



EPIKH

RESEARCH PROGRAMME OF ACHRAF OTHMAN

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Abstract: This document includes the functional description of the WebSign System maintained by UTIC “Research Unit of Technologies of Information and Communication” and their current work plans. For the implementation of the WebSign System into grid architecture and for ensure the multi-community aspect of the system. The time schedule and expected outcomes are also included.



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1. INTRODUCTION

Disabled persons face insurmountable difficulties when they want to deal with the new technologies: the use of a computer, the access to Internet, the edition and the impression of a text, the reading of a document can be extremely complex tasks in spite of their simplicity for another user. Today, the extraordinary progress of the new technologies bound to the data processing and Internet offers remarkable opportunities to bring a better quality of life to those that endure handicap.

In this context, our project has for objective the contribution to the improvement of the accessibility of disabled person to the technologies of information and telecommunication.

We target a specific category of disabled person: the deaf. The objective of our project is to develop a Grid-based interpreter of Sign Language(SL) that would be useful in enabling people who do not know SL to communicate with deaf individuals and to contribute, such that, in eliminating the language barrier between deaf and hearing people.

A sign language is a language which uses manual communication instead of sound to convey meaning - simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions to fluidly express a speaker's thoughts. The sign language remained nevertheless a fully-fledged language, with its own constructional method of the sentences. In this document illustrates a program to deploy a sign language machine translation into the Euro-Mediterranean.

1.1. PURPOSE OF THE DOCUMENT

The main purpose of this document is to describe the scheduled activities in order to deploy the WebSign (Sign language machine translation developed into the Research laboratory UTIC) on the EPIKH platform.

1.2. DOCUMENT ORGANIZATION

This document is organized in 3 sections:

- Introduction and other relevant information for this document.
- A description of the research program.
- A description of the time scheduling and the expected outcomes.

1.3. APPLICATION AREA

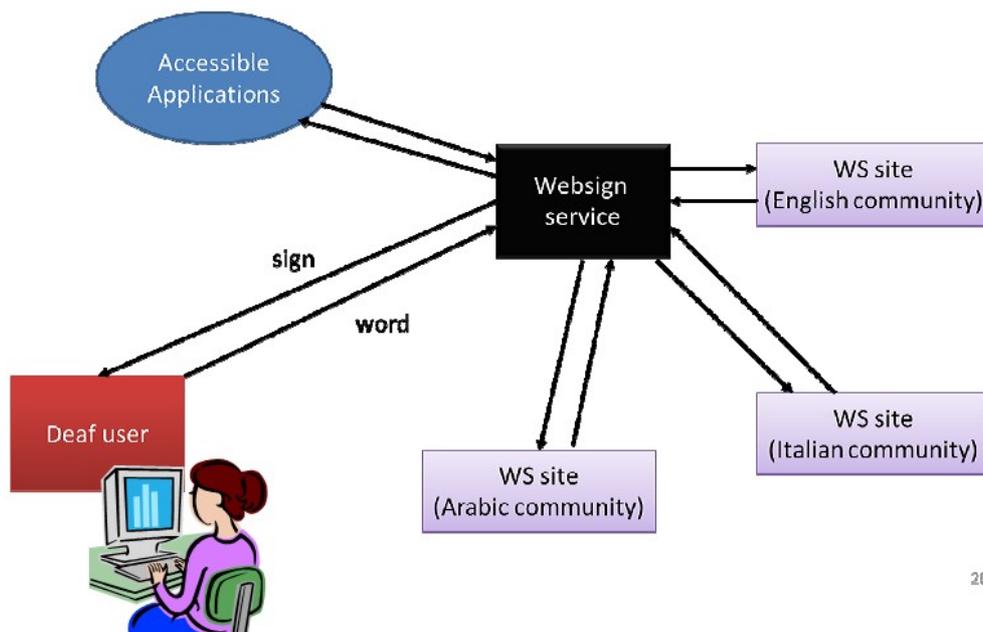
The document is applied to the exploitation of Grid resources to improve the accessibility of people with disabilities to the information and communication technologies and in particular deaf persons.

2. RESEARCH PROGRAMME

WebSign is a Web application. It is based on the technology of avatar (animation in virtual world). The input of the system is a text in natural language. The output is a real-time and on-line interpretation in sign language. This interpretation is constructed thanks to a dictionary of words and signs. The creation of this dictionary can be made in an incremental way by users who propose signs corresponding to words. A word and its corresponding sign interpretation are added effectively to the dictionary only after its verification by an expert administering the system.

Contrary to popular belief, sign language is not universal. Wherever communities of deaf people exist, sign languages develop, but as with spoken languages, these vary from region to region. Hundreds of sign languages are in use around the world and are at the core of local Deaf cultures [9]. Some sign languages have obtained some form of legal recognition, while others have no status at all. For this reason, we implemented the notion of community. A community is a group of users that can build and share a common dictionary of sign language. A dictionary can be created totally by a specific community or can be just an instance of an existent dictionary where some specific words are interpreted differently to respect the intrinsic specification of the concerned community. The generation of gestures is essential for the creation and the development of applications dedicated to deaf persons, in particular the illiterates. In most cases, these application need to store gestures codification/description in data bases or dictionaries in order to process sign language, to translate text from or to sign language, to play sign in a 3D scene and so on. In this context, we have developed a system to make Signs using collaborative approach via a Web based interface.

WebSign System is developed using classic web technology. In this project, we plan to exploit the possibility to deploy it into a Grid system. The main idea is to offer for each community its one site which is responsible of the translation of texts to the community's sign language and the creation of its sign's dictionary. In this context, we propose the technical architecture shown in the following figure.



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Each site contains two main services; the first allows users to propose signs using an easy of use interface. The proposed signs should be validated by an expert before its insertion into the dictionary of the community. The second service is responsible of the text translation to sign language. The user should download and install in his machine the WebSign player which communicates with the translation service to get a description of the sign in SML language. The SML description is interpretable by the player which animates the virtual character according to the SML code.

My aim during a period of one month is to get trained as a trainer of Grid technology covering both administration of Grid sites and application support. Doing this work, I will extend my experience to new application areas and their specific demands on administration and application support, especially for web sign application.



3. TIME SCHEDULE AND EXPECTED OUTCOMES

3.1. TIME SCHEDULE

15/07/2010 – 15/08/2010 : Getting trained as a trainer on Grid technology and porting of applications by visiting EU partners of EPIKH.

dd/mm/yyyy – dd/mm/yyyy : Contributing to education events.

3.2. EXPECTED OUTCOMES

- Enlarge and deepen my knowledge of Grid technology and applications.
- A specialized understanding of the principles of grid technologies and applications
- Hands on experience with the administration and maintenance of production systems concerning grid related services.
- Accumulate experience with the administration and maintenance grid services.
- Deploy the web sign service