

Service feature of ISDB-T

Current and Future

Venezuela 2006

August 28th ,2006

DiBEG Japan

Yoshiki MARUYAMA

tv asahi

Contents

- ❑ *Current situation of ISDB-T*
- ❑ *Current service of ISDB-T*
- ❑ *Future service of ISDB-T*

***Current situation
of
ISDB-T in Japan***

Expanding Service Area

国土地理院承認 平13総複 第367号

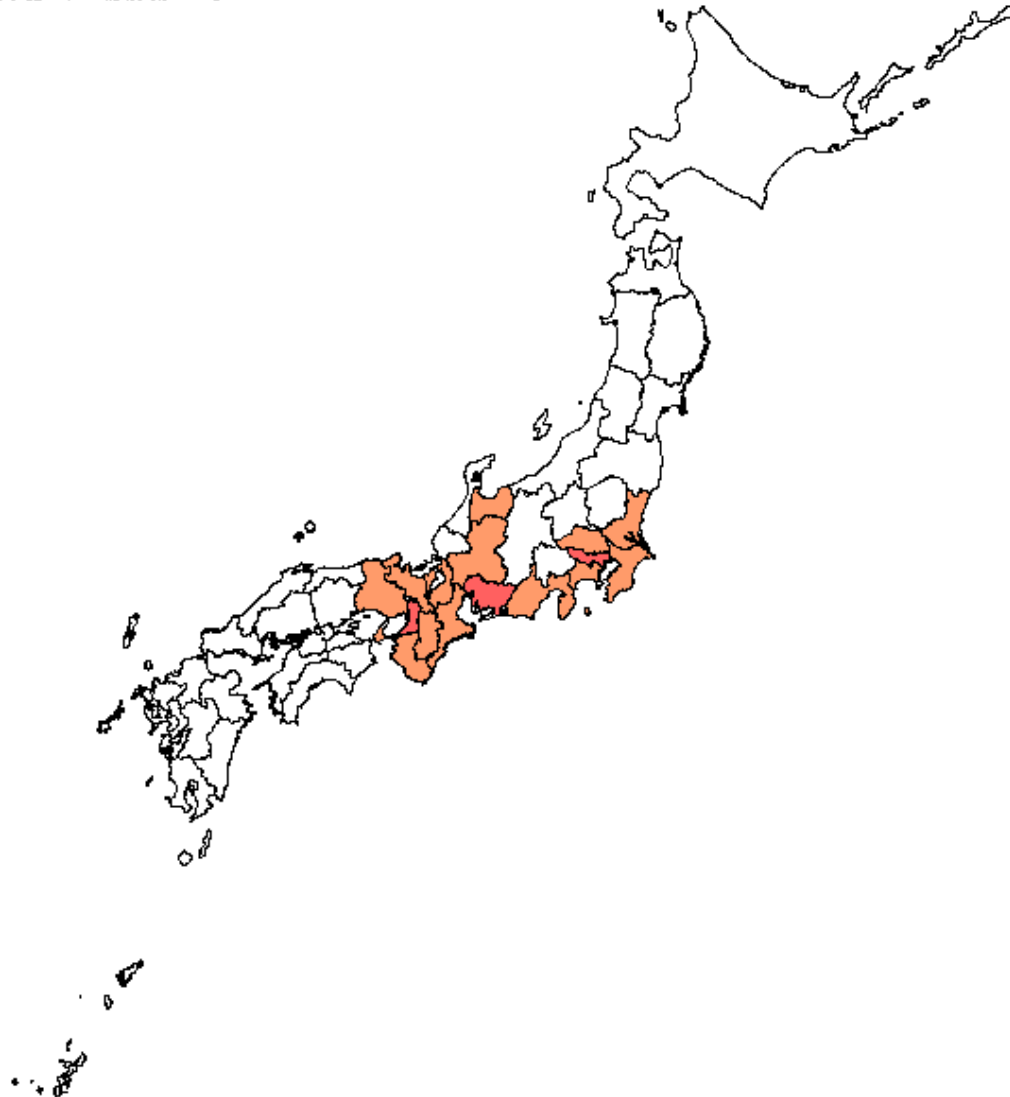
*Digital terrestrial television broadcasting commenced on **Dec.2003** at three major metropolitan areas, such as Tokyo, Osaka and Nagoya.*



Expanding Service Area

国土地理院承認 平13総複 第367号

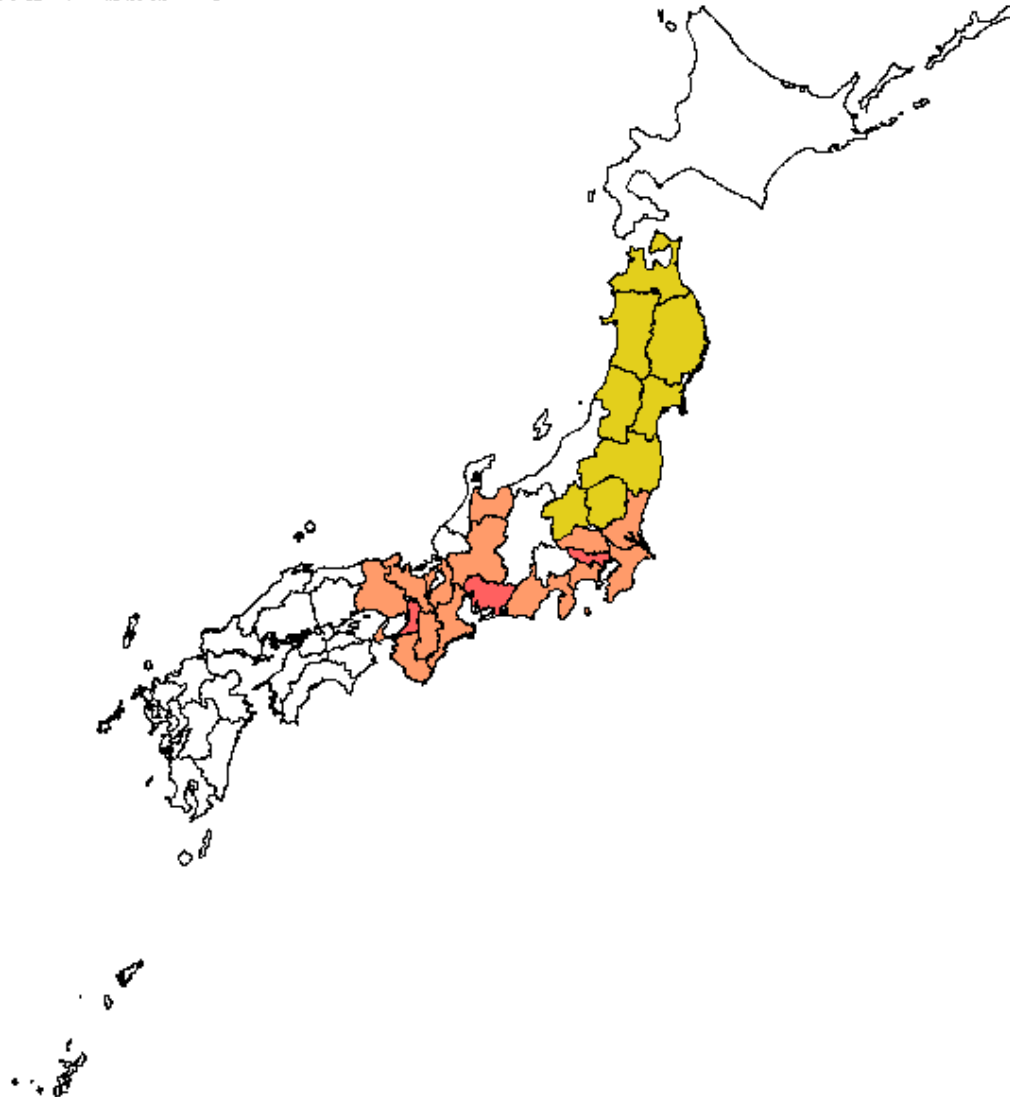
Dec.2004



Expanding Service Area

国土地理院承認 平13総複 第367号

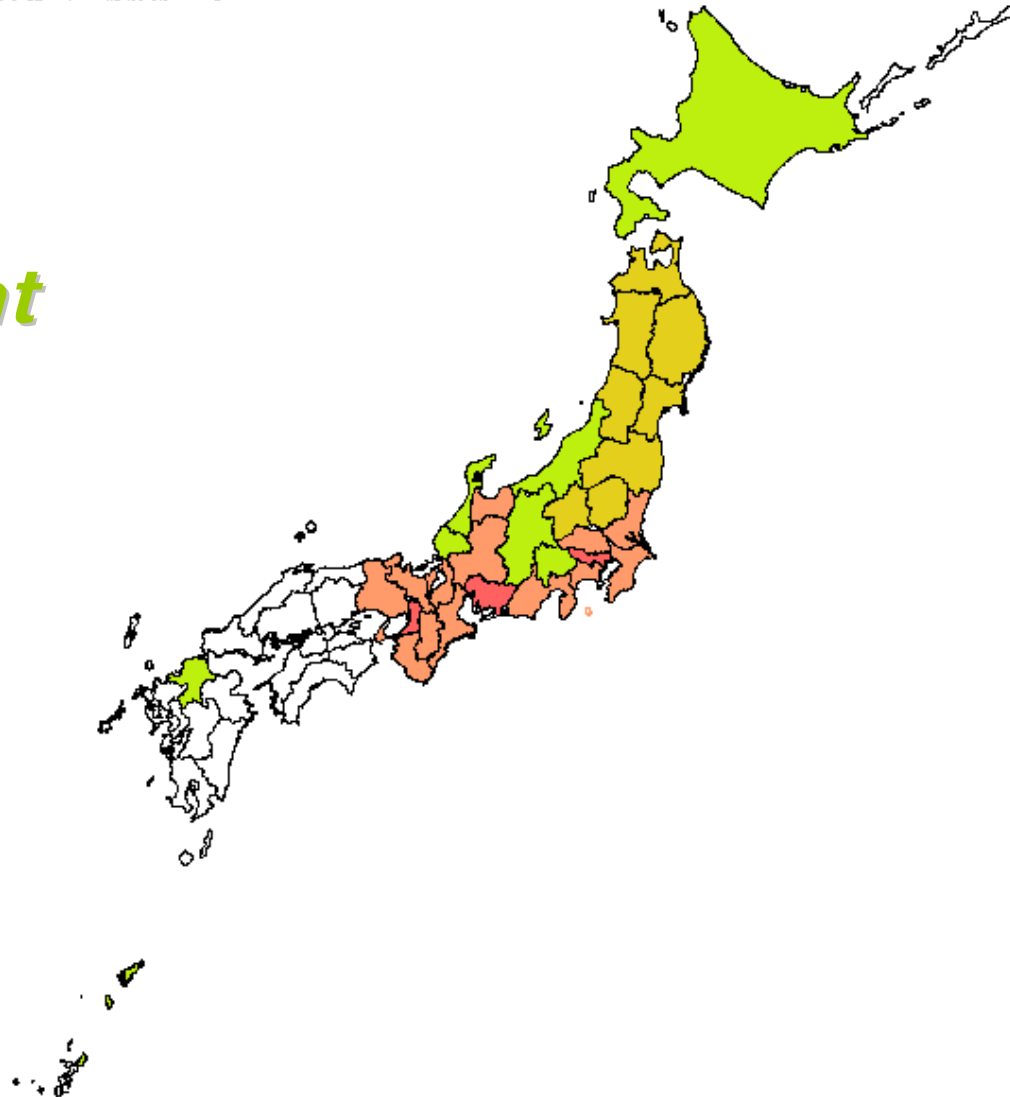
Dec.2005



Expanding Service Area

国土地理院承認 平13総複 第367号

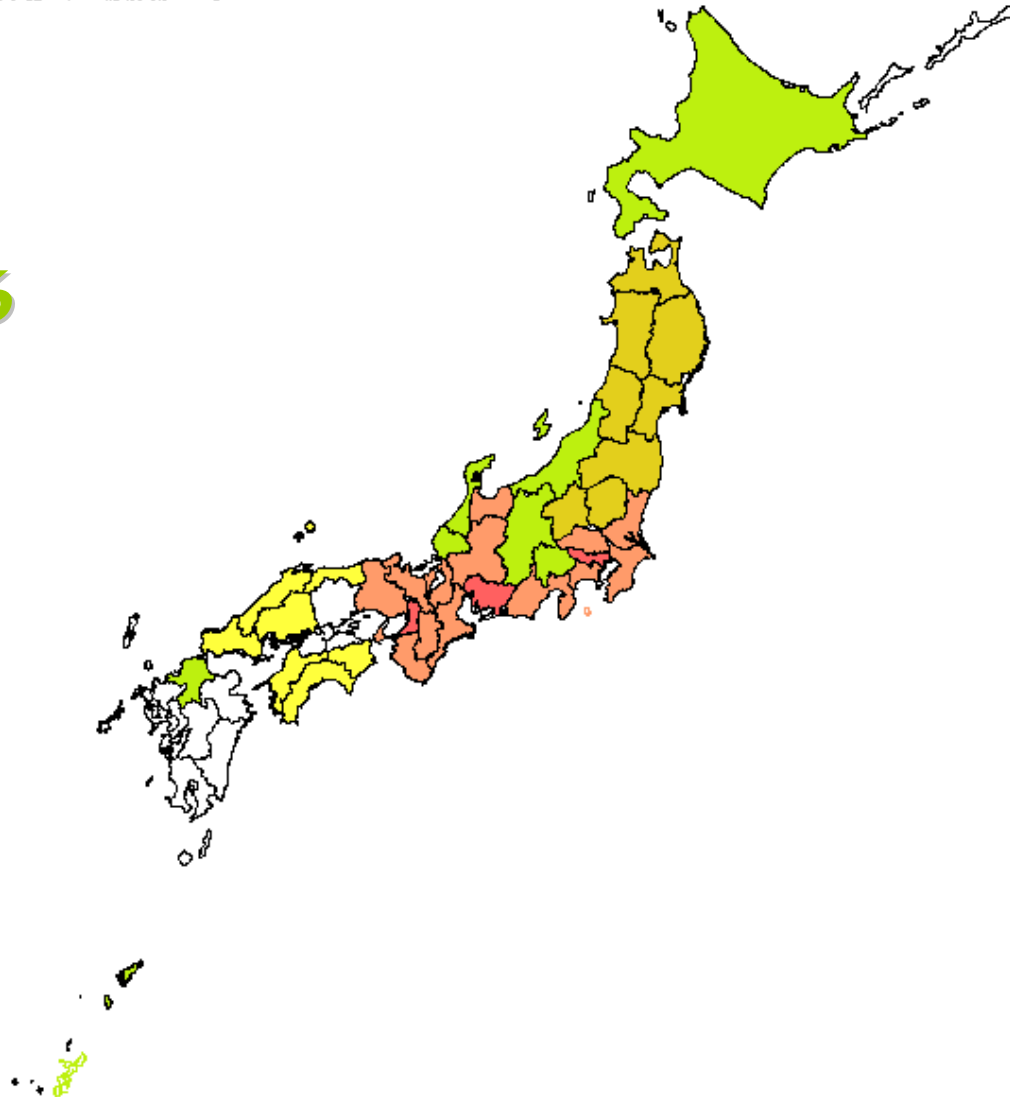
At present



Expanding Service Area

国土地理院承認 平13総複 第367号

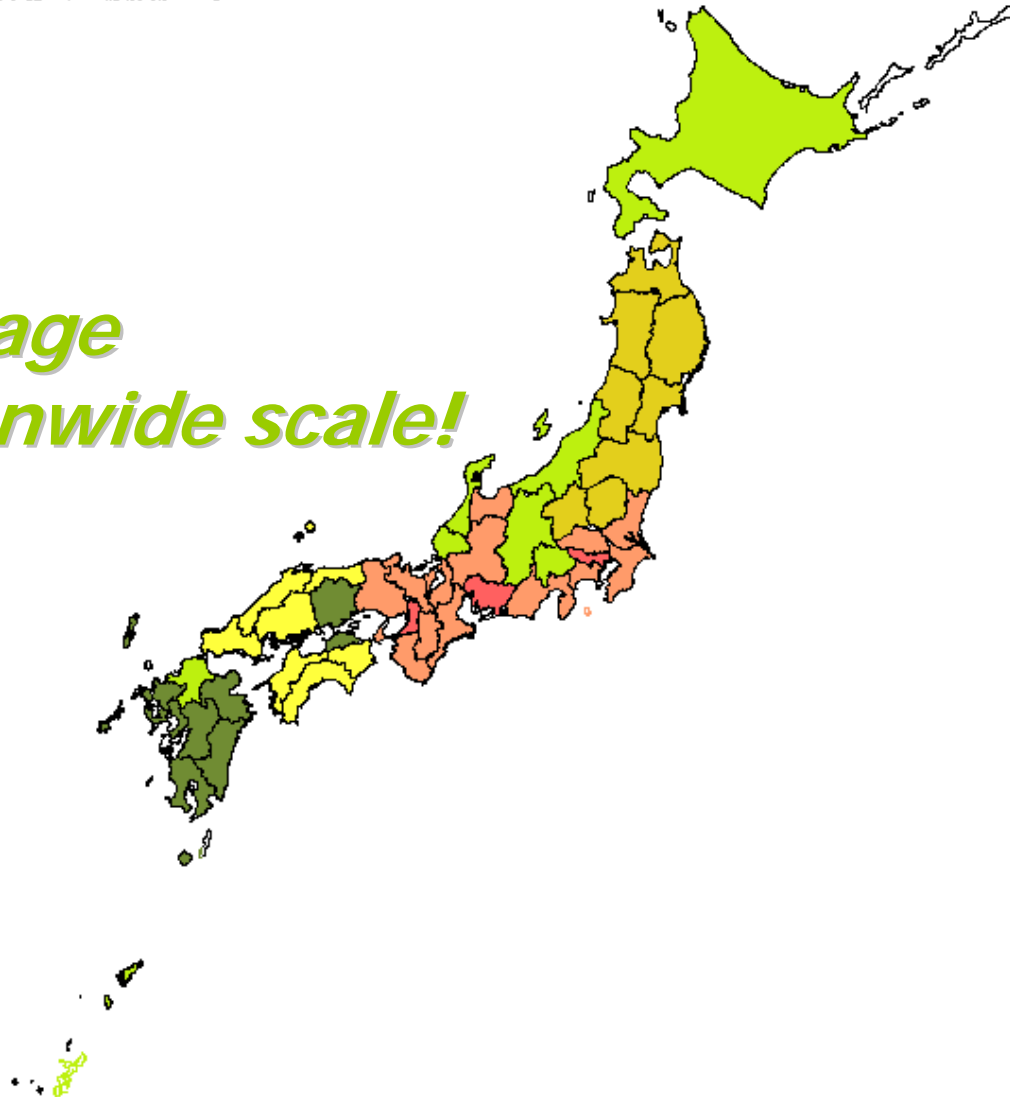
Oct.2006



Expanding Service Area

国土地理院承認 平13総複 第367号

Dec.2006
Full coverage
on a nationwide scale!

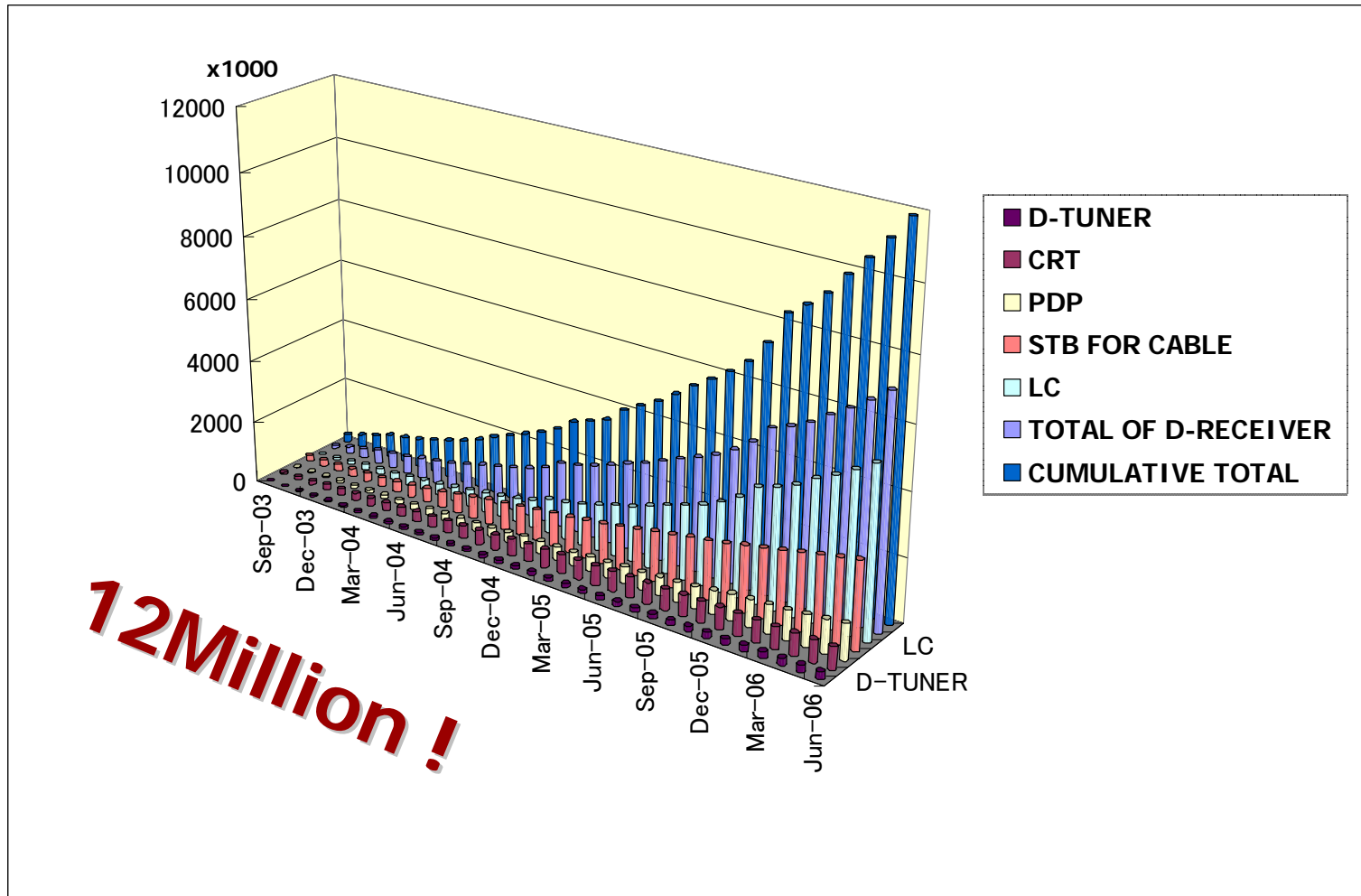


Households coverage

Households coverage which can receive DTTB increase every year as shown below.

<i>In December 2004 :</i>	<i>18.0 million</i>	<i>38%</i>
<i>In December 2005 :</i>	<i>28.4 million</i>	<i>60%</i>
<i>In December 2006 :</i>	<i>38.5 million</i>	<i>82%</i>

Volume of shipment for DTTB receiver



***Current service
of
ISDB-T in Japan***

Unique Features of Japan's Digital Broadcast

HDTV



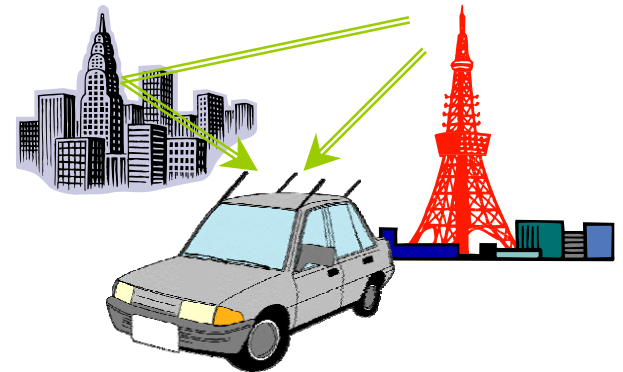
- High quality image and sound service.

Data broadcasting



- Simple program searching and retrieval of information at any time.

Mobile reception



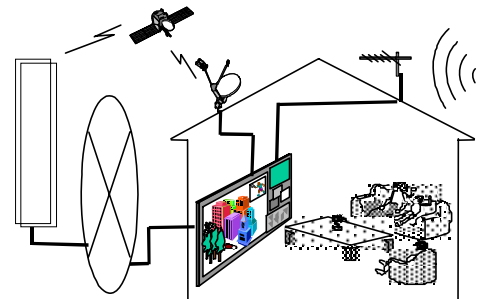
- Stable reception service

Multi-channel service



- Realization of multiple channels
- Communication services and linked TV service

Interactive TV



HDTV

□ High Definition Broadcast

- ✓ Most powerful application*
- ✓ The quality images on the wide, 16:9 aspect ratio screen and CD-quality sound make you feel as if you were there.*
- ✓ European broadcasters have opted for “multi-channel” strategy, however Japan’s broadcasters have chosen the advantages of “high definition” pictures.*

✓ Pure HDTV : 16x9 1080i



Multi channel SDTV

- ❑ *The bandwidth of a single digital channel can be used to transmit two or three programs with standard definition simultaneously.*
- ❑ *Multi-channel approach is presently positioned as an “experimental” .*



SD-1



SD-2



SD-3

Data broadcasting (1)

□ Data broadcasting is now on service.

- ✓ *Weather information*
- ✓ *Anytime news*
- ✓ *Result of sports game*
- ✓ *Information associated TV program*

Players list



Ongoing games



A example of soccer game

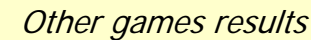
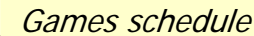
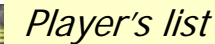
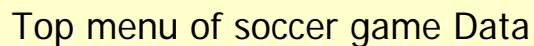
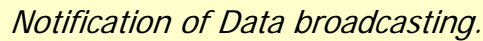
Other games result



Other information



Current programme screen

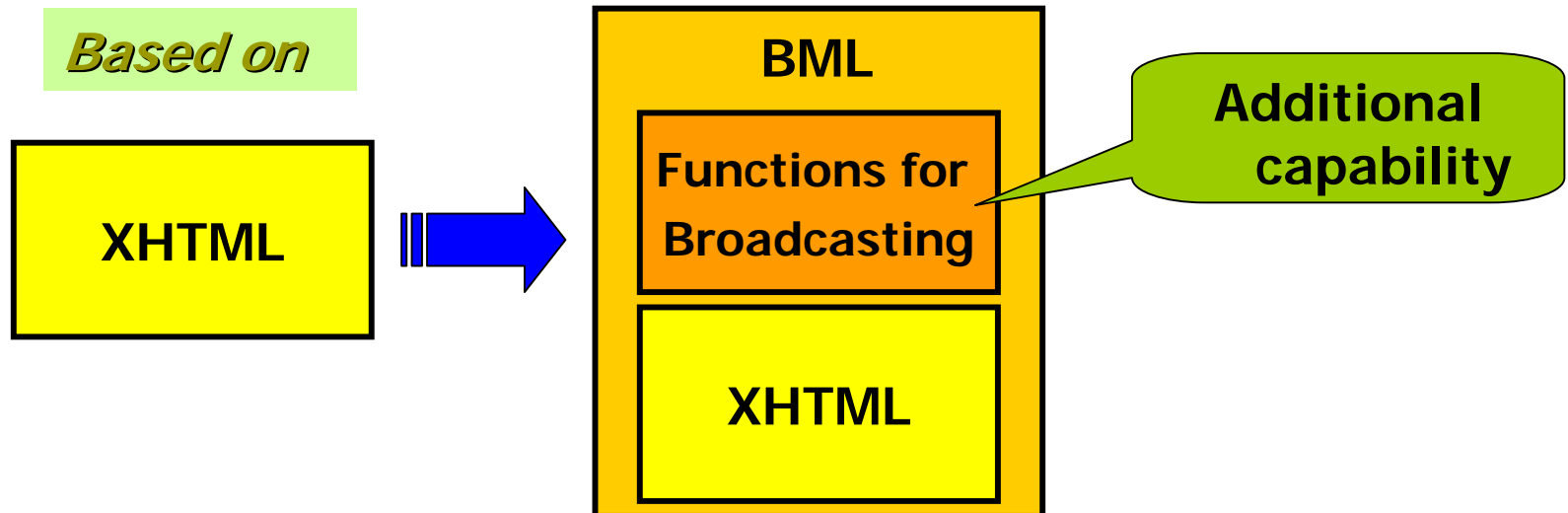


Data broadcasting (3)

❑ *Description language is BML format*

❑ *Features*

- ✓ Easy creation of contents
- ✓ Affinity for internet



EPG

❑ EPG (Electronic Program Guide)

- ✓ *An electronic programme guide (EPG) is a on-screen guide to scheduled broadcast television programs, allowing a viewer to navigate, select and discover content by time, title, channel, genre, etc, using their remote control.*



One-Seg service (1)

- ❑ ***One segment service launched from April 1st, 2006 .***
- ❑ ***One-Seg is abbreviation of one segment service.***
- ❑ ***Common logo was designed as shown below.***



One-Seg

One-Seg service (2)

- ❑ *The One-Seg service sends images to mobile phones, car TV's, personal computers etc. so that you can enjoy digital terrestrial television broadcasting program anytime anywhere.*

- ❑ *Merits*
 - ✓ *Stable reception in a mobile environment.*
 - ✓ *High quality of video & audio in a mobile environment.*
 - ✓ *Robust to noise and multi-pass.*

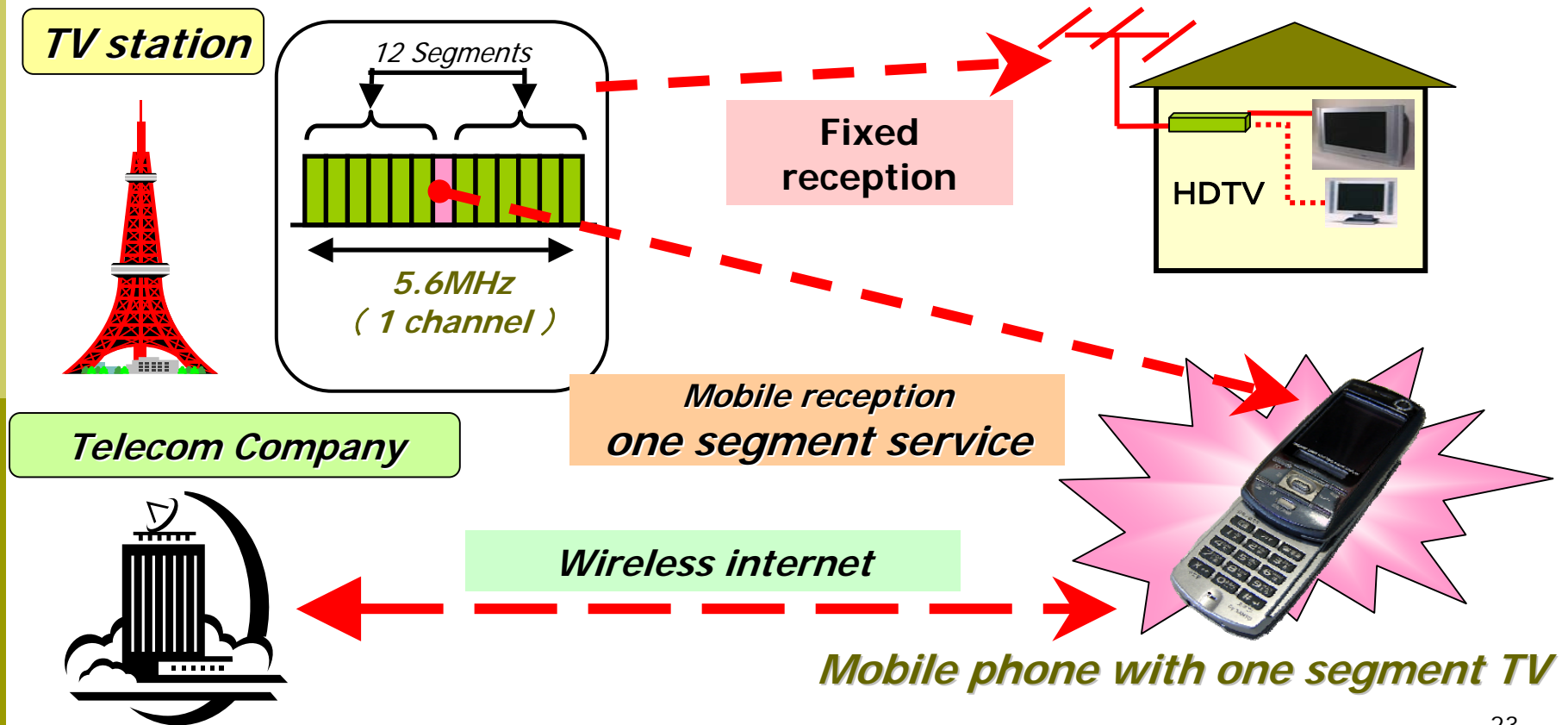
One-Seg service (3)

Comparison between ISDB-T and other systems

	<i>ISDB-T</i>	<i>Other Systems</i>
<i>Transmission method</i>	ISDB-T One-seg service	<ul style="list-style-type: none">▪ T-DMB (KOR)▪ DVB-H (mainly EU)▪ Media FLO (US)
<i>Service application</i>	Video / Audio / Data	Video / Audio / Data
<i>Assignment of new spectrum</i>	Not necessary	Necessary
<i>Additional license</i>	Not necessary	Necessary
<i>Service provider</i>	Broadcaster	Broadcaster / Carrier / Other company

One-Seg service (4)

□ *ISDB-T has a capability of segmentation in a channel and one seg TV uses only one segment as partial reception.*



One-Seg service (5)

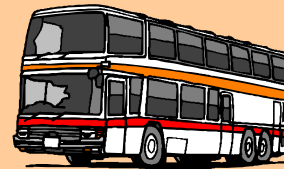
10110...
~~Digital~~
Broadcasting



High definition picture
High quality sound



At home



In the Bus

For large screen television

Anytime
Anywhere



In the train

While walking

For portable terminal

One-Seg service (6)



Video

Display Image



12:50

playback

Data Broadcasting

- Program information
- Today's news
- Forecast
- local information

Data

Example

Modulation	QPSK
Code Ratio	2/3
Guard Interval	1/8
Bit Rate	416 Kbps

One-Seg service (7)

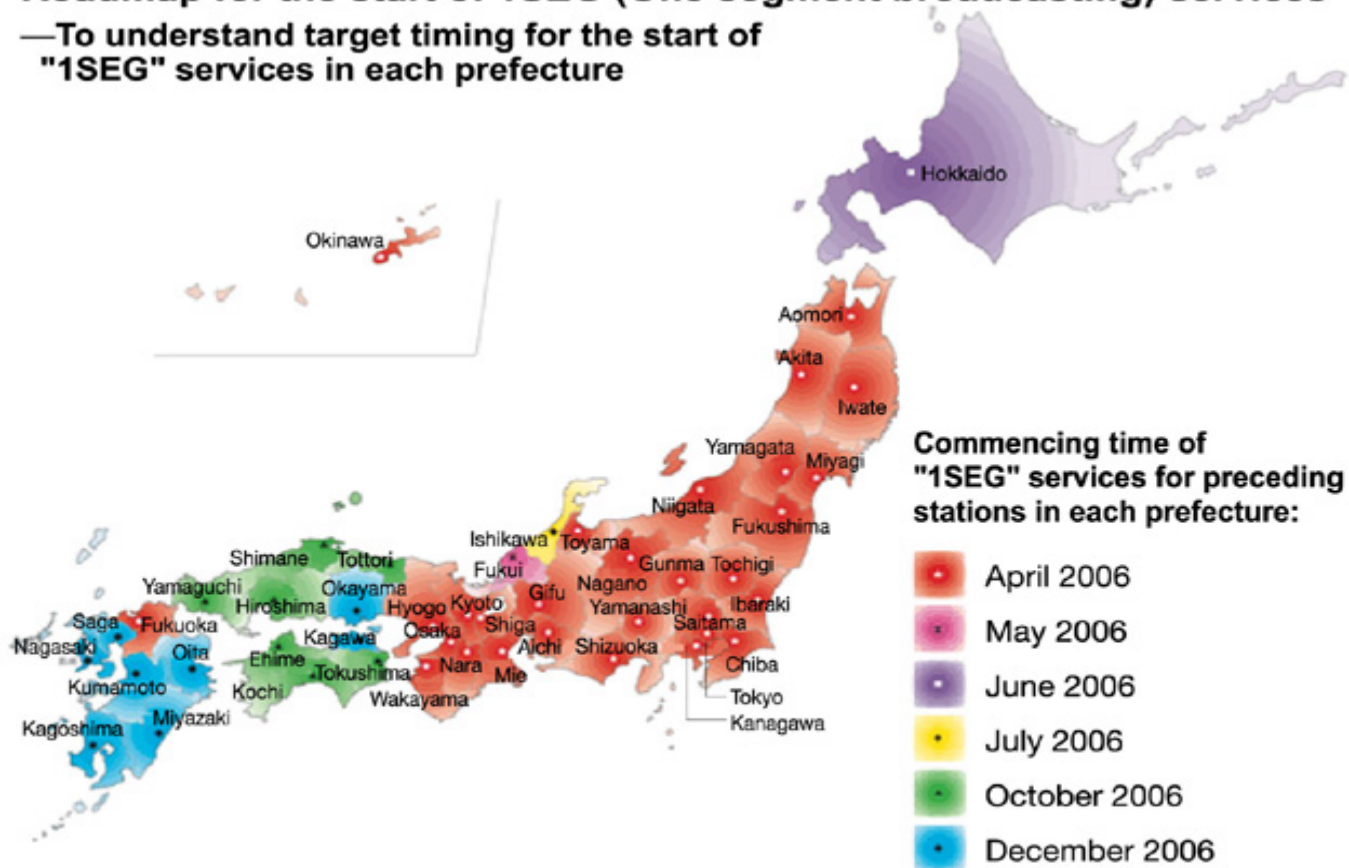
One-seg receiver



One-Seg service (8)

Roadmap for the start of 1SEG (One segment broadcasting) services

—To understand target timing for the start of "1SEG" services in each prefecture

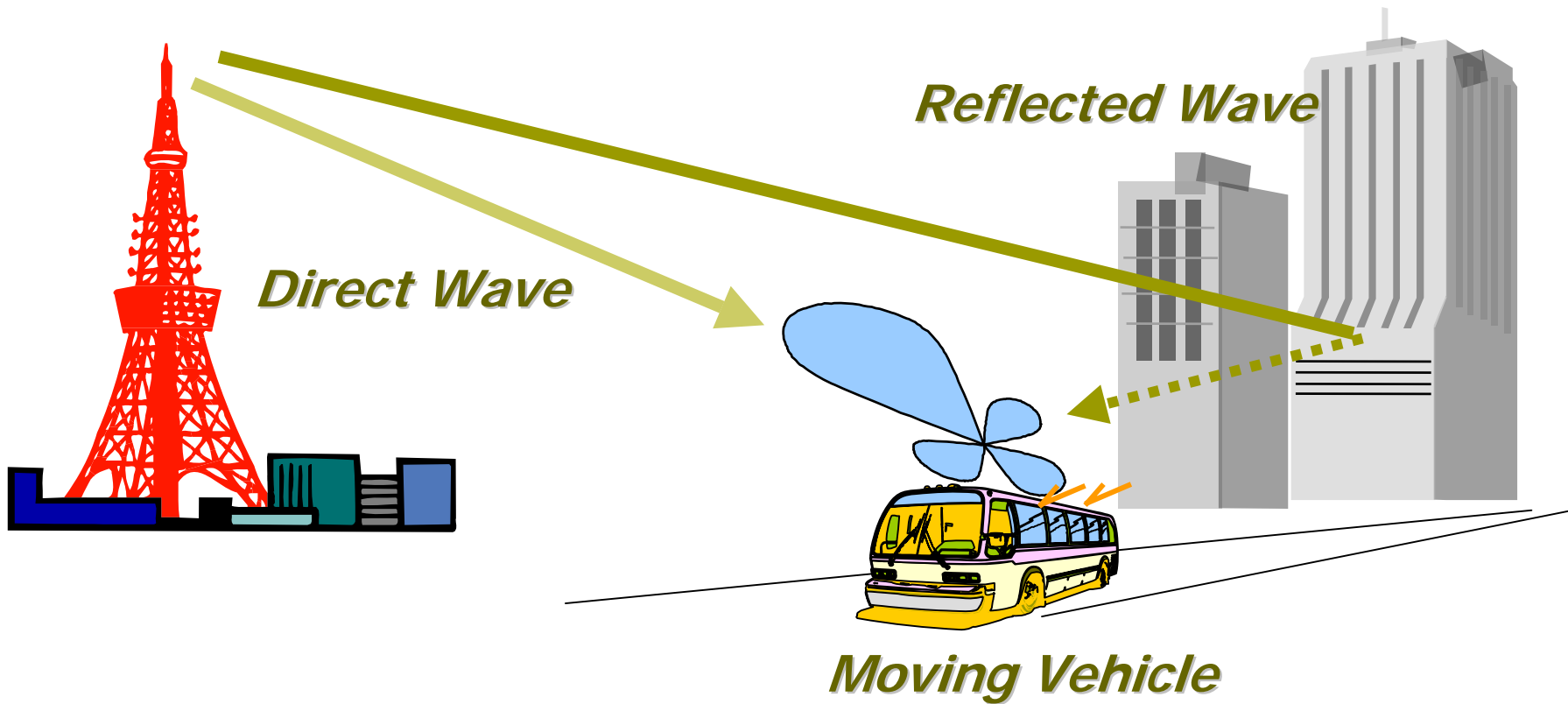


Note:

The above roadmap shows target timing for the start of "1SEG" services in each prefecture as of November 2005. Color coding on the map is according to the commencing time of "1SEG" services for preceding stations.

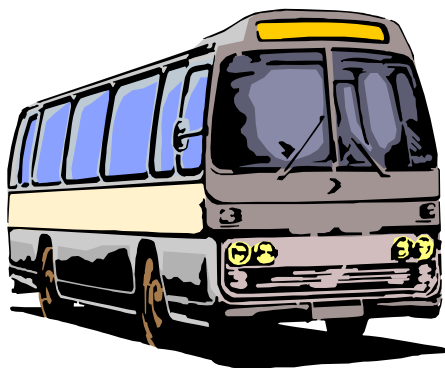
***Future Service
of
ISDB-T in Japan***

HDTV mobile reception (1)



HDTV mobile reception (2)

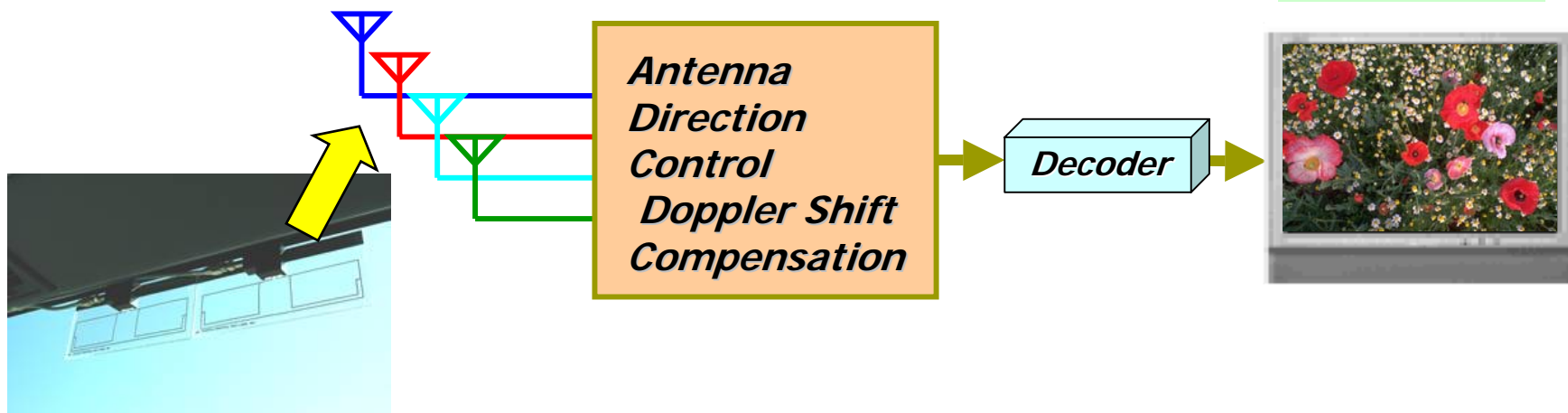
Adaptive Array Antenna on the vehicle's window



Receiving device



HD receiver



Adaptive Array Antenna

HDTV mobile reception (3)

Comparison test for HD mobile reception

Digital Broadcasting

Analog Broadcasting



HDTV mobile reception (4)

World's first HDTV reception on public transport system



HDTV mobile reception on the tram



HD program was displayed

Complimentary photo by KNB , Kita Nihon Broadcasting Co.,

HDTV mobile reception (5)

In-vehicle HDTV tuner



**Digital terrestrial television
broadcasting tuner for
automobile use**



LCD for automobile use

**High image quality wide LCD panel.
Faithful reproduction DVD and digital
terrestrial television broadcasting image**

Mobile reception in a train

Experimental test result for mobile reception on the train.



Indoor test result

QPSK, FEC=1/2, GI=1/4, Mode3, Max Speed=494km/h

Field test result

Experimental test has tried on Tohoku bullet train at Sendai city, northern part of Japan.

Constant speed 275km/h

Mode2, FEC=1/2, GI=1/4, T.I=0.43ms

Percentage of reception rate (without tunnel area)

- *QSPK 90.3 %*
- *16QAM 74.5 %*

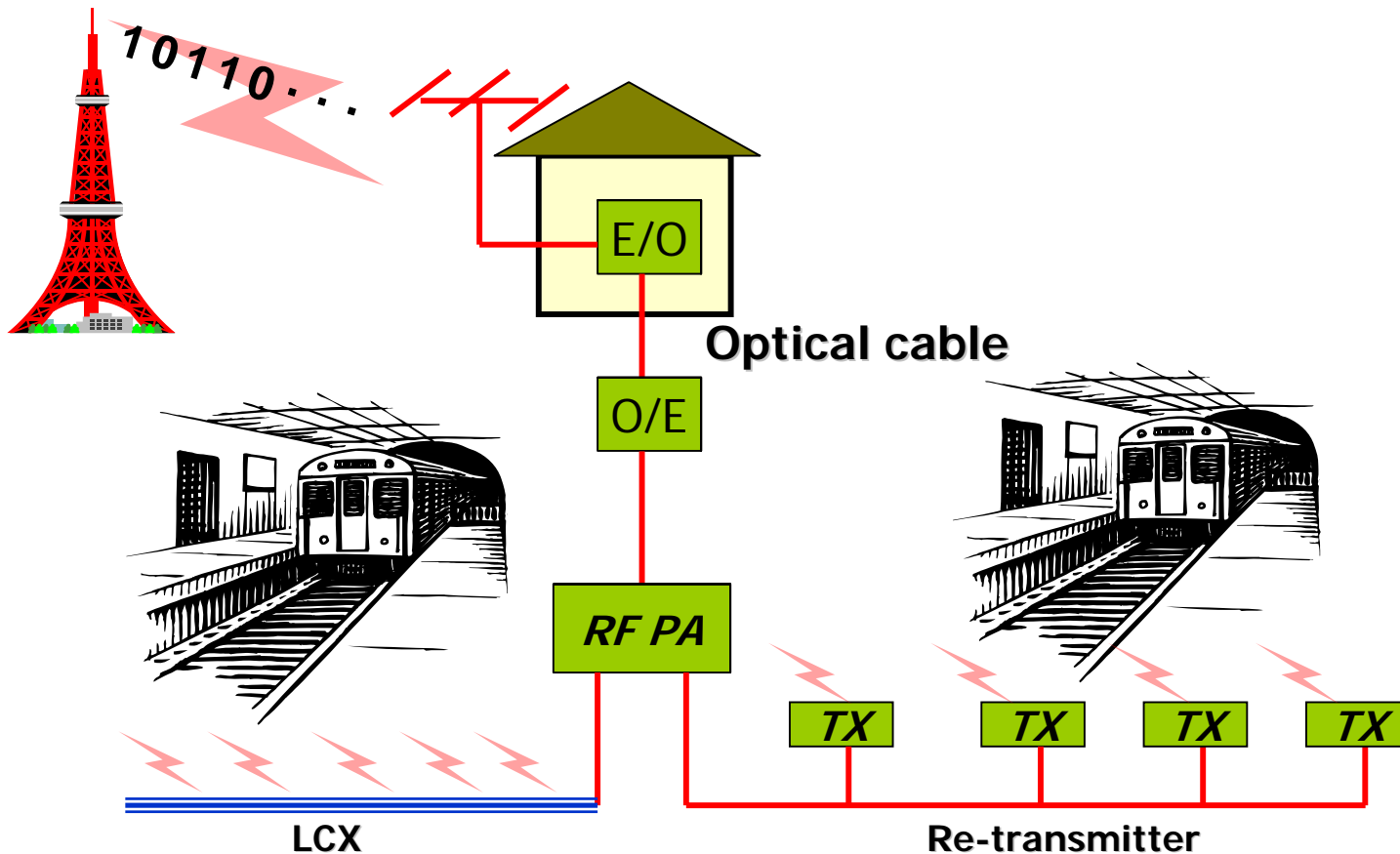
One-Seg service in a subway car (1)

□6 major broadcasters and Tokyo metropolitan subway demonstrated the fact that to receive one seg service in a subway car on March 2006.

□Re-transmission service in subway is convenient for passenger, and realize stable reception of one-seg service information is helpful for passenger even in times of emergency or disaster.

One-Seg service in a subway car (2)

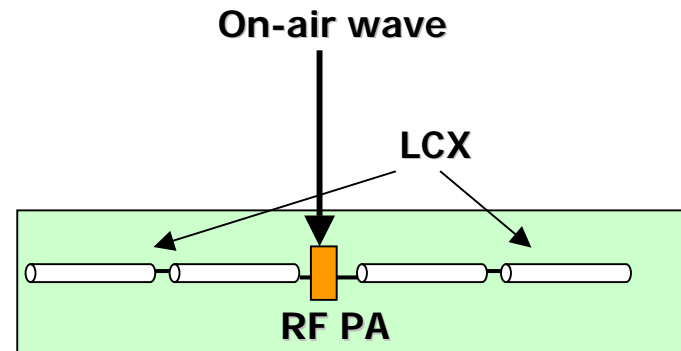
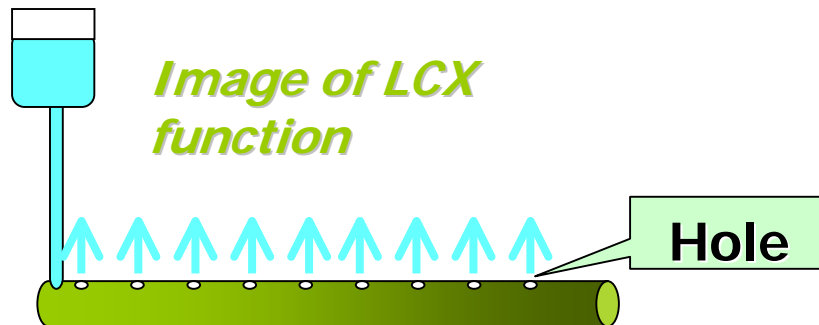
Conceptual diagram



One-Seg service in a subway car (3)

Two solutions

- Deployment of re-transmitter
- Laying LCX, leakage coaxial cable



One-Seg service in a subway car (4)

Antenna for re-transmitter mounted on ceiling of station



Reception antenna for re-transmit in a subway car



One-Seg service in a subway car (5)

Re-re-transmission antenna in a subway car



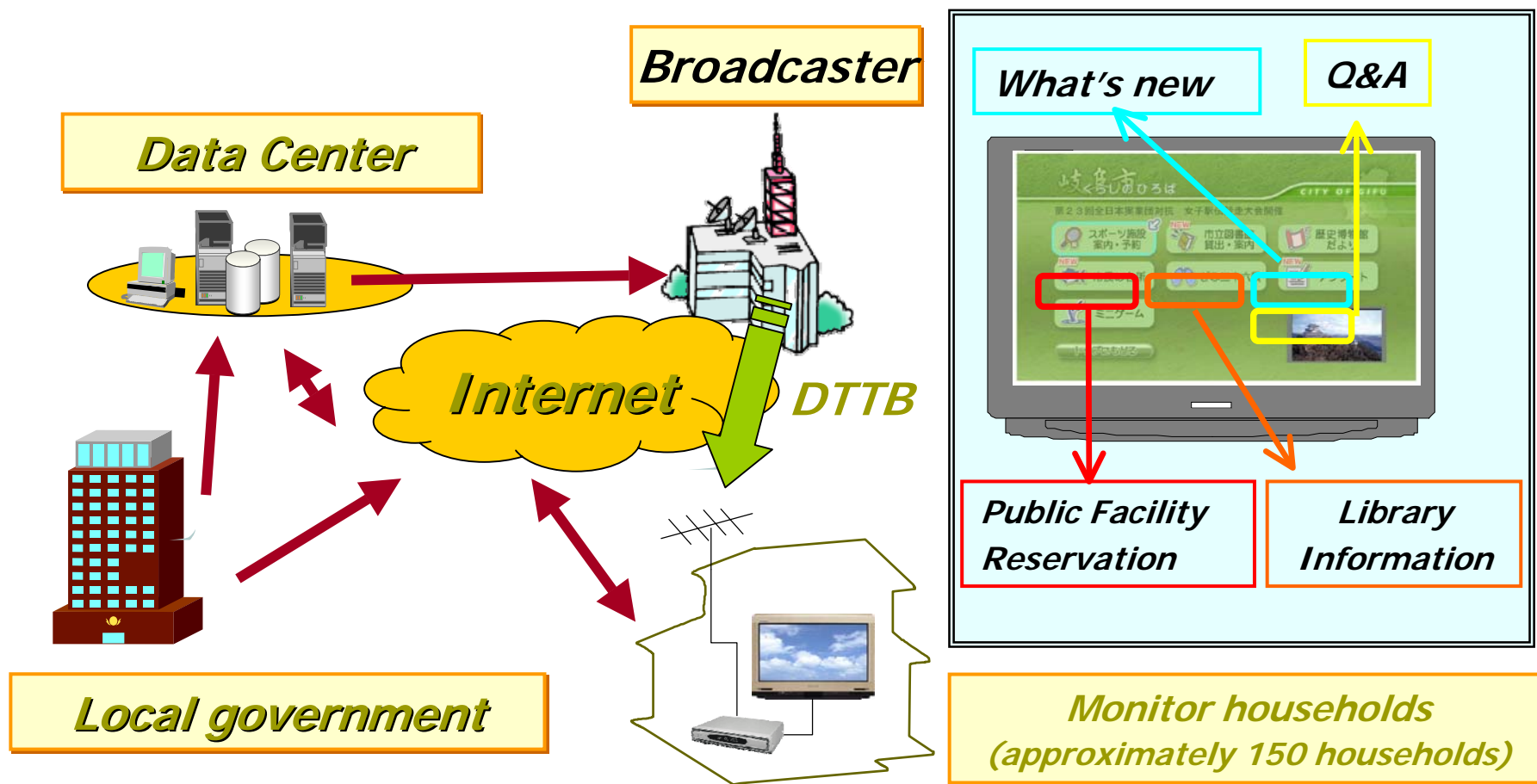
Local government service on DTTB (1)

Background

- (1) Integrated service of DTTB/Communication is expected for administrative service.**
- (2) In Gifu prefecture, central area of Japan, conducted experimental test started on Feb. 2004 to evaluate the effect of integrated service of DTTB/Communication for local government community services.**
- (3) Local government, local public body, communication carrier, broadcaster and MIC participated this experimental test.**

Local government service on DTTB (2)

Outline of local government information service on DTTB



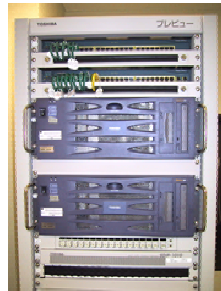
Local government service on DTTB (3)

Data editing flow & transmission image

Data editing & Pre-view



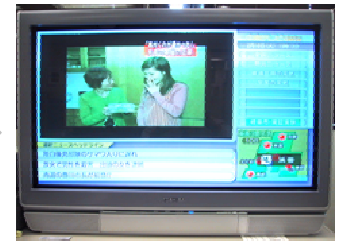
Authoring Terminal



Pre-view & Transmission



DTTB Tuner



Receiver

Image of data broadcasting transmission

Carousel Transmission

Text data

陸自後発部隊のサマワ入りに遅れ
放火で男性を殺害 出頭した女を逮捕
再選の豊田市長が初登壇...

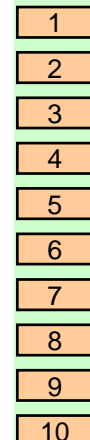
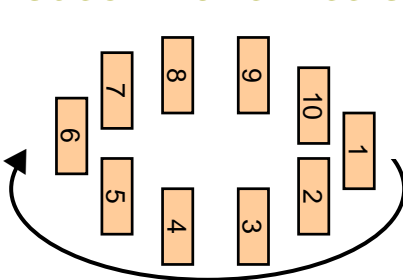
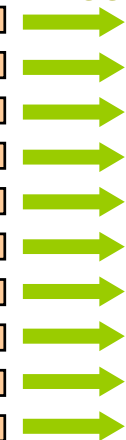
Picture data



BML

```
<body id="body">  
<div id="divtv" class="tv">  
<object class="video" id="video">  
<object class="audio" id="audio">  
</div>  
<div id="op_box">  
<div id="logo_box"> ...
```

Packetize



Receive all packets
and decode



Example of data broadcasting carousel contents

3. Information of library



5. Sightseeing guide



7. Mini-game

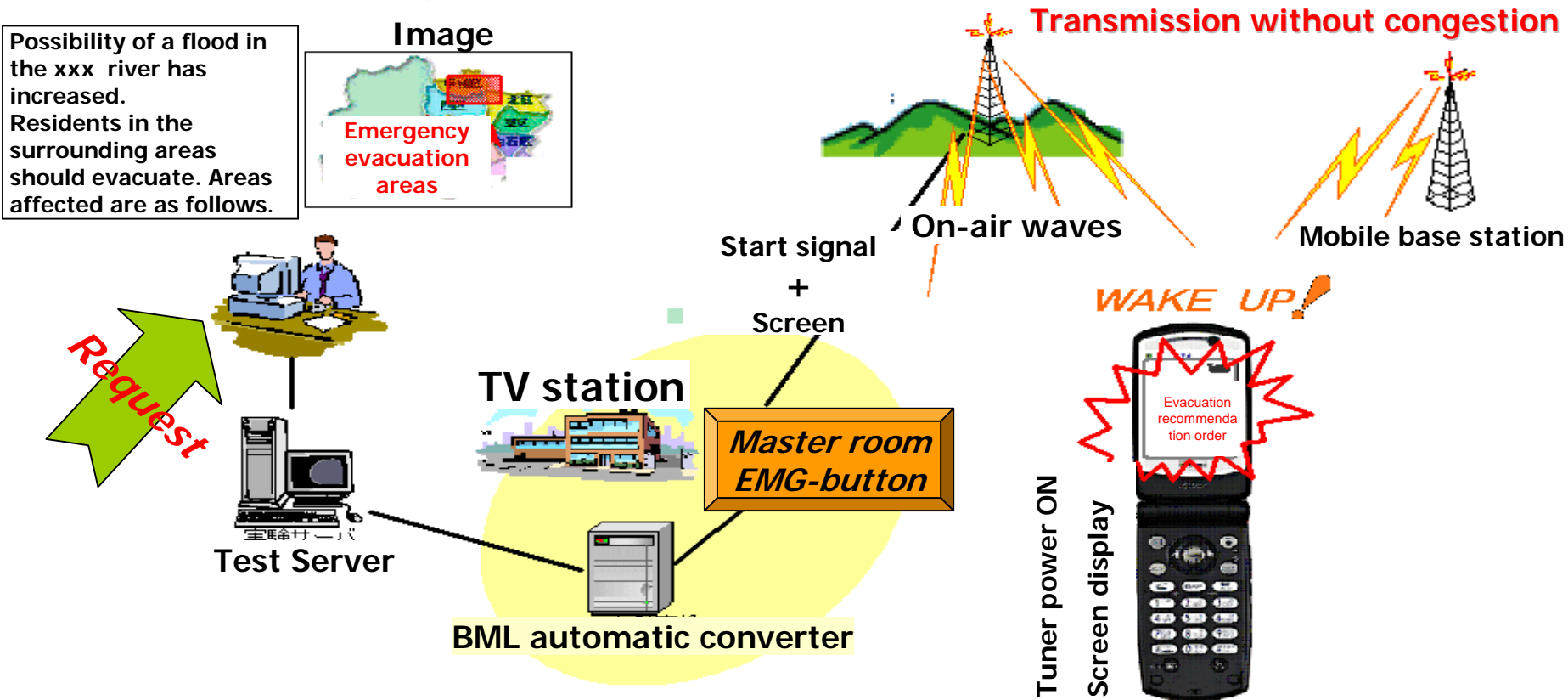


Application to Disaster Prevention(1)

- Realize a congestion-free transmission path even in times of disaster***
- Realize stable information transmission even in times of emergency or disaster, through startup control.***
- Realize communication paths according to areas and targets***

Application to Disaster Prevention(2)

Schematic diagram for disaster prevention service



ISDB-T seminar in Venezuela



*Thank you
for your attention !
END*

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