



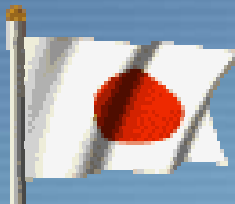
Digital Terrestrial Television Service and TV Sets in Japan

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- Current situation of DTTB service in Japan
- Current situation of DTTB sets in Japan
- One-segment DTTB
- New Products
- Summing-up

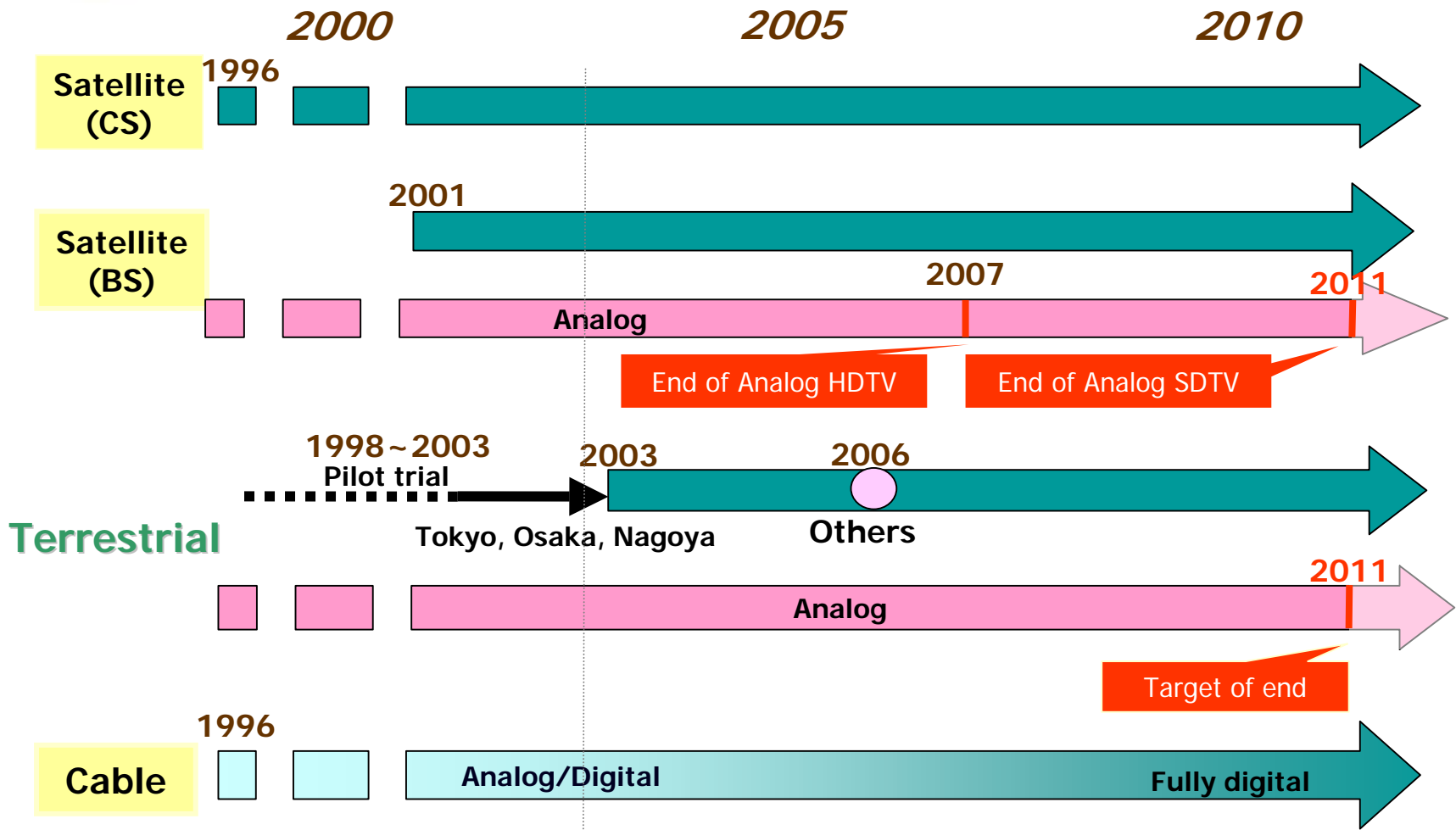


Current situation of DTTB service in Japan










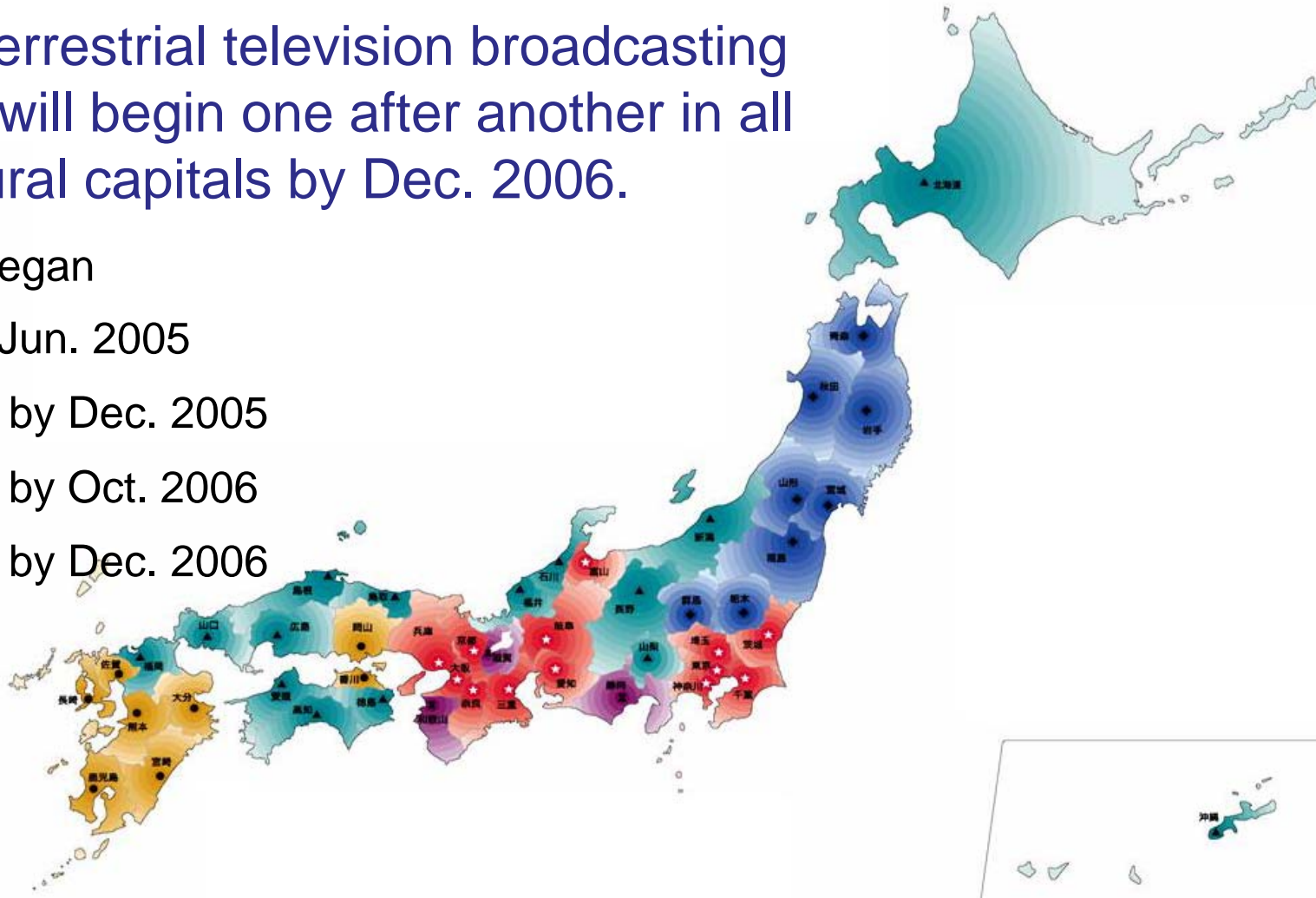
Schedule of Digital Broadcasting in Japan



Expansion Schedule for Digital Terrestrial TV

Digital terrestrial television broadcasting service will begin one after another in all prefectural capitals by Dec. 2006.

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





Households Coverage

- On December 1st 2003, Digital Terrestrial TV started in three metropolitan areas (Tokyo, Osaka, Nagoya)
- Households Coverage (percentage of the households which can receive DTTB) increases every year as shown below.
 - In December 2004: 18 million households (38%)
 - In December 2005: 27 million households (56%)
 - In December 2006: 37 million households (77%)
(DTTB is available in all the prefectural capitals)
- ✓ 48 million households in Japan. Industry's target is that every household has more than one DTTB receiver by 2011.

- **Licensing Policy for Digital Terrestrial Television Broadcasting**
 - 6MHz channels for digital TV were assigned to existing terrestrial broadcasters.
 - Over 2/3 of DTTB programs are the same as programs of analog TV broadcasting a day. But with some more values; HDTV, SDTV multi-program, datacasting, etc.
 - HDTV programs should be televised at more than 50% of broadcasting hours a week.
- **Currently . . . All broadcasters are providing *pure HDTV programs****
 - NHK broadcasts HDTV programs at about 90% of the time.
 - Private Network stations broadcasts HDTV programs at about 60% of the time.

* *pure HDTV programs* : Produced and transmitted by 1080i HDTV format



Current situation of DTTB sets Japan





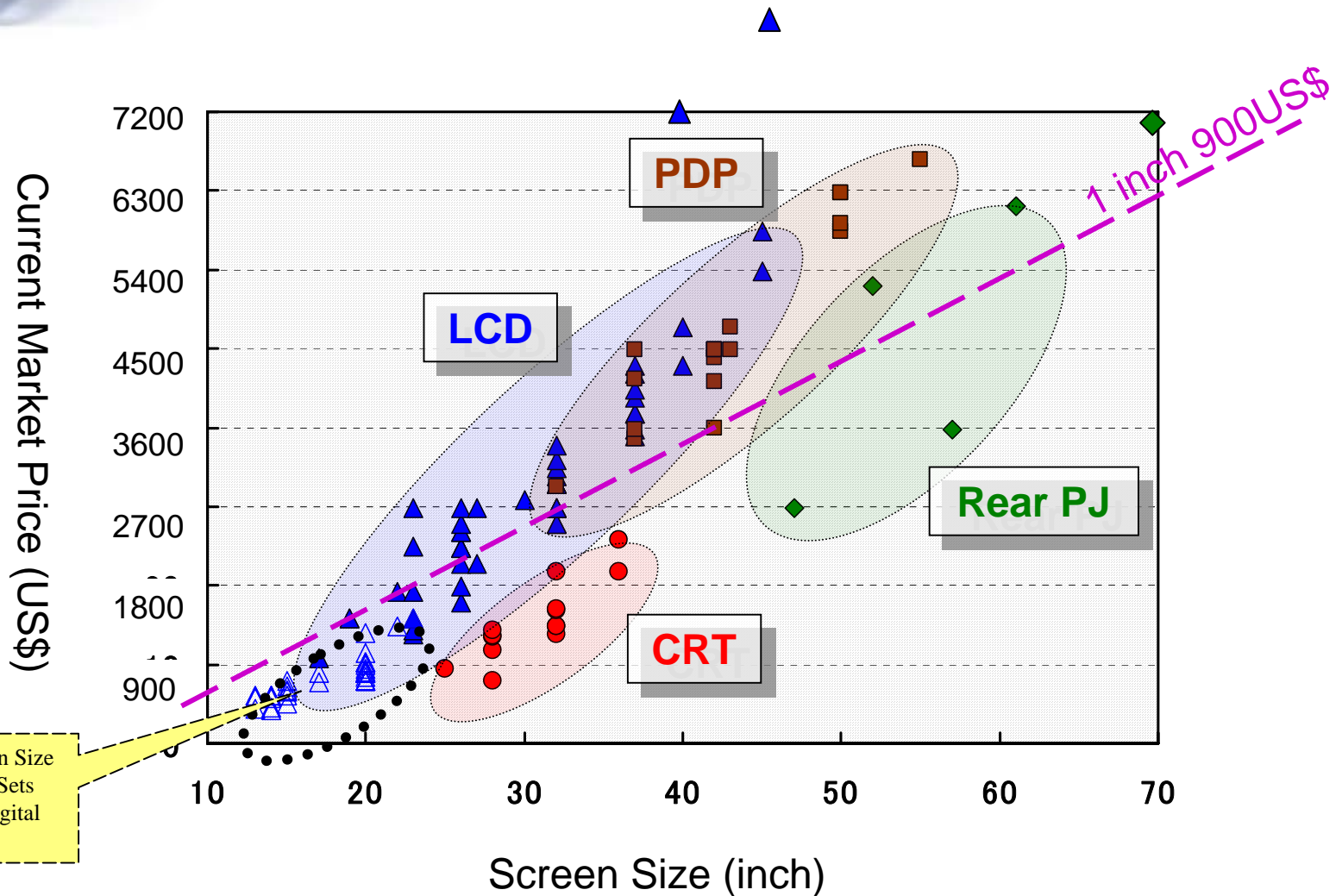
Line-up of DTTB Sets

Manuf.	Screen Size						
	10"	20"	30"	40"	50"	60"	70"
Toshiba		▲	●	●	▲		
Sharp	△	▲					▲
Sanyo	△	▲	●	●	■		
Panasonic	△	▲	●	●	■		
Hitachi	△	▲	●	●	■		
Sony	△	▲	●	●	■		◆
JVC		▲		▲	■	◆	◆
Mitsubishi	△		▲	▲			
Pioneer					■	■	
Epson					◆	◆	
Nanao		▲	▲				

● CRT-TV ▲ LCD-TV ■ PDP-TV ◆ Rear PJ △ Analog LCD-TV

Price Distribution Map of DTV Sets

As of June 8, 2005

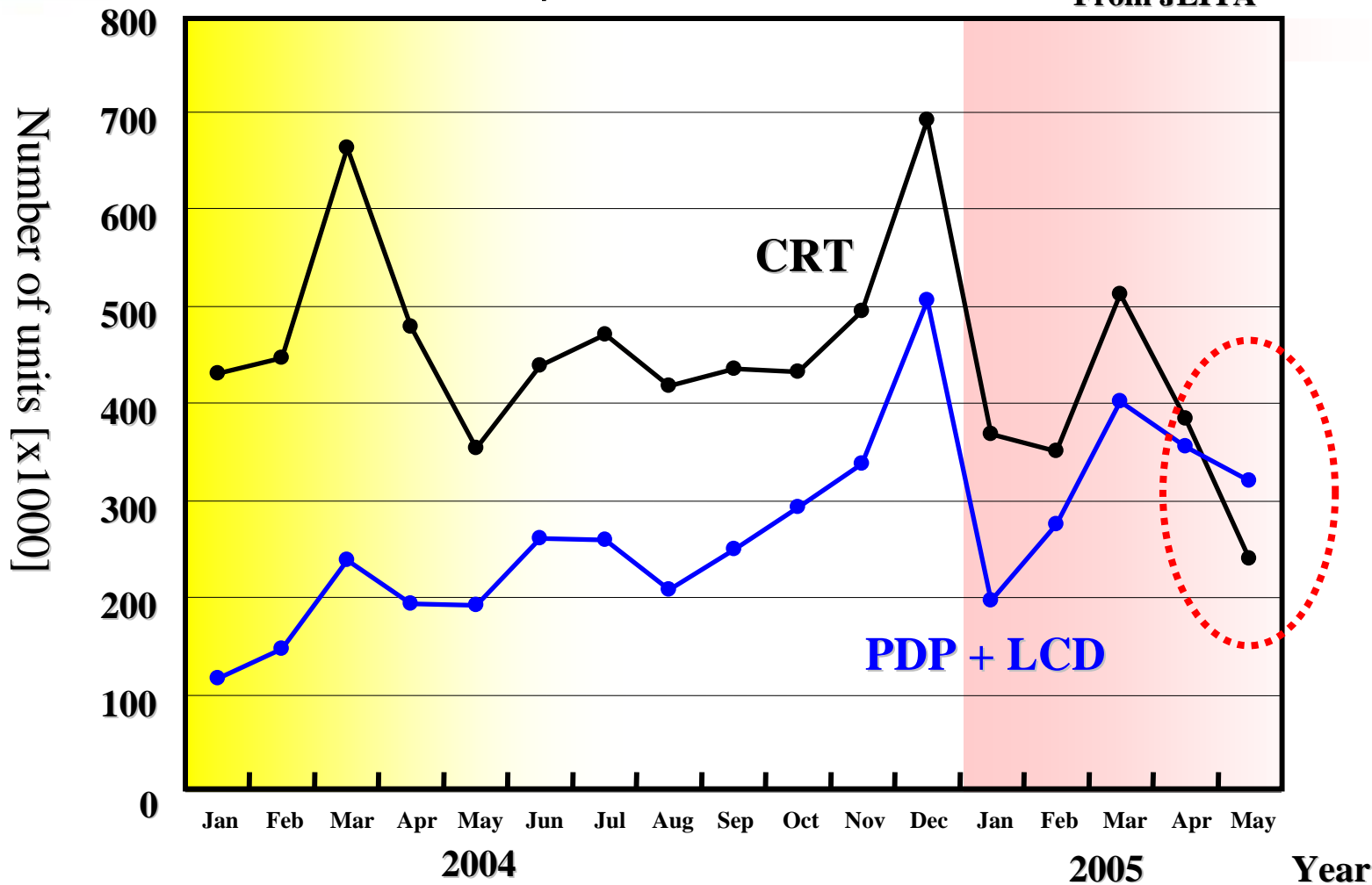


Shipment of Flat Panel Display TV Set Exceeded the Shipment of CRT TV Set.



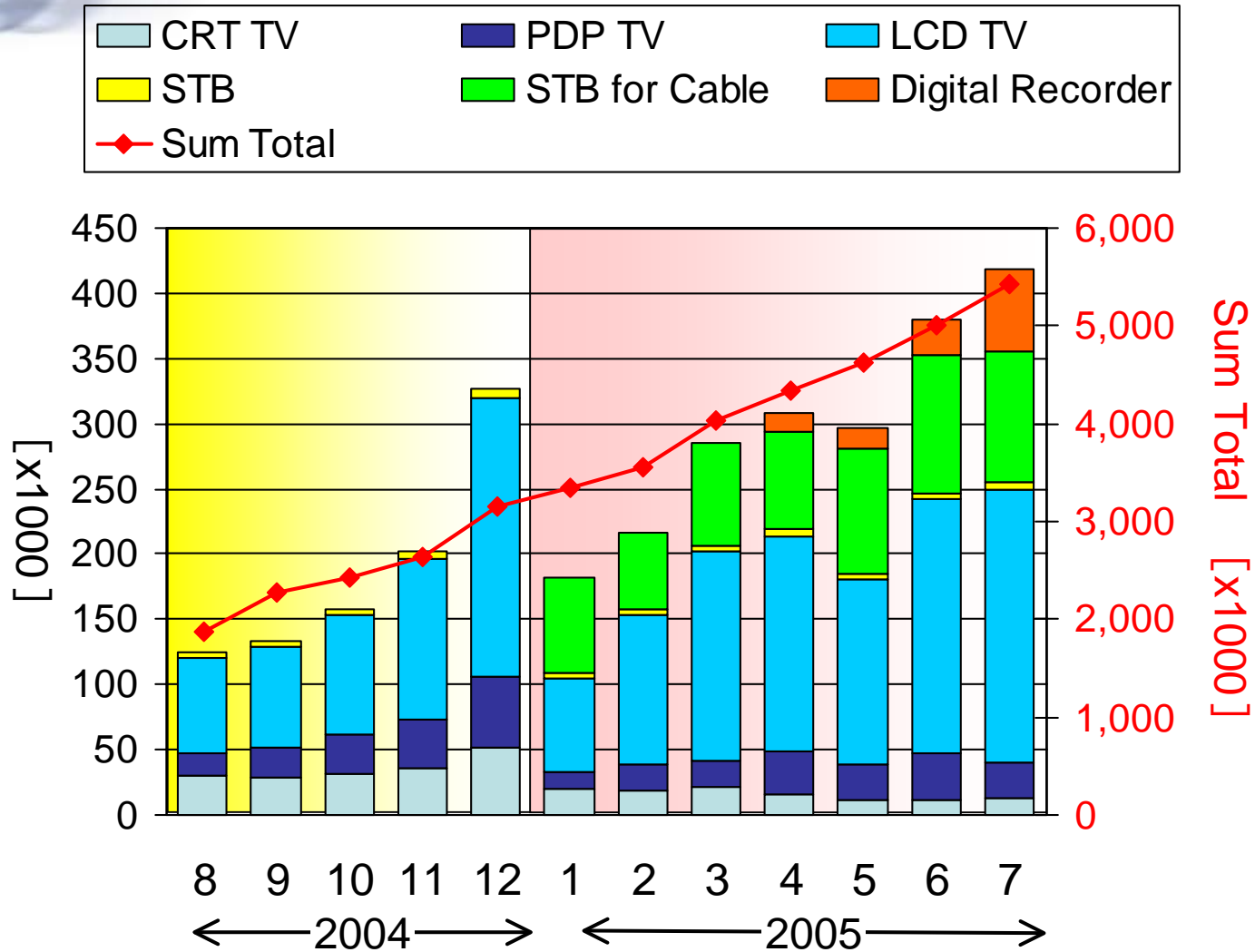
Shipment of TV Sets

From JEITA

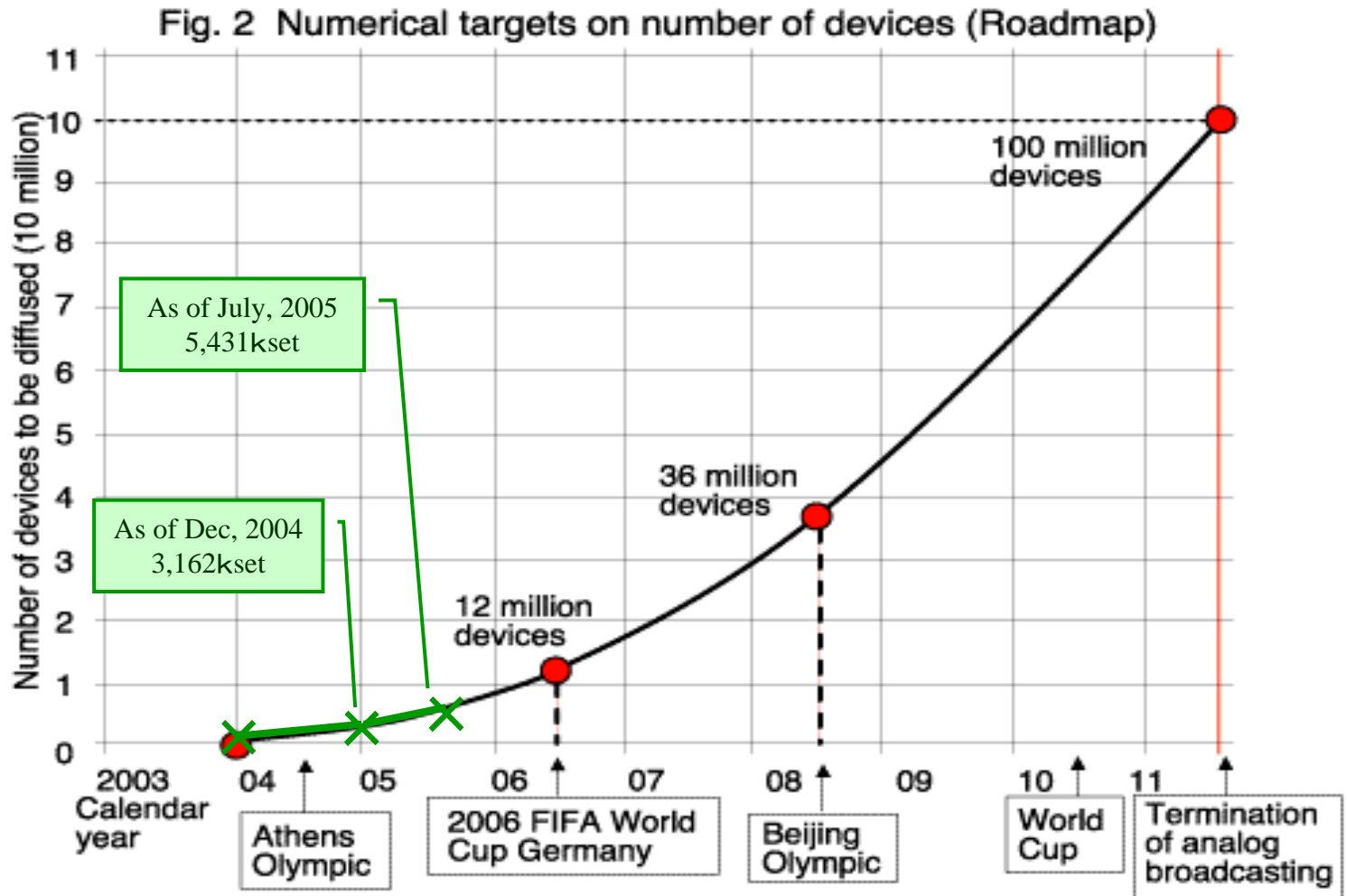




Shipment Volume of DTTB Receivers



Targets on Diffusion and Shipment Volume of Digital Terrestrial TV Receivers



Extra Information about DTTB Sets

- The latest flat panel display TV sets, which have a screen larger than 22 inch is an all-in-one type .
 - equipped with both digital tuner (for terrestrial, BS, CS110) and analog tuner.
 - HDTV display
 - Equipped with data broadcasting decoder
 - Network connection facility (10Base-T)
 - 20 million households are using the Broadband (optical, cable and ADSL) in Japan
- Some models have internet web browsing function
- The DTTB sets price dropped in the past two years.
 - 20%~50%
- Low-price simple DTTB Sets will be on the market in the near future.

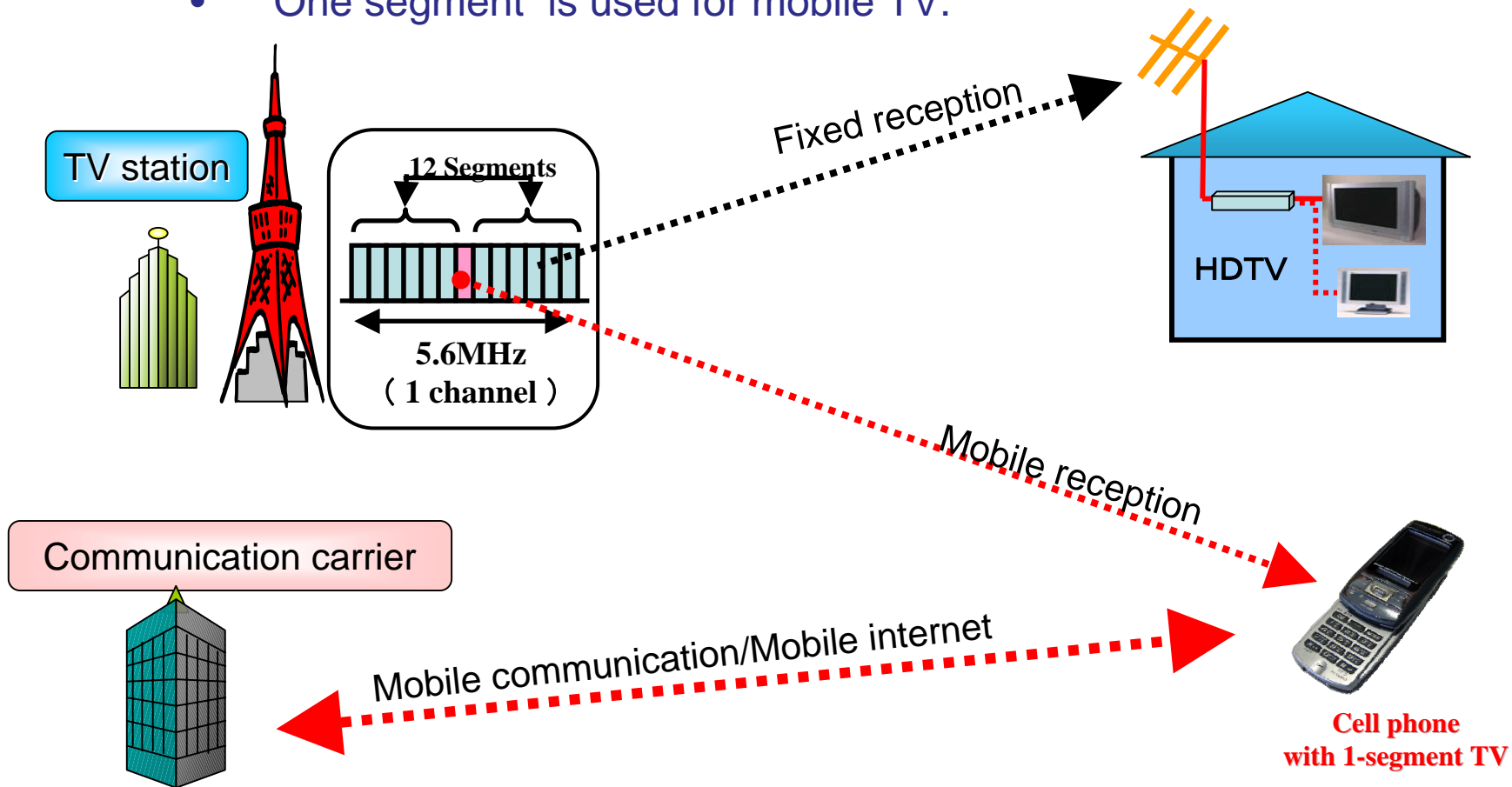


One-segment DTTB



One-segment DTTB

- One channel of DTTB is divided into 13 segments.
- One segment is used for mobile TV.



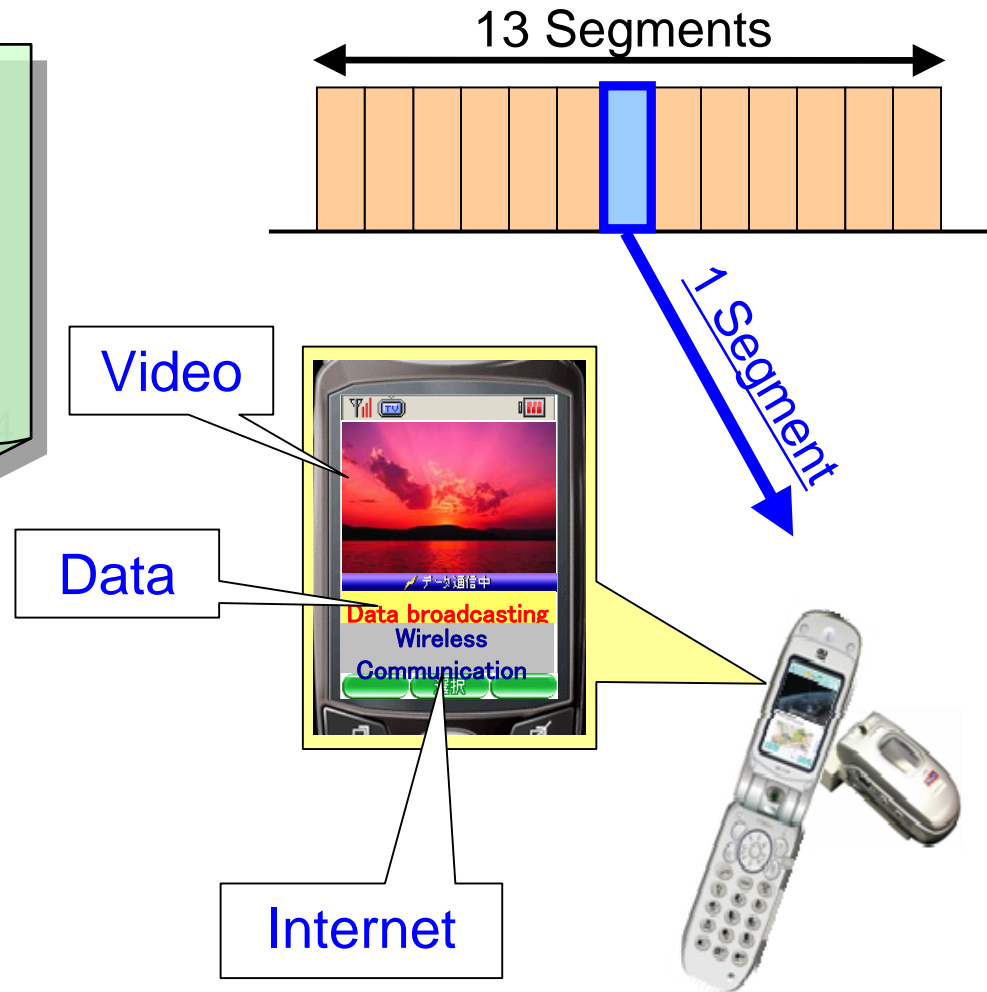
One-segment DTTB

Example:

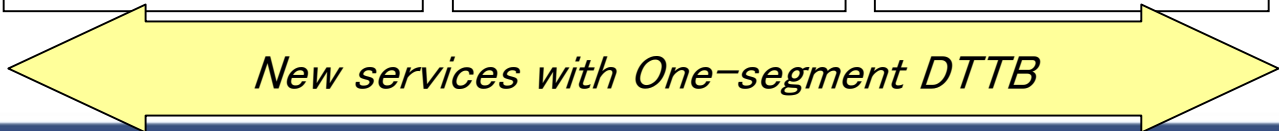
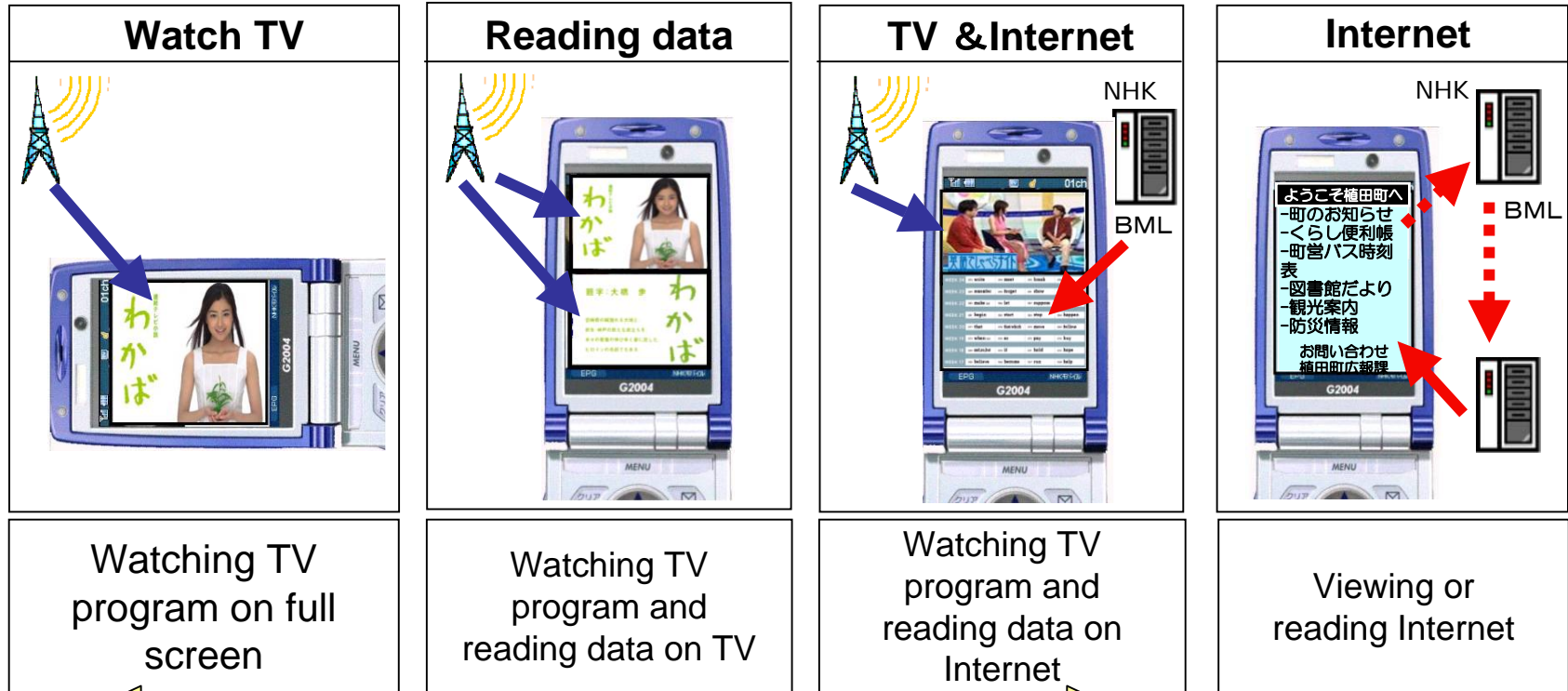
Modulation	QPSK
Code Ratio	1/2
Guard Interval	1/8
Bit Rate	312 Kbps
Video Compression System;	MPEG4 AVC/H.264

An example of bit rate distribution

Video	180kbps
Audio	48kbps
Data	50kbps
PSI/SI	30kbps



Service Model of One-segment DTTB



- NHK, KDDI, Hitachi, Sanyo and Sony demonstrated prototypes of Cellular Phone with a ISDB-T One-Segment Receiver @ CEATEC Japan 2004.



Sanyo



KDDI



Hitachi

- Toshiba announced SD card viewer with one-Segment Receiver last September.



- Sanyo announced one-segment receiver installed in cellular phone.
- Specifications
 - Diversity reception
 - UHF 470~716MHz
 - Multiplexing; MPEG-2 TS
 - Video coding ; H.264/MPEG-4 AVC, Base Line Profile L1.2 15fps
 - Audio coding; MPEG-2 AAC (24.48kHz sampling)
 - Data browser; BML and XHTML
 - Display; QVGA (320x240 or 320x180 2.4inch LCD panel
 - Recordable on flash memory 128MB=30min
 - Camera 200mil pixel
 - Weight; 150g
 - 800mAh lithium ion battery; 120minuites TV reception



- Pilot broadcasting in progress
- Commercial services will be launched in **March 2006**.
- **No additional license** is necessary, if simultaneous broadcasting.

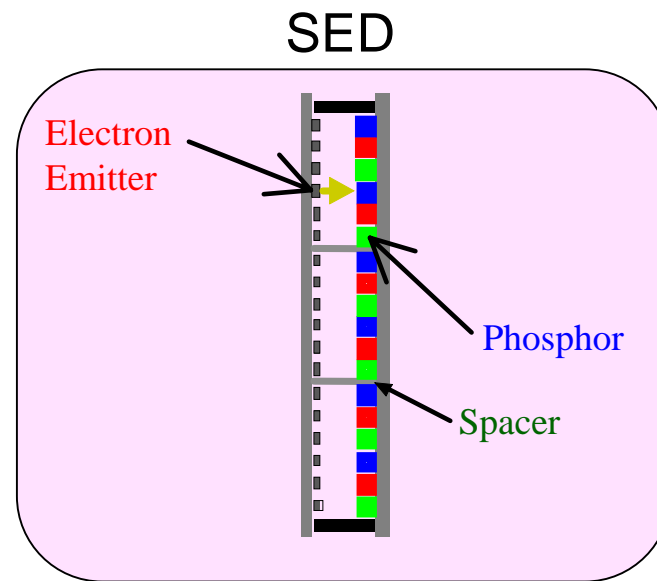
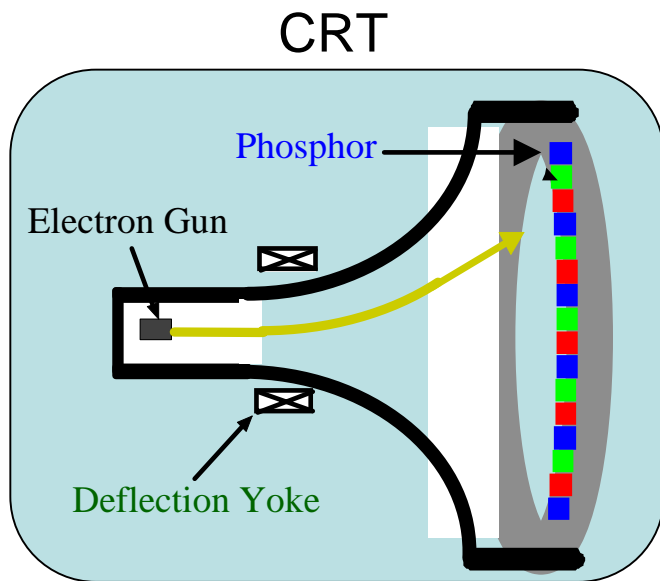


New Products



SED (Surface-conduction Electron-emitter Display)

- **Heritages the Advantages of CRT**
 - High Contrast, Wide Viewing Angle, Clarity of Moving Objects
- **Lower Power Consumption**





SED (Surface-conduction Electron-emitter Display)

- SED is one kind of FED (Field Emission Display)
- Toshiba has been developing a SED, in collaboration with Canon Inc.
- A 36-inch (visual size) prototype SED (1,280 × 768pix) was exhibited at CEATEC JAPAN 2004 in October 2004.
- Based on the same light-emitting principle as the cathode ray tube (CRT), the SED inherits the reputable picture quality of the CRT but with improvements in sharpness and other characteristics.
- SED brings the image quality of the traditional cathode-ray tube (CRT) to flat panel displays.
- Delivering bright, high resolution images offering high contrast, high gradation levels, fast responsiveness and low power consumption.
- Toshiba started to mass-produced 50" SED panel in August.
- Toshiba intends to sell SED DTV receiver by the end of the first half of next year.

Characteristics Comparison between CRT-TV and Flat Panel Display-TV

Toshiba's evaluation:

	CRT	LCD	PDP	OLED	SED
Luminance (peak white)	◎	○	○	○	◎
Luminance (full white)	○	◎	△	△	○
Contrast ratio (dark ambience)	◎	△	○	○	◎
Contrast ratio (bright ambience)	○	◎	△	○	○
Resolution	△	◎	◎	○→◎	◎
Number of Gradation	◎	△	○	△	◎
Reproducibility of Color	○	△	△	△	○
Quality of Motion Picture	◎	△	○	○	◎
Viewing Angle	○	△	○	○	○
Power Consumption	△	○	△	◎	◎
Burn-In	○	○	△	○	○
Lifetime	○	○	○	△	○

◎ Very good ○ Acceptable △ Not so good

In-vehicle DTV tuner

- Panasonic began the sales of DTV tuner which is loaded into the car navigation system, from June 10th,2005.



DTV tuner



Diversity Antenna
(sold separately)



11" Wide TV-set
(sold separately)

- The following car navigation systems have special interface for the DTV tuner.



Mitsubishi



Alpine



Fujitsu Ten

Mobile Reception in Toyama City

KNB is demonstrating HDTV reception on a tram



From June to Dec



Photos of the test

Receiver



In-tram antenna





Summing-up

- Households coverage of DTTB are growing ahead of schedule
- Sales of DTTB sets reached over five millions and will increase rapidly around 2006 in Japan.
- The collaborative effort among government, broadcasters and consumer electronics industry is necessary to stop the analog TV broadcasting in July 2011.
- Commercial services of one-segment DTTB will be launched in the end of March 2006.
- New generation flat panel display, SED, coming soon.



Obrigado!



<http://www.dibeg.org/>