

## IST-2000-27518 - WWAAC

### World Wide Augmentative & Alternative Communication

because

# COMMUNICATION IS NOT A PRIVILEGE

[www.wwaac.org](http://www.wwaac.org)  
[www.conceptcoding.org](http://www.conceptcoding.org)

### Summary

It is estimated that about 5.6 million people in the EU have some form of language and/or communication impairment. Despite advances in Internet technology it remains very difficult for many to browse the Internet, use e-mail, or take advantage of other Internet-based services. The WWAAC project's mission was to change this.

Whilst most of the current focus of web accessibility is on the *separation of content from presentation*, WWAAC wanted to provide a new and important level of separation - *the separation of content from meaning*.

The solution the WWAAC project developed for this purpose is a **Concept Coding Framework (CCF)**.



# WWAAC



The WWAAC project ran from Jan 2001 till June 2004 and was partly funded by the European Commission within the framework of the Information Society Technologies (IST) programme.

### Introduction

One fundamental issue for a person with a communication and/or language impairment is that he/she may not always have the necessary language skills to understand some web-page content or how to navigate websites.

**Augmentative and Alternative Communication (AAC)** enables many

people to communicate using a symbol language such as PCS or Bliss. Each symbol represents a language concept with a unique meaning. This makes symbols so suitable for many people with communication and language difficulties.

### Approach

The ultimate goal of the WWAAC project was to

make the electronic highway more accessible for a wide range of people with communication and/or language impairments. In the context of these users the project addressed the development and implementation of:

- preliminary standards for syntax and semantic text/message encoding.
- tools for text support: i.e. message

conversion between symbols and text-to-speech output.

- tools for task support i.e. demonstrations of techniques for web navigation and mailbox handling.
- guidelines and tools for information presentation on the web for the target group.
- innovative evaluation & testing tools for enabling end users to contribute meaningfully and ethically to R&D AT development projects.
- Symbol-to-symbol conversion and symbol-to-text conversion, both essential for inclusive Internet services.

By using the CCF to repurpose a webpage's content using alternative representation, the webpage becomes meaningful to the user and the **semantic content** can be better understood.

For example, a news article on a BBC website could be enhanced with an annotation of concept codes representing essential keywords (these would be provided by the author or by an independent annotator). The keywords could then be automatically translated from their original textual representation to text in another language, and/or to a symbol representation

in one of the many symbol languages or vocabularies available to end users.

## **Results & Achievements**

To enable Symbol-to-symbol conversion and symbol-to-text conversion a **Concept Coding Framework (CCF)** and a **universal concept set** (a language and culture independent lexicon) were developed and are available as opensource software. In addition, the project built linguistic mechanisms to support symbol users in producing better syntax in their writing.

**The Concept Coding Framework (CCF) is the primary achievement of the WWAAC project.** All other components of WWAAC act as a test-bed for the CCF, providing information and feedback essential to its design, and wider potential. In so doing, these applications can provide the user of AAC with an enriched experience of the Internet.

To demonstrate the ideas within the CCF, the project developed some **software prototypes**:

- a personalised and supportive **web browser**, where web pages can be read aloud, and where favourite links to other web sites are integrated into the user's homepage. Links to related pages can be

represented with an image, and key functions for browsing are accessible to people using switch scanning access.

- Supportive **E-mail software** which can translate emails between different symbol sets (Bliss, PCS or Pictogram for example) and between different European languages (Swedish, English, Dutch or Spanish for example).
- Supportive **Writing Grids** in which users can insert symbols of the appropriate word class, and, in some cases, semantic class. The basic structures of the writing grids are the most frequent phrases and sentences found in the conversational texts. Synthetic speech is available to aid in message construction at all stages.

In addition, practicable **accessibility guidelines for webmasters** were suggested, based on the project's user requirements and evaluation work. These enable information to be made more accessible to people with a range of communication disabilities. These guidelines have been fed into the W3C's WCAG WG ([www.w3.org/WAI/GL/](http://www.w3.org/WAI/GL/)).

Finally, innovative **user requirement and evaluation methodologies** have been developed and successfully applied by the WWAAC project. These

will form the basis of a new set of ethical **user involvement guidelines**. They will be published in late 2005 and placed in the public domain for the benefit of other researchers wishing to engage end users *meaningfully* in the complex process of AT R&D.

The WWAAC project attended to several conferences and ran workshops, for example ISAAC 2002 (Odense, Denmark), ISAAC 2004 (Natal, Brazil) and CSUN 2004 (Los Angeles, USA). The project meetings and/or evaluations took place during the project in The Netherlands, Sweden, UK, Spain, Denmark and Finland.

### **Perspective**

The CCF is designed as an application of the Semantic Web (more on the Semantic Web can be found at [www.w3c.org](http://www.w3c.org)). It offers the AAC user enhanced accessibility to the Internet and removes barriers for message exchange. The Semantic Web as a whole potentially offers these same users more support and independence. Developing such solutions is very complex, and the open source CCF requires further development and maturity. To date we have shown that it is technically feasible, and that, therefore, its continu-

ing development beyond the lifetime of the WWAAC project is justifiable. This is being done within a special interest group, the Concept Coding Interest Group (CCIG). To bring the CCF to full service maturity and usefulness, there is a need for the updating, adding, and maintaining of language concepts, and the demonstration and deployment of CCF techniques within a wider spectrum of internet applications and exemplar usage scenarios.

More about the work of CCIG can be found on [www.conceptcoding.org](http://www.conceptcoding.org). All contacts from parties interested in collaborating in this area of expertise are welcome.

### **Timescale**

Start: January 2001  
Completed: June 2004

### **Budget**

Overall cost:  
3.1 million €  
EC contribution:  
1.8 million €

## **Consortium**

### **Commercial organisations**

- Handicom (the Netherlands)
- Modemo (Finland)
- MITC (Denmark)
- Femtio Procent Data AB (Sweden)

### **Service providers**

- DART (Sweden)
- ACE Centre (United Kingdom)

### **Research institutes**

- KTH (Sweden)
- ESRI (United Kingdom)
- Dundee University (United Kingdom)

## **Coordination**

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For more information about the project, published documents, downloadable software and demonstrators: please visit:

**[www.wwaac.org](http://www.wwaac.org)**

