Accessibility in Theaters using Mobile Devices Project Schedule

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1 System Description

The main idea is to develop a message distribution system, for subtitles and audio descriptions in multi-lingual context, adapted for show rooms, providing access to both people who have sensory disabilities (visual or auditory) as for people who have difficulty understanding language in used in the show.

The system is based on a mobile device (Android, iPhone,...) with a screen to read the subtitles and a headphone output for audio description. These mobile devices are connected through a network without children, a computer system that distributes content such as multiple messages, subtitles, audio descriptions, ..., in the language you have chosen from among the spectators that offers the show. The system architecture is describded in Figure 1.

The system is planned to have three ways of triggering the broadcast of the contents:

1. **Automatic**: When the timings to launch the contents is well known .

2. **Manual**: When is required the presence of an operator to launch the contents.

3. **Intelligent**: The system detects a new sentence spoken by the actor, and broadcasts the corresponding content (This mode will be postponed to some later version).

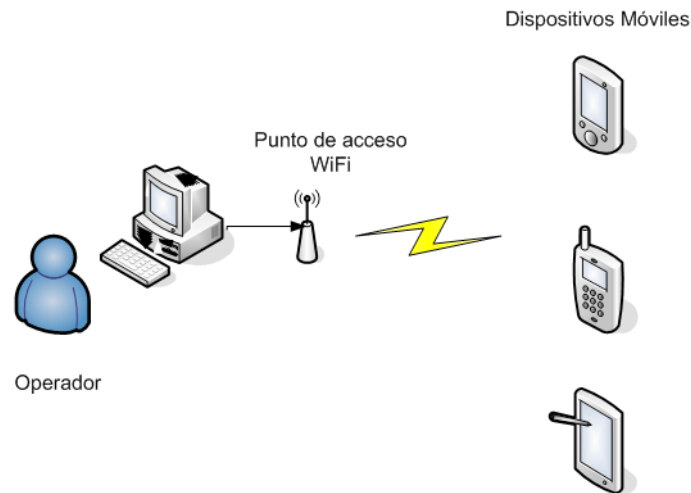The theaters that have shown interest in this project are:

Figura 1: System Architecture

- Liceu

- Teatre Nacional de Catalunya (TNC)

- Teatre Lliure

2 Users

The system must take into account three types of users, each one requiring different functionalities:

Administrator : Manages the content broadcasting server:

- Manages the contents stored in the server: imports, deletion, etc.
- Manages the network configuration of the server.
- Creates, deletes, modifies users profiles.

Operador : Controls the functioning of the server during a show.

- Launches new content of the show.
- Stops the broadcasting of show content.
- Starts the launching of çommercial breaks"on the mobiles devices, during the show breaks.

Spectator : Using the mobile device, receives the contents related to the show.

3   Server Funcionalities

Next are describded the functionalities required from the content server. There are two main user types: an Operator and an Administrator.

3.1   Administrator

This user has total control of the server's functionalities and configurations. It has the following roles:

- Create new users

- Import to the system new content (subtitles, audio descrition, etc) from the STR2 format defined by UAB.

- Delete from the system content that is no longer required.

- Configure the promotional advertisement that is broadcasted during the breaks.

3.2   Operador

- Create a new session for broadcasting contens.

- Select the contens to be broadcasted during the show and the translated languages.

- Configure the the contents launching mode (manual, automatic, etc)

- Switch the between the states "show time" (content broadcasting) and "advertisement"

4   Functionalities of the Mobile Device

In this section is describded the functionalities required on the spectators's mobile device, or on the devices available on the theater.

4.1   Espectador

- Select user interface language.

- Select the language of the contents broadcasted on the show.

- Choose the type of desired contents (subtitle, audio descriptions, etc...).

- Read the contents on the mobiles's device screen, in the language previouly selected.

- Identify the actor that is currently speaking (by color or by the actor's name)

- Audio description for blind people with the content pre-recorded and released automatically.

- In the intervals the spectator receives advertising / promotional information.

- Usage of the infrastructure as sound amplifier (Problem: the delay / desinchronization can be high).

5 Non Functional Requirements

- Disable the speaker of the mobile device (to be able to hear audio it is required to plug-in headphone)

- Compatibility with the mobile operatinf systems: *Android, BalckBerry* and *iPhone* (The first prototype will be developed in *Android*).

- The screen of the mobile device must have a dark color, with low luminosity.

- The application can be downloaded from the online app store (Android Market)

6 Liceu custom feature requests

- The client application installed on the smartphones must deactivate the mobile applications inbound events, as far as possible, and also block inbound calls and activating silence mode, etc.

- While the application is active it should run in full screen mode, to block access to other functionalities, not required in "show time".

- Make the application fault tolerant to broadcast failure, network time-outs, ...

- La fuente de los subtítulos deberá adecuarse dinámicamente a la longitud del subtítulo recibido, de manera que se garantice en todo momento que cabe todo el texto en la pantalla del dispositivo.

- The systems must support multiple languages: catalán, spanish and english.

- The systems must be compatible with the subtitling software VICOM content generator.

- Sound only works only the applications has the headphones plugged-in.