting ICT accessibility and service needs. Finally, Section VII provides the conclusion with recommendations for a way forward.

It is estimated that 650 million people or about 10 percent of the world's population live with a disability and this figure is increasing through population growth, longer life due to medical advances, and the ageing of the world's population. In addition, women with disabilities have multiple disadvantages because they experience exclusion on account of both their gender and disability.[7]

II. What is meant by ICT Accessibility for Persons with Disabilities?

ICT Accessibility:

Accessible Design
Availability
Affordability
Access for Everyone

Due to the explosive multiplication of ICT applications and innovations deployed in all aspects of society, the world has arrived at a technology crossroad where the design of our technology will determine whether or not everyone will be able to participate fully in society.[8] This is especially true for persons with disabilities who face barriers in the design of technology as well as other ICT accessibility barriers such as availability and affordability.

Because the words "accessibility" and "ICT" are broad terms, they can have different meanings depending on their use in language, technical and cultural contexts. This paper focuses on accessible ICT in the context of accessible design and the Universal Service obligations of availability and affordability.

Accessible Design

Although there are some differences, ICT accessibility is also known by terms such as "Universal Design," "Design for All," "Barrier Free Design" and "eAccessibility." Accessible design is now a Convention mandate so that ICT can be used by a broad range of consumers. As discussed later in this paper,

[7] See *UN Convention Factsheet* at http://www.un.org/disabilities/convention/facts.shtml.
[8] Waddell, Cynthia D. *The Growing Digital Divide in Access for People with Disabilities: Overcoming Barriers to Participation;* commissioned in 1999 by The National Science Foundation and the U.S. Department of Commerce for the first national conference on the digital economy; at http://www.icdri.org/CynthiaW/the_digital_divide.htm.

technical standards for accessible design can be important in meeting the needs of persons with disabilities. Standards can also provide the requirements for ICT procurement tenders so that consumer expectations can be met.

In particular, the accessible design of ICT includes the design of mainstream products that have interoperability and standardized interfaces for assistive computer technology used by persons with disabilities or older adults. This means that mainstream products are capable of being operated with adaptive hardware and software according to specialized user needs.

Today, the innovation and evolution of technology brings the flexibility needed for providing a multi-modality architecture. One best practice example of this approach is a telecommunications service known as "Total Conversation" which takes advantage of the convergence of voice telephony, video telephony and text telephony. Discussed later in this paper, this multi-modality interface offers flexibility that can be tailored to user needs and preferences.

Availability
ICT availability continues to be a problem worldwide as this paper illustrates the critical situation in Africa due to the lack of an ICT infrastructure. Yet, in the North where an infrastructure is present due to Universal Service obligations, persons with disabilities are unable to place emergency calls. Other related problems include the lack of indicators worldwide for measuring the availability of ICT for persons with disabilities. Perhaps the issues discussed concerning mainstreaming and outreach, education, and training could lead to strategies for addressing the problem.

Affordability
According to the World Bank, people with disabilities in developing countries are among the poorest of the poor and frequently live in vulnerable situations due to exclusion from education, employment and health care systems.[9] As discussed in this paper, ICT affordability is a Universal Service obligation that continues to be a problem not only in the North but also in the South. If accessible design is incorporated at the beginning of product development, the cost will be significantly lower than if added as an afterthought. The Convention specifically calls for the development of new technologies with priority given to affordability. Sustainable development of the ICT infrastructure requires attention to this ongoing issue.

Finally, it should be noted that ICT accessibility enables not only persons with disabilities and older adults to benefit from it, but also anyone experiencing difficulties accessing ICT in environmental or social situations. Some examples of these benefits include:

[9] World Bank, 2006 "Disability and Development" at http://web.worldbank.org.

- Users can access multi-media, television content, or cell phone calls in a noisy room (with captioning, text messaging and text to speech cell phone menu navigation);
- Users can operate a computer or a cell phone if they have busy eyes or are in a dark room (with text to speech, screen reading software and text to speech cell phone menu navigation);
- Users can operate a computer or a cell phone if they have busy hands (with speech input software and text to speech cell phone menu navigation);
- Users can quickly download web content using slow modems (by turning off images for web sites designed for accessibility); and
- Users with low literacy can read website content (with screen reading software).

III. Major Issues in Developing and Implementing Successful Policies and Strategies

Take into account eight major issues when developing and implementing successful policies and strategies for accessible ICT:

1. **Disability Rights;**
2. **Mainstreaming and stakeholder engagement;**
3. **Universal Service obligations;**
4. **Accessible ICT technical design standards;**
5. **Implementation of ICT barrier removal action plans;**
6. **Accessible ICT public procurement toolkits;**
7. **Identification of benchmarking and research needs; and**
8. **Outreach, education, and training on accessible ICT.**

A. Disability Rights

The first major issue concerning ICT access and service needs for persons with disabilities is to understand the role of disability rights. In the international arena, accessibility as a disability rights principle first emerged in the United Nations World Programme of Action (WPA). The WPA was the guiding instrument for the United Nations Decade of Disabled Persons (1982-1993). Although the first two goals of the WPA, prevention and rehabilitation, reflected the traditional approach to disability law and policy, the third goal addressed “equalization of opportunities” as a global strategy for full participation in society by persons with disabilities. It also addressed accessible ICT within the context of human rights:

> One of the most important concerns is **accessibility: to new technologies, in particular information and communications technologies**, as well as to the physical environment. The notion of "mainstreaming" will also be given prominence, that is, including a **disability dimension in policy recommendations** covering a wide spectrum of social and economic concerns.[10] (Emphasis added)

A shift has occurred within the past two decades from viewing persons with disabilities as objects of rehabilitation and charity to viewing persons with disabilities as holders of disability rights of non-discrimination and equality. Noting that there are more than half a billion persons with disabilities worldwide, and that 80 percent live in developing countries, the United Nations raised the alarm that this "silent crisis" was a public policy issue that "affects not only disabled persons themselves and their families, but also the economic and social development of entire societies, where a significant reservoir of human potential often goes untapped."[11]

One of the major outcomes of the Decade of Disabled Persons was the adoption of the Standard Rules on the Equalization of Persons with Disabilities by the General Assembly in 1993 (Standard Rules).[12] The Standard Rules have served as an instrument for policy-making as well as a basis for technical and economic cooperation.

Within the Standard Rules, the "Target Areas for Equal Participation" reference accessibility, information, communication and technology:

Rule 5 Accessibility- Access to the Physical Environment (Built Environment) and Access to Information and Communication
Rule 6 Education- Integrated Setting and Effective Communication
Rule 7 Employment- Accessible Design of Workplace, Technology and Communication
Rule 8 Income Maintenance & Social Security- Accessibility is implied
Rule 9 Family Life & Personal Integrity- Accessible Housing and Effective Communication Implied
Rule 10 Culture- Accessibility of Built Environment and Information and Communication
Rule 11 Recreation and Sports- Accessibility of Built Environment and Information and Communication; and

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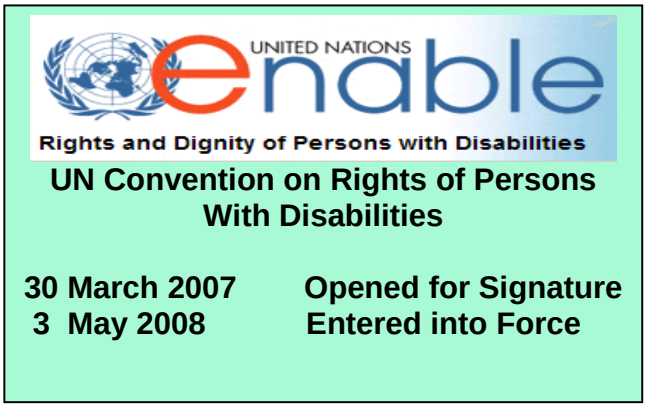
[10] United Nations Commitment to Advancement of the Status of Persons with Disabilities at www.un.org/esa/socdev/enable/disun.htm.
[11] *Ibid.*
[12] The Standard Rules on the Equalization of Opportunities for Persons with Disabilities adopted by the United Nations General Assembly, forty-eighth session, resolution 48/96, annex, of 20 December 1993 at http://www.un.org/esa/socdev/enable/dissre00.htm.

Rule 12 Religion- Accessibility of Built Environment and Information and Communication.[13]

Although not a legally binding instrument, the Standard Rules have paved the way for the new Convention on Rights of Persons with Disabilities.

1. UN Convention on Rights of Persons with Disabilities



The United Nations Convention on Rights of Persons with Disabilities (Convention) is the first comprehensive human rights treaty of the 21st century. Approved by the UN General Assembly on 13 December 2006, it opened for signature by all States and regional integration organizations on 30 March 2007. States ratifying the Convention must enact laws and other measures to improve disability rights and also abolish legislation, customs and practices that discriminate against persons with disabilities.

The Convention does not explicitly define disability. Instead, the Preamble and Article 1 of the Convention provide the following (emphasis added):

> Preamble: Disability is an **evolving** concept and results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder full and effective participation in society on an equal basis with others.
>
> Article1: Persons with disabilities **include** those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.

[13] Waddell, Cynthia D. *Critical Issues from a Disability Perspective: Accessibility,* Expert Panel presentation before the United Nations Ad Hoc Committee on a Comprehensive and Integral Convention on the Rights of Persons with Disabilities at http://www.un.org/esa/socdev/enable/rights/panelcwaddell.htm.

In other words, disability results from an interaction between a non-inclusive society and individuals. For example, a person using a wheelchair might have difficulty gaining employment not because of the wheelchair, but because of environmental barriers such as inaccessible buses or staircases that impede access. Or, a person who is blind might have difficulties gaining employment and working with digital media not because of blindness, but because the work site computer did not have screen reader software or the content on a web site was not designed to be accessible.

In addition, with respect to accessible ICT, the general obligations of the Convention require States to:

- Undertake or promote research and development of universally designed goods, services, equipment and facilities, having the minimum possible adaptation and the least cost to meet the specific needs of persons with disabilities, to promote their availability and use, and to promote universal design in the development of standards and guidelines;
- Undertake or promote research, development, availability and use of new technologies, including accessible ICT giving priority to technologies at an affordable cost;
- Provide accessible information to persons with disabilities about new technologies and support services; and
- Promote the training of professionals and staff about the Convention rights for those working with persons with disabilities.[14] (Emphasis added.)

The Convention defines “Universal Design” in Article 2 as:

> [T]he 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 assistive devices for particular groups of persons with disabilities where this is needed.

It is expected that countries will increasingly adopt accessible ICT policies and implementation plans because Article 9 of the Convention makes it obligatory for countries to identify and remove obstacles to accessibility, and to ensure that persons with disabilities can access their environment. More specifically, accessible ICT is referenced in Article 9 (Accessibility), Article 21 (Freedom of expression and access to information), Article 29 (Participation and public life), Article 30 (Participation in cultural life, recreation, leisure and sport), Article 31 (Statistics and data collection) and Article 32 (International Cooperation).

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[14] Convention on the Rights of Persons with Disabilities adopted by the United Nations General Assembly, sixty-first session, resolution A/RES/61/106 of 6 December 2006 at http://www.un.org/esa/socdev/enable/rights/convtexte.htm

A summary of the relevant ICT issues in the Convention is provided below:

Article 9 – Accessibility

Article 9 requires States Parties to take appropriate measures to ensure access for persons with disabilities, on an equal basis with others, to information and communications, including information and communications technologies and systems. In addition, with respect to accessible ICT, States Parties must:

- Identify and eliminate obstacles and barriers to accessibility, including information, communications and other services, such as electronic services and emergency services;
- Implement minimum standards and guidelines for the accessibility of services open or provided to the public;
- Ensure that private entities offering services to the public take into account all aspects of accessibility;
- Provide training for stakeholders on accessibility issues;
- Promote access to new information and communications technologies and systems, including the Internet; and
- Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so they are accessible at minimum cost.

Article 21- Freedom of Expression and Access to Information

Article 21 requires States Parties to ensure that persons with disabilities can seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice, including accessible ICT. In addition, with respect to accessible ICT, States Parties must:

- Provide 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;
- Accept and facilitating the use of sign language, Braille, augmentative and alternative communication, and all accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions;
- Urge private entities to provide information and services in accessible and usable formats, including services to the general public through the Internet;
- Encourage mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities; and
- Recognize the use and promotion of sign language.

Article 29- Participation in political and public life

Article 29 requires States Parties to guarantee to persons with disabilities political rights and the opportunity to enjoy them on an equal basis with others. In

addition, with respect to accessible ICT, States Parties shall undertake to facilitate the use of assistive and new technologies where appropriate when protecting the right to vote by secret ballot, and the right to stand for elections, to hold office and to perform all public functions at all levels of government.

Article 30- Participation in cultural life, recreation, leisure and sport

Article 30 requires States Parties to take all appropriate measures to ensure that persons with disabilities enjoy access to cultural materials, television programmes, films, theatre and other cultural activities in accessible formats.

Article 31- Statistics and data collection

Article 31 requires States Parties to undertake collection of appropriate information, including statistical and research data to enable them to formulate and implement policies to carry out the Convention. The information shall be disaggregated, as appropriate, and used to assess the implementation of States Parties' obligations under the Convention and to identify barriers faced by persons with disabilities. States Parties shall assume responsibility for the accessibility of these statistics for persons with disabilities.

Article 32- International Cooperation

Article 32 encourages States Parties to facilitate cooperation in research and access to scientific and technical knowledge; to provide technical and economic assistance, including the facilitation of access to and sharing of accessible and assistive technologies; and the transfer of technologies.

2. National Laws and Policies

The Convention will have a significant impact on national laws and policies since only forty-five countries have anti-discrimination and other disability-specific laws.[15] Signatories across the globe are amending their national laws in order to comply with the treaty provisions. Although some countries already have rights-based legislation in place concerning equality for persons with disabilities, they may not have legislation addressing the accessible design of goods and services. The concept of discrimination on the basis of disability due to the inaccessible design of goods and services is new to many countries.

However, one ICT sector that has experienced immediate pressure to implement accessible design has been online government information and services. A global survey published in 2006 found at least 26 countries and/or jurisdictions that had already adopted accessible web design laws or policies.[16]

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[15] See UN Convention Factsheet, *supra.*

[16] Waddell, Cynthia D. "Worldwide Accessibility Laws and Policies" in *Web Accessibility: Web Standards and Regulatory Compliance*, Apress 2006.

Finally, access to print communications and alternative formats is an ongoing issue around the globe. Anti-piracy or digital rights management technology is increasingly becoming a barrier for access to information and communications by persons with disabilities.[17] Yet there are now copyright exemptions in the United States for educational textbooks and instructional materials produced and distributed in accessible digital formats for persons with disabilities.[18]

B. Mainstreaming and Stakeholder Engagement

The second major issue to highlight is mainstreaming and stakeholder engagement. Not surprisingly, the Convention references mainstreaming of disability issues in the Preamble "as an integral part of relevant strategies of sustainable development."[19]

Noting mainstreaming as an emerging issue, the UN Economic and Social Council published a report entitled, "Mainstreaming Disability in the Development Agenda" (E/CN.5/2008/6).[20] The report noted a World Bank report that during the fiscal years 2002-2006, only 5 per cent of new lending commitments had a disability component. As a result, "In March 2007, the World Bank issued a guidance note to assist its projects in better incorporating the needs of persons with disabilities, integrating a disability perspective into ongoing sector and thematic work programmes, and adopting an integrated and inclusive approach to disability."[21]

In her June 2007 European Commission presentation at the T4P'07 First International Conference on Technology for Participation and Accessible eGovernment Services, Inmaculada Placencia Porrero, Deputy Head of Unit, DG Employment, Social Affairs and Equal Opportunities, said that it is important to have a political understanding of the significance of mainstreaming disability issues. She also said that the requirements of mainstreaming involve four steps:

1. Integration of disability perspective in all policy areas and at all stages of policy development;
2. Active participation of all commission services;

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[17] See Economic and Social Commission for Asia and the Pacific, 2002 Biwako Millennium Framework for Action Towards an Inclusive, Barrier-Free and Rights-Based Society for Persons with Disabilities in Asia and the Pacific, at http://www.worldenable.net/bangkok2003/biwako1.htm.
[18] For more, see National Instructional Materials Accessibility Standard (NIMAS) Development and Technical Assistance Centers' website at http://nimas.cast.org/index.html.
[19] Convention, *supra,* at Preamble (g).
[20] "Mainstreaming Disability in the Development Agenda" at http://www.un.org/disabilities/documents/reports/e-cn5-2008-6.doc.
[21] *Social Analysis and Disability: A Guidance Note: Incorporating Disability-Inclusive Development into Bank-Supported Projects* (World Bank, March 2007, available from http://siteresources.worldbank.org/DISABILITY/Resources/280658-1172606907476/SAnalysisDis.pdf.

3. Participation of all relevant actors, including NGOs and representative organizations of people with disabilities; and
4. Utilization of methodological tools, suitable coordination, adequate monitoring and impact assessment.[22]

Mainstreaming is a critical approach that enables policies and strategies to take the needs of persons with disabilities into account in all stages of policy development. Disability rights cannot be seen as a horizontal issue such as the sole responsibility of policymakers in welfare, labor or medical services. For example, during the data gathering survey of countries adopting accessible web design laws or policies, the author noticed a government website where accessible content was only provided on certain web pages dealing with medical or welfare information. When asked about this practice, the governmental agency said it was not aware that persons with disabilities might also be interested or benefit from visiting other web pages of that government portal.

Perhaps one helpful definition of mainstreaming is this:

> Mainstreaming disability . . . is the process of assessing the implications for disabled people of any planned action, including legislation, policies and programmes, in all areas and at all levels. It is a strategy for making disabled people's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that disabled people benefit equally and inequality is not perpetuated. The ultimate goal is to achieve disability equality.[23]

It is the author's experience that one key factor for mainstreaming success is the engagement of individuals with disabilities that represent cross-disability issues to inform all policy sectors. By actively participating in the development and implementation of policies and strategies for accessible ICT, persons with disabilities can contribute to the determination of the most relevant and appropriate strategies for successful policies. Be sure to plan accessible meetings and incorporate effective communication practices so that persons with disabilities can participate.[24]

C. Universal Service Obligations (USO)

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[22] See Inmaculada Placencia Porrero PowerPoint presentation for T4P'07 at http://www.t4p.no/t4p.no/conference/programme/presentations.

[23] Miller, Carol and Bill Albert, *Mainstreaming Disability in Development: Lessons from Gender Mainstreaming* (March 2005) at http://www.disabilitykar.net/research/red_main.html.

[24] For example meeting documents should be made available in alternate formats so that persons with visual disabilities can access the content; meeting rooms and restrooms should be accessible for persons with mobility disabilities; and sign language interpreters, real time captioning, assistive listening devices and TTYs, as appropriate, should be available upon request for persons with hearing disabilities.

Another major issue in policy and regulatory impact for persons with disabilities is the role of Universal Service obligations (USOs) in meeting their needs. Looking across the globe, there is no standard definition because USOs can support a number of different goals such as providing a basic service at an affordable price, ensuring comparable retail prices in urban and rural areas, and enabling support for services to schools, libraries, hospitals and the disadvantaged. In addition, although the terms "universal service" and "universal access" are similar and sometimes used interchangeably, they are different. Universal services refers to telecommunication services provided to all households within a country, whereas universal access refers to the use of telecommunication services on a shared basis, such as the use of public payphones or public call offices in a rural area.[25]

For the purposes of this paper, USO's are defined broadly using the definitions offered by Dr. Patrick Xavier in his 2006 ITU background paper:

- Availability – that the level and quality of service (including reliability) is the same wherever a person lives or works, so that residing in a high cost rural or remote area does not affect a person's ability to access communication services;

- Affordability – that maintaining and using the service does not place an unreasonable burden on consumers, particularly on vulnerable disadvantages consumers; and

- Accessibility- that people with disability can use the service.[26]

This discussion highlights how USOs are carried out in various countries for meeting the availability, affordability and accessibility needs of persons with disabilities.

1. United States

In the United States, the Universal Service obligation was created in the Communications Act of 1934 by providing that all people in the U.S. "without discrimination on the basis of race, color, religion, national origin, or sex" shall have access to "rapid, efficient, nationwide . . . communication service with

[25] See *What Rules for Universal Service in an IP-Enabled NGN Environment?*, Background Paper by Dr. Patrick Xavier for ITU Workshop on What rules for IP-enabled NGNs? March 2006; Document NGN/03.
[26] *Ibid.,* at page 5.

adequate facilities at reasonable charges."[27] In 1934 there were no disability rights laws and it was not until Congress passed the Americans with Disabilities Act of 1990 (ADA) that accessible telecommunications services were mandated for persons with disabilities.

Today there are approximately 54 million Americans with disabilities including 36.5 million people who have difficulty hearing.[28] In particular, the ADA requires that telecommunications relay services (TRS) be provided as well as the captioning of federally funded public service announcements.[29] TRS enables a person with a hearing or speech disability to have access to the telephone system. This is accomplished by relay operators staffing TRS centers who relay conversations between persons using various types of communication devices and persons using voice telephones. However, the TRS mandate is not funded through the Universal Service Fund but through the Telecommunications Relay Fund.

With respect to equipment and services for persons with disabilities, it should also be noted that the Telecommunications Act of 1996 required accessible design when it amended the Communications Act of 1934 at Section 255 and Section 251(a)(2). These provisions require manufacturers of telecommunications equipment and providers of telecommunications services to ensure that equipment and services are accessible to and usable by persons with disabilities, if readily achievable. At this time the U.S. Access Board is engaged in a Section 508 Refresh effort that may lead to additional rulemaking concerning the accessible design requirements of both Section 255 of the Communications Act and Section 508 of the Rehabilitation Act.[30]

Today the USO support mechanism provides four programs that do not directly target persons with disabilities. However, persons with disabilities may benefit from the Lifeline/Link-up program if they qualify. The USO programs are:

- Lifeline/Link-up program that provides discounts on monthly telecommunications service and pays for initial telephone installation or activation fees for primary residences of income-eligible consumers;
- High-cost program that supports companies providing telecommunications services in areas where cost is high;
- Rural health care support program that allows rural health care providers to pay rates at a discount; and

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[27] Communications Act of 1934, Title I, Section 1 at 47 U.S. C. Section 151.
[28] National Center for Health Statistics, Fast Stats for disabilities/limitations.
[29] See *A Guide to Disability Rights Laws, ADA Title IV Telecommunications Relay Services*, by United States Department of Justice, Civil Rights Division, Disability Rights Section at http://www.ada.gov/cguide.htm#anchor62335.
[30] See U.S. Access Board Update of the 508 Standards and the Telecommunications Act Guidelines at http://www.access-board.gov/sec508/update-index.htm.

- Schools and libraries program that provides an "E-Rate" discount range from 20 to 90 percent for local and long-distance calling, high-speed lines, Internet access and equipment to deliver internal connections.[31]

Generally, all telecommunications companies (wireline phone companies, wireless phone companies, paging service companies, and certain VoIP service providers) contribute to the federal Universal Service Fund. However, companies can choose to collect Universal service fees from their customers. They cannot collect from Lifeline/Link-up customers unless they have incurred long-distance charges.

U.S. Telecommunications Relay Services (TRS)

As discussed above, TRS was established by the ADA. The ADA amended the Communications Act of 1934 by adding TRS requirements in Section 225. TRS enables people who are deaf, hard of hearing or have speech disabilities to use the telephone. Relay services must operate 24 hours a day, seven days a week, must not limit the length of the calls, and conversations must be kept confidential.

Prior to the TRS mandate, relay operators were volunteers in the late 1960's and early 1970's and consumers paid for two phone calls whenever they made a call; the call to the relay operator as well as the call made by the relay service. According to the National Association of the Deaf, sometimes it took almost an hour just to get through to the relay service and frequently the operator would say that "the line is busy" and force the consumer to spend another hour to re-establish the relayed connection.[32]

There are nine types of TRS calls that can be made depending on the needs of the user and the equipment available:[33]

- **Text-to-Voice TTY calls**[34]- enables TTY users to make calls to people who do not have TTYs; enables callers to call TTY users with a telephone.

- **VCO- Voice Carry Over**- enables a caller who can speak intelligibly but who cannot hear telephone conversations (such as a hard of hearing person) to speak directly with a person using a telephone. The relay operator types the comments back to the VCO user via TTY. Either VCO users or telephone users can initiate and receive VCO calls.

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[31] See *FCC's Universal Service Support Mechanisms, FCC Consumer Facts* at http://www.fcc.gov/cgb/consumerfacts/universalservice.html.

[32] National Association of the Deaf, TRS at http://www.nad.org/site/pp.asp?c=foINKQMBF&b=274046.

[33] See Federal Communications Commission, *Telecommunications Relay Services FCC Consumer Facts* at http://www.fcc.gov/cgb/consumerfacts/trs.html.

[34] TTY was originally an acronym for Teletypewriter and today is used to refer to TDDs- Telecommunications Devices for the Deaf- or TTs- Text Telephones. TTY is the preferred term used by federal agencies.

- **HCO- Hearing Carry Over**- enables people who can hear but who cannot speak clearly (such as a person who has had severe strokes) to use their hearing via a telephone while using a TTY to type their comments. HCO users type their comments to the relay operator who reads them to the person using a telephone. The telephone user then speaks directly to the HCO user. Either HCO users or telephone users can initiate and receive HCO calls.

- **STS- Speech to Speech**- enables people with speech disabilities who are neither deaf nor hard of hearing (such as people with cerebral palsy) to place calls. Relay operators are trained to understand people with speech disabilities and repeat the message clearly to the person being called. The person with the speech disability can be either the initiator or the recipient of the STS call.

- **Shared Non-English Language Relay Services**- Because of the large number of Spanish speakers in the U.S., the FCC requires interstate TRS providers to offer Spanish-to-Spanish traditional TRS. Calls made within states are not required to offer their services in Spanish although many TRS centers do so. Spanish Relay offers services for TTY, VCO, HCO, and IP Relay. It is not now available for STS or Video Relay Service users. This is a Spanish to Spanish call and not a translation service. Either Spanish Relay users or standard telephone users can initiate and receive Spanish Relay calls. The FCC also allows TRS providers who offer other shared non-English language interstate TRS, such as French-to-French, to be compensated from the TRS fund.

- **Captioned Telephone Service**- Like VCO, it is used by persons with a hearing disability but who have some hearing. A special telephone with a text screen displays captions of what the other party to the conversation is saying. A captioned telephone allows the user on one line to speak to the called party and to simultaneously listen to the other party while reading captions. There is a two-line version of captioned telephone services that offers additional features such as call-waiting, *69, call forwarding and direct dialing for 911 emergency service. Unlike traditional TRS, the relay operator repeats or re-voices what the called party says. This is done using speech recognition technology that automatically transcribes the relay operator's voice into text and is then transmitted directly to the user's captioned telephone text display.

- **Internet Protocol (IP) Relay**- This is an optional service that is not mandated. Internet Protocol Relay calls are initiated over the Internet using an IP relay provider. At this time, IP Relay can only be used to make calls from an Internet connection to a telephone. Calls cannot be made in reverse. Voice callers using a standard telephone or callers using VCO, HCO, or STS cannot initiate an IP Relay call.

- **IP Captioned Telephone Service**- This is an optional service that combines elements of captioned telephone service and IP Relay. It uses the Internet, rather than the telephone network, to provide the link and captions between the caller with a hearing disability and the relay operator. It allows the user to simultaneously both listen to, and read the text of, what the other party is saying. This service can be used with an existing voice telephone and a computer or other web-enabled device without requiring specialized equipment.

- **VRS –Video Relay Service**- This is an optional service that is not mandated. VRS allows American Sign Language users to send and receive messages in sign language. At this time, VRS calls must be initiated by the sign language user who must have video equipment and high speed connectivity such as a cable modem, Digital Subscribe Line (DSL) or Integrated Services Digital Network (ISDN). The sign language user signs to a relay operator who is a qualified sign language interpreter. The message is interpreted into spoken English for the standard telephone user who responds in spoken English. The relay operator listens to the spoken message and interprets it into sign language for the caller.

TTY equipment distribution and consumer affordability provisions are addressed at the State level. For example, TTY equipment is loaned free to users in California. The State California Relay Service and the Deaf and Disabled Telecommunications Program maintains an equipment loan program funded by a small surcharge that appears monthly on each ratepayer's telephone bill. Each telephone company in the State (including local, long distance, cellular and radio carriers, and resellers) assesses and collects the surcharge monthly from their customers and remits the surcharge to the State. In 1987 the average monthly outbound call volume was 149,449 as compared to 642,137 for the first six months of 1995.[35]

According to the National Council on Disability, the use of all forms of relay service has increased by 15 percent from 2003 to 2004. In addition, traditional relay service use has declined slightly (.3 percent), while Internet relay service is increasing (45 percent) and video relay service is increasing tremendously (210 percent).[36]

[35] See California TRS page at www.fcc.gov/cgb/dro/trs_california.html.
[36] National Council on Disability, *The Impact of the Americans with Disabilities Act: Assessing the Progress Toward Achieving the Goals of the ADA,* 26 July 2007 at http://www.ncd.gov/newsroom/publications/2007/ada_impact_07-26-07.htm.

2. European Union

Today a demographic shift is underway due to the projection that 27% of the European population will be over 60 years old by the year 2020 and that about 9% of this group will be over 75. In addition, at the same time it is estimated that 10-15% of the European population has a disability. These two groups account for about 90 million European citizens today.[37]

Universal Service obligations in the European Union are defined by the European Commission Universal Service Directive. It defines the scope of universal service to be ensured by Member States and the consumer rights relating to electronic communications networks and services. It requires Member States to ensure that services are made available with the quality specified to all end-users in their territory, irrespective of their geographical location and at an affordable price that does not result in the distortion of competition.[38]

There are four basic elements to the universal service:

- Access at a fixed location so that users can make and receive local, national and international telephone calls, fax communications and have Internet access;
- Availability of at least one comprehensive directory and one directory enquiry service for all subscribers who wish to be included with both fixed and mobile numbers;
- Availability of public payphones; and
- Availability and affordability of the same services for users with disabilities.[39]

With respect to persons with disabilities, the i2010 initiative recognizes that there are barriers that must be overcome to achieve eInclusion and this problem has been highlighted in a 2005 Communication.[40] It has also been examined in the INCOM (Inclusive Communications) sub-group of the Communications Committee.[41]

Although the INCOM Report of 12 September 2006 is a working document and does not reflect the official position of the Commission, and cannot be used to infer the precise future measures to be taken by the Commission, the report

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[37] INCOM Report (COCOM06-16 Final), published 12 September 2006, p. 13.
[38] See Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 at http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00510077.pdf.
[39] *Ibid.*
[40] COM(2005) 425.
[41] INCOM report, *supra.*

contains the results of a 2005 survey of Member States concerning access and use of electronic communications by users with disabilities. Twenty-three Member States and Norway replied to the survey.

The survey confirmed that persons with disabilities in Europe continue to be frequently disadvantaged in relation to availability, choice, quality and price of electronic communications. There also is a severe lack of information in the Member States on the practical situation and problems faced by persons with disabilities. This includes the state of accessibility as well as affordability. As a result, the INCOM Report notes that due to the lack of information, "national provisions do not – or seldom- address specifically disabled users' concerns."[42] This is one of the reasons why Article 31 of the Convention provides for statistics and data collection. Along these lines, the INCOM Report states that it was unable to assess whether or not there is accessibility to and affordability of publicly available services nor could a determination be made as to whether there was equivalency.[43] These matters could be addressed as suggested in the report by encouraging Member States and National Regulatory Authorities to establish consultations with persons with disabilities.[44]

Another serious issue concerned text telephones. Although some countries provide free text telephones, the lack of interoperability prevents consumers from calling from one system to another and across Member States.[45]

The INCOM Report also found that even though an earlier report in January 2004 identified major problems faced by persons with disabilities in their use of electronic communications as well as the relevant legal provisions protecting this interest, the same problems remain. Of particular concern is the fact that

> [T]here is still no comprehensive solution in all Member States for disabled users to call the single European emergency number 112; the accessibility to public pay phones is not addressed in a harmonized way in the Member States; text telephones used by deaf users are not interoperable across Member States or across networks, etc.[46]

According to the INCOM Report, the Commission has recognized that persons who are deaf, hard of hearing or speech-impaired may have difficulties with accessing emergency services and they are addressing the issue in a review of the e-communications regulatory framework currently under way.[47]

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[42] *Ibid.,* p. 6.
[43] *Ibid.,* p. 26.
[44] *Ibid.*, p. 35.
[45] *Ibid.*, p. 40.
[46] *Ibid.*, p. 6.
[47] SEC(2007) 403 published on 29 March 2007, p. 63.

A number of best practices were identified in the INCOM Report where some Member States reported that they:

- Impose special tariffs to ensure affordability for persons with disabilities;
- Propose text telephones and relay services for users who are deaf and hearing impaired;
- Impose a legal obligation to provide terminal devices so that persons with hearing impairments can access publicly available telephone services;
- Provide free access to information services for persons with visual disabilities;
- Provide a special telephone number for deaf users to access 112; and
- Require service providers to provide copies of contracts and bills in an accessible format for persons with visual disabilities.[48]

Although the INCOM Report identified some examples of best practices for serving the needs of persons with disabilities, the report concluded that there "does not seem to be a comprehensive or coherent action to address the needs of people with disabilities."[49] It also recommended that the Member States should provide powers to regulators to enable them to respect the principle of anti-discrimination of persons with disabilities and that the Commission should examine the possibility of strengthening the following articles of the Universal Service Directive:

- Article 7(2) relating to the equivalent choice for persons with disabilities to that enjoyed by other end-users;
- Article 31 relating to the must carry obligations and access by users with disabilities to radio and TV programmes; and
- Article 33 relating to the consultation of persons with disabilities.[50]

Looking to the future, the INCOM Report discusses the fact that Member States should pay attention to the development of new technologies in order to avoid the repetition of the same accessibility problems. Specifically, attention should be paid to:

- Total Conversation over IP (a best practice as discussed in this paper);
- Digital Television accessibility (Terminals, remote controllers, electronic programming guides, services);
- Broadband access; and
- Next generation of mobile technologies.

It should be noted that this discussion paper only highlights some of the INCOM Report findings and cannot be a substitute for a reading of the entire report.

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[48] INCOM Report, p. 6.
[49] *Ibid*.
[50] *Ibid.,* p. 7.

On 3 June 2008, the European Commission announced stepped up efforts to promote a single emergency phone number to call for assistance. Referring to European Union legislation, Directive 2002/22/EC of 7 March 2002, it emphasized that Member States must ensure that users of any type of telephone, fixed or mobile, are able to call 112 free of charge throughout the European Union.

Noting that 112 is not accessible to all, such as persons with hearing or speech disabilities, or senior citizens or persons with serious injuries, it was announced that a 112 multimedia service named "Total Conversation" will offer solutions. It is expected that the service will be tested in the coming months to allow users to alert emergency teams through a combination of voice, video and real-time text. The fact sheet notes that emergency centers will receive more complete information through image and text description and that this will enable the best possible response with the shortest possible delay.[51]

The European Commission is moving forward to make 112 more accessible for persons with disabilities through two avenues. First, it has proposed to improve the 112 accessibility for citizens with disabilities during its current reform of telecommunication rules. Second, it is funding a pilot service, "Total Conversation," that is developed under the Competitiveness and Innovation Framework Programme (CIP) (2007-2013).[52]

3. Selected Countries

This discussion takes a brief look at two countries and how they address their Universal Service obligations. In Sri Lanka, approximately 274,771 people have disabilities.[53]According to an ITU 2006 report, the government has a policy of having telephone bills issued in Braille and has proposed an international universal-access symbol for adoption to indicate accessible public payphones for persons with disabilities. There are also plans for a number of pilot projects, such as the provision of special directories, the issuing of bills in Braille and voice assistance systems. These efforts are due to the government working alongside the regulator to find solutions for persons with disabilities in the areas of affordability and connectivity. In this situation, the regulator took on the role of serving as the direct contact point between the operators and consumers with disabilities.[54]

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[51] EU, 112-the Single European Emergency Number, General Fact Sheet 44 at http://ec.europa.eu/information_society/doc/factsheets/044-112-odb-en.pdf.
[52] *Ibid.*
[53] People with Disabilities 2001, Census of Population and Housing by District and Sex, Department of Census and Statistics, compiled at http://www.apcdproject.org/countryprofile/sri%20lanka/sri_lanka.html.
[54] Report on Innovative Solutions for the Management and Financing of Universal Service and Universal Access Policies, ITU-D Study Group 1, Question 7-1/1, Universal access/service, pgs. 4 and 18.

In Australia, there are approximately 4 million people with disabilities. Over 6 percent or 1.2 million Australians report a profound or severe level of core activity limitation. In addition, there is an increasing rate of disability with age, with up to 45 percent of people aged 65 to 74 having a disability, and 82 percent of people aged 85 and over having a disability.[55]

The Universal Service obligation in Australia stems from provisions in the Telecommunications (Consumer Protection and Services Standards) Act of 1999 and ensures that standard telephone services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business. This includes persons with disabilities.[56]

Telstra, is the primary universal service provider and offers a package of products and services to address the needs of low-income customers, including persons with disabilities. Recognizing the importance of affordable as well as accessible communication services, Telstra's **Access for Everyone** package is designed to assist people on low income or facing financial hardship to maintain telecommunications access.[57] Telstra has filed their Fourth Action Plan for the removal of ICT barriers as part of the scheme under the Disability Discrimination Act of 1992. This type of barrier removal approach is further discussed below in the section entitled, "Implementation of ICT Barrier Removal Action Plans."

4. USO and Broadband

In the United States, the Federal Communications Commission (FCC) issued notice on 1 May 2007 for public comment on whether or not Universal Service funding should be used to promote broadband deployment.[58] Advocates for persons with disabilities have submitted comments arguing that broadband has become vital to the disability community.[59] On September 6, 2007, the Federal-State Joint Board on Universal Service released a statement saying that the Joint Board has tentatively agreed that support mechanisms for the future will focus on voice, broadband and mobility.[60]

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[55] 2003 Australian Bureau of Statistics (ABS), Study of Disability and Careers, as reported in the Telstra Action Plan (2007-2009), p.4 at http://www.telstra.com.au/disability/dap_07_09.htm.
[56] Australian Government, Department of Communications, Information Technology and the Arts, USO webpage at http://www.telstra.com.au/disability/dap_07_09.htm
[57] Telstra Action Plan (2007-2009), *supra.*
[58] FCC 1 May 2007 Notice 07J-2 at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07J-2A1.doc.
[59] See *Universal Service and the Disability Community: The Need for Ubiquitous Broadband Deployment* at http://www.benton.org/index.php?q=node/6105.
[60] FCC 6 September 2007 Notice 07J-3 at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07J-3A1.doc.

In the European Union, the European Commission has not moved forward to include broadband as part of USO for a number of reasons but broadband deployment is being raised as a service of general economic interest.[61]

In contrast, global regulators are modifying the Universal Service obligations to include narrowband and broadband Internet access. For example, of the 93 countries that responded to ITU's annual regulatory survey, 27 countries included narrowband Internet service in the universal service definition and 11 included high-speed Internet.[62]

The debate over the role of broadband in USO is ongoing.

5. USO and Voice over Internet Protocol (VoIP) Services

In the United States, the FCC on 15 June 2007 extended disability access requirements of the Telecommunications Act of 1996 to providers of interconnected Voice over Internet Protocol (VoIP) services and to manufacturers of specially designed equipment used to provide those services.[63]

At the same time, the FCC also extended TRS requirements to providers of interconnected VoIP services. This includes the requirement that providers contribute to the Interstate TRS Fund and to offer 711 abbreviated dialing for access to relay services.

The FCC pointed out that consumers are migrating from traditional phone services to interconnected VoIP services and that both measures are to ensure that the disability access provisions mandated by Congress will apply to and benefit users of interconnected VoIP services and equipment.[64]

With respect to emergency calls and VoIP services, on 11 March 2008, the FCC adopted emergency call handling requirements for Internet-based TRS providers. The measures are to ensure that persons using Internet-based forms of TRS, *i.e*, Video Relay Service (VRS), Internet Protocol (IP) Relay, and IP captioned telephone relay service (IP CTS), can promptly access emergency services. This is an interim order pending adoption of a solution that will permit Internet-based TRS providers to immediately and automatically place the outbound leg of an emergency call to an appropriate public safety answering point (PSAP),

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[61] See June 2007 presentation by Jurand Drop, European Commission, DG Information Society and Media Unit, i2010 and Lisbon Strategy, "Implementation of i2010 at the regional and local level" at http://conference2007.mwi.pl/index.php?id=456.
[62] See ICT Regulation Toolkit, developed by ITU and *info*Dev at http://www.ictregulationtoolkit.org/en/Section.2097.html.
[63] FCC 15 June 2007 Notice 07-110 at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07-110A1.doc.
[64] *Ibid.*, p.1.

designated statewide default answering point, or appropriate local emergency authority.[65]

In the European Union, the European Commission urged national regulatory authorities in February 2005 to take a "light touch" approach so that innovative services and market structures could be allowed to emerge. As a result, national regulatory authorities have taken different approaches. According to a 2006 household survey, 10 percent of German broadband customers said they used their broadband connection for telephony services. The same survey found that the figure was 14% for Finland and 10% for Luxembourg.[66]

D. Accessible ICT Technical Design Standards

The fourth major issue to highlight is the role of technical design standards. The pervasive use of ICT in society coupled with technology innovation will continue to erect barriers in design unless accessibility is addressed. Technical design standards can play a critical role in the implementation of accessible ICT and as discussed, the Convention calls for the promotion of Universal Design in the development of guidelines and standards. Standards represent a consensus in the industry on the components needed to implement accessibility. They also provide certainty for users with disabilities that barriers will not prevent them from participation in society.

While usability professionals will continue to play a significant role in the development of ICT, the emerging field of accessible design is now a significant contributor to design of ICT. This effort includes understanding cross-disability issues, cross-disability user functionality requirements and the impact of user interface requirements across technologies.

The international standards community has become increasingly active in developing technical standards related to accessible ICT. For example, the World Wide Web Consortium (W3C) Web Accessibility Initiative is one effort.[67] European based standards bodies such as the European Telecommunications Standards Institute (ETSI), the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC) and the Japanese Standards Association's Japanese Industrial Standards (JIS) are also focused on the evolution and promotion of accessibility standards that fall within their domains. The United States Electronic and Information Technology

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[65] See FCC 11 March 2008 Report and Order FCC 08-78 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-78A1.doc.

[66] See SEC(2007) 403, Commission Staff working document Annex to COM(2007) 155, pages 39-40; quoting i2010 Annual Report (March 2007); online at http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/annualreports/12threport/sec_2007_403.pdf.

[67] W3C Web Accessibility Initiative at http://www.w3.org/WAI/.

Accessibility Standards are based on Section 508 legislation and is also a widely recognized accessibility framework.[68]

One example of technical standards activity is the mapping of global accessibility standards that is being conducted by JTC1 Special Working Group on Accessibility (SWG-A) and established in 2004 by the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC). JTC1 recognizes that ICT standardization for accessibility is a major undertaking, encompassing many international, regional and local interests; including significant standards efforts underway in ISO, IEC, and ITU.[69]

Of interest is the telecommunications technical standards activity concerning the ITU Total Conversation service.[70] Developed from standards that bring about the convergence of voice telephony, video telephony and text telephony, Total Conversation provides rich media real-time conversation for all people, including persons with disabilities. This service will be revisited later in this paper under best practices.

Standards setting activities for accessible ICT will increasingly address the convergence of technologies to enable multi-modality accessibility solutions to prevent further gaps in ICT accessibility.

E. Implementation of ICT Barrier Removal Action Plans

A fifth major issue to consider for successful policies and strategies is the implementation of ICT barrier removal action plans. An implementation plan for ICT barrier removal for equality is driven by public policy determinations which direct the scope of the effort. Although the Convention calls for the removal of ICT barriers, there are action plans already underway in countries with rights-based legislation. Looking across the globe, here are some examples of policies and implementation plans for accessible ICT.

1. European Union

In the European Union, efforts to address barriers experienced by persons with disabilities and others when trying to access ICT goods and services is called eAccessibility. Today, eAccessibility is considered part of the broader concept of eInclusion which seeks to enable equal participation in the information society. eAccessibility is a component of eInclusion, one of the three pillars of the i2010 initiative. In the framework of i2010, both the eAccessibility Communication of 2005[71] and the 2006 Riga Ministerial Declaration[72] on eInclusion provide the

[68] U.S. Access Board, Electronic and Information Technology Accessibility Standards, 36 CFR Part 1194, at http://www.access-board.gov/sec508/standards.htm.
[69] See JTC1 Special Working Group on Accessibility website at http://www.jtc1access.org/.
[70] See International Telecommunication Union, ITU-TSG 16 Work on Accessibility at http://www.itu.int/ITU-T/studygroups/com16/accessibility/.
[71] Communication on eAccessibility COM(2005) 425.

political agenda for eAccessibility. The European Information Society strategy builds upon earlier actions under the eEurope 2002 eAccessibility targets.

The eAccessibility Communication of 2005 aimed at mobilizing both the industry and Member States towards Europe-wide harmonized solutions. Three policy approaches were offered:

1. Using public procurement contracts to improve accessibility requirements in the ICT domain;
2. Exploring the possible benefits of certification schemes for accessible products and services; and
3. Making better use of the eAccessibility potential of existing legislation.

It also recommended continuing various activities such as:
1. Development, implementation and use of eAccessibility requirements and standards;
2. Promotion and take-up of the Design-for-all concept;
3. Web accessibility of online public services;
4. Setting targets to benchmark accessibility and monitor progress; and
5. Developing European data comparable across Member States.

The 2006 Riga Ministerial Declaration announced the following targets related to ICT accessibility:

- Halve the gap in internet usage by 2010 for groups at risk of exclusion, such as older people, people with disabilities, and unemployed persons;
- Increase broadband coverage (i.e. the availability of broadband infrastructure) in Europe to at least 90% by 2010. In 2005, broadband was available to about 60% of businesses and households in the remote and rural areas of the EU15 and to more than 90% in the urban areas);
- Ensure that all public websites are accessible by 2010;
- By 2008, put in place actions in the field of digital literacy and skills to reduce gaps for groups at risk of exclusion by half in 2010;
- By 2007, make recommendations on accessibility standards and common approaches, which could become mandatory in public procurement by 2010; and
- Assess the necessity for legislative measures in the field of e-Accessibility, and take account of accessibility requirements in the review of the electronic communications regulatory framework beginning in June 2006.[73]

Today, research activities in the Seventh Framework Programme includes:

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[72] Riga Ministerial Declaration, signed 11 June 2006 and posted at http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf.
[73] See eInclusion@EU News summary at http://www.einclusion-eu.org/NewsItem.asp?CaseTitleID=1564.

1. Ensuring equal access and participation through the removal and prevention of technological barriers through the application of design-for-all methods and tools, and new assistive technologies; and

2. Horizontal issues such as the identification of ICT policies as best practices examples, benchmarking, indicators and cooperation across Member States and internationally.[74]

Beginning in January 2007, country reports have been posted online regarding the "State of Play" of eInclusion and eAccessibility. These country reports identify the implementation plans and efforts underway to meet their obligations under the eInclusion and eAccessibility programme.[75]

2. Australia

Under the Disability Discrimination Act (DDA) of 1992, it is unlawful to discriminate in the provision of goods, services or facilities against people on the basis that they have, or may have, a disability. It is also unlawful to discriminate against a person on the basis that one of their associates has, or may have, a disability. The Act states that organizations may develop an Action Plan as a strategy for eliminating discriminatory practices and that the plan may be lodged with the Human Rights and Equal Opportunity Commission (HREOC).

Should a disability discrimination complaint be filed, the HREOC is required by the DDA to consider the organization's action plan. The success of an Action Plan for the removal of disability discrimination depends on the effectiveness of the actions taken and can be used as a defense against the complaint.

The HREOC maintains a website for registered Disability Discrimination Act Action Plans that includes almost 400 plans for viewing so that 1) organizations developing action plans can benefit from other organizations' work and experience 2) people with disabilities can see what an organization has committed itself to achieving and 3) people with disabilities can contribute their views on the improvement of the action plans and their implementation. Entities register their Action Plans under the following classifications: Business (private and government business enterprises), Commonwealth Government, State and Territory Government, Local Government, Education and Non-government Organizations. The HREOC website also provides resources on developing effective plans.[76]

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[74] *Information Society and Inclusion: Linking European Policies*, European Commission 2006, p.5 at http://ec.europa.eu/information_society/activities/policy_link/documents/inclusion.pdf.
[75] See e-Inclusion State of Play reports at http://ec.europa.eu/information_society/activities/einclusion/policy/country_reports/index_en.htm.
[76] See HREOC website at http://hreoc.gov.au/disability_rights/action_plans/index.html.

Each of the 400 Action Plans in Australia are downloadable but the website does not provide a searchable database. Business registrations include filings from banking, public transport, and telecommunications. As mentioned earlier, this database contains the Fourth Action Plan filed by Telstra, the primary Universal Service provider.

3. United States

The 1998 Amendments to the Rehabilitation Act[77] requires that the Attorney General conduct biennial surveys and report to the President and Congress information and recommendations regarding the extent to which the electronic and information technology of the Federal Government is accessible to and usable by individuals with disabilities. Also known as Section 508, this statutory approach to the removal of ICT barriers to persons with disabilities is discussed later in this paper under public procurement toolkits and best practice examples. Except for the Interim Report, the accessible ICT determination is based upon the December 2000 Electronic and Information Technology Accessibility Standards promulgated by the U.S. Access Board pursuant to the 1998 law.

The first interim report was issued by the U.S. Department of Justice in April 2000 and is entitled ***Information Technology and Persons with Disabilities: The Current State of Federal Accessibility***.[78]

Since that time, additional federal-wide surveys have been conducted in 2001 and 2003. Results of the 2001 survey are online at the U.S. Department of Justice and the 2003 survey has not been released as of the writing of this background paper.[79]

F. Accessible ICT Public Procurement Toolkits

One way to have a systemic impact on the procurement of accessible ICT is to provide ICT public procurement toolkits. There are at least four countries that have implemented this approach: Denmark, Ireland, Canada and the United States. Each country is presented as a case study to demonstrate the scope of ICT products and services impacted as well as the public policy basis for the toolkit. By focusing on the public procurement processes in the public sector, the instrument leverages the ICT budgets of these countries and plays a significant role in promoting accessible ICT.

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[77] Section 508 of the Rehabilitation Act of 1973, as amended 29 U.S.C. §794(d), at http://www.access-board.gov/sec508/guide/act.htm.

[78] See *Information Technology and Persons with Disabilities: The Current State of Federal Accessibility* at http://www.usdoj.gov/crt/508/report/content.htm.

[79] U.S. Department of Justice, *Section 508 of the Rehabilitation Act: Accessibility for People with Disabilities in the Information Age (Results of 2001 Survey)* at http://www.usdoj.gov/crt/508/report2/index.htm.

1. Denmark

Although there is no national special procurement legislation requiring the procurement of accessible ICT, the toolkit was created by the Centre of Excellence based at the Danish National IT and Telecom Agency. The Centre of Excellence was created in May 2003 and its goal is to support a government IT policy strategy of an inclusive society. The current version of the toolkit was presented to the public in 2005 as a tool for assisting public procurers in successfully implementing e-accessibility requirements in their tenders and contracts.

A web-based application, the technical development was carried out by Adapt, a private company that provides web solutions. Products covered by this tool include hardware, software, websites and web-based applications. It applies a number of sources for accessible technical design standards, including the U.S. Section 508 Electronic and Information Technology Accessibility Standards, the "Guidelines for Procurement of Accessible Personal Computer Systems" as set out by the EU ACCENT project, industry guidelines from IBM and Microsoft, the World Wide Web Consortium Web Content Accessibility Guidelines, and the Danish Government Guidelines for Public Homepages. According to the eInclusion@EU report, information is not yet available concerning its actual use and impact.[80]

2. Ireland

Launched in 2007, the Accessible IT Procurement Toolkit is designated for Irish public service bodies as well as anyone seeking to procure accessible hardware or software. Developed by the National Disability Authority, the Toolkit is based on NDA IT Accessibility Guidelines[81] and is a web-based application that covers four topics: Principles of Accessible Procurement, Stages of Procurement, Accessibility Targets and Supporting Information.[82]

Accessible procurement is a legal requirement for all public sector bodies under the Disability Act (2005). The ICT Accessibility Targets cover the following products and services:

a. Web Technologies (all information services, including web sites and online applications)
b. Public Access Terminals
    - ATMS (Automated Teller Machines)
    - Information Kiosks

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[80] See eInclusion@EU *Learning Examples: Accessible Procurement Toolkits Denmark, Canada and USA: Description and Synopsis*, page 6 at http://www.einclusion-eu.org/ShowAnalysisReport.asp?IDFocusAnalysis1=17, a project website supporting Information Society policy-making in Europe by strengthening eInclusion and eAccessibility across Europe.

[81] National Disability Authority IT Accessibility Guidelines are online at http://accessit.nda.ie/it-accessibility-guidelines.

[82] See toolkit online at http://accessit.nda.ie/managing-accessibility/procurement-toolkit.

- Ticket vending machines
- Information displays (e.g. flight information)
- Point of sale customer card payment systems
- Card door entry systems

c. Application Software (For any operating system or runtime environment such as Windows, Macintosh, Unix, Linux, and Java);
d. Telecoms (Fixed or mobile telecommunication devices and services delivered via Interactive Voice Response (IVR) systems, Hardware and Software aspects of public or private telephones and videophones, and menu-based services such as voicemail); and
e. Smart Cards (and related media).

In Stages of Procurement, the tool covers Writing a Request For Tenders, Assessing Candidates and Tenders, Development and implementation, Evaluating deliverables and Maintaining accessibility. As of the writing of this background paper, data on the use of the tool was not available.

3. Canada

The Accessible Procurement Toolkit for Canada is a web-based application that delivers accessibility guidelines and standards for use in the procurement process of mainstream ICT products and services. Developed by the Assistive Devices Industry Office, it was launched in 2000. As discussed in the learning example at eInclusion@ EU,[83] the toolkit can be used by:

- Purchasing managers to inform public procurers of their product requirements;
- Public procurers to add accessibility clauses to purchasing documents;
- Manufacturers to see what standards might apply to their products for planning and development purposes; and
- Vendors to compare the compliance level of their products to government or national standards.

Although Canada does not have specific federal legislation requiring the procurement of accessible ICT, regional procurement legislation is in effect for Ontario as part of the Ontarians with Disabilities Act 2001. The tool applies various standards including the U.S. Section 508 Electronic and Information Technology Accessibility Standards, the Canada Common Look and Feel Standards for the Internet,[84] and other best practices. As of the date of the posting of the learning example at eInclusion@ EU, the tool had been used in "five major procurements and in two smaller procurements."[85]

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[83] See eInclusion@EU, *supra*, page 9.
[84] *Common Look and Feel Standards for the Internet*, Treasury Board of Canada, at http://www.tbs-sct.gc.ca/clf-nsi/index_e.asp.
[85] See eInclusion@EU, *supra,* page 11.

The Accessible Procurement Toolkit is available online in both English and French language versions.[86]

4. United States

The Buy Accessible Wizard is a web-based application that assists procurers of ICT products and services to comply with the accessible ICT procurement law of Section 508. A procurement law wrapped around a civil rights requirement, Section 508 is mandatory for all federal ICT procurements, with some exceptions. The Wizard is a tool used by federal agencies and is open for public use. It resides on the U.S. General Services Agency (USGSA) web portal gateway along with resources and tools for meeting Section 508 requirements.

Because the Section 508 procurement law is supported by a complex regulation structure that contains extensive guidance for implementation, the Buy Accessible Wizard integrates access to technical guidance and simplifies the procurement process. A procurement officer is guided by the Wizard through a process of gathering data on the ICT product or service to be bought and at the same time receives information about the product conformance to Section 508 Electronic and Information Technology Accessibility Standards. The Wizard includes a market research database supported by vendor submissions of Voluntary Product Accessibility Templates[87] that show the extent their ICT products conform to the accessibility standards. Finally, the Wizard has a summary report feature that enables the procurement officer to draft a compliant request for proposals and at the same time serves as documentation on how the procurement officer met the Section 508 requirements. There are many other features of the Wizard, including learning tools that are also helpful.[88]

According to the learning example at eInclusion@ EU:

> Initial uptake was very good and users reported noticeable positive effects regarding the effectiveness of their procurement processes as well as an increasing success in adequately meeting all applicable requirements of Section 508 for a given product.[89]

G. Identification of Benchmarking and Research Needs

The identification, monitoring, benchmarking and data collection of accessible ICT best practices is relatively new and is considered key to successful implementation. At this time there is an absence of appropriate indicators to measure accessible ICT implementation. For example, in 2004 the European Commission launched the eInclusion@EU project to give scientific and research

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[86] See Accessible Procurement Toolkit at www.apt.gc.ca/.
[87] For more about Information Technology Industry Council Voluntary Product Accessibility Templates (VPATs), see www.access-star.org/ITI-VPAT-v1.2.html.
[88] See Buy Accessible Wizard at http://www.buyaccessible.gov/.
[89] See eInclusion@EU, *supra,* page 11.

support to the European Union's eInclusion policies. The objective of the project was "to establish a framework for scientific and user inputs to European policy-making for eInclusion and eAccessibility and to identify new and innovative policy approaches."[90] However, upon project conclusion in mid-2006, one of the determinations was that better tools were needed since monitoring approaches largely lacked indicators for monitoring eAccessibility.[91]

However, the Commission is supporting three projects on web accessibility benchmarking involving 23 European organizations combined in a cluster called the WAB Cluster. In July 2007, the project launched the Unified Web Evaluation Guidelines which provides a large scale monitoring and local evaluation of the accessibility of websites. One reason for this project is due to several Member States having binding legislation that requires website accessibility resulting in the need for compliance assessment.[92]

Another example of the research problem is illustrated in the United Nations report, ***Partnership on Measuring ICT for Development: Core ICT Indicators***.[93] As stated in the Foreword of the report:

> Comparable statistics on access to, and use of, information and communications technologies (ICTs), are critical to formulating policies and strategies concerning ICT-enabled growth, for social inclusion and cohesion, and for monitoring and evaluating the impact of ICTs on economic and social developments.[94]

The objective is to help countries to produce internationally comparable data with the recognition that not all countries are at the same level of development or have well developed statistical systems. The core list has four sets of indicators:

- ICT infrastructure and access;
- Access to, and use of, ICT by households and individuals;
- Use of ICT by businesses and
- ICT sector and trade in ICT goods.

Unfortunately, there is a lack of metadata and ICT indicators for accessible ICT. Article 31 of the Convention, Statistics and Data Collection, seeks to correct this gap in data. Additional research demonstrating the business case for accessible ICT and cost would also be helpful for informing public policies and implementation plans.[95]

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[90] Factsheet 12, *An Information Society Open to All*, September 2005.
[91] See *Information Society & Inclusion, supra,* p.8.
[92] See project website at http://www.wabcluster.org/.
[93] See United Nations *Partnership on Measuring ICT for Development: Core ICT Indicators* online at http://www.itu.int/ITU-D/ict/partnership/material/CoreICTIndicators.pdf
[94] *Ibid.*
[95] See U.S. National Council on Disability, *Over the Horizon: Potential Impact of Emerging Trends in Information and Communication Technology on Disability Policy and Practice*, December 19, 2006 at http://www.ncd.gov/newsroom/publications/2006/emerging_trends.htm#_Toc151518477.

H. Outreach, Education and Training on Accessible ICT

The final major issue to highlight for successful policies and strategies is the need to provide outreach, education and training on accessible ICT. Because this is a broad topic with many sub-issues, this background paper highlights two important areas of activity: 1) the issue of accreditation and 2) the development of an on-line toolkit for policy makers.

1. Accreditation

Even in the engineering world, accessible design for mainstream ICT is relatively new and not well understood. Although usability professionals have played significant roles in the design of ICT, the value of additional knowledge in accessible design for persons with disabilities cannot be overlooked. This is evidenced by the call for accreditation at the university level in the United States by both the National Council on Disability[96] in 2007 and the National Task Force on Technology and Disability.[97]

For example, the National Task Force on Technology and Disability reports that:

- There is an absence of UD (Universal Design) education as a formal component of most engineering, design, public administration, business administration and marketing programs. Accreditation bodies such as the Accreditation Board for Engineering and Technology (ABET), the Association to Advance Collegiate Schools of Business (AACSB) and the National Association of Schools of Public Affairs and Administration (NASPAA) should include UD in their curriculum requirements; and that
- Improvements should not be limited solely to postsecondary degree programs. Business and professional associations should support professional in-service training in UD and accessibility. Educating these groups about the benefits of and techniques for UD will involve incorporating UD concepts and principles in academic curriculum and industry training, and adding UD requirements to the professional accreditation systems. Including UD curriculum in post-secondary education will have a long lasting and systemic effect on the availability of assistive technologies to all American citizens.

Accreditation is one strategy for ensuring that the technical knowledge base can support accessible ICT.

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[96] National Council on Disability, *Implementation of the Americans with Disabilities Act: Challenges, Best Practices, and New Opportunities for Success*, July 26, 2007, at http://www.ncd.gov/newsroom/publications/2007/implementation_07-26-07.htm.

[97] National Task Force on Technology and Disability, *Within Our Reach: Findings and Recommendations of the National Task Force on Technology and Disability*, 2004, at http://www.ntftd.org/report.htm.

2. Toolkit for Policy Makers

Acknowledging that the implementation of accessible ICT for policy makers can be a complex endeavor, ITU-D and The Global Initiative for Inclusive Information and Communication Technologies (G3ict) announced on 21 April 2008 that they will collaborate in the development of an on-line toolkit for policy makers.[98] The objective is to create a global on-line toolkit to support the development of successful policies and strategies addressing ICT accessibility and service needs of persons with disabilities and for mainstreaming disability issues at all levels in application of the dispositions of the Convention on the Rights of Persons with Disabilities.

Intended as a global electronic repository of policies and strategies, the toolkit will also serve as a platform for sharing experiences on best practices addressing disability issues in the ICT sector. It will provide a set of necessary actions to be undertaken at the national level and will facilitate the development of effective policy frameworks responding to the needs of e-inclusiveness principles.

As explained by Axel Leblois, G3ict Executive Director, the toolkit for policy makers is

> A much needed bridge between the many areas of ICT applications covered by the dispositions of the Convention on accessibility and the fast evolving world of accessible and assistive information technology. . . . In this endeavor we are looking forward to promoting further international cooperation, existing standards, and to constitute a common body of knowledge and experience really useful to all stakeholders involved in ICT accessibility and assistive technologies. We are grateful for the opportunity and welcome all volunteering organizations and individual experts in this important endeavour.[99]

IV. Current Situation in Africa, Arab Region, Asia Pacific, Americas and Europe

As can be expected, a global snapshot of the current situation in accessible ICT and service needs for people with disabilities reveals a wide disparity between the regions in practice. There are many factors for this disparity, such as countries not having a fully developed ICT physical infrastructure or the absence

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[98] See Joint ITU and G3ict Agenda at http://www.itu.int/ITU-T/worksem/accessibility/200804/programme.html.

[99] Leblois, Axel. "ICT Accessibility: Are the Stars Lining Up? at http://g3ict.com/resource_center/newsletter/news/p/newsletterId_126/id_150.

of a disability rights law or policy.[100] It should not be a surprise that a call for accessible ICT came out of the developing countries where eighty percent of the world's ICT users with disabilities live.[101]

Hopefully, in the future there will be indicators and research available to provide a more detailed and complete analysis of the situation. This will be especially helpful in the developed countries because even if the ICT physical infrastructure is in place, it does not necessarily mean that persons with disabilities can use it. It is also critical that investments, including those in developing countries, include accessible design at the fore front so as to avoid an expensive accessibility retrofit at the back end.

A. Africa

One of the barriers most frequently raised is affordable access in developing countries to the physical infrastructure of e-commerce (such as computers, hardware, software, telecommunications services and Internet access services).[102] This effectively impacts all e-services in Africa. Without an ICT infrastructure in place, it is difficult to measure accessible ICT. Currently the UN has classified 50 countries as Least Developed Countries (L.D.C.s) and 31 are in Africa. Countries must meet three principal criteria for this class:

1. Per capita GDP of US $ 100 per person in 1968 or less;
2. A share of manufacturing in total GDP of 10 per cent or less; and

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[100] Only 45 countries have anti-discrimination or other disability specific laws. See the *UN Convention Factsheet, supra.*

[101] See *Manila Declaration on Accessible ICT*, March 2003 at http://www.worldenable.net/manila2003/declaration.htm

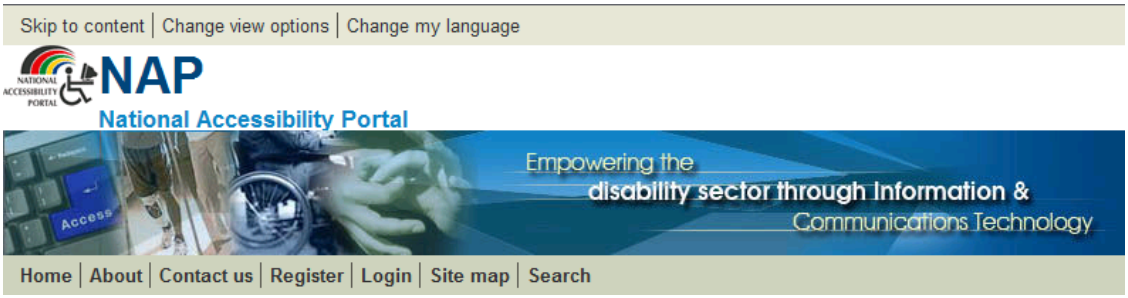
[102] Wunsch-Vincent, Sacha. *WTO, E-Commerce and Information Technologies, a report to the UN ICT Task Force, 2005, p. 22.*

3. An adult literacy rate of 20 per cent or less.[103]

A report on Africa by the UN ICT Task Force Working Group on the Enabling Environment concluded that providing increased use of ICTs is a complex problem.[104] Due to the lack of data on the deployment of accessible technologies, this paper is not able to provide further analysis about the state of accessible ICT in Africa.

Nevertheless, the following initiative based in South Africa is of great interest since it is aligned with the goal of the Africa Decade of Persons with Disabilities (1999 to 2009) to empower persons with disabilities.

1. National Accessibility Portal (NAP)



The NAP was developed by the Meraka Institute (African Advanced Institute for Information and Communications Technology) in partnership with a representative group of Disabled Persons' Organizations and the Office on the Status of Disabled Persons (OSDP) in the Presidency.

The NAP is a national project in South Africa to address the needs of approximately 4 million persons with disabilities where less than one percent are economically independent.[105] Recognizing that effective communication and access to information and services are key needs, NAP was launched to empower persons with disabilities.

A five year research and innovation project that embraces a future vision for the African region, the initiative is structured into three phases and is currently in the final phase. NAP seeks to "use innovative, cost-effective and appropriate ICT based technologies to support people with disabilities, to empower them, to uplift

[103] See World Intellectual Property Organization *Criteria for Least Developed Countries* at http://www.wipo.int/ldcs/en/criteria_ldcs.html.
[104] See *Open Access for Africa: Challenges, Recommendations and Examples,* United Nations ICT Task Force Working Group on the Enabling Environment, 2005, p. 152.
[105] Dr. Ennio V. Macagnano, 2006 Keynote "The Role of ICT in Design for All in South Africa" at http://dfasuomi.stakes.fi/EN/dfa2006/rovaniemi/programme/keynote_ennio.htm. See also NAP website at http://www.napsa.org/za/partners.htm.

them economically and to enable them to play a full, participatory role in society."[106]

Stakeholders of the NAP are affiliated with the South African Federal Council on Disability and government departments:

- The Office on the Status of Disabled Persons (OSDP), an umbrella Organization established in The Presidency and responsible for the coordination, monitoring and implementation of the Integrated National Disability Strategy;
- The Independent Living Centre (ILC), an NGO, operating as an integrated Resource Centre for Persons with Disabilities. It provides a community-based service as well as a display of commercially available equipment and other resources for persons with disabilities;
- The SA National Council for the Blind (SANCB), an NGO striving to meet the needs of all blind and partially sighted people of South Africa;
- The Deaf Federation of South Africa (DeafSA), an NGO which co-ordinates and facilitates services to the South African Deaf and hard of hearing communities;
- The National Council for Persons with Physical Disabilities in SA (NCPPDSA), an NGO promoting the maximum level of independence and integration of people with physical disabilities into the community and the prevention of the occurrence of physical disablement;
- The QuadPara Association (QASA) was established to assist quadriplegics by providing a range of highly specialized support services that are designed to promote and encourage their rehabilitation, community integration and independence; and
- The South African Federation for Mental Health (SAFMH)is a non-profit organization, which aims to act as a dynamic national movement, which serves as an effective resource to empower people to attain optimal mental health and quality of life in a just society, through its various services and programs.[107]

The web portal is part of the NAP initiative and supports the multilingual nature of South Africa in all eleven official languages. It seeks to serve as a one-stop shop for information, services and communications that supports stakeholders in the disability field including persons with disabilities, caregivers, the medical profession, and those offering services in this domain.[108]

Using a service center approach, services are provided from specific centers located in schools, clinics, hospitals and multi-purpose community centers. Each center contains accessible ICT equipment, such as screen reader software for persons with visual disabilities, speech recognition software and access for

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[106] *Ibid.*
[107] See "The Team" at http://www.napsa.org.za/partners.htm.
[108] See web portal at http://www.napsa.org.za/portal.

persons using wheelchairs. Each center is also staffed by interpreters and persons trained in ICT and disabilities, including persons with disabilities. The web portal allows information access and interactive communication on a 24 hour basis.[109]

B. Arab Region

In November, 2007, the first Arab Regional Conference on Sharing Experience on Best Practices in ICT Services for Persons with Disabilities was held in Cairo, Egypt. Participants included fourteen Arab countries: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Mauritania, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic and Tunisia. This conference resulted in the publication of the Cairo Declaration on Supporting Access to Information and Communication Technology Services for Persons with Disabilities.[110] As of June 2008, nine of these countries have signed the UN Convention on Rights of Persons with Disabilities.[111]

According to this conference Background Paper written by Dr. Ghassan Shahrour, the Eastern Mediterranean Region, like most regions of the world, does not have sufficient reliable information and statistics on the number of person with disabilities in each country. However, the author concludes that after taking into consideration World Health Organization estimates and other surveys, the number of persons with disabilities in the region is estimated to be about 40 million.[112]

The Cairo Declaration confirms that most countries of the region do not have statistics on the number of persons with disabilities as well as the type of disability. There is also an absence of annual surveys or reviews to inform statistics on the number of persons with disabilities. Moreover, the United

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[109] Ennio V. Macagnano, "A National Accessibility Portal for South Africa: Innovative application of ICT for Disability in the developing world" in *Assistive Technology: From Virtuality to Reality*, A. Pruski and H. Knops (Eds.), IOS Press, 2005.

[110] See website at link "Final Report" at www.ituarabic.org/2007/Disabilities. The Cairo Declaration is posted in both English and French.

[111] Countries that have signed the Convention are: Bahrain, Egypt, Jordan, Lebanon, Oman, Qatar, Sudan, Syrian Arab Republic and Tunisia.

[112] Ghassan Shahrour, "Background Paper" for Regional Conference on Sharing Experience on best practices in ICT services for persons with disabilities, Cairo, Egypt, 13 through 15 November 2007, at p. 5.

Nations and other international and regional organizations also do not have accurate statistics or data on persons with disabilities in the Arab Region.

The Cairo Declaration also confirms that Arab countries lack telecommunication policies and industries serving persons with disabilities. Access to ICT continues to be limited at a time when the number of persons with disabilities is increasing in the Arab Region.

It is believed that the percentage of persons with disabilities in the Arab Region ranges between 10% and 15% of the total population and that the percentage of relatives and other persons adversely affected by this group represents 40% of the population. At this time there have been significant efforts by non governmental organizations and civil society to address the problems and have resulted in success stories as demonstrated by presentations at the conference.[113]

The Cairo Declaration notes that the high percentage of persons with disabilities in the Arab Region represents a serious problem that negatively impacts sustainable development in the developing and the least developed countries. It notes that a reduced workforce causes low gross domestic product and national income. In addition, financial resources at the individual, family and country levels are depleted in order to meet the ongoing needs of persons with disabilities, such as food, clothing, treatment, compensatory assistive devices and special equipment. A national plan engaging government, nongovernmental organizations, civil society and specialized organizations would enable persons with disabilities to utilize ICT and become productive members enriching their society and enjoying inclusion in social life.

Finally, the Cairo Declaration calls for twelve action steps. These steps are briefly outlined for the purposes of this paper as follows:

1. The Cairo Conference calls upon the governments of Arab countries to:
    a. Draw up policies and comprehensive plans;
    b. Carry out a survey and produce periodical statistics on persons with disabilities;
    c. Study and implement the UN Convention on Rights of Persons with Disabilities;
    d. Invite Arab countries that have not done so to sign the UN Convention on Rights of Persons with Disabilities; and

[113] One success story was presented by the Parents Association of People with Visual Impairment (PAVI) in Egypt. They were engaged in a partnership ICT program with the Ministry of Communication and Information Technology, IBM, USAID and universities, nongovernmental organizations, national libraries and schools. The project goal was to make ICT accessible to persons with disabilities in Egypt, and thereby enhance their opportunities to learn, live and work independently. Some of the significant outcomes included the establishment of the first certified IBM computer centre for persons with disabilities in the Arab Region and twenty seven certified trainers. See Document 37 presented by Mrs. Doaa Mabrouk of PAVI.

e. Exempt from all taxes and customs duties all ICT devices and assistive technology, including screen reader software for persons with visual disabilities and disability aids for persons with hearing disabilities.

2. The Cairo Conference calls upon the Secretariat General of the League of Arab States and the specialized ministerial councils to:
   a. Request the Arab League Secretary General to develop comprehensive working mechanisms to care for persons with disabilities in all areas, including social, health, educational, cultural and sports;
   b. Call on the Arab League Secretary General to direct competent bodies to encourage specialized ministerial councils to enroll permanent items on their agenda tackling issues of persons with disabilities;
   c. Invite the Council of Arab Ministers of Telecommunications and Information to facilitate access of persons with disabilities to ICT committees;
   d. Call on the Council of Arab Ministers of Health, in cooperation with WHO, to conduct a comprehensive survey to identify number of persons with disabilities in each Arab country as well as the causes and types of needs; and
   e. Call upon the Council of Arab Ministers of Housing to establish disability-friendly specifications as a condition for granting building licenses to new facilities.

3. The Cairo Conference calls upon the Ministry of Telecommunications and Information of Egypt to consider the launch of a website for the conference so that all Arab states can communicate and exchange their experience and success stories.

4. The Cairo Conference calls upon the Ministries of Telecommunications and Information in the Arab Countries to
   a. Provide technical and financial support to nongovernmental organizations and schools for persons with disabilities; and
   b. Assist these organizations in obtaining state of the art ICT and in providing the training to use and maintain the ICT.

5. The Cairo Conference calls upon the Ministries of Education in the Arab countries to:
   a. Prepare special educational curriculum for students with disabilities using ICT; and
   b. Consider the relevant experience of the UN Educational, Scientific and Cultural Organization (UNESCO), the Arab League Educational, Scientific and Cultural Organization (ALESCO) and the Islamic Education, Scientific and Cultural Organization (ISESCO).

6. The Cairo Conference calls upon the Telecommunication regulatory authorities in Arab countries to:
   a. Set up policies, laws and regulations on communications for persons with disabilities at affordable rates compatible with limited income; and
   b. Require employment of a certain percentage of persons with disabilities in ICT services as a condition in the licensing of private sector companies.

7. The Cairo Conference calls upon Telecommunication companies, service providers and internet companies in Arab countries to:
   a. Offer special rates, service, contracting and bill settlements for persons with disabilities; and
   b. Recruit a certain percentage of persons with disabilities in such companies.

8. The Cairo Conference calls upon Software companies in Arab countries and throughout the world to give due attention to designing user-friendly Arabic software for persons with disabilities in the Arab countries.

9. The Cairo Conference calls upon the Arab private sector to communicate with government bodies, international organizations, civil society and individuals to support projects directed to persons with disabilities and to enable affordable ICT.

10. The Cairo Conference calls upon ITU and WHO to
    a. Call on the ITU communication development officer to collaborate with WHO to convene this conference annually;
    b. Launch accessible and interactive websites and e-forums to address the needs of persons with disabilities and to disseminate success stories in all countries;
    c. Prepare regional Arab projects to develop assistive software and equipment and ICT for persons with disabilities; and
    d. Call upon the ITU Arab Regional Office and WHO Regional Office for the Eastern Mediterranean to translate the relevant report into English and French, to circulate it to relevant parties, to follow up implementation, and to issue a user-friendly electronic version of the report for persons with disabilities.

11. The Cairo Conference makes General Recommendations that:
    a. All concerned parties in the Arab states should support research and development projects for assistive technologies, devices and facilities;
    b. Relevant parties in the Arab states should set up criteria, standards and specifications to control the quality of services, software and commodities for persons with disabilities;

c. Relevant training and rehabilitation bodies in the Arab states should set academic and professional training courses for persons with disabilities, including ICT; and
d. Relevant parties in the Arab states should adopt, in coordination with UNESCO, ALESCO and ISESCO, a regional initiative to devise a unified sign language for the Arab region.

12. The Cairo Conference calls for Coordination and Follow-up Mechanism:
    a. National entities concerned with the affairs of persons with disabilities in the Arab states should circulate the report of the meeting to all relevant national parties;
    b. National entities should form ad hoc committees to follow upon implementation as outlined in the report, committees should comprise of members with disabilities, and a report should be submitted to the forthcoming conference to be held by the end of 2008;
    c. All participating bodies and individuals should operationalize the “Cairo Declaration” and follow up on implementation; and
    d. The ITU Arab Regional Office and WHO Regional Office for the Eastern Mediterranean should follow up implementation of the “Cairo Declaration” in coordination with Sheikha Hessa bint Khalifa bin Ahmed Al-Thani, United Nations Special Rapporteur on Disability, including preparation for the next conference.

C. Asia Pacific

1. Tsunami Preparedness and ICT

One of the regional responses to the December 2004 Tsunami that took the lives of many people was the International Conference on Tsunami Preparedness of

Persons with Disabilities in Thailand in January 2007. It was co-hosted by DAISY Consortium; Asia-Pacific Development Center on Disability; the Council of Disabled People of Thailand; National Electronics and Computer Technology Center, Thailand; Thailand Association of the Blind, DAISY For All Project Thailand, Asian Disaster Preparedness Center; and Thai Autism Vocational Center.

The conference established an international networking for the promotion of tsunami preparedness of persons with disabilities in the context of the World Summit on the Information Society (WSIS) Plan of Action. Information sharing was provided concerning the following:

1. Needs of persons with disabilities for tsunami preparedness with attention to individual preparedness on understanding tsunamis, accessible communication channels for warning, and planning/confirming evacuation routes;
2. Best practices of tsunami preparedness promotion activities that meet the needs of persons with disabilities;
3. Ongoing tsunami disaster prevention/mitigation initiatives at local/international level; and
4. Initiatives of bridging the digital divide in disaster preparedness of persons with disabilities as the implementation of WSIS Plan of Action.[114]

As a result, the Phuket Declaration on Tsunami Preparedness for Persons with Disabilities was issued and stated that tsunami disasters can be prevented through:

1. Sharing of knowledge and best practices on tsunami and other disasters;
2. Strong commitment and active participation for contribution of all stakeholders including persons with disabilities to eliminate the loss of lives;
3. Local community-based initiatives for disaster preparedness;
4. Infrastructure building including tsunami early warning system at all levels to disseminate timely disaster warning to all people concerned; and
5. Building of disability friendly infrastructure addressing accessibility issues in all phases of disaster management.[115]

The Phuket Declaration went on to state that ICT development, including assistive technologies and universal design, would contribute to successful disaster preparedness development and would meet the diverse needs of all people. It also stated that ICT development should be based on international

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[114] See *Report of the International Conference on Tsunami Preparedness of Persons with Disabilities in Thailand* at http://www.dinf.ne.jp/doc/english/prompt/ws070112.html.
[115] *Phuket Declaration on Tsunami Preparedness for Persons with Disabilities*, Adopted March 1, 2007, at http://www.dinf.ne.jp/doc/english/prompt/ws070112_2.html.

standards that are open, non-proprietary and with a proven track record for accessibility.

Finally, the Phuket Declaration recommended that an educational and training center on tsunami and other disaster preparedness should be established. It also recommended that all aspects of the center should be inclusive and accessible to persons with disabilities, including the physical infrastructure and training materials.

The tsunami conference activities and the Phuket Declaration represent an improvement to the findings on communication accessibility of the *International Disability Rights Monitor, Regional Report of Asia 2005*.[116] The report stated that few countries have systems allowing persons with disabilities to communicate with authorities in case of emergencies. It noted that in most countries, people with hearing loss must rely on family members to communicate with authorities. Unfortunately, it also noted that although China and Japan have specific information for responding to needs of persons with disabilities in times of emergency, the information is targeted for use by volunteer organizations and NGOs and is not included in the government national disaster or emergency plans.

One major challenge reported in the *Disability Rights Monitor* was the overall low priority generally given to disability issues in most of the countries resulting in scarce official records. It also noted that the impact of ICT remains limited due to cost and training issues with alternative format materials often only available in major cities and not rural areas. As for news broadcasts, closed captioning or sign language interpretation is limited, if available, and is often only in large cities. Lastly, although most countries have some requirements for access to the built environment, enforcement and awareness is generally lacking.[117]

2. ICT Regional Survey

The Biwako Millennium Framework for Action towards an Inclusive, Barrier-free and Rights-based Society for Persons with Disabilities in Asia and the Pacific (BMF) was adopted by 28 governments at the conclusion of the Asian and Pacific Decade of Disabled Persons in October 2002. The BMF is the regional policy guideline for the Asian and Pacific Decade of Disabled Persons, 2003-2012. It sets out a rights based approach to achieving seven priority areas for action to progress rights and addresses the significant poverty faced by people with disability in the Asia Pacific region.

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[116] Center for International Rehabilitation, *Disability Rights Monitor, Regional Report of Asia 2005.* A project collaboration between the Center for International Rehabilitation, Disabled Peoples International and many other groups; online at http://www.conventionyes.org/content.cfm?id=5F5A&memberMenuid=0

[117] *Ibid.* at Executive Summary.

An ICT regional survey supporting the Biwako Millennium Framework was recently completed in August 2007.[118] Due to space constraints in this paper, only a few findings from the replies of 20 governments can be discussed and the reader is encouraged to review the report once it is online. In general, most of the governments report active promotion of ICT for persons with disabilities.

According to the Executive Summary, the types of barriers reported by governments on the development of an environmental infrastructure for using ICT are: lack of funding, training, knowledge of the needs and opportunities and affordable ICT materials; high cost of ICT related equipment and assistive technologies; lack of organization with a fund to take its initiative; and no policy on ICT infrastructure. NGOs reported the following barriers:

1. Unstable situation and poverty of the country;
2. Lack of financial resources, high cost of assistive devices and lack of knowledge on ICT information;
3. No availability of ICT equipment and ICT training;
4. No physical accessibility of the IT institution;
5. Lack of awareness on ICT for persons with disabilities by governments and users themselves;
6. Lack of abilities to access information by persons with disabilities;
7. Lack of government support for persons with disabilities to utilize ICT; and
8. No affordable telecommunication services and network in not only rural area, but also urban areas.

One interesting finding was that 6 countries reported that they had ICT survey data on ICT usage by persons with disabilities: Australia, Bhutan, Japan, Republic of Korea, Mongolia, and New Zealand. And finally, 12 countries reported that they had regional working groups to develop standards in ICT telecommunications and broadcasting for persons with disabilities: Australia, China, Hong Kong China, Japan, Republic of Korea, New Zealand, Pakistan, Thailand and Turkey.

C. Americas

[118] ICT Task Force on Disability-related Concerns, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), *Report on Access to Information and Communication for persons with disabilities with the special reference to the Biwako Millennium Framework,* August 2007; to be posted at http://www.dinf.ne.jp/doc/english/index_e.html. The author thanks Nomura Misako for providing the survey in advance of the posting online. For more information, see ESCAP, *Disability at a Glance: A Profile of 28 Countries and Areas in Asia & the Pacific, 2006,* at *www.unescap.org/esid/psis/disability/publications/glance/disability%20at%20a%20glance.pdf*

The International Disability Rights Monitor 2004 Regional Report of the Americas provides a snapshot of accessibility issues in this 24 country report. This paper highlights some of the findings. It reports that if you are blind in the Americas, you will not find a Braille copy of the constitution in more than 60% of the countries surveyed, and that only one in three have national news that is captioned. It also reports that one in five of the countries have a wheelchair accessible bus system in the capital city and that fewer than half of the countries in the region have an accessible post office in their capital city. Taking a look at the largest employers in each of the countries, it also found that less than one in three have policies forbidding discrimination against people with disabilities and only half of the countries have training available to physicians on how to care for persons with disabilities.[119]

With respect to accessible ICT, the United States and the Ontario province of Canada have disability rights laws that impact ICT. In the U.S., the most significant impact has been the 1998 Amendments to the Rehabilitation Act that prohibits federal agencies (with limited exceptions) from developing, purchasing, using or maintaining ICT that is inaccessible to persons with disabilities. Also known as Section 508, it is broad in scope and requires ICT product conformance, with some exceptions, to the U.S. Access Board Electronic and Information Technology Accessibility Standards.[120] Although a federal procurement law, it has also been adopted by many States in different forms as a State ICT procurement mandate.[121]

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[119] Center for International Rehabilitation, *Disability Rights Monitor 2004, Regional Report of Americas.* See Executive Summary; http://www.conventionyes.org/content.cfm?id=5F5A&memberMenuid=0

[120] See U.S. Access Board Section 508 webpage at http://www.access-board.gov/508.htm.

[121] See Georgia Tech Research Institute State IT Database at http://accessibility.gtri.gatech.edu/sitid/stateLawAtGlance.php.

In Canada, the province of Ontario has enacted the Accessibility for Ontarians with Disabilities Act, 2005, which is broad in scope in that it impacts all goods procured by both the public and private sector. The regulatory support defining the ICT accessibility standards are currently being developed. It builds upon the Ontarians with Disabilities Act, 2001.[122]

D. Europe

As discussed above under Section III concerning Universal Service obligations and the implementation of ICT barrier removal action plans, there is significant activity in the region. One NGO that monitors the situation is the European Disability Forum (EDF). It represents persons with disabilities throughout the European Union and other European authorities. According to their Annual Report, EDF is working with the European Commission to develop standards for public procurement in ICT.[123]

V. Best Practice Examples in Policy, Regulatory or Legal Framework

A. Sweden- "Total Conversation"

[122] For more about the Ontario disability access laws, see http://www.mcss.gov.on.ca/mcss/english/pillars/accessibilityOntario/questions/.
[123] European Disability Forum, Annual Report 2004-2005, at http://www.edf-feph.org/en/about/annual_rep/anrep.htm.

Total Conversation is an ITU service description in ITU-T Rec. F.703 that covers videophone with real time text. According to the description posted at the ITU-T website, under work done by Study Group 16 on Accessibility, it is an audiovisual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations. It is not only useful for persons with disabilities but also for anyone requiring textual back-up, technical data, language translations, verbal or signed conversations.[124]

Allan eC was the first product to implement Total Conversation in the IP world and is widespread on the accessibility market in Sweden. It is procured by the Swedish Handicap Institute for the accessible communication market in Sweden and by the Swedish Labour Authorities and Social Insurance system. According to Gunnar Hellström, the Total Conversation concept has been submitted as a recommendation to the U.S. Section 508 refresh committee that is discussing revisions to the ICT accessibility standards.

B. Netherlands, Sweden, and United States- DAISY

The Digital Accessible Information System (DAISY) is an open, interoperable and non-proprietary contents/user interface standard that can be used to create accessible content. Although originally developed to benefit people unable to

[124] See ITU-T SG 16 Work on Accessibility, Total Conversation, at http://www.itu.int/ITU-T/studygroups/com16/accessibility/conversation.html.

read print due to a disability, it has broad applications as a best practice in its use for Digital Talking Books; education and training materials; HIV/Disaster prevention tools; and publication tools for indigenous languages.

DAISY is currently deployed by governments worldwide such as the U.S. Library of Congress,[125] as implementation for the U.S. National Instructional Materials Accessibility Standards,[126] at FNB Netherlands, the largest library for the blind in the Netherlands,[127]and at the TPB Swedish Library of Talking Books and Braille.[128] In general, DAISY enables organizations to:

1. Produce a Digital Talking Book that enables a person to navigate it in a way comparable to how a print book would be used. For example, readers can examine the book by page, section, or chapter, or use a table of contents or an index. It can be accomplished by creating a structured text file integrated with a human-narrated audio file;
2. Synchronize an electronic text file with an audio file to provide readers with the choice to examine the text and/or listen to the audio version of it;
3. Generate an electronic Braille file from the electronic text used to create the DAISY book; or
4. Produce a structured digital "text-only" document which can be read with a DAISY software player in combination with a Braille display or speech synthesizer.[129]

[125] See U.S. Library of Congress website at http://www.loc.gov/nls/reference/factsheets/audiobkplayers.html.
[126] See NIMAS website at http://nimas.cast.org/.
[127] See background information at http://www.library.geac.com/page/VubisSmartatFNB_LIB.html.
[128] See TPB Swedish Library website at http://www.tpb.se/english/.
[129] See DAISY website at http://www.daisy.org/about_us/g_faq.asp

C. United States- Section 508 Accessible ICT Procurement

Another best practice is to mandate by law the procurement of accessible ICT and at the same time tie the procurement to concrete accessible ICT technical design standards of functionality for product conformance. As discussed earlier, the U.S. Section 508 legislation requires the procurement of accessible ICT with some exceptions. This law has had a ripple effect not only in the U.S. where States have also legislated Section 508 as a law or policy, but it has also had an impact on industry. Although the law does not require businesses to develop accessible ICT, businesses who want to sell to the U.S. government must now address accessible design in their product design. This best practice law has created a marketplace incentive for accessible ICT. It also means that businesses can challenge the award of a government contract to a competitor if they believe their product is more accessible. Businesses can now recover research and development costs because accessibility is a significant factor in competition.

The Electronic and Information Technology Accessibility Standards[130] cover the following areas:

- Software applications and operating systems;
- Web-based Intranet and Internet information and applications;
- Telecommunications products;

[130] U.S. Access Board, 36 CFR Part 1194 at http://www.access-board.gov/sec508/standards.htm.

- Video and multimedia products (including television displays and computer equipment with display circuitry that receives, decodes and displays broadcasts, cable, videotape and DVD signals);
- Self contained, closed products (having embedded software such as information kiosks, information transaction machines, copiers, printers, calculators and facsimile machines); and
- Desktop and portable computers.

The Standards also include gap provisions for products that may not be designed to the technical standards but rather incorporate new methods, design or technologies to achieve accessibility. In addition, the Standards include a provision for Information, Documentation and Support requirements, specifically:

- Product support documentation provided to end-users shall be made available in alternate formats upon request, at no additional charge;
- End-users shall have access to a description of the accessibility and compatibility features of products in alternate formats or alternate methods upon request, at no additional charge; and
- Support services for products shall accommodate the communication needs of end-users with disabilities.

Each federal agency has a Section 508 Coordinator residing in their Chief Information Technology Office who supports the agency Section 508 effort. The General Services Administration provides technical assistance federal-wide regarding Section 508 compliance and procurement of accessible ICT. As discussed earlier, the Buy Accessible Wizard is a helpful tool for compliance.

VI. Potential Role of Private Sector in Meeting ICT Accessibility and Service Needs

Accessible ICT and service needs cannot be met if the private sector is not incorporating accessible design in their product and service development cycles and has no incentive to do so. It also cannot occur without significant private sector financing. However, governments can assist in correcting accessible ICT market failures and encourage competition such as the U.S. Section 508 effort. There are many examples of government and private sector model partnerships where the private sector has played a significant role in investing in ICTs and governments have encouraged this investment. But the difference today is that both the private sector and the government must work together with consumer stakeholders to ensure that barriers are not being erected for accessible ICT.

Partly driven by the U.S. Section 508 effort, the private sector is engaged in ongoing work to address the accessible design of ICT. There are many industry efforts underway and unfortunately this paper cannot address all of them to the fullest due to space limitations. However, Nokia, Motorola, Microsoft and IBM are highlighted for your review.

For example, Nokia has been involved in inclusive product design and product development for over a decade. As discussed at the Nokia website, the award-winning Nokia loopset was the first inductive coupling loopset in the wireless industry that enabled customers with telecoil-equipped hearing aids to use digital handsets without electromagnetic interference. Nokia was also the first to include text-to-speech software so that blind and low vision customers could navigate the features of their handsets.[131]

Motorola has also developed products that include hearing aid compatibility, voice recognition and text to speech features. Motorola is a past member of the Board of Directors of the American Foundation for the Blind (AFB) and has contributed to AFB outreach and education programs.[132]

In addition, Microsoft has increasingly added accessibility features to its products and services and maintains an Accessibility website containing extensive information on accessibility product solutions, tutorials and training and case studies with business resources. Their website includes extensive accessibility information not only for consumers but also for developers. One helpful offering is their free monthly newsletter entitled ***Accessibility Updates***.[133]

And finally, IBM has also had a long history of addressing accessibility solutions in ICT. Recently, in July 2007, Aaron Leventhal, a senior engineer in IBM's Accessibility Architecture Development, was tapped the winner of the Google-O'Reilly Open Source Award for Best Accessibility Architect. This award was for turning Firefox into the "preferred accessibility solution going forward."[134] Also, in March 2007, IBM announced the launch of the Accessibility Common Courseware Exchange for Software studies repository. This initiative builds a worldwide repository of materials that will enable student developers to make software more accessible to persons with disabilities and older adults. It is part of IBM's ongoing effort to "promote universal access of software applications, web sites and documents."[135]

Two examples of private sector/government collaborations are the Global Initiative for Inclusive Information and Communication Technologies and the ICT Policy Support Programme 2007.

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[131] See Nokia Connecting People website on Accessibility at http://www.nokia.com/A4359264.
[132] See Virginia Business Leadership Network (BLN) publication on Arizona BLN at http://www.vabln.org/downloads/Motorola_Best_Practices_web.pdf.
[133] See Microsoft Accessibility website at http://www.microsoft.com/enable/.
[134] See Google Code Update at http://google-code-updates.blogspot.com/2007/07/drum-roll-winners-of-2007-google.html.
[135] See IBM Press release at http://www-03.ibm.com/press/us/en/pressrelease/21275.wss.

A. UN G3ict- The Global Initiative for Inclusive Information and Communication Technologies[136]

The Global Initiative for Inclusive Information and Communication Technologies (G3ict) is a flagship advocacy initiative of the United Nations Global Alliance for ICT and Development (UN-GAID). Launched in December 2006 by the Wireless Internet Institute (W2i), G3ict is a public-private partnership dedicated to facilitating the implementation around the world of the digital accessibility agenda defined by the Convention on the Rights of Persons with Disabilities.

G3ict was incorporated in 2008 as a 501(c)(3) not for profit U.S. corporation in the State of Georgia, where it maintains an office in Atlanta. G3ict's key constituents include policy makers, ICT industries, international standards development organizations and civil society. Leading institutional participants include:

- International Telecommunications Union;
- United Nations Global Alliance for ICT and Development;
- United Nations Institute for Training and Research;
- National Council on Disability;
- European Commission; and
- Global Partnership for Disability and Development.

G3ict mission priorities are to:

- Raise awareness on effective public policies, private sector initiatives and standardization references;
- Facilitate the sharing of solutions and good practices;
- Foster harmonization and standardization; and
- Support policy makers with capacity building programs and benchmarking.

Support for policy makers includes the "Toolkit for Policy Makers" discussed in Chapter III and on going work on the Digital Inclusion Index research project. The Index will evaluate and provide national rankings on how accessible and inclusive ICTs are in a given country. It will assist policy makers in understanding the basic building blocks of ICT accessibility in a country. The Digital Inclusion Index will promote the Toolkit by covering the countries that have ratified the Convention in addition to three "benchmark" countries with

[136] See G3ict Fact Sheet and portal at www.g3ict.com.

significant achievements: one large, one medium and one small. Initially, the Index will include thirty countries.

B. EU ICT Policy Support Programme (ICT PSP)

One of the main financial instruments of i2010, the ICT PSP will run from 2007 to 2013 with a budget of 730 million €. It aims to stimulate innovation and competitiveness through a better use of ICT in the products, services and processes. The first call for proposals is now open and Theme 2: ICT for Accessibility, Ageing and Social Integration, supports a pilot action focusing on the accessibility of Digital TV for all, including persons with disabilities and older adults. One of the expected impacts is the full mainstreaming of the Design for All process to ensure accessibility of future digital Audio Visual products and services as well as sustainable business models for industry to stimulate investments.[137]

VII. Conclusion

The accessible design of ICT is in its infancy, given the call for university accreditation of Universal Design curriculum in the United States as early as 2004 and the call for national laws in the comprehensive United Nations Convention on the Rights of Persons with Disabilities that opened for signature just last year. Even technical standards for accessible design are relatively new and still being determined as new technologies emerge. Although the United States Section 508 procurement law was enacted in 1998, it did not take effect until 2001 after national accessible design standards were promulgated. The ICT industry is still engaged in responding to this legislation that requires their product development cycles to incorporate accessible design if they sell to the United States government.

ICT availability, affordability and accessibility, along with capacity building for policy formulation and accessible ICT implementation issues continue to be

[137] See European Commission Information Society Thematic Portal on the ICT Policy Support Programme at http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm.

serious concerns for persons with disabilities around the globe. Even Universal Service obligations are being impacted by technological innovations. Perhaps technological convergence will bring private sector solutions for overcoming barriers for persons with disabilities.

We are at this juncture today because ICT has rapidly advanced ahead of public policy to the point that it is readily apparent when a person with a disability cannot fully participate in society. This paper briefly highlights the systemic changes underway that involve all sectors of society and identifies some of the global regional challenges concerning barrier removal for access. The process started with sharing of experiences and information on best practices, dealt with issues of availability and affordability that addressed three sectors: 1) Accessible Technologies, products and Services including Interoperability and Standards 2) Regulatory and Policy Frameworks and 3) Technical, Social and Economic considerations for assistive devices and related software.

This was followed by identification of best practices and development of tools and resources for use in the next phases. Two workshops/seminars have already organized, while a third takes place in July 2008. At the same time, work is also in progress within Question 20 under the ITU-D Study Group 1 to develop Guidelines on implementing ICTs for persons with disabilities and collecting statistics on persons with disabilities from Member States for on-going support for capacity building. Work is also in progress to develop an on-line toolkit to be used for training policy makers. This tool will enable mainstreaming of ICT accessibility issues to be implemented at country level and support capacity building to equip countries with the required skills to manage this process of inclusion. This process is aimed at providing countries with best practices, tools, resources and collaborative partnership opportunities for stakeholders, including consumers, business and government, to enable countries to meet their obligations under the UN Convention and WSIS objectives as well as Resolution 56- WTDC-06 through Question 20/1. ITU has also launched the Dynamic Coalition on Accessibility and Disability bringing together work from all the three ITU sectors to facilitate interaction between relevant bodies involved in accessible ICT activities.[138] It is expected that this background document may be a way forward to address the challenges of meeting ICT accessibility for persons with disabilities so that everyone can benefit from ICT innovation and the realization of equal opportunities for all can be achieved.

[138] See Dynamic Coalition on Accessibility and Disability website at http://www.itu.int/themes/accessibility/dc/aims.html.