Business Case   White Paper Series

User-driven
e-Accessibility

G3ict

**Global Initiative for Inclusive Information
and Communication Technologies**

User-driven
e-Accessibility

A G3ict Business Case White Paper Series

Spring 2015

G3ict

Acknowledgments

This G3ICT White Paper picks up and builds on the topics addressed at the 8th European e-Accessibility Forum, held on 31 March 2014 at the Cité des Sciences in Paris. Over 200 professionals, association members and scholars from around the world gathered on this occasion to discuss "User-driven e-Accessibility". Seven of the conference speakers and five further experts, 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.

About G3ict

G3ict is an advocacy initiative launched in December 2006 by the United Nations Global Alliance for ICT and Development, in cooperation with the Secretariat for the Convention on the Rights of Persons with Disabilities at UNDESA. Its mission is to facilitate and support the implementation of the dispositions of the Convention on the Rights of Persons with Disabilities (CRPD) promoting digital accessibility and Assistive Technologies. Participating organizations include industry, academia, the public sector and organizations representing persons with disabilities. G3ict organizes or contributes to awareness-raising and capacity building programs for policy makers in cooperation with international organizations, such as the ITU, ILO, UNESCO, UNITAR, UNESCAP, UN Global Compact and the World Bank. In 2011, G3ict launched the M-Enabling Summit Series (www.m-enabling.com) to promote accessible mobile phones and services for persons with disabilities and seniors, in cooperation with the ITU and the FCC (U.S. Federal Communications Commission). G3ict produces jointly with ITU the e-Accessibility Policy Toolkit for Persons with Disabilities (www.e-accessibilitytoolkit.org), as well as specialized reports which are widely used around the world by policy makers involved in the implementation of the CRPD. G3ict is funded by contributions from corporations and foundations. Its programs are hosted by international organizations, governments, universities and foundations around the world. For additional information on G3ict, visit www.g3ict.org

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Foreword

Enhanced "consumer" involvement is gaining currency both on a business and political level. In order to reach as broad an audience as possible in an increasingly competitive market, more and more companies and service providers are seeking ways to involve the end user in the initiation, development and delivery of their products. In parallel, governments and organizations are increasingly looking to users to help set standards and monitor progress.

Users who have personal experience of accessing digital content are "experts by experience". People with disabilities are no exception: they have first-hand familiarity with adaptive strategies and assistive technologies and, as such, can have a direct impact in enhancing the quality of digital products and services. Accessibility use cases can help designers and developers to identify specific barriers which compromise the overall usability of their interfaces. Such user involvement increases the accountability of both public and private organizations and can prove instrumental in promoting political and social change.

Meeting the needs of the "average consumer" is no longer sufficient. To build and sustain a robust digital economy, industry and government agencies must be responsive to the needs and preferences of a broad cross-section of the population.

This G3ict White Paper presents and discusses
- Real life case studies in which users are helping to shape and improve accessible ICT products and services;
- The crossover between usability and accessibility and how UX practitioners, web designers, developers and their clients can ensure an optimum experience for all users;
- How user-centric methodologies have the potential to enhance user experience by tailoring presentation, content and functionality to each individual user;
- Examples of intelligent web service applications that empower users by allowing them to collect, enhance and share information tailored to their interests and to their needs;
- How existing and planned legislation at both national and European level will help to ensure that all users have access to information, products and services on an equal footing.

Dominique Burger
UPMC-Inserm, Chair of BrailleNet

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Preface

**By Axelle Lemaire, French
Minister for Digital Affairs**

Digital tools can change the life of many people for the better and empower those who know how to use them in their everyday lives. However, harnessing this power doesn't come without effort: it requires us, as a society, to make sure that the accessibility of digital services is guaranteed; it implies that every person has the knowledge and the ability to use those services, and most of all that progress in the digital world is not only driven by economic considerations but also serves the common good. That is the goal of our endeavor to build a « Digital Republic », a Republic in which our shared values are not only defended online, but also embodied in digital services used as tools for social inclusion and equality. This is particularly true when we think of accessibility.

As our economy and our lives become more digitalized with every passing day, universality of access becomes a prerequisite: how can we tolerate that part of our population be excluded from its benefits when digitalization can be, on the contrary, a tool for universal accessibility? We need to take action now : by making sure that every service is user-centric and makes the best use of accessibility standards and tools, by promoting innovation in technology, design or interfaces which improve access; sometimes, also, by raising our standards and norms.

Accessibility of services is essential, but so is making sure that everyone has the proper knowledge to benefit from those services. In every country, digitalization creates a new type of fragmentation between digital literates and those who remain at the door. Governments, associations and communities can provide the needed support and promote digital literacy. That is what we do, in France, by creating a network of places and initiatives aimed at providing a local response, making sure that everyone can find some advice and personalized support to take the road to digital literacy. And here again, new services, like dedicated online training platforms, can be used to make this support more efficient.

A digital republic takes on what is great and good in the digital world: its agility, mutability and adaptability, its ease of use, and strives to make it useful for everyone, a foundation on which our ability to live together can grow stronger. On this path, every contribution, wherever it comes from, is useful. This white paper is one of them, and I know we share the same goals.

Getting older users involved: the experience of AGE Platform Europe

Through the long-standing involvement of older users in both policy making and research, AGE Platform Europe proves that seniors, too often conceived as a burden, are in reality an incredible resource. Making their voice heard can only lead to a win-win situation from which society as a whole can benefit.

By Ophélie Durand, Project Officer and European Parliament Liaison Officer at the AGE Platform Europe

Ophélie DURAND joined AGE Platform Europe as Project and European Parliament Liaison Officer in April 2012. She is responsible for liaising with the European Parliament and is involved in several EU projects on ICT and health, in which she follows the drafting of deliverables on users needs, the management of advisory boards, the organisation of meetings and dissemination activities.

What is AGE Platform Europe?

AGE Platform Europe is a European network of around 167 organisations of and for people aged 50+ which aims to voice and promote the interests of the 150 million senior citizens in the European Union. AGE Platform Europe works to:
- Bring older users point of view to European policy debates and EU-funded projects;
- Raise awareness on users needs and wishes;
- Work together with other European NGOs and stakeholders;
- Involve and empower older persons;
- Lead EU-wide campaigns on topics relevant for our ageing societies.

Who are older people?

"Older people are a totally heterogeneous group and that is a vital point to learn. You have those who continue to decide on their daily living and those who at the same age have given up. You have those who will grasp the tele-control and flick through the channels and those who leave it in the drawer preferring to push the button" *(Angela Cluzel, AGE Expert on the occasion of the AALIANCE Final Conference, Malaga, March 2010)*

The word "users" designates a broad range of stakeholders and its final meaning depends on the context in which it is used. In a very broad context, users, or "end users" as they are sometimes called, are considered to be a group of persons who are expected to benefit from a developed service, product, technology or policy.

How do we involve our users?

Users are involved in AGE activities through the following channels:

User Fora

User fora are rather informal settings where representatives of user organizations and/or individuals test technologies and services and share their ideas, views and experiences in plain language. It helps when participants share an interest in the activities and issues at hand, but they are rarely expected to be experts.

Advisory Boards

Unlike user fora, advisory boards are composed of carefully selected representatives of older persons who are both experienced and committed to making a long-lasting contribution. As a result, advisory boards tend to have a more permanent composition that allows for greater visibility.

Task Forces

AGE members nominate experts for each area of policy in which AGE is involved (such as age discrimination, accessibility, employment and standardization). These experts join dedicated task forces where they are kept up to date on the latest developments in their area of policy. Through task forces, experts contribute to consultations, surveys and policy papers, share literature and studies, comment and exchange opinions and experiences, and suggest possible ways forward.

How do we do this in practice?

Questionnaires/Surveys

Questionnaires can vary in length and content, but usually have a closed format, meaning that respondents must keep within a set structure. As questionnaires and surveys do not necessarily ensure an adequate level of engagement and can prove challenging for those requiring support, they are best used in telephone and face-to-face interviews where they offer better opportunities for in-depth understanding of user needs.

> **Case study:** the A Sharing Approach to Promoting Science (ASAPS) Project aims to better communicate the benefits of European health research in order to increase its visibility and societal impact. To glean public opinion, ASAPS developed an anonymized questionnaire, translated into different languages and available online and in paper form to ensure that those citizens less acquainted with new technologies were not excluded.

Focus Groups

Focus groups are a form of structured group discussion designed to gather different perspectives and attitudes on a certain topic. A skilled moderator is required to coordinate the discussion, to encourage equal participation and to differentiate between individual and group opinions. Focus groups tend to work best with small groups of no more than six to eight people and should last no longer than two hours.

> **Case study:** As part of the INNOVAGE project, the University of Lund undertook four research cycles on user-driven housing involving 61 people. Participants included 26 end users, 20 experts and 15 professionals with different capacities, backgrounds and origins. This led to a cross-national synthesis of user requirement specifications for the development of an ICT-based tool to assess housing accessibility.

Pilot site visits

Advisory boards are usually invited to visit project pilot sites to provide expertise on challenges faced as a result of context-related specificities. Advisory board members are asked to contribute in various ways: to attend meetings, to meet individual users, to provide feedback to the partners responsible for the pilots, etc. This brings added value to the project by bridging the gap between research and practice, by highlighting ethical concerns and issues of acceptability, by cross-evaluating the use and take-up of technology from a user's point of view and by identifying issues that need to be further investigated.

> **Case study:** The DREAMING and HOME SWEET HOME projects trialed home solutions for older persons in different European countries. Advisory boards were established to provide targeted user feedback throughout. At the end of both projects, project partners were able to put forward recommendations for future up-take which took into account a variety of European user contexts and approaches.

How do we assess user participation?

Various tools are used to assess user participation. AGE asks users to complete an evaluation questionnaire on the quality and relevance of discussions with suggestions on how these can be improved. Advisory board experts are required to prepare feedback reports on their expectations, observations and suggestions, both prior to and following each site visit. These reports are invaluable and enable improvements to be made in real time.

How do we report back to our members?

AGE uses various channels to report back to its members: a monthly newsletter, newsflashes, expert group meetings (task forces), statutory meetings (General assembly and Council of administration) and e-mails to its members on specific topics. Publications and brochures are also used to raise awareness on specific issues, as well as to further disseminate results and outcomes. The AGE website is also a good source of information and contains a password-protected section that only members can access. Experiences and outcomes are presented and discussed to allow further analysis and improvement.

Learning Points

- Users have experience, skills and abilities that complement the knowledge and expertise of researchers and policy-makers. They also consider topics from a different perspective.
- When older people are involved from the outset, their needs and preferences can be better understood and taken into account.
- Market deployment of technologies, products and services is facilitated and improved as real needs and problems are addressed.
- User involvement results in better ownership and sustainability of the solutions at hand, and a satisfactory trade-off between costs and benefits for society as a whole.

Improving universally designed eBooks and reading systems through user evaluation

eBooks offer print disabled readers unprecedented opportunities, provided content and reading system developers take the needs of all users into consideration when designing their products and services. To ensure that these requirements are met, the DAISY Consortium is working with a dedicated group of users to test reading systems and provide developers with concrete suggestions on how their products and services can be improved

By Varju Luceno, Director of Communications, DAISY Consortium

Varju Luceno was born and raised in the Northern European country of Estonia. She earned a Bachelor's Degree in Library Science from Tallinn University and later an MBA from the University of Montana. She particularly enjoys researching and integrating meaningful information that educates and advances information accessibility for all. Varju is convinced that all people, regardless of their ability or disability, should have access to education. Varju helps others as an accessibility advocate and a digital technology enthusiast.

Introduction

Millions of people with print disabilities struggle to access traditional printed materials. For these users, eBooks and e-Readers hold great promise.

eBook creators and libraries that embrace universal design principles can provide access to books for individuals with print disabilities on the same terms as the general population. The challenge for accessibility advocates is to improve the accessibility of eBooks and e-readers within well-established sectors and industries such as education, but also beyond these sectors.

DAISY Consortium members serve both eBook and e-reader users and the standards and technology community by making sure the requirements of individuals with print disabilities, including visual impairments, learning disabilities and literacy challenges, are incorporated into technologies.

In order to be fully accessible to all users, a digital publication should have the following features:

- **Compatibility with screen readers and text-to-speech (TTS):** Persons consuming digital content should be able to listen to the text or view a synchronized presentation of the text, images and audio narration using synthetic or human voices.

- **Reflowability in order to fit all screen sizes:** It is necessary to provide support for magnification and color contrast features of reading systems. All users should be able to adjust the text display by changing font, font size and line spacing.

- **Rich navigability:** Content consumers should be able to browse a publication by chapter, section, page and sentence. The user should also have the option of skipping footnotes, sidebars, producer notes and page numbers when reading continuously with TTS.

- **Multiple input method support:** The digital publication should work with different input methods e.g. keyboard, mouse and touch.

- **Accessibility of images:** Text should contain image captions and textual descriptions for charts and graphs. Videos should be captioned or accompanied by a text transcript.

- **Page numbers:** eBooks should contain page numbers that match the print version of the same book.

In addition, the digital publication should be readable on multiple platforms and devices such as computers, mobile phones, tablets, refreshable braille and digital book readers. Reading systems used to consume accessible digital content also need to be accessible.

Supporting accessible formats: EPUB 3

EPUB 3 allows for improved accessibility and provides support for digital math and interactive content. It integrates both HTML 5 and CSS 3, facilitating an improved user experience on iOS and Android apps as well as their integration with assistive technologies.

The widest adoption of EPUB 3 can currently be found in the learning and educational publishing sector. Large publishers such as Pearson and Elsevier have placed EDUPUB (EPUB 3 with extensions), as the core of the digital book publishing format for their digital learning platforms. Ingram's Vital Source has also embraced the EPUB 3 standard.

EPUB 3 and EDUPUB: Brief Overview

The EDUPUB profile represents the effort of the IDPF[1] educational community to adapt the functionality of the EPUB 3 format to the unique structural and semantic requirements of educational publishing.

EDUPUB tailors the EPUB 3 specification as follows:
- Adds semantics for commonly used educational publishing components and structures;
- Defines requirements for the production and inclusion of images and rich media;
- Provides guidelines on how to include content that may be created outside the narrative text workflow, such as interactive content and assessments (e.g., Question and Test Interoperability (QTI));
- Implements common educational accessibility features for compliance with educational standards.

EDUPUB also takes advantage of the ability to use schema.org metadata in the EPUB package document.

Enlisting users to test reading systems that support EPUB 3 content

In 2014, the DAISY Consortium set up the Reading Systems Evaluation Working Group in order to test the accessibility of reading systems. This group is comprised of DAISY Consortium consultants, invited accessibility experts and DAISY members' representatives. Two calls for participation have been circulated, resulting in involvement from various assistive technology user groups.

The basic assumption of accessibility evaluation is that all Reading Systems that render EPUB 3 content should support reading with eyes, ears, and fingers.

Reading Systems Evaluation Working Group members receive suggestions on specific applications to be tested from the Book Study Industry Group (BISG). Each application goes through a series of manual tests to evaluate conformance to the EPUB 3 standard. Timelines for testing are decided at Working Group meetings. Results are recorded online on a dedicated website (www.epubtest.org).

Tests are conducted on the basis of test plans that have been prepared with sample content; the fundamental test book provides the tests and instructions for the person conducting the test. As EPUB standards and guidelines evolve, test books are updated.

The reading systems are evaluated using a wide variety of assistive technologies, e.g. screen readers, magnifiers, Braille displays and alternative input. Other initiatives to improve user experience for specific user groups, such as EDUPUB profile development, are also underway.

Reading System Test Scores: Working with Developers to Improve Accessibility

After accessibility evaluation of a platform or application has been completed, the Reading Systems Evaluation Group representative may contact the application developer to make suggestions on how the system's accessibility can be improved. If the application has a low accessibility evaluation score, the developer is the first person to help resolve accessibility issues. When the new version is released, the reading system is tested again and improvements are recorded.

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1. International Digital Publishing Forum

The best developers are passionate about their work. They genuinely want to improve their product, but to do so they need feedback, direction, and information from users. Winston Chen, for example, developer of Voice Dream Reader app (Top 10 in Education category in 86 countries) has always been very appreciative of user feedback and also responded to Reading Systems Evaluation Group's suggestions promptly. "Voice Dream Reader would certainly not be where it is today without user feedback. It was users, for example, that told me that Voice Dream Reader should support DAISY and that I should make the app accessible to VoiceOver users. Almost every feature has its genesis in a user email."

Conclusion

The book famine for people who cannot read traditional printed materials can be addressed by enlisting users in efforts to encourage and help publishers and reading system developers to adhere to principles of universal design.

All digital content must be accessible for users wherever and however they choose to access it.

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Learning Points
- New opportunities offered by technology and standards are constantly evolving and changing; accessibility advocates need to learn from each other.
- Efforts to harness technology that improves user experience and enhances accessibility are rewarded by increased user numbers and customer loyalty.
- Developers who are familiar with complex needs strive to constantly improve their applications.
- Applications or devices are never quite finished; feedback is always needed.
- It is important to collaborate, share specific examples and provide concrete suggestions for improvement.

The Bibliothèque Numérique Francophone Accessible (BNFA): A Responsive Library

Users explore, discover and read books in a variety of ways. By providing more efficient and flexible tools, digital libraries can adapt their services to suit the needs of end users, resulting in the broadest possible access to their collections.

By Alex Bernier, Technical Director, BrailleNet

Alex Bernier is technical director of BrailleNet. He graduated in computer engineering at the National Institute of Applied Sciences (INSA) in Rennes. He has worked on various projects related to books and digital libraries. He is responsible for the Accessible Francophone Digital Library (BNFA) and a research and development program aimed at improving the accessibility of scientific and technical documents for the visually impaired.

Introduction

The BNFA is a library service for people with print disabilities. It is an initiative of BrailleNet, the Groupement des Intellectuels Aveugles ou Amblyopes (Group of Blind or Partially Sighted Intellectuals) and the Association pour le Bien des Aveugles et des Malvoyants (Association for the Benefit of the Blind and Visually Impaired). These organizations have pooled their collections to provide online access to the largest catalogue of French eBooks for the visually impaired[2]. At present 2800 subscribers have access to over 30,000 titles.

BrailleNet is responsible for coordinating the project and providing technical development, support and maintenance. Since its inception in 2012, the BNFA has been committed to developing tools and services that meet the needs (objective) and preferences (subjective) of its users.

This re-articulation of the interpersonal role of the library, where the collection-centered approach is replaced by a user-centered model, allows the BNFA to be responsive to the technology, devices and practices of its users.

Guiding users in a digital reading environment

A digital reading environment provides the print disabled reader with a wealth of titles and embedded features designed to support individual needs. However, without the necessary guidance, this complex environment can be perceived as presenting further barriers to the reading experience. The BNFA strives to inform, engage and support its users while being sensitive to the individual nature of the reading process.

To ensure users find the books they are looking for, the BNFA has put a number of access points in place:

- **Optimized search facility on the website:** The BNFA launched a new website in June 2014. A user-centered design approach was adopted with the aim of improving the overall usability of the site for both sighted and visually impaired users. Feedback from user questionnaires fed directly into its design, and a 15% increase in the number of downloads was observed when the new site went live.

- **Curated content:** Themed selections informed by current affairs (such as the anniversary of the Normandy Landings) or important events (such as the invitation of Brazil to be guest country at the 2015 Paris Book Fair) are presented on the BNFA website. Each week the BNFA also selects two "librarian picks" that they feel will be of particular interest to users.

- **Weekly newsletter**: BNFA users receive a weekly newsletter listing the latest additions to the catalogue. This newsletter contains direct links to download these titles. In the six months that followed the first newsletter in October 2013, the number of downloads increased by 62.5%, and the number of active users[3] increased by 30%.

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2. The French law on copyright in the information society (DADVSI, 1 August 2006) permits accredited adaption organizations (charities, libraries, etc.) to adapt works for people with disabilities without prior authorization from or payment to copyright holders.
3. An active user downloads at least one book per year

- **Social networks**: Readers who follow the BNFA on Twitter receive regular reading suggestions or information on new titles.

To help users understand how to optimize their reading experience, the BNFA provides succinct guides on the website along with case-by-case advice via telephone and email.

In addition to providing technical support, the BNFA strives to give users full control of their reading materials. For readers of PDF files, for example, it is possible to customize the layout of files (font size, color, etc.). BrailleNet is currently developing further functionalities that will be available to each user via their online account.

When BrailleNet introduced text-to-speech books that could be read on any DAISY device in 2011, it saw subscriptions rise by over 40% in less than a year. Today, mainstream mobile devices (tablets and smartphones) are still little used by print disabled users due to inadequate software. BrailleNet hopes to remedy this by creating a dedicated BNFA app on both iOS and Android. In addition to facilitating mobile access to the BNFA catalogue, it will have built-in functionality that will enable users to access complex content such as mathematical formulae.

An acquisition policy steered by the needs of users

BrailleNet adds a selection of new publications to its catalogue, and continues to adapt classics that were previously unavailable. However, over a third of its additions result from user requests. While all suggestions must be approved by the librarian after careful deliberation on the basis of overall interest to BNFA users and feasibility, BrailleNet believes that allowing the user to play a pivotal role in the development of the library catalogue is core to the user-centered library model.

Adapting the reading experience to meet individual needs

Unlike providers like iBooks or Amazon, the BNFA encourages print disabled users to get the most out of the reading experience by offering digital formats that can be tailored to individual needs and preferences. Users have the option to read their digital eBook files on a number of devices: portable audio players, refreshable braille terminals, text-to-speech devices, tablets, computer monitors with large-print displays, etc. As content and presentation are no longer intrinsically linked, the user is free to choose the most comfortable reading option available.

This large choice is possible thanks to the Digital Accessible Information System (DAISY) format. Built on XML technologies, the features offered by the DAISY format are now part of the EPUB 3 standard. Recognized by the publishing world as the international standard for eBooks, EPUB 3 provides a general framework to meet the specific needs of users.

The options available to BNFA users have also widened a result of pooling catalogues from partner organizations and the fact that effective production tools are now in place. Several types of audiobooks are available in real and synthetic voice alongside text books produced either from publisher source files or from hardcopy books that have been scanned by Optical Character Recognition (OCR) technology and corrected manually.

When publishers provide well-structured XML files, production is considerably accelerated. All this is made possible through French legislation on copyright exception and may further increase once the Treaty of Marrakesh has been ratified.

Listening, understanding, and responding to user needs

There are a number of ways for users to make their needs known:
- Direct contact with the librarian via email and telephone
- Responding to questionnaires
- Indirectly via user metrics

All comments, suggestions and trends that surface via these channels are considered when looking at ways to improve the library service.

A survey conducted in April 2014, for example, revealed that 59% of participants found the default text-to-speech voice to be good or excellent, but most users indicated that they would prefer the option of a another voice. In response to this, and via the DAISY Pipeline[4] project, BrailleNet is developing a tool that will allow users to select a synthesized voice of their choice (e.g. voice A to read the text, voice B to read titles, voice C to read footnotes, and so on).

To better meet the needs of its users, the BNFA is also exploring ways to simplify access to its catalogue. Implementing the DAISY Online protocol, for example, will allow reading applications to connect directly to the BNFA catalogue and download books without having to rely on a Web browser or a screen reader which often represent further barriers to accessing books.

Conclusion

The BNFA strives to offer a highly customizable and open service which meets the needs of all its users. It is working with international standards to develop a service that can be accessed directly via mobile or desktop applications or dedicated devices in order to retrieve and adapt accessible content that is generated on demand according to the specific needs and preferences of its users.

Learning Points

- In order to reach as broad an audience as possible, digital libraries have a duty to be responsive to the technology, devices and practices of their users.
- The digital librarian must not relinquish his or her role as mediator: without the necessary guidance, users can come up against further barriers in the digital reading environment.
- eBooks delivered in DAISY and EPUB 3 standards have built-in accessibility features and can be customized on a multitude of platforms and devices to meet individual needs and preferences.
- The BNFA has a number of channels in place to monitor user needs and preferences and is working on new technological solutions that will provide a rich, ubiquitous and seamless reading experience for its users.

4. The DAISY Pipeline is a cross-platform, open source framework for DTB-related document transformations. It provides a comprehensive solution for converting text documents into accessible formats for people with print reading disabilities.

Evaluating the user experience: an essential step in the user-centered design cycle

User testing (UX) is all the rage in the world of digital design. But what does it mean, and how in practical terms does one go about ensuring software, websites, mobile applications and digital services meet the needs of users?

By J. M. Christian Bastien, Director of the PErSEUs Laboratory, University of Lorraine, Metz

J.M. Christian Bastien holds a Master in Psychology of Cognitive Processes, a postgraduate degree in Ergonomics and a PhD in Cognitive Psychology with a specialty in Ergonomics from the Université René Descartes in Paris. After working as an engineering expert at the Institute for Research in Computer Science (INRIA), he held a lecturing post at the University René Descartes. Christian was a researcher at the Computer Research Institute of Montreal. Today he directs the PErSEUs Laboratory (Psychologie Ergonomique et Sociale pour l'Expérience Utilisateur, EA 7312) at the University of Lorraine in Metz. His research focuses on the use of interactive software and the Web, user-centered design methods and ergonomic assessment methods.

Introduction

User experience (UX) has become a fashionable buzzword used by everyone involved in designing interactive systems, from computer scientists to developers and visual designers. Almost every large IT company has its own UX department and specialists, and there are ever more seminars, conferences and workshops on the subject of UX.

But what exactly do we mean when we talk about UX? Can UX be reduced to the design of all software, mobile applications, websites and digital services? How are the end users – key to the concept – involved in the development of user interfaces? How does one ensure users' needs and their contexts of use are taken into consideration? How does one ascertain whether one's users are satisfied with their experience? In other words, what are the development processes, methods and expertise that must be put in place in order to ensure that a user has a "positive" experience?

The expression "user experience" first appeared in the nineties and came to replace the concept of usability, namely "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use"[5]. However, UX didn't simply replace the concept of usability. Broader in scope, it covers more subjective considerations such as users' emotions, beliefs, preferences, and perceptions. But the methods that are available to centre the design process on users are the same, some simply having evolved to embrace these subjective aspects. The methods that can be used to ensure good UX have been documented over the years and are listed in the related ISO standards[6]. Among these are evaluation methods, which will be discussed in this paper. For ease of comprehension, these can be classified in four broad categories:

1. Usability inspection methods
2. Model-based methods
3. Usability testing
4. Surveys and questionnaires.

These evaluation methods are an essential component of the development process and enable stakeholders to validate design choices.

5. International Organization for Standardization (1998). ISO 9241-11:1998: Ergonomics requirements for office work with visual display terminals (VDTs) -- Part 11: Guidance on usability. Genève, ISO.
6. International Organization for Standardization (2010). ISO 9241-210:2010: Ergonomics of Human-system interaction – Part 210: Human-centered design for interactive systems. Genève, ISO.

Usability inspection methods

Usability inspection consists of evaluating the look and feel of an interface based on a given set of guidelines or standards. This may relate to the organisation and positioning of the menu and menu items, the organisation of information on a given webpage, the nature and comprehensibility of user feedback, and so on. The aim of this method is to identify possible design choices that contradict guidelines and that are likely to result in user interaction problems or difficulties. This method is relatively cost effective but requires some expertise in ergonomics and human factors[7]. It can be applied early on in the design process: on paper prototypes and mock-ups as well as on live releases. Once the design flaws are identified, ways of fixing them are provided by the analyst. To conduct such evaluations, analysts can rely on a variety of documents and standards[8].

Model-based evaluation methods

This kind of evaluation involves the collection of usability data before developing a prototype or interactive system[9]. In other words, it attempts to determine the usability of an application according to a model of how users are expected to interact with the system and to predict, among other things, the time a user will take to accomplish specific tasks. A detailed description of the interface and precise task descriptions are needed. The model then describes how a user would accomplish the tasks. By using psychological theories, the model-based evaluation method predicts usability metrics. With this type of method, comparisons can be made between different design choices. This evaluation method is seldom used in practice.

Usability testing

Usability testing is undoubtedly the best-known, and indeed best-documented, evaluation method. There are countless books and articles dedicated to usability testing. Due to the fact that real users (or potential users) are asked to accomplish real tasks, it could be said to be the method that most directly evaluates the ergonomic quality and user experience of a given interactive system. Analysts are exposed to first hand experience of the difficulties encountered by users. These tests tend to be conducted in "usability laboratories", i.e., rooms equipped with recording tools enabling the analyst to record users behaviour and comments. Other pieces of equipment such as eye tracking tools have been added over the years, providing an insight into how users explore the interface visually. However, this method can prove both time consuming and expensive: test sessions may require several hours per user, and the analysis of the data is a time consuming task. This results in limited numbers of users, often no more than 10 to 15, being enlisted.

Thanks to the Internet, however, usability testing can now be conducted remotely and involve greater numbers of participants. Different systems have been developed to allow people to accomplish tasks simultaneously on applications or websites, at home or even at work. Web tools can be used to collect and automatically analyze data, including screen recordings, in order to establish how users interact with different technologies.

One such tool is Evalyzer, developed by the University of Lorraine (www.evalyzer.com). This tool allows project teams to capture data and screen recordings of users interactions with a web browser. It also allows automatic analysis and visualisation of the data. With such a tool, dozens and even hundreds of people can be recorded simultaneously, resulting in more representative and reliable data.

Surveys and questionnaires

Usually, user testing is supported by user satisfaction questionnaires or surveys[10]. These can include anything from a dozen to a hundred questions. Their content must be worded so as to be easy to understand and answers are best formulated in terms of agreement or disagreement.

Conclusion

Applying all the evaluation methods discussed in this paper allows project teams to identify design flaws, i.e. design choices that will induce users' difficulties. Once these flaws have been identified, solutions may be envisaged, providing these are validated by further user testing. Applying a user-centered design process necessitates an iterative approach, and is the only way to ensure a positive user experience.

Learning Points
- There are a number of validated and well-documented user experience methods.
- The four categories of methods outlined in this paper should be used together: the ergonomic quality of an interactive application cannot be evaluated by using one method alone.
- The evaluation process should begin with usability inspection, then user testing and conclude with a satisfaction questionnaire.

7. "Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. Ergonomists contribute to the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of people." (http://www.iea.cc/ergonomics/)
8. Bastien, J. M. C., & Scapin, D. L. (1995). Evaluating a user interface with ergonomic criteria. International Journal of Human-Computer Interaction, 7, 105-121.
9. Nielsen, J. (1994). Heuristic evaluation. In J. Nielsen & R. L. Mack (Eds.), Usability inspection methods (pp. 25-62). New York: Wiley.
10. Nielsen, J., & Mack, R. L. (Eds.). (1994), Usability inspection methods. New York: Wiley.

The Renow web quality process: An effective alliance between User Experience and e-Accessibility

The Renow framework provides government institutions with the means to ensure that their websites fulfill e-Accessibility and User Experience criteria and respond to user evaluation methods, thereby taking the needs of all users into account.

By Gautier Barrère, State Department for Information Technologies, Luxemburg

Gautier Barrère is a Psychologist, User Experience (UX) Strategist and specialist in persuasive design. For over 8 years, he has been implementing UX methods and techniques in governmental agencies. Since 2009 he has coordinated the "Web & User eXperience" Office of the Luxembourg government which brings together UX specialists, interaction designers, graphic designers, accessibility experts, developers and project managers. In parallel, Gautier is the founder of the Franco-Luxemburg branch of User Experience specialists (FLUPA) and a member of the OpenWeb collective.

History

The Centre des technologies de l'Information de l'Etat (CTIE) began establishing Renow (www.renow.public.lu) as the Luxembourg government's web quality framework in early 2000, and the first major step in its implementation was the selection of an efficient content management system. Since then, Renow has been expanded continually and has become a mature framework reconciling User Experience (UX) and e-Accessibility.

Renow – an introduction

The CTIE's primary role is to provide information technology services and solutions to government institutions. The WEBUX team, responsible for developing and maintaining Renow, could best be described as an in-house web design agency that provides all of the necessary skills and resources needed for web projects: project managers, developers, interface designers, ergonomists and accessibility experts. This allows clients to focus exclusively on their own specialty and deliver high quality content.

Renow can be applied as soon as a project features users and a user interface. As the stated purpose of Renow is to understand how users interact with websites, what their demands are in terms of ease-of-use, navigation, etc., the main aspects of quality immediately become apparent: ergonomics and accessibility.

Combining User Experience and e-Accessibility

Deploying a web quality framework in a government structure is a highly complex mission. It becomes even more complicated when it also involves accessibility concerns, and has very limited resources at its disposal. This is the case for Renow, which has to provide a wide set of know-how to a large project portfolio on very limited resources.

The four measures listed below have been the main instruments for combining UX and e-Accessibility when designing websites.

Use of a common, centralized project management methodology

QUAPITAL-HERMES, an adaptation of the Swiss HERMES project management methodology, was adopted by the Luxembourg government in 2000. It shares many traits with other well-known methodologies (such as PMBOK, Prince2 etc.), but has been adapted (or "tailored") to Renow's specific web design approach.

The adaptation was made based on the ISO 13407 (Human-centered design processes for interactive systems, now ISO 9241-210) standard by adopting its four key provisions:
- Understanding and specifying the usage context
- Specifying the needs of users and organizations
- Providing design solutions
- Evaluating these solutions in the light of users needs

The objective was to:
- Define key moments in the project for the implementation of the activities prescribed by the ISO standard;
- Define the minimum quality standards for deliverables;
- Assemble a team with the necessary skills to produce these deliverables.

These measures enabled us to define the deliverables at key moments in the project (i.e. project proposal, tree structure, graphic design, paper prototyping, pre-launch checks, etc.) along strict quality guidelines. They also enabled us to establish the technological prerequisites in terms of user centricity, in order to iteratively design and test the final product directly with the end users.

The next logical step was to create a clearer definition of UX techniques involving end users.

Using 21 UX techniques
On the basis of QUAPITAL HERMES, Renow lists 21 classic UX techniques involving end users, such as user testing, eye tracking, focus groups, card sorting, talks, observation, paper prototyping, task analysis, etc. In this context, user tests are done piecemeal with special needs users, such as the visually impaired. While these tests may not yield results that are universally applicable to all disabilities, they nonetheless involve people with disabilities in the design process, which widens the scope of design decisions.

Compliance with ergonomics criteria and Web Content Accessibility Guidelines (WCAG)
Like most frameworks of its kind, Renow features a checklist that includes multiple quality criteria and web components, such as development, responsive design, accessibility, ergonomics, writing for the web and etc. Renow also implements the UX ergonomic assessment technique, which evaluates interfaces according to classic ergonomic criteria. While there are numerous sets of ergonomic principles available, Renow specifically uses the Scapin & Bastien criteria[11].

Throughout a project, WCAG and ergonomic criteria are constantly cross-referenced in both the Renow checklist and the projects ergonomic criteria in order to make ergonomic choices that are both technologically feasible and compliant with usability principles.

This approach enables us to make responsible design choices that balance ergonomics and e-Accessibility.

Implementation of an ergonomic and accessible web framework
The implementation of an ergonomic and accessible web framework is the final step in our attempt to balance ergonomics and accessibility. As a result, Renow provides a modular web framework that features e-Accessible components that can be tested in real-life usage contexts, thereby guaranteeing their usability. This approach enables us to respond quickly to our clients needs while leaving us enough space to continually produce innovative, high value components.

Accessibility of means
Renow offers an efficient framework for the production of all types of websites while allowing web editors to focus on their core task: producing content.

Despite the availability of training modules, web content guidelines, compliance tools, and of an ATAG-compliant CMS, the most problematic area of the Luxembourgish Internet presence is content production. While many other countries have the same problem, the situation in Luxembourg is even more complex due to its cosmopolitan and multilingual context and the fact that there are no fewer than three official languages – Luxembourgish, German and French.

While continuing to raise awareness, we therefore use an "accessibility of means" approach, i.e. constantly weighing up which accessibility criteria can realistically be implemented and which cannot. In order to render this process transparent to users and to our clients, this is done through clearly stating in the accessibility statement which content and services are not accessible due to lack of means.

In conclusion, and as a testimony to the importance of involving people with special needs in the design process of user-centered services, a quote from a disabled participant sums up the shortfalls of current approaches to e-Accessibility: "Disabled people don't want special, accessible products – they simply want to be able to use whatever is there". And that particular objective can only be attained if disabled people with specific needs are involved in the product design process as a matter of course.

Learning Points
- It is possible to combine e-Accessibility and usability criteria and evaluation methods in a single framework.
- In order to provide user-centered services, it is essential to involve users, including those with special needs, in the design process.
- Project managers, designers and developers can ensure that a website fulfills e-Accessibility and usability criteria, but content providers are the long-term guardians of e-Accessibility.
- When working on a limited budget, it is important to weigh up which accessibility criteria can realistically be implemented and which cannot. Any shortcomings that result from a limited budget must be listed in the Accessibility statement.

[11]. Scapin, D. L., & Bastien, J. M. C. (1997). Ergonomic criteria for evaluating the ergonomic quality of interactive systems, Behavior & Information Technology, 16, 220-231.

User Modeling for Web Accessibility

When used correctly, analytical data on how individuals interact with websites has the potential to enhance user experience by tailoring presentation, content and functionality to each user. Providing certain technical challenges are overcome, users with disabilities in particular are set to benefit from this practice, known as user modeling.

By Shadi Abou-Zahra, Worldwide Web Consortium (W3C) Web Accessibility Initiative (WAI)

Shadi Abou-Zahra works with the W3C Web Accessibility Initiative (WAI) as Activity Lead of the WAI International Program Office, which includes education and outreach, coordination with the WAI Technical Activity, and liaisons with standards organizations and disability groups. Shadi coordinates WAI outreach in Europe. He is the scientific coordinator of the WAI-ACT Project (IST 287725), chairs the Evaluation and Repair Tools Working Group (ERT WG) and is the staff contact of the Research and Development Working Group (RDWG).

Introduction

Websites have become highly dynamic and increasingly responsive towards the particular context of their users. For example, many websites adapt their content, including their presentation and functionality, according to the devices being used, such as mobile phones, tablets, and digital televisions. Websites also adapt their content according to the preferences, interaction, and behavior of their users. For example, websites prioritize news articles and products that seem to be more relevant to a user by observing previous activity on the website, or according to interests specified by the user.

This practice of adapting content according to the profiles of website users is commonly referred to as *user modeling*. While it is typically used to enhance the usability of websites for all users, it also has the potential to improve accessibility of websites for persons with disabilities. For example, websites could optimize their content, including the presentation and functionality, according to the needs and preferences of their users. Most simply, websites could present content using large fonts, high contrast, and with sign language videos depending on the users accessing the website. More advanced usages of user modeling could include e-learning platforms that provide the same courses (learning objectives) in formats, such as auditory, tactile, and visual, that are better adapted to the specific user.

Such adaptations are supported and encouraged by the W3C/WAI Web Content Accessibility Guidelines (WCAG) 2.0, provided that the website as a whole addresses the broad spectrum of accessibility requirements for website users with different disabilities. However, there are several technical challenges that are slowing down widespread deployment of user modeling for web accessibility. One particular issue relates to privacy concerns around websites asking for or collecting sensitive information on users and their abilities. There is also at present no widely recognized format for recording accessibility needs and preferences ("profiles"), resulting in developers tending to reinvent their own formats.

To help coordinate and promote further progress in resolving these challenges, the WAI Research and Development Working Group (RDWG) organized an online symposium[12] on this topic on 15 July 2013. The goal was to bring together researchers, practitioners, and users with disabilities to explore current and past research experiences. The symposium analyzed different approaches and implementations, as well as promising future research and development directions. The symposium clearly showed important successes but it also highlighted important areas that we as a community need to continue to focus on.

User Models

User models typically consist of user profiles and classifications. These contain information about users and their preferences that are relevant to the system. For example, a shopping website may record information about the types of products typically purchased, viewed, or in which users have expressed an interest. The user profile may also include information about the age, gender, and address of the user, as well as contextualized information such as their current location, device, screen size, and other aspects that are specific to the session.

Simple user models might only include a few aspects while more sophisticated ones will typically include a variety of data points. Data points that rarely change are typically referred to as static, while other ones are referred to as dynamic. This data can be provided directly by users, for example when creating a user account as is customary for many websites, or gathered by the system as users interact with the website. Data may be temporal – stored for a specific duration, such as during a particular session – or permanent – stored indefinitely for future sessions. Data points, regardless of how they are acquired, can be incorrect or imprecise for a variety of reasons.

Drawing conclusions (classifications) based on user profiles adds yet another layer of potential inaccuracy that can reduce their effectiveness. For example, deducing that a person has an interest in a product because it was viewed or even purchased may be misleading, for example if this person was buying the product for another person. Systems also often utilize so called stereotypes to classify users. For example, the system may decide that you are interested in a particular product or news article based on your age and gender. Collecting appropriate data and making adequate classifications are critical for successful user modeling systems, and some websites are able to do this effectively.

Challenges

While collecting appropriate data and making adequate classifications can prove problematic for user modeling in general, collecting sensitive personal information on accessibility needs and determining appropriate adaptations according to these needs can represent a further challenge. For one, there is still relatively little validated research about the needs and preferences of people with disabilities on the Web, in particular for certain types of disabilities such as cognitive and learning disabilities. Furthermore, preferred ways to interact with websites vary from one person to another, so that generalization could inadvertently lead to user experiences that are less rather than more satisfactory for users.

Another challenge is to maintain website accessibility for all users, without losing focus on particular user groups. For example, a website that adapts to the accessibility needs of users with auditory disabilities by providing sign language videos should not become less accessible for, say, keyboard users. This does not mean that every adaptation (sometimes called a "view") must be accessible to all users, but rather that the system as a whole should be if it is not to exclude certain users. The W3C/WAI Web Content Accessibility Guidelines 2.0 provides important guidance on "alternate versions", "change of context", and "default presentation" that are relevant for dynamic and adaptive systems.

From a technical perspective, there is a lack of standardized formats for recording data about accessibility needs and preferences, in particular with sufficient consideration for privacy and confidentiality. There are several promising approaches, such as that of Global Public Inclusive Infrastructure (GPII), where sensitive data remains with the user and is only temporarily used by systems in the context of a session. However, more research and development effort is needed by the community to bring about more mature and scalable implementations. It is paramount that these data formats build on the readily available open W3C standards of the Web, such as Extensible Markup Language (XML) and Resource Description Framework (RDF), to ensure interoperability across various systems.

Different approaches, implementations, and research avenues have been introduced and documented in a W3C Working Group Note to help promote and facilitate further effort in this field. The working group welcomes further discussion on this and other accessibility research topics.

Learning Points

- Advanced web technologies such as HTML5, CSS3, and WAI-ARIA provide capabilities to design dynamic and interactive websites that are accessible to persons with disabilities. Adaptations based on user modeling can be used to further enhance the user experience for persons with disabilities by better aligning content and functionality to their needs and preferences, without disadvantaging certain users.
- A number of research and development challenges must be addressed by the digital community in order to fully implement user modelling and exploit its full potential.
- The W3C/WAI Research and Development Working Group is working with researchers, practitioners, and users with disabilities to explore current and past research experiences and to promote and facilitate further effort in this field.

12. User Modeling for Accessibility, Online Symposium, 15 July 2013: http://www.w3.org/WAI/RD/2013/user-modeling/

User Generated Content and e-Accessibility

Persons with disabilities have been sharing information about access opportunities and barriers in their communities for decades. With the advent of intelligent web service applications, users can now collect, enhance and share information tailored to their interests and to their disability in real time. Providing mainstream players and accessibility specialists work together, the possibilities are endless.

By Mike May, CEO of Sendero Group

Mike May is co-founder and CEO of Sendero Group, developers of the first accessible GPS for the blind (1999) and distributors of various adaptive technologies. He has been the principle investigator on several US federal grants as he works with numerous organisations to advance way-finding technologies around the world. Mike has been a pioneer in new product development since 1980.

Introduction

It is likely that we have all heard the term "User Generated Content", or "crowdsourcing", but never realized how it could dramatically change the way we access information about our surroundings. Crowdsourcing is an online exchange of information, ideas and solutions creating a distributed problem-solving and production model[13]. Since "no one knows everything and everyone knows something," the idea behind crowdsourcing is that intelligence stems from the combination of skills, understanding and knowledge[14].

Crowdsourcing is based on an Internet increasingly influenced by intelligent web services that empower the user to contribute to developing, rating, collaborating on and distributing Internet content and customizing Internet applications. In general, the people who contribute to crowdsourcing applications do so without expectation of payment. In fact, the amount of money paid to the crowd for high quality labor relative to the amount that labor is worth in the market resembles a slave economy[15]. So why do so many people eagerly participate? They do so to connect with peers, to achieve a certain level of fame, notoriety or prestige, and to express themselves[16].

So at the end of the day, we have a limitless and customizable source of information produced at little to no cost. What this means for a person with a disability is that they can collect, enhance and share information tailored to their interests and to their disability. The boundless scope of this information could include, for example, public transportation schedules, a Braille menu at a restaurant, spatial layouts, locations of public restrooms, and physical accessibility features, such as wheelchair ramps and accessible kiosks. Persons with disabilities have already been sharing knowledge about the access opportunities and barriers in their communities on a much smaller scale. For decades, they have been sharing travel anecdotes with others who they happen to know. Participating in crowdsourcing activities will match the power of communication technology with the deep knowledge base of community members, codifying a hitherto untapped bonanza of access content.

13. Brabham, Daren (2008), "Crowdsourcing as a Model for Problem Solving: An Introduction and Cases", Convergence: The International Journal of Research into New Media Technologies 14 (1): 75–90
14. Lévy, P. (1997 [1995]) Collective Intelligence: Mankind's Emerging World in Cyberspace (R. Bononno, Trans.) New York: Plenum

15. Brabham, Daren (2008), "Crowdsourcing as a Model for Problem Solving: An Introduction and Cases", Convergence: The International Journal of Research into New Media Technologies 14 (1): 75–90
16. Organization for Economic Co-operation and Development (OECD/OCDE) (2007), Working Party on the Information Economy, "Participative Web: User Created Content". Accessed from http://www.oecd.org/dataoecd/57/14/38393115.pdf

Crowdsourcing information is abundant. However, without a way to make the information meaningful to the user, all this information is useless. Sendero Group researchers, funded by various Department of Education grants, have identified another area of high need of information accessibility: Location-Based Information. The idea behind Location-Based Information is that relevant data in the form of news broadcasts, historical anecdotes, or tour guide information will be linked to the user's current location giving real-time, relevant information. Whereas sighted people have alternative access to print signs, posted transit information, monument plaques, museum descriptions and historical markers, blind people do not. The genius in the crowdsourcing solution is the ability to unite various technologies.

Need for setting a standard

The Smith-Kettlewell Eye Research Institute is currently leading a project which gathers a Community of Practice (CoP) to try to build a consensus among a wide range of groups who are crowdsourcing disability-related geographical information. Some groups are gathering information about the location of bus stops and subway entrances, while others are collecting locations and attributes of curb ramps and accessible building entrances. Still other groups are cataloging non-visual landmarks such as audible fountains or wind chimes. The fact that so many different communities are gathering disability-related geographical information poses the potential problem of different data cataloging approaches. The Accessible Geographical Information Community of Practice (GeoCoP) will create community-based guidelines and de facto standards to help ensure that accessible geographical data is tagged and cataloged consistently and reliably. This will ensure that different communities will be able to find and use disability-related geographical information when it is needed.

Apps that harness crowdsourcing:

Wikipedia is a crowdsourced Encyclopedia online resource where users are allowed to edit the content freely.

Foursquare / Blindsquare is an iOS-app that helps blind and visually impaired people to travel independently by providing them with spoken information about their environment. It gets information of the surrounding environment from Foursquare[17].

AbleRoad connects people with accessible businesses. AbleRoad gives persons with disabilities, families, friends, caregivers and business owners an online destination to rate and review community access[18].

OpenStreetMaps is built by a community of mappers that contribute and maintain data about roads, trails, cafés, railway stations, and much more, all over the world.[19]

Yelp and other rating feedback apps.

Need for momentum to guarantee success

For crowdsourcing to succeed, there needs to be collaboration between mainstream players (FourSquare and OpenStreetMaps) and accessibility specialists.

Other Examples of Crowdsourcing:

Crowdsourcing with User Points of Interest (POIs) for Sendero GPS: Sendero has focused its energies on the creation of an electronic wayfinding system that enables people with no functional vision to move efficiently and comfortably through the streets of their villages, towns and cities using accessible information to monitor their locations, travel direction, and the names of businesses and other points of interest they are passing. They can also use the device to create and then follow walking routes in the same manner as automobile GPS devices. In addition, users can electronically tag specific points, such as bus stop signs or ATM machines, and later relocate them using the device.

YouDescribe: Smith-Kettlewell has also been involved with development of tools for crowdsourcing video descriptions. By creating a cloud-based repository for description data called the Descriptive Video Exchange (DVX), anyone, anywhere, can create and distribute video descriptions to everyone, everywhere. In the future, DVX could be used as a repository for crowdsourced descriptions for streamed videos from YouTube, Netflix, Amazon, or other sources on the web. DVX is already having an impact on the availability of described YouTube videos through Smith-Kettlewell's experimental YouDescribe.org web site – an online tool that allows volunteers to describe any YouTube video without copying, or otherwise impacting the original video.[20]

Benetech's BookShare project: Volunteers all over the world are invited to scan, process, and upload textbooks to be used by students with print-reading disabilities. Now, with POET, Benetech has created a new crowdsourcing tool that allows volunteers to describe images in textbooks. New tools under development by Touch Graphics, Inc., and Smith-Kettlewell are enhancing the POET system by automating the creation of image descriptions based on a virtual interview process conducted with volunteer image viewers. This exciting approach to crowdsourcing of image description and transcription is likely to lead to a significant increase in the availability of image descriptions in accessible textbooks used by students with a wide variety of disabilities.[21]

Learning Points

- Crowdsourcing has the potential to gather a limitless and customizable source of information at little to no cost.
- Crowdsourcing builds on the tradition of sharing access information that has existed for decades between disabled community members.
- The full potential of crowdsourcing will be realized when mainstream repositories are fully integrated with specialist accessibility platforms.

17. BlindSquare.com http://blindsquare.com/
18. AbleRoad: http://ableroad.com/about.php#sthash.4kQRjo04.dpuf
19. http://www.openstreetmap.org/about
20. YouDescribe Project at SKI: http://youdescribe.ski.org/rel/
21. BookShare.org https://www.bookshare.org/

e-Accessibility as a driver of social innovation: the case of Jaccede.com

Its name may sound French but the concept of Jaccede is undeniably international. The website and smartphone app is developed and designed by the registered charity of the same name to list any accessible place worldwide on a free and collaborative online platform.

By Claire Baker, Volunteer Manager, and Damien Birambeau, founder and CEO of Jaccede.com

Damien Birambeau has been an advocate for accessibility since as far back as he can remember. Not only has he been a wheelchair-user since his childhood, he has also created a unique and unbiased approach to the subject which has created a following in France and which he brands the □Jaccede attitude□

Claire Baker came to know Jaccede during her linguistics studies abroad, and left her home country of England to become Jaccede□s chief communicator in French and English at the organization's Paris offices.

Introduction

Jaccede.com is a reference for people with limited mobility, but also for those who are not directly concerned by accessibility, but committed to making a contribution to this collaborative guide.

Detailed and universal accessibility information for restaurants, parks, public services, and over 100 other different types of places can be added to the Jaccede online guide by anyone with an internet connection via an easy-to-use checklist. To date, 38 countries have at least one accessible location featured on the guide. In the coming years this figure is set to rise significantly as translations of the guide are made available to the international community.

The guide to accessible places

Damien Birambeau, a French wheelchair user and digital innovator, created Jaccede in 2006. His ambition was to ensure that all information registered on the website about a given location was positive, potentially useful to all people with limited mobility, and able to withstand the test of time by continuously evolving with each new contribution.
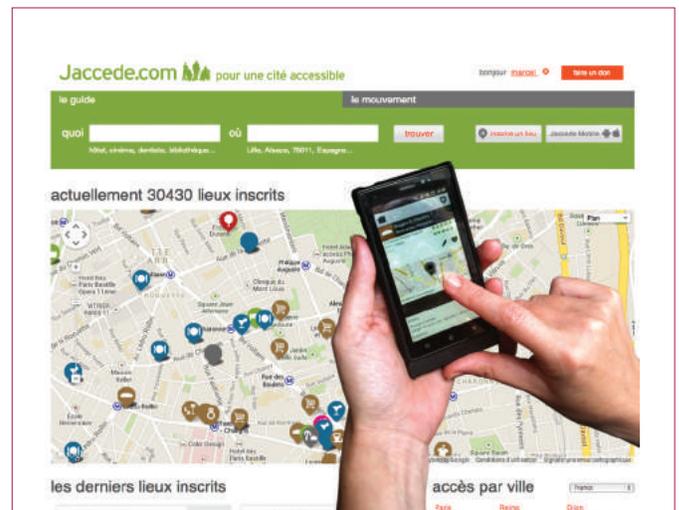
Since then, more than 72,000 places have been added to the guide, 50% from 2,500 regular users and 50% via partner websites such as Handicap.fr and La Poste. In the summer of 2014, the entire Jaccede website and app were made available in English, opening up new possibilities for international users and information exchange with well-recognized platforms using the Jaccede Application Programming Interface (API). This technically innovative API, developed internally by the charity, allows other guides to integrate Jaccede accessibility information on places (restaurants or hotels, for example) with those listed in separate public databases.

User-driven and accessibility-focused

"But what has this got to do with e-Accessibility?" one might ask. Aside, of course, from the fact that this is an 'e' tool, there is a clear and significant link between the information we search for online and the way we access it. Jaccede aims to reconcile digital accessibility with physical accessibility.

Location directories and online guides that are technically accessible to the visually impaired, the mentally disabled or the elderly, are of little use if the information they present is not relevant or of value to these users. For example, an internet user searching for a restaurant on a mainstream directory may be greeted with an accessible website, conceived by the most competent of programmers and graphic designers, but will not necessarily be able to find access details for each listing. We believe that coherence between technological access and physical access is essential.

Freedom: the measure of success

Jaccede firmly believes that free access to detailed information on the physical accessibility of a place gives each person the freedom to decide whether or not they want to go there. Jaccede never claims a place is "accessible" or "inaccessible" to a given user group, as each person has different requirements or preferences, and therefore different criteria for what constitutes an accessible place.

An internet without limits is a world without barriers

Whilst the seemingly utopian idea of a barrier-free world is still a speck on the horizon, easy access to information about existing barrier-free places has become a reality. The Jaccede API is sophisticated enough to be integrated into mainstream platforms and online databases, allowing accessibility information to be searchable by users of such platforms.

By displaying accessibility information about public places alongside menu information, reservation options and addresses, this information comes to be expected, and users don't have to consult three separate guides to collate all the necessary details to consider a trip. Currently, someone looking for an accessible restaurant in a given area will look on one website for food reviews, another for accessibility criteria and another for international user-driven comments. Jaccede aims to centralize all of this information through its API and to share it with the world.

Mobilizing the masses

Participation is the cornerstone of Jaccede.com. This is why members of the charity organize Accessibility Days throughout the year to collect accessibility information to add to the guide and to raise awareness among the general public. So far such events have been hosted in France, Belgium, Spain, Monaco, Sweden and overseas French territories, and there are no limits to who can spearhead such an event. All that is needed is a willingness to unite a large number of people, some wheelchairs to lend to willing participants, and a quick briefing on how to identify and register an accessible place. Anybody can take part and the key success of the day is that each and every person comes away with the knowledge that they have contributed to the accessibility guide, and they have become life-long ambassadors of a universal cause.

Without people to contribute to the website and the Accessibility Days, Jaccede would not exist. While physical barriers to free and easy access still exist, there are now no barriers to using and working with Jaccede in order to strive towards a more accessible world for everyone.

Accessibility Day 2014 in Rennes, France. Photo by Jérôme Gombaud

Learning Points

- Information providers should not focus on any one disability. As well as being technically accessible, location-related content must be relevant to people with limited mobility.
- There is no way to define a place as "accessible" or "inaccessible"; the criteria are as varied as the people they relate to.
- Accessible IT tools are a step in the right direction, and can serve to collect and distribute information which can be useful to everyone at some point in their lives.
- Without the involvement of a cross-section of the population, barriers to access will never be addressed in a representative and constructive manner. Everyone is concerned by access information at some point in their life. We all have a responsibility to ensure that this information is available.

Towards a comprehensive and future-proof e-Accessibility Directive for the citizens of Europe

The European Disability Forum (EDF) represents disabled citizens across Europe. It believes that information and communication technologies and the web provide a gateway to all types of public services, constituting a great opportunity to combat isolation and social exclusion by enabling persons with disabilities to participate in all spheres of life. The proposed Directive on the accessibility of public bodies' websites for persons with disabilities and older people has become one of the Forum's key priorities.

By Rodolfo Cattani, European Disability Forum

Rodolfo Cattani is the Secretary of the European Disability Forum. He has a University degree in Philosophy of Science from Bologna University. He worked as a school teacher for 13 years and for almost 20 years he was Managing Director of the Italian National Library for the Blind. Since 1969, he has occupied several positions within the Italian Union of the Blind and Partially Sighted, where he is currently a member of the National Council. Since 1984 he has occupied various positions within the World Blind Union and the European Blind Union where at present, he is the Chairman of the Commission for Liaising with the EU.

Accessible online public services: a matter of urgency

The information society brings unprecedented scope for equal access to information, goods and services, along with the risk of further exclusion if such access is not guaranteed for all. It is a matter of fact that information and services are increasingly delivered online, yet at present less than 10% of public sector websites respect accessibility standards.

We live in an era of convergence, so there is an urgent need to fully address e-Accessibility across all platforms. Mobile devices and web applications are becoming the preferred user agents. Websites and their content must therefore be accessible regardless which device, application or assistive technology is used.

Solid legislative and market foundations

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) has been ratified by the EU and entered into force on 22nd January 2011. Most EU Member States have also ratified the Convention. The UNCRPD recognizes accessibility as a general principle (Article 3), which is of universal application. Article 9 stipulates that persons with disabilities should live independently and participate fully in all aspects of life, with access, "on an equal basis with others, to information and communications, including information and communication technologies and systems, and to other facilities and services open or provided to the public".

In the European Union (EU), the e-Accessibility sector counts over 175,000 companies and employs over 1 million people, with an annual turnover of some 154 billion euros. With such a huge market sector in place, there is significant potential for growth and greater inclusion.

Reinforcing legislation in Europe: first proposal for a Directive on the accessibility of public sector websites

On behalf of the disabled citizens of Europe, the EDF has been advocating for a binding legislation on e-Accessibility for many years, and the proposed Directive on the accessibility of public bodies websites for persons with disabilities and older people has become one of the forum s key priorities.

In December 2012, the European Commission released a *Proposal for a Directive on the accessibility of public sector websites* (Com(2012)721). The proposal lays down specific technical provisions whereby member States are responsible for making the content of certain types of public sector websites providing basic information and services related to civic and professional life accessible to all citizens. The proposal aims at harmonizing the laws, regulations and administrative provisions of the member States on the accessibility of these websites by defining standardized requirements. The Commission identified twelve categories of public sector websites which, according to a study of 2001 on eGovernement benchmarking, are considered essential to all citizens:

1. Income taxes: declaration, notification of assessment;
2. Job search services by labour offices;
3. Social-security benefits: unemployment benefits, child allowances, medical costs (reimbursement or direct settlement), student grants;
4. Personal documents: passports or driving license;
5. Car registration;
6. Application for building permission;
7. Declaration to police, e.g. in case of theft;
8. Public libraries, e.g. catalogues and search tools;
9. Request and delivery of birth or marriage certificates;
10. Enrolment in higher education or university;
11. Notification of change of residence;
12. Health-related services: interactive advice on the availability of services, online services for patients, appointments.

However, this first timid step in the right direction did not meet the expectations of organizations representing disabled citizens who deemed this response to be too little too late. In particular, the directive appeared too narrow in scope, since the proposed categories do not cover the majority of the basic services to the public, such as childcare, primary education, secondary education, general and local elections, public transportation and cultural activities.

Furthermore, no satisfactory enforcement and monitoring mechanisms were put in place, and the proposal was limited to the Internal Market (TFEU article 114). This approach was chosen because the diverging legal obligations and policies put in place by EU Member States fragment the internal e-Accessibility market. This implies additional costs for market players and consumers and impedes the free movement of goods and services. This approach is unsatisfactory because Article 3 of the Treaty on the European Union (TEU) states that the role of the market is, among other things, to promote social inclusion, equality, non-discrimination and social justice.

In addition, no explicit reference to accessibility as a right was made in the proposal.

As a consequence, EDF decided to continue its campaign.

A second, more ambitious proposal approved

EDF started a fruitful collaboration with the European Parliament, which, on the 26 of February 2014 at its penultimate plenary session of this mandate, approved a far more ambitious *Proposal for a Directive of the European Parliament and of The Council on the accessibility of public sector bodies websites and websites operated by entities performing public tasks.* Thanks to the commitment of the rapporteur and the positive work of the members of the Internal Market and Consumer Protection Committee, who expressed the view that the measures proposed by the Commission were neither sufficient nor far-reaching enough, the text was substantially improved and extremely valuable changes were made to the Commission proposal. First of all, the Parliament extended the scope of the directive which now includes all public websites and also those websites belonging to private entities that are providing basic services to the public. In annex A, the website categories are listed as follows:

1. Network services: gas, heat, electricity and water services; postal services; electronic communication network and services;
2. Transport-related services;
3. Basic banking and insurance services (including at least the following: basic payment account, home contents and building insurance, life insurance and medical insurance);
4. Primary, secondary, higher and adult education;
5. Statutory and complementary social security schemes covering the main risks of life (including at least those linked to health, ageing, occupational accidents, unemployment, retirement and disability);
6. Health-related services;
7. Childcare services;
8. Other essential services provided directly to the public to facilitate social inclusion and safeguard fundamental rights;
9. Cultural activities and tourist information.

Furthermore, the Parliament introduced a strong enforcement mechanism, including penalties for those who do not comply with the law, as well as a monitoring and reporting mechanism involving the representative organizations of persons with disabilities.

A solid proposal which must be adopted as a matter of priority

Member States are required to communicate the outcome of the monitoring process. The European Disability Forum believes that adoption of the proposal by the European Parliament will not only benefit persons with disabilities and older people but also reduce the digital divide across Europe. It will of course boost the Web industry by creating new job opportunities and strengthening competitiveness. Unfortunately the European Council is lagging behind and has not yet started negotiations in order to achieve the adoption of the directive.

On behalf of all disabled citizens, we are now calling on all Member States to prioritize this dossier and get it adopted as soon as possible. There is now a concrete proposal on the table and it seems possible to achieve a comprehensive legal and technical framework for web accessibility based on the principles of the UN Convention on the Rights of Persons with Disabilities.

Learning Points

- Despite the ratification of the United Nations Convention on the Rights of Persons with Disabilities by the European Union, and the existence of a solid e-Accessibility market sector, less than 10% of European public sector websites respect accessibility standards.
- There is an urgent need to fully address e-Accessibility across all platforms. Websites and their content must be accessible no matter which device, application or assistive technology the person is using.
- The European Commission's initial *Proposal for a Directive on the accessibility of public sector websites (Com(2012)721)*, published in 2012, did not meet the expectations of organizations representing disabled citizens who deemed this response to be too narrow in scope with insufficient enforcement and monitoring mechanisms in place.
- A second *Proposal for a Directive on the accessibility of public sector bodies websites and websites operated by entities performing public tasks* was put forward in 2014. This new proposal is applicable to a great many more websites, including all public websites and those belonging to private entities that are providing basic services to the public, and is supported by satisfactory monitoring process. This proposal has the full backing of the EDF on behalf of the disabled citizens it represents.

How can we make standards and legislation meet the needs of all consumers?

ANEC believes that standards build on legislation and are a suitable tool for making products and services accessible to as many consumers as possible, irrespective of their age and abilities. But how do we make standards meet the needs of all users?

By Chiara Giovannini, ANEC Senior Manager, Policy & Innovation

Chiara Giovannini is Senior Manager of Policy & Innovation at ANEC. She holds a Masters degree in European Law. Since 2002 she has been responsible for standardisation work in the sectors of Design for All (Accessibility), Nanotechnologies and the Information Society, including information and communications technologies (ICT). She is also in charge of ANEC's horizontal policy issues, supporting the Secretary General. She represents ANEC in several European Commission Committees and Expert Groups (ECCG, COCOM, IoT Expert Group) and CEN/CENELEC/ETSI Committees and Working Groups.

ANEC in a nutshell

ANEC, the European consumer voice in standardisation, was created in 1995 by the national consumer organisations and public authorities of the European Union (EU) Member States and the European Free Trade Association (EFTA) countries. ANEC is supported financially by the EU and EFTA Secretariat, and members contribute in kind.

ANEC provides both technical and policy expertise using a network of consumer representatives across Europe. Experts contribute directly to the work of the committees of the European Standards Organisations (CEN/CENELEC/ETSI) and the International Standards Organisations (ISO/IEC). ANEC focuses on eight fields of priority: Child Safety; Design for All; Domestic Appliances; Environment; Information Society; Innovation, Services and Traffic.

Why does ANEC exist?

In Europe, product safety and conformity legislation is complemented by the use of standards developed by the three European Standards Organisations (ESOs). Standards provide a presumption of conformity to legal safety requirements. This legislative technique – the New Approach[22] – helped create the Single Market for products. But standards go beyond safety as they provide the nuts and bolts of modern society. As with many domains, they are very important for accessibility.

However, although standards affect each of us every day, it is industry – the party that presumably benefits the most from the presumption of conformity offered by standards – that represents the loudest voice in standardisation. Industry has the financial and human resources to contribute to the development of standards, and therefore sets the rules of the game. And although it is not in the interests of industry to ignore the voice of consumers if it wants to sell its products and services, our experience is that businesses focuses on meeting the needs of the "average consumer", where costs are lowest and profits highest, to the detriment of those who are young, old or with disabilities. If and when standards are used for public policy objectives, they need to take into account the needs of all consumers. This is why ANEC exists[23].

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22. The New Approach is a legislative technique that consists of defining mandatory product requirements, while leaving the choice of technical solution up to interested and knowledgeable parties.
23. www.anec.eu

Why are standards important for e-Accessibility? Are they linked to legislation?

ANEC has been calling for the use of standards to complement legislation in other areas than product safety.

In February 2014, the final draft of a new Directive on Public Procurement was adopted by the co-legislators, the European Parliament and the Council of Ministers. The new rules that ANEC supported will require all public authorities to include accessibility requirements in their tenders wherever possible[24].

During the same month, the European Parliament voted on a *Proposal for a Directive on the accessibility of public sector bodies websites and websites operated by entities performing public tasks.* It brought significant improvements to the European Commission's legislative proposal[25] in terms of the spread of public websites covered and increased enforcement provisions in line with ANEC's proposals. Parliamentarians expressed their support for ANEC's long-standing call to ensure that public websites are accessible according to agreed standards[26]. The approval of the Council of Ministers is still pending and should take place in 2015.

In parallel, e-Accessibility standards have been elaborated and were approved at the beginning of 2014. The standards were drafted by the CEN/CENELEC/ETSI Joint Working Group "eAccessibility under Mandate M/376" as part of Phase II of Standardisation Mandate 376 *European Accessibility Requirements for Public Procurement of Products and Services in the ICT Domain* in which ANEC participated.

A standardisation mandate is a request by the European Commission to the ESOs to draft standards in a specific field in order to meet a given policy or regulatory need. It sets out the requirements for standardisation and delimitates the scope of the work. ANEC commissioned a study on web accessibility[27] which fed into the mandate. Mandate M/376 was composed of two phases and was executed over five years.

A report was produced during Phase 1 which included an inventory of standards on e-Accessibility and a report on conformity assessment. In Phase 2, a series of standards on ICT Accessibility requirements, testing methods and conformity assessment methods was developed.

In January 2014, ANEC welcomed the adoption of EN 301 549 *Accessibility requirements suitable for public procurement of ICT products and services in Europe* and a series of supporting Technical Reports[28].

The objective of the standard is to set out in a single source detailed, practical and quantifiable functional accessibility requirements that take note of global initiatives in that field and which are applicable to all Information and Communication Technology (ICT) products and services usable in public procurement. The standard is to be used for conformity assessment as it provides for objective, concise and accurate test methods that are intended to produce unambiguous, repeatable and reproducible results.

The standard is primarily addressed to public procurers as the functional accessibility requirements applicable to ICT products and services, together with a description of the test procedures and evaluation methodology for each accessibility requirement are presented in a form that is suitable for use in public procurement within Europe. It can, however, also be used by private sector stakeholders. It provides a template for conformance claims of accessibility, facilitating the comparison of tenders. For web accessibility, reference is made to W3C WCAG 2.0 guidelines (level AA) and alignment is made with international accessibility requirements in order to avoid market fragmentation.

More recently, an online toolkit for public procurers was unveiled as public bodies do not have specialist knowledge on accessibility. Based on the contents of EN 301 549 and related Technical Reports, it provides structured access and guidance on how to consider accessibility in the four stages of procurement: writing a call for tenders, evaluating tenders, evaluating deliverables and managing contracts[29].

ANEC is convinced that this set of functional accessibility requirements for the procurement of ICT products and services will create incentives for manufacturers to develop and offer accessible devices, thus benefitting both consumers with disabilities and older consumers. It will also aid the harmonisation of e-Accessibility in the Internal Market when the directive on the accessibility of the websites of public sector bodies is adopted.

Learning Points

- Internet and digital technologies are more and more present in consumers day-to-day lives, providing information, a means of communication, and a gateway to access and deliver services, including public services. Their use is a fundamental requirement in modern society. However, consumers with disabilities and older consumers are still faced with barriers which prevent them from accessing the web.
- ANEC believes that standards are a suitable tool to make products and services accessible for as many consumers as possible, irrespective of their age and abilities. ANEC's unique role in fostering accessibility through standards is well known and recognised by the relevant stakeholders.
- Standardisation is a problem-solving activity carried out by different parties. Differences of opinions can and do happen. Standards represent the consensus and state of the art of a given subject. Consumer representatives have to make their voice heard but the standardization system needs to allow for this.
- ANEC believes that the availability of the recently approved e-Accessibility standards and the forthcoming approval of European legislation on the accessibility of public websites will allow all consumers to reap the benefits of the Information Society and the Digital Single Market.

24. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=u riserv:OJ.L_.2014.094.01.0065.01.ENG
25. http://tinyurl.com/bodwbu4
26. http://tinyurl.com/d2o6p7g
27. http://www.anec.eu/attachments/ANEC-R&T-2011-ICT-002finalrev2.pdf

28. TR 101 550 Documents relevant to EN 301 549 Accessibility requirements suitable for public procurement of ICT products and services in Europe TR 101 551 Guidelines on the use of accessibility award criteria suitable for public procurement of ICT products and services in Europe TR 101 552 Guidance for the application of conformity assessment to accessibility requirements for public procurement of ICT products and services in Europe freely available: http://www.etsi.org
29. http://mandate376.standards.eu/

The French government updates its e-Accessibility guidelines and launches a brand new compliance label

The French Interministerial Directorate of Information and Communication Systems (DISIC) has updated its statutory e-Accessibility guidelines for public sector websites, the Référentiel Général d'Accessibilité pour les Administrations (RGAA). In parallel, a series of measures have been put in place to encourage a wider take-up of e-Accessibility across public services, the most notable being a label scheme that reflects both a service's level of compliance and its organizational commitment to e-Accessibility

By Philippe Bron, IT Architect, French Interministerial Directorate of Information and Communication Systems (DISIC)

Philippe Bron trained as a telecommunications engineer and spent 10 years in the Research and Development department of Orange, France's historical telephone operator. He was responsible for the modernization of its information system. He then joined the Home Office where he helped build the information system used to manage driving licenses. In 2014, he joined the Architecture and Urbanization department of the DISIC, where he leads the French State's Digital Accessibility program.

About e-Accessibility in France

In December 2014, the French President, François Hollande, expressed his government's renewed commitment to digital accessibility: "Access also concerns the digital world. And the digital world should not represent one more barrier, an additional sanction, but rather an opportunity, one more chance. This is why public services websites must be made accessible as a matter of urgency."[30]

Introduction

The Référentiel Général d'Accessibilité pour les Administrations (RGAA), published in 2009, was the French Government's response to a Communication from the European Commission entitled 'Towards an accessible information society' (COM(2008) 804) requesting that Member States comply with the World Wide Web Consortium's Web Content Accessibility Guidelines (WCAG). Its publication coincided with the passing of a decree (No. 2009-546) making it mandatory for all public service websites to conform to RGAA requirements to level A and AA within two to three years. Failure to do so would result in the inaccessible website being blacklisted.

Six years on, there can be little doubt that French public websites have fallen short of their legal obligations. According to a well-publicized study by BrailleNet[31], only 4% of state websites include a declaration of conformity, a statutory document reflecting the level of digital accessibility as stipulated in the RGAA.

30. Closing speech given at the Conférence Nationale sur le Handicap (CNH), 11 December 2014, Paris
31. Study published by BrailleNet and Université Pierre et Marie Curie in May 2014. The study reviewed 600 public service websites, including ministries, regional councils, county councils, prefectures, urban communities, and town councils.

The government's ambitious action plan attempts to redress a marked lack of consideration for disabled persons to date. The new version of the RGAA (v3) implements WCAG 2.0 and is adapted to new web technologies (HTML5/ARIA). More important still, it is accompanied by a solid support component which was sorely lacking in the previous version of the RGAA.

Before taking a look at this new support component, it is worth reviewing the reasons for the limited take-up of the RGAA to date.

Where the RGAA v.1 failed

Shortly after publication, it became apparent that the RGAA, along with its compliance testing module, was far from operational and very complex to implement. However, the main limitation was the absence of on-the-ground support and training. Indeed, the blacklist that the Ministry for Disabled Persons was entrusted to manage never saw the light of day. These limitations were only exasperated by the fact that, unlike the WCAG, the RGAA was not updated to reflect changes in technology and usage. Six years on, there was no mention of HTML5 and JavaScript was still prohibited. Insisting that web teams produce modern and dynamic web content in compliance with the RGAA was simply not possible.

Faced with these difficulties, the RGAA fell out of favor with web teams. In its place, the AccessiWeb Standard became the reference in e-Accessibility. Produced and maintained by BrailleNet and based on WCAG 2.0, the AccessiWeb standard was created in 2003 and has been updated on a regular basis to reflect the evolution of technology, languages, devices and practices. Today it is primarily used in the private sector, but there are a small number of public services using this RGAA compatible standard.

A collaborative review of the RGAA

By 2011 it became clear that the shortcomings of the RGAA needed to be addressed. The government entrusted the task of implementing a digital accessibility plan to the Fund for Employing Disabled Persons in the Public Sector (FIPHFP), the Interministerial Directorate of Information and Communication Systems (DISIC) and the Government Information Service. This plan, which in particular concerned visually impaired or blind users, sought to make all government internet and intranet sites accessible. It also aimed to promote the use of accessible software within public sector organizations.

For the period 2011-2013, the DISIC was given a budget of € 4.5 million to adapt the RGAA, to instigate training and to undertake 30 eligibility and label certification audits for employers of the three services. Following a public procurement tender, the DISIC contracted a group of organizations composed of France's leading digital accessibility experts[32]. The DISIC launched its Digital Accessibility Program in April 2014 focusing on two axes: one to undertake a technical update of the RGAA and the other to deploy a number of accompanying measures to ensure its uptake and sustainability.

The technical update of the RGAA was completed in December 2014. This was the result of a collaborative process which took place over several months. From July to September 2014, around 100 experts from the AccessiWeb Working Group (GTA)[33] drew up a proposed revision, largely based on the AccessiWeb HTML5/ARIA Standard. This was then published in a BETA version and opened to the public for comment, resulting in over a hundred responses. From September to December 2014, the group of experts processed these comments and finalized the guidelines.

A label to encourage a widespread take-up of e-Accessibility

Even the clearest and most comprehensive of standards will have little real-world impact without the necessary incentives and support. Rather than imposing sanctions, the DISIC decided that rewarding best practice in e-Accessibility is the best way to encourage wide-spread adoption. To do this, they devised a conformance label called "e accessible".

This label has two significant advantages. On the one hand, it is a communication tool highlighting both technologically advanced and virtuous approaches to web design. On the other hand, it does not limit itself to testing legal compliance (i.e. all A and AA criteria), but rather recognizes efforts in the right direction.

A two-tiered label

In order to obtain the e accessible label, public services must first demonstrate:
- organizational commitment to e-Accessibility (letter of commitment);
- a quality control policy that covers e-Accessibility, with a designated in-house e-Accessibility expert;
- built-in sustainability and improvement through (a) an annual audit to be carried out internally and (b) the provision of an "accessibility channel" enabling website users to report any areas of non-compliance.

Once an independent body is satisfied that these requirements have been met, the level of technical compliance with respect to the RGAA must be evaluated. The label is based on five levels of compliance:

Level 1 50 specific level A criteria (this can only be given once)
Level 2 All applicable level A criteria
Level 3 All applicable level A criteria and 50% of level AA criteria
Level 4 All applicable levels A and AA criteria (legal requirement)
Level 5 All applicable levels A, AA and AAA criteria

32. The group includes Smile, Meanings, Access42, V-Technologies and Association BrailleNet
33. The AccessiWeb Working Group (GTA) is supported by BrailleNet, a non-profit organization. The GTA is an active community of around 500 professionals from both the public and the private sector. It brings together project managers, developers, graphic designers, and other digital professionals, all of whom are qualified AccessiWeb Experts in Evaluation (EAE).

Conditions for success

At present, e-Accessibility is missing from all public sector training courses. The DISIC is determined to remedy this as without training, there is little hope of widespread take-up of the RGAA. It will be drawing up freely available training materials, and may call upon the services of external training centers to build up skills within the public sector. It will also be compiling specific resources for developers and project managers, including libraries of accessible templates and components, sample specifications and guides on how to undertake an e-Accessibility audit.

It is hoped that the new label, training modules, guidelines and technical and educational resources, along with funding available from the FIPHFP, will allow the new RGAA to have a real-world impact where its predecessor failed.

The fact that the government's digital accessibility plan has been entrusted to the DISIC, already responsible for all interministerial information systems and reporting directly to the Prime Minister, offers further encouragement. This new regulatory framework, a far cry from 2009, strengthens the government's prerogatives and gives extra weight to the push for a legally compliant and accessible public web presence.

Learning Points

- French public websites have fallen short of their legal obligations, with only 4% including a statutory declaration of conformity to the RGAA.
- The French Government has enlisted the help of leading experts in the field to ensure that the latest version of the RGAA reflects current technology and usage.
- The RGAA v3, based on WCAG 2.0 and AccessiWeb HTML5/ARIA, will be accompanied by a series of measures to support and encourage public services and ensure widespread take-up of e-Accessibility across the public sector.
- The conformance label, e accessible, will recognize varying levels of technical conformity, and place emphasis on the importance of implementing a far-reaching and sustainable e-Accessibility policy.

Conclusion

The digital age brings unprecedented scope for equal access to information, goods and services. However, if industry and public service providers focus their attention on the "average consumer" to the detriment of real users with very specific needs and preferences, there is a significant risk of further exclusion.

Users have the experience, skills and abilities that complement the knowledge and expertise of goods and service professionals. The involvement of users with disabilities results in greater ownership and sustainability of the solutions at hand, and a satisfactory trade-off between costs and benefits for all stakeholders.

To support industry and public service providers in their efforts to deliver accessible and highly-customisable products and services, robust and comprehensive standards and supporting methodologies exist. These are developed and maintained by technical experts in collaboration with a wide pool of user groups. Adhering to these standards helps ensure products and services are not only viable and relevant, but that they evolve with the needs of their users over time.

As the articles in this White Paper demonstrate, considerable progress has been made in user-led design. However, there is still some way to go in renewing the human side of e-Accessibility and expert-providers and disabled users need to work together to give a louder and collective voice to e-Accessibility.

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