

Presentation 1

Digital TV Broadcasting in Japan

28th February - 1st March, 2007

Jakarta, Indonesia

Ministry of Internal Affairs and Communications

Japan

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- Advanced features of Japan's Digital Terrestrial Television Broadcasting (DTTB) system.
- Special advantages of Japan's system for mobile reception.
- The mobile reception service is much more feasible and cost effective than compared with the fixed reception service in some case.



- 1997** ▪ Technical Standards for DTTB were established in E.U (DVB-T) and U.S.(ATSC)
- 1998** ▪ DTTB started in E.U (DVB-T) and U.S.(ATSC)
- 1999** ▪ **Technical Standards for DTTB were established in Japan (ISDB-T).**
 - Support center for R&D of DTTB in Japan opened.
(Shared use of facility, Organization of Communications and Broadcasting)
- 2000** ▪ Technical standards for Digital Terrestrial Sound Broadcasting were established in Japan.
 - Planning of DTTB station channels.
- 2001** ▪ Development of institutions for digitization of Terrestrial Television Broadcasting.
(Revised part of Basic Plan Popularization of Broadcasting and Use of Broadcasting Frequency)
- 2003** ▪ **DTTB started in Japan** (in three metropolitan areas).
 - Start of trials for practical application of Digital Terrestrial Sound Broadcasting in part of Kanto and Kinki areas.

ISDB-T is the newest DTTB system and as such includes the latest technology



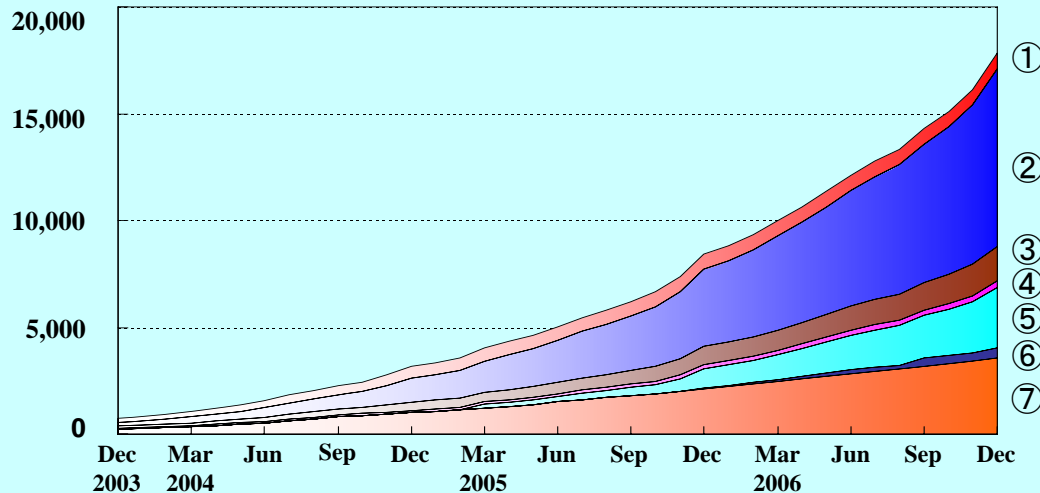
Digital Terrestrial Broadcasting Receiver Shipments

17,830,000

Source: Japan Electronics and Information Technology association (JEITA), Japan Cable Laboratory

① CRT	720 (± 0)
② LCD	8334 (+893)
③ PDP	1613 (+137)
④ Tuner	296 (+ 18)
⑤ Digital Recorder	2817 (+419)
⑥ Personal Computer	481 (+ 89)
⑦ CATV STB	3569 (+150)

(Unit: thousand)



Access to Digital Broadcasting Satellite

21,520,000

Dec 2006 Source: NHK

Digital Broadcasting Satellite Receiver Shipments

19,840,000

CRT	1,860 (± 0)
PDP & LCD	10,490 (+103)
Tuner (including Digital Recorder)	3,960 (+ 44)
CATV STB	3,550 (+ 15)

Access to Digital Broadcasting Satellite using CATV

1,680,000 households

One-Seg Mobile Phone Shipments

3,410,000

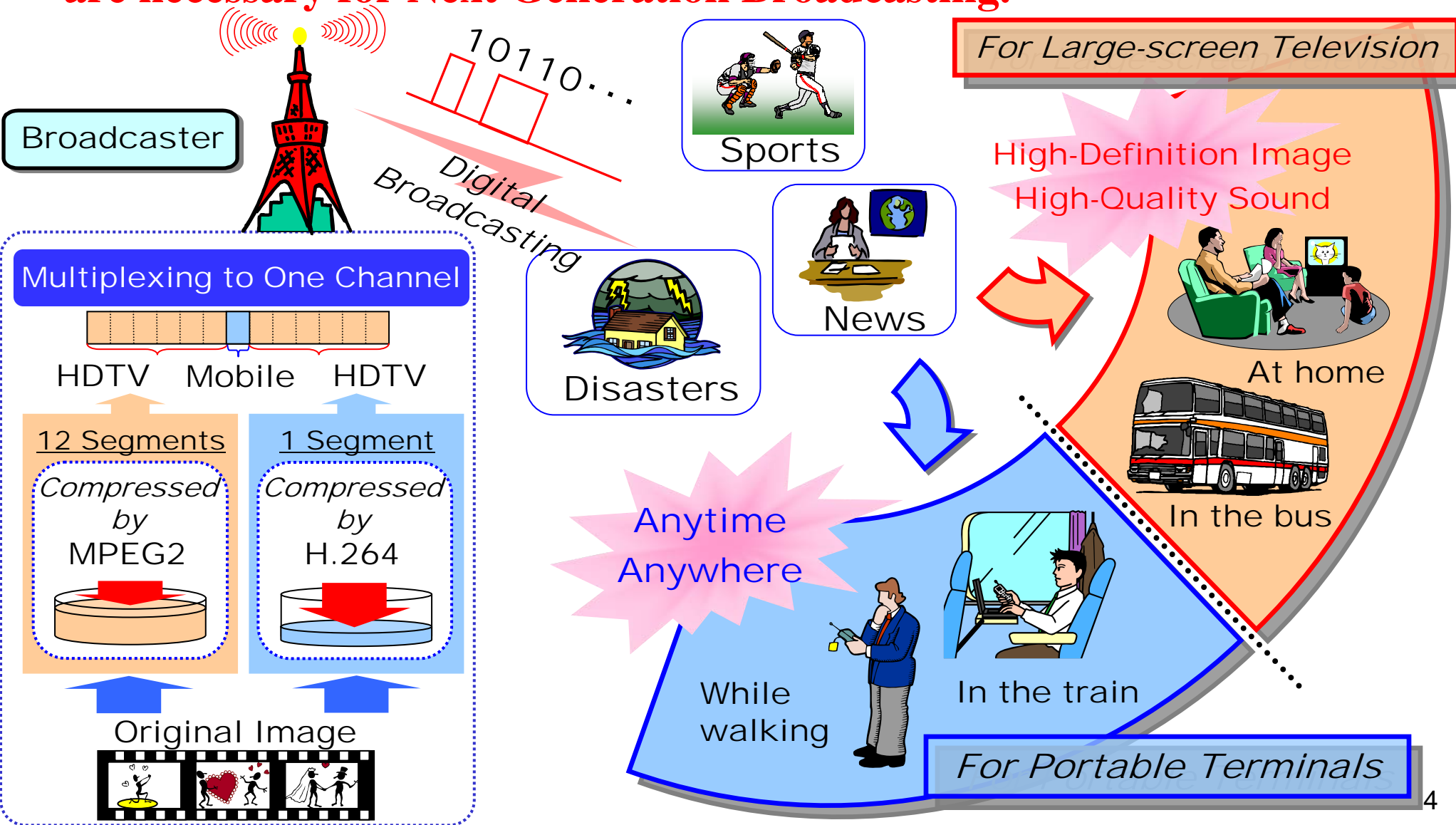
In-car DTTB Receiver Shipments

260,000

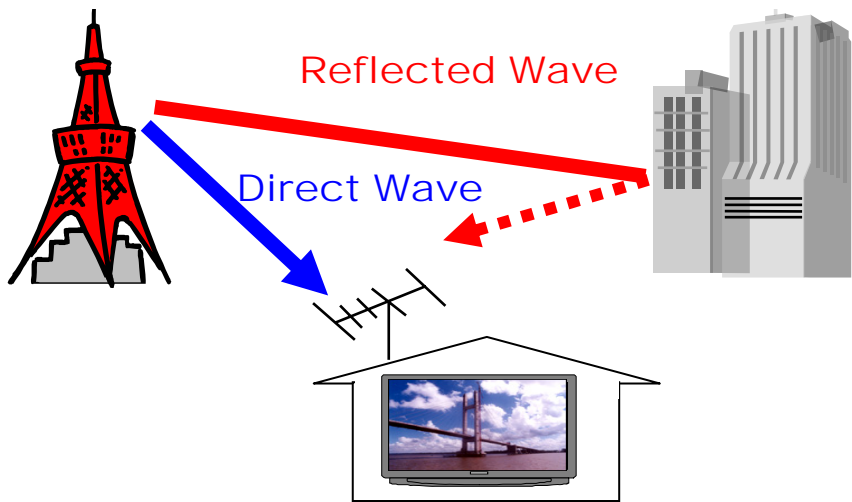
Source: Japan Electronics and Information Technology association (JEITA)



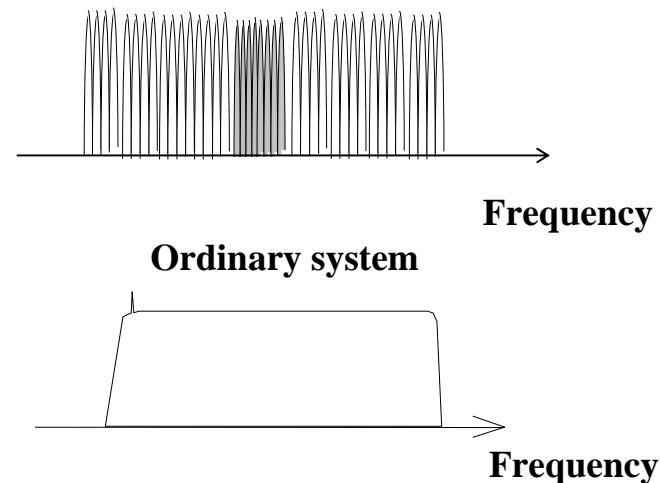
HDTV, Mobile Reception, and Data (Multimedia) Broadcasting are necessary for Next Generation Broadcasting.



① Robustness to Radio Interference by Multi Path. Because of OFDM system is adopted .



OFDM: Orthogonal Frequency Division Multiplex



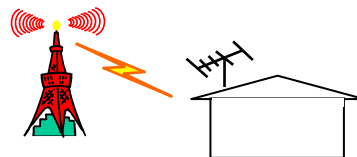
Stability of reception for mobile HDTV reception !

② Frequency and Time Interleaving

TV Station



Transmission Path



Receivers

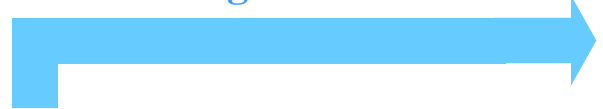




TV Station



No-Interleaving

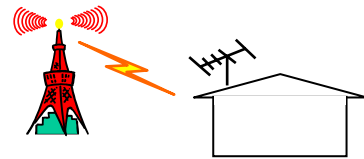


Original data

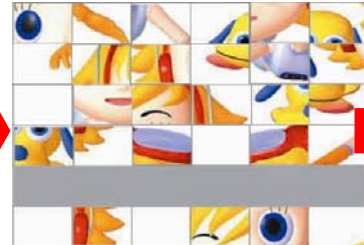
Interleaving



Transmission Path



Errors occur as a result of radio interference



Errors occur as a result of radio interference

Receivers



Difficult to correct continuous errors.

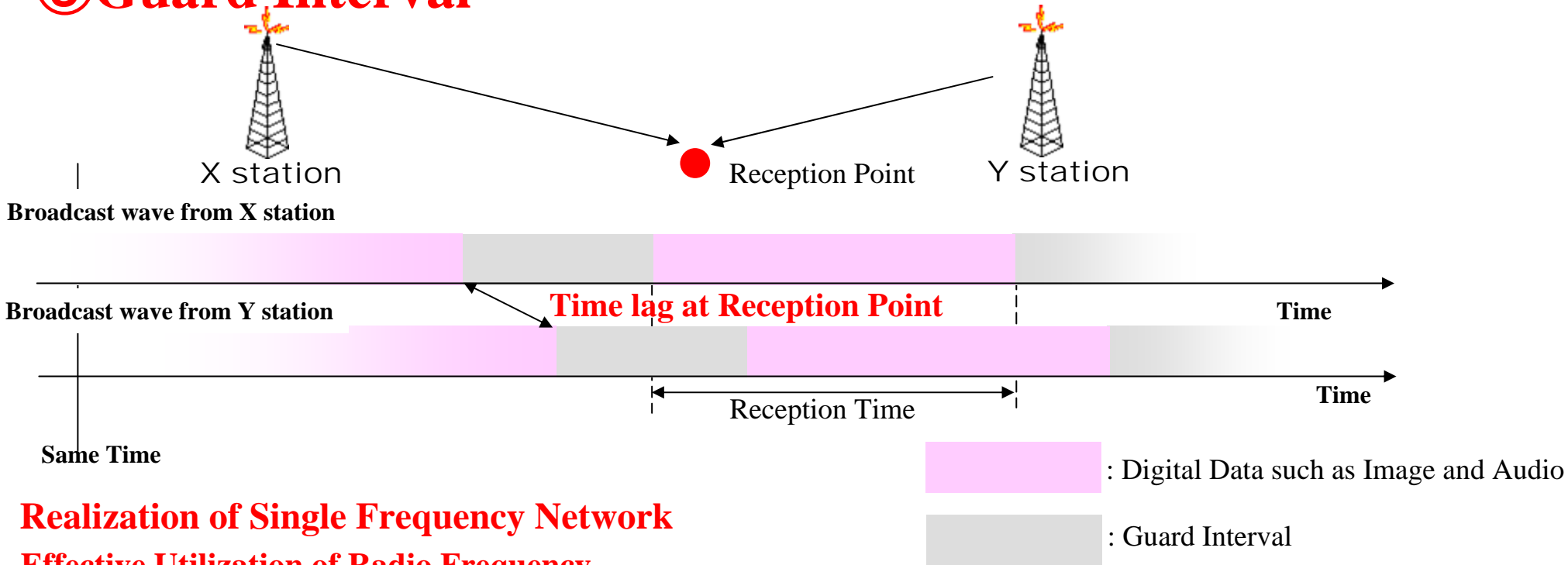


Reconstruction of data



Dispersed errors can be corrected.

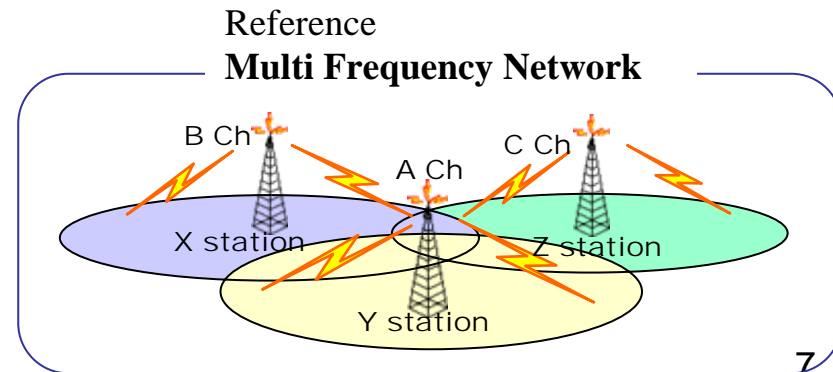
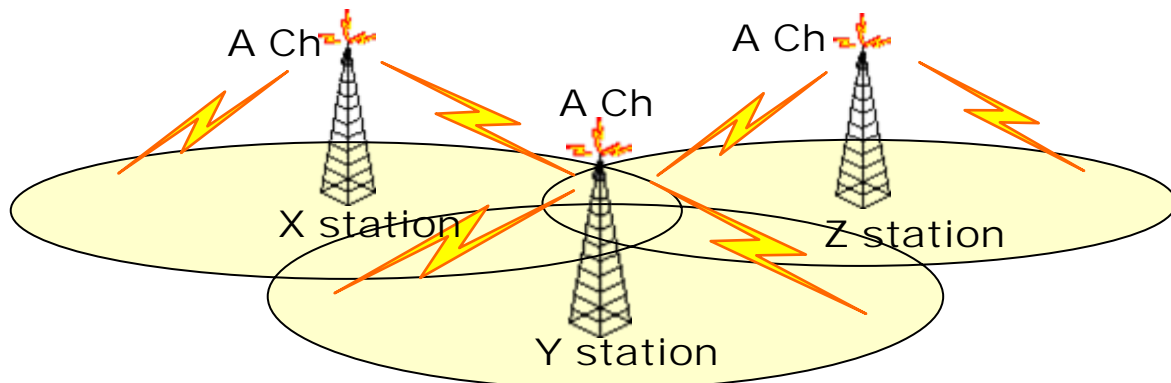
③ Guard Interval



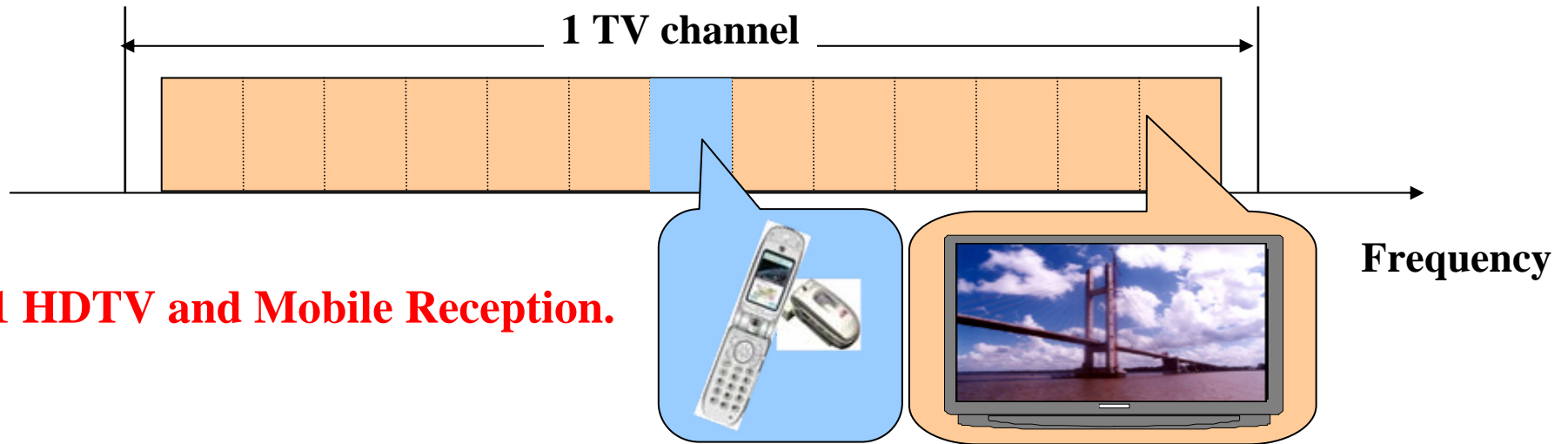
Realization of Single Frequency Network

Effective Utilization of Radio Frequency

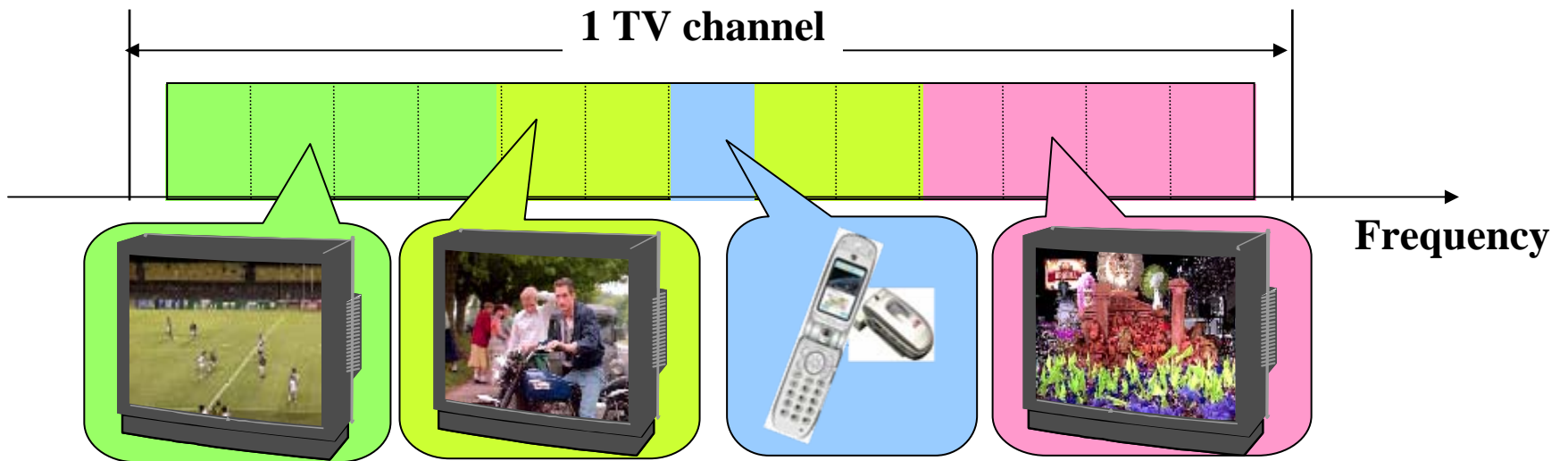
Over 10,000 stations can be set using 40 Ch in Japan



④ Segmented Frequency












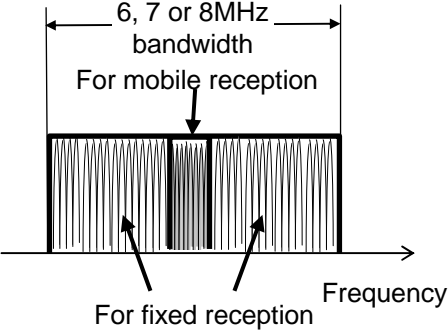
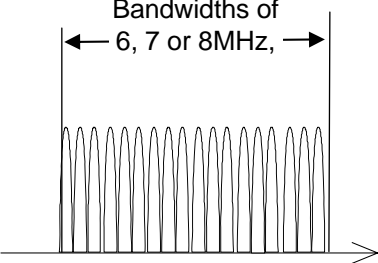
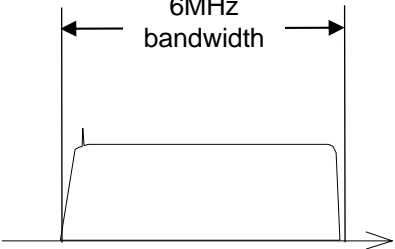
Ex.1 1 HDTV and Mobile Reception.



Ex.2 3 SDTV and Mobile Reception.

Comparison of Three DTTB Systems

Results of fair evaluation by a third country (Federative Republic of Brazil)

System	Japan (ISDB-T)	EU (DVB-T)	U.S (ATSC)
Items			
Robustness to ghost image interference	Effective against ghost image interference using advanced technique. 	Effective against ghost image interference. 	The same degree of analog TV broadcasting. 
Feasibility of Single Frequency Network (SFN)	A channel plan including SFN has already been prepared. 	Some countries such as Germany, Australia, and Singapore, are operating this. 	Being tested in the U.S. and Canada. However, no prospect for commercialization has emerged. 
Feasibility of portable reception	<u>One channel</u> can carry portable reception service simultaneously with HDTV service. 	DVB-H, <u>another channel</u> is necessary for portable reception. 	Portable reception is not available in the current system. Other systems are not being considered. 
Transmission system	 <p>It is possible to designate the modulation system of the segment group unit according to the service purpose.</p>		 <p>Improved system based on analog TV broadcasting system.</p>

Importance of mobile reception is recognized worldwide.

Europe and U.S.A developed **additional system** for mobile reception.

Broadcasters need **additional investment** for mobile TV reception **except in the case of Japan's system.**



EUROPE

Mobile Reception: DVB-H
Fixed Reception: DVB-T

- DVB-H was established for mobile reception as series of DVB, European DTTB system.
- Trial Services have been provided in some countries, such as Finland, France, Spain, and Denmark.
- ✘ *MPEG-4 AVC/ITU-T H.264 will be adopted for video encoding.*
- T-DMB was launched in Germany in May 2006.



KOREA

Mobile Reception: T-DMB
Fixed Reception: ATSC

- T-DMB based on European Digital Audio Broadcasting (DAB) was adopted for mobile reception systems unlike fixed reception.
- Launched in Dec. 2005
- ✘ *MPEG-4 AVC/ITU-T H.264 was adopted for video encoding.*



JAPAN

Mobile Reception: ISDB-T
Fixed Reception: ISDB-T

- MPEG-4 AVC/ITU-T H.264 was adopted for video encoding.
- Launched on 1 April 2006.
- Federative Republic of Brazil also adopted Japan's system on

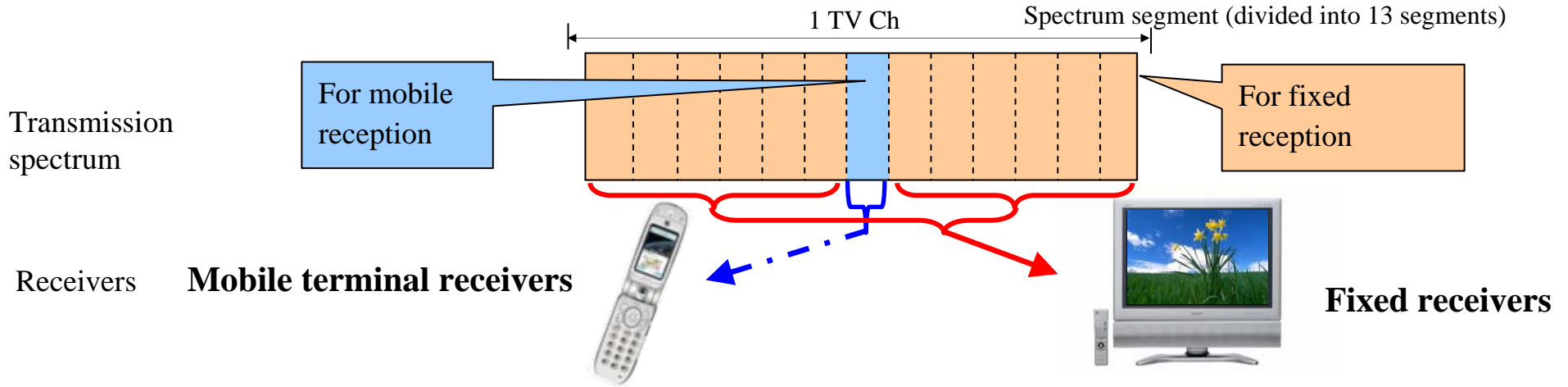
U.S.A



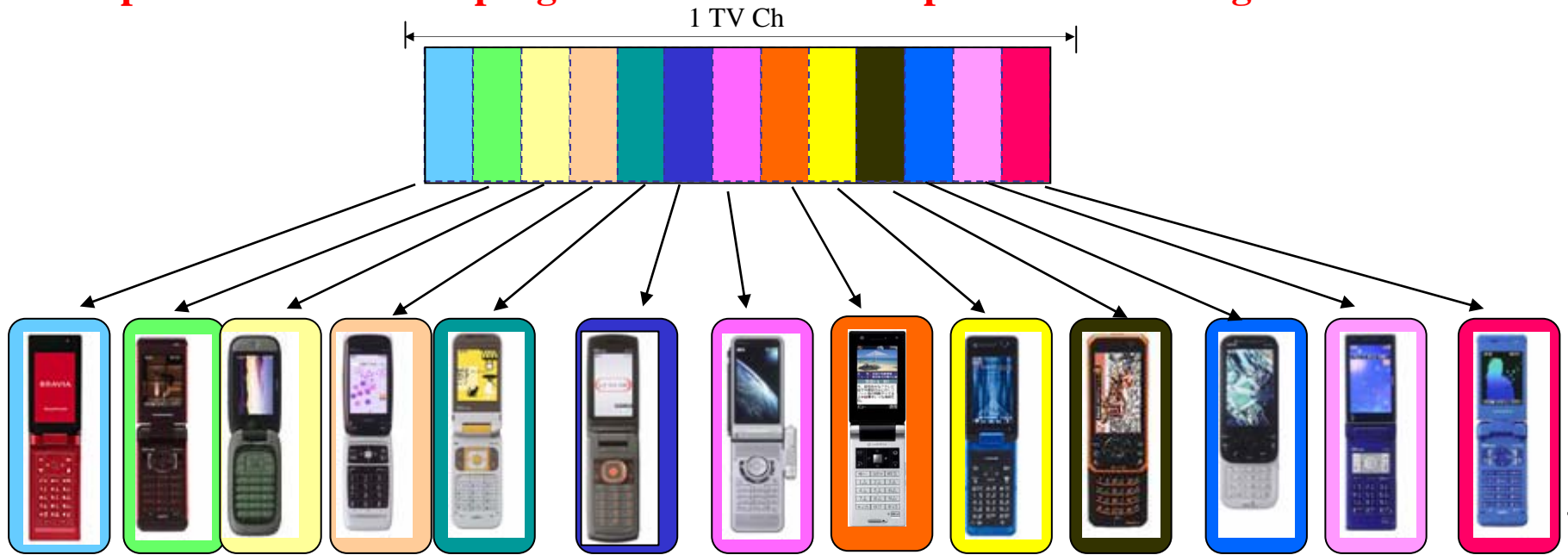
Mobile Reception:
Under Consideration
Fixed Reception: ATSC

- Stream distribution services using mobile networks instead of terrestrial broadcasting have been started.
- In addition to DVB-H, new technologies such as Media-FLO are being considered.

In the case of ISDB-T, broadcasters don't need additional investment for mobile TV reception. Because One-Seg service can be provided using same investment for fixed TV reception.



ISDB-T can provide over 10 TV programs for mobile reception service using one TV Channel !





Mobile Phones



W33SA
(Dec 2005)



W41H
(Feb 2006)



W33SA II
(Jun 2006)



W43H
(Sep 2006)



W43SA
(Oct 2006)



W44S
(Dec 2006)
Usable also as digital radio



W43H II
(Jan 2007)



MEDIA SKIN
(Jan 2007)



W51CA
(Jan 2007)



W51K
(Jan 2007)



W51SA
(Jan 2007)

KDDI



W51SH
(Jan 2007)
Usable also as digital radio



W51T
(Jan 2007)
Usable also as digital radio



W52T
(Jan 2007)
Usable also as digital radio



P901iTV
(Mar 2006)



D903iTV
(Jun 2007)



D903iTV
(2007)



P903iTV
(2007)



SH903iTV
(2007)

NTTDoCoMo



905SH
(May 2006)



911SH
(Nov 2006)

SoftBank



Personal Computers



VGN-TX91PS, etc.
(from Jan 2006)

Sony



LesanceNB
CL206GW-GT/TV etc
(from Jul 2006)

Aro System



PC Card
(Mar 2006 OEM Supply)

PIXERA



USB connective Tuner
(DH-ONE/U2)
(Oct 2006)

BUFFALO



PC Card
MonsterTV 1D
(Nov 2006)

SKnet



PC Card
MonsterTV 1D
(Nov 2006)

SK Net



T70S/V, etc.
(from Apr 2006)

Fujitsu



LavieA (LA700/GD)
(Sep 2006)

NEC



USB connective Tuner
(LDT-1S100U)
(Sep 2006)
Logitech



SDIO Tuner
(scheduled in 2007
OEM supply)
ZENTEK



Express Card
MonsterTV 1D for DELL
(Nov 2006)

DELL



USB connective Tuner
W-one (GH-1ST-U2K)
(Dec 2006)

GREEN HOUSE



USB connective Tuner
PCTV-hiwasa (LOG-J100)
(Dec 2006)

LOGFARM



USB connective Tuner
VGA-TV1S
(Dec 2006)

SanwaSupply



USB connective Tuner
SEG CLIP (GV-1SG/USB)
(Dec 2006)

I.O.Data



USB connective Tuner
DigiTVe (LC-1SEGU)
(Dec 2006)

Live Creator



USB connective Tuner
QOT-W100
(Dec 2006)

Quick Sun



USB connective Tuner
ON TIME TV (IM-1ST0001U/S)
(Dec 2006)

IMJ



USB connective Tuner
DT-007
(Dec 2006)

TRYWIN



USB connective Tuner
K-ONESEG/U2
(2007)

KEIAN



SDIOワンセグチューナ
(2007 OEM supplied)

ZENTEK



Portable DVD Players



DVD-LX97
(Mar 2006)
Panasonic



SD-P90DT
(Dec 2006)



SD-P50DT
(Dec 2006)

TOSHIBA

※ One-Seg tuner only for portable DVD player



SD-PDT1
(Jul 2006)
TOSHIBA



DVF-DTV100
(Aug 2006)
SANYO



ROSSINI RPD7100SN-SV
(Nov 2006)

NAGASE



axion
AXN6709TD
(Dec 2006)

Electronic Dictionary



Papyrus
PW-TC900
(Dec 2006)

SHARP

Game Terminal



Nintendo DS
(scheduled in 2006)

Nintendo

Digital Audio Player



gigabeat V30T
(Jul 2006)



gigabeat V30E & V60E
(Nov 2006)

TOSHIBA

Exclusive Terminals, etc.

※Usable also as digital radio



BTV-400K
(Feb 2007)

BLUEDOT



One-segment unit
Produced by Wilcom
(Dec 2006)

PIXERA



Prodia
(Sep 2006)

Others



Super One-seg TV Watch
(campaign prize)

Asahi Beer

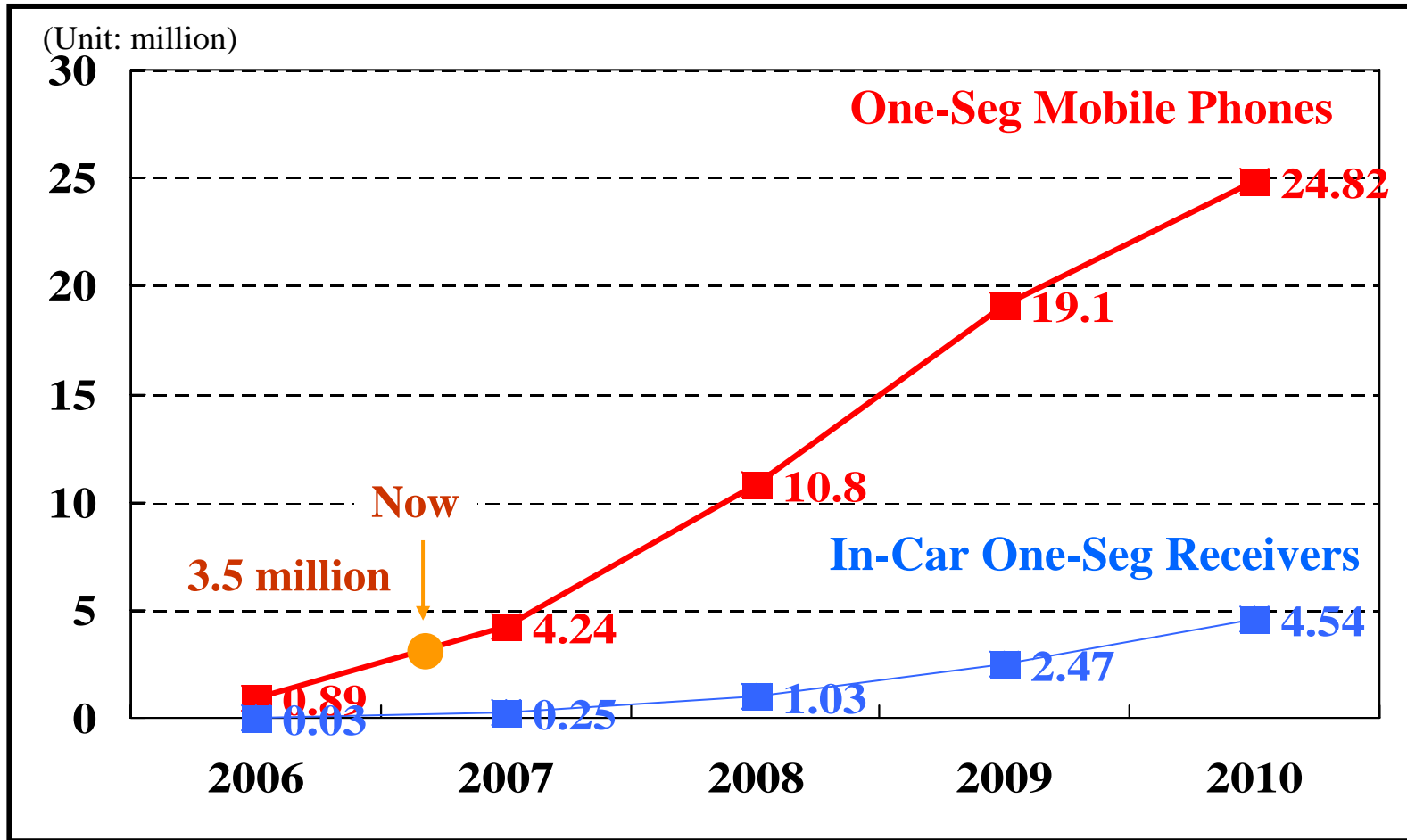


Original One-seg TV
(G I Challenge campaign prize)

Georgia



Source: Nomura Research Institute



Utilization of diffusibility of mobile phones.

And also One-Seg service speed up diffusion of mobile phones.

Win-Win situation !

	Japan	Other Countries
Transmission system	ISDB-T (One-segment)	- T-DMB (KOR) - DVB-H (EU) - Media-FLO (U.S.A)
Service application	Video/Audio/Data	Video/Audio/Data
Assignment of new frequency bandwidth	Not necessary	Necessary
Additional license	Not necessary	Necessary
Service provider	Broadcaster (Free Service)	Broadcaster/Carrier/ Other company (Pay Service)
Emergency Warning Broadcasting System	Implementable	Cannot implement
Thrifty Power Consumption	Excellent	Depend on systems

Obviously ISDB-T is excellent system for mobile reception.



1. Realization of non-congested communication even in times of disaster.
2. Ensure conveying information by automatic activation even in times of disaster and/or in emergency.
3. Able to convey information according to area and objective.

Text

Possibility of a flood in the xxx river has increased. Residents in the surrounding areas should evacuate. Areas affected are as follows.

Image



Activation Control by Broadcasting
Non-congested communication
 Power-saving feature is necessary



Server



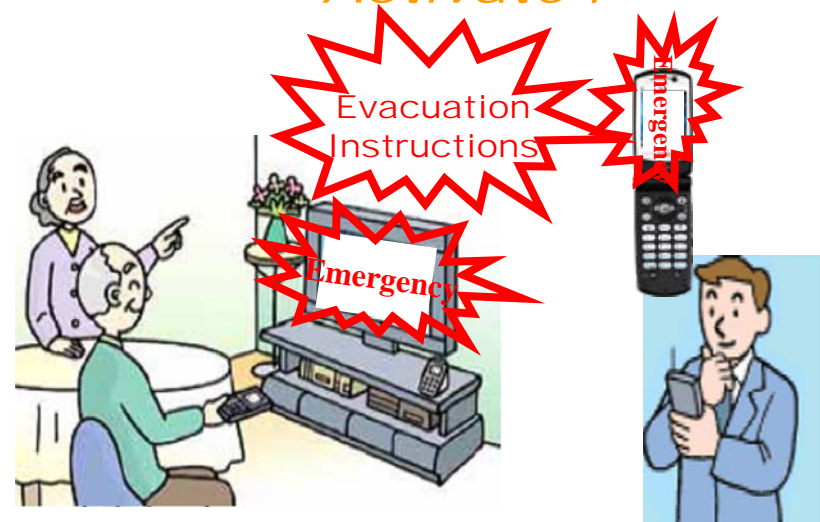
TV Station



Translate to Broadcasting Markup Language

Master Room
 (on-air button)

Activation control signal
 &
 Text and Image



Both in and outside the home.



➤ Adaptability of ISDB-T

- In Japan, the 6MHz bandwidth is assigned to One Digital TV channel.
- Of course, ISDB-T technologically adapts the 8MHz bandwidth.
 - If a market is established, then LSI encoder which is a key component to come into practical use to enable TV reception to adapt the 8MHz will be supplied.

➤ Technical Cooperation

- Dispatch a mission and implementation of demonstration with regard to broadcasting for mobile reception.
- Fostering of broadcasting technical experts.
 - Cooperation to establish channel planning based on Japan's know-how.



Project Title

“The Project on the Capacity Development of the Ministry of Communication and Information Technology concerning Broadcasting Strategy Formulation and Planning”

Overall Goal

Broadcasting administration is properly conducted in Indonesia.

Project Purpose

The Ministry of Communication and Information Technology’s function concerning strategy formulation and planning on broadcasting is strengthened.

Outline of Project

1. The Project aims toward the capacity development of the Ministry of Communication and Information Technology concerning the strategy formulation and planning on broadcasting.
2. The strategy and plan on broadcasting will be considered taking account of the following policies:
 - 1) Policies for the introduction of digital broadcasting in Indonesia,
 - 2) Policies for the nationwide dissemination of broadcasting in Indonesia.
3. The Project will be implemented through dispatch of experts, training for counterparts in Japan, and provision of equipment.



Results of Official Development Assistance (ODA) in Broadcasting

Technical Cooperation

From 1983 to 1992, the Technical Cooperation Project which aims for the capacity development of the Multimedia Training Center (MMTC) for training the broadcasting technicians were implemented. From 1999, 4 experts on broadcasting policy adviser have been dispatched.

Grant Aid

From 1973, 10 projects (Total 6,282 million yen) was implemented to establish Multimedia Training Center (MMTC) and to introduce broadcasting equipment

Yen Loan

From 1985, 5 projects (Total 28,614 million yen) was implemented for enhancement of broadcasting networks and for rehabilitation of broadcasting facilities

Recent Cooperation with Indonesia in Broadcasting

Japan is promoting Asia Broadband Program. Recent cooperation projects for Indonesia are as follows .

Experts on Broadcasting Policy Advisers

From 1999, 4 experts on broadcasting policy adviser have been dispatched for the development of broadcasting policy in Indonesia.

Technology concerning Broadcasting Strategy Formulation and Planning in Indonesia

Conduct capacity development of the Indonesian government to formulate strategies and plans in the field of broadcasting such as digital broadcasting and nationwide dissemination of broadcasting.

Adopted a Ministerial joint declaration (Sep. 2003)

- Support for the spread of an e-government
- Support for human resource development

Adopted a revised Ministerial joint declaration (Jan. 2007)

In addition to the items above, holding an international seminar, forum, conference, workshop, etc. in the following areas was included:

- Next Generation Network
- Technologies for Mobile Communications
- Broadcasting



Project for Improvement of Broadcasting Equipment for Television of the Republic of Indonesia (TVRI) JAKARTA News Division (540 million yen)

Establish broadcasting facilities for Jakarta Broadcasting Station of public television station (TVRI) in Indonesia.

Project for Improvement of Training Equipment for Multimedia Training Center (590 million yen)

Establish equipment in Multimedia Training Center for human resource development of broadcasting technicians.

Project for Improvement of Broadcasting Equipment for Television of the Republic of Indonesia (TVRI) Makassar Station (460 million yen)

Establish broadcasting facilities for Makassar Broadcasting Center of public television station (TVRI) in Indonesia.

- Rapid diffusion of mobile phones indicates that diffusion of terminals coupled with mobile phones is sooner than renewing fixed TV receivers.
- Additional TV channel is not necessary, in the midst of the growing expansion of demand for frequency in the case of ISDB-T.
- High-quality audio broadcasting and/or data broadcasting can be provided together with One-Seg broadcasting in the same investment (transmitter, network Terminals etc.).

→ ISDB-T can be the most suitable DTTB system for Indonesia.

➤ Ministry of Internal Affairs and Communications (MIC) :

http://www.soumu.go.jp/joho_tsusin/eng/index.html

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