Universal Design and Print Disability - DAISY Technology and Accessible Multimedia

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Abstract:

The paper discusses the development of accessible multimedia standards development and their applications as good practice of universal design implementation. Internationally agreed instruments to promote universal design is discussed for international cooperation in the Library Field.

Keywords: DAISY, EPUB, H.702, Convention on the Rights of Persons with Disabilities, SDGs

Introruction

Accessibility requirements sometimes conflict each other.

Audio books does not work for deaf people just like the fact that sign language video without sound does not accommodate blind people at all.

Large print on paper is not accessible for totally blind people and braille books may not work for many of those who became blind at their adulthood.

Caption services may guarantee access to communication of those who became hard of hearing at their adulthood but in many case deaf people have difficulties to participate without sign language interpretation.

"Easy read" and "plain language" are recommended to people with intellectual disabilities but our schools for the blind in Japan supports increasing number of visually impaired students with intellectual disabilities and other developmental disabilities such as dyslexia.

Deafblind people have diverse of communication channels based on their social context even among those who have the same medical profiles.

We find higher ratio of persons with disabilities among indigenous peoples who are living with languages which sometimes do not have written scripts.

Thanks to Helen Keller and Anne Sullivan and others, our mindset has been shifted from disabilities to abilities. However, we are going to achieve Sustainable Development Goals by 2030 bearing mind of "no one left behind". We, library field, must find the best sustainable and affordable ways to guarantee equitable access to information for knowledge and culture for literary everybody including persons with diverse of disabilities.

Turning point of United Nations main stream as regard to "Persons with Disabilities"

"Persons with Disabilities" as well as "Universal Design" were ever first mentioned by the World Summit on the Information Society, Geneva, 2003, in the official outcome documents of United Nations Conferences

The Millennium Development Goals (MDGs) did not mention persons with disabilities at all. Although "protection of the vulnerable" was mentioned in the MDGs, issues around "equitable access" was completely ignored.

This ignorance of UN Conferences continued until when Preparatory Conferences (PrepCon) of the World Summit on the Information Society (WSIS) agreed upon the inclusion of a text on "universal design". The WSIS preparatory conferences had been a battle field to address equitable access to information and knowledge of persons with disabilities in the information society so that ICT development may realize the "digital opportunities".

We, WSIS Disability Caucus, put forward accessibility issues to be included in the draft outcome documents. In many case it was well understood and accepted by the government bureau. However, NGOs representing women, children and indigenous peoples immediately proposed to add specific languages representing their constituencies to the text following "persons with disabilities". As a result, the text became very lengthy and some of government delegates proposed to cut it short. "The vulnerable" was the language used in the MDGs and no specific language refers to persons with disabilities: this was mentioned by some diplomats as a justification to cut it short.

After a few rounds of such process, we proposed "universal design" for everybody without mentioning "persons with disabilities" through Thai government delegates backed up by Mexico, Japan and other government delegates. The proposal was unanimously supported by the PrepCon3 on 13th November 2003. Once "universal design" was accepted by the diplomats, diplomats themselves added the language "persons with disabilities" in the final outcome documents:

13. In building the Information Society, we shall pay particular attention to the special needs of marginalized and vulnerable groups of society, including migrants, internally displaced persons and refugees, unemployed and underprivileged people, minorities and nomadic people. We shall also recognize the special needs of older persons and persons with disabilities.

25. The sharing and strengthening of global knowledge for development can be enhanced by removing barriers to equitable access to information for economic, social, political, health, cultural, educational, and scientific activities and by facilitating access to public domain information, including by universal design and the use of assistive technologies.

30. The use of ICTs in all stages of education, training and human resource development should be promoted, taking into account the special needs of persons with disabilities and disadvantaged and vulnerable groups.

(Document WSIS-03/GENEVA/DOC/4-E, 12 December 2003)

Convention on the Rights of Persons with Disabilities

Article 2 of the Convention on the Rights of Persons with Disabilities (CRPD) stipulates key concepts for equitable access of persons with disabilities such as "communication", "language", "discrimination on the basis of disability", "reasonable accommodation" and "universal design".

The 2nd Second Global Forum on Disability in the Information Society was held as one of the official event organized by the Disability Caucus during the WSIS 2005 in Tunis.[i]
Here we had more concrete texts of the outcome documents which provided most comprehensive and advanced thinking on "universal design" and "persons with disabilities":

18. 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.
("Tunis Commitment" Document WSIS-05/TUNIS/DOC/7 -E 18 November 2005)

Para 90 e) paying special attention to the formulation of universal design concepts and the use of assistive technologies that promote access for all persons, including those with disabilities.
("Tunis Agenda for the Information Society" Document WSIS-05/TUNIS/DOC/6(Rev.1)-E 18 November 2005)

We were extremely fortunate to have Mr. Monthian Buntan among WSIS Disability Caucus who was at the same time head of the Thai Delegation to UN for CRPD. Through Mr. Buntan, the outcome of the WSIS 2005 directly reflected to the process for formulation of the texts of CRPD adopted in June 2006.

Universal Design in CRPD Context

Article 2 of the CRPD defines "universal design" as follows:

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

Article 4 stipulates obligations of the government:

1. (f) To undertake or promote research and development of universally designed goods, services, equipment and facilities, as defined in article 2 of the present Convention, which should require the minimum possible adaptation and the least cost to meet the specific needs of a person with disabilities, to promote their availability and use, and to promote universal design in the development of standards and guidelines

Meeting the needs of everybody including persons with disabilities with minimum adaptation should result in the best cost performance to guarantee equitable opportunities for

all. CRPD reiterates the best possible measures to implement equitable access to information and communication for sharing knowledge and culture with minimum cost; promoting universal design in the development of standards and guidelines.
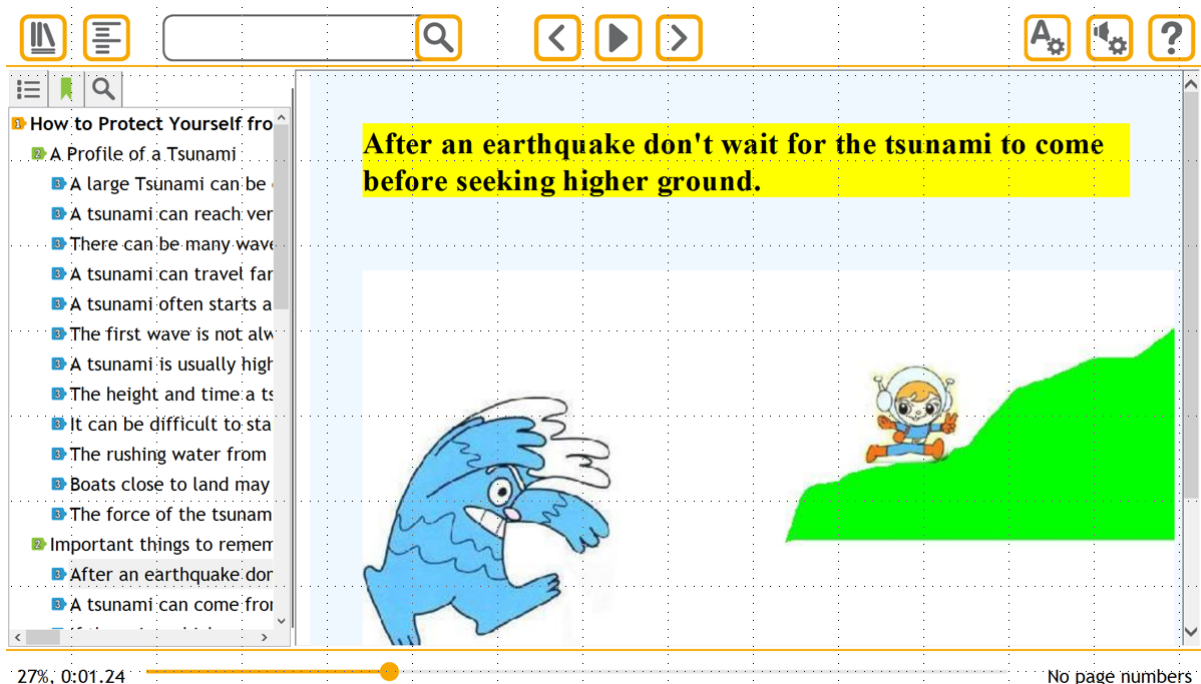
Development of DAISY standards

Open and non-proprietary standards and guidelines have been contributing to share information, communication, knowledge and culture on the internet.

Web Contents Accessibility Guidelines (WCAG) is a good example of sharing best know-how to make web-site accessible with minimum cost. WCAG 2.0 became ISO/IEC 40500:2012 standard. WCAG 2.1 is a "Proposed Recommendation".

Digital Accessible Information System (DAISY), an open, non-proprietary, free of charge international standard for accessible reading materials has been developed and maintained by the DAISY Consortium. DAISY Consortium is a not-for-profit international non-governmental organization established under swiss law.

The DAISY Consortium was originally founded by institutional members of the Section of Libraries for the Blind/IFLA in 1996. Currently DAISY 2.02 (2001) and DISY 3 (2005) are spread around the world as standards for accessible reading materials in alternative format.

Accessible multimedia in DAISY format easily accommodate synchronization of human narration and text/graphics appear on the screen. It may take advantage of development of text-to-speech engines in different languages and automatic braille translation technologies on the fly as they become available.

Most of the playback tools may play both DAISY 2.02 and DAISY 3 and nowadays EPUB. DAISY 4 development has been completely merged with EPUB 3+ development.

EPUB Accessibility 1.0 in association with EPUB 3.2 being developed under W3C in collaboration with the DAISY Consortium is going to be the best born accessible e-publishing standards for publishers.

The DAISY Consortium has been identifying needs of persons with print disabilities to develop use cases of the standard based around existing technology standards as much as possible for the sustainability of the DAISY Standards. When a missing pieces of technology standards are identified, the DAISY Consortium worked within the W3C. The Synchronized Multimedia Integration Language (SMIL) is one of those works of the DAISY Consortium. The DAISY Consortium contributed a lot to develop SMIL 3.0 (2008) which is now supporting text-audio synchronization of EPUB. With e-book standards development approach, the DAISY Consortium is successful to create millions of titles in accessible alternative format across the world. Being developed based around existing standards, books in DAISY 2.02 format has been produced and used since 2001 and still working today. This is the best benefit of international open standards approach versus development of applications for certain groups of books.

Proven track record of DAISY standards

The DAISY Consortium and its members around the world were the core of the Disability Caucus of WSIS who hosted the Global Forum on Disability in the Information Society in Geneva (2003) and Tunis (2005). Mr. Buntan was one of the Assistant Project Managers of the DAISY for All Project (DFA). Mr. Dipendra Manocha, who is leading Capacity Development Project of the Accessible Books Consortium was another Assistant Project Manager of DFA.

As such, the DAISY Consortium, a spin-off of an IFLA Section which is called LPD now, has been developing standards for accessible multimedia defined in the Article 2 of CRPD, DAISY and EPUB, with proven track record of supporting needs of wide range of persons with print disabilities which resulted in the international legal concept of persons with print disabilities set out by the Marrakesh Treaty.

The DAISY Consortium received World Telecommunication and Information Society Award of ITU in 2008.

On 11th March 2011, we lost more than 20,000 lives by Earthquake and Tsunami in Japan. However, the people who regularly drilled tsunami evacuation following the tsunami evacuation manual in DAISY format since 2005, eventually lead the evacuation in the community immediately after the quake which resulted in no human casualties in Urakawa Town hit by tsunami in spite of US$ 3,000,000 equivalent property damages.

Urakawa Bethel's House, a self-help group of 160 members with severe psycho-social disabilities living in communities in Urakawa Town has been suffering from frequent earthquakes with fears of tsunami because some of the group homes were located at the area 4 m above the sea level just in front of the sea.

With the Japanese Government Research Grant for research on easy to understand manuals to prepare for disasters and emergency situations faced by persons with intellectual and/or psycho-social disabilities, I had an opportunity to coordinate an international research and development team consisting of DAISY Consortium, W3C SMIL Working Group, US based researchers around Autism Society of America, Japanese Autism Community, Urakawa Bethel's House, Urakawa Town Authority, Urakawa Town community autonomous groups, the Research Institute of the National Rehabilitation Center for Persons with Disabilities and Assistive Technology Development Organization (ATDO).

Major outcome of this international R&D group includes contributions to WSIS 2005 in Tunis, SMIL3.0, Urakawa Project in the DAISY Consortium which resulted in the Media Overlays in EPUB3, and contributions to regular evacuation drills of the members of the Bethel's House conducted since 2005 using the manual we contributed.

The good practice of the Bethel's House members has been highly recognized internationally as a showcase of disability inclusion of disaster risk reduction which changes mindset on persons with disabilities as liability at emergencies. With the active participation of ATDO, a member of IFLA and the DAISY Consortium, in the preparatory process of the United Nations 3rd World Conference on Disaster Risk Reduction (3WCDRR) to make the conference accessible, the Disability Group was formulated within the coordination structure of the Conference and accessibility of the Conference was dramatically improved. As a consequence, the outcome document of the 3WCDRR (2015) recognizes and promotes abilities of persons with disabilities in the context of disaster risk reduction as one of stakeholders including by sharing knowledge on potential risks and how to reduce the risks in accessible and easy to understand format for everybody.

Following up the outcome of 3WCDRR, ATDO is collaborating with the Japan International Cooperation Agency and Ecuadorian Government for TV broadcast accessibility by making the most of DAISY/EPUB standards, SMIL and emerging ITU-T H.702 Accessibility Profiles for IPTV System[ii] in support of inclusive recovery process of 2016 earthquake hit coastal areas in Ecuador.

Conclusion

When I look back the history of DAISY standards development, I remember the IFLA Conference in Istanbul in 1995. It was the last chance for the international library field to share the international standards for accessible digital reading materials. As the outgoing chair of the section of libraries for the blind, I requested all concerned participants of the conference not to implement their own proprietary digital talking book format and give us 2 years to develop international open standards to guarantee global exchange of alternative format materials for persons with disabilities.

In 1997 in Copenhagen, the DAISY Consortium could present internationally agreed functional specifications of DAISY standard and the IFLA Section approved the outcome. Spending 1 year after the IFLA Copenhagen Conference, W3C approved SMIL 1.0 which filled the last piece of the mosaic of DAISY Technical Specifications.

Understanding the critical importance of standards and guidelines based on universal design concept and process is the prerequisite of the implementation of global sharing of alternative format books through Accessible Books Consortium supported by the WIPO Marrakesh Treaty.

Equity of access to information enables hundreds of millions of people including persons with print disabilities to share responsibilities to tackle global issues listed by the SDGs. Universal Design in sharing of information, communication, knowledge and culture will tremendously support achieving the SDGs in time.

Libraries and librarians must visualize this important role of library field and establish a clear focal point in annual United Nations High Level Political Forum on Sustainable Development.

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[i] http://www.dinf.ne.jp/doc/english/prompt/051115_18wsis.html
[ii] https://www.itu.int/rec/T-REC-H.702