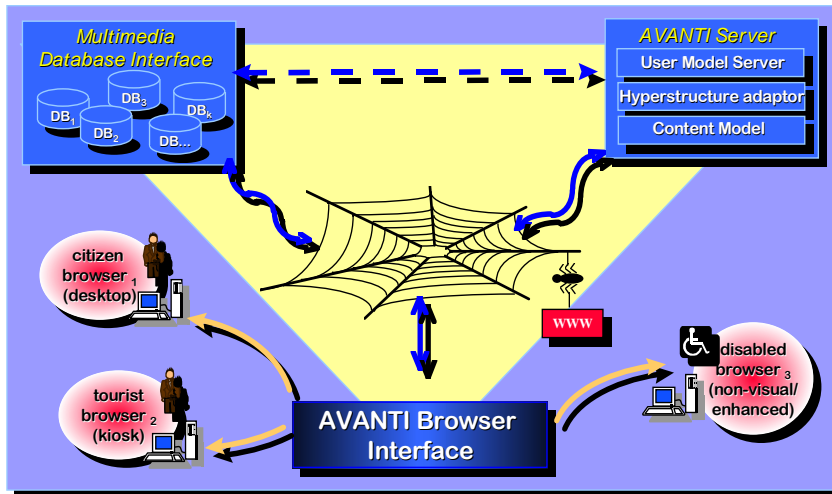


## THE AVANTI PROJECT OBJECTIVES

The ACTS AC042 AVANTI Project aims to address the interaction requirements of disabled users using Web-based multimedia telecommunications applications and services.



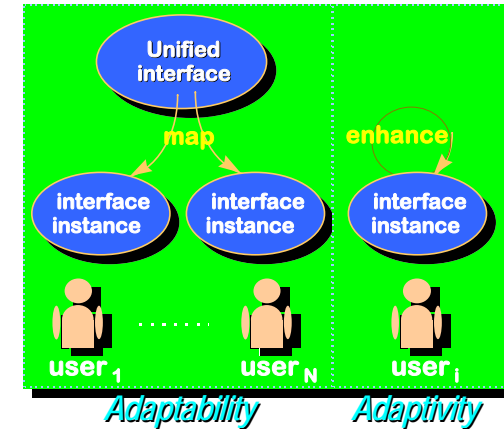
Overall Architecture of the AVANTI System

The main module of the AVANTI system are: (i) a collection of multimedia databases which are accessed through a common protocol (HTTP) and provide mobility information for disabled people; (ii) the AVANTI server which maintains knowledge regarding the users, retains a content model of the information system and adapts the information to be provided, according to user characteristics (hyper-structure adaptor); and, (iii) the unified browser interface layer, which is capable of adapting itself to the abilities, requirements and preferences of individual users.

## THE AVANTI USER INTERFACE APPROACH

The AVANTI Web Browser (acting as a front-end to the AVANTI system) aims to provide *accessibility* and *high quality interaction* to all potential users. Following the Unified User Interface Design methodology ( $U^2ID$ ), a *unified browser layer* has been developed, which addresses the different abilities and skills, and diverse requirements and preferences of a wide range of users, including disabled and elderly people. Lexical and syntactic adaptability and adaptivity techniques are applied to the unified browser, in order to provide accessibility and high quality interaction to able-bodied, motor-impaired and blind users.

## ADAPTABILITY AND ADAPTIVITY IN AVANTI



**Adaptability:** selection / modification of (aspects of) the user interface during initiation of each interaction session, according to user abilities, requirements and preferences that are known prior to interaction (e.g. user abilities, language) and are assumed to remain unchanged within a single session (e.g. particular user expertise, usage target, user preferences).

**Adaptivity:** selection / modification of (aspects of) the user interface dynamically, according to *user characteristics* and *situations* that are detected at run-time (e.g. user's inability to initiate or complete a task, high error rate, user disorientation).

**Syntactic Adaptations:** selection of different styles for the implementation of each task.

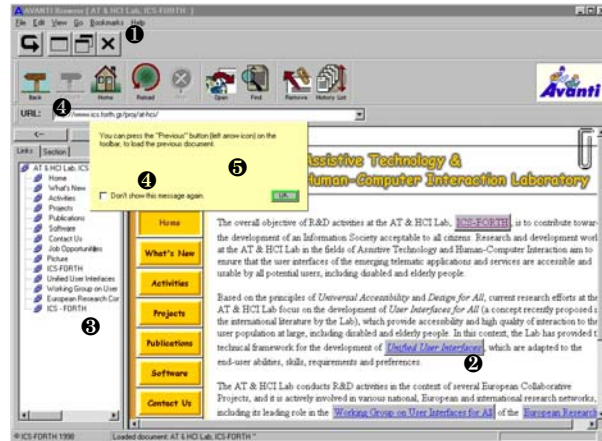
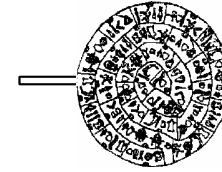
**Lexical Adaptations:** selection of interface object attributes

## SPECIAL INPUT / OUTPUT DEVICES

Binary switches; speech input (command recognition); joystick and touch-tablet input; Braille display output; speech output; digitised audio output; and special keyboard functionality.

## OTHER FEATURES

Enhanced history control for blind users, as well as linear and non-linear (graph) history visualisation for sighted users; resident pages that enable users to review different pieces of information in parallel; link review and selection acceleration facilities; document review and navigation acceleration facilities; enhanced mechanisms for document annotation and classification; and enhanced intra-document searching facilities.



A screen shot of the prototype AVANTI user interface. Styles that have been activated due to adaptability decisions include: enabling of the scanning mechanism for use by severely motor impaired users (extra window manipulation toolbar in ❶, and scanning focus in ❶); representation of links as buttons (as opposed to more "traditional" browser representations, as highlighted or underlined text) to facilitate interaction by users novice in hypermedia ❷; activation of the link-bar (a separate pane containing all the links in an HTML page), for easy review and selection by motor-impaired users ❸. Furthermore, in the screen shot the activation of a style is shown ❹ which provides interface usage information to the user, as a result of an adaptivity decision triggered by the fact that the user is not making "correct" use of the interface (in this specific case, manually revisiting a document, whereas the user could have used the history mechanism for the same purpose).

## THE AVANTI CONSORTIUM

Part of this R&D work has been carried out in the context of the ACTS AC042 AVANTI project "Adaptive and Adaptable Interactions to Multimedia Telecommunications Applications", partially funded by the European Commission (DG XIII). The AVANTI consortium comprises: ALCATEL Siette (Italy) - Prime contractor; CNR-IROE (Italy); ICS-FORTH (Greece); GMD (Germany); University of Sienna (Italy); MA Systems (UK); MATHEMA (Italy); VTT (Finland); ECG (Italy); University of Linz (Austria); TELECOM ITALIA (Italy); EUROGICIEL (France).

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# The AVANTI Web Browser: Supporting User-Adapted Interaction