Advantages of ISDB-T

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Manila, Philippines
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Content of this presentation

◆ Features of digital TV broadcasting

◆ Features of Japanese digital TV standard, ISDB-T
  ➢ Technical
  ➢ Economical
  ➢ Commercial

◆ Price of ISDB-T equipments

◆ Implementation of ISDB-T in Brazil
Features of ISDB-T

**HDTV**
- High quality image and sound service

**Multi-Channel Service**
- Realization of multi-SDTV program service on 1ch bandwidth (6MHz)

**Interactive TV**
- Communication linked services with TV

**Data Broadcasting**
- Simple retrieval of program and information at any time

**Mobile Reception**
- HD TV and Mobile TV in vehicle
- Mobile TV on Handheld Reception like Cell phones, Portable Game machine and so on.
ISDB-T Receiver Shipments
Almost 100 millions receivers have been shipped
(by the end of December 2008)

51.9 millions mobile receivers were shipped at the end of December 2008.
46.0 millions fixed receivers were shipped at the end of December 2008.
ISDB-T presents the faster penetration with a higher growth rate compared to other Standards.
**Scale Economy - in 6MHz -**

**DVB-T** has very little shipment in 6MHz.  
**ATSC** does not standardize the mobility

Receivers DTT in 6MHz (Millinons)

- **ATSC** for 10 years: 79.1
- **DVB-T&H** for 10 years: 97.9
- **ISDB-T** for 5 years: 51.9

Mobile: 0  
Fixed: 46.0

Official statistics: “DVB Worldwide” and JEITA
## Comparison of Three DTTV Systems

<table>
<thead>
<tr>
<th>Features</th>
<th>Japan/Brazil (ISDB-T)</th>
<th>EU (DVB-T)</th>
<th>U.S. (ATSC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Multi-carrier + Time interleave + Band segmentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDTV reception while moving</td>
<td>Excellent ★★★</td>
<td>NOT available (only SDTV)</td>
<td>NOT available —</td>
</tr>
<tr>
<td>Emergency Warning Broadcasting System (Fix reception)</td>
<td>In service ★★★</td>
<td>NOT in service —</td>
<td>NOT in service —</td>
</tr>
</tbody>
</table>

**Notes:**
- ★★★ indicates excellent performance.
- ★★ indicates good performance.
- ★ indicates satisfactory performance.
- — indicates not available.
# Comparison of Three DTTB Systems

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-channel SDTV service</td>
<td>excellent</td>
<td>available</td>
<td>available</td>
</tr>
<tr>
<td></td>
<td>(more channels)</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Mobile and Fixed Broadcasting within one transmitter</td>
<td>Available in One channel and One transmitter (economical)</td>
<td>NOT available in One channel and transmitter</td>
<td>NOT available in One channel and Transmitter</td>
</tr>
<tr>
<td></td>
<td>★★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Numbers of receiver (Million) (6MHz Bandwidth) (Dec.2008)</td>
<td>97.9 Million</td>
<td>81.0 Million</td>
<td>79.1 Million</td>
</tr>
<tr>
<td></td>
<td>(in 6MHz Bandwidth) ONLY 2.2 Million</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparison Tests with Impulse Noise in Peru

**ISDB-T**
Image is Clear
ISDB-T withstands impulse noise!

**DVB-T**
(European Standard)
Image is not clear with noise noise

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Time Interleave Technology

TV Station

Transmission Path

Receivers

Time Interleave

ISDB-T

Sort data in accordance with set rules

Errors occur as a result of radio interference

Reconstruction of data

Dispersed errors can be corrected.

Original date

ATSC

DVB-T

No Time Interleave

Errors occur as a result of radio interference

Difficult to correct continuous errors.
In the case of ISDB-T, the ratio of the points having value of “5 (Excellent Performance)” within 12 km of the transmitter is more than 70%, but the other two systems do not have this ratio of 70% even within 3km of the transmitter.

This fact shows that ISDB-T is definitely superior to the other two systems as a terrestrial digital broadcasting system.
Cost of receiving antenna becomes minimum by adoption of ISDB-T.

In case of ISDB-T, the number of viewers which can receive digital TV with indoor antenna is increased more than 20% by comparison with other digital TV systems.

In case of ISDB-T, more people can receive digital TV with indoor antenna (US$ 8) by comparison with DVB-T.

However in case of DVB-T, they must buy outdoor antenna (US$ 48). (ex. More 1.8million people need outdoor antenna in Manila*).

*(Result of the comparison test between 3 digital TV systems)

* Assuming that the rate is available for Manila and 9 million people watch analog TV in Manila area.
Features of ISDB-T system, Band segmentation

- Mobile reception “One-Seg”
- Support 3 reception types by one channel

1 channel of TV

- HDTV or Multi SDTV
- Fixed Reception
- Handheld Reception
- Communication link
- Diversity reception

- Internet / Telephone modem
- TV station
- Home Receiver
- Handheld terminal
- Receiver in Vehicle

12 segment
ISDB-T can save investment for Mobile Broadcasting

**ISDB-T**

One Transmitter

- Multi SDTV
- HD TV
- Portable TV handset

Fixed

Mobile

You don’t need additional investments for mobile TV broadcasting!

**DVB-T**

Additional Transmitter is need

- Multi SDTV
- HD TV
- Portable TV handset

Fixed

Mobile

You need additional investments for mobile TV broadcasting!

The other standard needs Additional transmitter for Mobile TV
### Example of TV program

<table>
<thead>
<tr>
<th>Time</th>
<th>SDTV (Sport shows)</th>
<th>SDTV (Variety shows)</th>
<th>SDTV (Dramas shows)</th>
<th>Portable receiver services (One-Seg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18:00h</td>
<td>SDTV (football, main program)</td>
<td>SDTV (football, another view)</td>
<td>SDTV (football, goal scenes)</td>
<td></td>
</tr>
<tr>
<td>20:00h</td>
<td>HDTV Movie (low bit rate)</td>
<td>SDTV Baseball (special channel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21:00h</td>
<td>HDTV Movie</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ISDB-T can provide Interactive TV service

High functionality

Data Broadcasting

Interactive TV over 51 million receivers, e.g. interactive shopping

Weather forecast

News

Information linked to on-air program

You can see the items and you can buy them directly.

Only ISDB-T succeeds those New businesses

DVB-T hasn’t provided attractive services of Data-broadcast and interactivity
A large variety of mobile TV receivers attract new viewers.
Economical Benefits for Broadcasters

- Broadcasters do **NOT** need to pay any commission / usage charge for ISDB-T

- Broadcasters can get mobile TV market **without additional investment**.

- **ISDB-T creates business chance** by new services with portability and interactivity.
Emergency Warning System

Possibility of ⚠️⚠️ river flooding has increased. Residents in the surrounding areas should evacuate. Areas affected are as follows.

Evacuate from this area!

Both inside and outside the home.
No difference in price of receivers among standards.

-Difference between Digital TV systems is only a part of software installed in modulator/demodulator.

-The difference is only 1% of whole cost of the equipments which is negligible for price.
Change in Price of Major Flat Panel Displays (FPDs)

Launched Digital TV

7,739 U.S.$

6,985 U.S.$

80% decreased

1,252 U.S.$

1,161 U.S.$
Japanese government decided to procure over 2.6 million STB for low income households. That will surely accelerate price-reduction of ISDB-T STB.
CAS (Conditional Access System) could be integrated on any STB in Philippines.

ISDB-T receivers and STBs can accommodate any kinds of conditional access systems (CAS). CAS is an extensive part as same as a graphic card for PC.

```
STB: Default

CAS: Extension

VideoGuard
Plsys
CAS7
Viaccess

+ 5 USD
```
DTT Broadcasting Starts in More and More Cities in Brazil

DTT will start all over Brazil in the near future!

Apr. 2009 - DTT will start in Brasilia

Dec. 2008 - DTT started in Campinas

Nov. 2008 - DTT started in Porto Alegre

Oct. 2008 - DTT started in Curitiba

Aug. 2008 - DTT started in Goiania

Jul. 2008 - DTT started in Belo Horizonte

Apr. 2008 - DTT started in Rio de Janeiro

Dec. 2007 - DTT started in Sao Paulo

Jun. 2006 - Brasil adoptó ISDB-T.

Brazil takes only 1.5 years to start DTT service after Brazil adopted ISDB-T because of Japanese powerful assistance.

46% people in Brazil can watch DTT!
Digital TV Start-Up Ceremony was held in Brazil on 2nd December 2007.

H. E. Mr. Lula, President of Brazil, attended and made a speech.

H.E. Mr. Mori, Vice-Minister for Communication of Japan, introduced mobile receiver (One-Seg) to H.E. Mr. Costa, Minister for Communication of Brazil.
Global manufacturers in Brazil

- Gradiente
- Philips
- Positivo
- Tec Toy
- Semp Toshiba
- Ebcom
- Samsung

- LG
- Envisio
- Aiko
- Amplimatic
- Thevear
- Visiontec

- Panasonic
- Sony
- Olévia
- Telesystem
- Plasmatic
- Coship

GSM+3G+TV Digital  LCD & PLASMA  USB One-Seg receiver
Advantages of ISDB-T

◆ You can build up broadcast network effectively and affordably thanks to **excellent robustness of ISDB-T** which might allow you to cover service area **with small number of stations than DVB-T**. Viewer can received with indoor antenna.

◆ Only ISDB-T enables **both fixed TV service and mobile TV service at the same time within One channel and One transmitter**. This excellent feature provides you **New Business Chance** without additional investments.

◆ **All ISDB-T STBs are applicable for HD TV**, while DVB-T STB is NOT applicable for HD TV completely.

◆ **The number of ISDB-T Receivers is larger than that of DVB-T**.
  The number of DVB-T Receivers in 6MHz is very small. **ISDB-T STB with affordable price is ready.**

◆ Only ISDB-T provides **Emergency Warning System** (**EWS**) that contributes to your social responsibilities under natural disasters such as typhoons and tsunamis.
Thank you for your attention!

**Salamat po!**

*Hideo FUSEDA*

*Ministry of Internal Affairs and Communications*