Invitation to the ISDB-T world

Migration plan for TV Station

SET 2006 Congresso

Aug. 24th ,2006

DiBEG Japan

Yoshiki MARUYAMA

tv asahi

Contents

- *Service and Business*
- *Migration plan in the case of Commercial TV Station in Japan*
  - *Broadcast premises*
  - *Transmission*

Migration Plan

Service and Business

Service and Business solution

Service

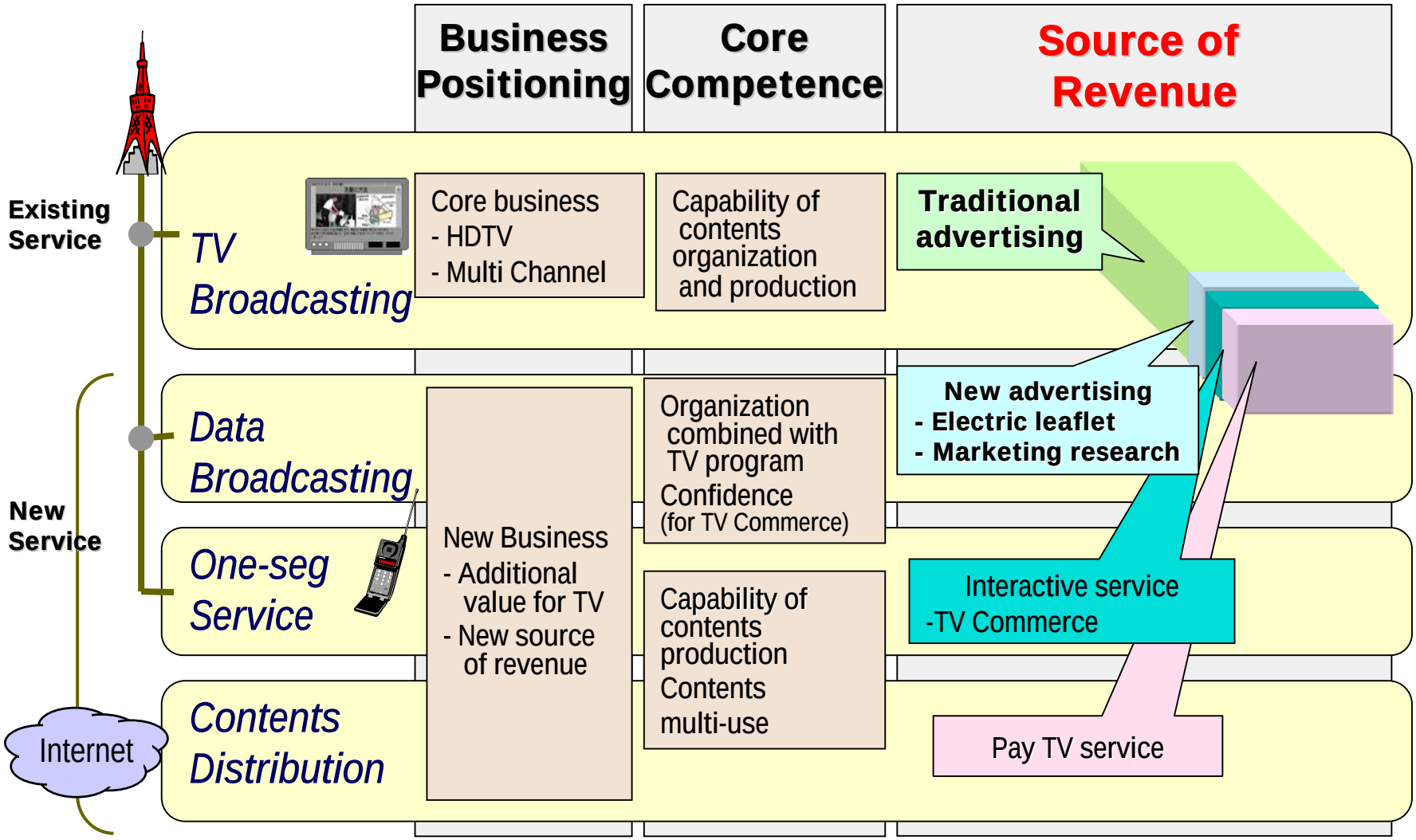
- Number of Channel
- Video Quality
- Communication
- Target
- Audience Action
- Where

Business

- Source of Revenue
- Advertising Target
- Media
- Potential

Analog Broadcasting	Digital Broadcasting
Single Channel	Multi Channel
Standard (SDTV)	+ High quality (HDTV)
Casting	Interactive
Viewer	Customer
Passive	Active
Home	Anywhere
	Convergence Broadcast and Telecommunication by Digital
Sponsor (Commercial station)	+ Subscriber, Industry
Mass	+ Segment, One to One
Broadcast	+ Interactive
Low (Stability)	High

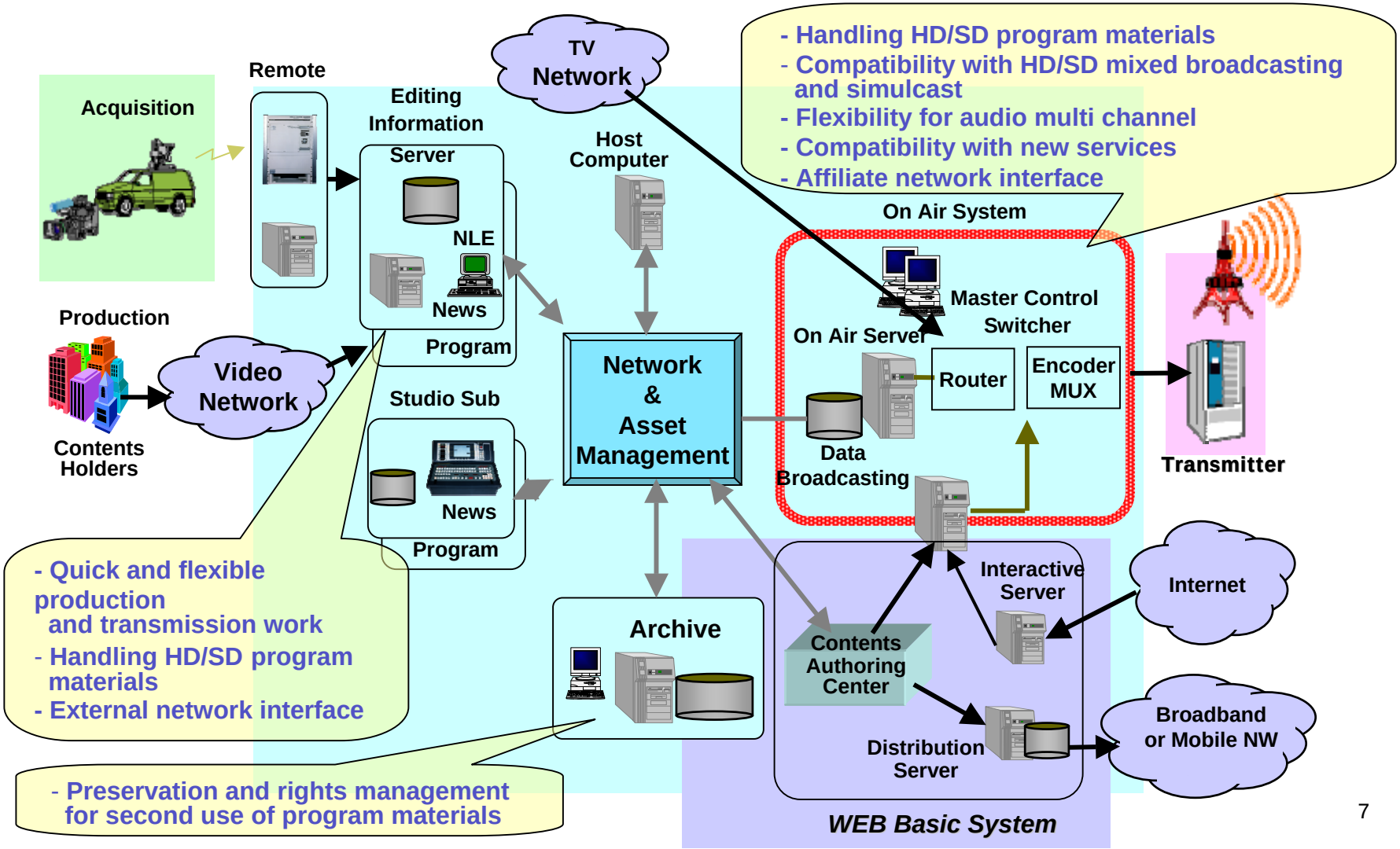
Business and Source of revenue



Migration Plan

Broadcast premises

Requirements for Station System



Requirements for Master System

☐Handling HD/SD Program Materials

- Compatibility of broadcast equipment with HD

☐Compatibility with HD/SD Mixed Broadcasting and Simulcast

- HD program assembly for digital broadcasting
- SD program assembly for analog broadcasting

☐Flexibility for Audio Multi-Channel

- Embedded audio processing (Multiplex to SDI ancillary data)

☐Compatibility with New Services

- SI / EPG transmission, Captioning transmission
- Data Broadcasting, Broadcasting service for one-seg service
- High compression HD encoder

Requirements for Master System(2)

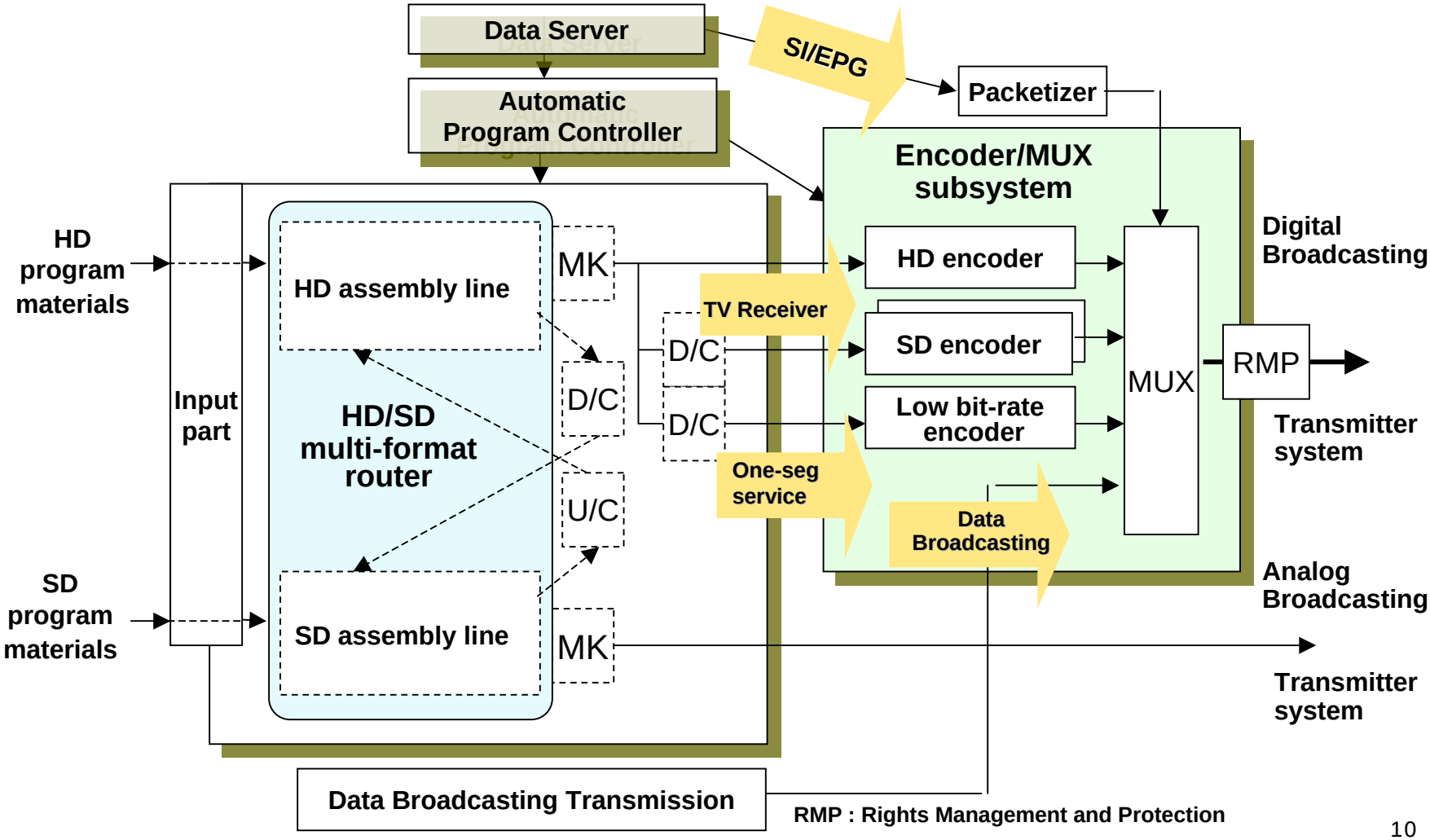
Affiliates Network Interface

- HD and SD program transmission between key station and local station

Efficient Operations

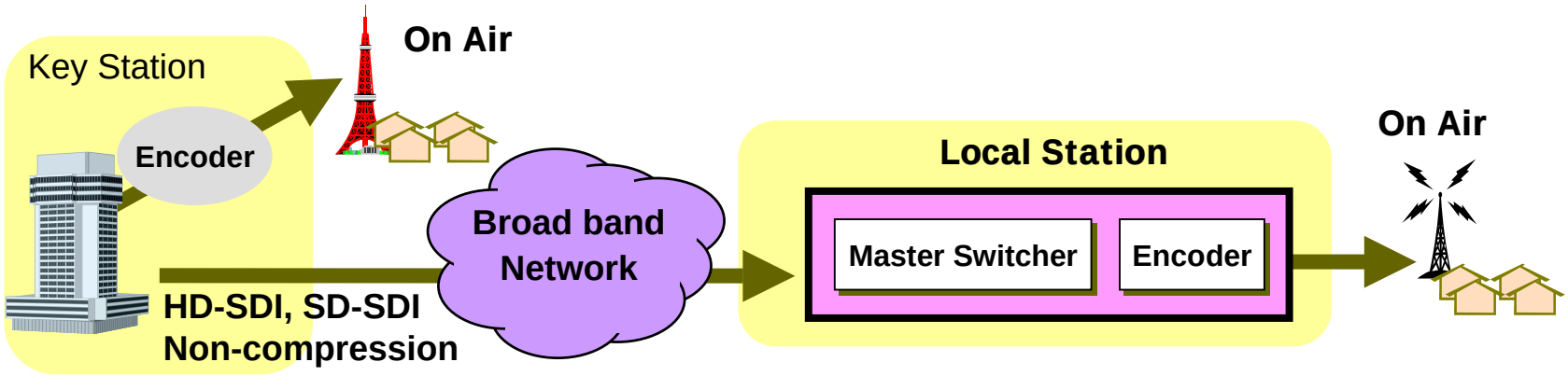
- Integrated monitoring system
- Monitoring of MPEG transport stream

Master Control Switcher Block Diagram

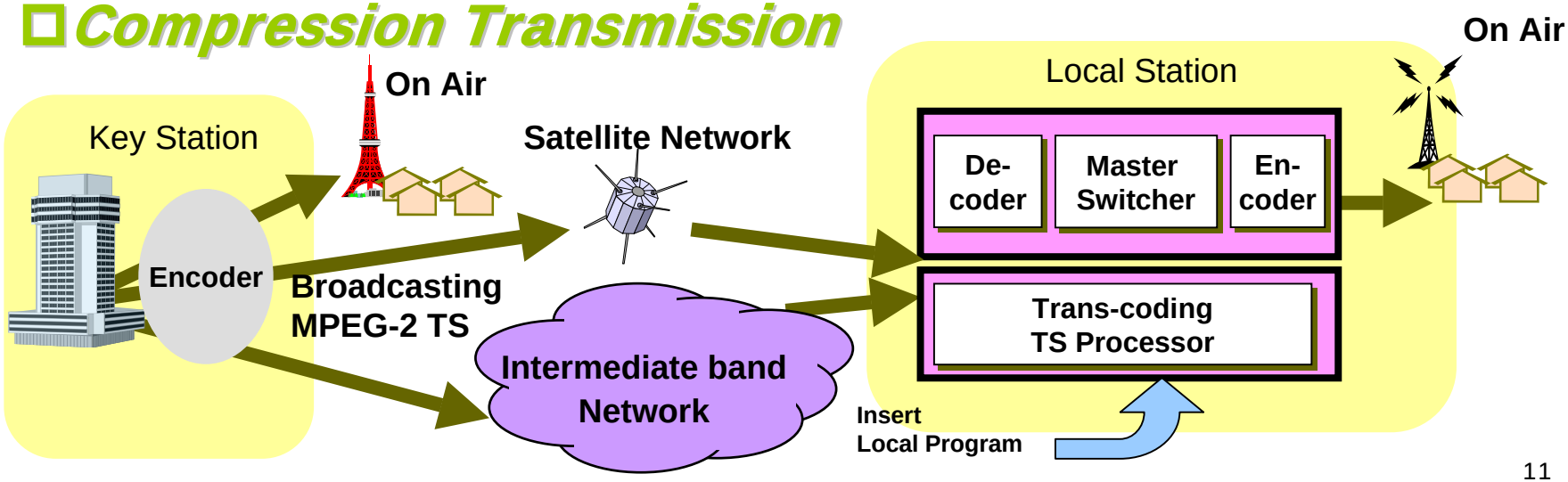


Distribution to the network stations

Non-Compression Transmission



Compression Transmission



Migration Plan

Introduction model

Nippon television

Architecture concept

- Integrated system

  Production facilities/Storage media/Broadcasting system

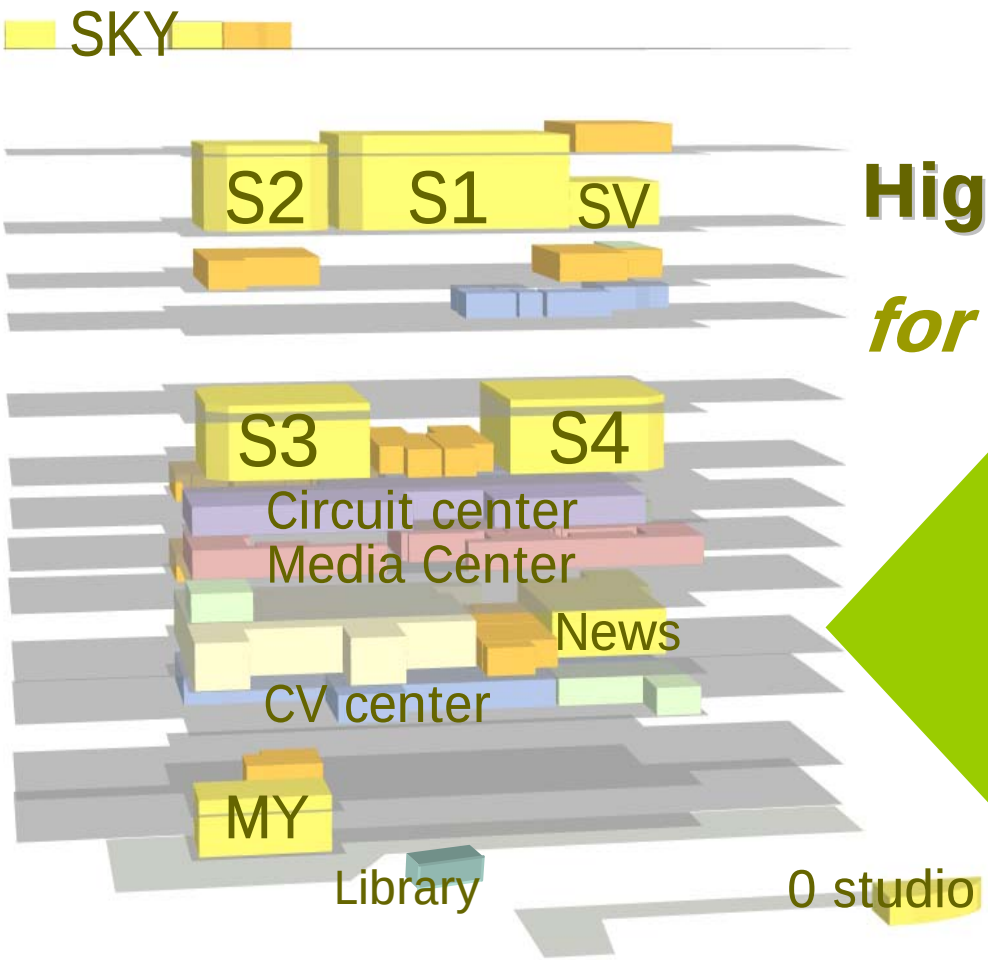
- Flexible system

  Long term life/Expansion request

- Screening

  Trend technology

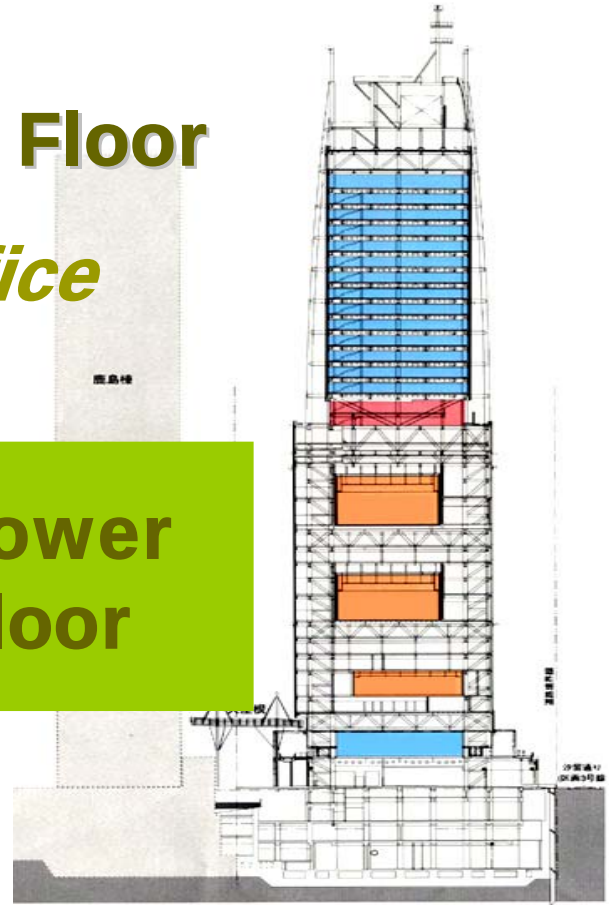
Layout



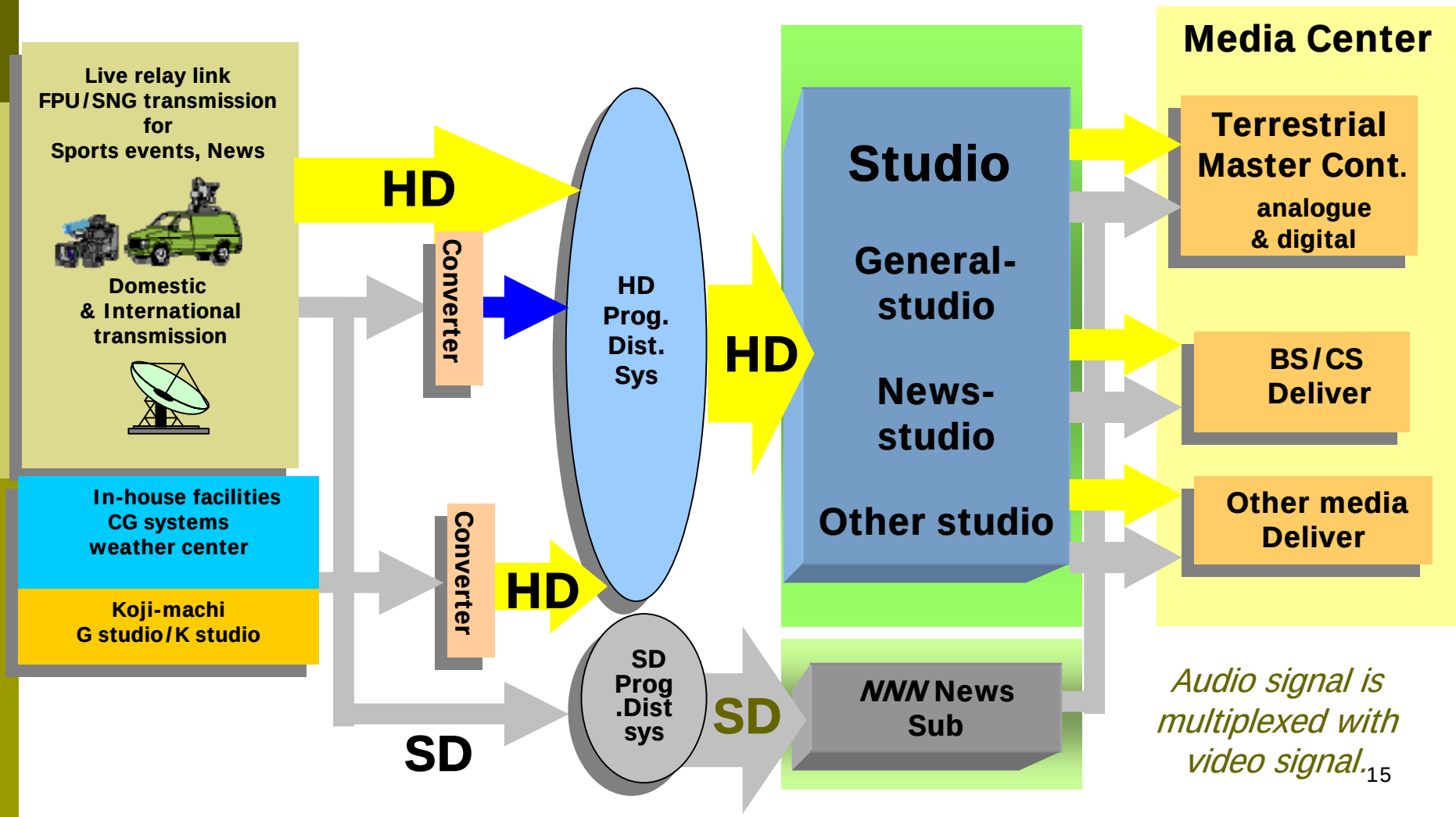
Higher Floor

for Office

Lower Floor

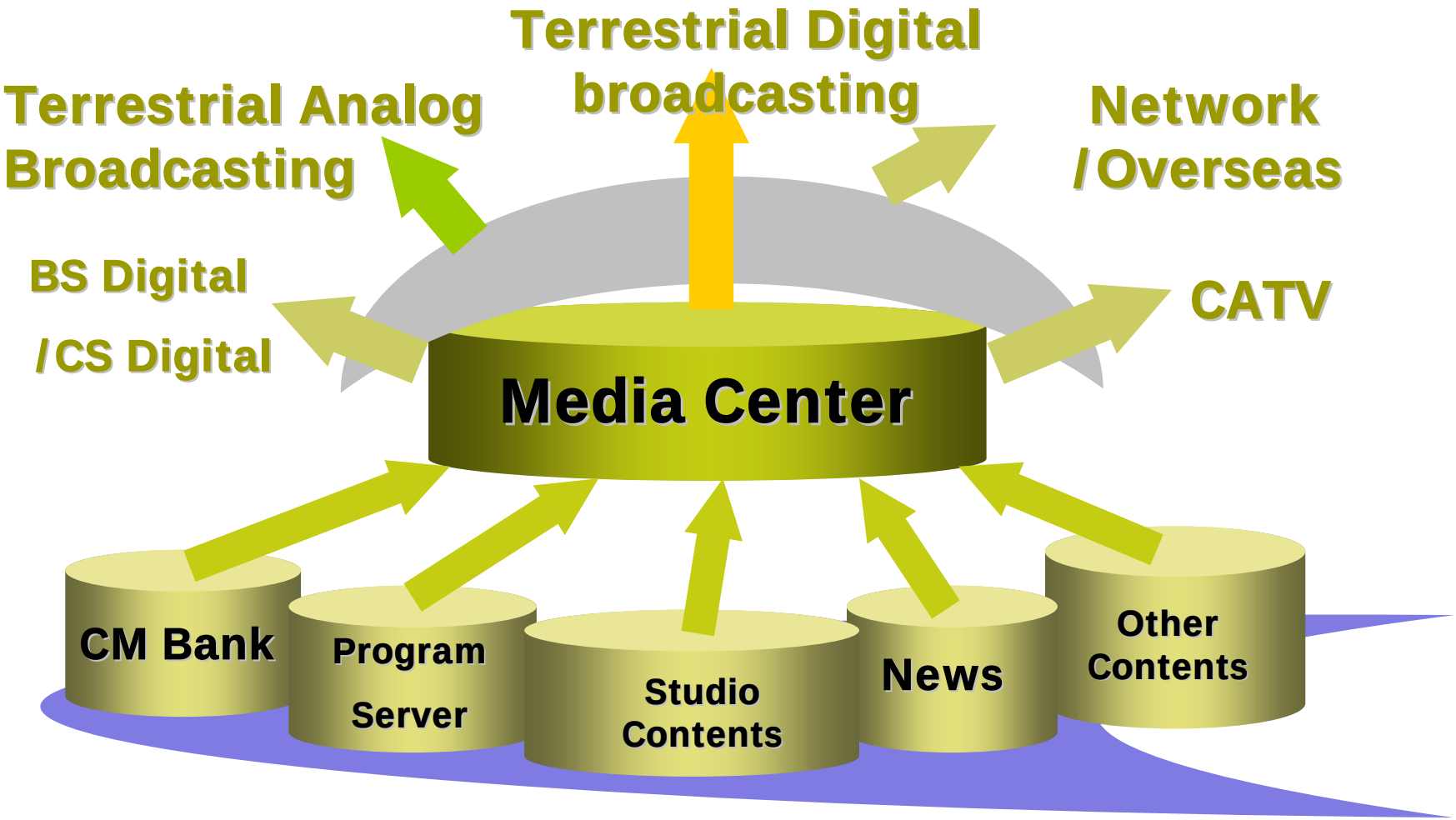


Flow of HD/SD Signal



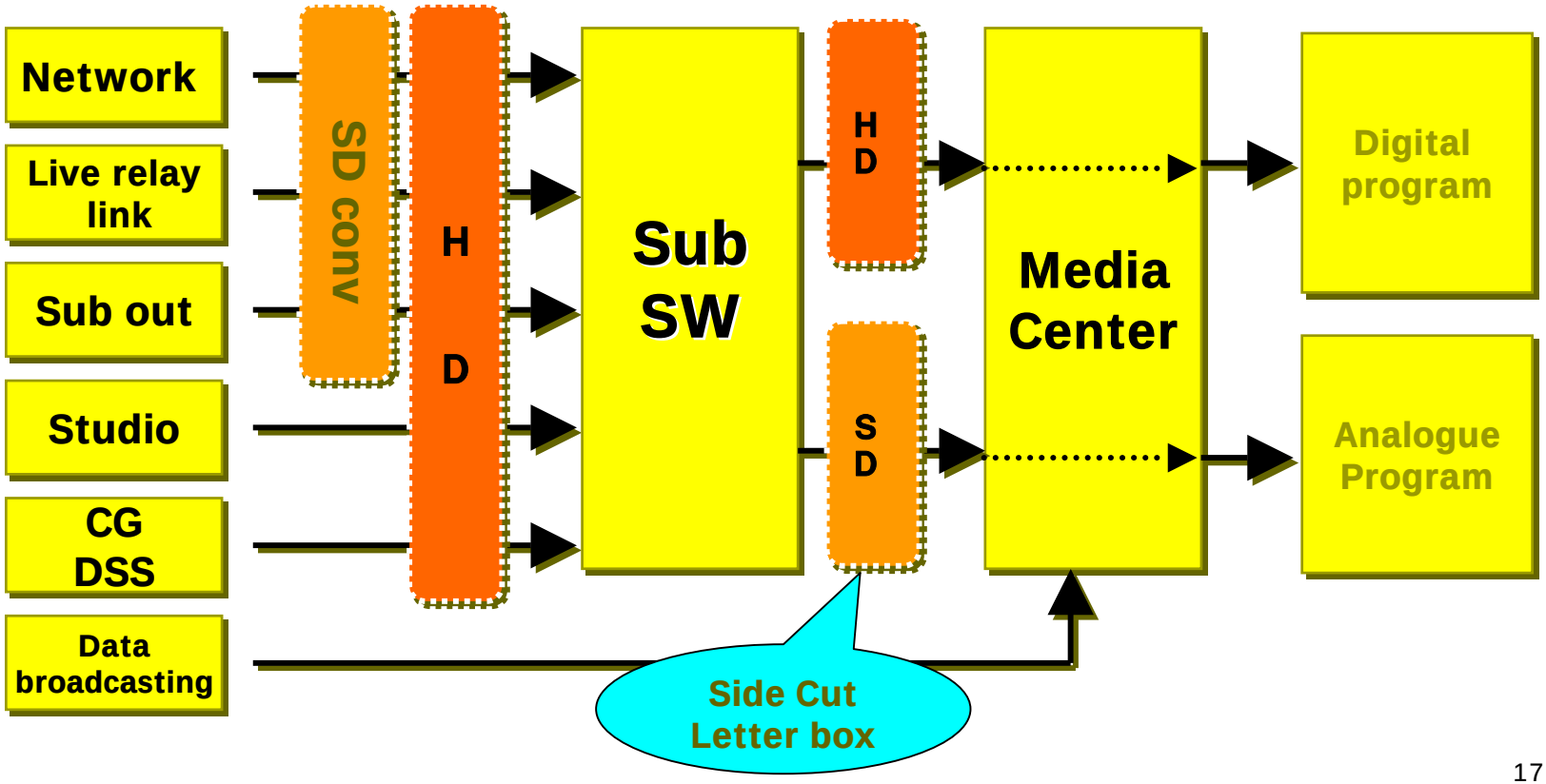
Audio signal is multiplexed with video signal.

Media center concept

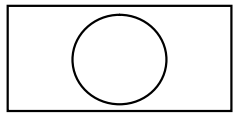
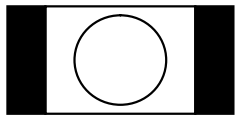
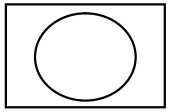
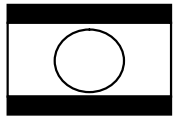


Simultaneous Broadcasting

- In the case of Live program

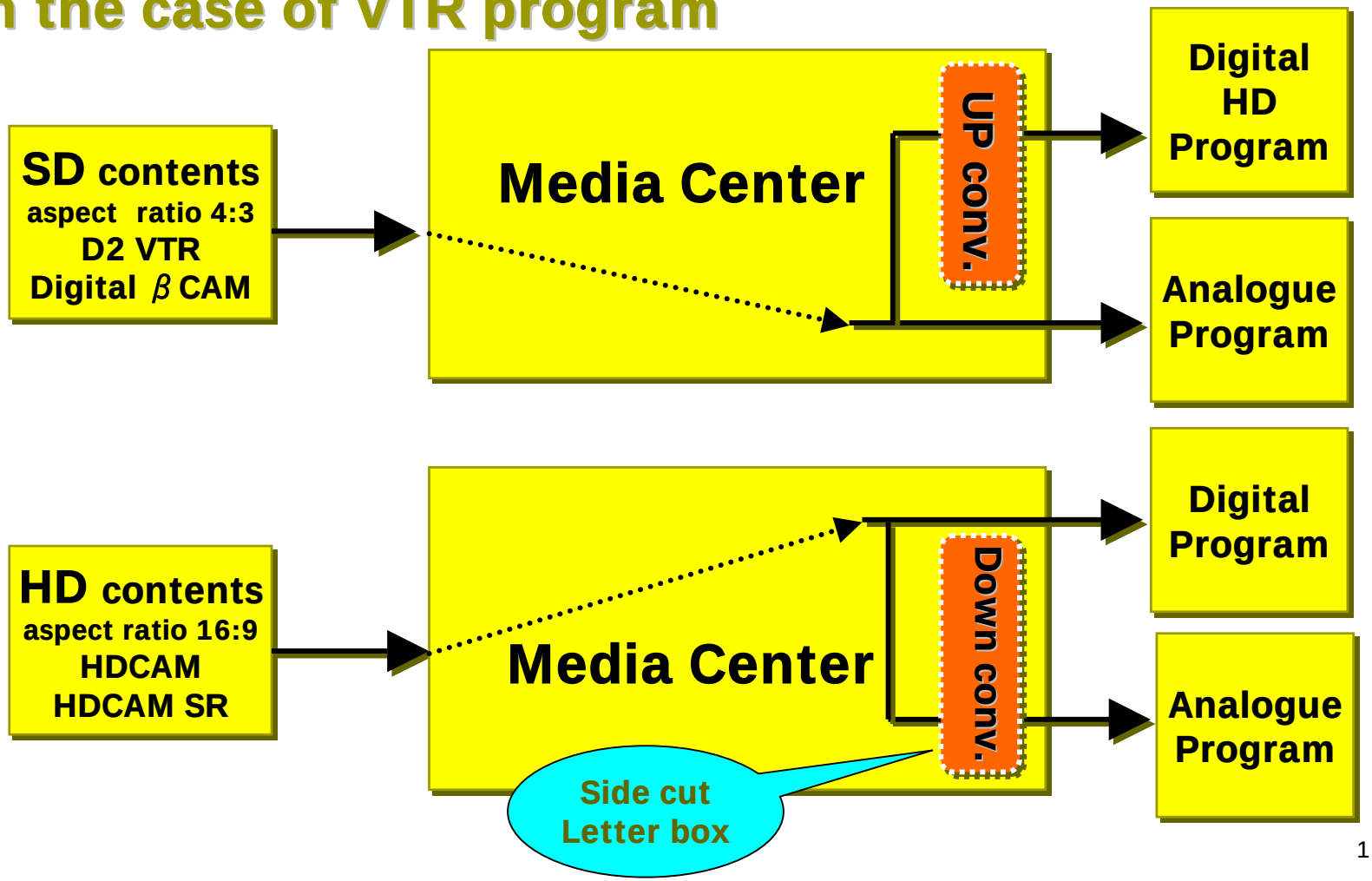


Aspect ratio

Content			Digital / Analogue	
Format	Aspect ratio	Picture	Duigital(1080i)	Analogue
HD	16 : 9		through	D/C (Letter box)
	4 : 3		through	D/C (Side cut)
SD	4 : 3		U/C (Side panel)	through
	16 : 9		U/C (Up & down cut)	through

Simultaneous Broadcasting

- In the case of VTR program



Program compilation policy

- Main program

  Basically HD 1ch

- Multi-channel program

  Presently experimental approach

- Data broadcasting

  Program-associated service & non-associated service (independent)

TV Asahi

Architecture concept

- Full HD & Full digital system
- Contents sharing system
- Migration from VTR base to Server base

Construction of the new building

Building Outline

Construction period: Aug.1st 2000–Mar.31st2003

Building Area: 9,469.74m²

Number of Stories: 8 stories and 3stories below ground.

Total Floor Area: 73,700.43m²

Power Supply: 66kV Loop Substation

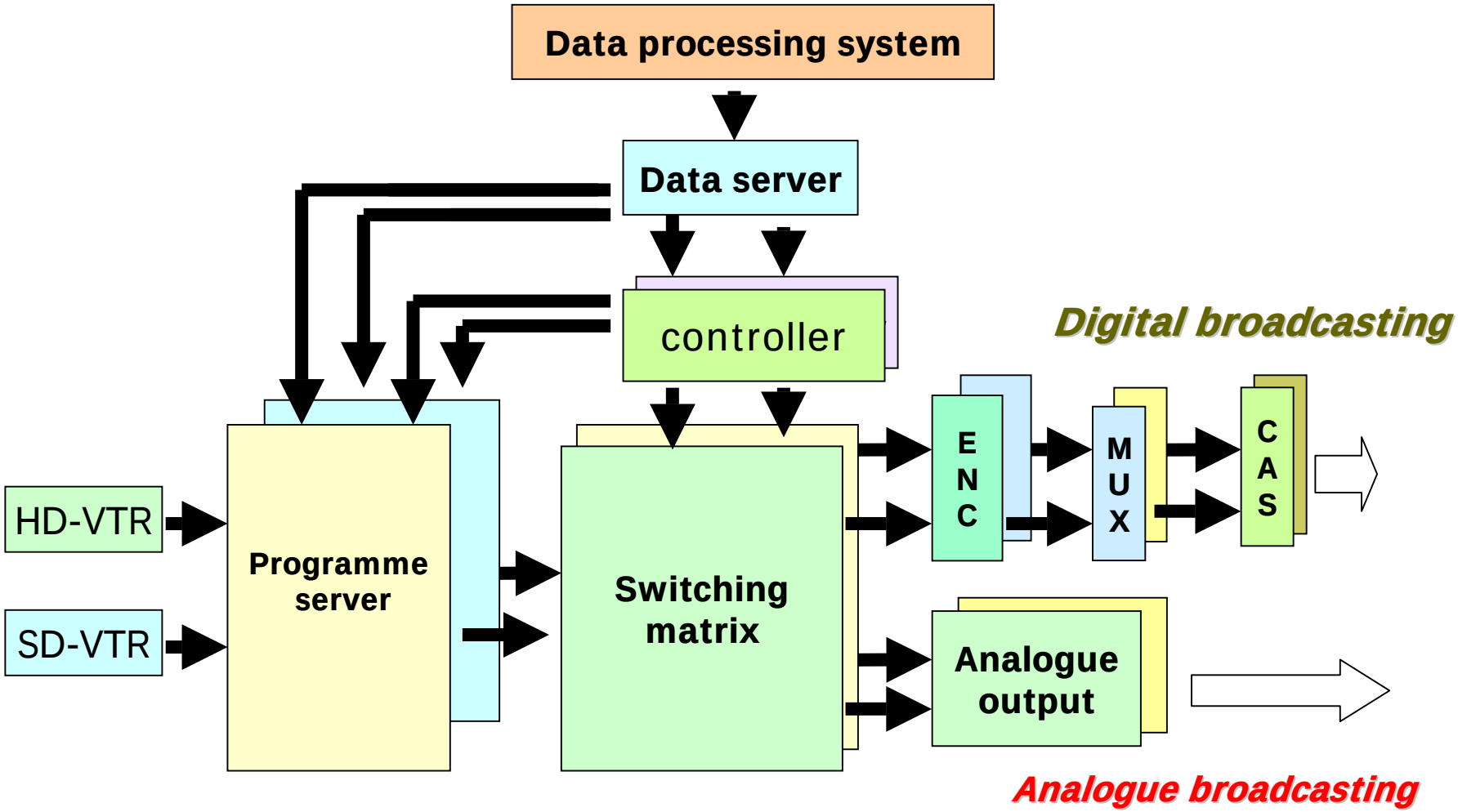
Private Power Generator: Gas Turbine PG. 3,500kVA 6.6kVx2

UPS: 1000KVAx2 Redundant operation

Construction of the new building(2)

tv asahi has installed full digital broadcasting systems for Analogue & Digital terrestrial television broadcasting at new building, instead of analogue systems at previous broadcasting premise.
First programme of Digital terrestrial television broadcasting had been transmitting from the new building in Roppongi Hills on Dec. 1st,2003.

Master control system



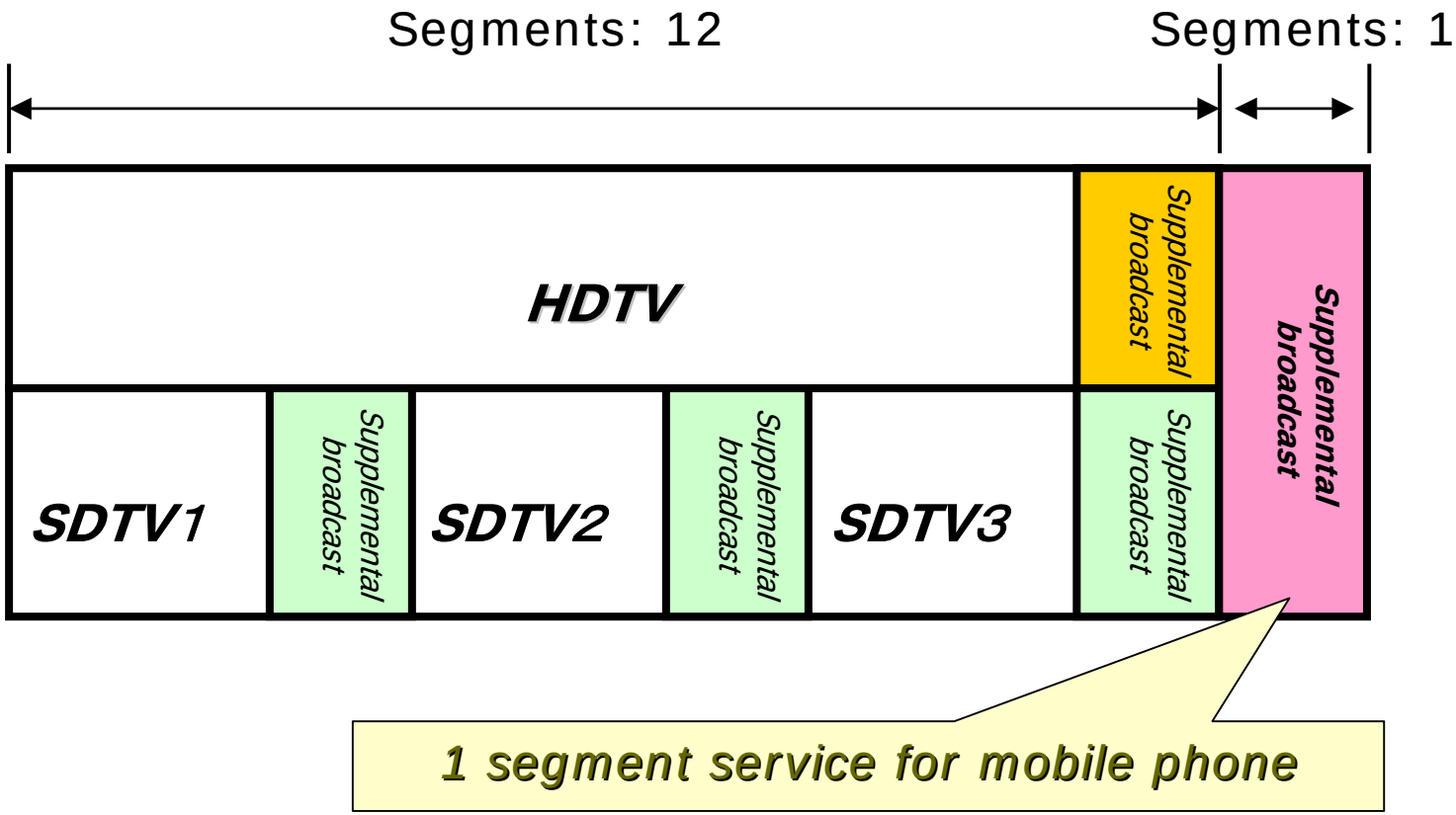
Master control system (2)

Characteristics of Master Control Switcher System

- **Massive and SD/HD Multi-format System**
  - SD/HD router ; 256 x 128
- **High Reliability**
  - Triple redundant system
  - Input part ; Dual
- **Scalability**
  - Easy extension by addition of MK part
  - Software update by using Test part
- **Efficient monitoring and operations**
  - Integrated monitoring system
  - Multi-monitor, Touch panel

Master control system (3)

DTV Service Type

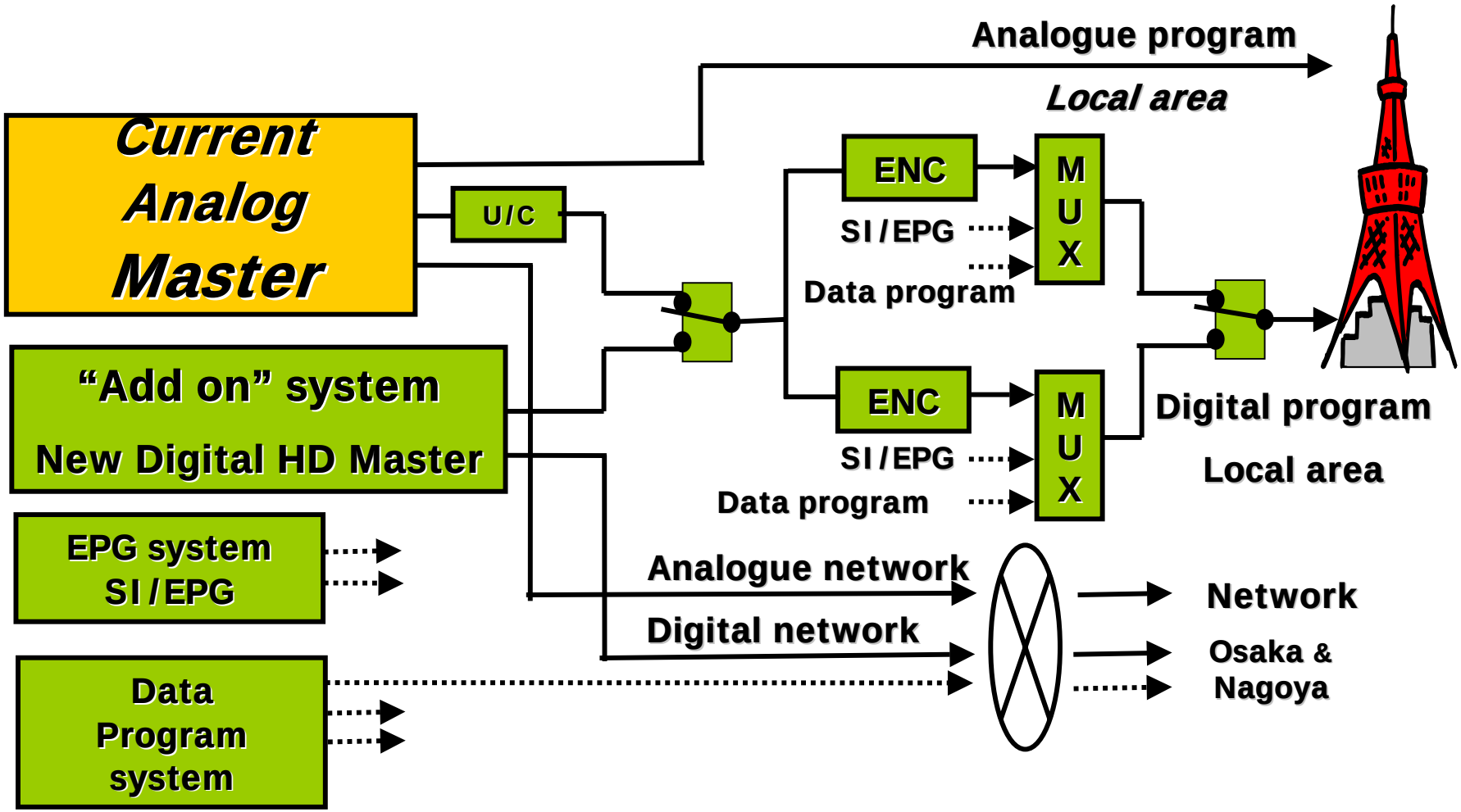


Tokyo Broadcasting System

Architecture concept

- Two-step approach
  - ✓First step
    from end of 2003
    "Add on" system
  - ✓ Second step
    from end of 2004
    Full digital

"Add on" system

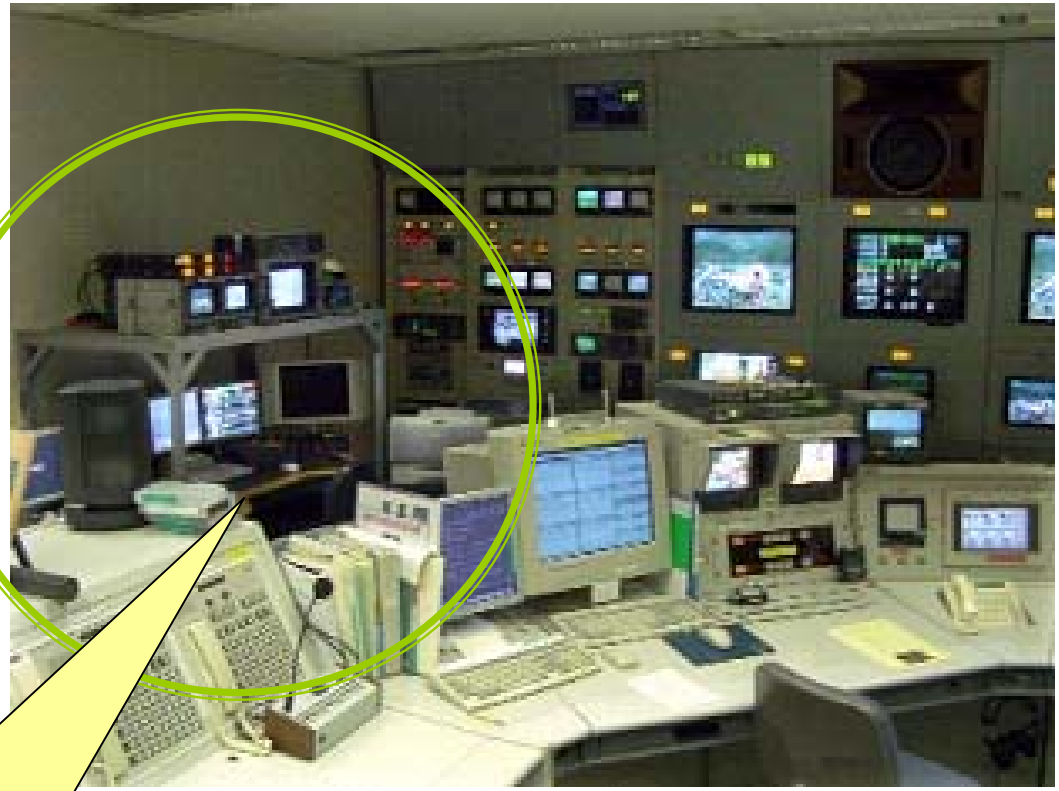


Monitoring system

Analogue program
Local Network

Digital program
Local Network

“Add on” monitoring system



“Add on” system

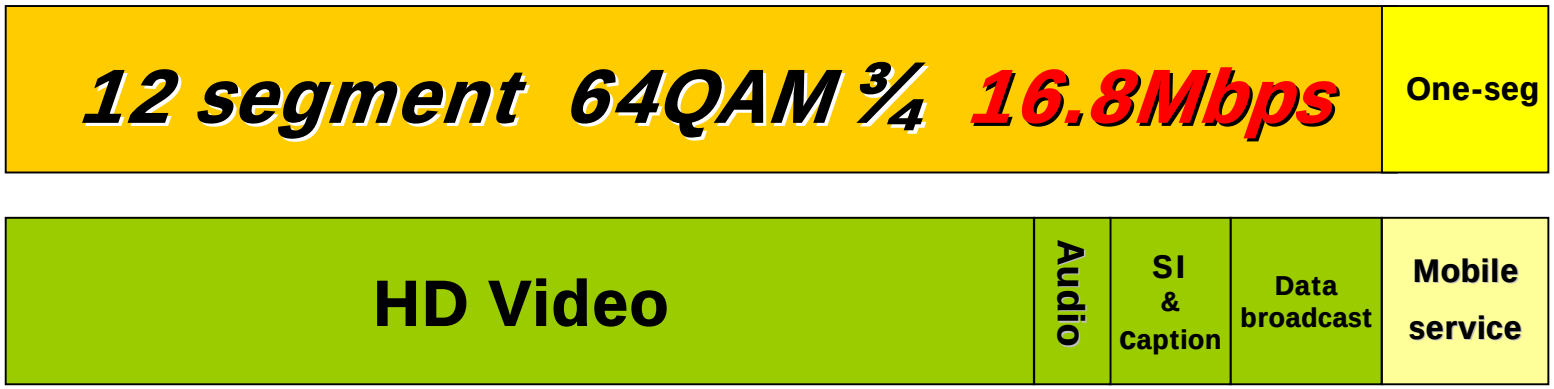
Transmission parameter

First stage

13 segment 64QAM ¾ 18.2Mbps

Final stage

12 segment 64QAM ¾ 16.8Mbps



Fuji television

Architecture concept

- Cost minimum
- Simple system

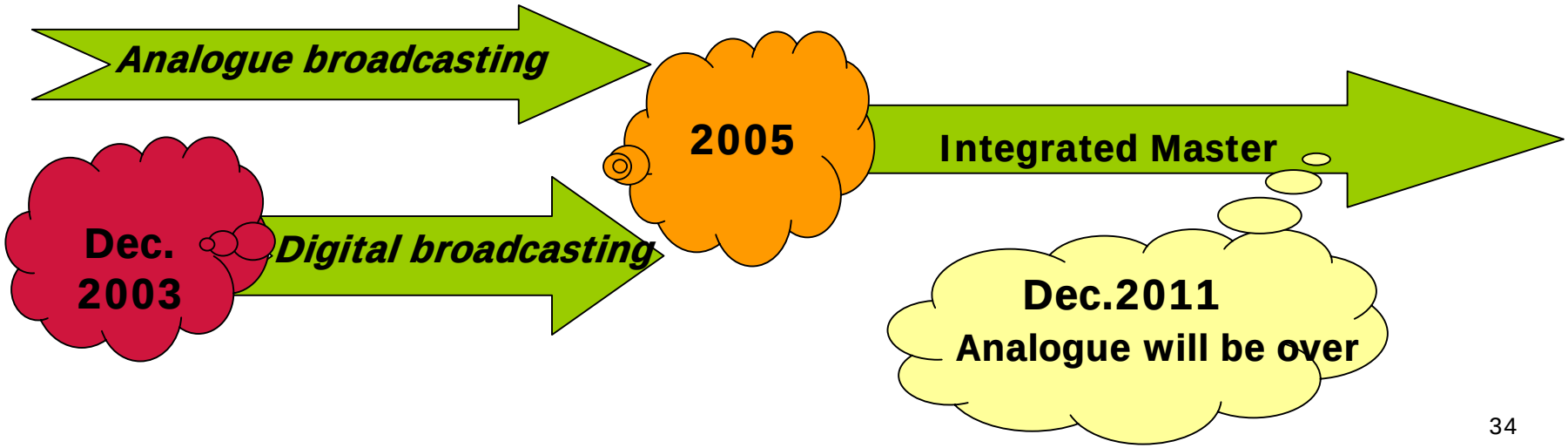
Renewal plan

- First stage

Master system is "Add on" system

- Second stage

When analogue master update, Fuji television will introduce total integrated master system.

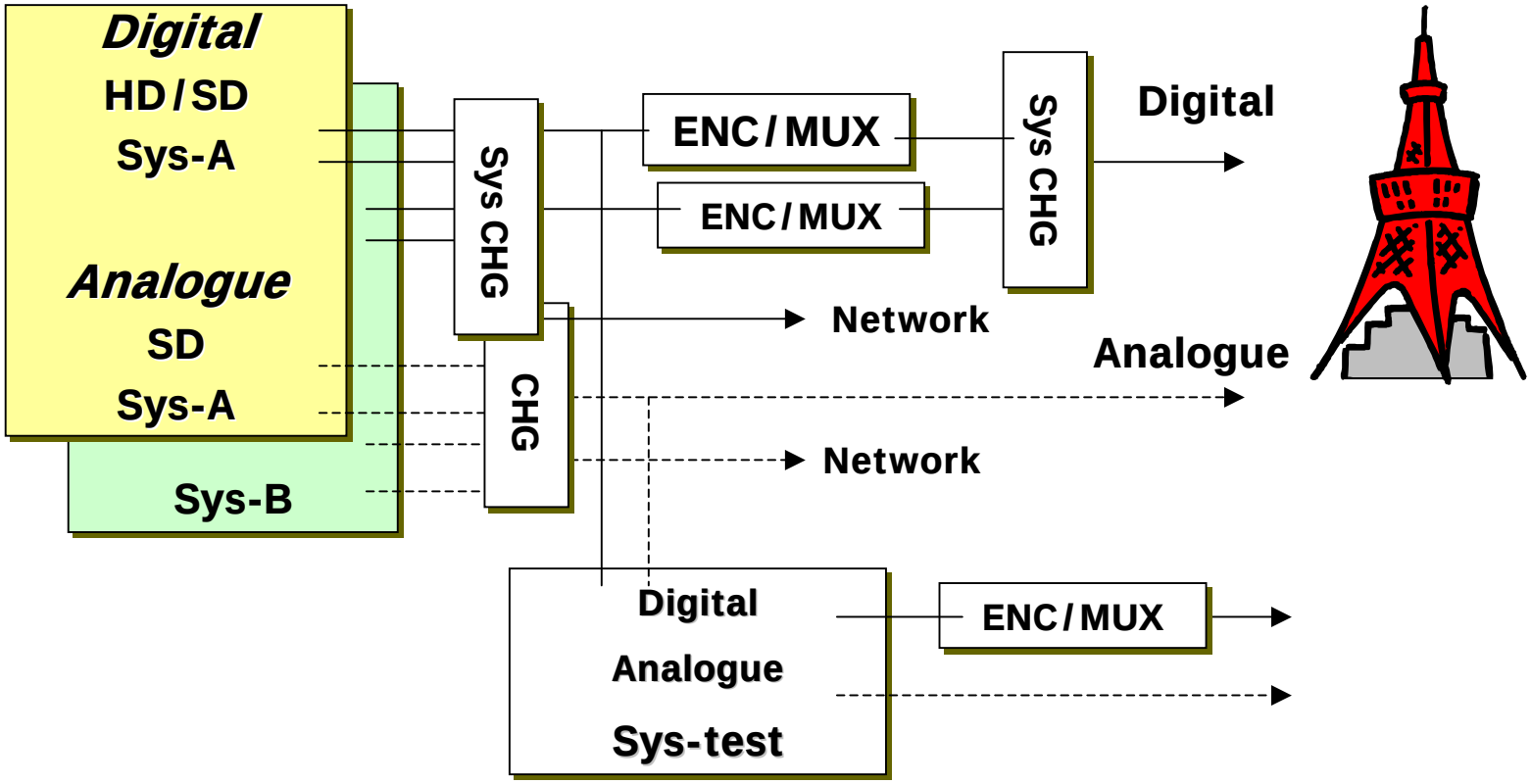


TV Tokyo

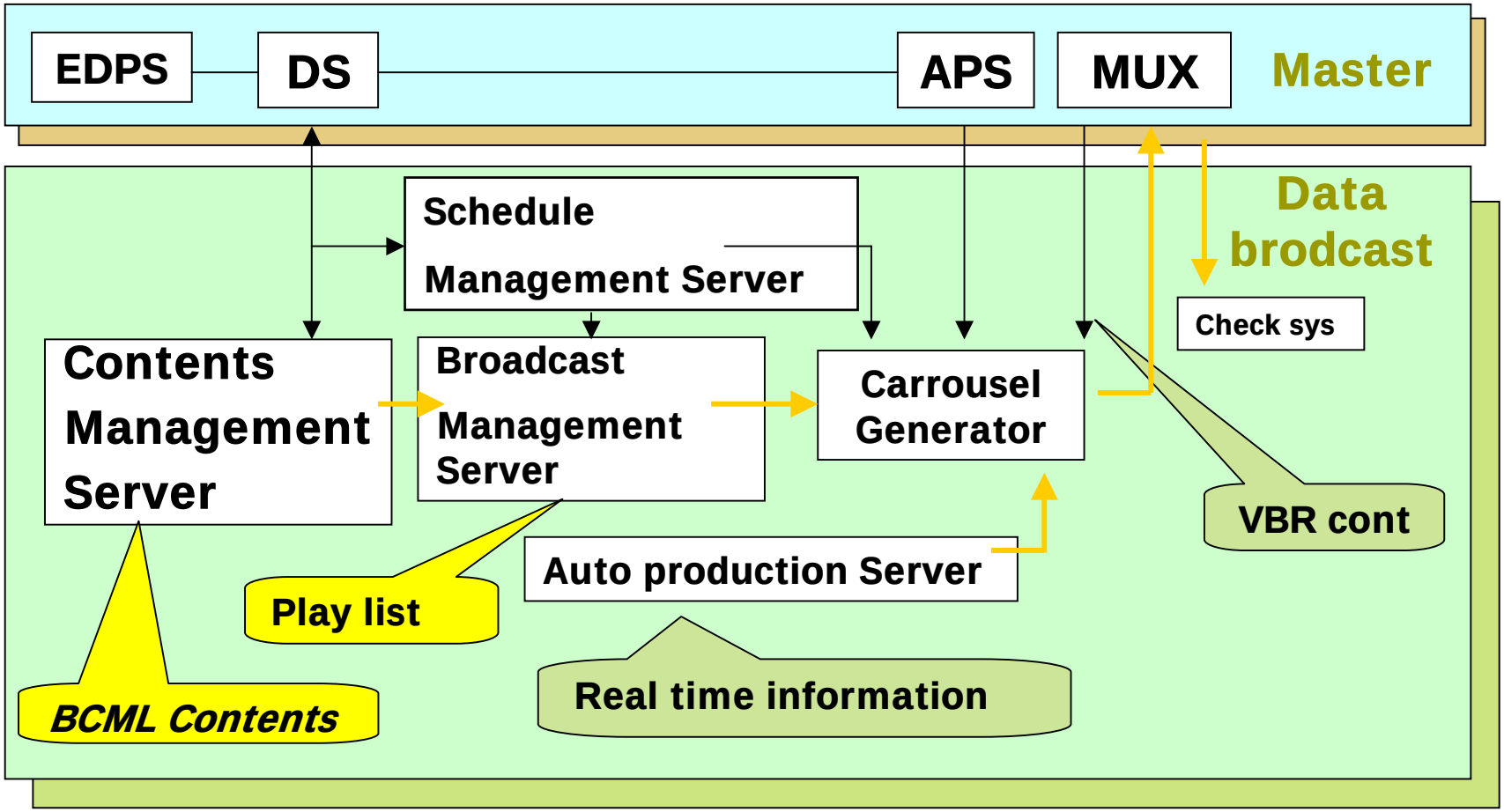
Architecture concept

- Analogue Digital total system
- Flexible programming
- Cost effective system

Broadcast system



Data broadcast system



Migration Plan

Transmission

Digital transmission

- Transmitters and antennas for digital terrestrial television broadcasting installed at Tokyo Tower in 2003.

STL

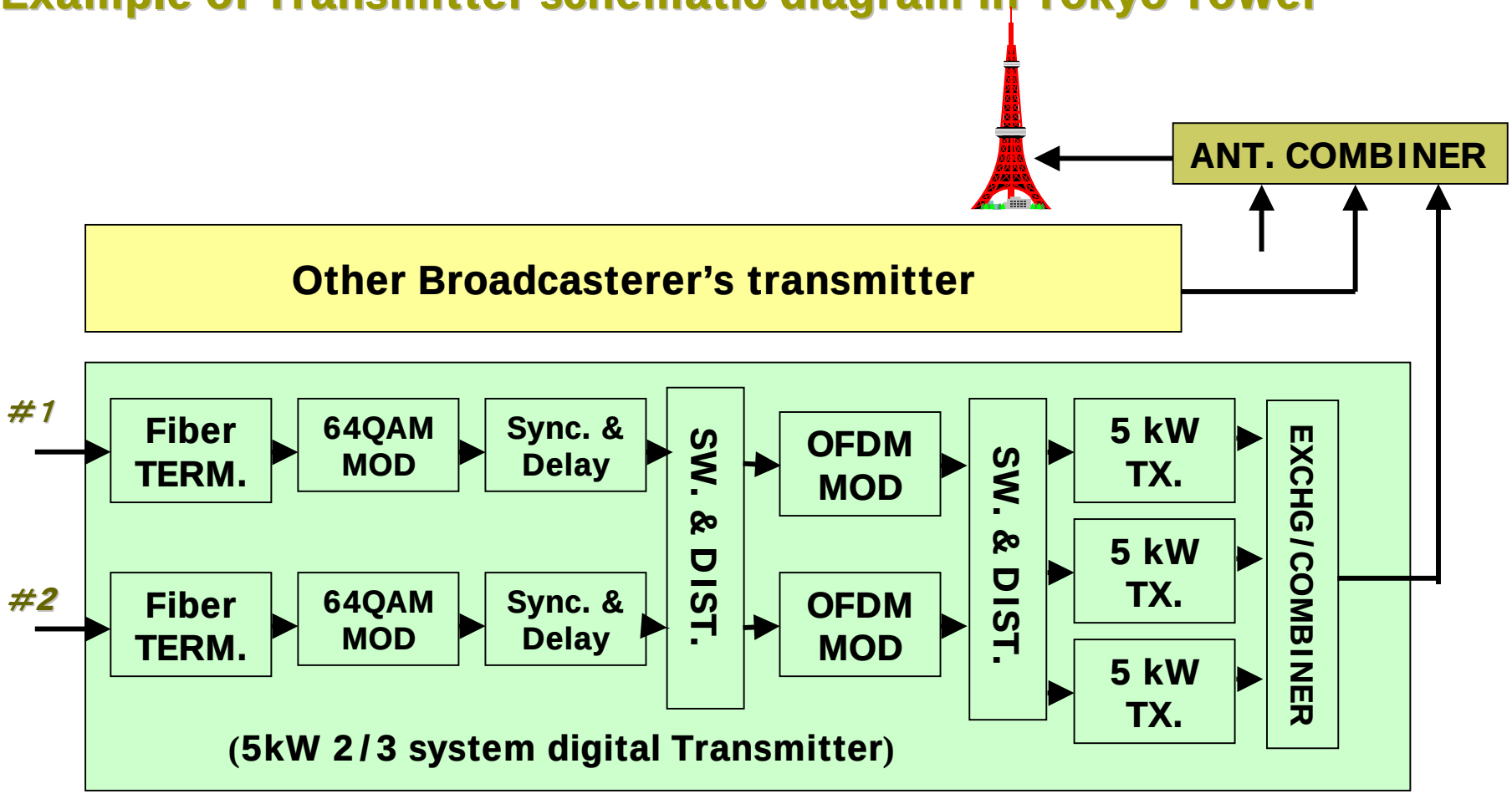
Optic fiber line x2

backup STL

Micro wave

Digital transmitter system

Example of Transmitter schematic diagram in Tokyo Tower



Digital Transmitter system

- Three 5kw transmitters for redundant operation.
- Output power is 10kW.

TOSHIBA

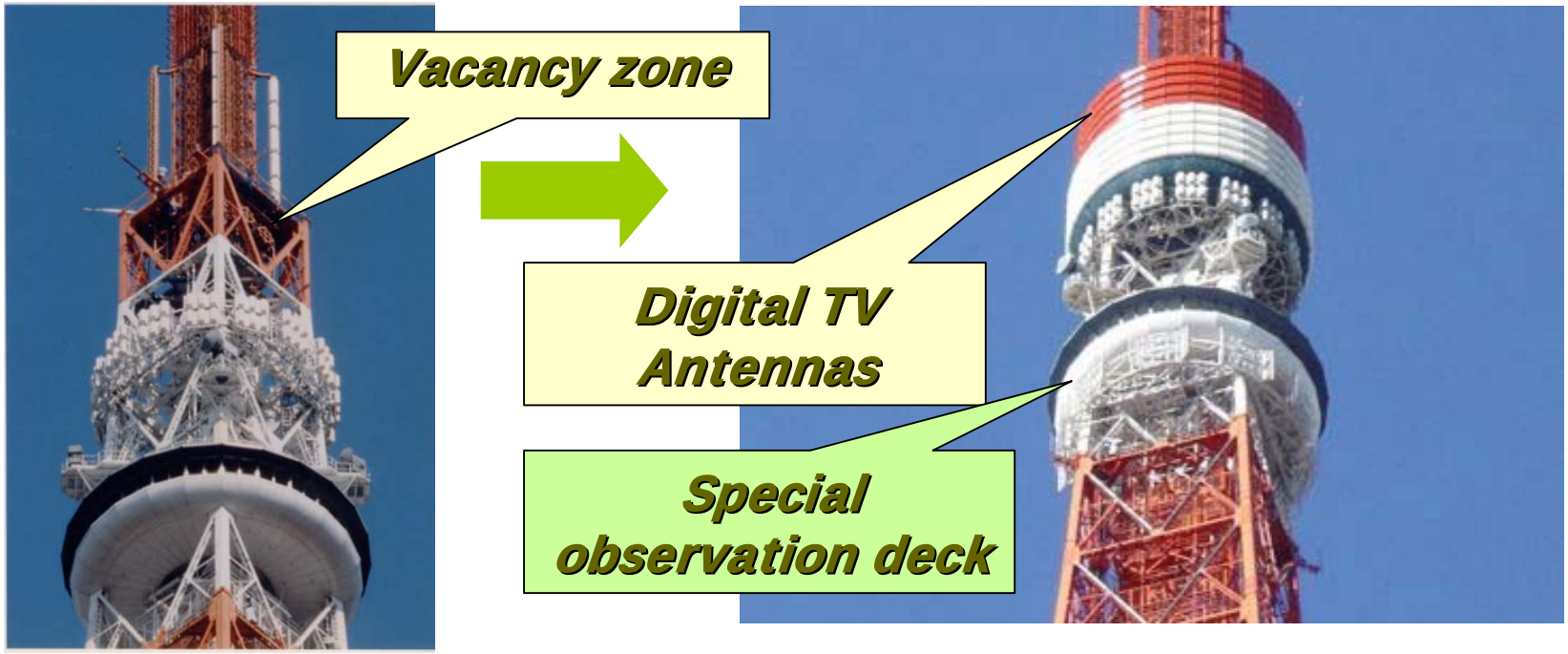
NEC

Antennas

A number of analog TV antennas were already mounted on the optimum position of Tokyo Tower .

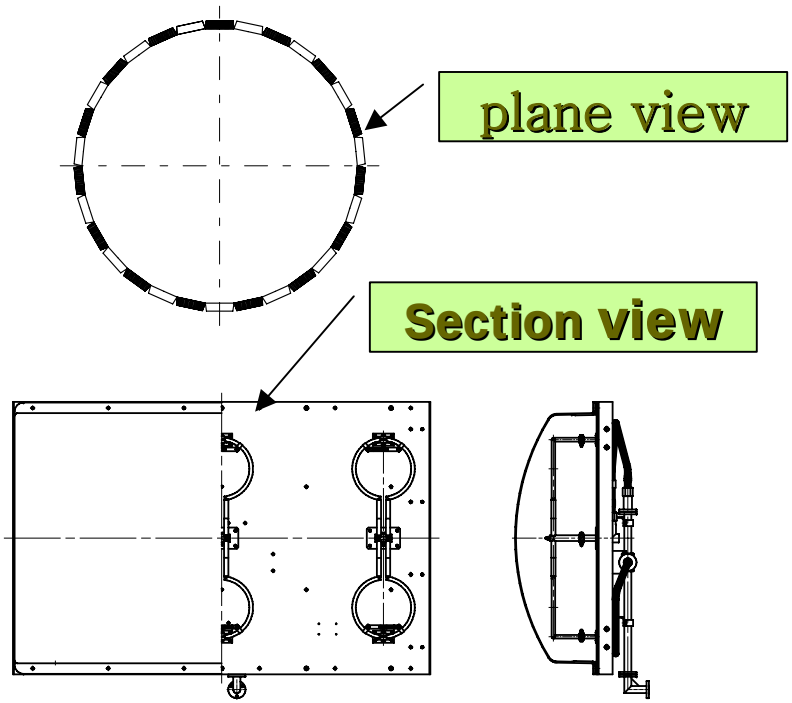
Antennas

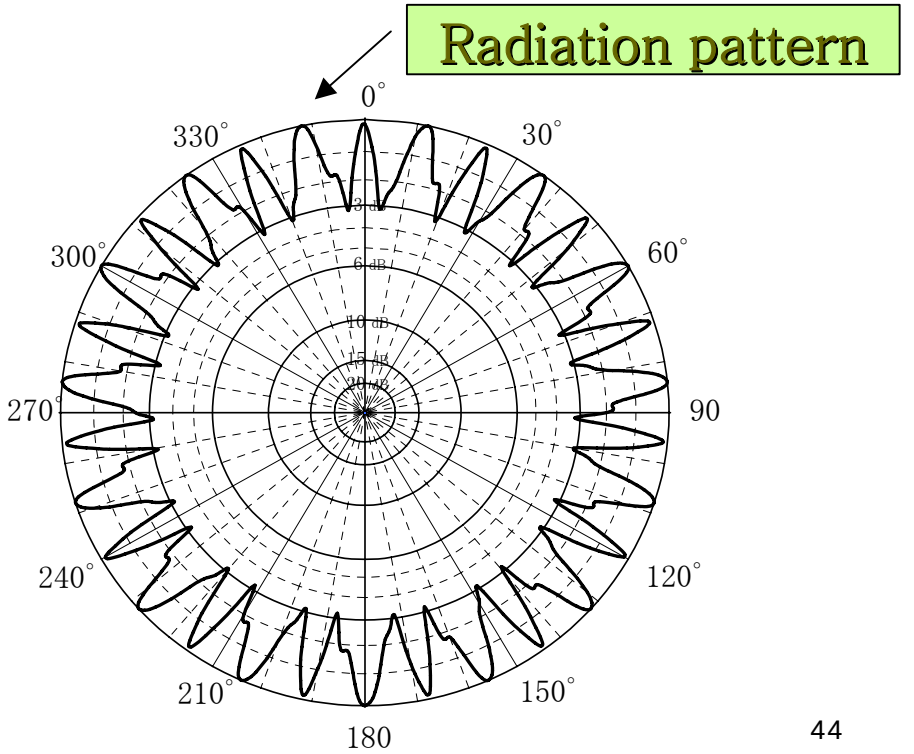
- Vacancy zone is around 250mH of Tokyo tower, There are no appropriate space except there. Digital antennas were designed , compact size, 6 meters in width and 12 meters in height.



Antennas

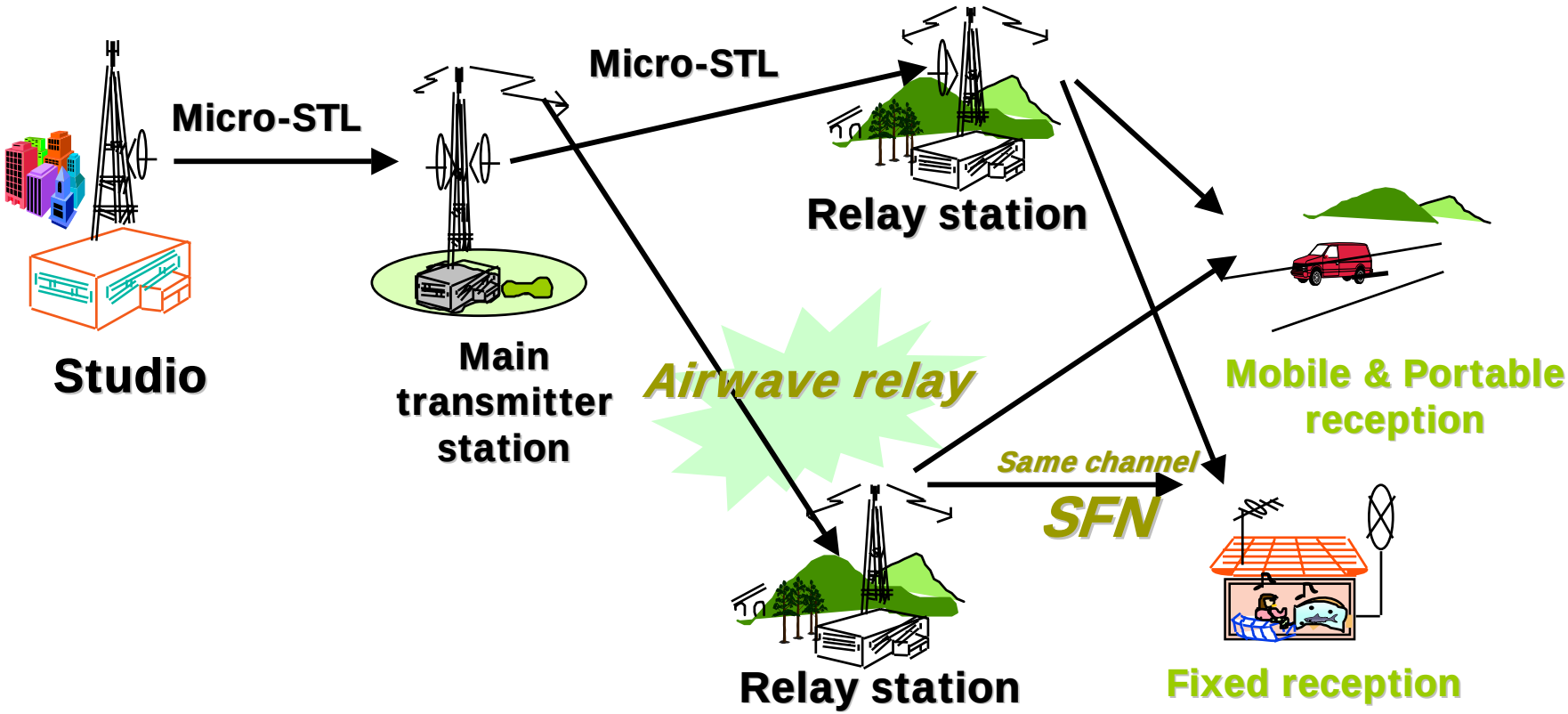
- *A beam pattern synthesis technology realized an omni directional radiation pattern in compact size.*





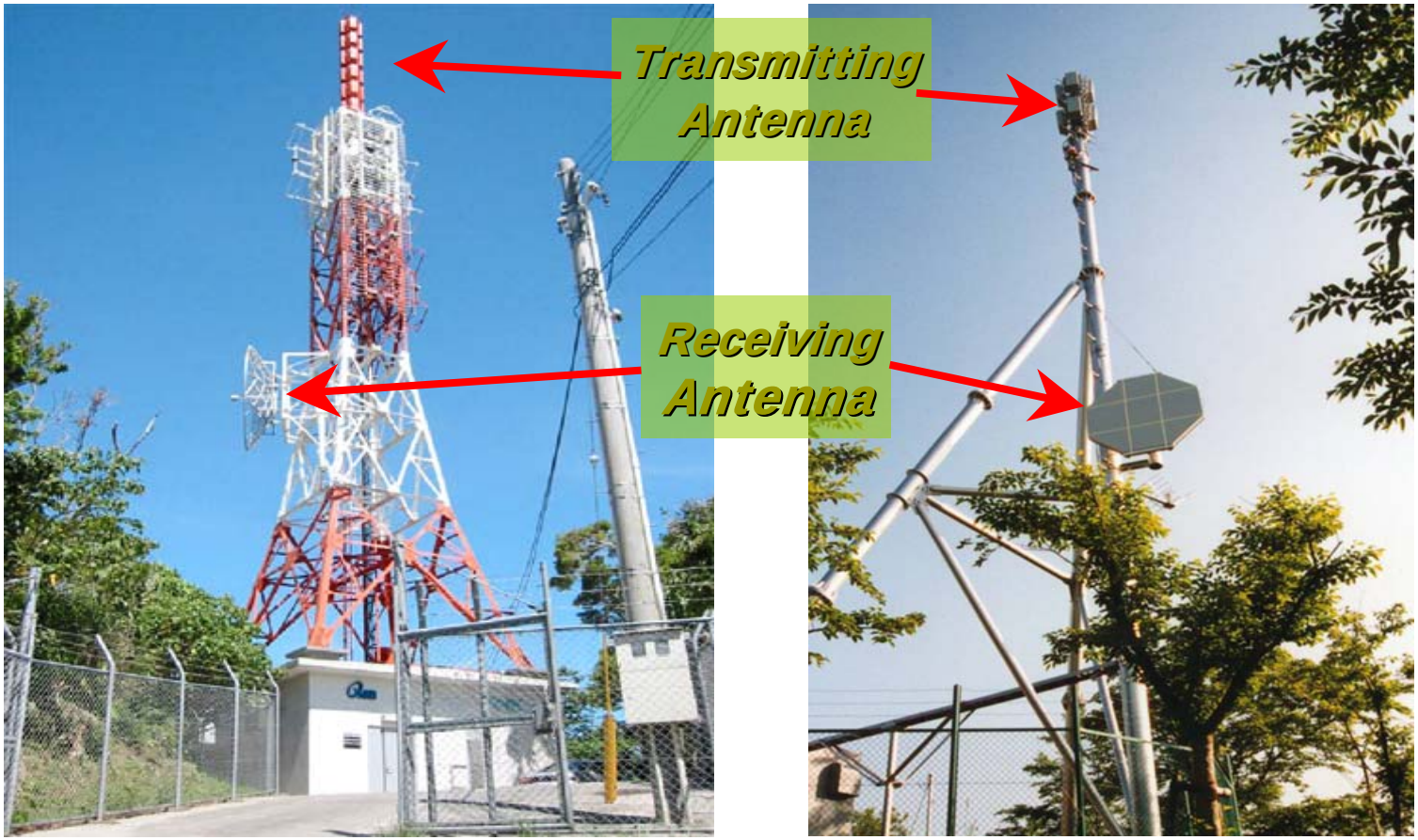
Transmission network chain

To cover the service area all over the country, Broadcasters have to construct many relay stations.



Relay station

Airwave relay station



SET 2006 congresso

Thank you
for your attention !
END

Digital Broadcasting Expert Group
http://www.dibeg.org
mail: info@dibeg.org