Building new markets through accessible information processing

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Abstract

This paper addresses the need for accessible solutions to be built into the information processing supply chains used by publishers and content providers. This includes a description of Accessible Information Processing, a concept new to many people at different stages of the supply chains in question. Given the differences between the traditional approach to accessibility and the wider view outlined in the previous paragraph, we are in something of a transitional phase at this time. An approach that aims to unify 'common' content, system, service and tool provision and the more 'specialised' content, system, service and tool provision, can be called *Accessible Information Processing (AIP).*

1 Introduction

1.1 Design For All

Accessible solutions are required for anyone who requires assistance in using the mainstream solution. This could be because a user, is blind, visually impaired, or impaired in some other way, but increasingly this is age-related. Accessible solutions range from small assistive applications (such as a screen magnifiers), to full scale operating systems and screen reading environments. As the recent Forrester report for Microsoft report stated *"...A large and growing potential market for accessible technology exists to serve individuals who have some degree of difficulty or impairment that impacts their ability to use a computer*". This report also noted that in the US, some 44% of computer users *already* use some form of accessible technology.

The traditional problem with accessible solutions is that they are normally implemented as an afterthought or a piggy-back solutions., This results in solutions which are not fully integrated (or not well integrated) with the main stream solutions. These independent applications are then at a disadvantage when software versions or operating systems are updated. In order to make this integration process easier, and provide more intuitive designs for the future, it is essential that "design for all" and accessible design methodologies are widespread [1]. Standard, policy and legislation also helps ensure that accessible designers have a solid standard to meet to ensure future-proofing.

1.2 Open Focus

Designing a more inclusive world requires a more *Open Focus*. This 'openfocus' can be achieved through an interplay of practical solutions conceived by greater co-operation between science and philosophy; technology and industry; and community and education [2].

Accessibility can also be viewed from a wider angle. Being able to *see* content in whatever modality; *perceive* its context; and attach a *useful meaning* to it requires that the user be able to access this content, its context and relevant software application in a way that meets that particular user's consumption preferences. These preferences may become requirements over time - we all get older. Being able to attach *useful* meanings to content is what lies at the very basis of *preservation* and *education* of thought. Attaching useful meanings to content underpins the basis of culture , commerce and civilisation. Being able to *access* software and the content and the potential for understanding it unleashes, requires us to be able to gain access *to* software and not be hindered by huge costs, complexity, lack of support and additional barriers.

Given the differences between the traditional approach to accessibility and the wider view outlined in the previous paragraph, we are in something of a transitional phase at this time. From the software producer, business community and the Open Source System community we see a move towards the inclusion of accessibility features into systems, tools and the programming languages themselves as system wide core functionalities (examples being KDE, GNOME, and Java Accessibility). There also exist less fundamental approaches in the form of separate with specific purposes which are bundled with software releases (such as the MS Windows screen magnifier). From the accessibility community we see a move towards more advanced and abstract descriptions of the procedures involved to move from 'common' content towards content that is processed to be granted accessible certification. A good example of such a move is the Web Accessibility Guidelines 1.0 and 2.0 [3], which provides detailed guidelines on how to (re)structure and enhance websites and their content to ensure a sufficient level of accessibility.

The approach we have taken goes further and involves the collection of accessible information transformation knowledge into software components, development methodologies and implementation trajectories. Regarding web authoring and delivery, we have aimed to capture the WAI 1.0 and WAI 2.0 guidelines in web applications and Content Management Systems such as the Open Source content management system XOOPS [4], an implementation which is described in greater detail below in section 2.

1.3 Accessible Information Processing

The transitional stage described above involves relatively slow change when compared with general exhilarating technological developments. However, this relatively slow pace also creates an opportunity to take a step back and observe all the individual processes that touch upon the notion of accessibility. This allows us to explicate similarities and possible complementarities, a process of convergent gradualism if you like. The opportunity then arises to synchronise various efforts in the accessibility arena and offer them to end-users and business as a ‘package’. Such a package contains scientific knowledge about accessibility, as well as technological knowledge about how to implement such notions. This package also contains detailed descriptions of the requirements of the end users, producers and distributors of content, as well as tools aiming towards market segments that rely on these requirements. Such an approach that aims to unify 'common' content, system, service and tool provision and the more 'specialised' content, system, service and tool provision, can be called *Accessible Information Processing (AIP).*

2 European Accessible Information Processing Network

The EUAIN project (European Accessible Information Network) is funded by the eInclusion thread of the European Commission 6th framework IST programme and co-ordinated by the authors of this paper [5]. The network aims to tackle the problems introduced in the first half of the paper. Information is then given concerning how the various stakeholders in the issues presented can become involved with dissemination, and use of the research and work created by the project.

EUAIN aims to promote e-Inclusion as a core horizontal building block in the establishment of the Information Society by creating a European Accessible Information Network to bring together the different actors in the content creation and publishing industries around a common set of objectives relating to the provision of accessible information. Accessibility for print impaired people can be an increasingly integrated component of the document management and publishing process and should not be a specialised, additional service.

Similarly, emerging international and European standards provide an excellent basis for the creation of accessible information at a more fundamental level than has previously been possible. EUAIN will establish a fluent communication of experience with standardisation bodies. At a European and national level, there now exists a clear desire on the part of publishers and associations of publishers to collaborate closely with experts in this area in order to provide truly accessible materials. Indeed, in several countries recent legislation has added an extra push to these concerns. This convergence at a technical, regulatory and political level means that the pieces of the jigsaw are now in place to make a significant breakthrough in the provision of accessible information.

2.1 Key Objectives

The EUAIN proposal has four key objectives, namely:

- To bring together all the players in the information provision and e-publishing chain in order to achieve the critical mass significantly to enhance the provision of accessible information at a European level
- To create a self-sustaining network which can offer the necessary expertise, shared knowledge, technological tools and distribution platforms to all those involved in the provision of accessible information and in particular to provide a collaborative platform for content creators to find information, tools, advice and solutions
- To raise awareness and stimulate the adoption at local, regional, national and European levels of the emerging formats and standards for the provision of accessible information and to find ways of ensuring that technological protection measures do not inadvertently impede legitimate access to information by people with print impairments
- To stimulate and support the adoption of new distribution channels and appropriate business solutions in order to help achieve faster, prompter and less expensive production and distribution of accessible information

These aims and associated activities are explained in greater detail below, as is the accessible content management system that underpins the EUAIN knowledge base.

2.2 Achieving Convergence

The EUAIN network is now feasible due to recent developments at several different levels.

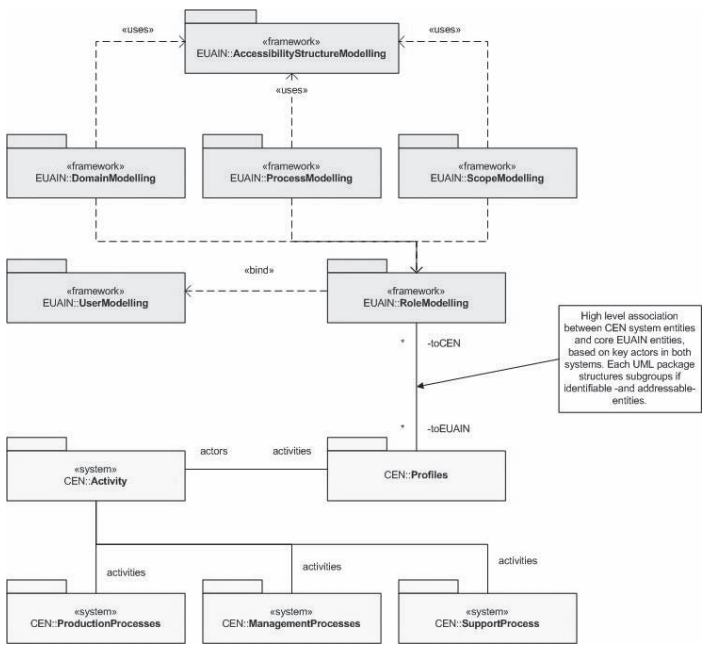

Figure 1. Diagram showing key points of connection between the EUAIN project and the CEN standardisation process

Due to much interest and involvement across several areas, earlier problems relating to the digitisation of materials have been largely overcome (from a technical perspective) and recent formats (such as XML, RDF, METS, MARC21 etc) provide a realistic basis for implementing the different aspects of this work. It is now possible to address the key concerns of content creators and providers and coherently to address issues such as: automation of document structuring, adherence to emerging standards, workflow support, digital rights management and secure distribution platforms.

This commitment is reflected in the project structure itself, with a workpackage examining standards and through the specific inclusion of a CEN/ISSS Workshop [6], entitled *Workshop on Accessible Document Processing* (WSADP), recently established under the existing CEN Workshop Agreement procedures.

2.3 Accessible Content Management System

The eXtensible Object Oriented Portal System (XOOPS) provides generic structures for the representation of web portals including blueprints for systems that are required to maintain such portals. Module, notification, messaging and user profile entities are available. Extending the original XOOPS architecture with 3rd party (open source) modules provides a framework that can be used to represent any kind of resource and messaging/notification of changes in the structure or use of these resources. The following collection of modules can be used to erect a *generic* web portal structure that includes use of:

1. User / Guest / Admin account system
2. Messaging between the above participants and their roles,
3. Notification between services/modules and the above participants and their roles,
4. Article management - including associated downloads and printing service,
5. news article management - used as messages that can be used to 'point' to a new or a change in existing resources in the article management system

The combination of accessible content management systems, accessible desktop systems and content modalities with internalised notions about accessibility, can be used to form a new generation of information processing environments. Because of the presence of explicit entities that can be used to represent the User (perception) models on one side, and content and application models on the other side, we can experiment with new interaction schemes. These new interaction schemes will, because of the knowledge preservation process that is included in the approach, create a consistent body of information including real-world applications for education purposes.

3 Conclusion

This paper has argued that by taking a more fundamental approach, we can help designers to incorporate *accessibility from scratch* and help publishers to build new markets. Designing a more inclusive world requires a more *Open Focus*. Under 'openfocus', abstraction leads to a better understanding of the situation by contributing information from multiple viewpoints.

When we examine the current situation it is clear that there are a number of good initiatives in the area of accessible information provision, but these initiatives are fragmented and examples of successful implementation are neither widely disseminated nor clearly understood by the different stakeholders in the information publishing chain. If these fragments can be brought together in discussion of standards and practices, then the previous efforts become more worthwhile by being incorporated into a cohesive framework for a wider audience. In so doing, any outcomes are immediately applicable for all European member states.

4 References

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