INTRODUCTION TO PROJECT MOBILTEL

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ABSTRACT

The MobilTel (Mobile Multimodal Telecommunications Systems and Services) project provides research and development activities in multimodal interfaces area. The MobilTel communicator is a multimodal Slovak speech and graphical interface. The result is a functional architecture for mobile multimodal telecommunication systems.

We describe the method of interaction between mobile terminal (PDA) and MobilTel multimodal PC communicator and we present the graphical examples of services that enable users to obtain information about weather forecast or train connection between two train stations.

1 SCIENTIFIC GOALS

The main goal of this project is the research and development in the area of mobile multimodal telecommunication systems, which allows access to information from different areas through mobile multimodal terminal and human - machine interaction with natural speech, with support of another mainly graphical modalities.

2 MOBILTEL COMMUNICATOR

The MobilTel Communicator enables multimodal multi-user interaction in Slovak language through telecommunication or IP network to find information in databases or Internet websites. The speech, graphical user interface, pen and keyboard on PDA device are on of the possible and also available modalities.

The MobilTel communicator is based on a distributed *'hub-and-spoke'* Galaxy architecture used in DARPA Communicator [1], [2].

Each module (server) seeks services from the HUB and provides services to the other modules through the Galaxy HUB.

It's based on easy *Plug & Play* approach. Every communication goes trough the HUB. MobilTel communication architecture is illustrated on Fig.1.

2.1 Servers of the communicator

ASR server – There is two isolated words recognizers with thousands words capacity.

HUB server - developed in DARPA Communicator project [3].

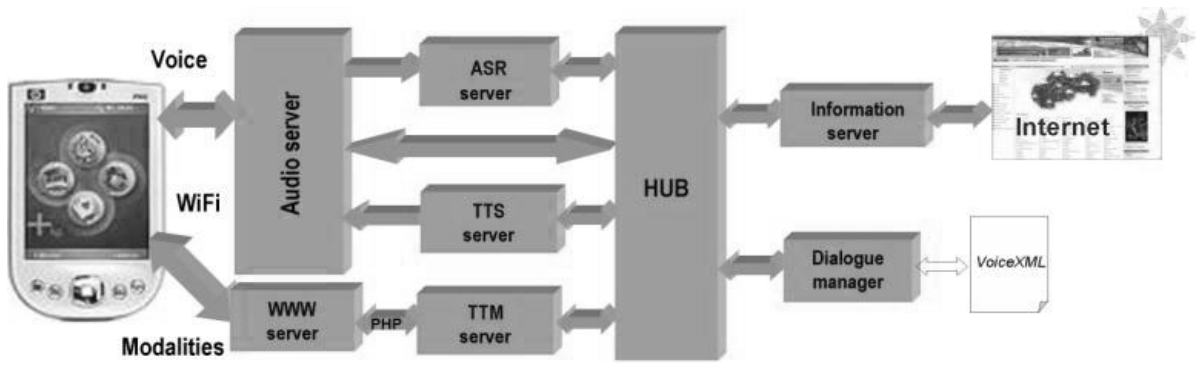
Information (Backend) server – server capable of retrieving the information from web.

TTS server - Diphone synthesizer based on concatenation of diphones with **T**ime **D**omain **P**itch **S**ynchronous **O**ver**l**ap and **A**dd (TD-PSOLA) similar algorithm [4].

Dialogue manager - Based on VoiceXML 1.0 interpreter [5].

Telephony server - Connects the whole system to the telecommunication or IP network, supports telephone hardware card - *Dialogic D120/41JCT-LSEuro*, sound card or VoIP connection.

WWW server – mainly Apache free web server which provides the GUI interface to the PDA device.



TTM (Text To Multimodality) server – provides next modalities, trough direct access to HUB with messages generated from files, and also logging messages from HUB to another files.

2.2 PDA-side services

On PDA side there are two main services running during the multimodal interaction:

1. Web browser – as graphical user interface (using the JavaScript and PHP to be a real-time service)
2. Voice audio server together with main control module.

3 MULTIMODAL SERVICES - EXAMPLES

We are using two multimodal services:

1. Railway scheduler and
2. Weather forecast

for testing the MobilTel architecture communicator. In these services is a combination of speech modality and other modalities, as we can see on the Fig.2. On first screen we can choose interactively clicking on the graphical representation of these two services: "Weather" and "Railway scheduler".

Fig. 2. Example of the first screen service GUI and the day selection dialog

a) b)

Fig. 3. Examples of service GUI for
a) Railway scheduler
b) Weather forecast

3.1 Railway scheduler service

Railway scheduler provides information about train connections. We can select place from and where we want to travel, the date and time (default is the present time and today) when we want to travel (see Fig.3).

3.2 Weather forecast service

Weather forecast service provides information about weather forecast in the district towns of Slovakia [6]. We select the city from scrolling menu and then also the day (see Fig.3). We can also request the current weather information from the last hour.

4 CONCLUSION

The next project activities will be oriented to optimizing and testing of demo version of the system. We will try to select optimal solution and increase the robustness by optimization of duplex voice transmission between PDA and multimodal server, optimization of GUI on the server and PDA side.

Next part of the project will be redesign and testing of the multimodal telecommunication services and optimization of multimodal dialog for services "Weather forecast" and "Railway scheduler".

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