

Digital Broadcasting in Japan

October 2006

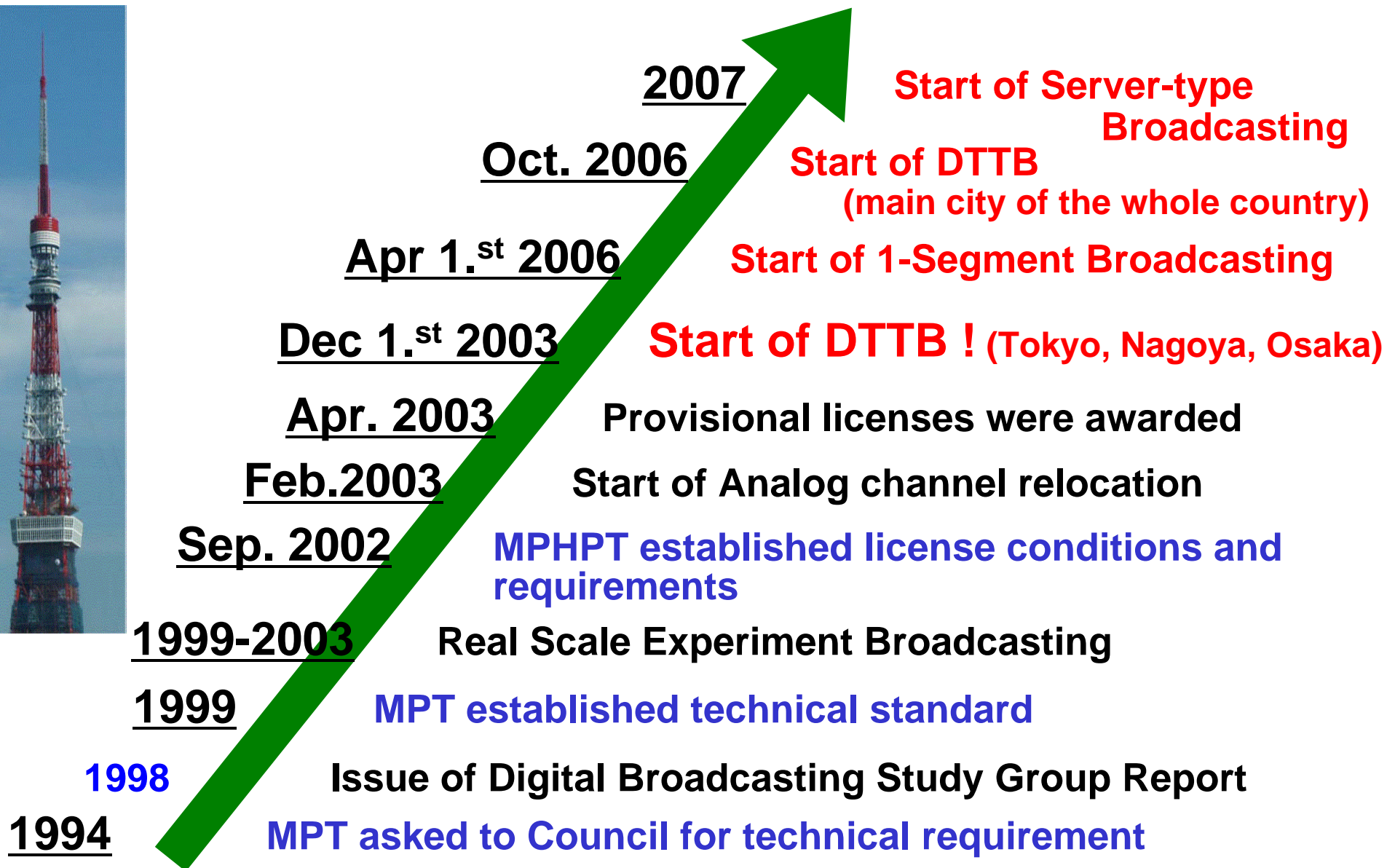
**Ministry of Internal Affairs and Communications
Japan**

Today's topics

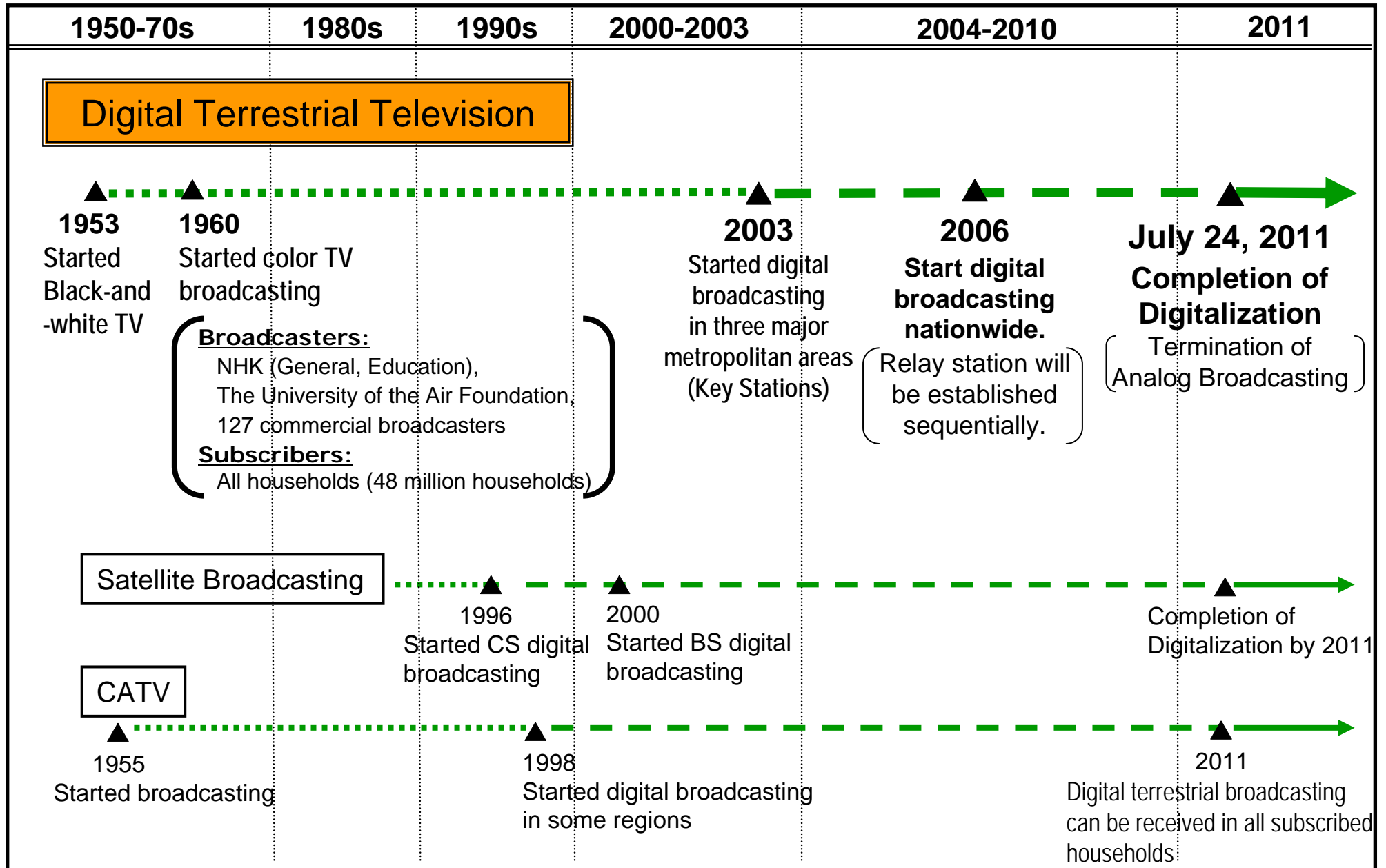
1. Update of Digital Terrestrial Television Broadcasting (DTTB) in Japan
2. Service Features of ISDB-T
3. *Comparison of 3 DTTB systems*

Update of Digital Terrestrial Television Broadcasting in Japan

Implementation Schedule of Digital Terrestrial Television Broadcasting in Japan



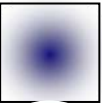

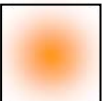


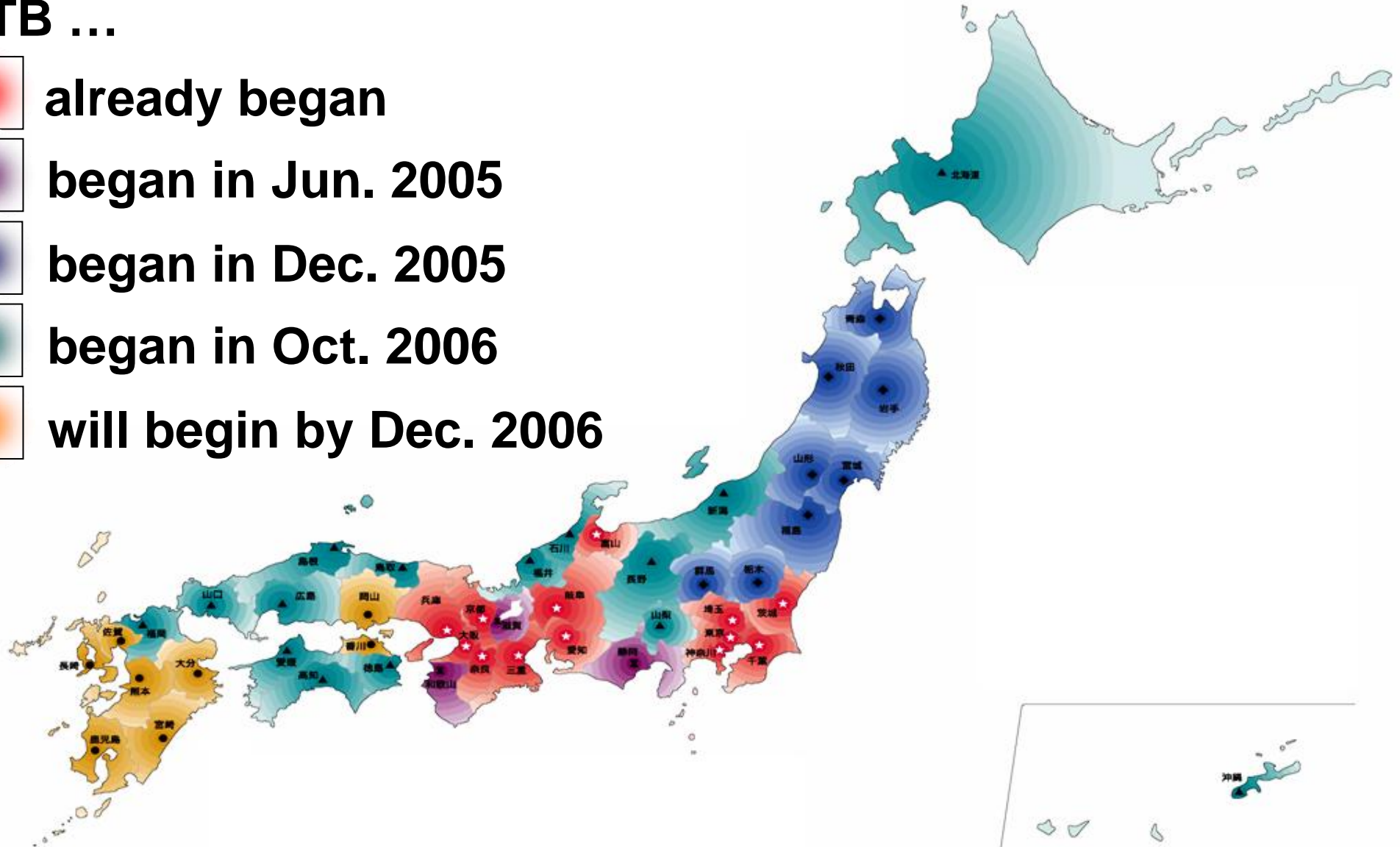
Schedule of Digitalization of Broadcasting in Japan



Expansion Schedule for Digital Terrestrial Television Broadcasting

In the seat of the Prefectural government,
DTTB ...

-  already began
-  began in Jun. 2005
-  began in Dec. 2005
-  began in Oct. 2006
-  will begin by Dec. 2006



Population Coverage of DTTB in Japan

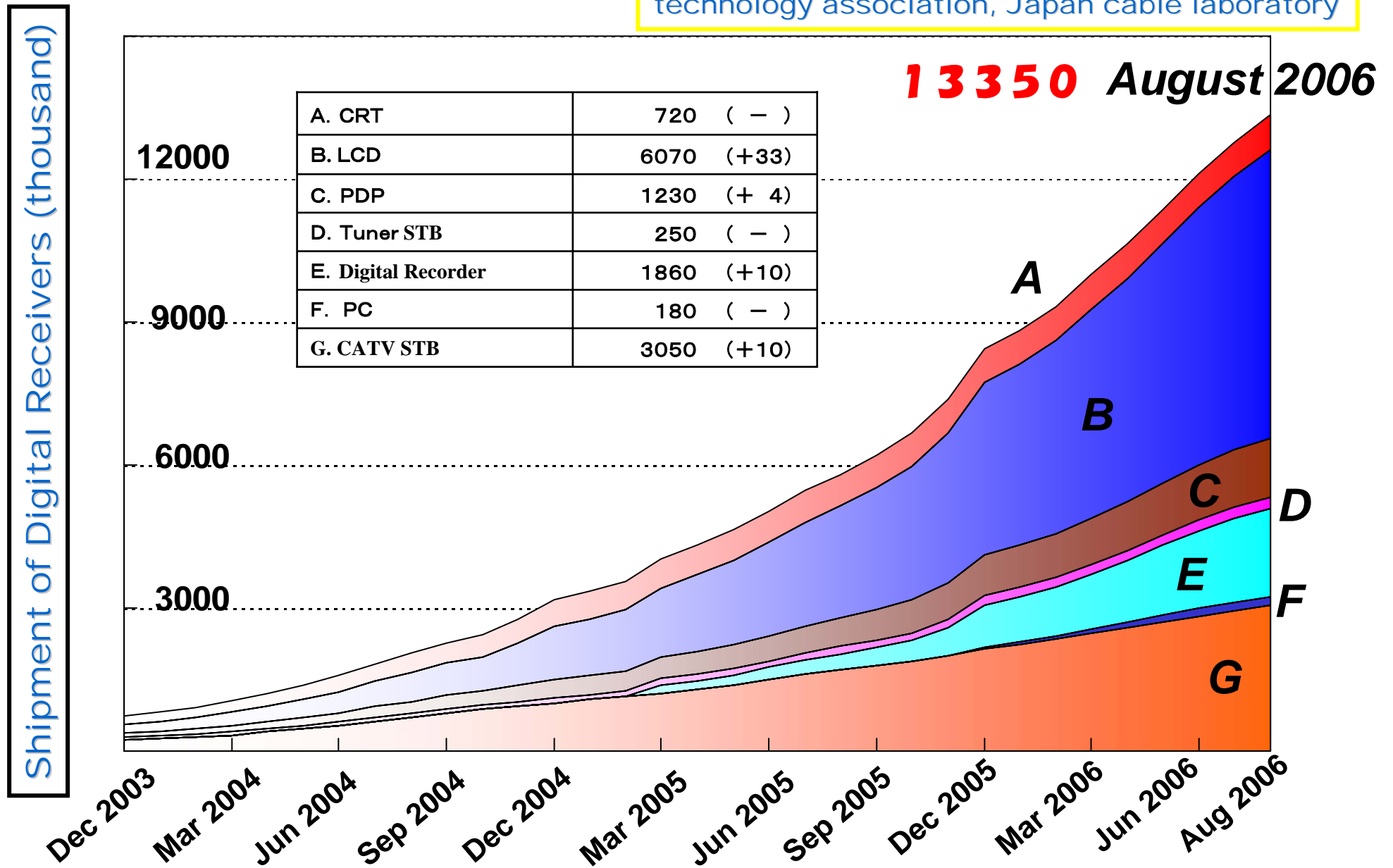
In December 2004: 18 million households (38%)

In December 2005: 27 million households (56%)

**In December 2006: 37 million households (77%)
(available at all prefectures)**

Number of Terrestrial Digital Receivers Shipped

Source: Japan electronics and information technology association, Japan cable laboratory



Wide variety of ISDB-T receivers

TV set



STB



HDD/DVD recorder



Cell phone



PC



Laptop / handheld PC



※画像はVGN-TX92S



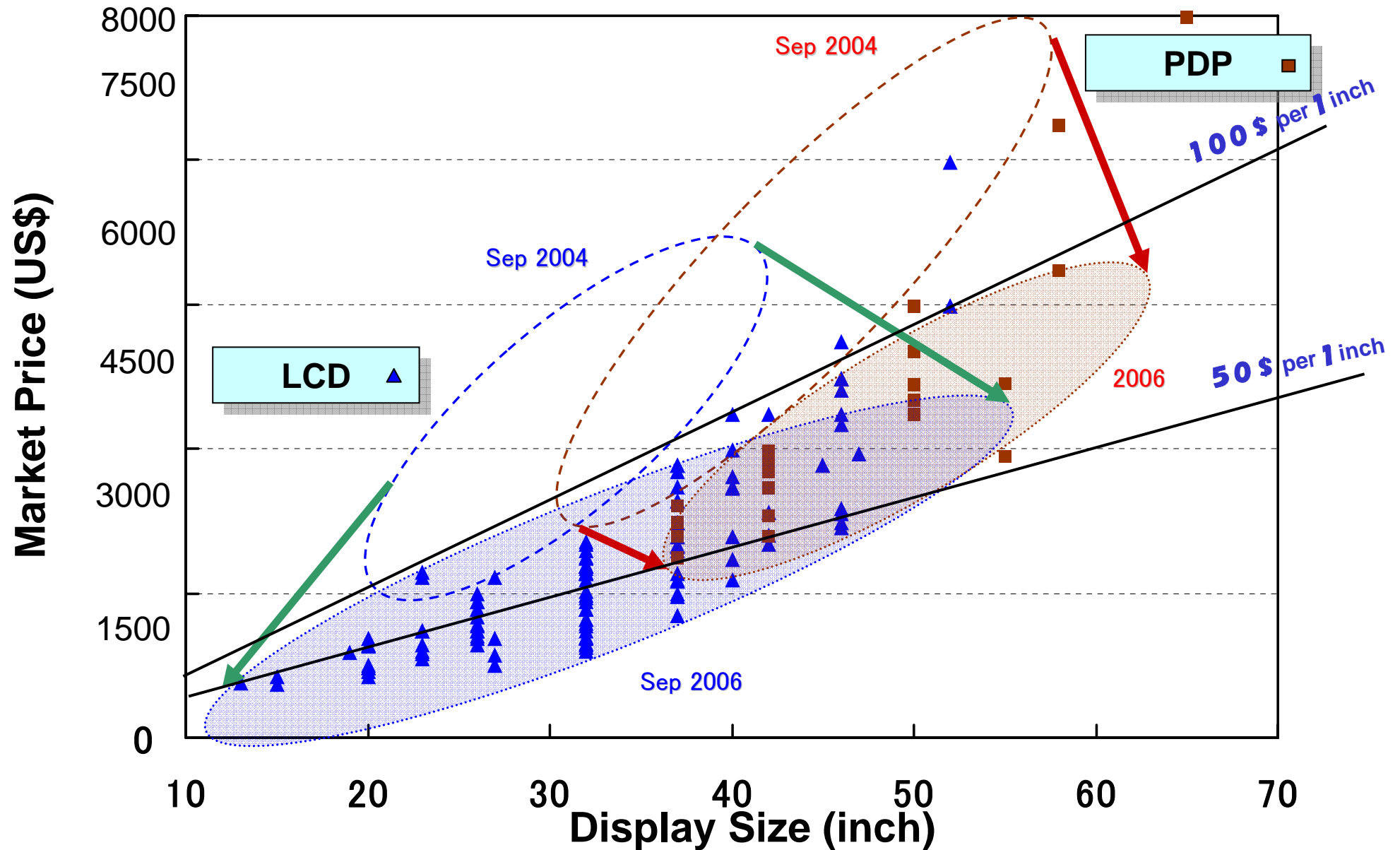
Car TV



Handheld TV



Price changes of DTV Receiver



Japanese major electric household appliance store's homepages as of Oct. 2006

Service Features of ISDB-T

Unique Features of Japan's Digital

HDTV



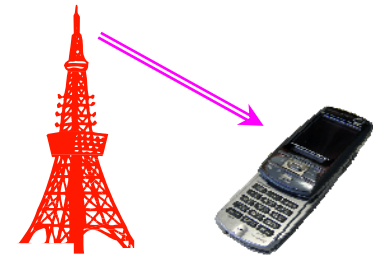
High quality image and sound service.

Multi-channel service



Realization of multi-SDTV program service in a 6MHz channel

One-Seg service



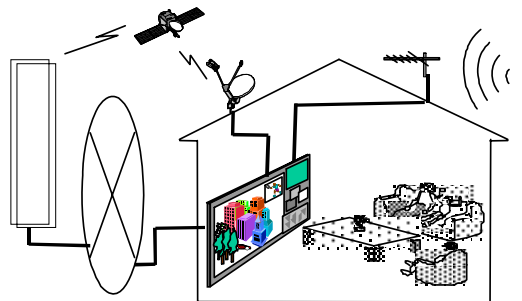
Anytime, anywhere, TV service to Cell phone

Data broadcasting



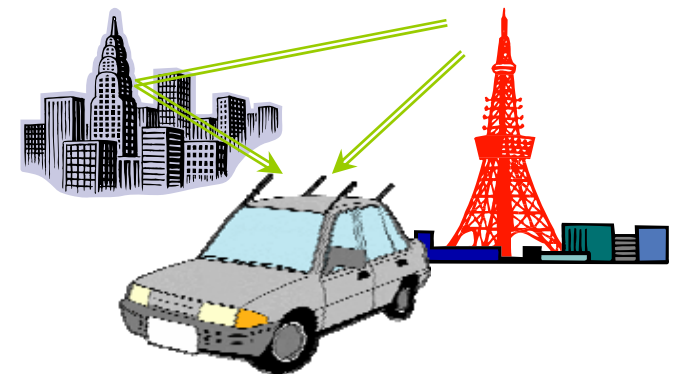
Simple program searching and retrieval of information at any time

Interactive TV



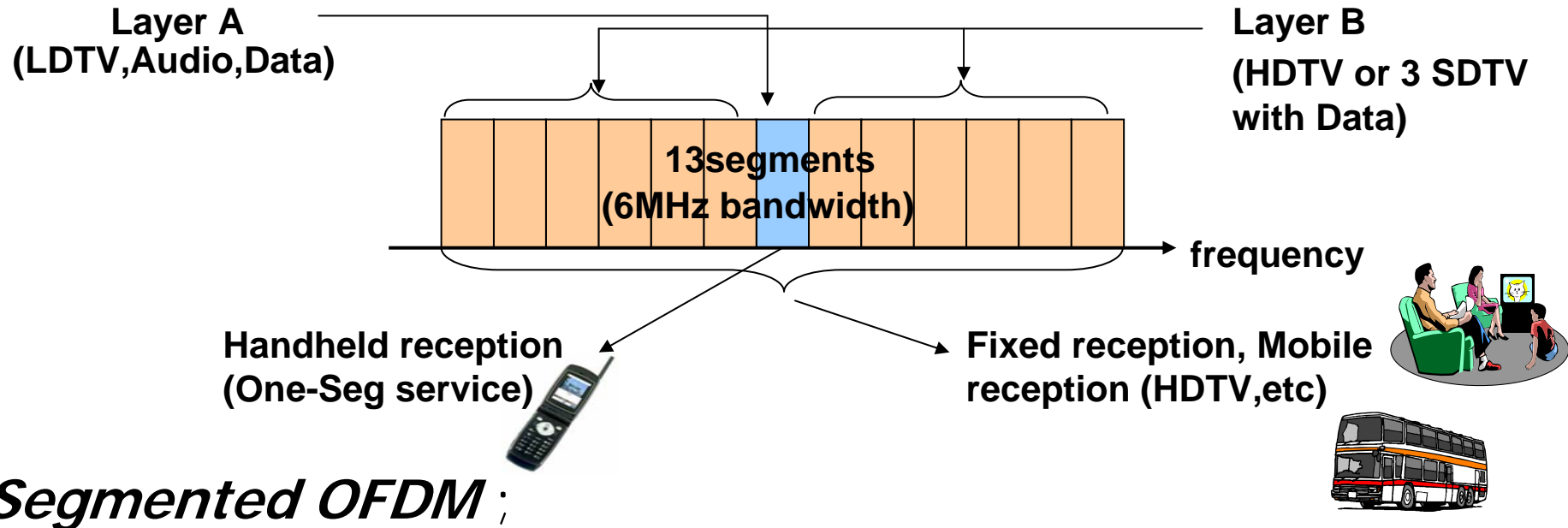
Communication linked services with TV

Mobile reception



Stable mobile reception service

What is Segmented OFDM with time interleave?



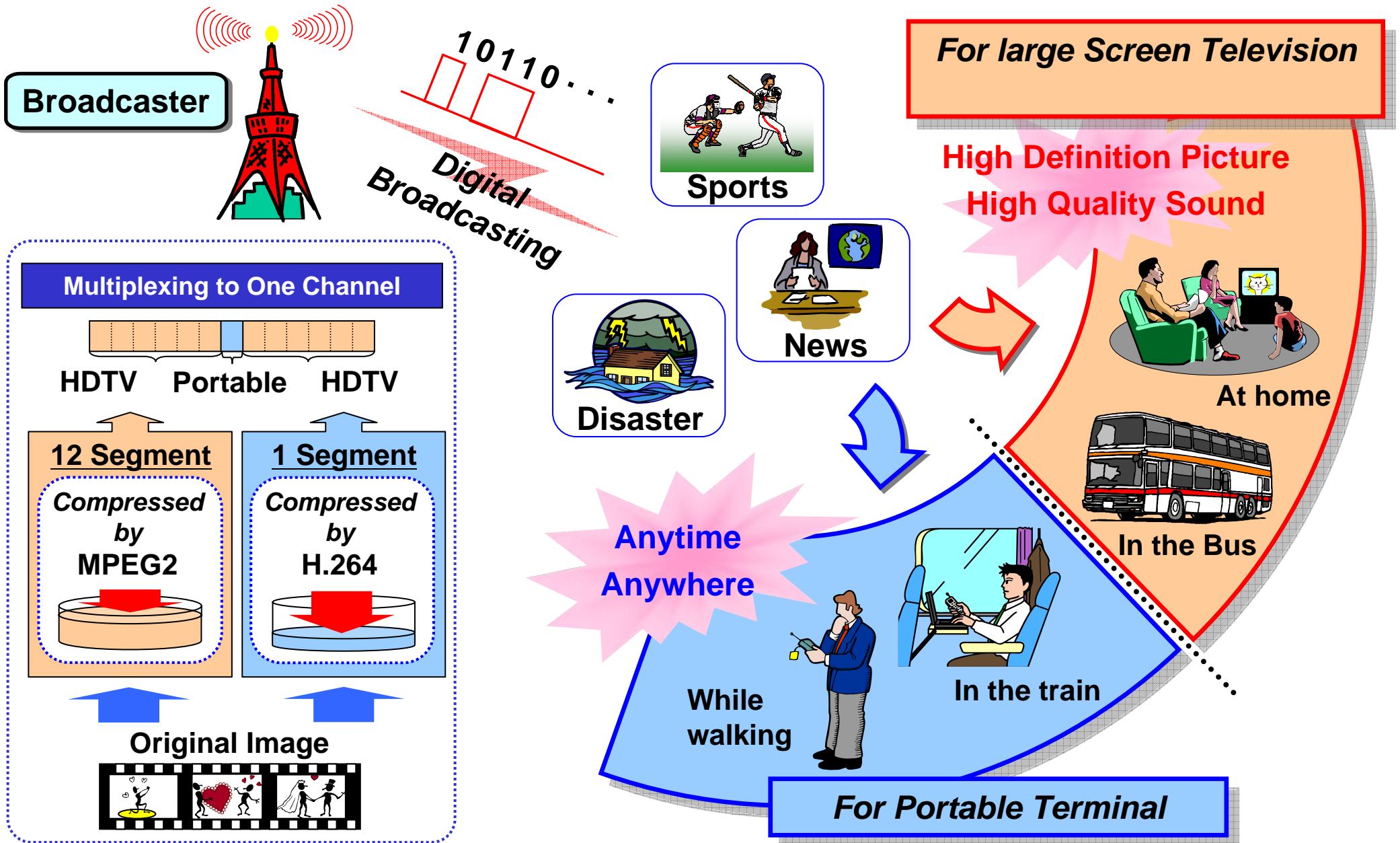
Segmented OFDM ;

Possible to support fixed/mobile/handheld reception service

Time interleave;

Reduce impulse noise and reduce the degradation caused by fading (tested in Brazil by Mackenzie and TV GLOBO)

Current service image of ISDB-T in Japan



Variety of one segment broadcasting receivers

Mobile Phones

W33SA (Dec 2005) W41H (Feb 2006) W33SA II (Jun 2006)

W43SA (Sep 2006) W43H (Sep 2006)

KDDI

P901iTV (Mar 2006)

NTT DoCoMo

905SH (May 2006)

Vodafone (Softbank)

Portable DVD Player



DVD-LX97 (2006年3月発売)

Matsushita

※ one segment tuner for portable DVD player



SD-PDT1 (Jul 2006)

TOSHIBA



DVF-DTV100 (Aug 2006)

Personal Computer

VGN-TX91PS etc (Jan 2006)

LesanceNB CL206GW-GT/TV etc (Jul 2006)

Aro system

T70S/V etc (Apr 2006)

LavieA (LA700/GD) (Sep 2006)

NEC

PC Card (Mar 2006)

PIXERA

USB connective Tuner LDT-1S100U (Sep 2006)

Logitech

Digital Audio Player



gigabeat V30T (Jul 2006)

TOSHIBA

Portable Game Machine



Nintendo DS (Autumn 2006)

Nintendo

Exclusive Terminals etc

One segment unit Produced by Wilcom (on sale not determined)










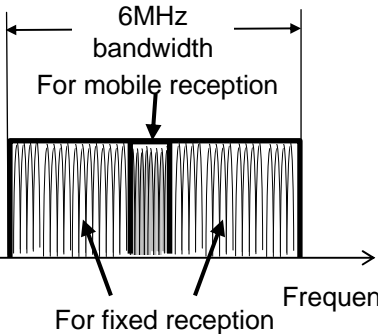
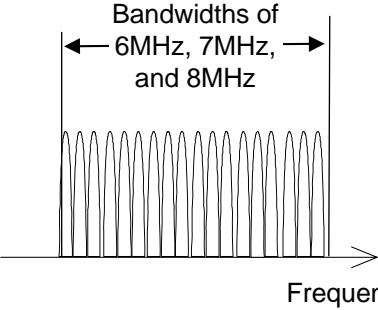
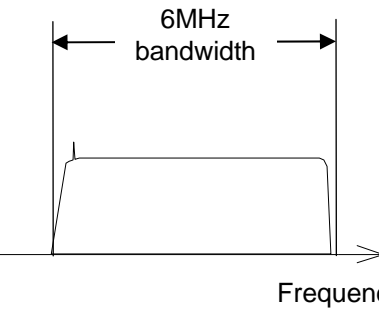
Prodia (Sep 2006)

PIXERA

※usable for also digital radio

Each company's press released merchandises in Japan

Comparison of 3 DTTB systems

| System | Japan (ISDB-T) | EU (DVB-T) | U.S. (ATSC) |
|--|--|--|--|
| Robustness to ghost Image interference | Effective against ghost image interference by advanced technique.  | Effective against ghost image interference.  | The same degree of analog TV broadcasting.  |
| Feasibility of SFN | A channel plan including SFN is ready.  | Some countries such as Germany, Australia , Singapore, etc. are operating.  | Being tested in the U.S. and Canada. However, no prospect of commercialization has yet emerged.  |
| Feasibility of portable reception | One channel can carry potable reception service, simultaneously with HDTV service.  | DVB-H, the system for potable reception, was developed as one of the series of DVB system.  | Potable reception is not available in the current system. The other systems are not being considered.  |
| Transmission system |  <p>6MHz bandwidth For mobile reception</p> <p>For fixed reception</p> <p>Frequency</p> <p>It is possible to designate the modulation system of the segment group unit, according to the service purpose.</p> |  <p>Bandwidths of 6MHz, 7MHz, and 8MHz</p> <p>Frequency</p> |  <p>6MHz bandwidth</p> <p>Frequency</p> <p>Improved system based on analog TV broadcasting system.</p> |

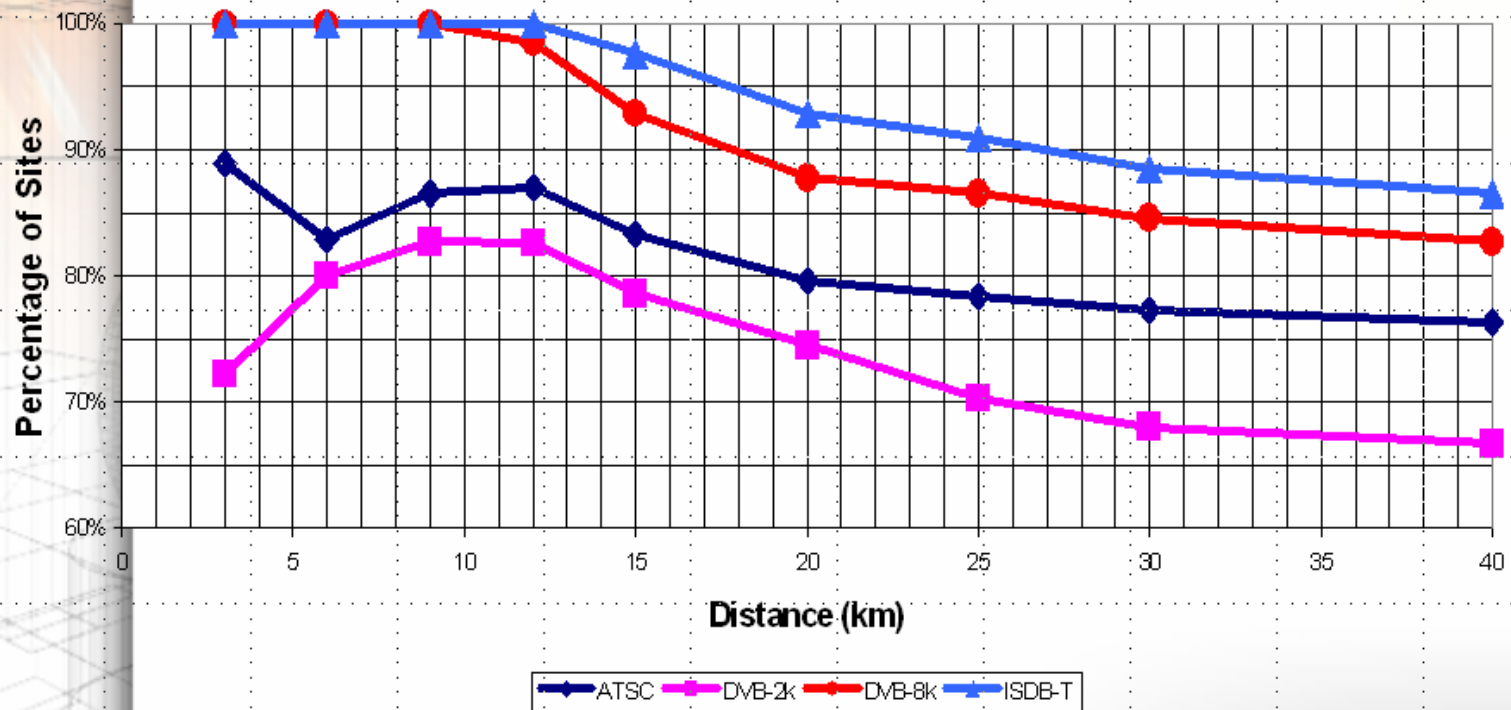
Comparison of 3 DTTB systems

| <i>Item</i> \ <i>System</i> | <i>ISDB-T</i> | <i>DVB-T</i> | <i>ATSC</i> |
|---|---------------|---------------|-------------|
| HDTV/ SDTV Fixed reception | ⊙ | ⊙ | ⊙ |
| Data broadcasting | ⊙ | ⊙ | ⊙ |
| SFN | ⊙ | ⊙ | × |
| HDTV Mobile reception | ⊙ | × (○ SDTV) | × |
| Portable reception with cellular phone | ⊙ | △ | × |
| Internet access | ⊙ | △ | × |

Outdoor: Coverage

ISDB-T system is the best in 3 DTTB systems

Success on Receiving - Cumulative Function
Criterion: Number of Errors < 5



(From the presentation of the Brazilian SET/ABERT study group at NAB2000)

Thank you for your attention !!

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

- Contact point:

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