

An Air Interface Protocol for Local Multi-lingual Broadcasting Service



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■ Scope

This proposed work item defines a standard for wireless multi-lingual personal story telling tour system based on ISO/IEC 29157(PHY/MAC specifications for short-range wireless low-rate applications in the ISM band)

■ Normative references

ISO/IEC 29157, Information technology - Telecommunications and information exchange between systems - PHY/MAC specifications for short-range wireless low-rate applications in the ISM band

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Overview

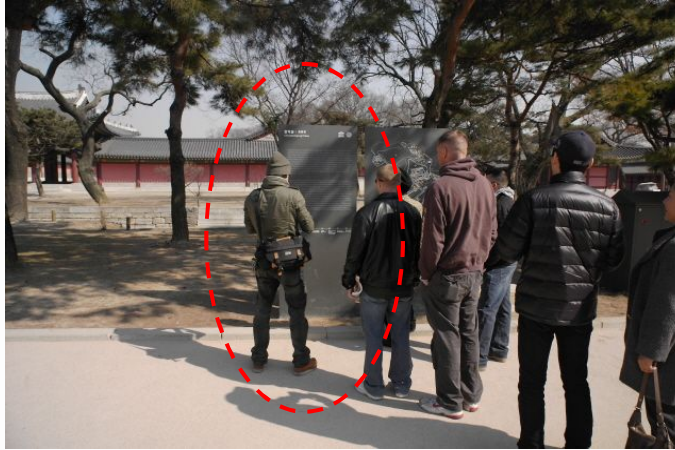
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Overview



Background

- What is the most common problem of the tourists facing in foreign countries ?
→ communication problem & expensive tour guide expense



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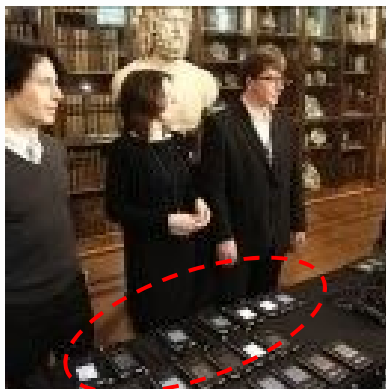
Overview



Tourist Info Service

- Various approaches are tried to attract the tourist's attention, however . . .

[British Museum Multi-lingual PDA Service]



Courtesy of British Museum

[AR Service]



[U-Device Service]



Source: PicoCast Solution Conference 2011, Korea

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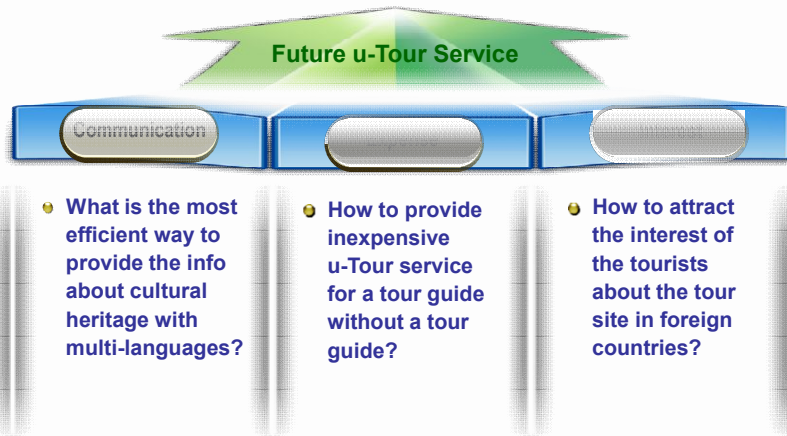
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Overview



Requirement for u-Tour

Multi-lingual Personal Story-Telling Tour Service with Local Broadcasting Feature



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Wireless Multi-lingual Story-Telling Tour Service

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Multi-lingual Story-Telling Tour Service



- The proposed Multi-lingual Story-Telling Tour System consists of . . .



Element	Main Functions
*PSTT Terminal	<ul style="list-style-type: none"> Selective listening of multi-lingual broadcasting Information and emergency broadcasting
Multi-lingual Transmitter	<ul style="list-style-type: none"> Broadcasting contents from multi-lingual DVD or streaming server
Multi-lingual DVD	<ul style="list-style-type: none"> Transmitting multi-lingual audio contents of the multi-lingual DVD Transmitting multi-lingual video contents to Information Display
Multi-lingual Streaming Server	<ul style="list-style-type: none"> Transmitting multi-lingual story-telling from the beginning on demand from a tourist
PSTT Server & Database	<ul style="list-style-type: none"> Registering the ID of PSTT service user along with the phone number for int'l call Storing the survey result of PSTT service experience
Display Device for PSTT Video Contents	<ul style="list-style-type: none"> Displaying video contents from multi-lingual DVD player

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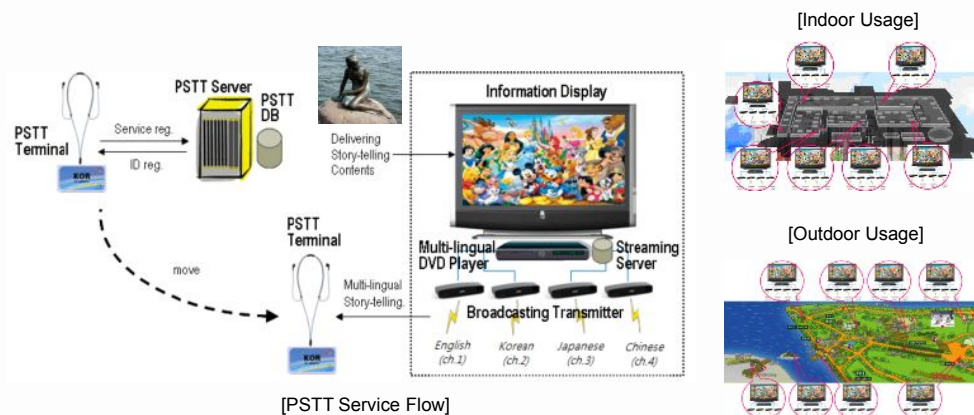
*PSTT: Personal Story-Telling Tour

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Multi-lingual Story-Telling Tour Service



- The PSTT service is based on PicoCast (ISO/IEC 29157) technology due to low latency, low power consumption, QoS, flexible bandwidth adaptability, and concurrent broadcasting capability, etc.



[PSTT Service Flow]

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Multi-lingual Story-Telling Tour Service



- The PSTT service flow comprises registration, broadcasting, making calls, etc.



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Multi-lingual Story-Telling Tour Service



- The broadcasting modes are: normal, streaming, designated and emergency.

Broadcasting Mode	Description
Normal Broadcasting	● Broadcast for all listeners in the broadcasting zone to hear the broadcasting without the limitation of the number of the listeners.
Streaming Broadcasting	● If the receiver approaches the streaming mode transmitter, the download is started and after a while, the pre-recorded contents can be heard from the start of the story.
Designated Broadcasting	● Broadcast the contents for the receivers in the specific space or for the specific receivers in the same space. For this service, the tourist should register ID at the entrance of the specific space. It can be used to page specific person or group.
Emergency Broadcasting	● All tourists can receive the emergency broadcasting when there is an emergency. Using the specific scan code, all receivers are made to receive the emergency broadcasting.
(option) Directional Broadcasting	● If a space is filled with a lot of exhibition items installed face to face, the receiver can be combined with the directional Infrared (IR) or any other device to allow the tourist to hear using the group code. If he is not in the direction of the object, he cannot hear the broadcasting.

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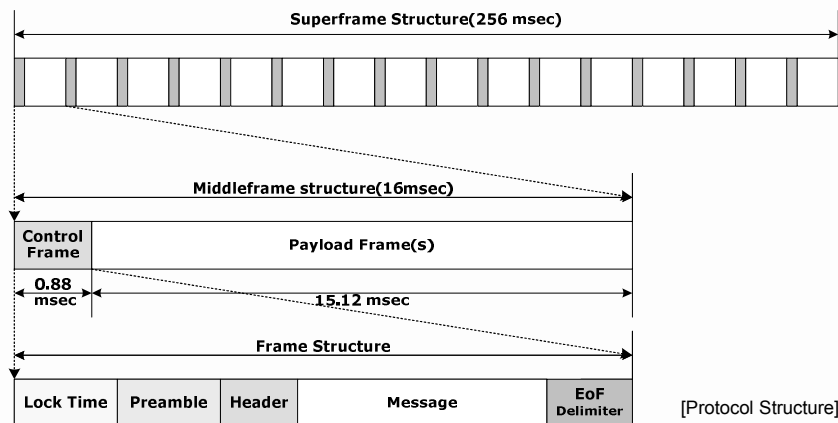
Air Interface Protocol for Multi-lingual Tour System

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Air Interface Protocol for Multi-lingual Tour System



- The basic protocol structure abides by ISO/IEC 29157, which is based on 256 msec super frame comprising 16 middle frames. The 16 msec middle frame is organized by 1 control frame and more than one user frames.



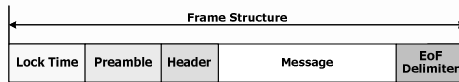
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Air Interface Protocol for Multi-lingual Tour System

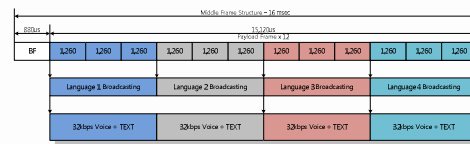


- The basic frame consists of Lock Time, Preamble, Header, Message and EoF Delimiter. There are 12 payload frames in one middle frame. These payload frames are divided into 4 blocks and support 4 languages with one RF module.

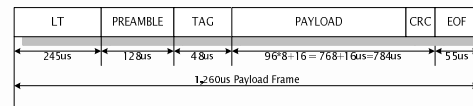


[Frame Structure]

Field of Frame	Description
Lock Time	Time for RF Frequency Synthesis
Preamble	Time for sync. signal acquisition
Header	Special purpose for frame control Setting of special packet type such as emergency communication; Special control signal
Message	Data transmission/receiveing section
EoF Delimiter	Time for RF state and frame change



[Middle Frame Structure]



[Payload Frame Structure]

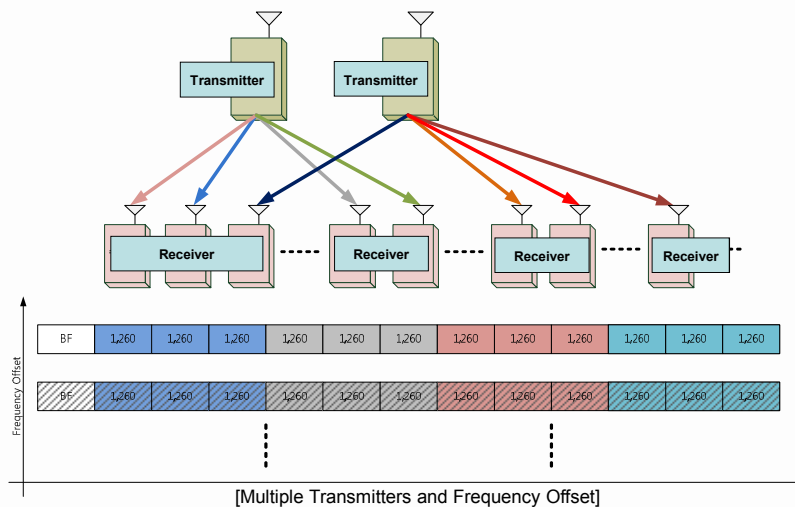
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Air Interface Protocol for Multi-lingual Tour System



- To support multi-languages with one guide point, the frequency offset is set and different language is transmitted for each offset using multiple transmitters.



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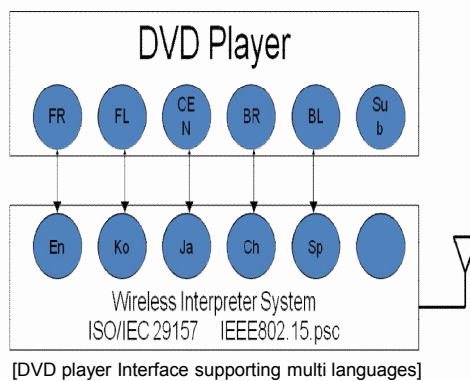
Annex: Multi-lingual Tour System using DVD

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Annex: Multi-lingual Tour System using DVD



- A conventional 5.1 channel DVD format can be revised for multi-lingual tour service by assigning each channel for different languages in order to support the feature of simultaneous broadcasting.



Language #1	FR	FL	cen ter	BR	BL	sub
Language #2	FR	FL	cen ter	BR	BL	sub
Language #3	FR	FL	cen ter	BR	BL	sub
Language #4	FR	FL	cen ter	BR	BL	sub
Language #5	FR	FL	cen ter	BR	BL	sub
Multi Lingual	FR+ FL	FR+ FL	FR+ FL	FR+ FL	FR+ FL	.

[DVD format supporting 5 languages]

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Thank You

