DiBEG
Digital Broadcasting Experts Group

Services

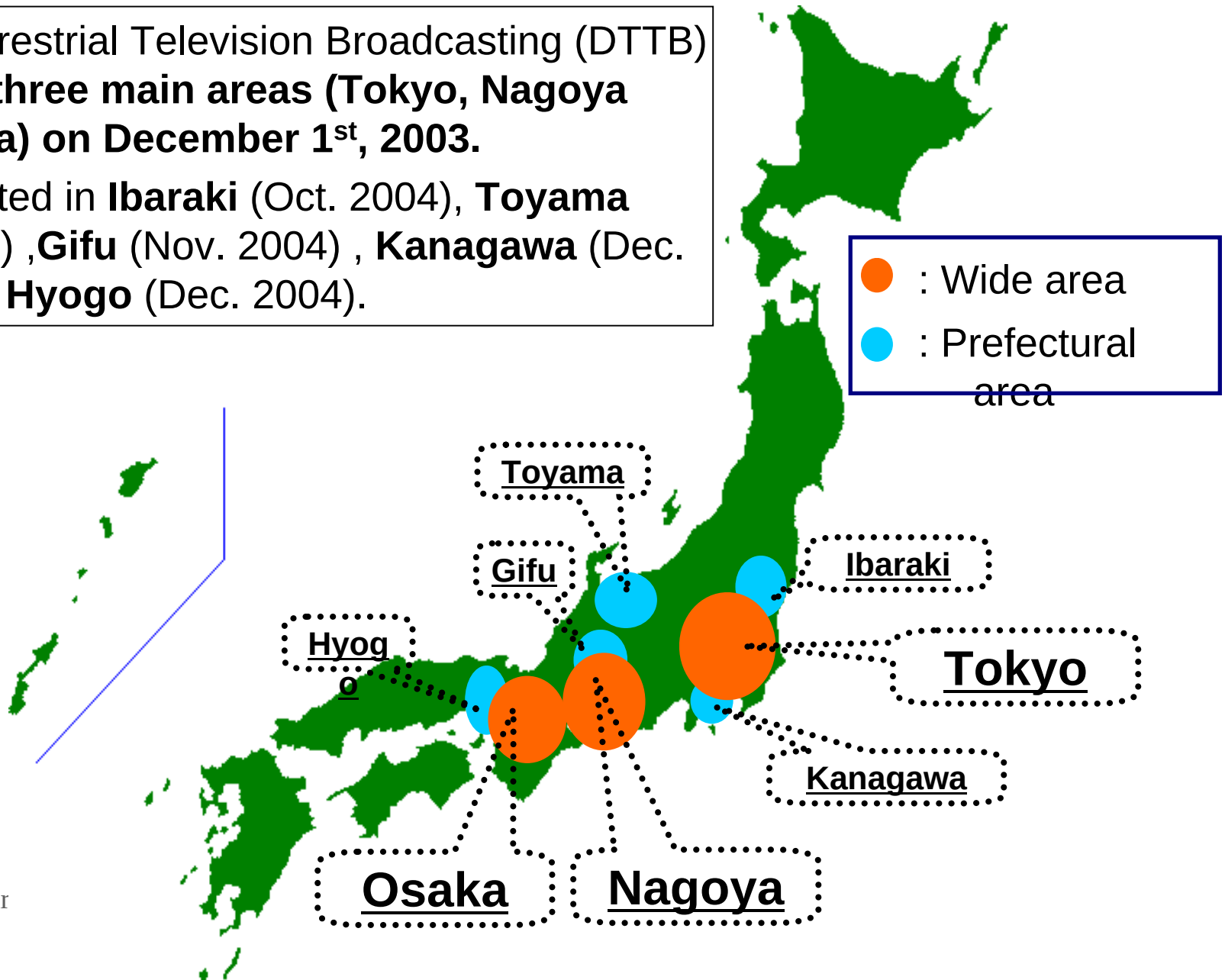
Sony corporation
Home Electronics Network Company
DTV Platform Engineering Department
Yoshiharu Dewa

Mar. 28/29 2005

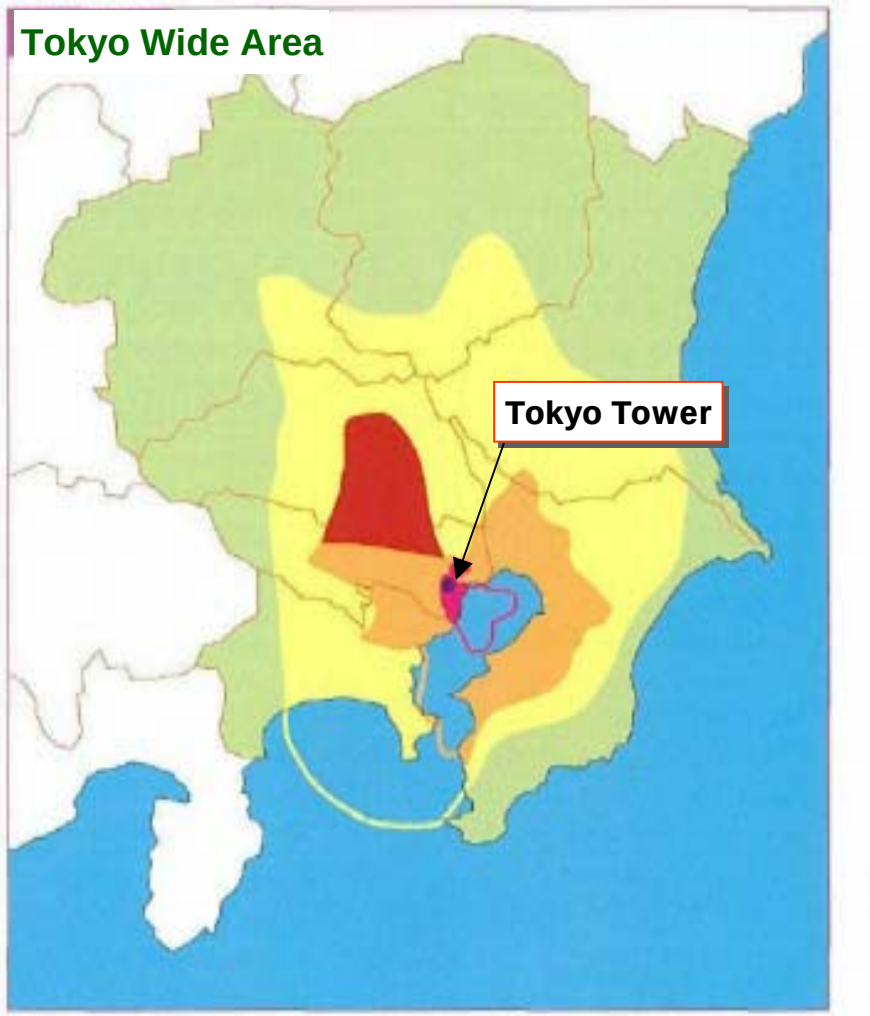
Service area of DTTB in Japan

Digital Terrestrial Television Broadcasting (DTTB) started in **three main areas (Tokyo, Nagoya and Osaka) on December 1st, 2003.**

DTTB started in **Ibaraki** (Oct. 2004), **Toyama** (Oct. 2004) ,**Gifu** (Nov. 2004) , **Kanagawa** (Dec. 2004) and **Hyogo** (Dec. 2004).



Approach to the DTTB in Tokyo Wide Area



Dec. 1st, 2003

NHK General

NHK Educational
Private Network(6)

Sept. 22nd, 2004

NHK General

NHK Educational
Private Network(6)

In 2005 (maximum output)

All Broadcasters

Population Coverage of DTTB in Japan

Approximately over 18 million households

(38% of total household in Japan)

Expansion of population coverage (households)

2005 27 million (57%)

2006 available at all prefectures (80%)

Number of potential households via CATV networks

10 million households in total (Sep.2004)

HDTV as thruster of digital TV

● High- Definition programs

Pure HDTV: produced by HDTV 1080i format

- **NHK provides pure HDTV more than 90% of all programs in the three metropolitan Area.**

  Prime time : more than 90%

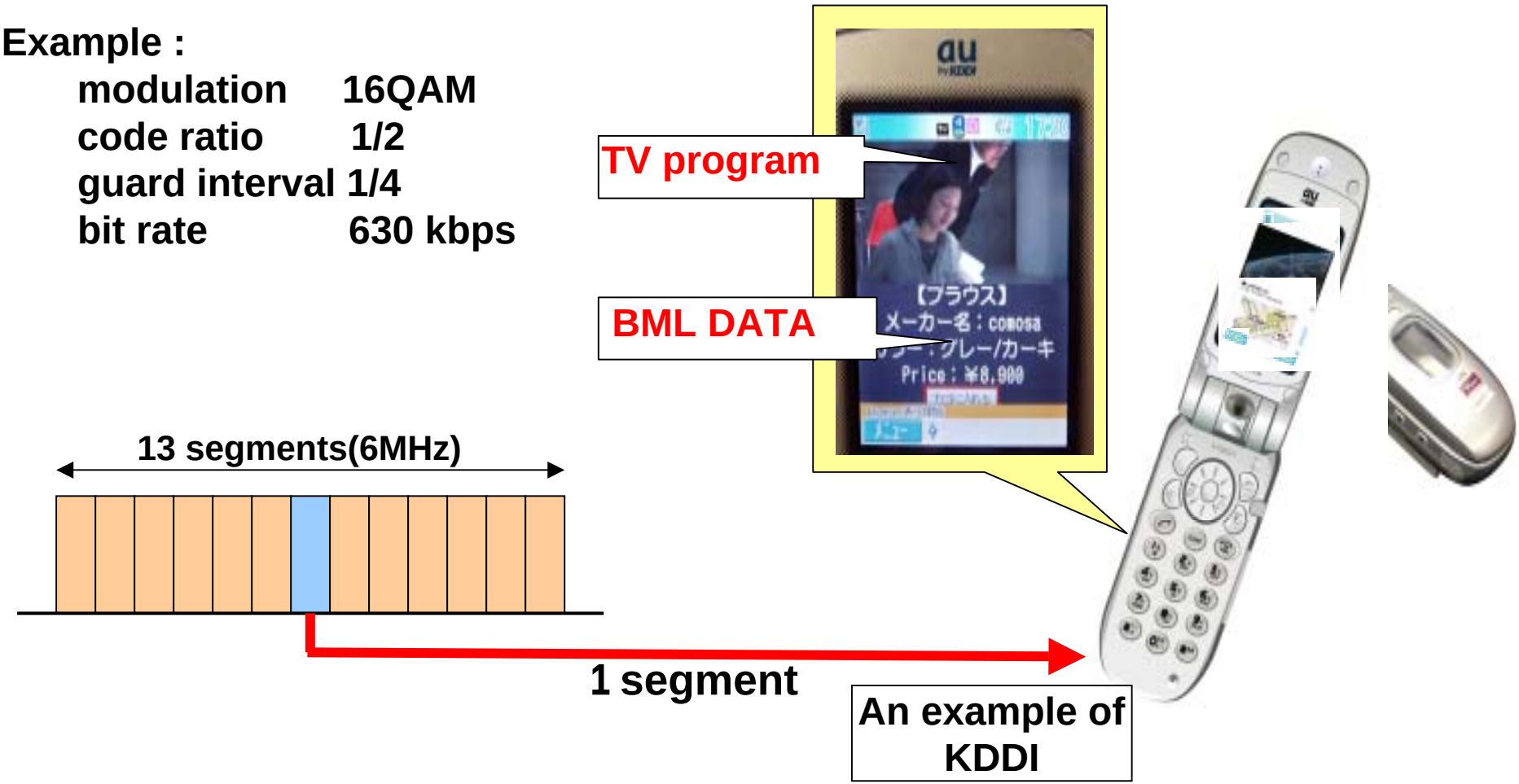
- **Commercial Network stations provide pure HDTV about 50% of all programs in Tokyo Area.**

  Prime time : more than 60%

Broadcasting to Portable Terminals

Example :

modulation	16QAM
code ratio	1/2
guard interval	1/4
bit rate	630 kbps



Prototype of Mobile Phone receiver (May, 2004)

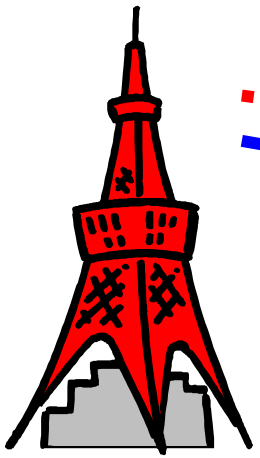
Implementation Schedule toward portable reception of DTTB

- Video compression system: MPEG4 AVC/H.264
- Patent agreed in March 2004
- Prototype receivers already developed by manufactures
- Service will start in early 2006
- TV viewing on Cellular phone while commuting

HDTV mobile reception (1)

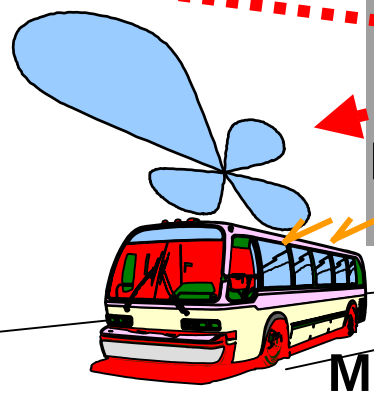
Broadcasting station

HDTV mobile reception for bigger screen in buses and trains



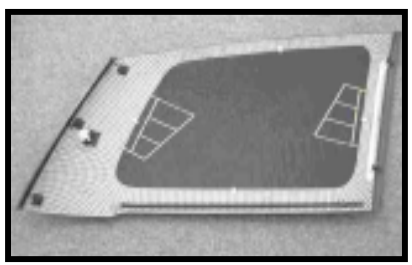
Direct Wave

Reflection Wave

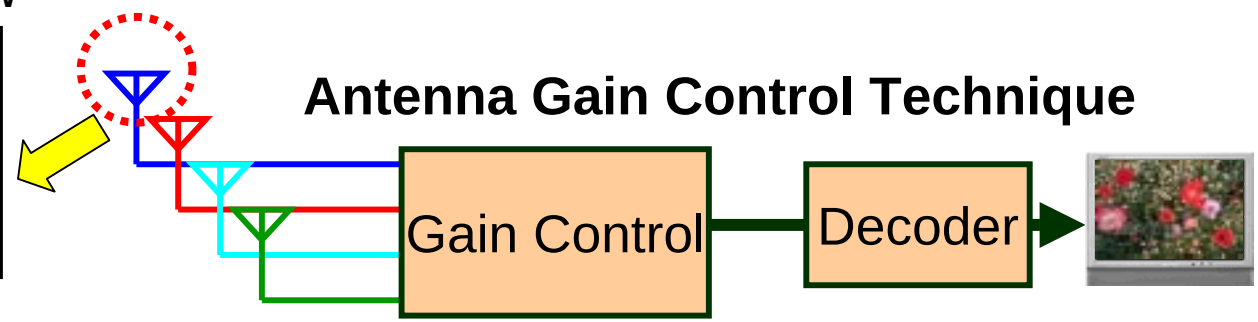


Mobile Receiver

Adaptive Array Antenna on the vehicle's window



Antenna Gain Control Technique



HDTV mobile reception (2)

HDTV Broadcasting

Data Broadcasting

Data Broadcasting

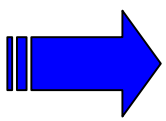
All DTTB Broadcasters and BS Broadcasters providing Data broadcasting (datacast) now

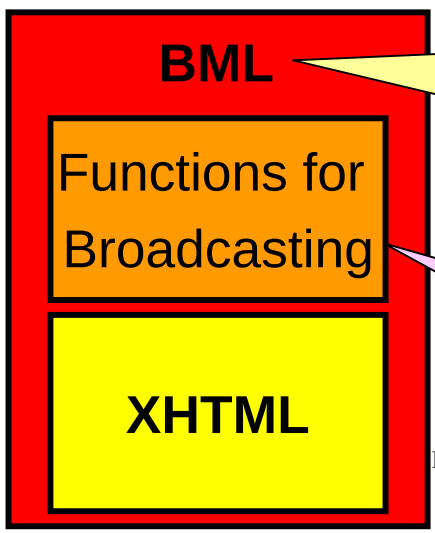
Program related information	Anytime news
Weather information	Report of sports game etc,

Currently the description language is BML format

Based on

XHTML





Features

Easy creation of contents

Facilitate convergence of internet

Additional capability

Example for Data Broadcasting (1)

Top menu

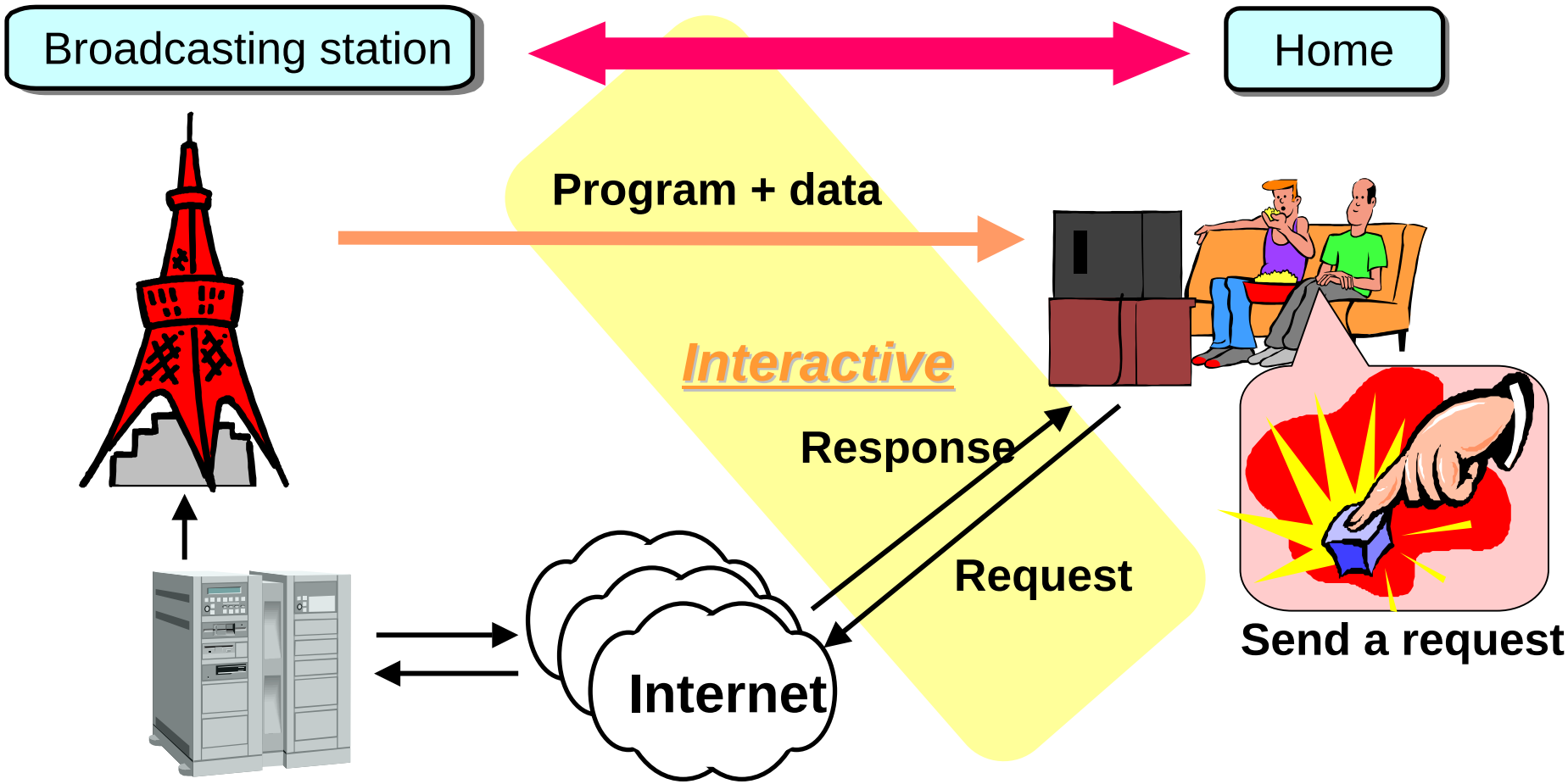
Example for Data Broadcasting (2)

Weather news

Example for Data Broadcasting (3)

Program related data

Interactive Broadcasting



Join the Quiz show by voting
Purchase on TV shopping

Interactive data service

NHK Data Online service available from April 2004

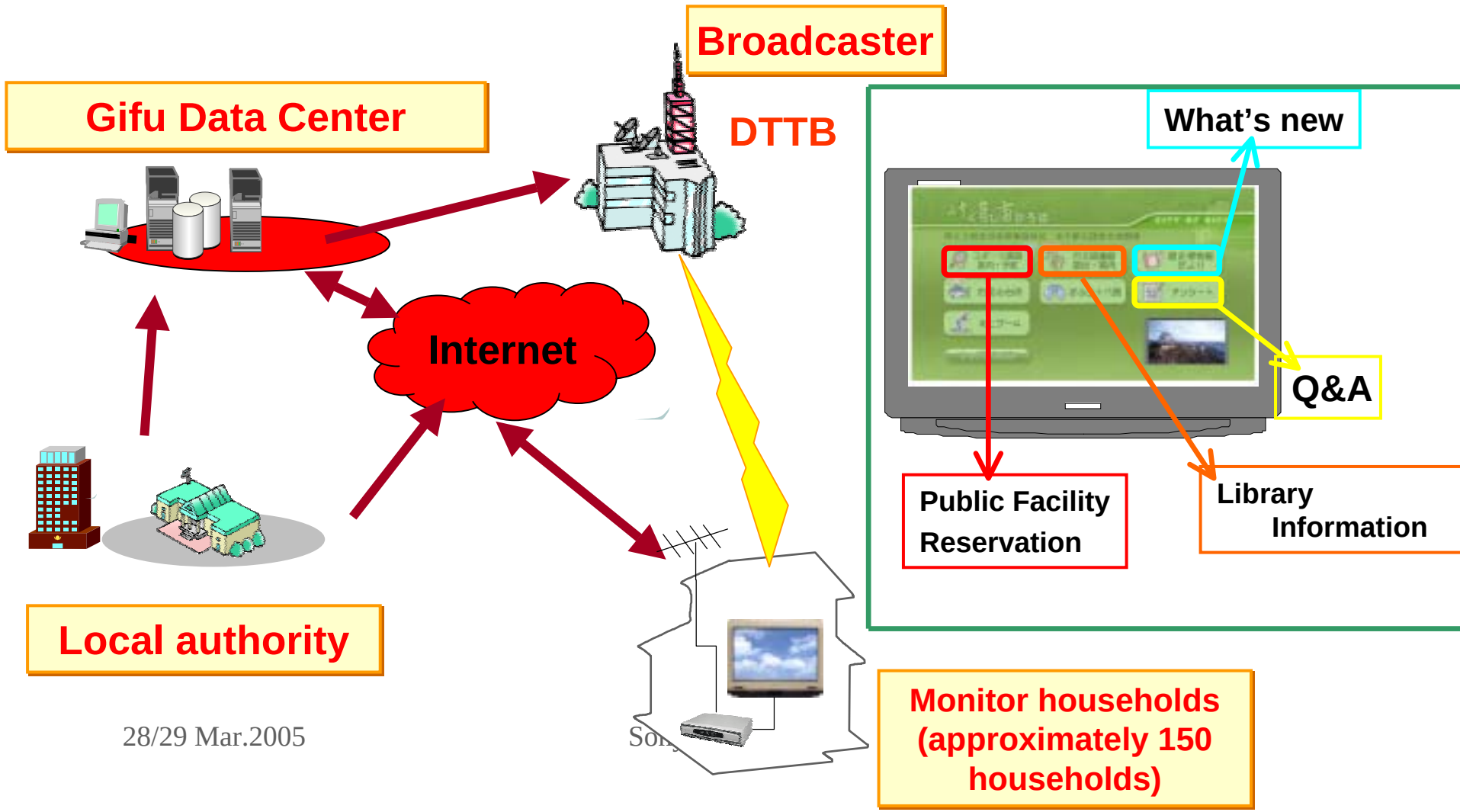
Top menu of Data broadcasting

NHK Data Online image

Access to NHK Data server

E - government service trial using DTTB

Local governmental information service using datacast of DTTB (Gifu prefecture in 2004)



Home doctor by Digital Broadcasting

<Home doctor>

・Programs received by broadcasting wave

・Personal information received by Internet

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Server type broadcasting

Mar. 28/29 2005

Increasing Stream / Storage

TV signal Recording time to HDD device

HDD Capacity / Screen Size	100GB	200GB	500GB	1TB
Low-SDTV (2Mbps)	111H (4.6day)	222 H	444 H	888 H (5.3week)
Mid-SDTV (4Mbps)	55 H	111 H	222 H	444 H (2.6week)
High-SDTV (8Mbps)	27 H	55 H	111 H	222 H (1.3week)
HDTV (22Mbps)	10H	20 H	40H	80 H (3.3day)

Overview of server type broadcast

- Server type broadcasting: On demand viewing, recording background process
- Possibility of PPV (Pay Per View)
- Availability of File type content, It impact on possibility of Internet Streaming Broadcasting

110 degree Digital broadcasting planed this service as ep broadcasting

ep station

- Receiving BS Digital and 110 CS Digital broadcasting
- 60GB HDD, Auto save ep-original broadcasting, Recording TV program and Time-Shift
- Using communication line, the services are available as follows

  -E-Mail

  -HTML browsing

  -Remote mentenance

Standardization for server type broadacasting

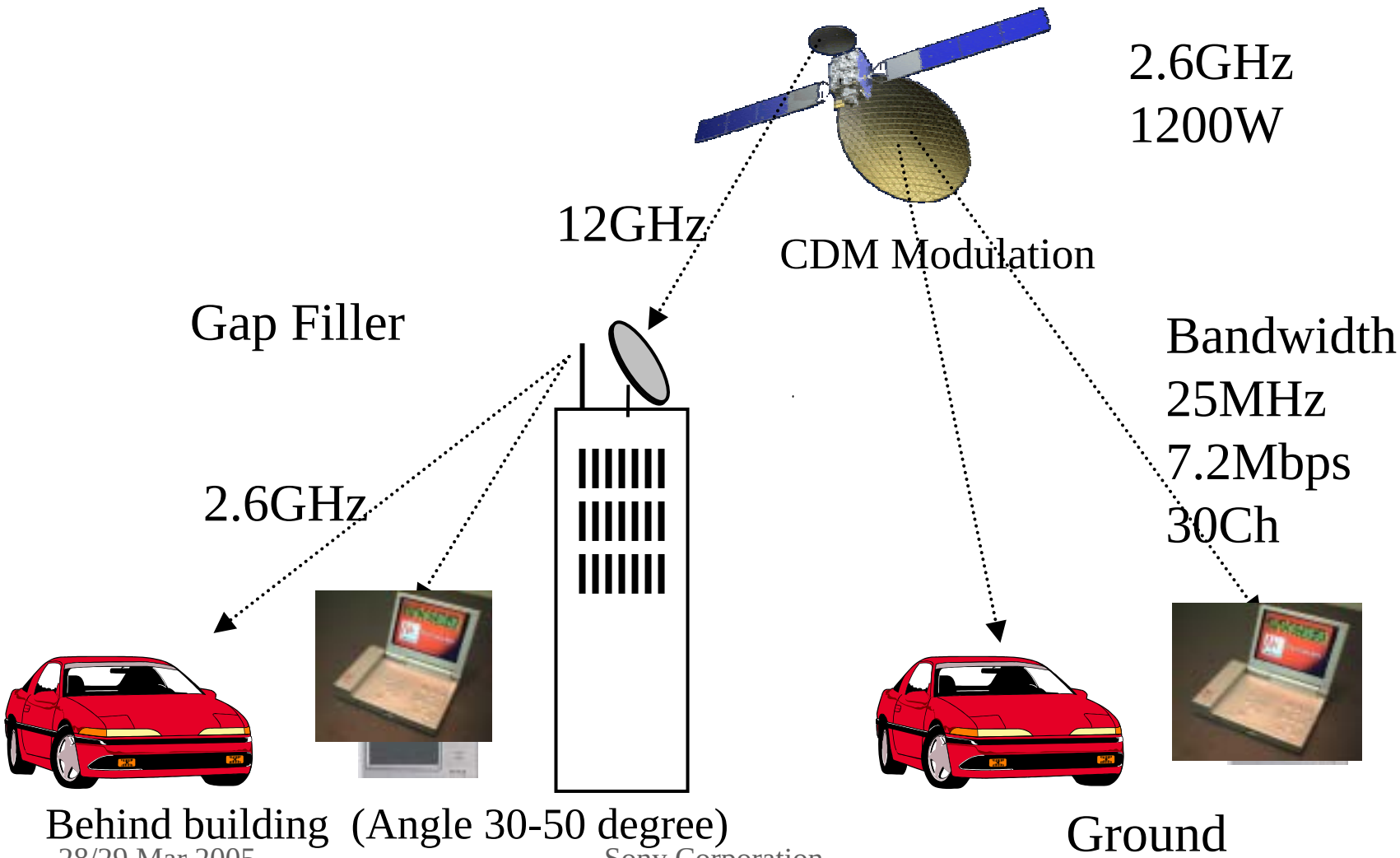
- Goverment
  - In September 2002, recommend guidelines for Copyright and Server type broadcasting concept issue
- ARIB
  - As a result of government verdict, ARIB standard was revised in datacasting, fee system, RMPI
- Server-P
  - Discuss about Operation Rule among broadcasters and manufacturers

Mobile Satellite Broadcasting (MSB)

- Satellite Digital Broadcasting for Mobile using S-Band (2.6Ghz)
  - Bandwidth 25MHz, Output 1.2 KW
- CDM Modularization method

  (Total 7.2Mbps, 30Ch, 240Kbps/Ch)
- Video 370Kbps(MPEG4/H.264) + Audio 48Kbps (AAC) (Using 2Ch 480Kbps) per 1 TV Program
- Using gap filler for behind the building (Angle is 30-50 degree)
- Start broadcasting from July 2004

MSB service image



Thank you for listening!