

# Presentation 3

## Current Situation and Prospect of Digital Terrestrial Broadcasting in Japan

Feb. 12, 2003 TVRI seminar in Jakarta

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(Toshiba)

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- Future Deployment
- Reference: Scenario for digitalization of Broadcasting

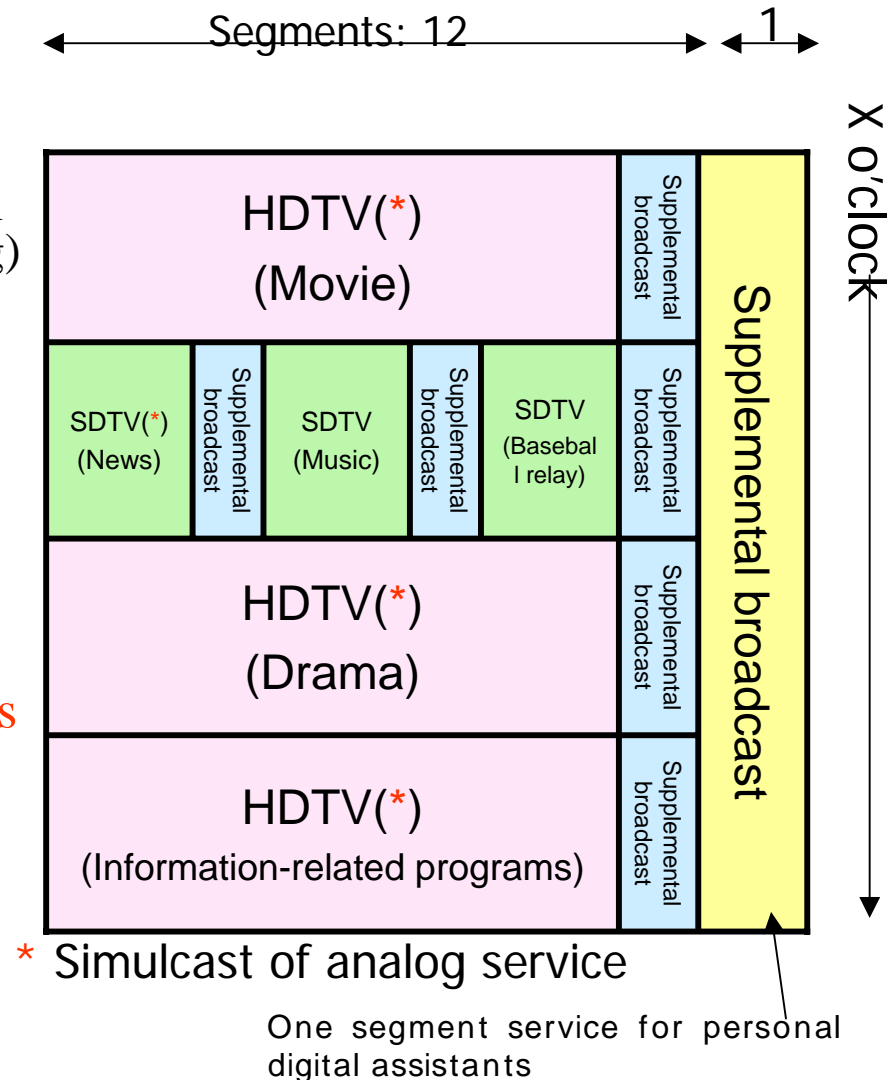
# Outline of Digital Broadcasting Service

- High quality TV(no ghost, no noise)
- 1 channel HDTV service
- Multi-channel SDTV
- High quality Sound/Multi-lingual service
- Data Broadcasting
- EPG: Check program guide easily
- Mobile reception - now on development stage
- Portable reception service - in near future

# Digital Terrestrial Broadcasting Licensing Policy

- Form of Broadcasting
  - HDTV/SDTV +supplemental broadcasts (data broadcasting)
- HDTV programming ratio
  - 50% or higher (in one week)
- Simulcast ratio
  - Over 2/3 of programming is shared with analog broadcasting.

An example of a broadcast form is shown on right.



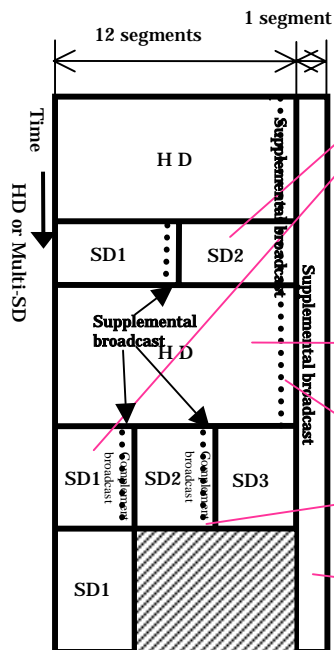
# Examples of Business model of terrestrial digital broadcasting

The License policy and service image for DTTV in Japan

The basic function of DTTB

Basic service

Service model(example)



High-quality TV

Multi- SD TV  
Semi- HD by 480p

High-quality and multi-functional sound broadcasting

HD broadcasting

Data broadcasting

Mobile broadcasting

- clear picture without ghost and/or noise

- Simultaneous broadcast (standard quality ) of max. 3 channels

-semi- HD broadcast max. 2 channels

- The clear sound has same quality as CD

- 5.1 CH surround

-High definition TV on large screen by 1080i and 720p system

- The supplemental information service by text and picture

- By-directional service with Inter-net

- 1 segment simulcast TV and/or supplemental service which transmission system is robust against fading and multi-path of mobile reception

- By-directional service with mobile-phone network

**Conventional TV broadcast**

- Clear picture quality even though SD and high-quality sound for CM and TV program
- Home-theater with wide screen/high quality picture and sound
- Multi-lingual and/or stereo
- Movie and sports event with 5.1 surround audio

**Digital cinema business**

- The digital cinema production by 24P and/or 30P
- Contents production for multi-use( movie, TV and DVD, broad-band, etc.)
- e-cinema theater business

**Data-broadcasting business**

(a supplemental broadcasting, CM-linkage data service, Program-linkage data service)

-Mobile broadcasting business (mobile-phone, portable terminal)

**The world of cellular phone**

- 70 million users in Japan-
- anytime, anywhere-
- I-mode, FOMA
- Co-operate with Internet

**The world of the Internet**

- Bi-directional/multi-functional service
- Broad-band (ADSL, fiber to the home)

**- Internet broad-band business**

**- Mobile phone information service business**

# Example of Menu Screen(BS Digital)

HDTV main  
channel

Weather

TV newspaper  
headlines

Favorite  
channels

Programs in  
"home server"

Audio  
services

Program  
table

E-mail



# Multimedia EPG

## (Electronic Program Guide)

### NHKおすすめ番組

#### 今日のおもな番組

##### 生きもの地球紀行

「ヒメコウイカ不思議な繁殖作戦」  
駿河湾に突き出した小さな岬、大瀬崎の岬には、季節に応じて700種以上を数える多種多様な海の生きものが姿を見せる。今日の撮影では、これまで撮られてきたヒメコウイカの繁殖行動など、不思議に満ちた生態の秘話を記録することになった。番組では、伊豆半島・大瀬崎の四季の移り変わりのなかに、ヒメコウイカの仲間たちの営みを見つめる。



後 8:00~8:45 総合

##### ポップジャム

今回は、3年ぶりに番組に登場する榊山耕治が、自身で作詞・作曲した楽曲「HEART」を歌うほか、原田知世が初登場。また、エンディング・テーマ「WONDERING」がソロ活動第一弾となる黒沢朋一など話題のアーティストたちが競って登場する。

【出演】  
榊山耕治、SOPHIA、原田知世、黒沢朋一、hitomi、SHAZNA



後 11:00~11:40 総合

##### 青春探検

「女の一生 サッカーに賭けます」  
地味ながらも確実に人気を伸ばしているのが「女子サッカー」。番組では、高校から選抜の選手たちが引退し、才能ある選手が合流する女子サッカー界で、サッカーとともに人生を歩むことを決断し、選手生命を少しでも伸ばそうと最速の練習を重ねるベテラン選手の熱い思いと女子選手ならではの悩みを扱う。



後11:45~前0:05 総合

##### コメディー決定版!

『Television』  
初めてテレビを買ったW.ビー。が、仲々見られず奮然と天竺な解決策を見いだす。

『The Park, Identity Parade』  
新しい「オモチャ」ボラロイド・カメラを手に入れたW.ビー。公園で「キツネ」に聞かれ疲れてしまふ。無論W.ビーは彼を返さない。



深夜0:30~0:55 総合

今日

1週間

特集 サッカーW杯

映画

ドラマ

スポーツ

ドキュメンタリー

音楽

アニメ

EPGに戻る

戻る

# Program Related Information

**放送中**  
スーパー

**絹さやともやしの煮込みそば**

**材料 (4人前) 258kcal**

中華めん	2玉
絹さや	20枚
もやし	1袋
ねぎ	15cm
しょうが	1かけ
チャーシュー	50g
生しいたけ	2枚
露がらスープ	カップ2
オイスターソース	大さじ1

**きょうの料理**  
周兄弟の春の中国おかず

情報終わり

**レシピ & 材料**

- ① いかと菜の花の炒め物
- ② アスパラのひき肉ソースかけ
- ③ 豆腐のベーコン風味蒸し
- ④ 絹さやともやしの煮込みそば

**出演者 紹介**

- 周 富徳先生
- 周 富輝先生

**テレビ**

# Anytime News

**NNN いつでもニュース**

**ヘッドライン**

- パキスタン 再度の核実験か
- 社民党 閣外協力解消を決定**
- 嘉手納 復帰後初の降下訓練
- 元組長 教師銃撃を認める
- 親和銀 無価値の担保で融資
- インドに熱波 約500人死亡
- 厚生省 職員が禁煙に挑戦
- 日本最高齢 エベレスト登頂

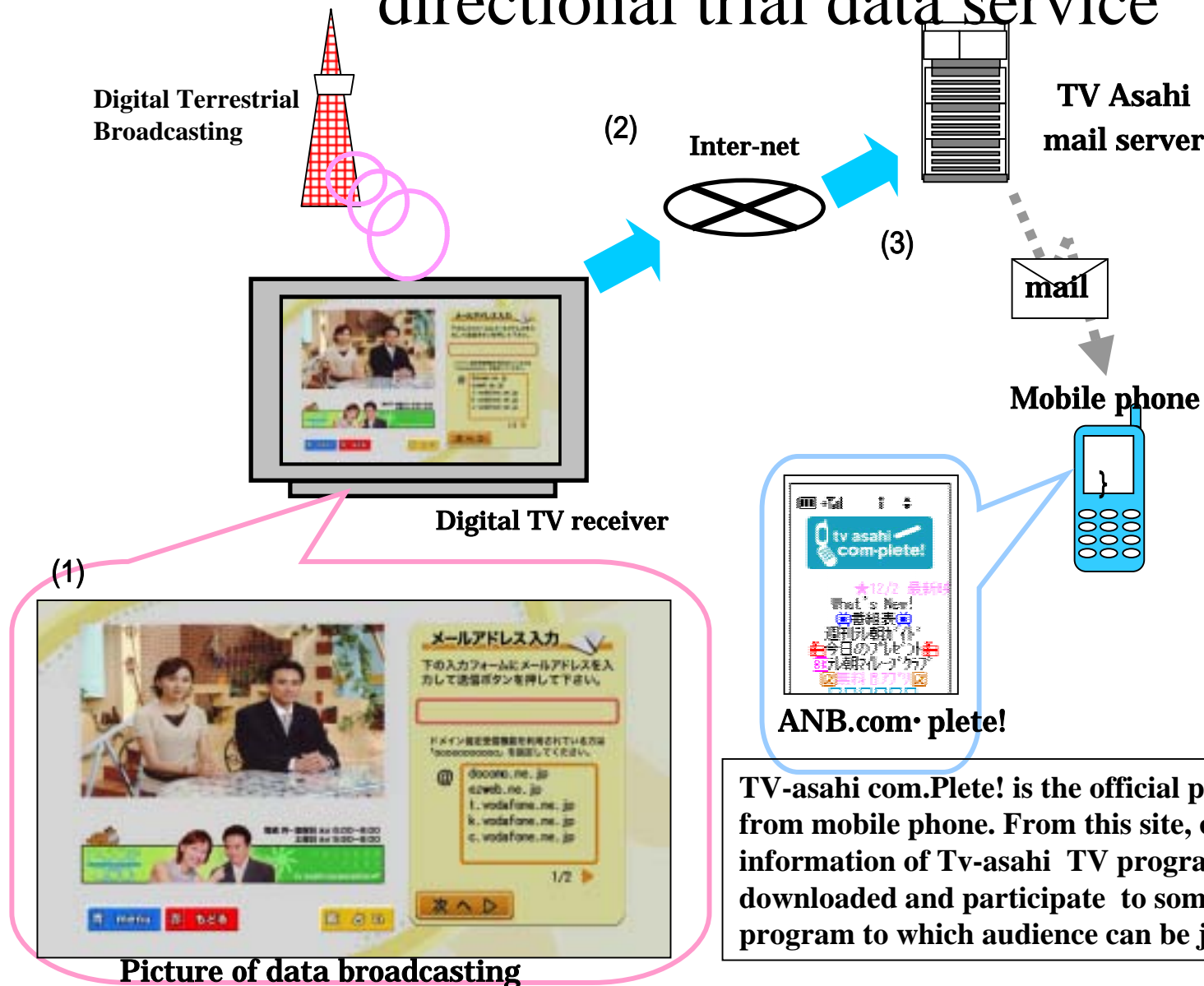
12時50分放送

**再生**

社民党は、30日両院議員総会を開き「橋本内閣への閣外協力の中で様々な成果を挙げてきたが、自民党は三党合意に反する様々な動きをしており、閣外協力を解消せざるを得ないと判断した」とする党声明を了承し、橋本内閣への閣外協力を解消することを正式に決めた。

土井党首は、30日夕方開く全国代表者会議でこの決定を報告後、記者会見することになっている。

# Service image of TV-asahi bi-directional trial data service



TV-asahi com.Plete! is the official portal site access from mobile phone. From this site, contents/information of Tv-asahi TV program can be downloaded and participate to some variety program to which audience can be joined

Dec. 2003 Launch the Digital  
Terrestrial Broadcasting in 3 area

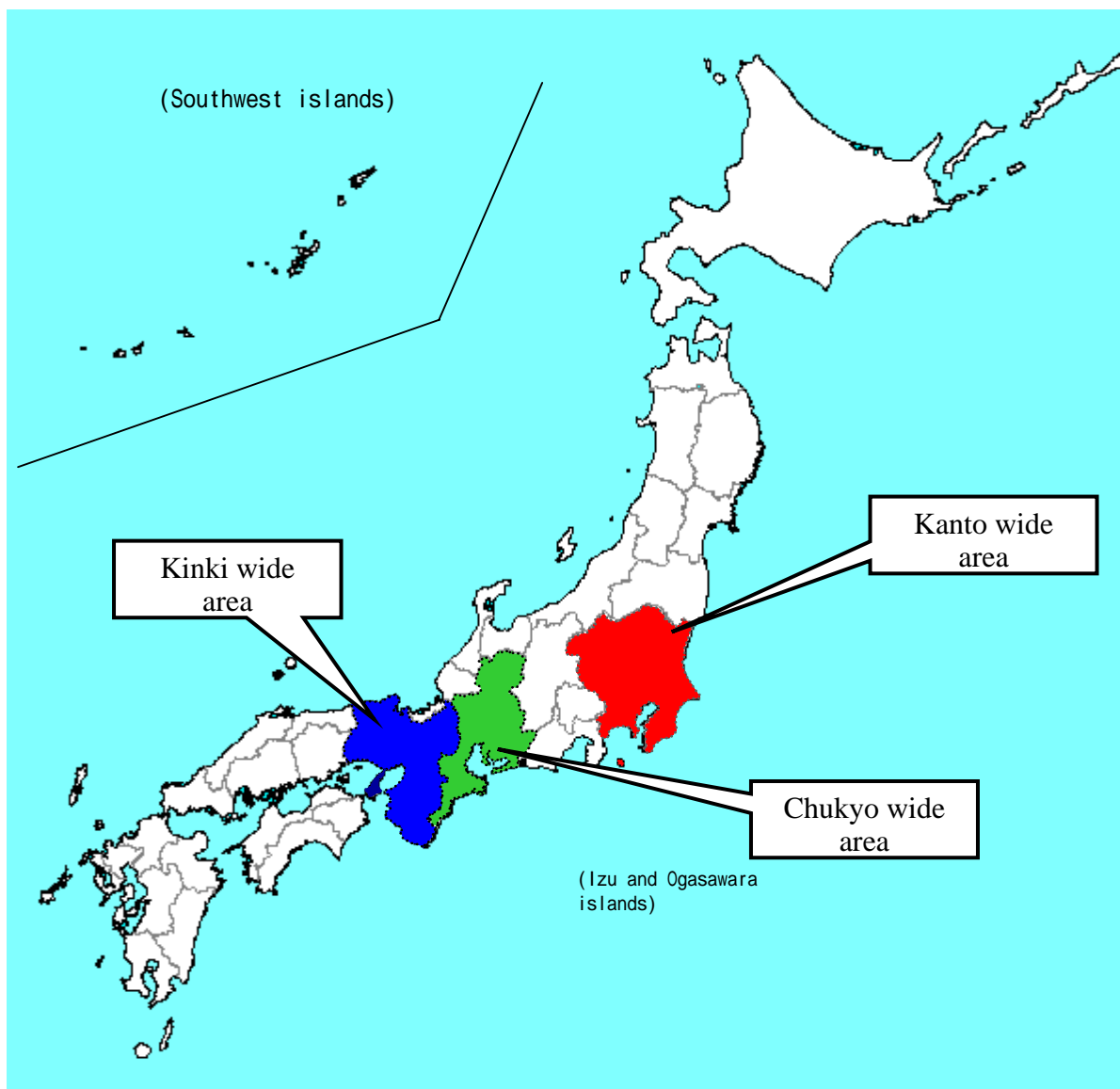
# Step by Step Enlargement of Cover Area

Digital Terrestrial Broadcasting has start in 3 area  
(Tokyo(Kanto), Nagoya(Tyukyo), Osaka(Kansai) on  
Dec. 1, 2003

At early stage, transmitter power is suppressed to avoid  
interference to analog TV channel, but step by step  
increase the transmitter power and finally reach to full  
power operation.

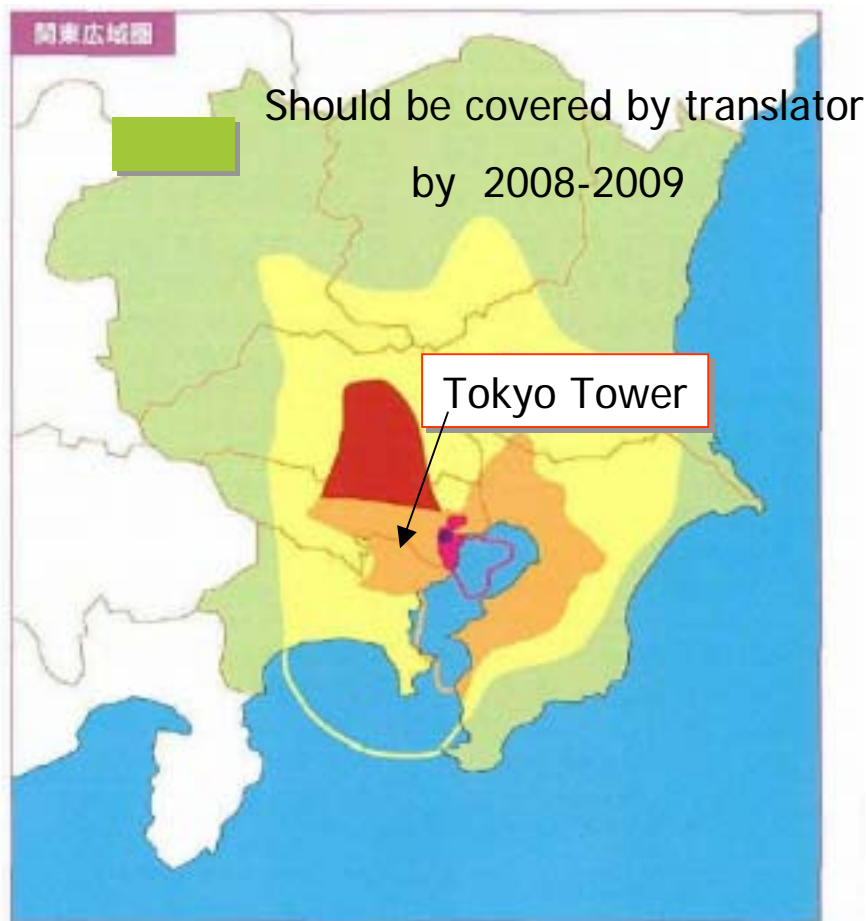
In other area, Digital terrestrial broadcasting will start  
during 2004-2006.

## The area which will start terrestrial digital television broadcast in December, 2003



# Stage by Stage Enlargement of DTTB Service Area(1/3)

## Kanto wide Area



**Dec.1st,2003**

- NHK General
- NHK Educational
- Private Network ( 6 )

**End of 2004**

- NHK General
- NHK Educational
- Private Network ( 6 )

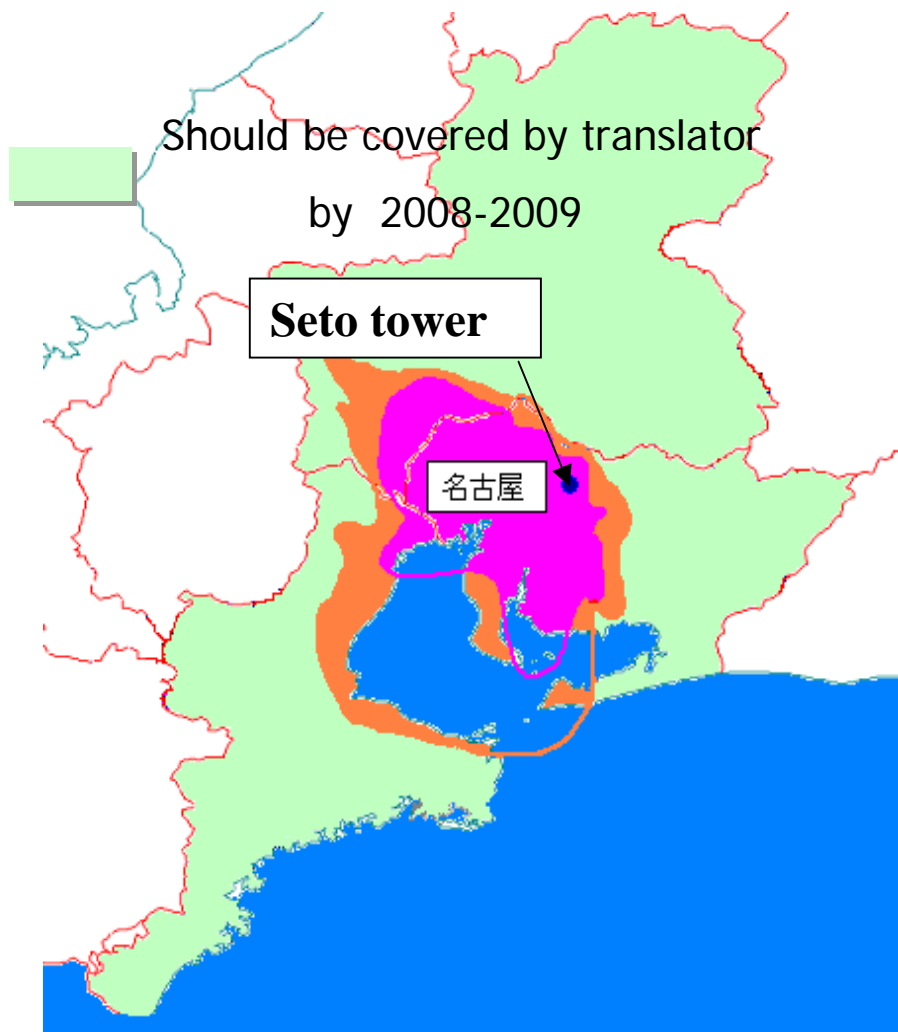
**End of 2005**

**(maximum output)**

- All Broadcasters

# Stage by Stage Enlargement of DTTB Service Area(2/3)

Chukyo wide Area



**Dec.1st,2003**

NHK and  
Private Network

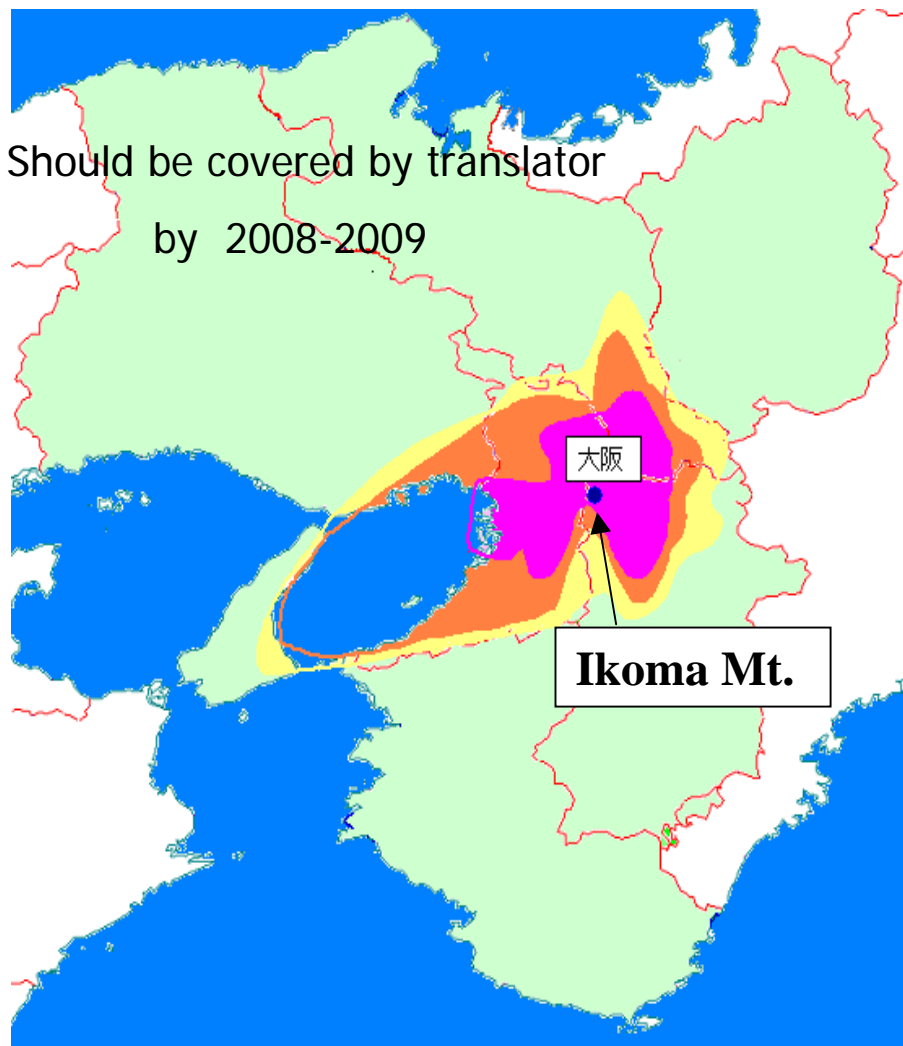
**End of 2005**

(maximum output)

NHK and  
Private Network

# Stage by Stage Enlargement of DTTB Service Area(3/3)

Kinki wide Area



**Dec.1st,2003**

NHK and  
Private Network

**End of 2004**

NHK and  
Private Network

**End of 2005  
(maximum output)**

NHK and  
Private Network

# Examples of Broadcaster's equipment

**Master system:** During analog simulcast period, Master system should treat both analog TV program and Digital TV program simultaneously. -Show the outline of TV Tokyo master system as an example

**Transmitter :** Digital Transmitter should be separately prepared. - Show the block-diagram and out-of-view of Tokyo tower transmitter as an example

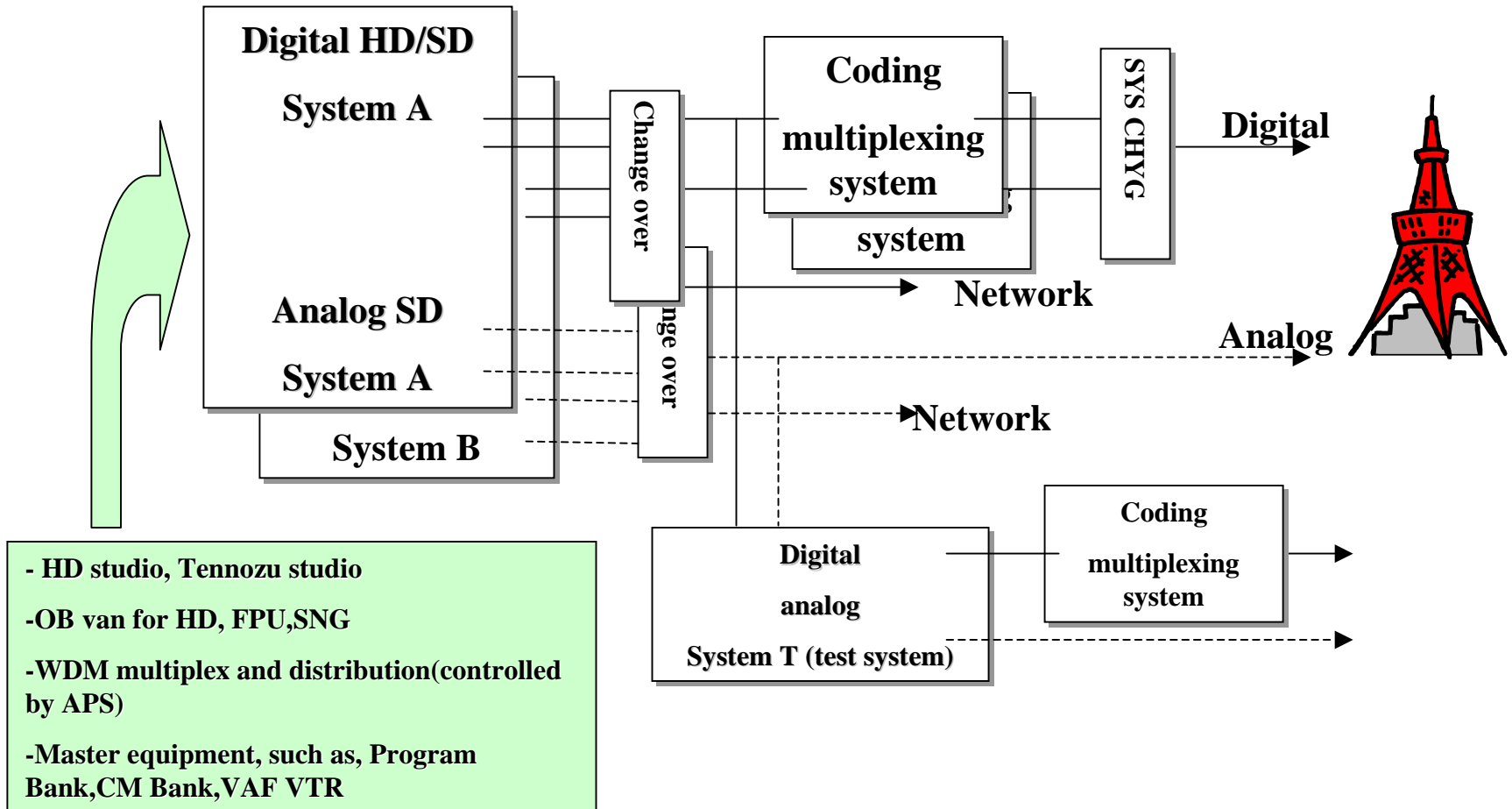
**Antenna:** 3 area starting at Dec. 2003, analog TV channels are mainly located in VHF Band, therefore, antenna for Digital Broadcasting should be prepared separately. -Show the out-of-view of Tokyo tower as an example

# Equipment design concept(TV Tokyo)

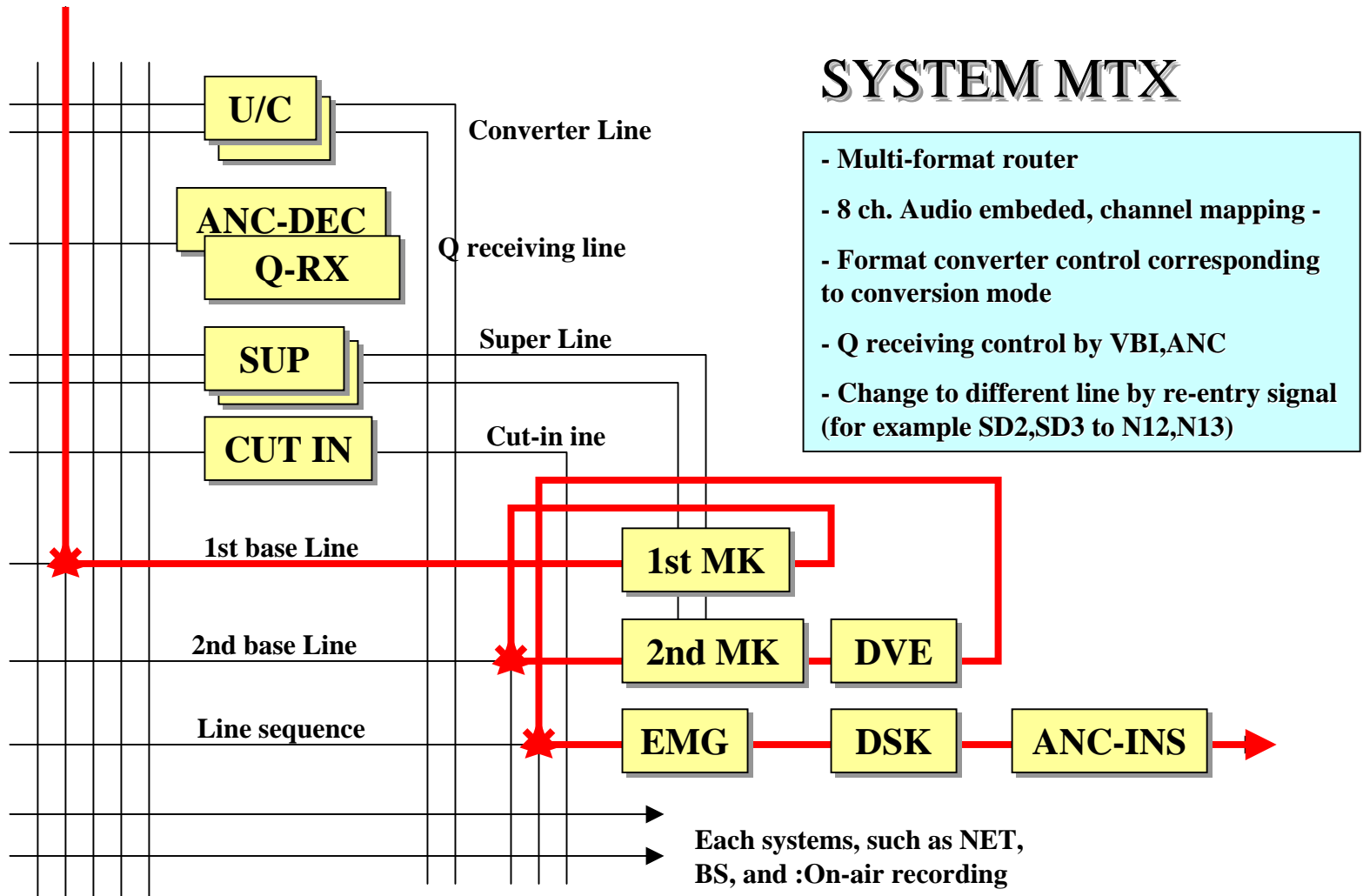
- Total system correspondent to both terrestrial digital and analog broadcasting service
- Correspondent to variety of service and flexible program
- Correspondent to variety of many kind of program
- Network operation with group broadcasters
- High cost performance



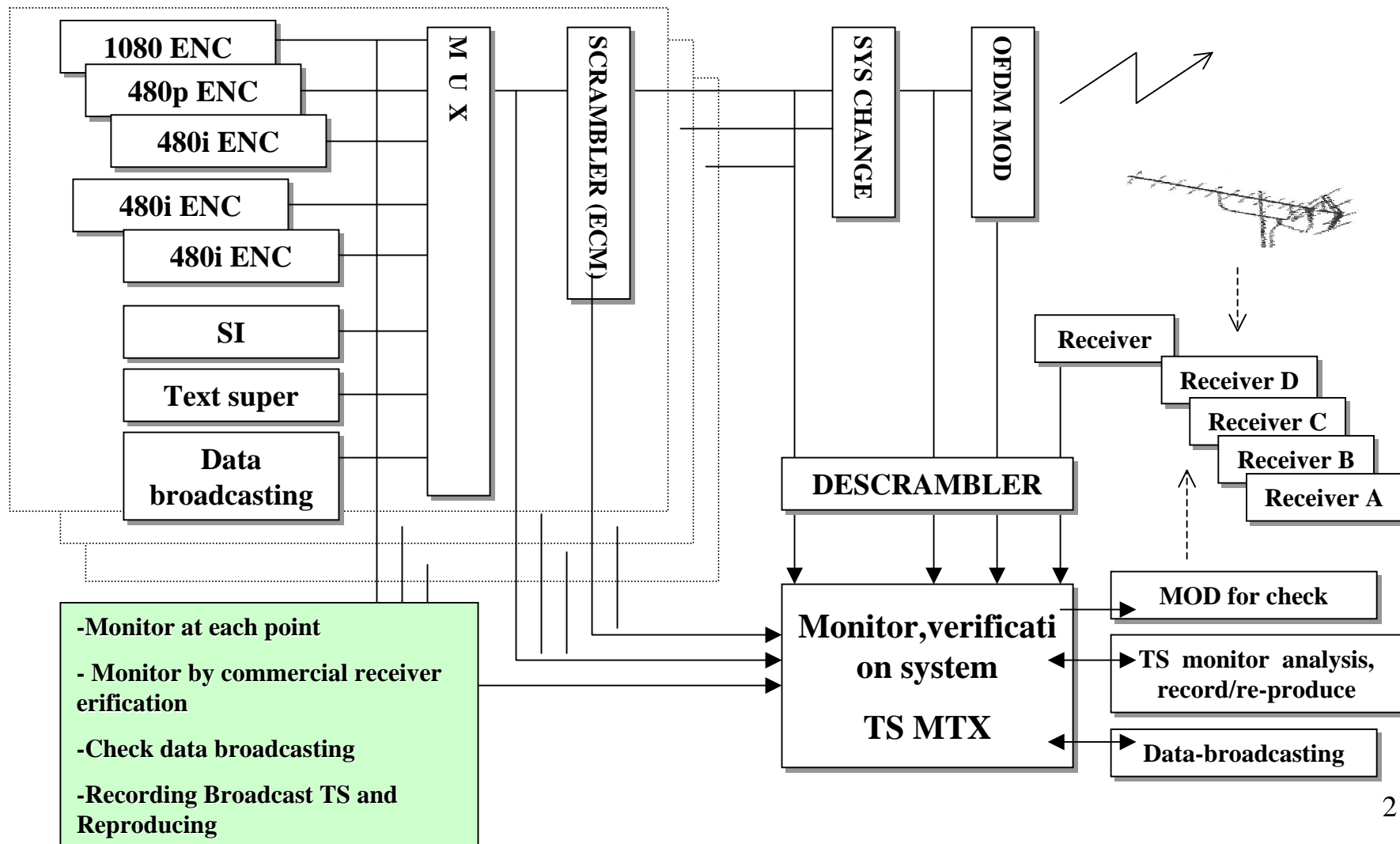
# Concept master system(TV Tokyo)



# Master baseband system construct (TV Tokyo)

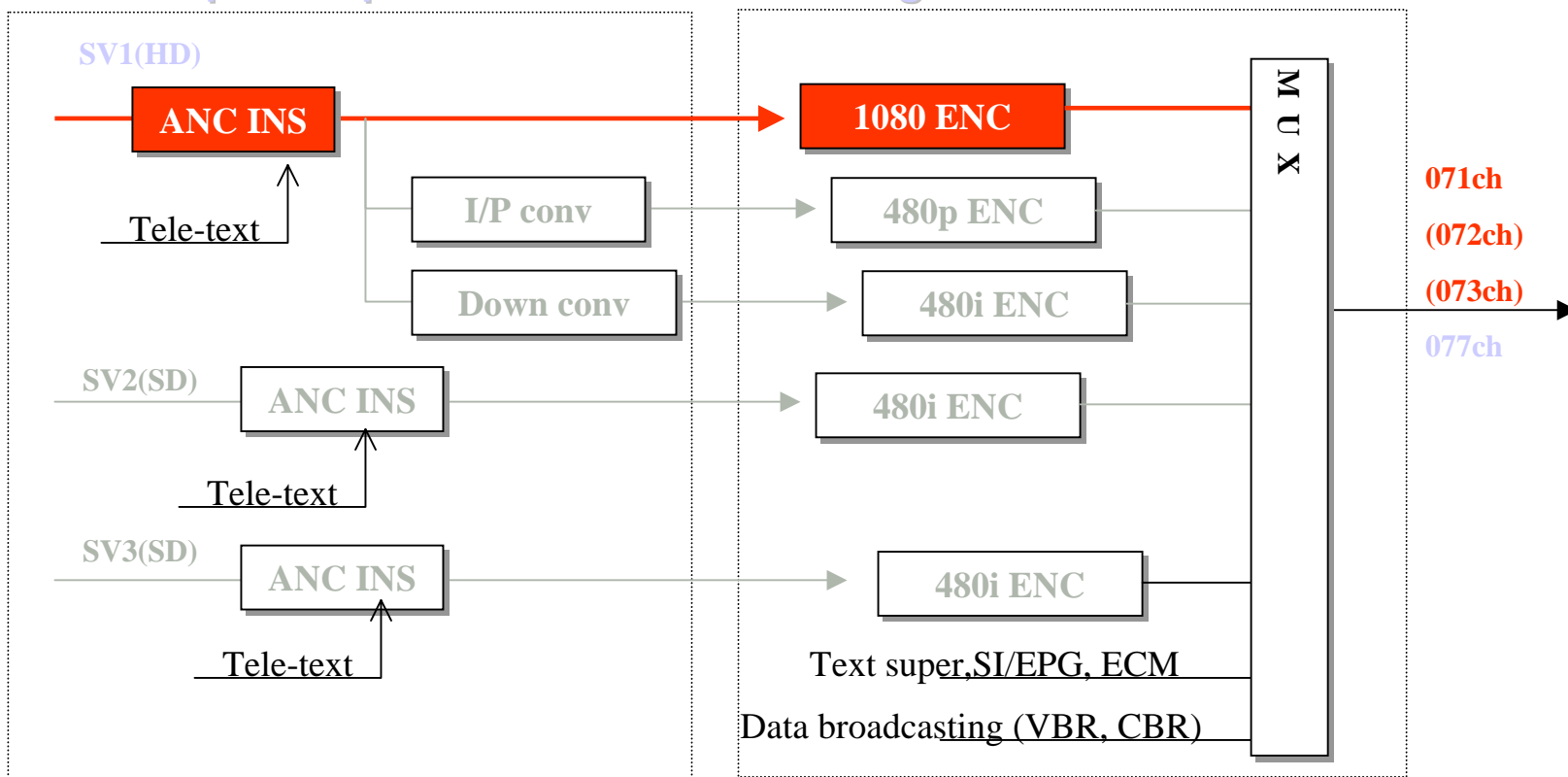


# The example of coding and multiplexing service form(TV Tokyo)



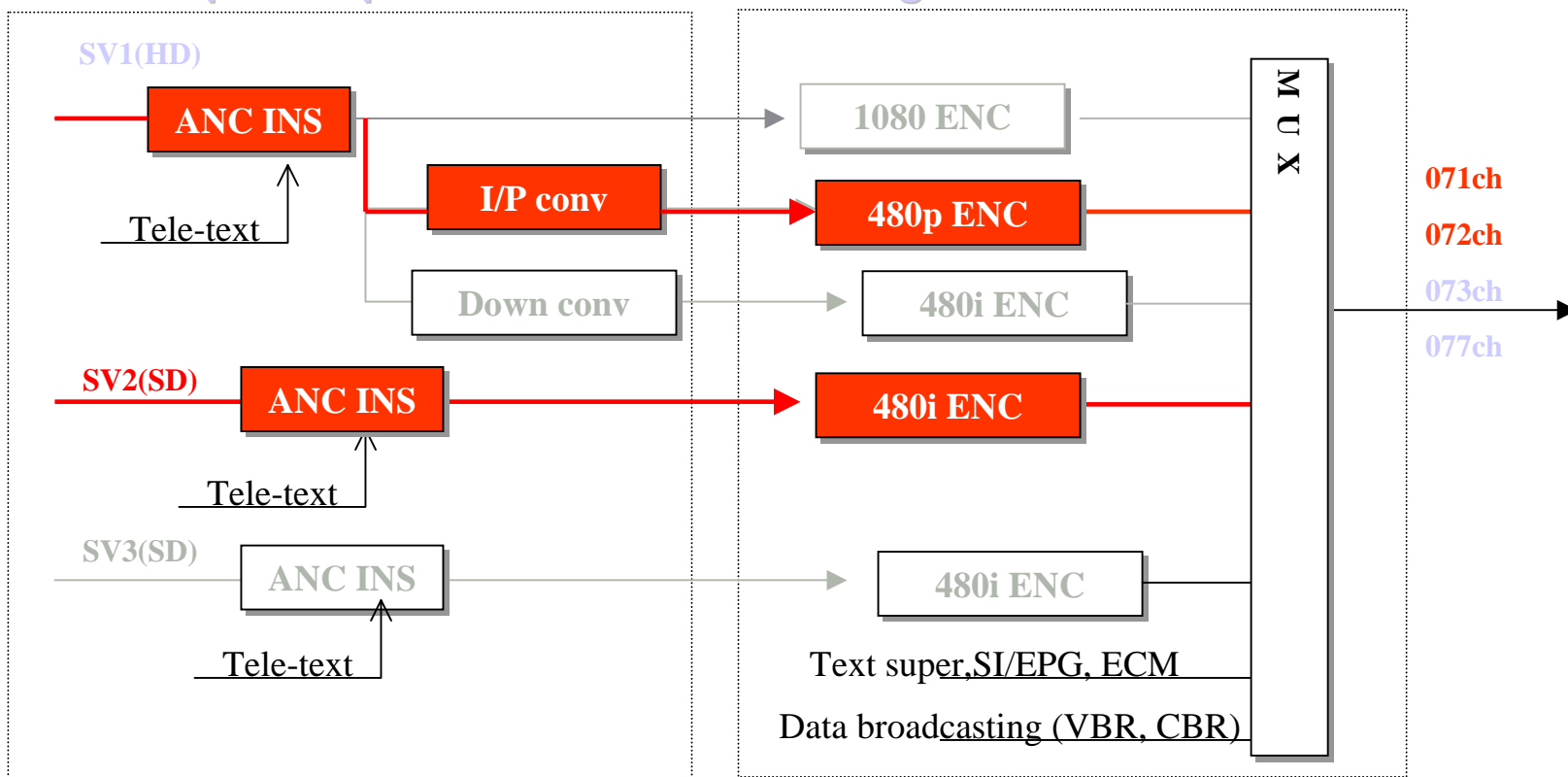
# The example of service configuration(ex. 1)

**HD, SD multi-CH, Multi-view, Extraordinary service** Data broadcasting, Tele-text, Character super-impose, Portable receiving service



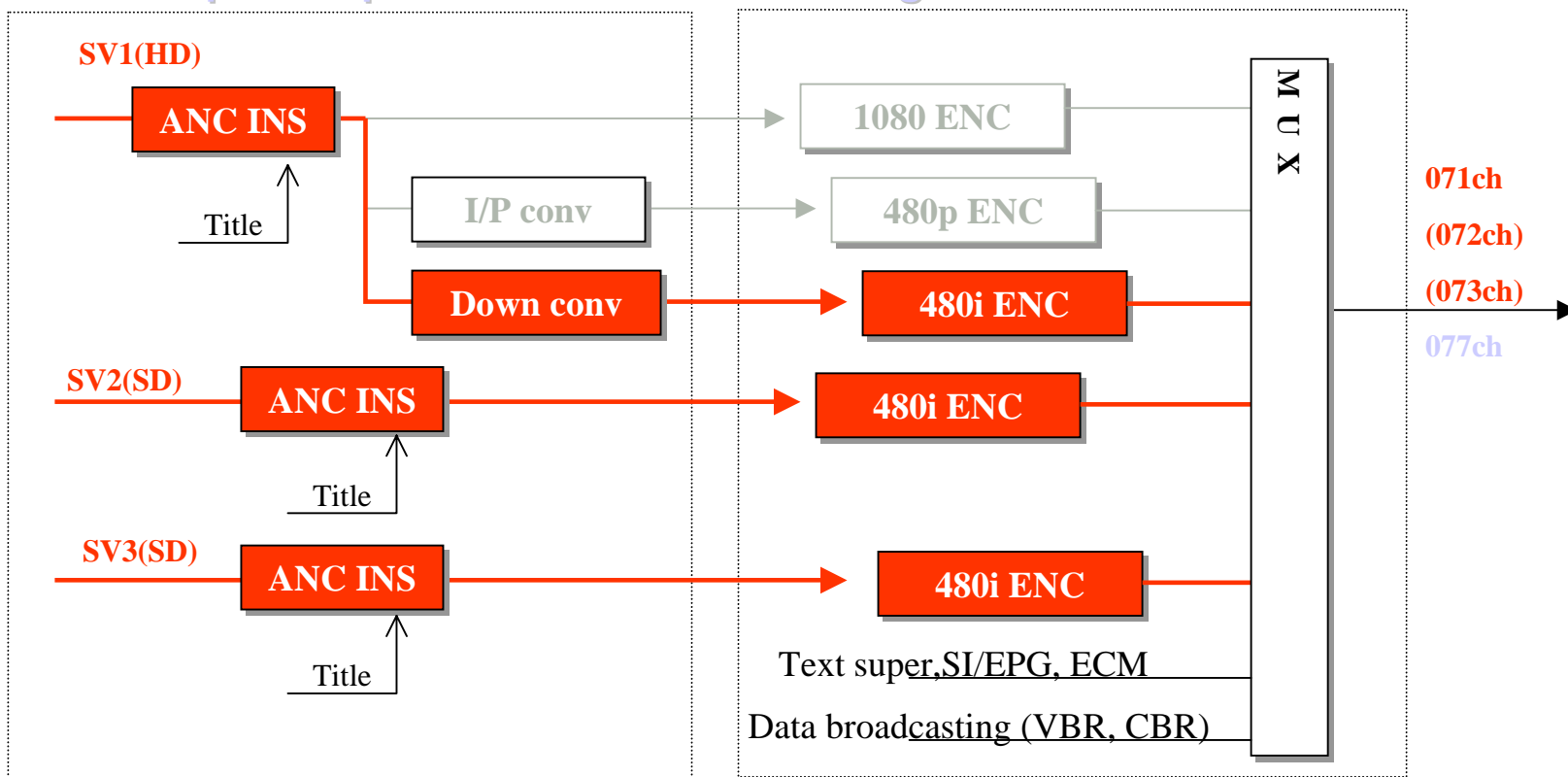
# The example of service configuration(ex. 2)

HD, SD 2-CH, Multi-view, Extraordinary service Data broadcasting, Tele-text, Character super-impose, Portable receiving service

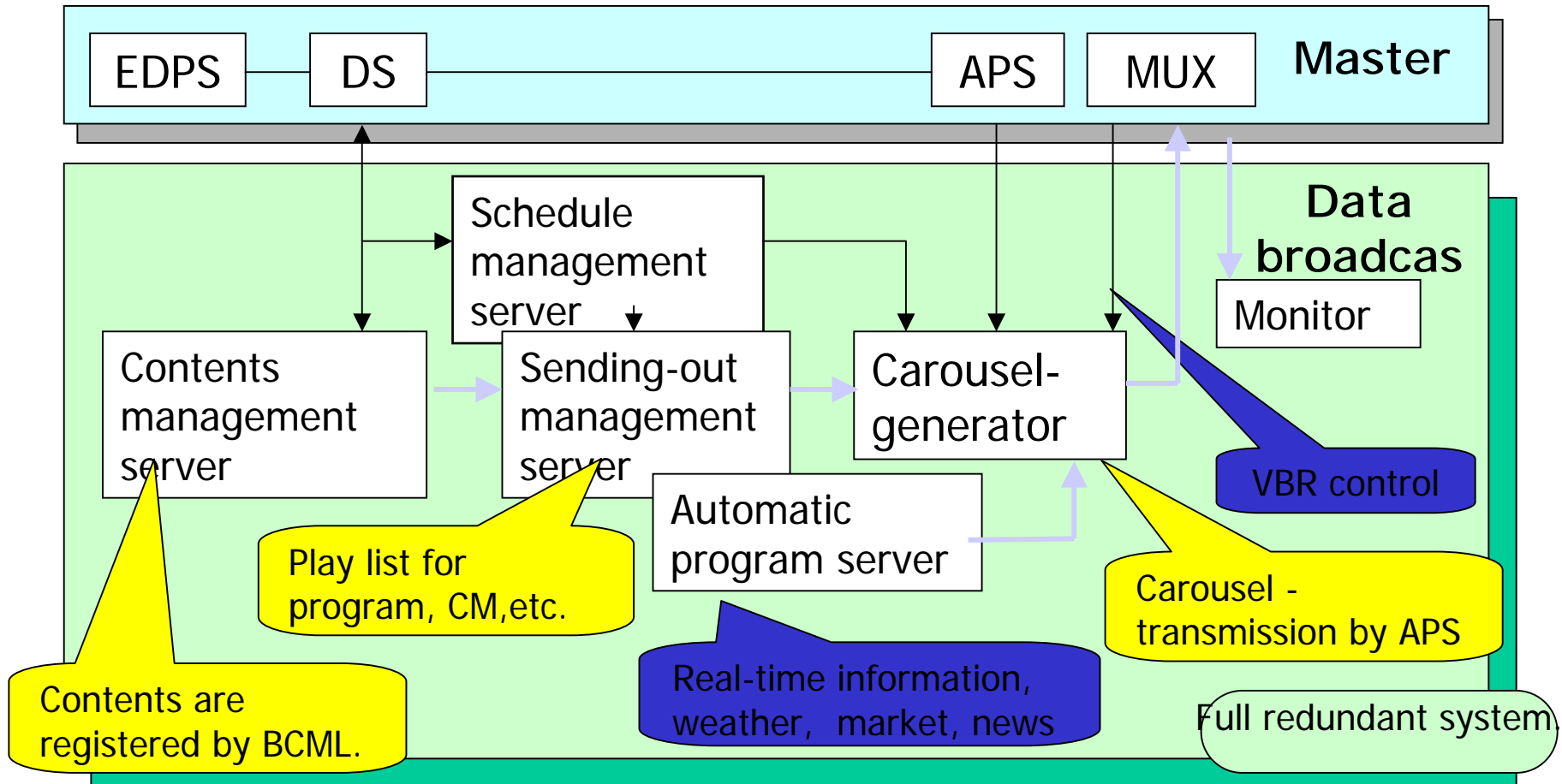


# The example of service configuration

HD, SD multi-CH, **Multi-view**, Extraordinary service Data broadcasting, Tele-text, Character super-impose, Portable receiving service



# Concept of Data-broadcasting equipment



# Example of Master system (TV Tokyo)



- Operation by few clues
- Efficient positioning
- Multi-view and/or selection on wide screen LCD,PDP
- Use touch panel for operation
- monitoring another line at monitoring booth

# Example of Master system (TV-asahi)



# Example of Video Server



VIDEOS™(note)



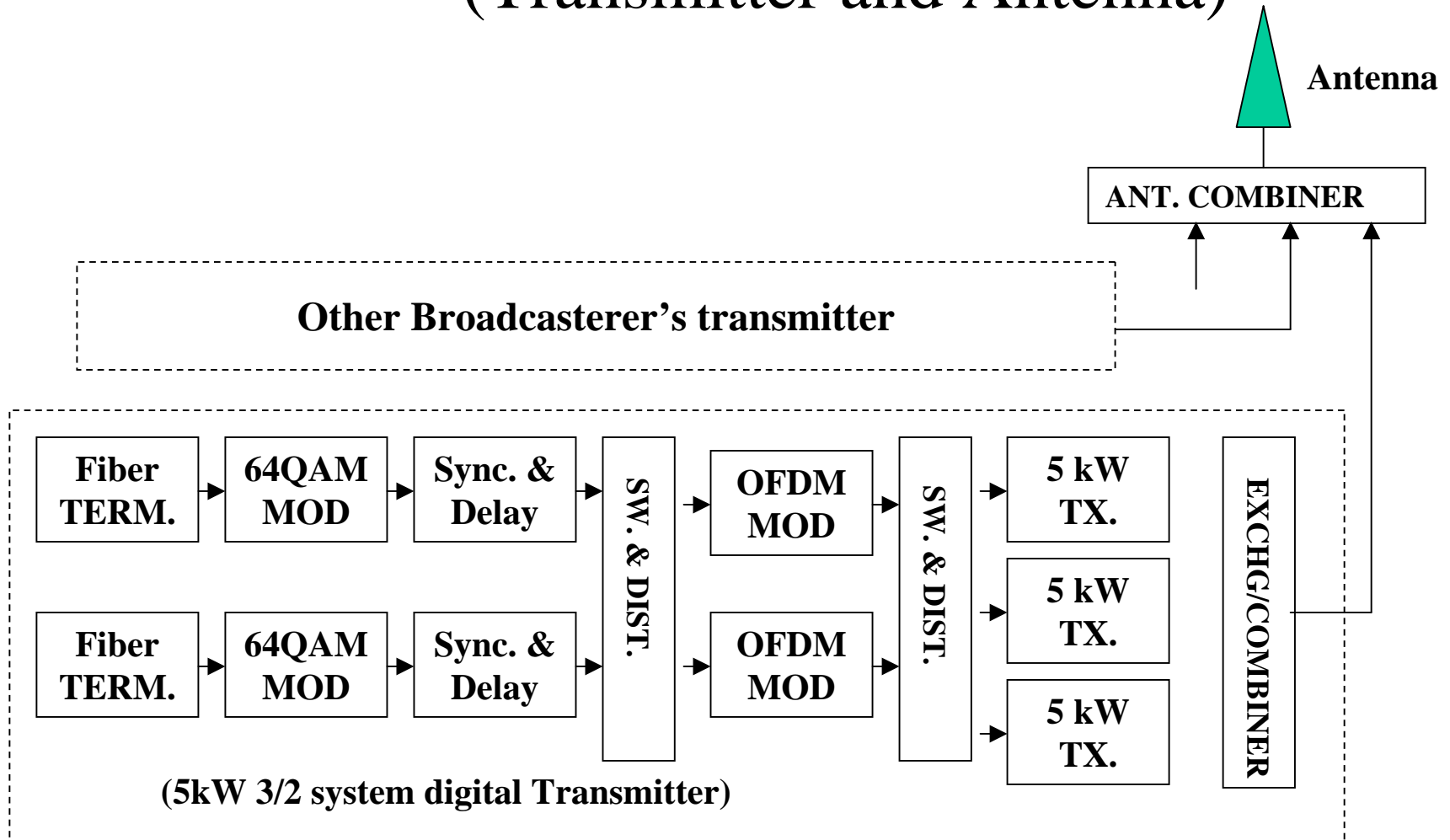
Console



Equipment Racks

(note)Flash memory video server(Toshiba commercial model)

# Example of Broadcaster's equipment (Transmitter and Antenna)



Example of Tokyo Tower Transmitter/Antenna System

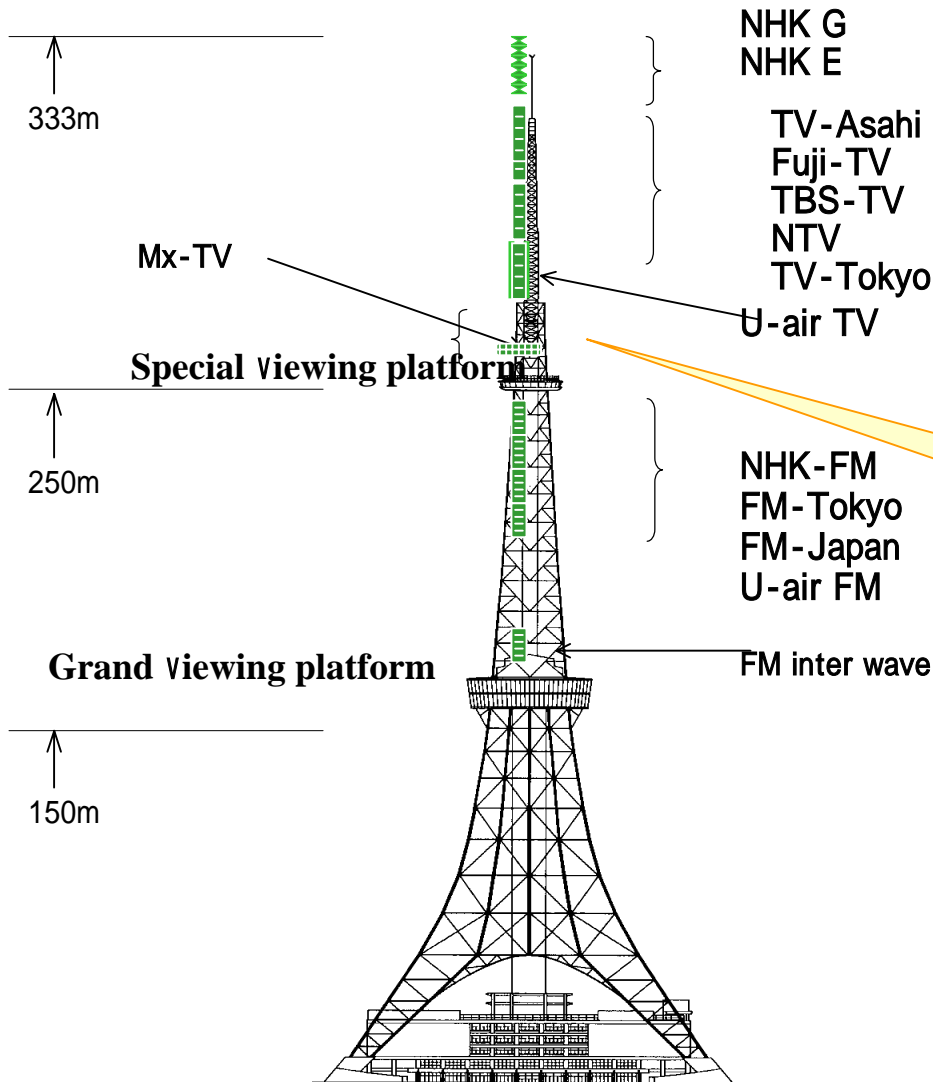
# Example of digital terrestrial transmitter

5kW, 3/2 system(10kW output) in Tokyo Tower



(Toshiba)

# TV Broadcasting Antennas Installed on the Tokyo Tower



•A number of analogue TV broadcasting antennas are already installed on the Tokyo Tower, leaving only a limited space for mounting of digital broadcasting antennas

**Digital TV antennas to be mounted here**

# Mounting Space for Digital TV Antennas on the Tokyo Tower

U-air TV

Digital TV antennas to  
be mounted

Mx-TV

Special viewing  
platform



- The mounting space for the digital TV antennas is limited to a small space of 6 meters in width and 12 meters in height on the tower structure.
- A pattern synthesis technology is required to realize an omnidirectional radiation pattern using such a difficult space for mounting

# **Future Plan & Expectation for digital broadcasting service in Japan**

- **Step by Step enlargement of broadcasting area**

- ➡ **Main Transmitter Construction in Other Area**

- ➡ **Transposer(repeater) Construction**

- **Expectation for new service style**

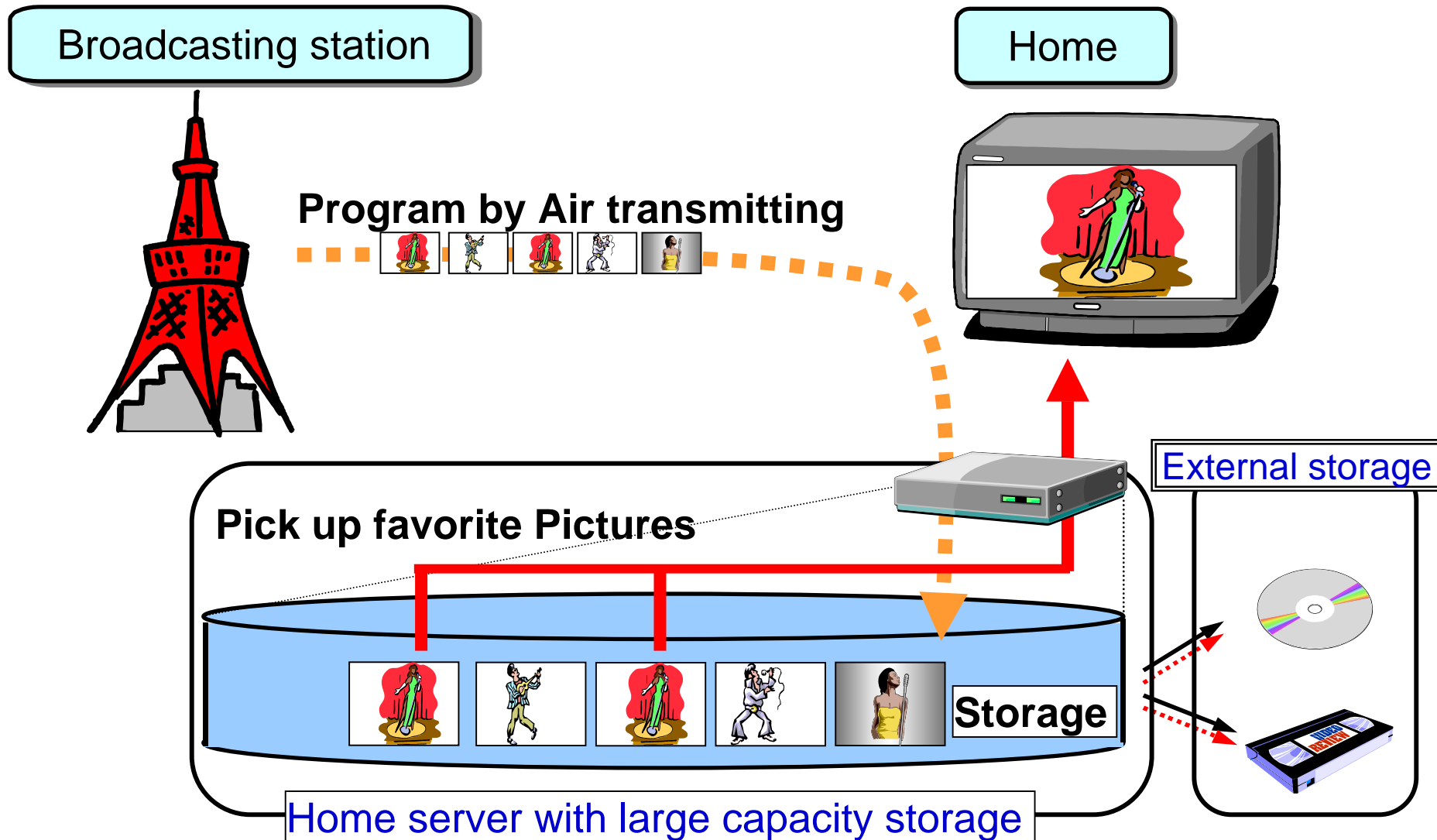
- Commercialization of mobile receiver by development of receiving technology**

- Portable reception service**

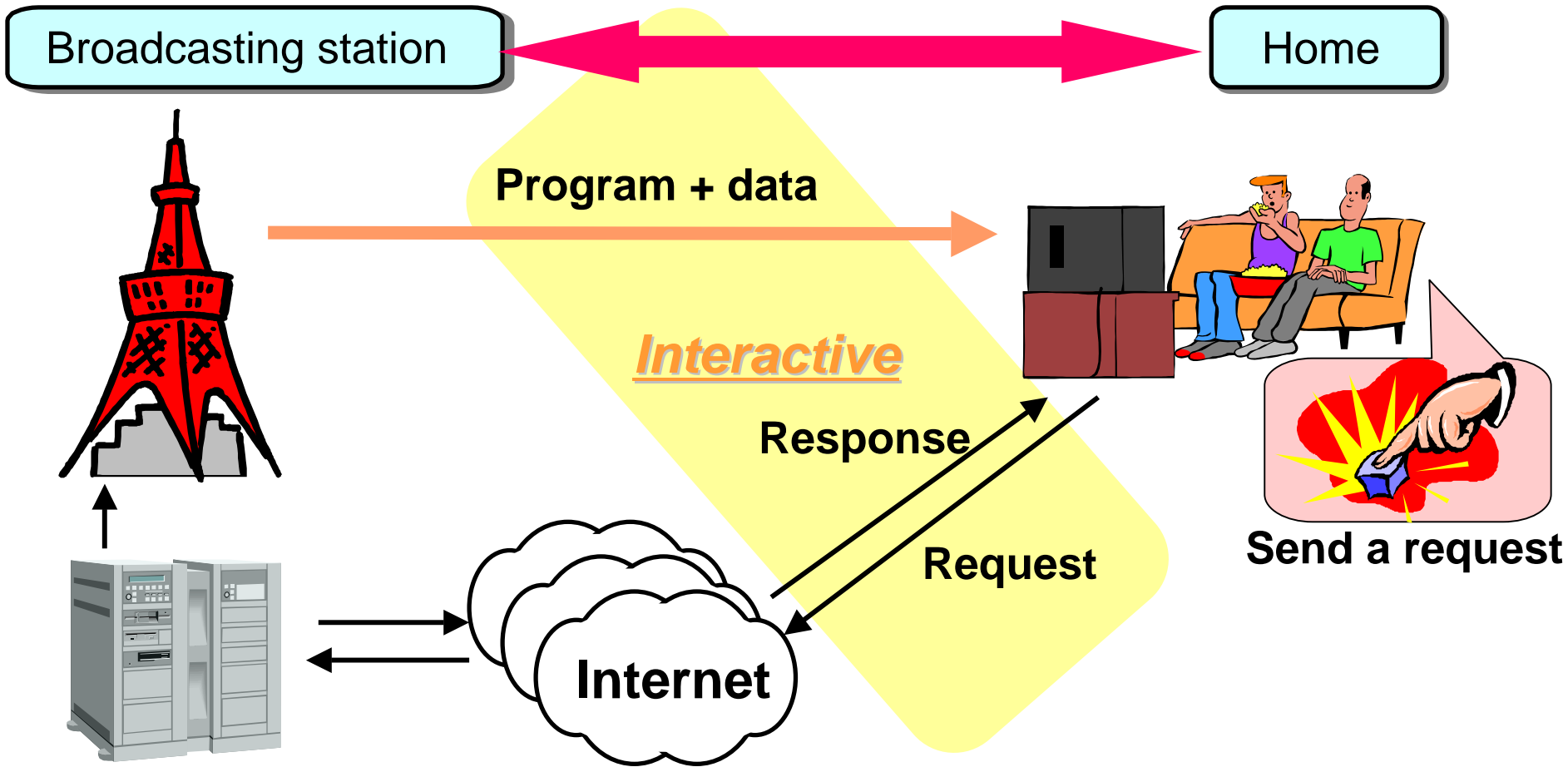
- Home-server Broadcasting service**

- Bi-directional service by Collaboration of communication and broadcast**

# Server-type Broadcasting System



# Interactive Broadcasting



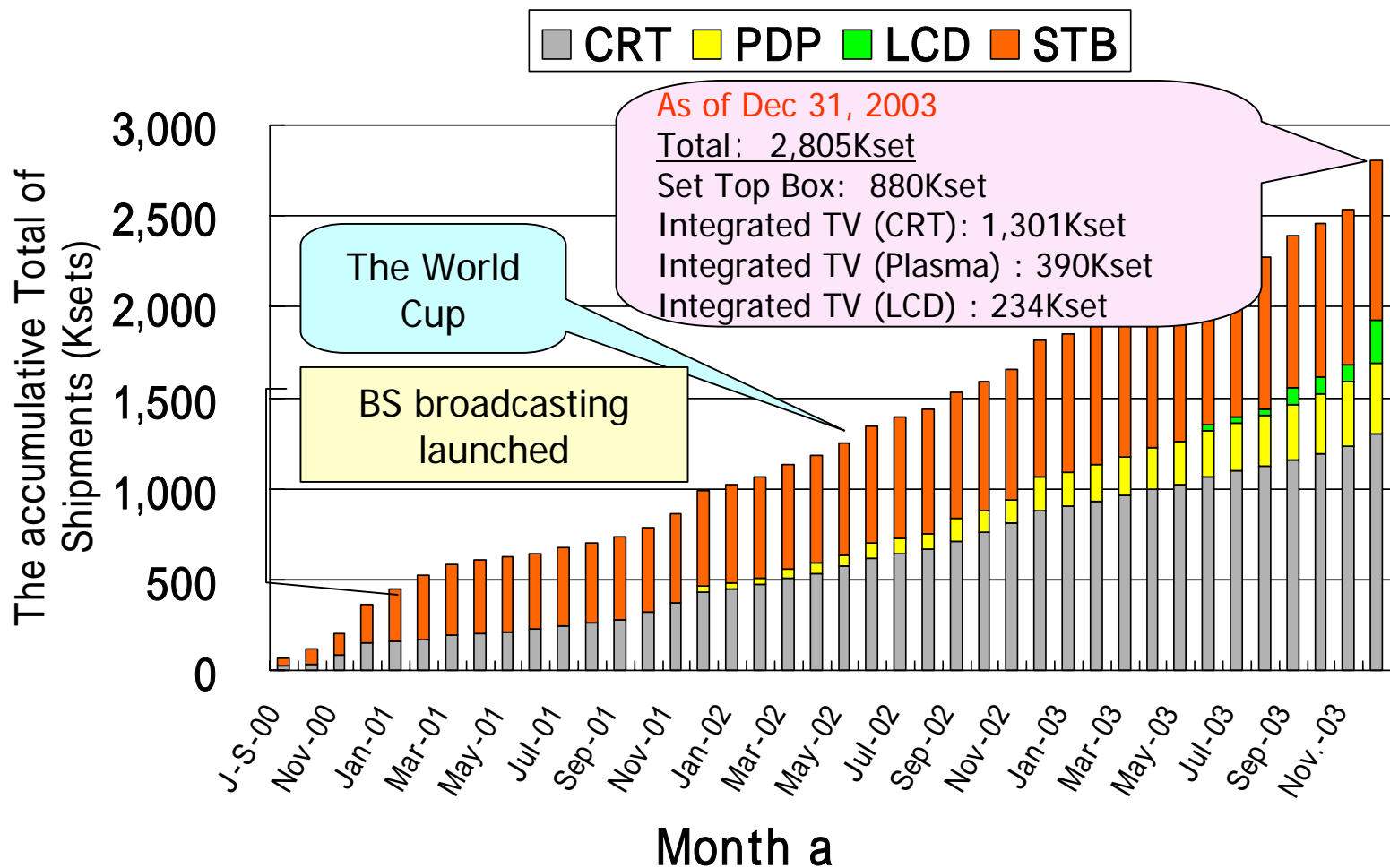
**Contents server / Portal server**

**Join the Quiz show by voting  
Purchase on TV shopping**

# Future deployment

- Prediction of Digital Receiver Market
- Influence to Business, Industry and Life Style

# Cumulative Total of shipments of Digital Receiver



# Panasonic Announced the Sale of PDP and LCD TV Sets

- ISDB-T tuner are installed in 37", 42", 50" PDP TV and 32", 26", 22" LCD TV.



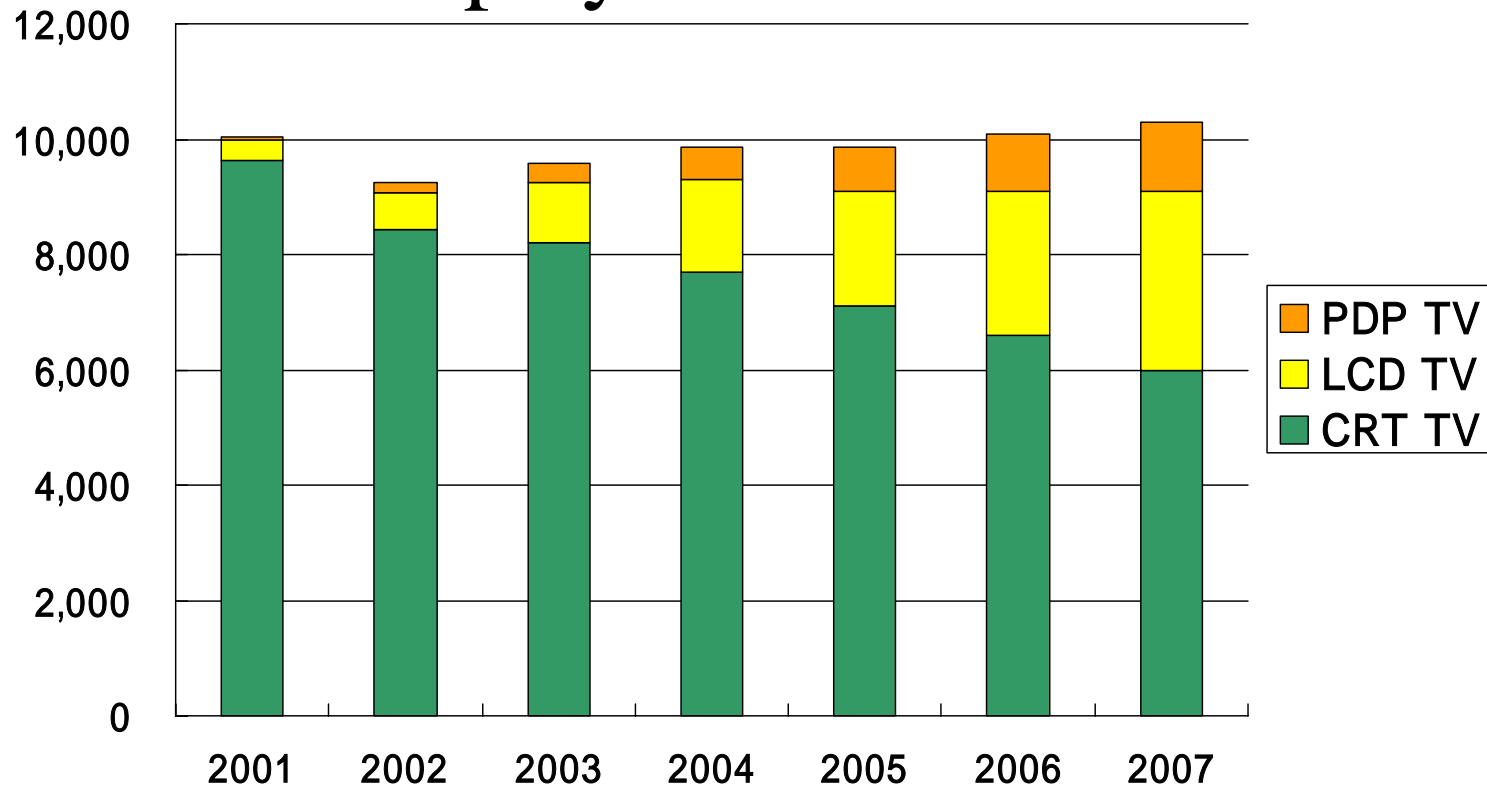
# Sony Announced the Sale of New Digital TV Sets

Aug 28

- New models
  - PDP 61", 50", 42"  
9models
  - LCD 42", 37", 32"  
3models
  - CRT 28", 32", 28"  
3models



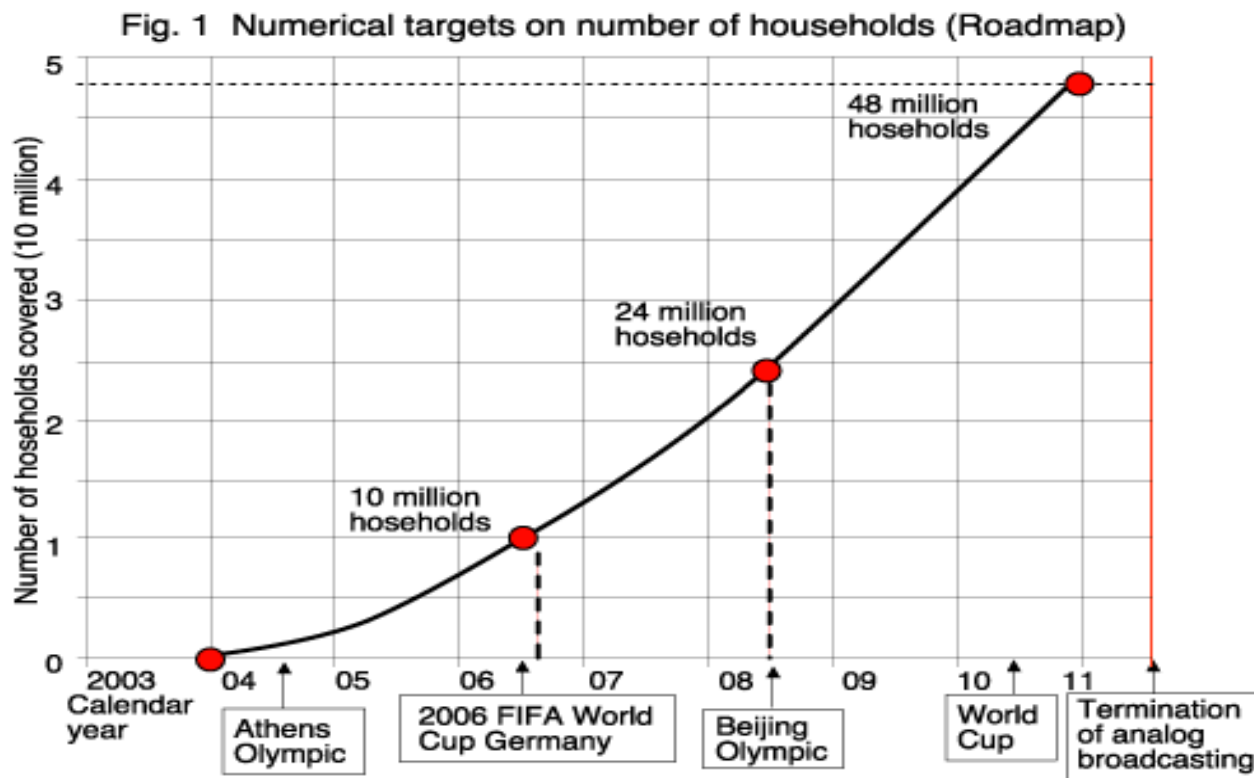
# Ratios between Flat Panel Displays TV and CRT TV



Source: JEITA Electronics and Statistics Committee AV Forecast Working Group

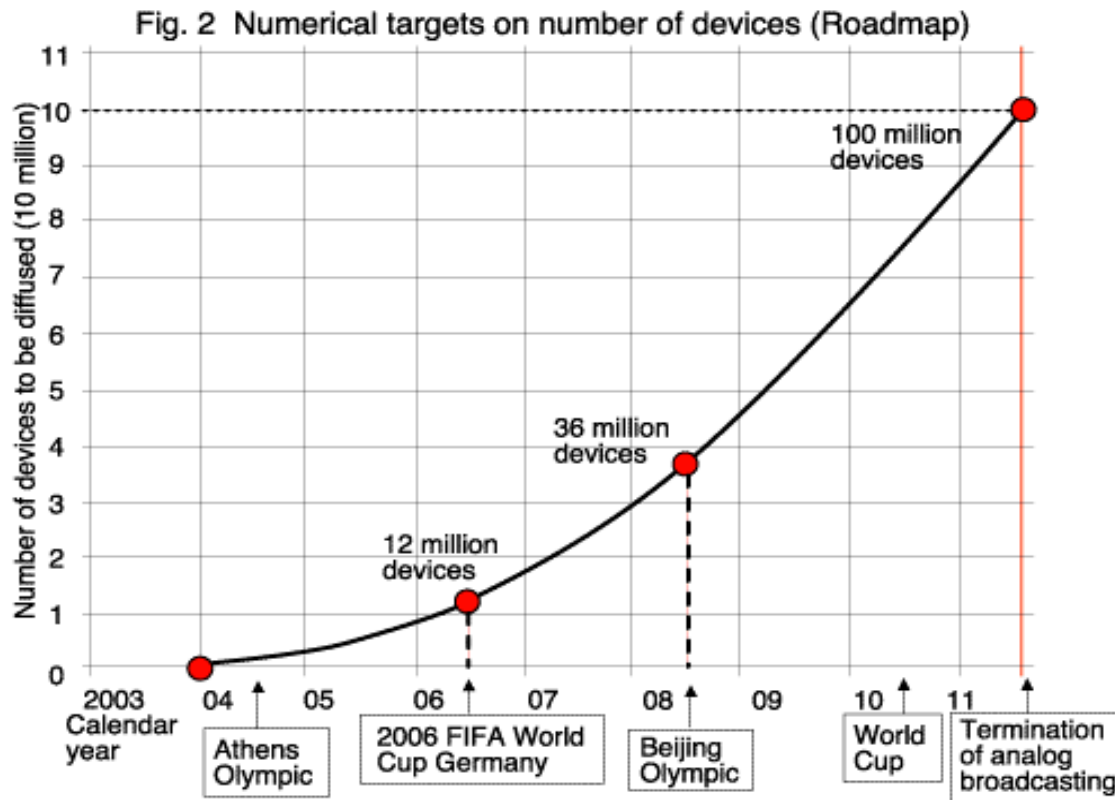
# Targets of Diffusion of Digital Terrestrial TV receiver units

Roundtable Conference on the Future Aspects of Broadcasting in the Broadband Age formulated the Targets of diffusion of terrestrial digital TV receiver units on April 15.

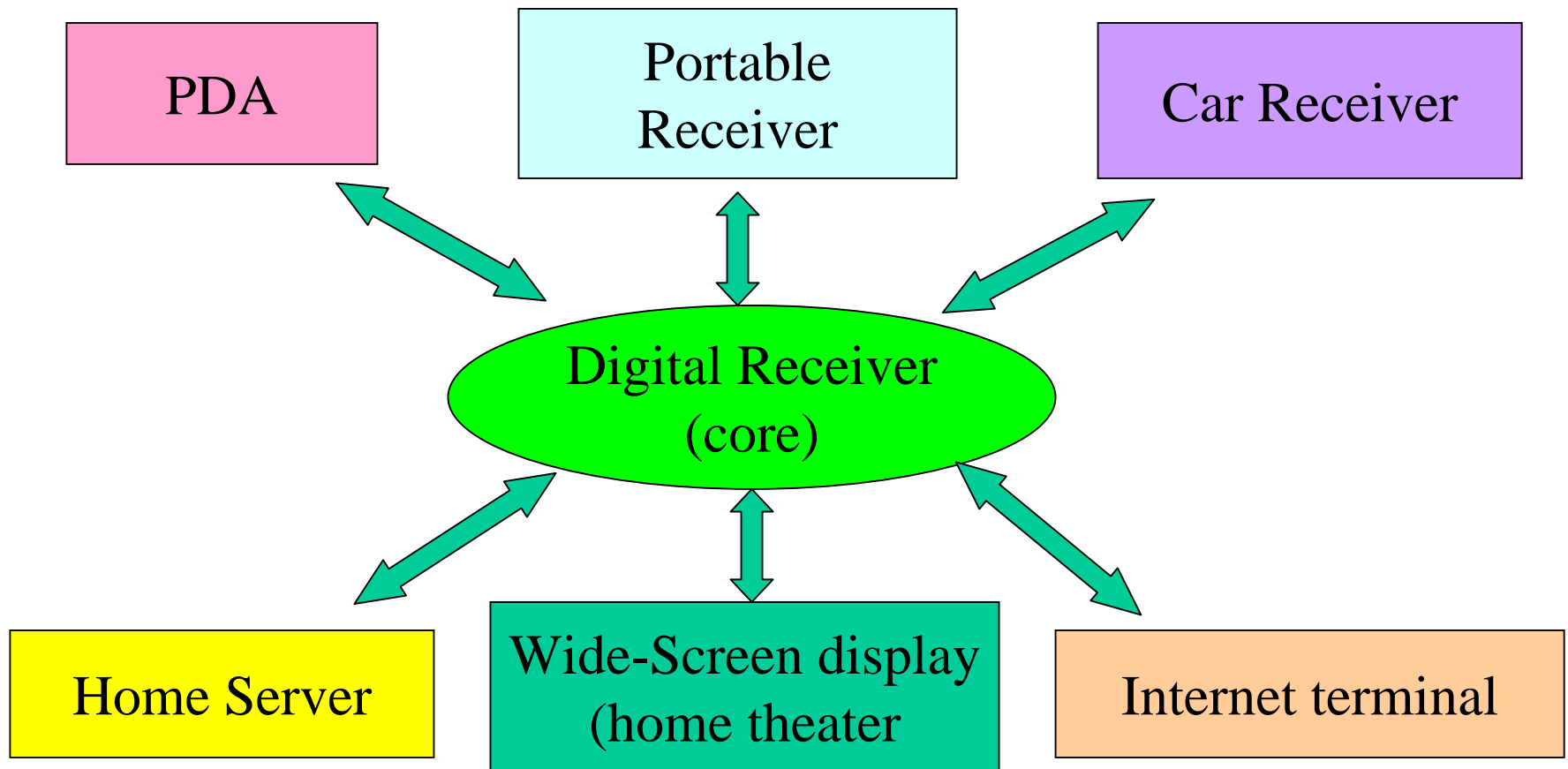


# Targets of Diffusion of Digital Terrestrial TV receiver units

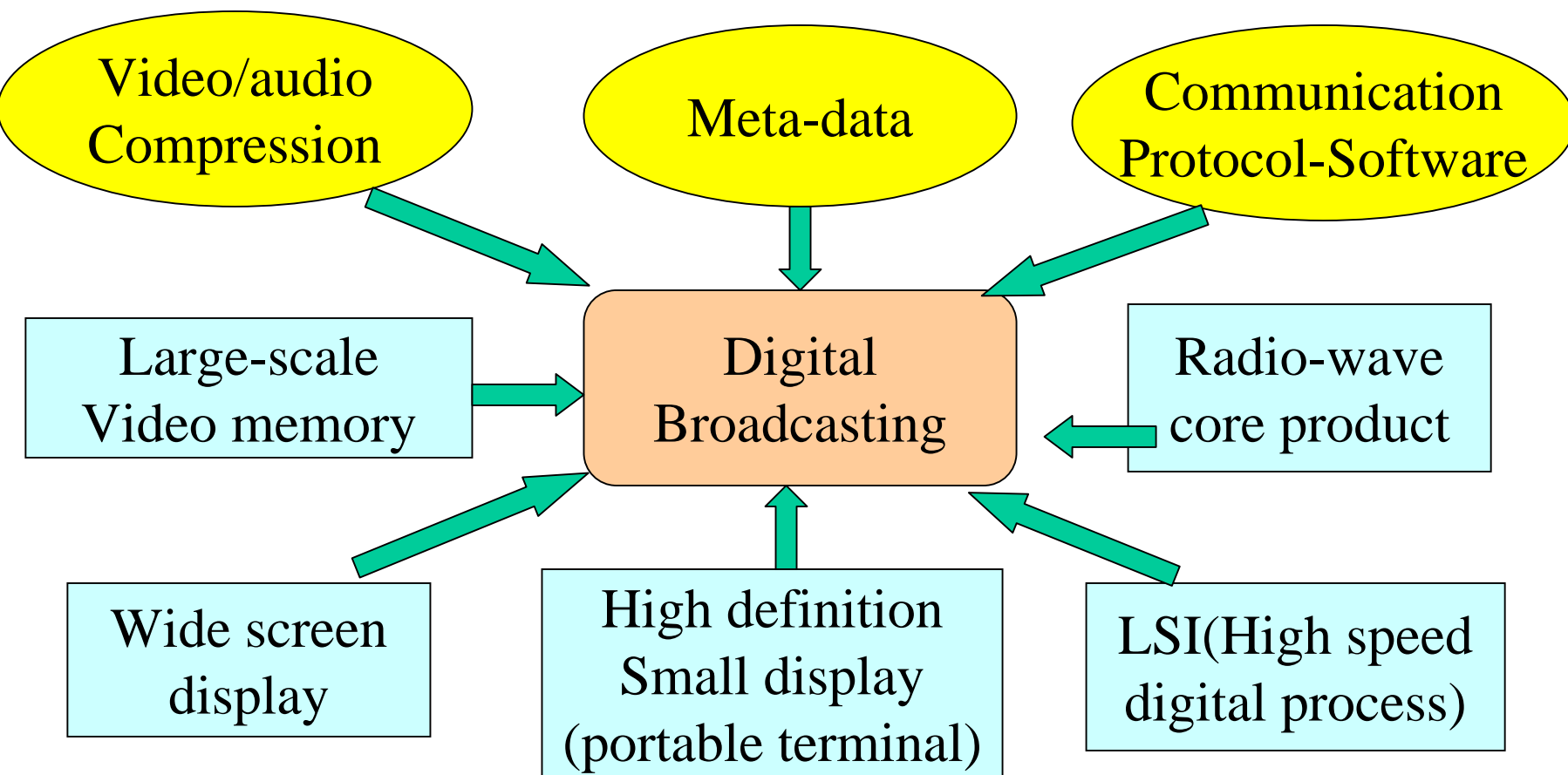
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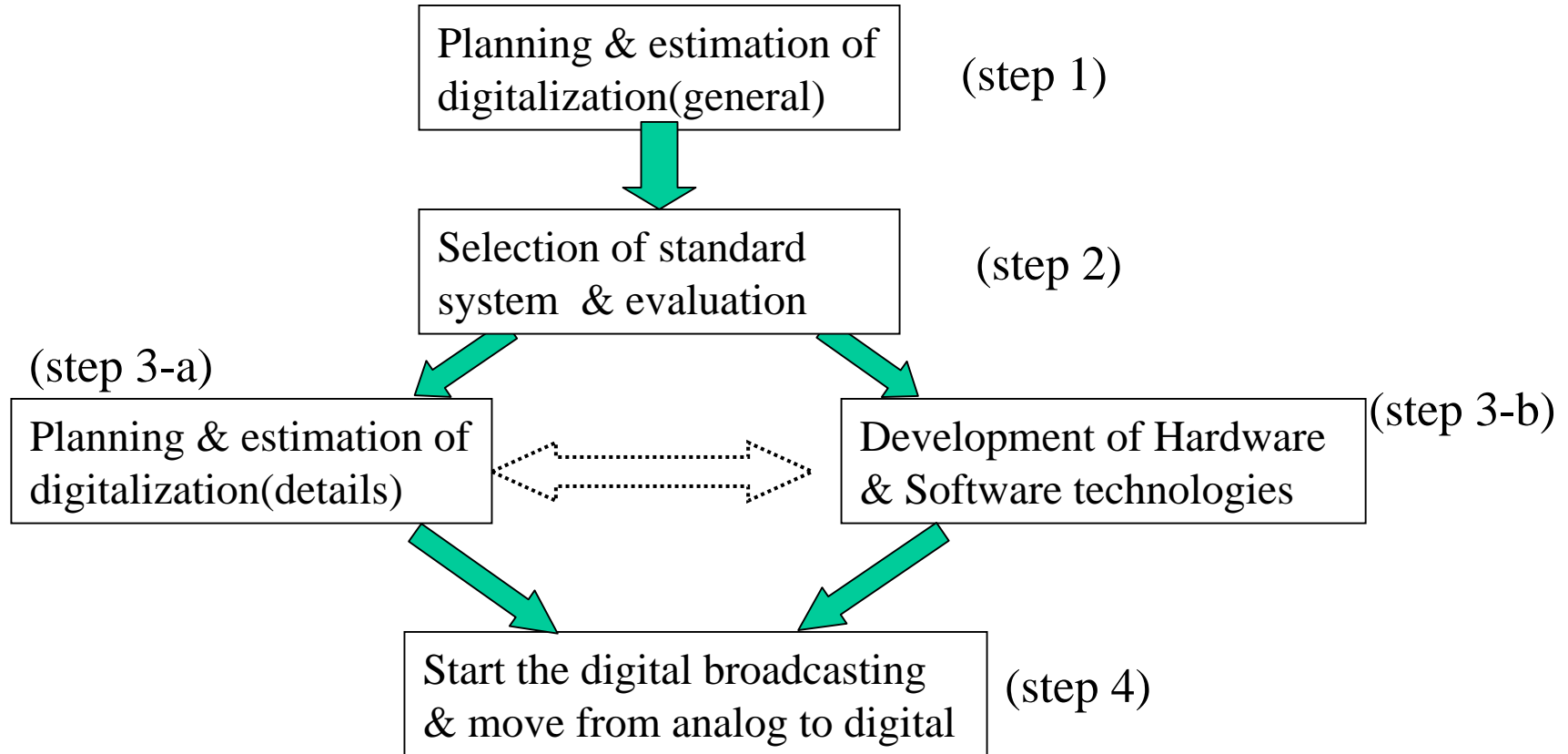
# Digital Broadcasting Receiver is the Core of Digital Consumer's Products



# Fundamentals of Industry/Technology for Digital Broadcasting



# Reference: Scenario for digitalization of Broadcasting



## **Step 1: Planning & estimation of digitalization(general)**

- **Prediction for the effect of broadcast digitalization**

- Influence to Life-style of Citizens in future
- Economical effect to market & industry
- Harmonization with communication and information policy
- Others

- **Set up the long-term scenario**

- Long term migration from analog to digital  
(Spectrum planning etc)
- Final image of broadcast service for citizens
- Others

## **Step 2-b: Selection of standard system & evaluation**

### **•Select the Standard for DTTB**

**-Trial first!     At first, Check its own performances and functions (HDTV and/or SDTV, fixed, mobile & portable use, Inter-operability with communication network,etc)**

**-Commonality between other broadcasting-media  
Digital satellite, DTTB, Digital Audio,Cable, etc**

**-Harmonize to Spectrum planning, Spectrum utilization efficiency**

### **•Study, evaluation, proto-type test & technical evaluation**

 **Decide the standard system**

## **Step 3-a: Planning & estimation of digitalization(details)**

- Select the spectrum:**

- which frequency band? -Bandwidth/channel, -Period of simulcast both analog and digital,

- Movement scenario from analog to digital**

- Channel planning**

- Transmitter site locations and frequency allocation

- Service configuration in digital broadcasting system**

- Which types of Video/Audio format

- Data-broadcasting

- Receiving type ; fixed, mobile, portable

- Commonality and Inter-operability with Communication

## **Step 3-b; Development of Hardware & Software technologies**

- **Make up the operation guideline both broadcasters and consumer makers**

- **Development core technologies**

- Modem, Codec, Data-broadcasting Software,etc

- Receiver commercialization(cost,performances, size, etc)

- **Design and estimation for Broadcaster's equipment**

- Master system

- Transmitter, transposer & transmitter network

# Conclusions

- ISDB-T is the most flexible DTTV standard
- ISDB-T showed the best results in Brazil's comparison test. The similar results were obtained in Singapore and Hong-Kong trials
- The sales of Digital TV receivers reached more than two millions and will increase rapidly around 2006 in Japan
- The analog channel re-arrangement is the first big challenge
- Developments of ISDB-T one-segment receiver and its components were announced in the end of 2003 in Japan. Mobile TV broadcasting will be launched in 2005.

Thank you for your  
attention !

*END*