Multimedia Modular Training Packages by EUAIN

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Abstract

The European Accessible Information Network (EUAIN) was established to support the move to incorporate accessibility within mainstream content processing environments. EUAIN has brought together a considerable base of knowledge that has now been structured into a series of training modules and curricula which are intended to meet the real needs at this point in time. In this paper we outline how the EUAIN training and learning framework is primarily intended to provide support for everyone who is directly involved in digital content creation and document distribution channels. This target audience requires general courses and training materials as well as domain-specific materials. These general training materials include information about digital document standards and formats, accessibility guidelines and different kinds of publishers and distribution channels. Also important is knowledge about accessibility and alternative forms of presentation that fulfil special requirements for print impaired people. The curricula are illustrated by good practices of accessible content publishing and good examples of accessible digital documents. The specific training materials are addressed to different branches of publishing (books, newspapers, magazines, etc.) and content creators (multimedia content designers, web designers, authors of e-learning content). A significant part of the materials are curricula that demonstrate tools and techniques for accessible content processing. Additionally, the training materials are in modular form to allow them to be adopted within courses and programs to meet the requirements of particular groups. These modular materials are also extensible and scalable, and it is our intention that many new curricula will be developed using this ever-growing resource base. Indeed, the newly-established PRO-ACCESS project is disseminating this information across the publishing industries.

Keywords: visually impaired; e-learning; EUAIN; digital publishing

1 Introduction

Structured information is the first step in the accessible information process. A document whose internal structure can be defined and its elements isolated and classified, without losing sight of the overall structure of the information, is a document that can be navigated.

Most adaptive technology allows the user to access a document, and to read it following the "outer" structure of the original. But if the same information also has an "inner" structure that allows the adaptive device to distinguish between a phrase and a measure, between a paragraph and a sentence, highlighting particular annotations, then the level of accessibility (and therefore usability) of the whole document will be greatly enhanced, allowing the user to move through it in the same way as those without impairments do when looking at a printed document, and following the same integral logic.

In an ideal world, all documents made available in electronic formats should contain this internal structure that benefits everyone. Highly-structured documents are becoming more and more popular due to reasons that very seldom pertain to making them accessible to people with disabilities. The move to XML related formats and associated standards for metadata has provided an impetus for far greater document structuring than before. Whatever the reasons behind those decisions are, the use of highly-structured information is of great benefit to anybody accessing them for any purpose.

In recent years, the market for accessibility and assistive technologies has started to gain recognition. It is clear that the integration of accessibility notions into mainstream technologies would provide previously unavailable opportunities in the provision of accessible multimedia information systems. It would open up modern information services and provide them to all types and levels of users, in both the software and the hardware

domain. Additionally, new consumption and production devices and environments can be addressed from such platforms and this would provide very useful information provision opportunities indeed, such as information on mobile devices with additional speech assistance.

It is equally clear that we remain at the very beginning of the move to incorporate accessibility within mainstream content processing environments. The EUAIN consortium has brought together a considerable base of knowledge that has been structured into a series of training modules and curricula which we believe meet the actual needs at this point in time. These materials are also extensible and scalable, and it is our hope that many new curricula will be developed using this ever-growing resource base.

2 The EUAIN Project

The EUAIN project [2] is now nearing completion, and as such much interesting information has been brought together concerning the provision of published information for visually impaired end users. In order that the information brought together by the consortium can have a maximum effect on stakeholder communities in Accessible Information Processing the EUAIN network has created a comprehensive set of instructional training materials. These flexible materials can be used in different environments and work is now underway to translate them into multimedia materials. This paper is a presentation of these developed materials.

3 Training Materials

The training and learning framework was primarily constructed with the intention to provide support for everyone who directly affects digital content creation and decides about document distribution channels. This group requires general courses and training materials as well as domain-specific training materials.

![Figure 1: Accessible Information Processing (AIP) Training](image)

The general training materials include information about digital document standards and formats, accessibility guidelines and different kinds of publishers and distribution channels. Also important is knowledge about accessibility and alternative forms of presentation that fulfill special requirements for print impaired people. The curricula are illustrated by good practices of accessible content publishing and good examples of accessible digital documents.

The specific training materials are addressed to different branches of publishing (books, newspapers, magazines, etc.) and content creators (multimedia content designers, web designers, authors of e-learning content). A significant part of the materials are curricula that demonstrate tools and techniques for accessible content processing. Additionally, the training materials are in modular form to allow them to be adopted within courses and programs to meet the requirements of particular groups.

In general, there are three themes. The first is related to different types of digital documents and their accessibility issues for print impaired people. The subject of the second theme is to discuss and demonstrate workflows for authoring tools and techniques that allow people to create documents accessible for all. The last theme addresses the processes that must be considered regarding content distribution and digital rights management.

The EUAIN training materials consist of:

- Practical examples of good practice;
- Illustrated explanations of good process management for accessible information production;
• Detailed explanations of approaches, technologies and tools;
• Detailed explanations and examples of benefits and weaknesses of different formats;
• Step by step, modular instructions for producing accessible information in different formats.

Furthermore, the educational process and especially the course materials are themselves a good example of accessible content creation.

After detailed consideration and advice from industry, there is also a requirement that the training materials should operate on several levels. These levels will become increasingly detailed and complex. In this way, different people can choose the level of detail that is required for their situation, or their position in the decision-making chain. In essence, the three levels are as follows:

• **Level 1: Descriptive** - Should teach actors to think about the issues and finding the solutions for their situation. There will only be simple explanations, and not detailed or over-technical information.

• **Level 2: Decision making** - Should teach actors how to make the right decisions to implement accessible information processing. There will only be relatively simple explanations, and not detailed or over-technical information. These descriptions will link directly to level 3 detailed information.

• **Level 3 Training packages** - At this level, the detailed and more technical information is provided. This level essentially provides the answers to detailed questions and applications.

To this end we have constructed our training materials in such a way that people can choose exactly the most appropriate training packages for their local environments.

### 3.1 The Curricula

In order to target the EUAIN modular training packages at the correct market segments, it is important to understand the various targets of the curricula presented. The most relevant modules can then be presented to these audiences. As a starting point, the WAI Resources on Developing Web Accessibility Training and Presentations[1, 7, 8] have been used and adapted to be more specific to Accessible Information Processing:

![Curriculum Diagram](image)

**Figure 2: An expansion of the Curricula section of the AIP training**
The example curricula currently available are:

- **General introduction to Accessible Information Processing:** A general introduction to a heterogeneous audience provides the background information required to understand why Accessible Information Processing is important in whatever environment the recipients of the training are involved in. The curricula is designed to take 40 minutes to present in order that it can be easily incorporated in other curricula and training sessions.

- **Accessible Information Processing Lecture:** a single two-hour lecture/presentation on AIP as part of a full semester's introductory course on general web design skills.

- **Workshop on AIP design and markup Context:** Hands-on workshop on Accessible Content design and mark up, for a class (~10-20 people), of content creators. The workshop assumes some knowledge of the Business case and the Market for Accessibility, and is taught with computers for learning assistance. The class has to be taken by someone who has a reasonable experience in Accessible Information Processing as the workshop requires a lot of interaction with the subject matter.

- **Conference Workshop on AIP technologies:** This curriculum specifies a ninety minute workshop which can be given at a conference or trade event. It is aimed at IT workers who have some knowledge of software design and development. It is assumed that the audience is familiar with the need for accessible information processing.

- **In-House Training Day on Accessible Information Processing:** In-house training at a publisher, content creation company, or software development company. The audience is assumed to have some level of knowledge of Accessible Information Processing. The training session requires considerable preparation (Possibly with the help of an organisation contact point) by the facilitator of the training in order that the training is relevant to the organisations specific field, workflows and authoring tools.

- **Accessible Information Processing Overview for Senior Management:** A brief presentation around a conference table during a senior management meeting. The focused delivery of this training aspect requires a familiarity with the material.

These curricula are aimed at different audiences and market segments. The materials for these curricula draw on a body of topic specific modules which have been brought together for use in training. Each sample curriculum highlights several objectives and learning outcomes for the topic and provides a list of resources relevant to those learning objectives. An estimated time frame for each curriculum is provided. They are designed in such a way that the curricula can be altered and personalised for more specific needs and situations.

### 3.2 Modular Training Packages

The Modules for the EUAIN training materials have been modeled on the structure of the WAI Resources on Developing Web Accessibility training and presentations. The structure is as follows:
These modules consist of materials which can be used in the curricula described above. Each module focuses on a particular aspect of Accessible Information Processing and provides reusable materials such as hand-outs, presentations, software and other useful materials:

- **Module 1 – Why Accessible Information Processing is important.** This module provides an overview of Accessible Information Processing. This includes an overview of the topics in the other modules and should be seen as an introduction module to all the EUAIN training modules. The resources presented in this module are relevant to all the other modules and relate directly to all the curricula.

- **Module 2 – Description of Accessible formats with examples of practical use.** This module is aimed at providing a solid understanding of the formats relevant to Accessible Information Processing and how they are used in processes and workflows. As such it presents descriptions of how these formats used in both mainstream environments and environments that are more focused on print impaired users. An understanding of these formats is essential before conversion processes can be built out of the formats such that they can be incorporated into workflows and processes relevant to the stakeholders which these resources and training materials are presented to.

- **Module 3 – Business case and the Market for Accessibility.** It is important to understand not only the technical perspectives for formats and conversations required for Accessible Information Processing but also the business angle and the market relevance for incorporating Accessible Information Processing within existing industrial environments. This module targets decision makers and executives within stakeholding communities who have to assess the cost and benefits of implementing Accessible Information Processing.

- **Module 4 – Implementing Accessible Information Processing.** Accessible Information processing is a series of processes, but very few of these processes stand alone, in most cases, the accessibility component will be one in a chain of processes with the input and outputting feeding from and to other processes. This module describes how Accessible Information processing ties in with these other processes and workflows already in place in mainstream environments.

- **Module 5 – Evaluating and incorporating Accessible Information Processing.** In order to successfully incorporate Accessible Information Processing within existing workflows, it is important to first evaluate the workflows for accessibility. This relates to the formats, authoring tools and standards already in place in the processes within these workflows. This module focuses
on evaluating this accessibility and how these evaluations can help point top answers on the best way to implement further accessibility.

- **Module 6 – Accessible Content and Accessible Authoring Tools.** In order to implement accessible information processing within organisations, clear understanding is required of how to create, modify and process content using both the tools available within mainstream organisations and also the accessibility conversion tools and assistive technologies. This module provides resources such to make this possible.

- **Module 7 – Promoting Accessible Information Processing.** This module ties the previous 6 modules together in order that participants of EUAIN learning packages can reuse their knowledge and understanding of Accessible Information Processing within heir organisation and further promote accessibility. This module ensures that accessibility is reverberated through the organisation and can be promoted from the top down.

Each module is intended for use as information which feeds into specific curricula but they have specific objectives, resources and learning outcomes such that they can be used as a stand alone information package.

### 3.3 Resources and Additional Materials

**Formats**

In order to look at the various processes involved in Accessible Information Processing, it is essential to build up a finite list of the formats which are commonly used during these processes and interactions within supply chains. After careful consideration of several specialist organisations, publishers and users, we came up with the following list of formats.

- Printed paper
- Printed Braille
- Audio(Wav)
- ASCII Text
- HTML
- XML
- Multimedia Packages

It was felt that these descriptions covered all areas. There is a specific focus on formats for the print impaired, so formats such as bitmap or JPEG are considered to be components of more complex multimedia packages, as they are rarely dealt with without some sort of surrounding information or multimedia package.

**Conversion Processes**

Given that we have a finite list of formats used for accessible information processing, a conversion from every format to every other format provides us with a list of accessible information conversions. This provides us with a list of 42 conversion processes.
Each conversion process is dissected to provide:

- a description of the conversion from an accessible information processing perspective
- examples of the conversions use in real life case studies (see below)
- examples of the conversions use in hypothetical scenarios (see below)
- related guidelines and best practices
- A flow chart description of the process

For example:

![Flow chart of ASCII to Braille Process](image)

**Figure 5: Flow chart of ASCII to Braille Process**

**Standards**
As part of the work of EUAIN a deliverable entitled “Standards for Accessible Information Processing” was created. The deliverable is public and available on the EUAIN website. This information is used as a resource in many of the modules and curricula.

**Guidelines**
EUAIN is not the first project to tackle the issues of Accessible Information Processing and there are several sets of Guidelines and Best Practice already in existence. However, until now these have not been brought together in a systematic manner. EUAIN has collated this information in order to focus stakeholders on specific information based on their specific requirements. This information is available on the EUAIN website, the EUAIN wiki and it is also fed into the resources for the training materials.

**Case Studies and Scenarios**
Based on real-life examples of accessible content processing, we have prepared a number of Case Studies and scenarios to illustrate different aspects of accessible content processing. These Case Studies are drawn from different publishing sectors and address a variety of different issues. Each Case Study provides an in-depth examination of key factors and provides practical explanations of how the various processing stages were addressed to achieve accessible content. The case studies are constructed out of the same conversions which were described above:
This case study is then dissected in terms of:

- Actors involved in the information processing chain
- Conversions and processes used
- Standards used
- Guidelines used.

This body of information is also available on the EUAIN wiki[ref].

4 Pro-Access

Following on from EUAIN, the consortium intend to explore these themes further by taking part in several more practical implementations which tackle that which EUAIN raised. One such endeavour is the PRO-ACCESS[4] project which started recently.

The project will provide practical tools for publishers and content providers to address the targeted audience of primary and secondary students with specially formatted and accessible course materials on a timely basis with total respect of copyright.

This main objective of the project will be achieved following these steps:

- evaluate the actual situation in the involved countries, analysing on one side the needs of the disabled people and on the other the problems and the concerns arose from these request in the
publishing sector, involving key schoolbook publishers and printed disabled people representatives in the process;

- define the production process needed to create accessible documents, starting from the achieved results of the EUAIN project;
- promote the results as wide as possible in the publishing sector;
- analysis of the content value chain in the education sector (authors, publishers, intermediaries, schools, students) to define a set of shared rules to managing rights.

Expected results:

- a set of ISO 9001 compliant Certification guidelines for publishers to create an accessible school materials in a standard way. The publishers who will follow these guideline will be appointed with a specific process certification;
- a standard license for publishers to be used to manage the relations between the publishers and the students, or the schools asking for special formatted materials;
- a set of materials devoted to create awareness in the print disable people environment and in the school environment, teachers and educational authorities in particular;
- a standard module for blended training courses for publishers and content providers in order provide them with all the information needed both on the technical and legal solutions defined in the project itself.

As these results come to the fore, they will be disseminated through similar channels to EUAIN.

5 Conclusion

The EUAIN network has provided some practical training solutions and it is now important to create broader awareness on these topics in the content producers market (i.e. publishers, Learning Object producers, digital content and software developers) and promote the adoption of collaborative and practical solutions to allow them quickly to make available these accessible materials. New projects such as PRO-ACCESS can help to achieve these goals.

The coherent and sustainable provision of accessible information cannot be tackled in isolation by individual actors in the information provision chain. While examples of good practice are emerging in the production sphere and in new collaborative distribution models, a European-wide approach offers far greater potential. In particular, a collaborative approach involving content producers and users’ associations allows us to approach key aspects like rights clearance, definition of standard formats for exchanging content files, and finally actual increase of accessibility. As noted in the recent report produced for WIPO:

“This [EUAIN] is perhaps an example of a way forward more generally and work of this nature should perhaps be promoted more widely by governments and international agencies. It seems to be in everyone’s interests that a desire to build in access from the start is both encouraged and facilitated by ensuring that what this requires in practice is widely understood and adopted.”[6]

By focusing closely key issues in this area (rights management, production processes, content value chain, and standard information exchange), we can make an important and lasting contribution to the Accessibility For All initiative and help to provide the educational building blocks needed to help make consumer needs more explicit to the designers of products and services for print impaired people.
References

[1] http://www.w3.org/WAI/training/