

**IPCableCom / MediaCom 2004 / Interactive Multimedia Workshop
ITU, Geneva, 12 - 15 March 2002**

Mobile Multimedia Broadcasting

**A MediaCom 2004 Presentation
by**

**Shuji Hirakawa, Ph.D, IEEE Fellow
Media & Contents Business Division,
Toshiba Corporation e-Solution Company**

Vice Chairman, ITU-R Working Party 6M

WP 6M / SRG-4 Activities

- WP 6M / Special Rapporteur Group 4 (WP 6M / SRG-4) for Mobile Multimedia Broadcasting was set up in March 2001.
- Annex 8 of Document 6M/46-E says:

6M/SRG-4 is appointed to the following tasks:

- 1 to investigate the development of the related telecommunication technologies for mobile multimedia broadcasting;**
- 2 to investigate the application requirements and the technologies which may be used for mobile multimedia broadcasting;**
- 3 to identify possible interoperability with other interactive digital broadcasting services;**
- 4 to identify commonalities and possible convergence of these requirements and technologies to ease international programme exchange;**
- 5 to prepare a PDNR which will give the results of the above investigations**

Main tasks of WP 6M/SRG-4

Considering the main tasks of WP 6M, SRG-4 should study the following:

- **Interaction Channel for Mobile System;**
- **Spectrum Implications of Interactive and Multimedia Broadcasting for Mobile System;**
- **Application Programme Interfaces, APIs for Mobile System;**
- **Data Broadcasting for Mobile System;**
- **Digital Rights Management for Mobile System.**

Possible Systems for a Forward Channel of Mobile Broadcasting

- **Terrestrial Digital Broadcasting Systems (ITU-R BT.1306)**
 - DVB-T (with limited data transmission rate)
 - ISDB-T (with limited data transmission rate)
 - One segment reception of ISDB-T out of total 13 segments
- **Terrestrial Digital Sound Broadcasting System (ITU-R Rec. BS.1114)**
 - Digital System A (EUREKA 147)
 - Digital System C (FM-IBOC)
 - Digital System F (ISDB-T_{SB})
- **Satellite Digital Broadcasting with Terrestrial Augmentation (ITU-R Rec. BS.1547)**
 - Digital System D_H (WorldSpace System using QPSK satellite channel and MFM terrestrial channel)
 - Digital System E (BSS (s) using CDM modulation for both satellite and terrestrial channels)

Possible Systems for an Interaction Channel of Mobile Broadcasting

- **G2.5 (with data handling capability) and G3 mobile phone systems**
- **IEEE 802.11b / 11a / 11x**
- **DVB-RCT terrestrial return channel**

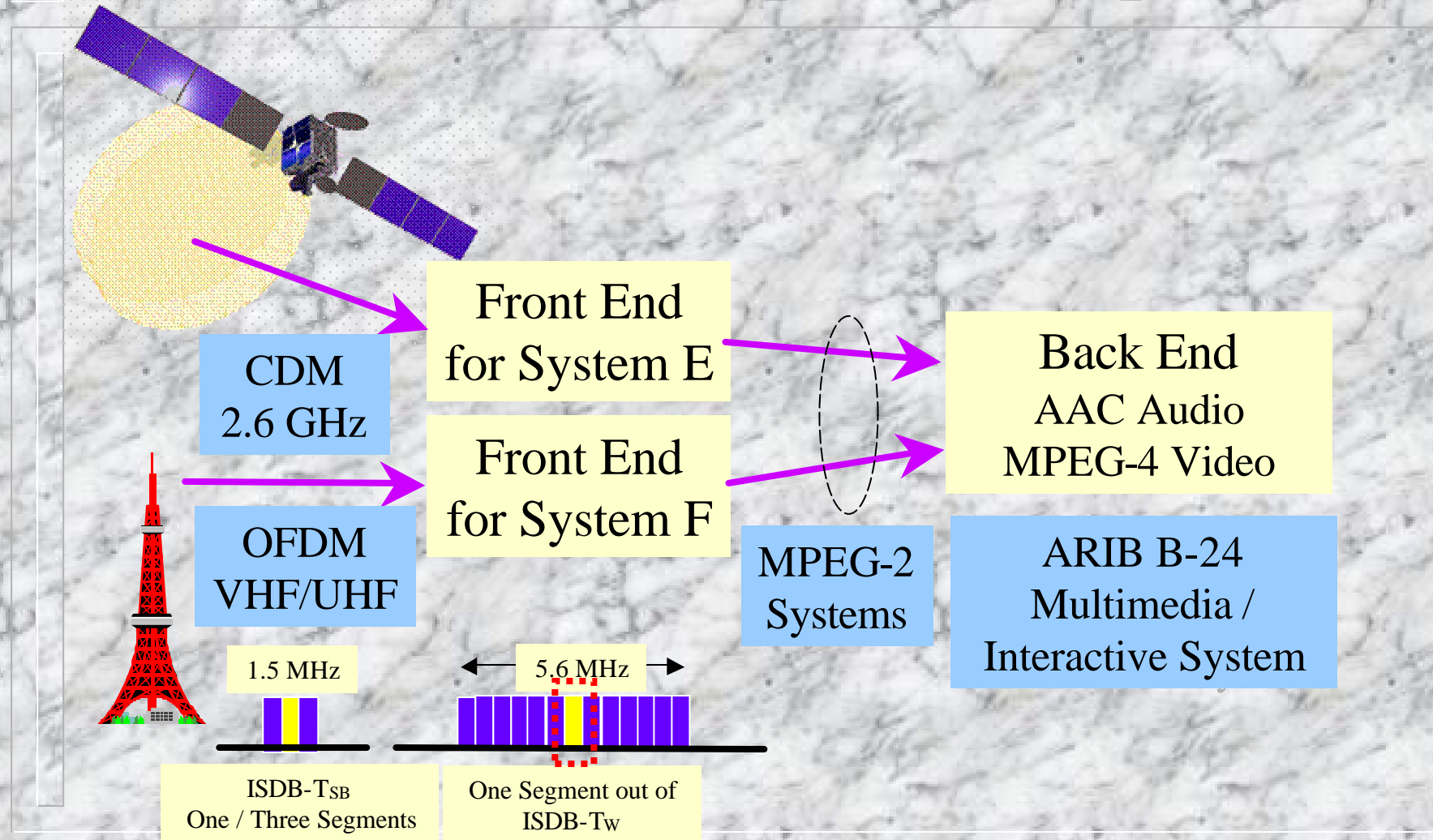
- **Hard to use a satellite return channel such as DVB-RCST for an interaction channel in case of using mobile receivers**

Interaction Channels for Interactive Mobile Broadcasting Systems

G2.5/G3 Phone
IEEE 802.11x



Multi-system Receiver for Portable / Vehicular Reception in Japan



DVB-T Mobile Reception in Singapore

 **SINGAPORE BUS SERVICES**



Example of Display in Public Transportation System



- Additional associated audio services are offered via analogue FM radio channels in addition to a digital audio channels in a digital broadcasting stream
- Complex interactive, multimedia and data broadcasting are available to fixed receivers in Singapore

Physical Transmission using Gap Filler in Singapore



Singapore

Filler Sites

Three Types of Portable Receivers



**PDA + Tuner Card
(Open box solution)**



**Portable Receiver
(Closed box solution)**



**Mobile Phone +
Broadcasting
receiver front-end**

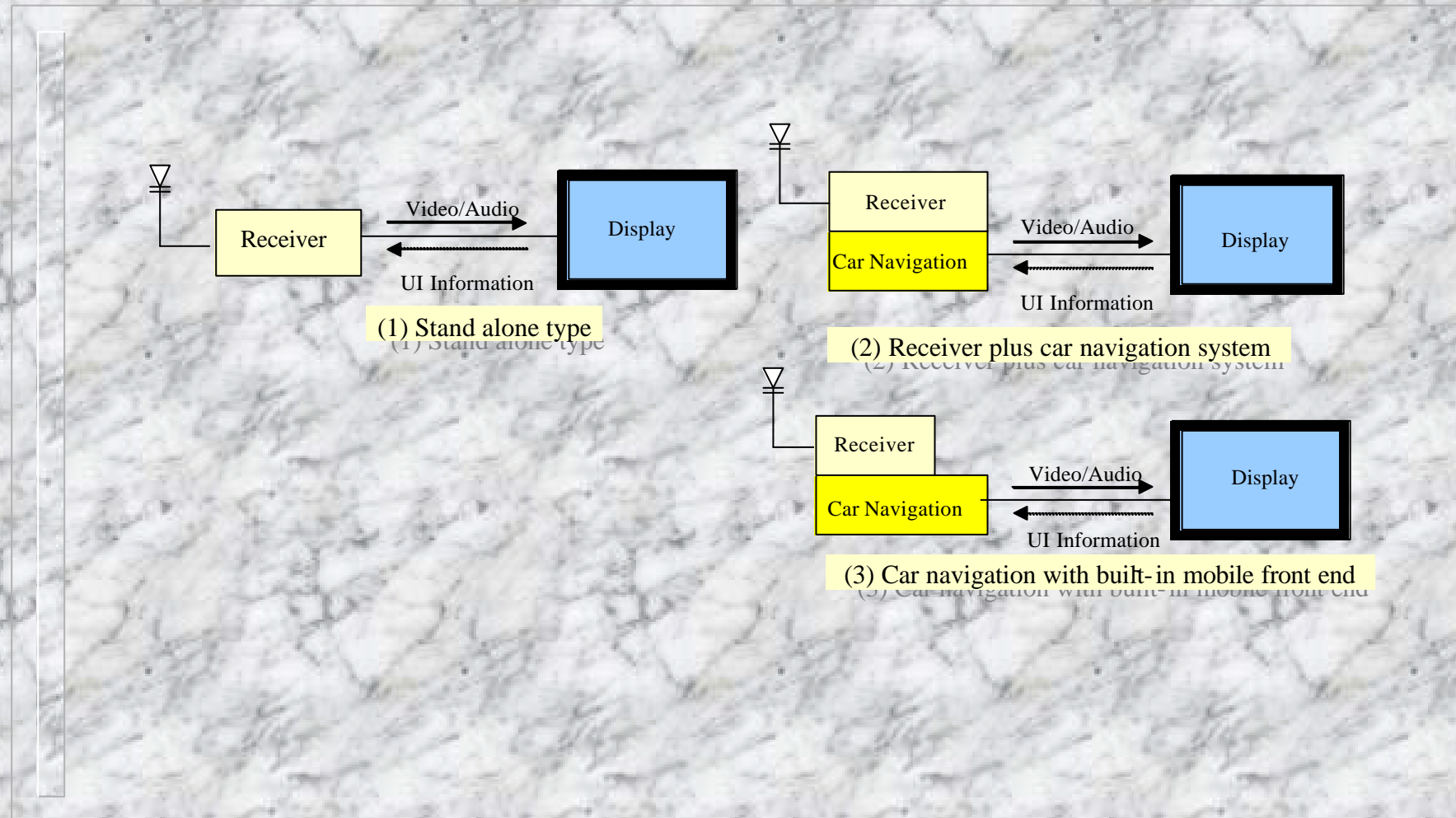
Current Issues Under Consideration

- Contents right issue for open-box solution in case of PDA + Mobile Tuner
- To implement multiple browsers for mobile phone terminal with broadcasting receiver front end
 - A G2.5 mobile phone terminal uses C-HTML / JAVA
 - Broadcasting receiver uses BML / ECMA Script defined in ARIB standard B-24
- Network provider does not require notifications between broadcast contents and internet contents through a communication channel
- Broadcasters request to identify these notifications because of specific requirement for broadcasting services. Ethical code would be applied to broadcast contents.
- There are a lot of issues for the physical layer of portable receivers, i.e., power consumption and battery life

Vehicular Receiver

- **Need to consider the combination of a vehicular receiver and a car-navigation system**
- **Three types of vehicular receivers are now considered in ARIB standardization activities**
- **Hard to identify the contents either from broadcasting stations or a car navigation system**
- **Officially, car drivers are requested not to watch a television screen during a car is moving**
- **Multimedia and data broadcasting services are not familiar to car-drivers because of their complicated receiver operation for selecting driver's favorite programmes**

Three Types of Vehicular Receivers with Car Navigation System



Example of Display by Type-3 Receiver

Road Construction Info.




Congestion Information

Service Areas / Parking

Sight Seeing / Event Info.

Weather Forecast

For Hakone

AM  PM  Night 

SW1 SW2 SW3 SW4 SW5 EPG

Conclusion

- **Portable Receivers and Vehicular Receivers for multimedia and data broadcasting services are discussed in this presentation**
- **Mobile reception of multimedia and data broadcasting is a new concept while fixed receivers are the primary target of multimedia and data broadcasting services**
- **There are a lot of issues to be resolved for an attractive interactive and multimedia broadcasting services**
 - **Battery life issue in the physical layer for portable receiver**
 - **Compatibility of presentation and execution engines between portable receivers and fixed receivers in case of using G2.5 and G3 mobile phone terminals**
 - **Display identifiers or not on screen to distinguish the contents either from broadcasting data or from internet oriented data**

Contact

Shuji Hirakawa

Vice Chair of Working Party 6M

Shuji.hirakawa@toshiba.co.jp

Thank you for your attention

Electronic Copy

This presentation is available on:

<http://www.itu.int/ITU-T/worksem/ipcablecom/program.html>

S5PM2-P2rev1.pdf