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Business Case White Paper Series

Putting e-Accessibility at the Core of Information Systems

G3ict

Global Initiative for Inclusive Information and Communication Technologies

A Flagship Advocacy Initiative of the United Nations Global Alliance for ICT and Development

Putting e-Accessibility at the Core of Information Systems

A G3ict Business Case White Paper Series

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G3ict

Acknowledgments

This white paper follows discussions from the 6th European e-Accessibility Forum organized by the Association BrailleNet and Universcience in Paris, France, on March 26, 2012.

Insert here logos of the organizing organizations : BrailleNet , Universcience

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G3ict is an Advocacy Initiative of the United Nations Global Alliance for ICT and Development, launched in December 2006 in cooperation with the Secretariat for the Convention on the Rights of Persons with Disabilities at UN DESA. Its mission is to facilitate and support the implementation of the dispositions of the Convention on the Rights of Persons with Disabilities promoting e-accessibility and assistive technologies. G3ict participants include organizations representing persons with disabilities, industry, the public sector, and academia. G3ict relies on an international network of ICT accessibility experts to develop practical tools, evaluation methods and benchmarks for States Parties and Disabled Persons Organizations to implement policies in support of assistive technologies and e-accessibility. Since its inception, G3ict has organized or contributed to 100 awareness-raising and capacity-building programs for policymakers in cooperation with international organizations such as the ITU, UNESCO, UNITAR and the World Bank. With ITU, G3ict co-produces the "e-Accessibility Policy Toolkit for Persons with Disabilities" (www.e-accessibilitytoolkit.org), which is widely used around the world by policymakers involved in the implementation of the Convention on the Rights of Persons with Disabilities.

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For additional information on G3ict, visit www.g3ict.org

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Foreword

The 'Information Society' has a responsibility to be accessible to all its citizens, without exception. This fundamental right was solemnly recognized on December 13, 2006 by the Convention on the Rights of Persons with Disabilities. This convention has now been signed by all EU Member States. It concerns all digital technologies used to convey information and connect people, including the Web and mobile services. Accessibility and usability of Information and Communication Technology (ICT) without discrimination is a necessary condition for the development of an inclusive society, where all citizens can take part equally. This principle is of particular concern to aging people and persons with disabilities; they often require adapted technology or specific devices, also known as assistive technologies, to access electronic content and services.

While more and more daily tasks can be carried out online with limited physical movement and greater efficiency, certain hurdles can still rapidly become obstacles which prevent people with disabilities from taking full advantage of this potential.

For an increasing number of stakeholders, e-accessibility is not only an ethical duty to remove these obstacles, but is also a market opportunity. In Europe, for instance, 15 percent of the population has some form of disability, often linked with old age. Furthermore, about 60 percent of regular users also gain some benefit from improved accessibility.

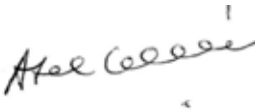
Several major manufacturers have already responded to this data by designing mainstream products which incorporate features that can be used to develop fully accessible services. As a result, we are seeing a complete change in the way people with some form of disability can use technology. The advent of new 'smart' devices and digital formats that integrate accessibility is the first step towards making accessibility mainstream.

Companies who show top-level commitment to developing new products and services based on sustainable working practices that take accessibility into account at the core of their information systems will invariably increase their market share and drive overall performance and innovation in their field.

This G3ict White Paper presents and discusses

- The notion that e-accessibility must no longer be approached as an afterthought but rather as a core component of information systems with the potential to increase business and performance;
- The importance of widely recognized standards and technical guidance;
- The need for industry leaders to rise to the challenge and provide all stakeholders, from designers to end users, with the necessary tools and training to make e-accessibility feasible in large organizations;
- The means to design, build and distribute accessible products and services; and
- The importance of implementing accessibility in the day-to-day activities of digital content and service providers.

Dominique Burger
UPMC-Inserm, Chair of BrailleNet



Axel Leblois
Executive Director, G3ict

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Note: This G3ICT White Paper is a result of the European e-accessibility Forum, held on 26 March 2012 at the Cité des Sciences in Paris, at the invitation of BrailleNet. 220 professionals, association members and scholars from around the world gathered on this occasion to discuss "how to put e-accessibility at the core of information systems". Seven of the conference speakers, all actively involved in e-accessibility, have accepted the invitation to update the opinions and points-of-view expressed on this occasion, in order to shape a review on this question.

Preface

Web-Accessibility: A Critical Step Towards An Inclusive Information Society Accessible For All

By Neelie Kroes, Vice president of the European Commission

At my start as a Commissioner I had a Digital Agenda for Europe drawn up. It contained 101 actions to achieve one goal by 2015: Every European Digital. These actions span from basic infrastructure targets (for example to ensure everyone can go online via broadband) to targets on content, security and e-inclusion. We want to ensure that everybody has the skills, motivation and trust to actually go online. One action I would like to point out here is the action of the Digital Agenda on web-accessibility: to make sure that public sector websites are fully accessible by 2015. That's why the European Commission recently launched a legislative proposal on the accessibility of government websites.

This White paper bears a clear relation to that action, but even more inspiring is the wider idea we all share: to make digital information and communication technology accessible for each and every one of us. To create an e-inclusive society where also older adults, people with disabilities or others with social and economic disadvantages, can fully participate. Right now they often can't, while they would benefit most!

Achieving an inclusive information society becomes more and more important, as each day brings new ICT enabled innovations: products, services, applications and content. We cannot wait to make these available to those who are now excluded from them. I thank the work G3ict and all its stakeholders and supporters do, and for not giving up making this a reality. I fully subscribe to their goal to put e-Accessibility at the core of information systems. It is good to have standards, assistive technologies and authoring tools. But it is absolutely necessary to have the people with the awareness, the vision, the knowledge and the skills to actually make websites and digital content accessible to all.

What our proposal on the accessibility of government websites says is essentially very simple: let's make 12 types of relevant government websites accessible. Let's do it according to one and the same set of requirements. Let's do it quickly and let's do it in a way that's future proof. By making public websites accessible in a harmonised way, we can have a big impact. We can boost the market for web-accessibility, create clarity and simplicity for those in charge of the accessibility of websites, create new market opportunities for web-accessibility experts, and provide many people with the opportunity to participate in our economy and society.

I hope G3ict members will support the proposal and will contribute to its implementation. This white paper contains inspiring and guiding articles that contribute to a further professionalization of your work, and e-Accessibility for all.

E-Accessibility for All

Everybody Technology

Mainstream touchscreen devices are truly heralding an age of more inclusive 'Everybody Technology'. But what is Everybody Technology and who does it cater to?

By Robin Christopherson, Head of Digital Inclusion, AbilityNet

Robin Christopherson is the Head of Digital Inclusion at AbilityNet. After studying at Cambridge University, Robin worked for the Royal National Institute for the Blind (RNIB) and became a founding member of AbilityNet in 1998. AbilityNet specialises in accessibility auditing and disabled user testing, as well as helping clients design attractive websites that are both accessible and easy to use for everyone. Despite being blind, Robin uses technology very effectively, using speech output to access computers, the internet, his iPhone and many other technologies to assist him in his work. He also advises companies on their obligations under the Equality Act and the Disability Equality Duty – including the evaluation of case specific reasonable adjustment.

Until quite recently, technological gadgets and appliances (from phones to fridges, from computers to cars) were designed for the 80 percent, and no more. These 80 percent are those customers described as 'able bodied'. They have fully functional working parts, including legs, arms, eyes and ears – customers that have no problems interacting with gadgets designed by people who themselves have 20-20 vision and fully dextrous digits.

The remaining 20% consumers are those with any sort of disability: a sight impairment or a physical disability, a cognitive problem such as dyslexia or an age-related condition affecting their dexterity or their ability to learn or remember.

These consumers earlier had to rely on very expensive specialist gadgets that were designed especially for the "old or disabled", and often based upon outdated, less sophisticated technologies.
Recently, something exciting has happened. A movement towards more inclusive technology has emerged, spearheaded by Apple and their mobile iDevices. Strange as it may seem, these touchscreen devices are truly heralding an age of more inclusive 'Everybody Technology'.

Let's first define what 'Everybody Technology' is. For a device to approach the golden goal of being truly inclusive, it needs to embody several key elements. It needs to be:

- A mainstream device at mainstream prices, aimed at a broad customer base - not just primarily designed for the niche disabled or elderly markets; and
- Providing the full range of functions expected of a mainstream device but with a wide choice of input and output methods (to cater for a wide range of differing abilities) that afford access to all, and not just a sub-set, of those functions.

Does a device such as an iPhone meet these criteria? Arguably, it does. It's a mainstream product that has at its heart a brain (the operating system iOS6) that has been developed in such a way as to support a multitude of input and output methodologies – many of which are built-in right out-of-the-box. We'll start with a list of those options that come as standard:

- **Vision solutions:** larger text, magnification and screen-reading (with Bluetooth support for a range of Braille displays and keyboards)
- **Hearing solutions:** custom vibrations, flash-alerts, mono-audio and support for a range of Bluetooth digital hearing aids
- **Motor solutions:** AssistiveTouch enabling multi-touch gestures to be assigned to custom single-finger (or mouth/headstick) gestures and support for other specialist headsets and switches

This built-in intelligence has made a huge range of third-party solutions possible, which combine with the iPhone to make it a truly inclusive example of 'Everybody Technology'. Apple didn't have to build a device that included every last input/output method used by people with different disabilities – that is not asked of mainstream device manufacturers. They only had to build in a few of these methods and make sure the rest work by providing the necessary 'hooks' (drivers and APIs). As a result, we see iDevices forming the heart of many more complex solution for users with very severe and often multiple disabilities – those users are still using an iPhone or iPad with all the power and price advantages of such a mainstream device, and have only had to buy relatively inexpensive specialist peripherals.

Add to this an app ecosystem that is based upon an accessible toolbox - and hence has resulted in huge choice for every user - and you have a platform that delivers for a really diverse customer-base.

The iPhone isn't perfect, but it's definitely pushing the boundaries and reaping the rewards as a result. Sales are soaring not only in the shops, but also in the vast bulk-contracts in the federal and education sectors in the US and elsewhere where there is a legal requirement to buy devices that are inclusive.

"Companies must look at their products and ask themselves, "How can I make this more inclusive?" They must work with disabled users and think of them as 'extreme users'. By designing for them, they will simultaneously make their product supremely easy for their mainstream users."

So this is the vision of 'Everybody Technology'

Not all devices can be as smart as a smartphone, of course. A can-opener doesn't have an operating system but it can still be given the 'extreme user' treatment throughout the design process. A modern fridge may well have a touchscreen, but is it reasonable to build in drivers for a digital hearing aid? Maybe not - but it's important to at least ask the question. By considering everybody, companies will consider the full range of possible input and output methods used by their customers and will decide which of them are impossible to include (for that product iteration at least).

One final point on the plethora of electronic devices we use every day. Semi-smart devices (such as microwaves, bathroom scales or blood-pressure monitors) can leverage the power of these all-pervasive smartphones to be the voice box of a device that would otherwise be mute, or the remote control of a device that would otherwise be too fiddly to use. If it's too costly to put speech or voice recognition on every fridge, ATM or TV set-top box, an alternate may only be a matter of simply including the right 'hooks' to talk to devices (such as an iPhone) that already have those capabilities. A few pounds (or even pence) to include a Bluetooth chip and a tweak to the software to enable that device to talk to a smartphone (which already has that connectivity potential) can open up a world of choice for disabled users who already have an inclusive device set up, just the way they need it.

Companies must stop the attitude of designing just for the 80 percent and throwing some crumbs at the rest in the form of expensive, feature-poor, 'specialist' devices. Inclusion must be built in wherever possible, and links made to inclusive devices where not possible. We must design for everybody by embracing the principle of 'Everybody Technology'.

Learning Points

- Until recently, 20 percent of users had to rely on very expensive specialist technologies specifically designed for the "old or disabled"
- Affordable mainstream touchscreen devices with built-in accessibility features now cater to a wide range of differing abilities
- Third party solutions that link to smartphones via drivers and APIs offer further connectivity opportunities for users with severe or multiple disabilities
- In the future, smartphones may be used to operate semi-smart devices and appliances
- By considering everybody, companies will increase their market share and make their products highly accessible for mainstream consumers

E-Accessibility for All

The Path to Transforming Accessibility

Success in our collective pursuit of digital inclusion and Accessible ICT relies on inclusive innovation and the formation of an international society of accessibility professionals.

By Rob Sinclair, Chief Accessibility Officer, Microsoft

Robert Sinclair is Chief Accessibility Officer at Microsoft, responsible for the company's worldwide strategy to develop software and services that make it easier for people of all ages and abilities to see, hear and use their computers. He believes that addressing the needs of people with a wide range of abilities is the key to transforming and improving the way everyone interacts with our increasingly digital world.

As we examine the trends in technology over the past ten to fifteen years, we can easily see that the digital world around us is becoming increasingly complex. In the past five years we have seen an acceleration in the entrance of new devices and technologies in the market, and we know that accessibility is not keeping pace with these trends. This is partly due to the fact that the community of accessibility practitioners is overwhelmed by the quantity of standards work, public policy activities, review of new operating systems from Apple, Google and Microsoft, and survey of the rapid increase of websites and mobile applications. Accessibility is an increasingly complex pursuit, and we need better global strategies to achieve the level of inclusion required in our digitally connected societies.

In this article, I propose two related concepts and areas of investment that I believe are essential to changing the trajectory of accessibility and digital inclusion. The first concept, Inclusive Innovation, highlights the need to think more broadly and more holistically about the way we design, build, deploy and support new products and services. Accessibility challenges extend beyond technical infrastructure and design methodology. They cannot be resolved without careful planning, reliable follow-through, and a true understanding of the value accessibility offers to every user of technology and every consumer of content and information. To achieve that outcome, we need a global approach to accessibility that enables and fosters the growth of a cadre of internationally recognized professionals – people who are designers, developers, business leaders, educators, trainers and more. We need to transform accessibility into an international profession, similar to privacy and security.

Inclusive Innovation

There are a number of labels for design methodologies that begin with a focus on the needs of the customer. These include: user-centric design, design for all, universal design and inclusive design. The basic premise is sound, but most people apply them only to the design of the intended product or structure. Inclusive Innovation builds on these design methodologies by promoting the need for related considerations which reduce the cognitive load, improve customer adoption and simplify the modern, digitally driven lifestyle. This is in contrast to our current reality of an increasingly complex, technologically focused lifestyle. Inclusive Innovation is comprised of the following key elements:

- Inclusive Design: address the needs of a broad target audience – aging, injured or disabled.
- Disseminated Expertise: ensure people across the organization deeply understand accessibility.
- Conscientious Innovation: consider the overall complexity and learning curve for the customer.
- Support Services: provide educational assets, forums and support to help customers succeed.

The first element is a well-established design methodology, and the remaining three are easily achieved if an organization has the appropriate talent and expertise.

State of Accessibility Today

As we look at trends around the world, we see some encouraging signs of progress. Microsoft's integration of speech recognition in Windows Vista enabled people with no use of their hands to use a PC at no additional cost. Apple's introduction of the VoiceOver screen reader in the MacOS and iOS changed the blind and low-vision communities' expectations for out-of-the-box accessibility in consumer electronics. IBM led the creation and standardization of ARIA (Accessible Rich Internet Applications) which is helping improve accessibility of web sites around the world. Microsoft's revolutionary Kinect peripheral for the Xbox and PC is changing the way people experience entertainment, and it provides great value for children with autism. These are only a few examples from recent years, but there are many more examples that illustrate that we, as a global society, are far from achieving digital inclusion.

- **Few companies understand the business case:** many companies still struggle to understand that accessibility is a part of good design and smart business.
- **New graduates are unaware of accessibility:** few design or engineering programs incorporate inclusive design into their curriculum, so most students graduate have little or no understanding of accessibility.
- **Difficulty identifying qualified accessibility experts:** there are no formal credentials or examinations available to evaluate the expertise and experience of an individual claiming to be an accessibility expert.
- **New products and content often inaccessible:** many new applications and web sites are inaccessible. Most content (documents, imagery and videos) produced today fails to satisfy common accessibility criteria.
- **Accessibility practitioners struggle to remain up-to-date:** for those people who have become accessibility experts, it is difficult to maintain their knowledge.

Increasing use of legislation and litigation: when customers do not feel their needs are being met by industry, they resort to litigation. Increasing litigation indicates consumers are dissatisfied with the level of accessibility in today's ICT products.

Potential Root Cause

Based on a review of the common accessibility challenges from the past twenty years, these symptoms could be a result of:

- **Misunderstanding:** many people today do not understand accessibility, how it leads to improved usability for everyone, and why it is important to achieve social and digital inclusion.
- **Lack of mainstream integration:** accessibility is not included in the curricula of most universities, it is not an integral part of the design, development and delivery of commercial products, and it is rarely considered as a strategic element of a company's business strategy.
- **Increasing technical complexity:** five years ago, most accessibility discussions related to web accessibility, Windows software and open source activities on Linux. Today, there are at least eight actively evolving and competing operating systems, new web and application technologies, and dozens of authoring tools. The digital landscape is increasingly complex.
- **Insufficient global coordination and collaboration:** there are a number of individuals and organizations who have created valuable accessibility resources. Unfortunately, many are not widely known or are only relevant for one particular region or country.

The Missing Element

While there is no single investment that will solve the world's accessibility challenges, one piece is clearly missing from our global approach. Accessibility is a highly complex domain that currently comprises of a self-organized community of deeply dedicated, largely self-taught practitioners. It is truly impressive to realize what they have achieved during the past 25 years, but the time has come to build an internationally recognized profession for accessibility. This same transition helped security and privacy to rapidly evolve into valued bodies of expertise in businesses and governments around the world over the past decade.

Conclusion

Without an international community of trained accessibility experts, it will be extremely difficult to move beyond today's pursuit of niche technology solutions. To achieve Inclusive Innovation and digital inclusion, we need experts in companies, organizations and governments around the world who have a shared understanding of accessibility and are equipped to apply it in their particular job function: business leader, product designer, software engineer, technical writer, customer support specialist, etc. Through that cadre of trained professionals, we can transform accessibility from niche accommodation to mainstream value that benefits everyone.

"To achieve Inclusive Innovation and digital inclusion, we need experts in companies, organizations and governments around the world who have a shared understanding of accessibility."

Learning Points

- Despite isolated examples of accessibility success, digital inclusion is still a serious global problem
- Rapid and continuous change in the technology landscape illustrates why our collective approach to accessibility has not yet achieved the desired outcomes
- Success requires a more holistic design methodology that looks beyond technology and considers how new technology is introduced, what support is needed for people to be productive, etc.
- The complexity and breadth of challenges inherent in accessibility require a globally harmonized approach and carefully coordinated strategy that spans industry, government and advocacy
- It is time for an International Society of Accessibility Professionals

Design for All: Standards, Guidelines and Toolkits

Standards to Ensure a Web for All

Standards are the basis for uniform accessibility requirements, common expectations for developers and users, and an enlarged marketplace for e-accessibility. Standards enable governments and businesses to put e-accessibility at the core of information systems and to deliver products and services that are inclusive for all.

By Shadi Abou-Zahra, Activity Lead, WAI International Program Office

Shadi Abou-Zahra works with the W3C Web Accessibility Initiative (WAI) as Activity Lead of the WAI International Program Office, which includes groups that are responsible for education and outreach, coordination with research, general discussion on web accessibility, coordination with the WAI Technical Activity, and WAI liaisons with other organizations including standards organizations and disability groups. Shadi coordinates WAI outreach in Europe, accessibility evaluation techniques, and international standards promotion and harmonization activities.

Web as the Backbone of Information Systems

The Web has rapidly evolved into a mature, rich, and complex platform that has become key for information, education, business and economy, research, civic participation, social interaction, entertainment and many more aspects of our daily lives. As it continues to evolve, it is also rapidly converging with other technologies and media. The Web is now the primary interface on mobile phones, tablets, televisions, game consoles, information screens, teller machines, car navigation and entertainment systems, and many other ICTs.

The Web connects devices and enables interactivity with and through them in ways that were unthought-of earlier, in particular regarding providing access to people with disabilities. It is the backbone of information systems and is an essential medium that continues to provide unprecedented opportunities for people with disabilities to participate equally.

> "Standards need to be developed in an open, consensus-oriented environment with participation of all stakeholders."

Accessibility of Web Platform Technologies

The Web platform is composed of core technologies that provide the functionality and the features available on the Web today. Hyper-Text Mark-up Language (HTML) continues to be the fundamental technology of the Web and is the base technology for providing web content. It is accompanied by Cascading Style-Sheets (CSS) that controls the appearance and JavaScript that controls the functionality of websites. These foreground technologies are supported by a stack of specifications that work in the background, mostly within the browser. They enable the Web on desktop computers and a plethora of devices.

Each of these technologies is fundamental to Web accessibility. Each of the features they provide individually, as well as collectively when they are combined, needs to support accessibility. For example, accessibility support for a simple button element entails the possibility of providing corresponding labels, events to activate the button, and notifications that are triggered when the button is activated. Web technologies from the World Wide Web Consortium (W3C), such as HTML, CSS, and many more, are cross-checked for such accessibility features through the work of its Web Accessibility Initiative (WAI). Continued effort is needed to monitor, check and improve technologies as they evolve.

Guidelines for Tools and Content Developers

In addition to ensuring accessibility of core web technologies, W3C Web Accessibility Initiative also develops a set of guidelines that define accessibility requirements for web content and tools. These include:

- **Web Content Accessibility Guidelines (WCAG)** – accessibility requirements for text, images, video, sound, forms, code and other aspects of web content;
- **User Agent Accessibility Guidelines (UAAG)** – accessibility requirements for web browsers, media players and other software that is used to access web content; and
- **Authoring Tool Accessibility Guidelines (ATAG)** – accessibility requirements for content management systems (CMS), code editors and other software used to create web content.

These guidelines are accompanied by specifications that extend the accessibility features of the core web technologies, such as HTML. These specifications include:

- **W3C/WAI Accessibility Rich Internet Applications (WAI-ARIA)** – augments HTML and other web technologies with semantics for identifying landmarks on web pages, roles and states of widgets and applications, and for event notifications; and
- **W3C/WAI Independent User Interfaces (Indie UI)** – provides abstractions for gestures, events, and complex user interaction including in the mobile context.

WCAG 2.0 has become the common standard for web accessibility in particular. It is recognized by organizations and governments internationally, and recently it has also been adopted by the International Standards Organization (ISO) as ISO/IEC 40500.

Research and Development in Standardization

Research and accessibility share a long history of innovation. Accessibility relies on the latest technologies and trends that are often adopted early on by people with disabilities. For example, people with disabilities have been using voice recognition to operate their computers, homes, and their wheelchairs long before the concept of smart homes reached the mainstream market. At the same time, the invention of the telephone by Graham Bell is closely linked to his research on hearing disabilities that revolutionized the entire ICT landscape.

Accessibility standards need to consider this relationship and involve research through the standardization process. This includes research on how to better include accessibility throughout the development process, in order to lower the perceived complexity and threshold for implementing accessibility that commonly exists among web developers.

Conclusion: Implementing Standards in Practice

While standards are essential for accessibility, standards in themselves do not make ICTs accessible. Standards need to be developed in an open, consensus-oriented environment with participation of all stakeholders. This includes researchers, industry, experts, and in particular the end-users. Standards also need to be supported by complementary training programs, management considerations, policies, tools, and processes to ensure that they are considered throughout the development process. Accessibility standards are measures and require appropriate considerations and processes to ensure that they are put at the core of information systems to deliver products and services that are inclusive for all.

Learning Points

- Despite isolated examples of accessibility success, digital inclusion is still a serious global problem
- Rapid and continuous change in the technology landscape illustrates why our collective approach to accessibility has not yet achieved the desired outcomes
- Success requires a more holistic design methodology that looks beyond technology and considers how new technology is introduced, what support is needed for people to be productive, etc.
- The complexity and breadth of challenges inherent in accessibility require a globally harmonized approach and carefully coordinated strategy that spans industry, government and advocacy
- It is time for an International Society of Accessibility Professionals

Design for All: Standards, Guidelines and Toolkits

EPUB 3 and Inclusive Publishing

EPUB 3 represents the first key step to a truly inclusive publishing model, one where accessible content can flow directly from publisher to consumer. Much work, however, remains to be done.

By Markus Gylling, CTO of the IDPF and DAISY Consortium, and Matt Garrish, CData

Markus Gylling is the Chief Technology Officer of the IDPF (International Digital Publishing Forum) and the technical director of the DAISY Consortium. Markus has worked in the field of information accessibility since the late nineties and has extensive experience in developing accessibility standards for electronic books, and software tools to support the DAISY DTBook standard and the DAISY Pipeline standard. He leads the technical development of the EPUB standard.

Matt Garrish has been working in both mainstream and accessible publishing for nearly 15 years. He was the chief editor of the EPUB 3 suite of specifications and has also played a key role in the design and writing of the new revision of the ANSI/NISO Z39.86 standard for authoring accessible content.

The printed word by its very nature excludes a significant segment of the population from access to information. Readers with a print disability—whether physical, visual, perceptual, developmental, cognitive or learning—have been held at a disadvantage as compared to their peers. One in ten individuals is affected by a print disability, and this number more than doubles in the population aged over 50.

Fixing this iniquity through technology has been the guiding mission of the DAISY Consortium, an umbrella organization of non-profit agencies, talking book libraries, educational institutions and others who share the common goal of accessibly republishing content.

Making print content accessible after the fact is a failing enterprise, however. It is estimated that only around 5 percent of books published each year are made available to readers with print disabilities.

The reasons for this are manifold, but three key issues have arisen in the publishing ecosystem itself:

1. Creating a second accessible format is viewed as costly and complicated by publishers
2. Identifying accessible content and making it discoverable in electronic bookstores has not been possible
3. Mainstream reading system developers have not shown an interest in accommodating alternate formats for what they perceive to be a niche market

"It is estimated that only around 5 percent of books published each year are made available to readers with print disabilities."

EPUB 3 represents the first key step in breaking down the walls of indifference that have held back a truly inclusive publishing model, one where accessible content can flow directly from publisher to consumer. This article will review how this can happen, and consider what remains to be done.

Why EPUB 3?

If we're going to fix the problem of information inequality, we have to find a solution that works from the source itself. Although DAISY digital talking books (DTBs) helped make print information accessible, the format never gained widespread publisher adoption. A new solution was in order, and it would have to be one that could offer the feature-richness needed for mainstream use.

The mainstream e-book formats publishers have been producing, on the other hand, provide limited accessibility, even when taken fully into account. PDFs offer only basic structural information and text navigation, and depend on the person generating the PDF having the knowledge and the ability to properly prepare their source. Amazon's devices are not only inaccessible to many readers, but accessibility has been largely ignored in the HTML-based format itself. Even EPUB 2 provided only limited accessibility capabilities, being useful mainly for simple novels and the like. In fully embracing the goal of universal access to information by overhauling the EPUB specification, the International Digital Publishing Forum (IDPF) has provided a larger platform from which to exact meaningful change. The IDPF is a global organization whose nearly 400 members include publishers, vendors and developers from around the globe and across the spectrum (trade, academic, science and technology, magazine, journal and more).

By collaborating with the IDPF, DAISY has been able to ensure that accessibility is a core feature of this global standard. EPUB 3 improves on DAISY DTBs in all the following areas, without losing any of the original functionality like text and audio synchronization:

- Semantic inflection—allows annotating of generic markup structures for richer reading experiences;
- Global language support—both through XHTML5 and CSS3;
- Multimedia support—native audio and video (no plugins), with the ability to include captions, subtitles and other timed tracks;
- Scripted interactivity—full support for ARIA roles, states and properties;
- Accessibility standards—a return to DAISY's web roots realigns work with WCAG 2.0 and simplifies comprehension of standards; and
- Enhanced text-to-speech—PLS lexicons, SSML markup and CSS3 Speech

The IDPF's long-term commitment to accessibility can also be seen in the makeup of the organization. George Kerscher, the Secretary-General of DAISY, is currently President of the IDPF board. Markus Gylling serves as Chief Technology Officer of both DAISY and the IDPF, and chairs the EPUB Working Group.

> "By collaborating with the IDPF, DAISY has been able to ensure that accessibility is a core feature of this global standard."

EPUB 3 was not just a one-time upgrade of the specification, in other words. It is the official successor to the DAISY 3 format, and the DAISY Consortium will continue to pursue its continued improvement and accommodation of all reader needs.

Driving Change

Although EPUB 3 presents a rich array of accessibility features, being built on the browser stack (HTML + CSS + JavaScript) means that EPUB 3 content can be made just as accessible and inaccessible as regular web content. To continue moving to an inclusive model, a lot of work remains to be done.

The DAISY Consortium has been working with the IDPF and others to provide a comprehensive roadmap for publishers, including efforts to:

- change internal indifference to accessibility: Accessible Best Publishing Guidelines for Publishers;
- provide instruction and guidance on how to create accessible content: IDPF Accessibility Guidelines, Accessible EPUB 3 and EPUB 3 Best Practices;
- update validation tools to better check for accessibility issues: EPUB 3 Preflight with Accessibility; and
- improve on, and develop new, frameworks for content: DIAGRAM Center and Accessible InfoGraphics

However, changes are also occurring outside of the format itself:

- Mainstream reading systems now offer native accessibility support:
  - The open-source Readium project aims to be a feature complete reading system, and has recently been adopted by Benetech for their accessible Bookshare platform
  - iBooks with VoiceOver provides an accessible reading experience for EPUB 3 content, including support for text and audio synchronization
- EDItEUR has developed Code List 196 for the ONIX metadata standard, which allows key accessibility compliance and features to be recorded. EPUB 3 allows these records to travel with the publication.

As you might expect only a year into the life of EPUB 3, though, much work remains to be done.

The Road Ahead

EPUB 3 may be an impressive vehicle for accessibility, but it's not the final destination.

Getting to that destination requires everyone who works in publishing to begin making meaningful changes to their processes, products and tools. DAISY will continue its mission by focusing on all of the following:

- Helping to integrate accessibility into the full production chain, from author to Quality Assurance;
- Working with production tool developers to continue to improve the quality of their output, and how accessibility features are exposed;
- Simplifying the identification and correction of issues through automation;
- Ensuring that publishers include accessibility metadata with their publications and that online bookstores provide discoverability mechanisms; and
- Continuing to push for accessible reading systems, including increased configurability options to meet readers' particular usability needs
- But change cannot happen without willing partners, and we encourage everyone in the industry to examine their practices and see how they can improve.

Restricting access to information is now a deliberate choice, not an unfortunate consequence.

> "The development of EPUB 3 can perhaps best be likened to the falling of the first domino: a key step on its own, but unless it triggers a chain reaction through the rest of the publishing ecosystem, only a symbolic one."

Learning Points

- Today, an estimated 5 percent of books are available to readers with print disabilities
- EPUB 3 is a mainstream publishing format that integrates accessibility as a core feature
- EPUB 3 has been developed by the IDPF in collaboration with the DAISY Consortium and is the official successor to the DAISY 3 format
- EPUB 3 is only the first step towards developing accessible e-books at source; a change in process, products and tools is required
- The IDPF is working with the DAISY Consortium and a number of other organisations to help publishers and product developers to work towards a fully inclusive model using EPUB 3

Industrial Opportunities for e-Accessibility

The Challenge of Deploying e-Accessibility in Large Companies

Sanofi has a top-level commitment to developing a structured and sustainable working practice to ensure e-Accessibility is a real asset to patients, employees and the company as a whole.

By Bruno Ménard, CIO at Sanofi

Bruno Ménard is Chief Information Officer at Sanofi and Vice President of the Club Informatique des Grandes Entreprises Françaises (CIGREF). He graduated from the Ecole Supérieure de Commerce in Lille and has a Masters in Finance from the University of Lille and a Graduate Diploma in Accountancy. He began his career with Sanofi in 1987 and held several positions in the finance departments in France and the United States. He was appointed General Manager of the Singapore branch in 1994 and of the Philippines branch in 1995. In 1998, he joined Sanofi Winthrop France as Resources Director. In 2001, he became Chief Information Officer of Sanofi-Synthelabo and in 2004 he was appointed Vice President of Information Systems, Sanofi-Aventis.

Corporate Social Responsibility Is Integral to Sanofi's Development Strategy

As a global healthcare leader, Sanofi has a duty to promote economic and social development while preserving the environment in an ethical and responsible manner. In order to ensure the company's long-term sustainability, the patient must be placed at the heart of the Group's business conduct. Each day, across the globe, Sanofi's 110,000 employees are working to protect health and improve access to healthcare. Corporate Social Responsibility (CSR) is integral to Sanofi's development strategy: it drives performance, encourages innovation, attracts new talent and fosters pride among employees.

E-Accessibility: Information for Everyone

E-Accessibility forms a part of Sanofi's CSR strategy. Digital channels today provide some of the simplest and most efficient means of circulating information. According to Tim Berners-Lee, director of W3C and inventor of the World Wide Web, e-accessibility should "make the Web available to all people, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability".

There are two essential concepts at play here, namely giving access to "the Web" and to "all individuals". The first recognizes the importance of providing access to digital information, whatever form that may take (websites, web-based applications, emails, documents, images, etc.) and irrespective of the technology used. The second indicates that, even if accessibility in the first instance relates to users with physical, sensory, cognitive, or developmental disabilities, it concerns everyone. From one day to the next, users can find themselves faced with a disability of some kind, such as a broken arm, a mouse which doesn't work properly or a low-bandwidth connection which means that pages take too long to load.

Adopting a Pragmatic Approach to e-Accessibility

One of the greatest challenges facing large organizations is reconciling e-accessibility requirements with other priorities such as security, efficiency, design and cost. For this reason, Sanofi has adopted a pragmatic approach to e-accessibility. Fulfilling all criteria necessary for WCAG A status from the outset can seem an insurmountable task. The company considers that, to start with, ensuring that 50 percent of our applications meet 80 percent of accessibility criteria is preferable to making only 10 percent fully compliant.

"Persons with disabilities also offer demonstrations which are often very effective in conveying the importance of accessibility and the ease with which it can be put in place."

The Information Systems department began by putting some best practice measures in place to enable employees with only a basic understanding of technology to integrate accessibility into their workflows. Members of staff are required to ensure that all functionality is keyboard-accessible, that all video content is accompanied by subtitles, that all images are complete with alternative text and that all content is correctly structured and tagged so that it makes sense when read without images, color schemes and relative screen positions. This demonstrates to what extent accessibility goes beyond technical requirements to include purely editorial considerations.

To help colleagues adopt these new practices, we use development 'frameworks' adapted to the production of accessible content and deployed as specific modules within our intranet and internet content management systems. These tools, for example, manage titles automatically and require that all images are accompanied by a text alternative.

For all new projects, a minimum standard of accessibility is set and written into the project specifications to ensure it is correctly deployed in the development stage and beyond. To help project teams, we have set up a validation process in which all web content is reviewed by an internet committee. An accessibility specialist is available to assist the committee by showing them the advantages of accessible content and helping them to find satisfactory solutions. A network of accessibility staff has also been put in place to respond to specific questions on a day-to-day basis.

Outreach and training programs have also been developed for Sanofi staff (approximately 120,000 people). All employees generate information on a daily basis and therefore must be aware of accessibility issues in order to play their part. An e-learning tutorial is available on our intranet which introduces staff to the concept, the issues, and the benefits of accessibility. It also presents five simple measures that can be followed to ensure content is accessible, such as making PDF documents accessible. Persons with disabilities also offer demonstrations which are often very effective in conveying the importance of accessibility and the ease with which it can be put in place.

Meanwhile, cycles of information and training have been organized for IT staff according to their specific field, from graphic design to code development.

Finally, we have had to convince our partners and suppliers to meet these same standards. We have reviewed the accessibility of the most commonly used software applications among the 3,000 used by the company. We have worked with the developers of SAP software, for example, to ensure that its Human Resources component integrates accessibility to a satisfactory level.

The Advantages of Accessibility

Accessibility is a fundamental principle of the definition of the Internet and the Web, which itself is at the heart of today's digital technologies. It is important to note that, far from being a constraint, accessibility can be a real asset to a company.

Of course, making information accessible can have a significant impact in terms of resource and investment. We believe, however, that this rarely exceeds 5 percent of the total cost, and that retrofitting web content for accessibility on the other hand can be much more costly and sometimes exceed 20 percent of the total cost of the existing system.

But accessibility is ultimately beneficial, not only for people with disabilities, but also for our customers and for the company as a whole. Of course, it is of great value to persons with a mobility, mild cognitive, auditory or visual impairment, and indeed older people who may have more or less severe forms of these disabilities.

"Accessibility is ultimately beneficial, not only for people with disabilities, but also for our customers and for the company as a whole."

But, in the same way that buses and trains with ramp access for wheelchair users benefit users with pushchairs, large suitcases or crutches, accessible interfaces prove to be a great deal more user-friendly for everyone as they are lighter, quicker to load and better organized. We have also noted that those of our sites which meet WCAG level A or AA criteria are better indexed by search engines, and this has a positive – if not quantified – effect on the commercial visibility of our group. Indeed, these sites contain more keywords, clear links and text alternatives for images. They also benefit from greater consistency as the functionality provided by Flash or scripting, for example, has been designed to work in as many technical environments as possible. This demonstrates that it is preferable to design a single site that is both accessible and enjoyable to use, rather than opting to create specific pages for users with particular disabilities.

A Business Approach

To conclude, taking accessibility on board is not simply a question of making one's site compliant, updating working processes and putting together training programs. At Sanofi, a charter signed by the Chief Information Officer and the Director of Corporate Social Responsibility shows the company's top-level commitment to developing structured and sustainable working practice to ensure accessibility requirements are met on a day-to-day basis for the benefit of patients, our employees and the company.

At Sanofi, accessibility is in practical terms:

Ensuring our company websites (both web pages and downloadable documents) meet WCAG level AA requirements;

- Ensuring that our subsidiary websites meet WCAG level A requirements;
- Making all documents related to the Annual General Meeting of Shareholders accessible;
- Working on a project to make all drug instructions accessible via optical reading software in smartphones;
- Commissioning annual audits of company websites by an out-of-the-house auditor;
- Conducting a systematic bi-monthly review of all content changes by an internet committee;
- Employing a full-time e-accessibility professional in the Information Systems department to support web editors from other departments;
- Providing outreach and training programs for employees;
- Maintaining an accessibility charter and implementing best practice in Web procedures; and
- Ensuring the Information Systems department and the Equal Opportunities Employment Diversity and Disability department work closely together.

> "Accessible interfaces prove to be a great deal more user-friendly for everyone as they are lighter, quicker to load and better organized."

Learning Points

- e-Accessibility is integral to Sanofi's Corporate Social Responsibility strategy
- All staff generate digital information and therefore need to be briefed on the concepts, issues and advantages associated with accessibility
- Training and accompaniment is essential to ensure that content is checked for accessibility at every stage in the production process
- Far from being a constraint, accessibility can be a real asset to a large company

Design for All: Standards, Guidelines and Toolkits

Producing Accessible School e-books

After many years of building e-book players with limited accessibility in isolation, school publishers are embracing an open standard that mandates accessibility. What happened?

By Gerald Schmidt, Platform Manager at Pearson Education

Gerald Schmidt specializes in implementing accessibility in e-production. Gerald has worked in educational publishing for many years, first at ProQuest in Cambridge and then at the Open University in Milton Keynes before joining Pearson Education in London in 2011.

From products designed for interactive whiteboards to tablet apps, e-books from educational publishers have evolved to look very much alike. As an industry, we have standardized on electronic textbooks that replicate the appearance of the printed page exactly; that are enhanced with audio and video where appropriate; and that support quizzes and other forms of interaction to a greater or lesser degree. In many cases, publishers have created multiple e-book players that follow that same formula. The problem is that competition has centered on new features, with each successive layer of functionality leading publishers further down the path of creating self-contained, proprietary e-book players. With discipline, publishers have achieved consistency across their own e-book portfolio, but compatibility with competing products is unheard of.

The absence of shared standards and tools has driven up the cost of accessibility. The relentless drive to introduce features made it very hard for publishers to abandon Adobe's Flash and Flex platforms: after all, adopting accessible and open web technologies would have meant removing rather than adding features. Awareness of WCAG 2.0 and allied guidelines is high but all too often not applicable. In many ways EPUB 3.0 offers the first viable alternative to Flash; as such it also represents our best chance of achieving WCAG 2.0 compliance at last.

The key point is that EPUB's accessibility features benefit everyone. One good example is read-to-me functionality, a core feature of e-book players in primary education especially: in the past, only Flash seemed capable of handling synchronized audio playback paired with highlighted text on the page. As a result, each of the many competing e-book platforms implemented this functionality in their own way, typically drawing on large spreadsheets linking audio clip offsets to words or lines of text. DAISY and SMIL were much better at this, but did not achieve widespread adoption in this market. Today, any publisher building such functionality has only two options: the first is to use EPUB media overlays; the second is to reinvent them at significant cost.

"The key point is that EPUB's accessibility features benefit everyone."

> "The Readium project has shown conclusively that EPUB 3.0 works well in modern web browsers."

Just as media overlays benefit learners who require text highlighting, the availability of high-quality audio recordings helps commuters in work-based learning contexts; integrated transcripts support learners using e-book readers that do not support video; and reflowable text improves the experience of readers using smartphones and small tablets.

As a result, across the sector, we need two things: an affordable means of producing highly accessible EPUB 3.0 and a way of delivering the content to browsers and mobile devices. In terms of delivery, the Readium project has shown conclusively that EPUB 3.0 works well in modern web browsers. (Older browsers present a set of challenges, but none that cannot be overcome if we accept that some compromises are inevitable) This leaves the challenge of coming up with a cost-effective means of producing accessible EPUB titles. For school e-books, page fidelity is usually a requirement, so the main emphasis here will be on fixed-layout EPUB.

For backlist titles, as for most titles currently in development, the starting point is generally InDesign. The end result is twofold: we produce fixed layout HTML for large screens (seven inches and up) and reflowable HTML for small ones (Figure 1).

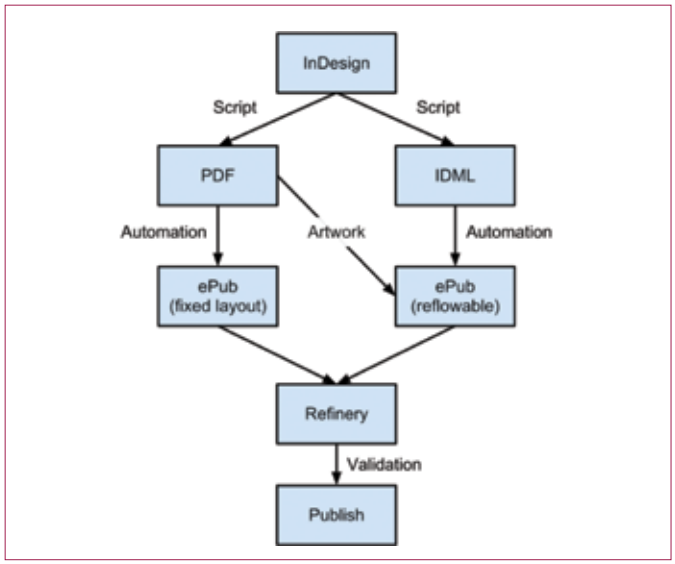

Figure 1 The production process
[Description: this chart flows from 'InDesign' at the top to 'Publish' at the bottom. There are two main processes: to the left, the process proceeds, via scripting, to PDF, from where automation yields a fixed layout EPUB. This file is then passed to the 'Refinery' tool before being validated for the final 'Publish' stage. To the right, InDesign scripting yields an IDML (InDesign Markup Language) file. Automation leads to a reflowable EPUB file, which also takes in artwork produced as part of the fixed layout workflow from PDF. Like the fixed layout EPUB, the reflowable version is processed in the 'Refinery' tool before being validated and published.]

Most paths out of InDesign require scripting: for PDF, for example, the baseline has to be adjusted so superscript and subscript are not treated as separate text fields in HTML; for IDML, it is usually beneficial to break the threading between text frames. A range of open source tools takes care of the many tasks in between: the Poppler library offers an invaluable bridge from PDF to fixed layout HTML, for example. Whichever tool one uses, however, some manual work is required to make the e-book fully accessible and an accurate reflection of the original.

In the case of page fidelity e-books, it is usually necessary to fine-tune the result in at least four respects. First, it is always worth checking that the reading order is correct. This can be done in InDesign, of course, but in practice the reading order needs work most of the time. Second, artwork requires figure descriptions. Third, some blocks of text may need cleaning up. For example, text expertly hidden in InDesign will be only too visible to the screen-reader. Finally, page and section titles have to be adjusted as these will be used for EPUB navigation.

Full media overlays synchronized to human voice recordings require further work, and this is crucial for early learners especially, but the goal is to enable the screen reader to convey the textual content fully, if not with pitch perfect intonation. That done, it is still necessary to clear up occasional infelicities and artifacts introduced along the conversion path from InDesign via PDF to HTML.

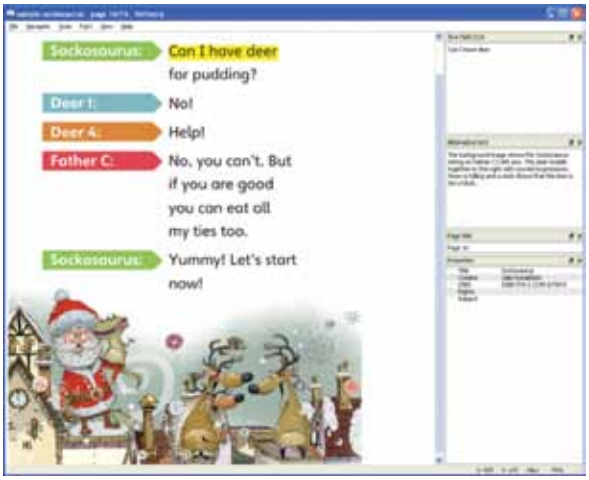

Figure 2 Fine-tuning a page from a children's book
[Figure description: this screenshot shows the Refinery tool with a fixed-layout page of a children's book in the main panel. The page shows a conversation between a character called 'Sockosaurus', two deer and Father Christmas. The first line is highlighted in yellow. To the right are panels for the currently highlighted text field (reading 'Can I have deer'), the alternative text associated with the page image of Father Christmas, Sockosaurus and the deer, the page title and properties associated with the e-book (e.g. title, creator and ISBN).]

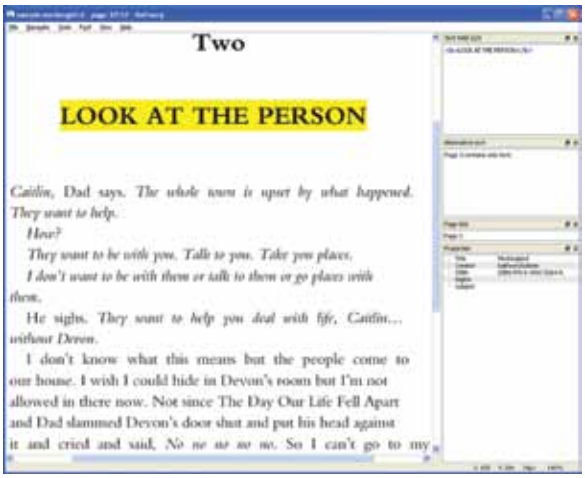

Figure 3 Not all titles are illustrated, but text and font properties still require attention [Figure description: this screenshot shows the Chapter 2 opener for 'Mockingbird', a title for older learners, also in the Refinery tool. There is no artwork, so the alternative text reads 'Page 3 contains only text'.]

The Refinery tool (Figures 2 and 3) is designed to make the tasks of fine-tuning and ensuring the accessibility of the e-books in the Refinery tool as quick and simple as possible. The tool produces EPUB from PDF and IDML and also gives the user full control over the pages that make up the e-book. Common operations include moving text frames across the page, moving frames up or down the reading order, changing the font family, increasing or decreasing the font size, opening background images for editing and so on.

Figure 4 Accessible EPUB in Readium
[Figure description: this screenshot shows a double page spread with the start of Chapter 2 of 'Mockingbird' in Readium. The toolbar has been minimized at the top, revealing the title MOCKINGBIRD in capital letters.]

The guiding principle is that technical details such as book conversion from PDF, XML transformation from IDML, EPUB building, font obfuscation, font sub setting, metadata handling and so on have to happen behind the scenes. The goal is to allow the production team to focus on the content without validating e-books at the command line or manipulating EPUB manifest files. The benefit is that there is pixel-accurate control over everything that appears on the page. Once the document meets the quality requirements, in terms of both accessibility and page fidelity, the finished product can be proofed in Readium or any other e-book player that supports fixed-layout EPUB (Figure 4).

This process ensures that validation and accessibility checks become a core part of how materials are produced. Validation is not restricted to the 'epubcheck' utility: we can bring the full range of W3C validation and accessibility tools to bear on the finished product. Barriers are recognized as bugs and stop titles from being published. Accessibility is built into the workflow much as it was in the case of DAISY, but this time every laptop, tablet and smartphone user can access the content.

Although, at the time of writing, the number of devices and applications that support EPUB 3.0 remains small, there can be no doubt that, behind the scenes, the standard has already transformed the way publishers create e-book content for schools and colleges. As EPUB 3.0 becomes the norm across the sector, accessibility of e-books is set to improve dramatically, to everyone's benefit.

Learning Points

- After many years of building school e-books in isolation, publishers are embracing EPUB 3.0 and with it, web standards for accessibility
- EPUB 3.0 is the first viable alternative to Flash for the interactive, enhanced e-books schools have come to expect
- The accessibility provisions built into EPUB 3.0 benefit all readers
- Automation can help bring down the cost of producing EPUB 3.0 titles, but some manual fine-tuning is unavoidable
- Accessibility becomes an integral part of the way school publishers build e-books

A New Generation of Accessible Online Services

The LIA Project: Towards Mainstream Distribution of Accessible EPUB e-books in Italy

How to bring an enhanced and accessible digital reading experience to the mainstream market

By Cristina Mussinelli, Associazione Italiana Editori

Cristina Mussinelli has been involved in the digital and multimedia market since 1990. She is a member of the International Digital Publishing Forum (IDPF) Board and is responsible for the Observatory on Digital Content and for technological innovation and digital publishing within the Italian Publishers Association.

The Libri Italiani Accessibili project (Accessible Italian Books) is coordinated by the Associazione Italiana Editori (Italian Publishers Association), managed by its subsidiary company Ediser and funded by the Italian Ministry of Culture through its "publishing for the blind and visually impaired fund". The project was developed in cooperation with the Unione Italiana dei Ciechi (Italian Union of the Blind and Visually Impaired) and other stakeholders working in the field of visual impairment.

E-books and digital technologies offer new reading opportunities for blind and visually impaired readers. E-books can be read on a wide range of devices: from personal computers to mobile devices, such as smartphones, tablets and dedicated e-readers. The same flexibility is to be found in reading options, with features such as enlarged characters, text-to-speech and digital braille displays becoming increasingly available.

The LIA project strives to create a service that will increase the availability of e-books for blind and visually impaired readers in the Italian market by taking advantage of the opportunities offered by these technologies. The project aims to bring about a cultural shift in the way accessibility issues are dealt with in the publishing value chain as a whole. To illustrate the project's core activities and the results achieved to date, the value chain can be divided into three macro areas of action: content, distribution and use.

Content

In order to come up with solutions that integrate accessibility wherever possible within mainstream workflows, rather than as a separate issue, LIA has concentrated its efforts on the international e-book format publishers are most familiar with.

Working with the International Digital Publishing Forum (IDPF), EPUB was soon identified by LIA as the most suitable format, particularly given that the most recent release of the 3.0 version incorporates some accessibility features. Using a standard like this is invaluable as it has little impact on the way publishers' manage their digital assets.

Indeed, finding a way to work with standards that form part of the publishers' existing workflow is paramount if accessibility is to be inherently incorporated in the "mainstream". In April 2011 the Enabling Technologies Framework project, funded by the World Intellectual Property Organization (WIPO) and involving EDItEUR and the Daisy Consortium, published guidelines indicating how to integrate accessibility features into the standard editorial production process. In addition to these, the LIA provides Italian publishers that have joined the project – and, where relevant, their service suppliers - with further practical guidelines, training and support activities to enable them to follow the guidelines with ease.

Once they are given instructions on how to produce accessible files from the outset, publishers can pass them on to LIA to convert, check and validate. LIA tests the files and, if they fulfill all accessibility requirements, they are tagged with a LIA "accessible" label.

A market share of over 60 percent of the Italian domestic market is already involved in the project. By 2013, a selection of some 3,000 best-selling titles of fiction and nonfiction (text only) will be available online.

Distribution

Once e-book files have been made accessible, autonomously or with the support of LIA, publishers need to make them available for purchase online. LIA is the first initiative in the world to address the distribution of accessible e-books through standard online trade channels.

Thanks to the agreement between LIA and the Informazioni Editoriali, the e-book metadata in the catalogue of e-books in trade (e-kitab) includes metadata on accessibility. Once again, standards and mainstream practices are central to the project. Any e-retailer interested in highlighting accessible titles in its store can get support from LIA on how to identify, track and sell accessible e-books. Accessible e-books are flagged and distinguished from standard e-books through the LIA label.

However, selling accessible content is of little consequence if the platform on which they are sold is inaccessible. Few Italian online bookstores are designed to be 100 percent accessible. This means that even if e-books themselves are accessible, they are very difficult to find, browse, preview, purchase and download by users with visual impairments. LIA is working with the stores that have joined the project to ensure that their websites are, at least partially, accessible. Of course, the LIA's role is merely to encourage engagement, and it has no decisional power on individual retailers' choices.

To provide users with an accessible environment in which to search for LIA labeled titles, LIA offers a completely accessible platform, redirecting users to e-retailers in order to check out their accessible shopping basket.

Reading Experience

The reader is the final part of the accessible value chain. LIA has planned several activities in collaboration with the Italian Union of Blind and Visually Impaired Persons to train and inform end users with visual impairments and their support networks. They are provided with updated information on the accessibility of mainstream devices available on the domestic market and are, in turn, asked to give feedback on the nature of their reading experience.

Next Steps

It is important to note that there are a number of outstanding critical issues which are inhibiting a proper reading experience, and these do not depend on publishers alone. Not only do online bookstores need to be reconsidered or at least redesigned in order to be accessible, but e-commerce payment procedures must also be designed with accessibility in mind. LIA is collaborating with the Association of Italian Banks to encourage change in this environment, something that will bring benefits not only to the publishing sector, but to e-commerce as a whole.

> "The business case for accessibility cannot be understated: improved content that is commercially available to a wider audience will not only attract custom from the visually impaired, but also from elderly readers."

Once the accessibility of distribution and sales channels improves, there is still one critical aspect with regards to the reading experience: the scarce availability of fully accessible reading supports on the market, both in terms of reading software and devices. LIA is working to increase awareness among software and app developers on this issue.

It is essential that public and private partners work together to ensure that they are up to date on the opportunities offered by the latest technology, distribution patterns and consumer needs. The business case for accessibility cannot be understated: improved content that is commercially available to a wider audience will not only attract custom from the visually impaired, but also from elderly readers (the ageing of the Western population is a well-known trend) and non-native language speakers.

Sanofi has a duty to promote economic and social development while preserving the environment in an ethical and responsible manner. In order to ensure the company's long-term sustainability, the patient must be placed at the heart of the Group's business conduct. Each day, across the globe, Sanofi's 110,000 employees are working to protect health and improve access to healthcare. Corporate Social Responsibility (CSR) is integral to Sanofi's development strategy: it drives performance, encourages innovation, attracts new talent and fosters pride among employees.

Learning Points

- After many years of building school e-books in isolation, publishers are embracing EPUB 3.0 and with it, web standards for accessibility
- EPUB 3.0 is the first viable alternative to Flash for the interactive, enhanced e-books schools have come to expect
- The accessibility provisions built into EPUB 3.0 benefit all readers
- Automation can help bring down the cost of producing EPUB 3.0 titles, but some manual fine-tuning is unavoidable
- Accessibility becomes an integral part of the way school publishers build e-books

Conclusion

Information and communication technology provides unprecedented opportunities for people with disabilities to participate equally in both the public and private sphere. Until recently, users with some form of disability had to rely on very expensive and specialist technology to access digital content and services. The advent of new, everyday 'smart' devices and digital formats that have the potential to integrate accessibility at core is the first step towards making accessibility mainstream.

The benefits of such developments are manifold: not only do disabled and elderly consumers have access to a greater wealth of digital content and devices; manufacturers and service providers around the world have the potential to reach wider audiences and drive overall performance and innovation in their fields.

For the full potential to be reached, however, it is essential to rethink the way we design, build and distribute new technology, content and services. Accessibility can no longer be approached as an afterthought. Instead it must become the backbone of all information systems.

As technology evolves, better global strategies are needed to achieve the level of inclusion required in our digitally connected societies. Standards bodies and industry leaders need to rise to the challenge and provide all stakeholders, from designers to end users, with the necessary tools and training to implement accessibility in their day-to-day activities. Developing professional skills in this field is the key to integrating e-Accessibility at the core of information systems - and subsequently driving competitiveness, edge and growth ambitions across the public and private sectors.

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