Wireless Public Announcement System for Hearing Devices

Javier Sainz, *Moviquity, ES*

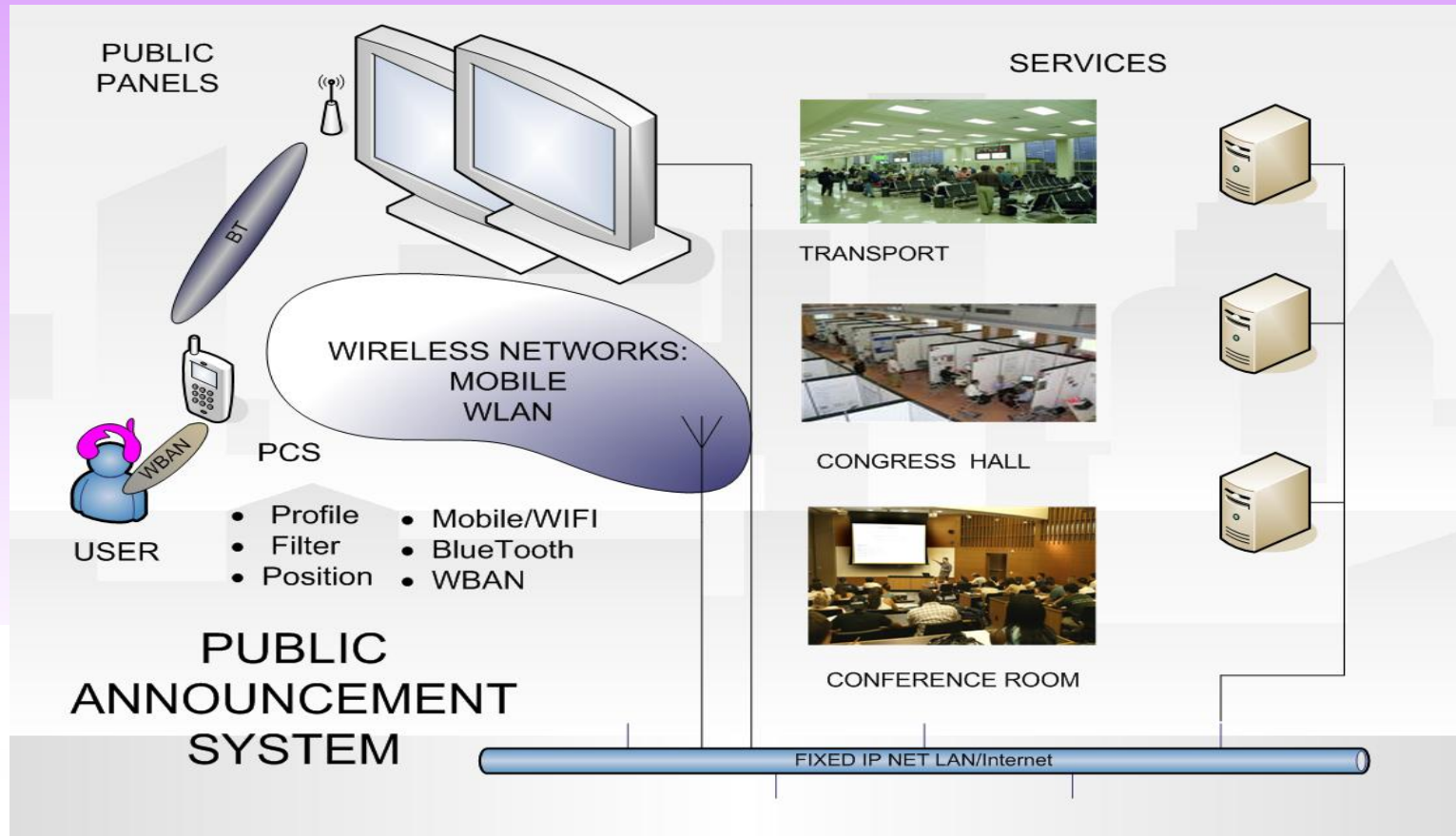# Index

- Scenario

- System Architecture
  - Network
  - Protocols

- HMI Interface considerations

- Conclusions

HearCom

Information Society Technologies

e-inclusion
Be part of it!

moviquity

Scenario

Scenario

The Personal Communications System

As Communications hub:

- Connects to Hearing Aid via WBAN
- Connect to Personal Networks:
  - Bluetooth
- Connects to remote Networks
  - Mobile
  - WLAN (WiFi), WMAN

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity

Scenario

• A person with hearing impaired profile and equipped with the latest PA technology terminal is going to the Museum using the Train. On the way he interrupts the excursion and visits a shop.

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity

Scenario

Activities:

Programming the day:

Excursion info: destination timetable is used to prepare the Public Announcement filters.

- This activity is performed at home with a PC Screen and with high speed internet access to Access Public Announcement Providers Web Pages (ie.Train or Museum information Web Pages)

HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity

Scenario

On the move;

- Using the mobile device (PCS) connected via wireless to internet (Mobile or Wifi) and to a Hearing Aid (WBAN).
- The user receives text, images, audio and vibration warnings of PA messages that are received.
- Location is defined on the fly by a location platform that combines the information from different technologies (Wireless Beacons like Wifi and Mobile, RFID, GPS)
- **At the Train Station.**

Change of Train Platform Announcements. Received for informing of a Platform Change.

HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity

Scenario

On the move; Using the mobile device.

At the Museum:

The museum is offering a tour for hear impaired visitors. This announcement will be received by the user when he is inside the museum.

• Announcement received in the vicinity of a shop (announcing discounts) prompts the user to change his plans for a visit to the shopping Mall.

→This PA message will be received by the user if allowed by the programmed filter.

→All messages are stored and can be heard and read again.

HearCom

Information Society Technologies

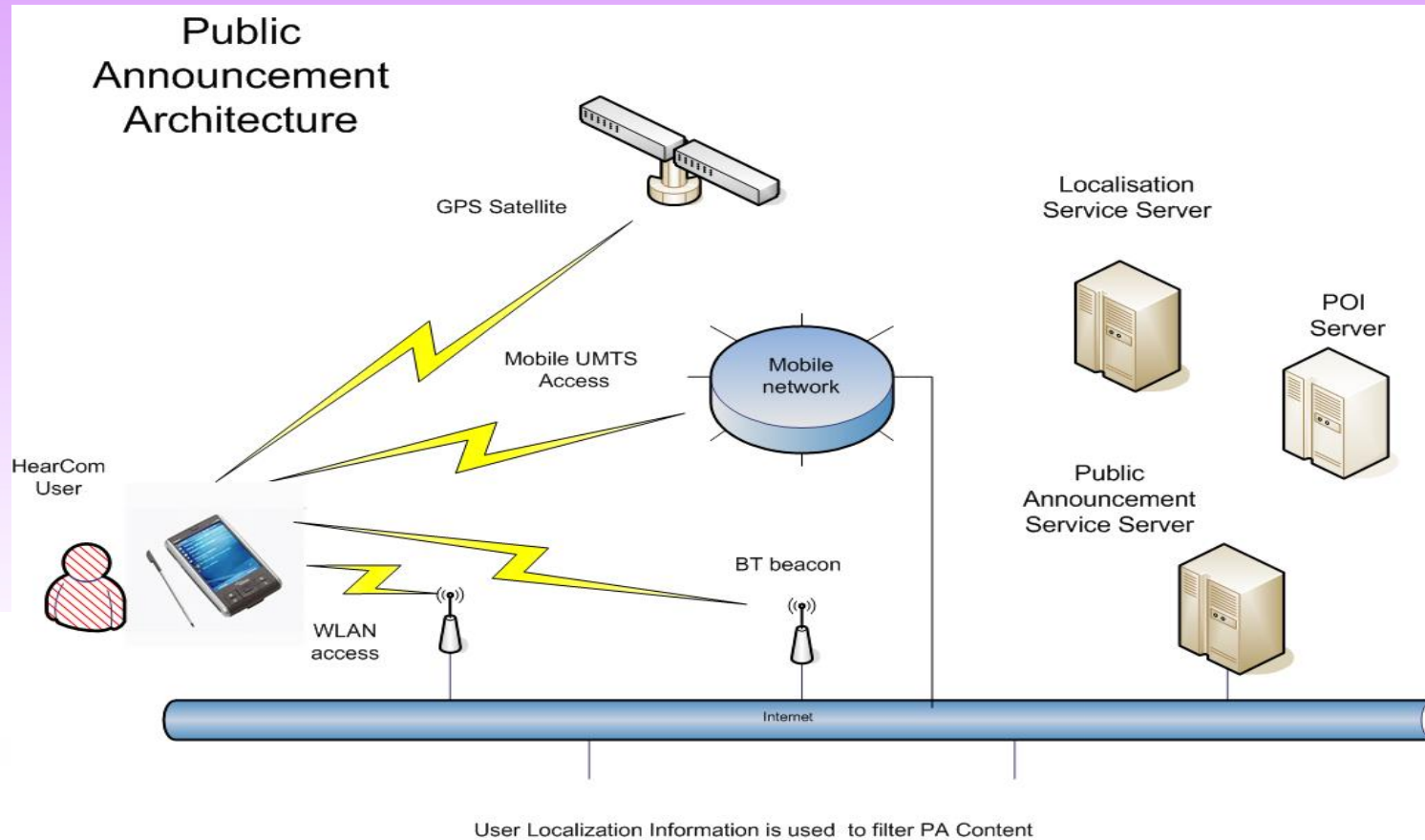e-inclusion
Be part of it!

moviquity

Scenario

- **Emergency Announcement**

A Fire Alarm Announcement at the Mall . This type of announcement will be propagated to all users in the vicinity of the danger.
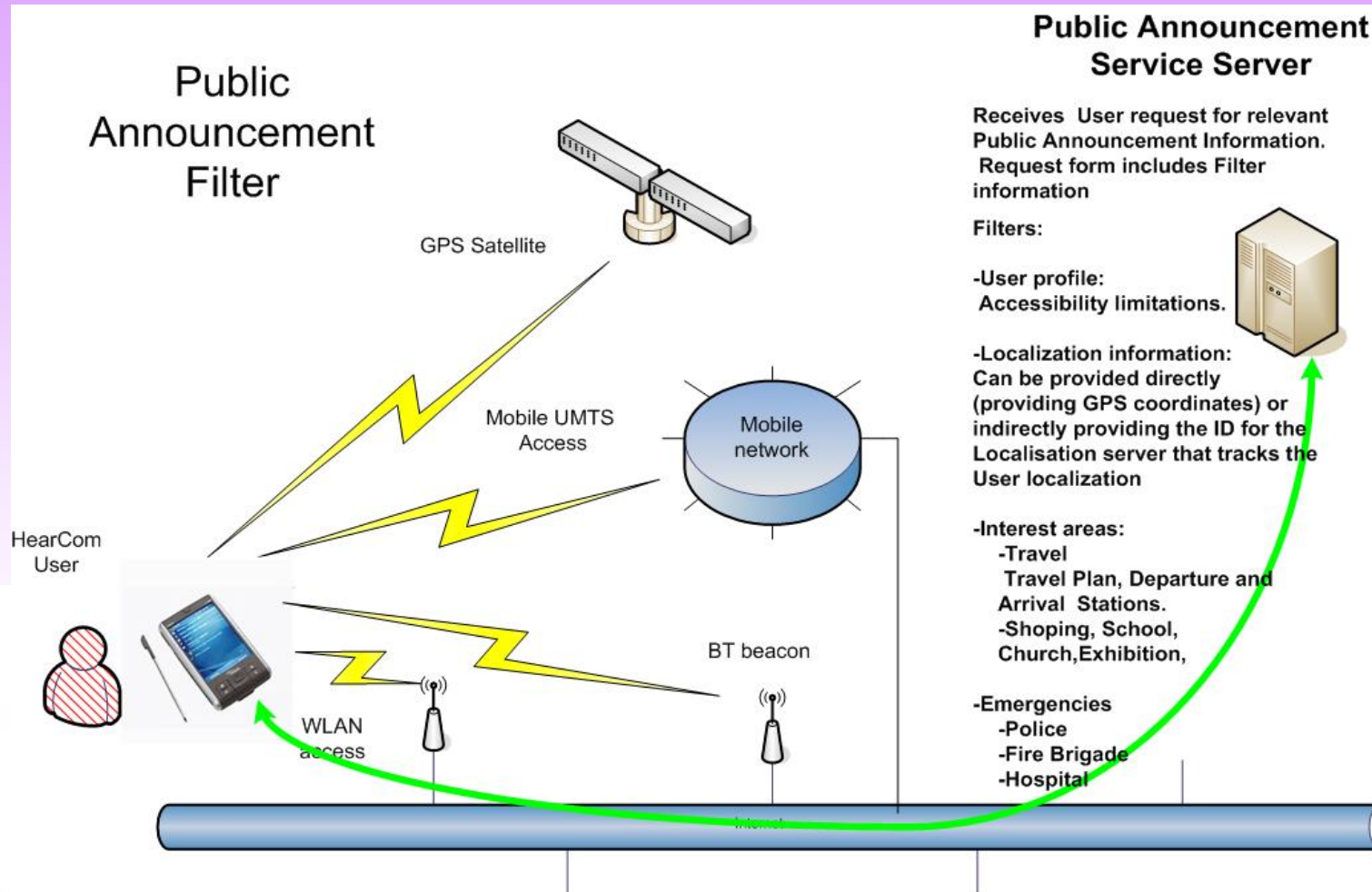
HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity

System Architecture

Public Announcement Architecture

GPS Satellite

Localisation Service Server

POI Server

Mobile UMTS Access

Mobile network

HearCom User

Public Announcement Service Server

BT beacon

WLAN access

Internet

User Localization Information is used to filter PA Content

HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity

System Architecture: Elements

Public Announcement Filter

GPS Satellite

Mobile UMTS Access

Mobile network

HearCom User

BT beacon

WLAN access

Public Announcement Service Server

Receives User request for relevant Public Announcement Information. Request form includes Filter information

Filters:

-User profile:
 Accessibility limitations.

-Localization information:
Can be provided directly (providing GPS coordinates) or indirectly providing the ID for the Localisation server that tracks the User localization

-Interest areas:
 -Travel
  Travel Plan, Departure and Arrival Stations.
 -Shoping, School, Church,Exhibition,

-Emergencies
 -Police
 -Fire Brigade
 -Hospital

User Public Announcement Request provides User Information and is used to filter PA Content

Workshop

HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity
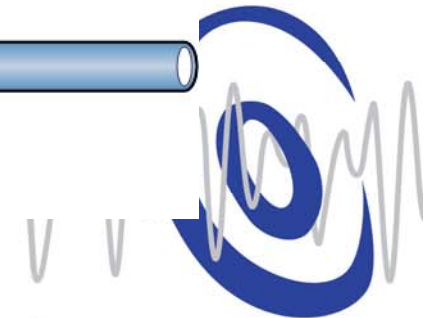
System Architecture: Elements

Public Announcement Publication

Announcements can be placed by the Different Public Organizations in different Formats /Languages to cater for the different Profiles and Localization
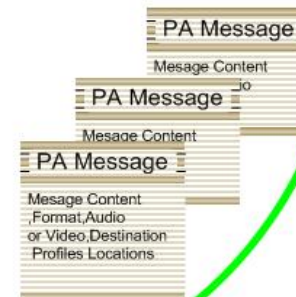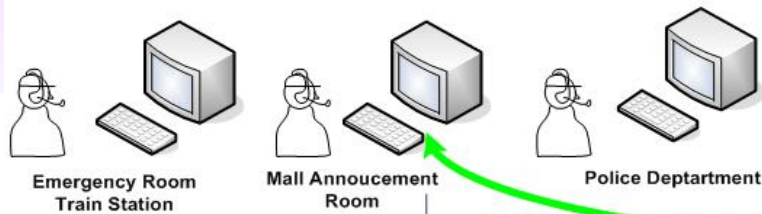
Announcement Parameters:
- Localization scope
- Urgency
- Language
- Voice File /Text File /Image
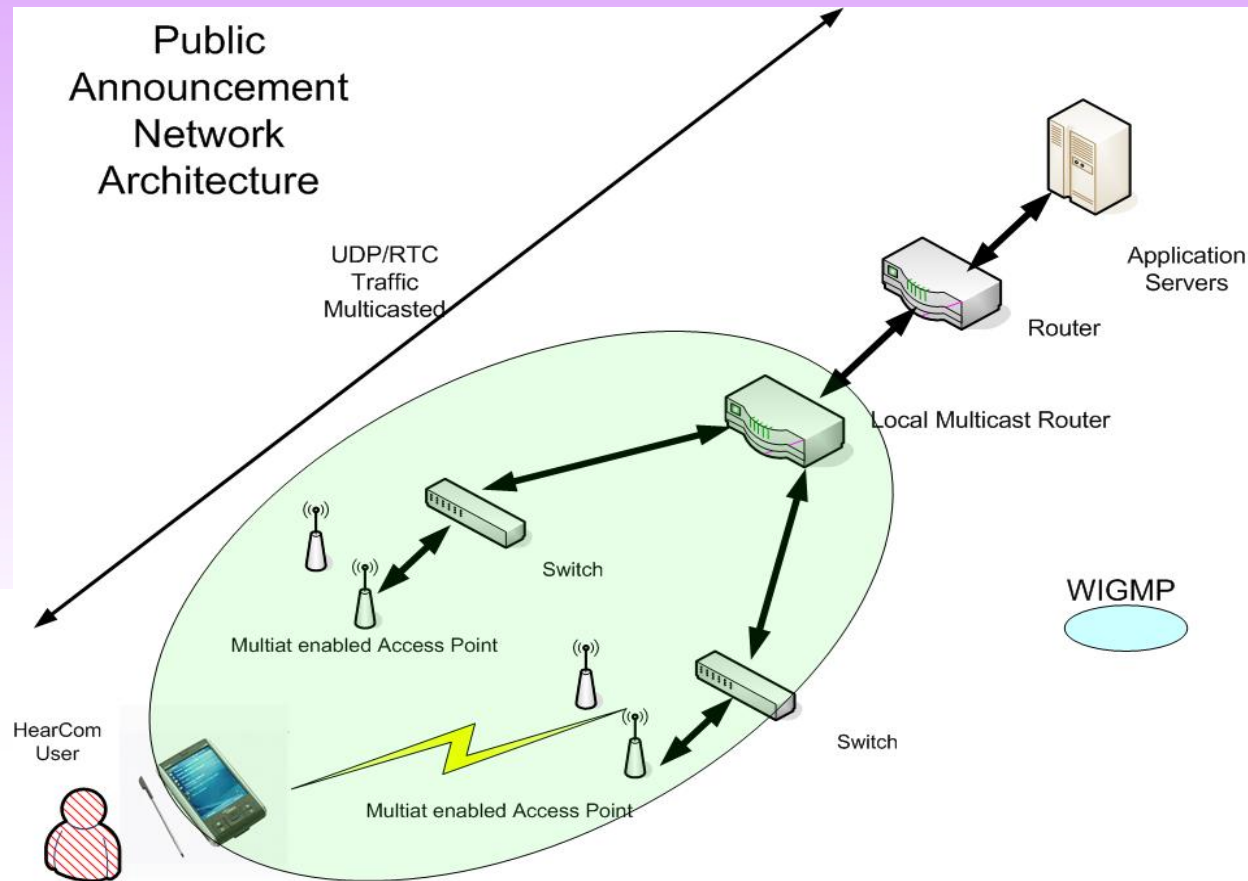- Target Profile

Public Announcement Service Servers

Public Announcement Organization

PA Message
Mesage Content

PA Message
Mesage Content

PA Message
Mesage Content
,Format,Audio
or Video,Destination
Profiles Locations

Emergency Room
Train Station

Mall Annoucement Room

Police Deptartment

Internet

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity

System Architecture: Network

Different Network Technologies are available to propagate the information optimally:

- Unicast/ Broadcast/ Multicast.

- The Mobile Wireless Networks

System Architecture: Protocols

Organization for the Advancement of Structured Information Standards (**OASIS**) has proposed a protocol to propagate alert messages. This protocol can be extended to informational messages.

CAP: Common Alerting Protocol:
• Supporting digital images, text ,audio and video.
- Multilingual and multi-audience messaging
- Flexible geographic targeting (localization).
- Compatible with digital encryption and signature capability.
- Message update and cancellation features
- Interoperability standard for use among warning systems and other emergency information systems.
- Usable over multiple transmission systems.
- End to end authentication and validation of all messages.

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity

Human Machine Interfaces

- – Adapted to user profile.
  - Hearing impaired, Elderly ..
- – Connected to Hearing devices
- – Critical for deployment success.
  - User friendly: overcome user limitations
  (wear it and use it at home: domestic applications).
  - Messages filtered and with different alert levels
    - – Location dependent.
    - – Alert messages prioritized

HearCom

Information Society Technologies

e-inclusion Be part of it!

moviquity

Conclusions

- **A system for the propagation of Public Announcements to mobile users**
- **Proposal is based on Hearing devices connected to PCS, IP technology and CAP like messages.**
- **Specially conceived to empower accessibility of Users on the move of different profiles (Hearing, Vision Impaired).**
- **Based on off the shelf technology (WBAN to come):**
- **Messages:**
  - **Presentation adapted to user preferences and profiles.**
  - **Filtered based on user localization, profile and preferences.**
  - **Stored to be retrieved for later revision by the user.**
- **Further development needed in Assistive HMI technology.**

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity

moviquity

Thank you

Moviquity S.A.
Tel: 91-4319859
c/ Isabel de Colbrand, 10 Plta
Of.150 Ed. Venecia, Pol. Ind. Fuencarral
28050 – Madrid
Tlf : 91 431 98 59
Fax : 91 432 22 06
www.moviquity.com
jsg@moviquity.com

HearCom

Information Society
Technologies

e-inclusion
Be part of it!

moviquity