

ISDB-T Seminar

Session 4 part2

DTTB products and infrastructure in Japan

Outline of broadcaster's infrastructure

Venezuela 2006

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DiBEG Japan

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tv asahi

Contents

□ *Fundamental aspect*

◆ *Service and Business*

□ *Migration plan in the case of Commercial TV Station in Japan*

◆ *Broadcast premises*

◆ *Transmission*

Migration Plan

Fundamental aspect
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

Single Channel
Standard (SDTV)
Casting
Viewer
Passive
Home

Sponsor (Commercial station)
Mass
Broadcast
Low (Stability)

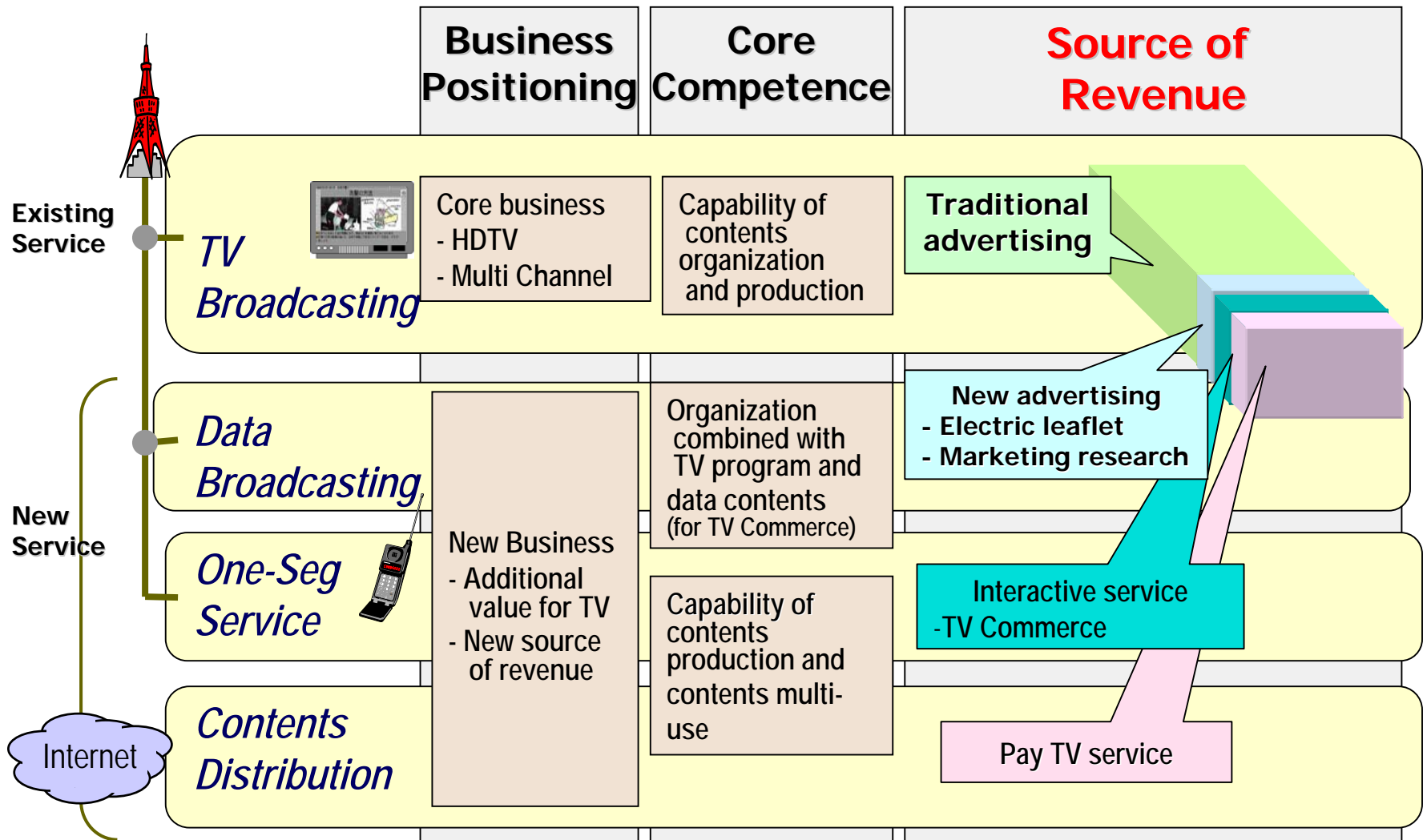
Digital Broadcasting

Multi Channel
+ High quality (HDTV)
Interactive
Customer
Active
Anywhere

Fusion of
Broadcast and
Telecommunication

+ Subscriber, Industry
+ Segment, One to One
+ Interactive
High

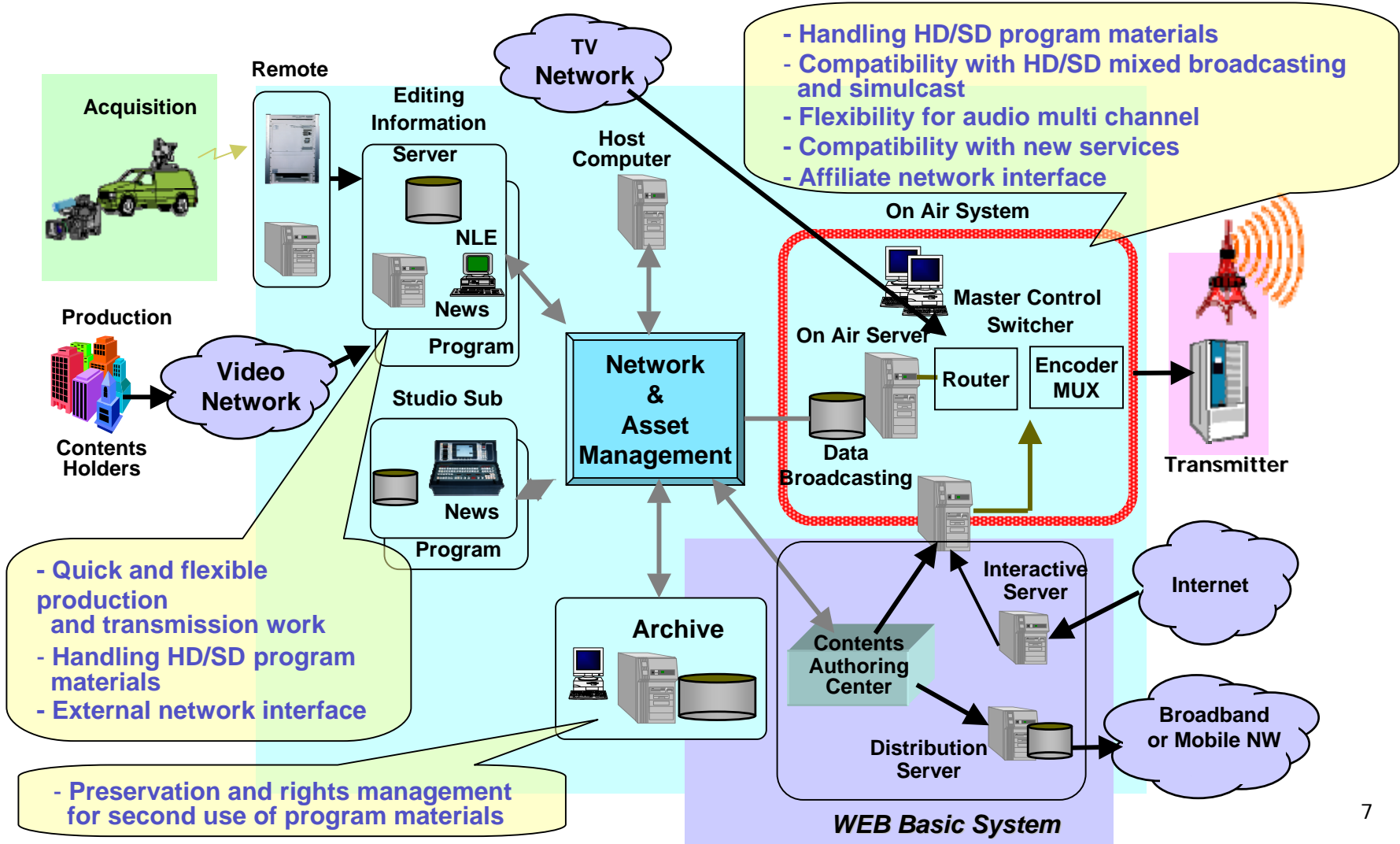
Business and Source of revenue



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, Caption transmission
- Data Broadcasting, Broadcasting service for One-Seg service
- High compression with HD encoder

Requirements for Master System(2)

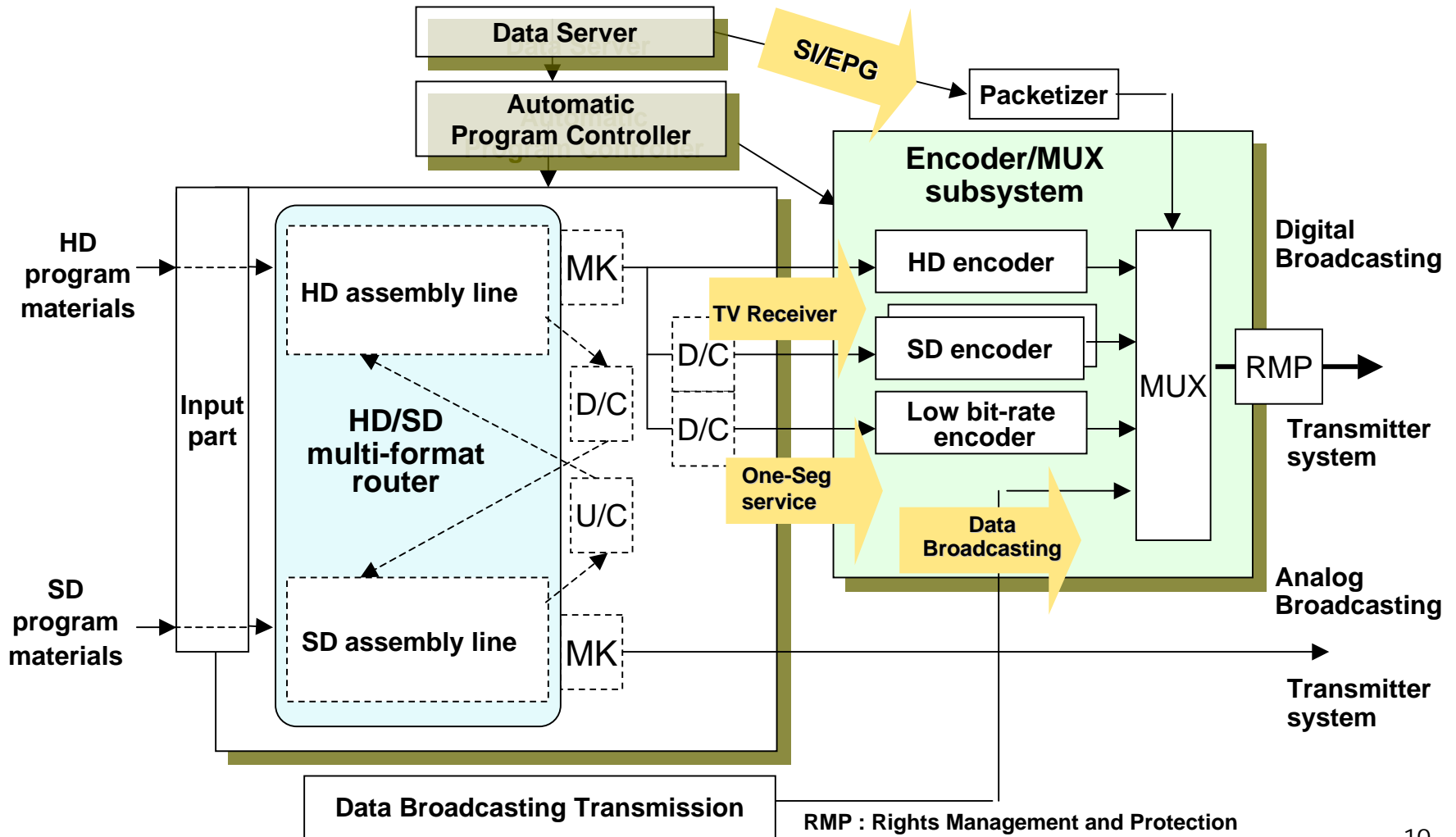
□Affiliates Network Interface

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

□Efficient Operations

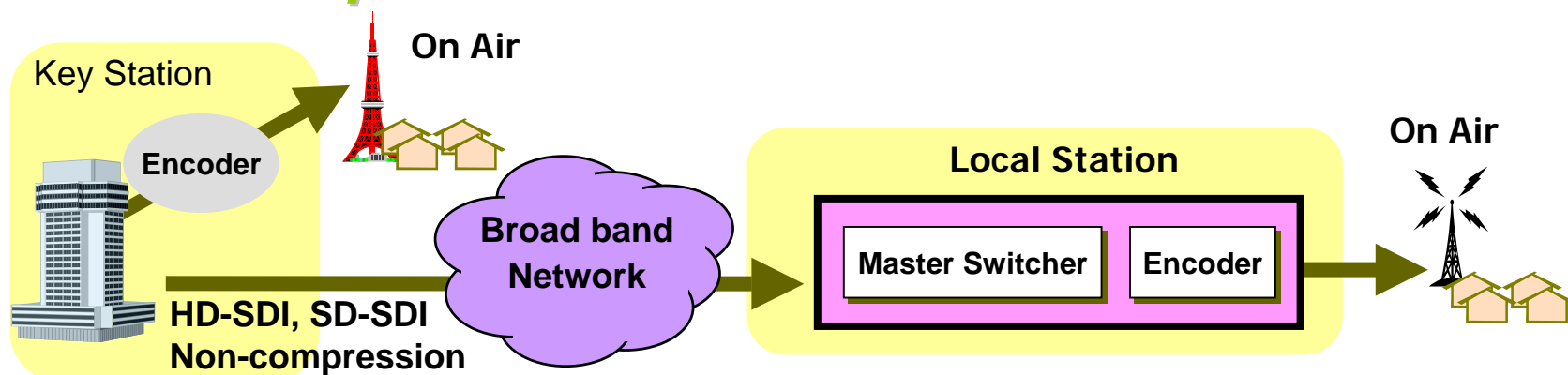
- Integrated monitoring system
- Monitoring of MPEG transport stream
- Monitoring of SI/EPG

Master Control Switcher Block Diagram

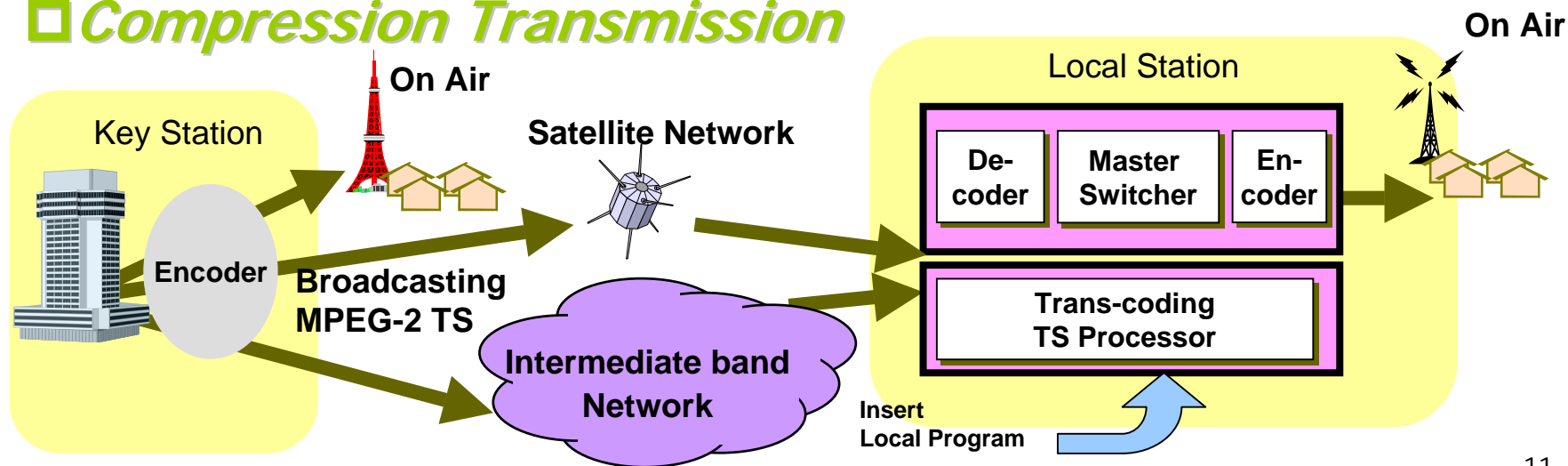


Distribution to the network stations

□ Non-Compression Transmission



□ Compression Transmission



Migration Plan

Introduction model

Nippon television



Architecture concept

□ Integrated system

Production facilities/Storage
media/Broadcasting system

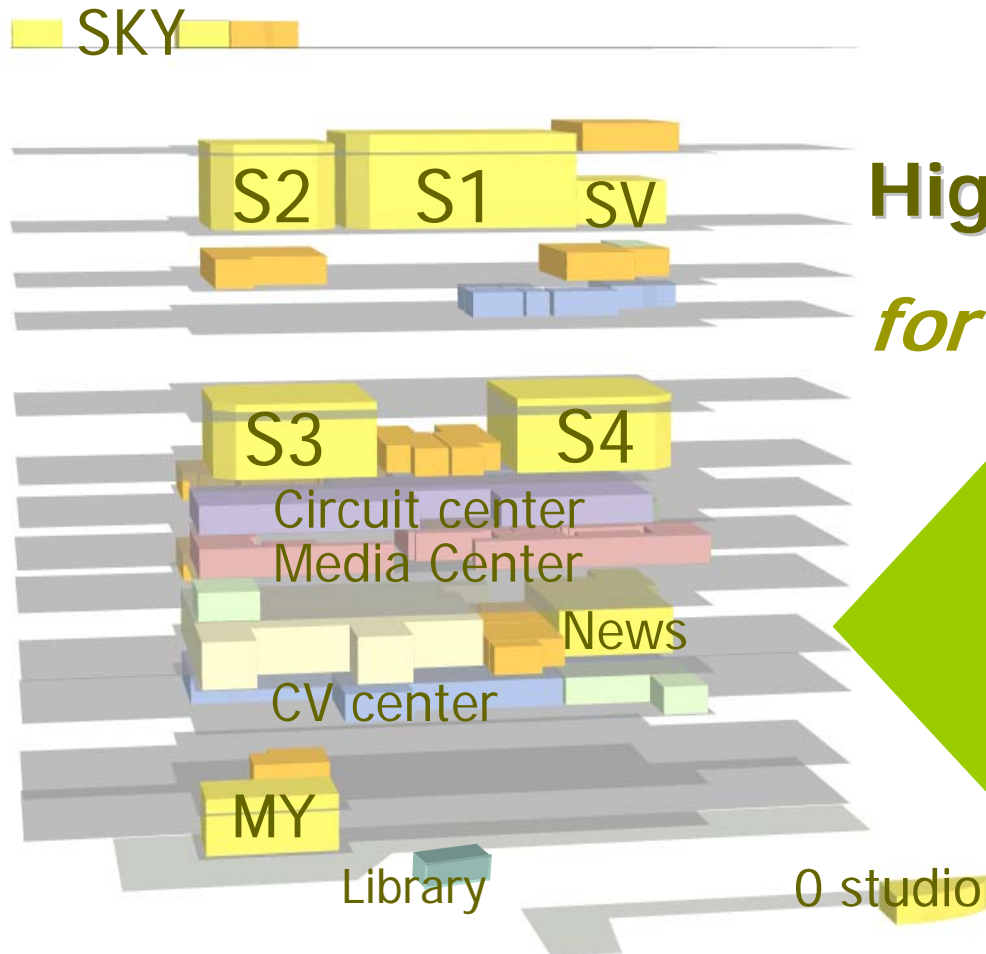
□ Flexible system

Long term life/Expansion
request

□ Screening

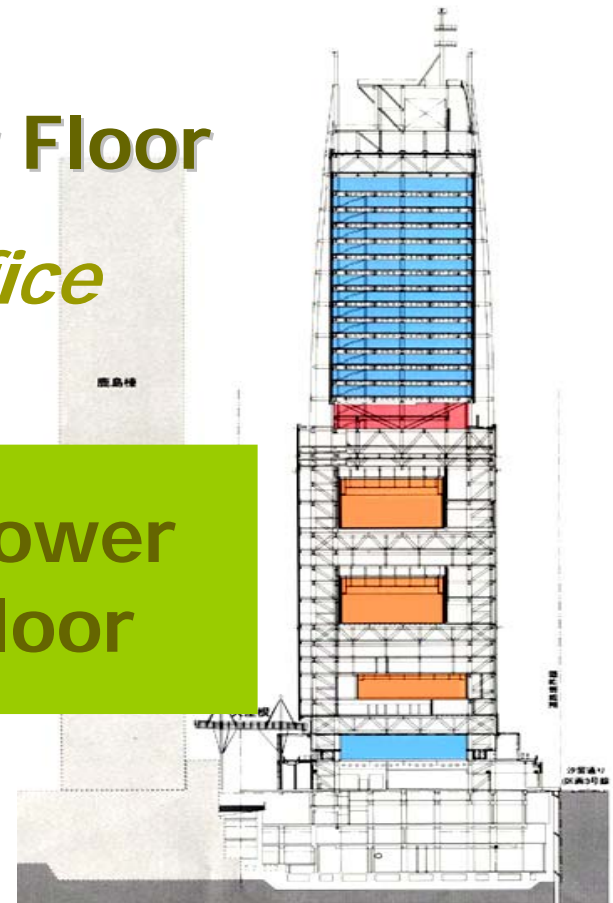
Trend technology

Layout

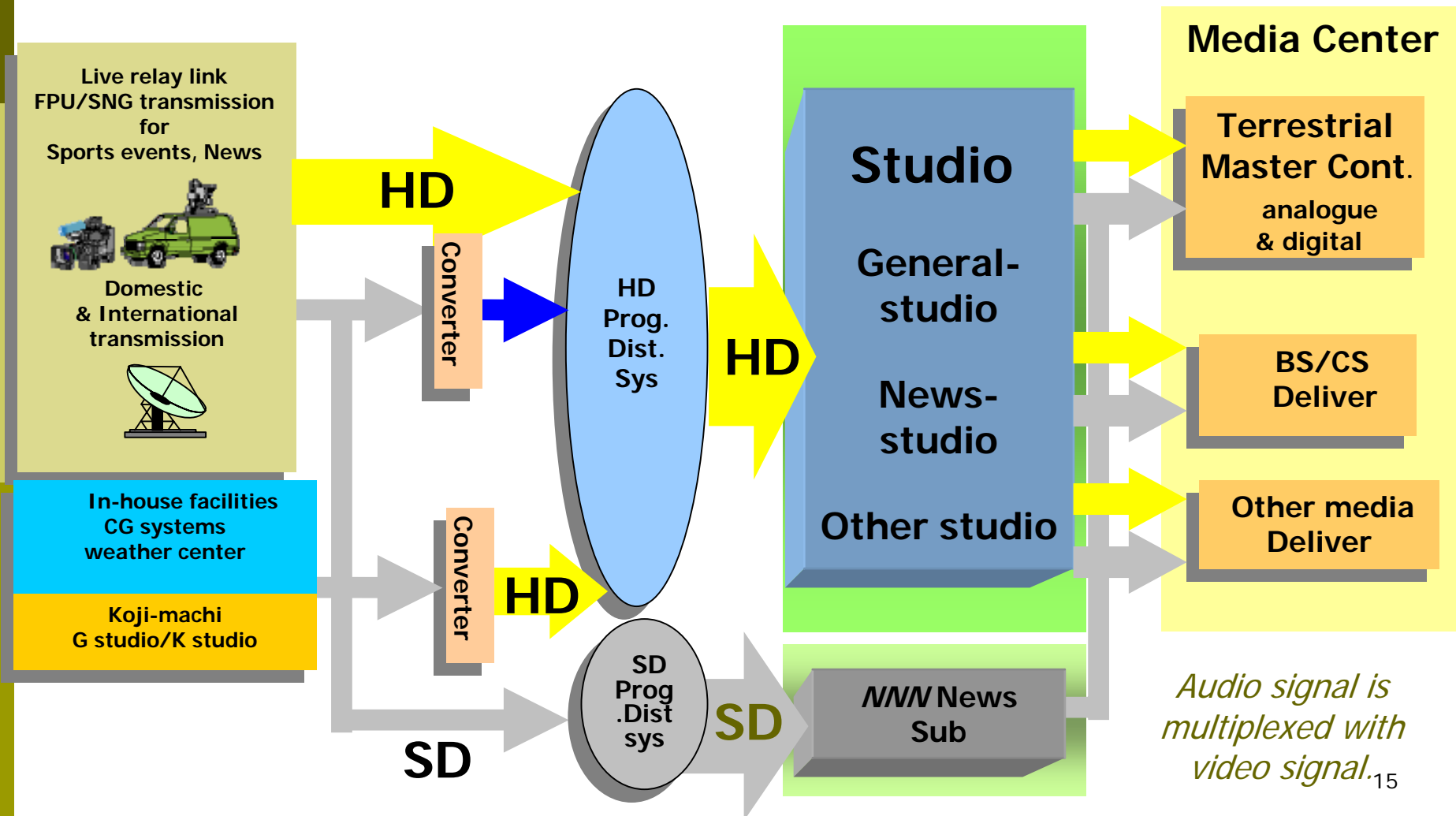


**Higher Floor
for Office**

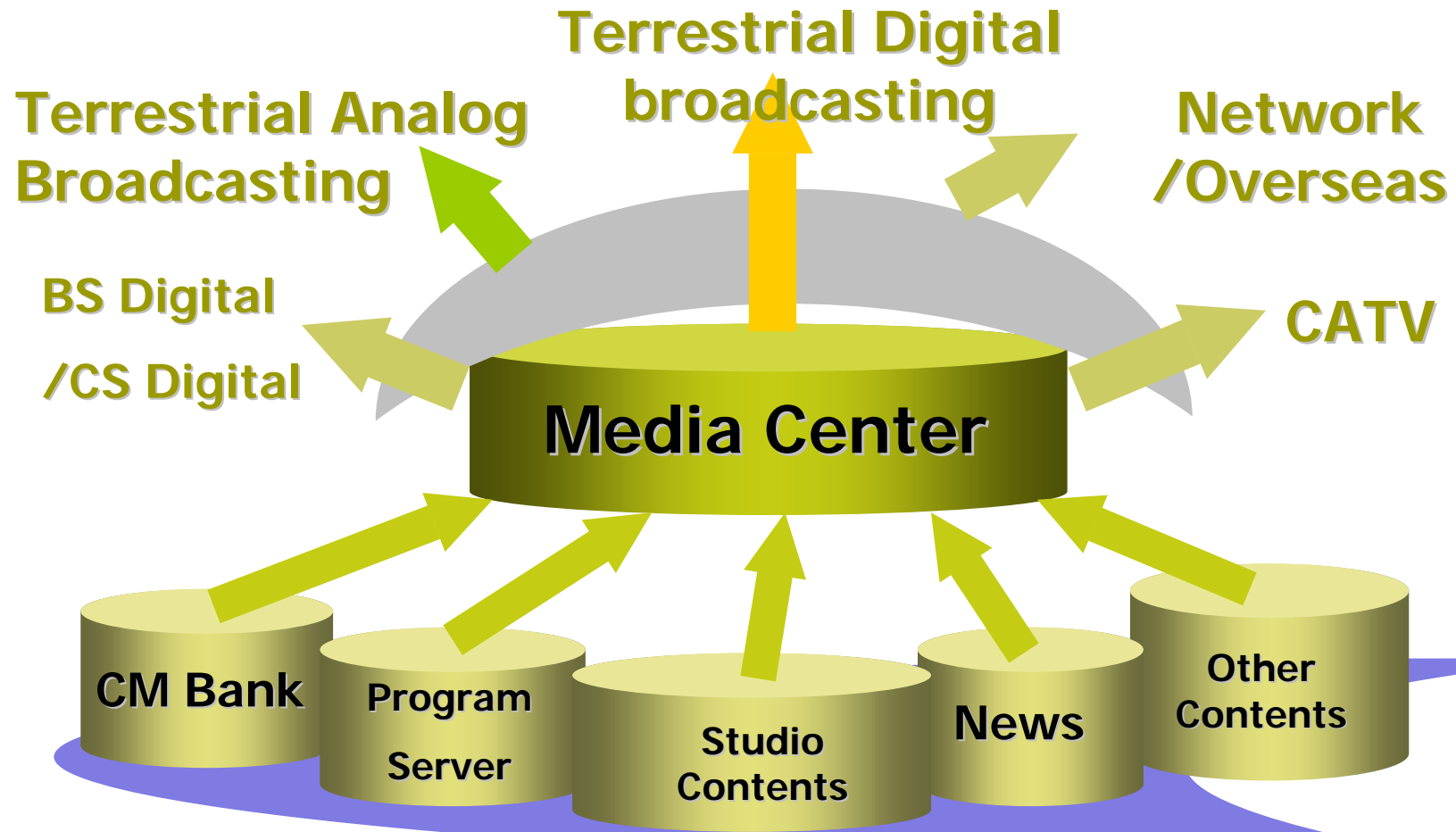
**Lower
Floor**



Flow of HD/SD Signal

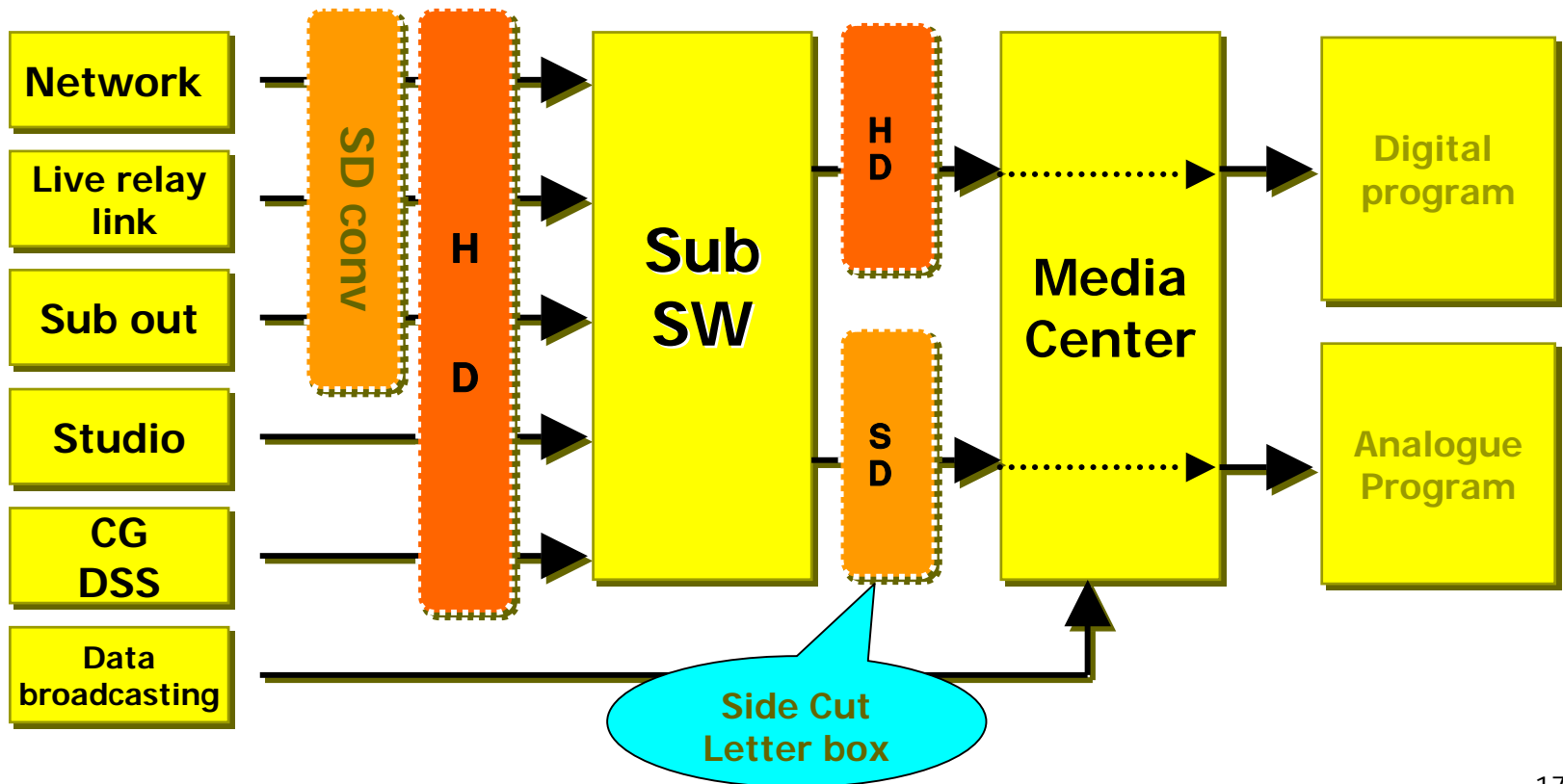


Media center concept

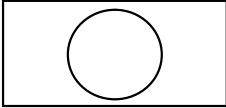
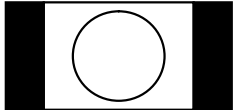
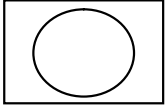
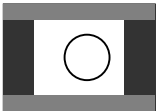


Simultaneous Broadcasting

□ In the case of Live program

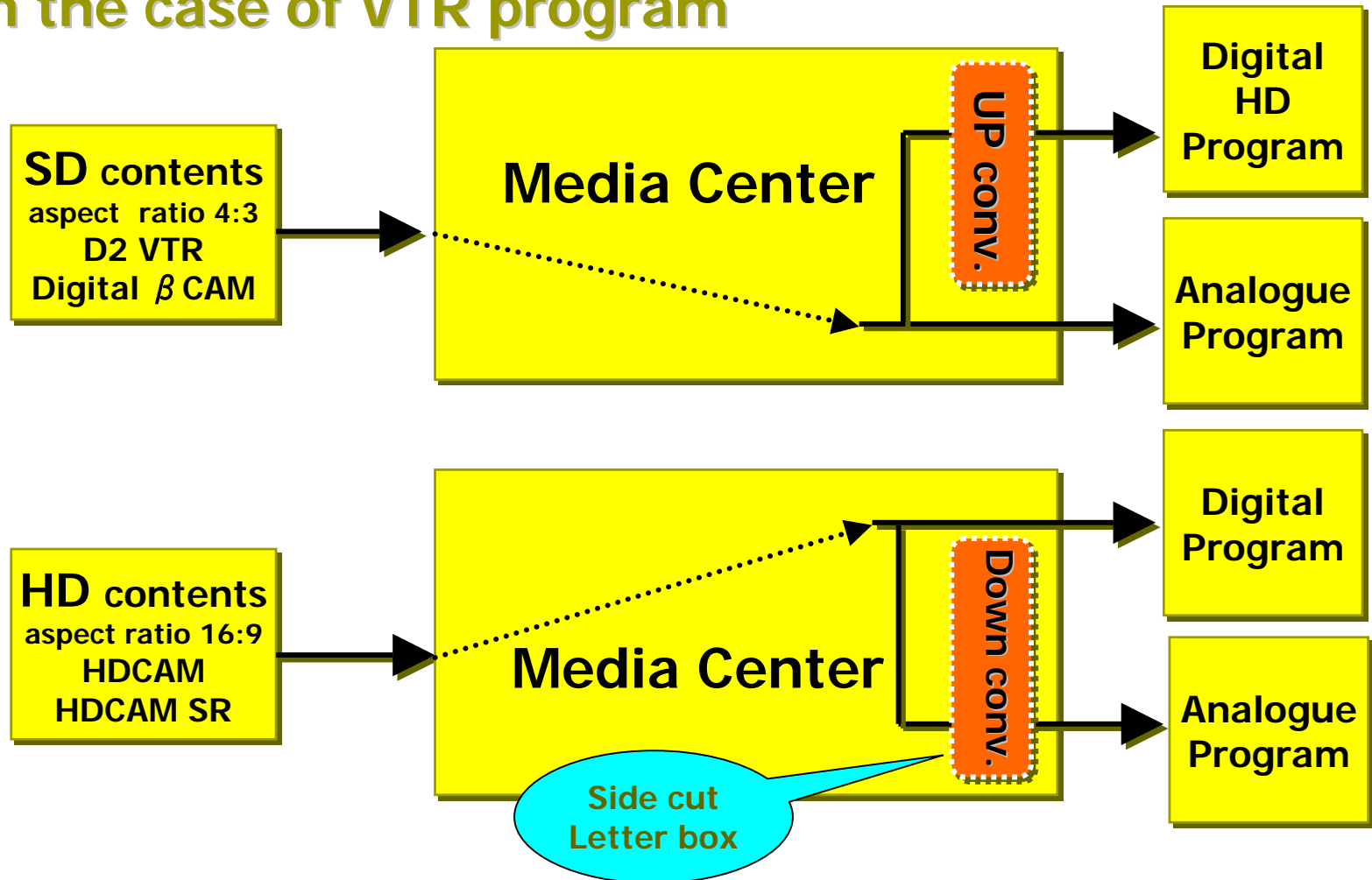


Aspect ratio

| 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

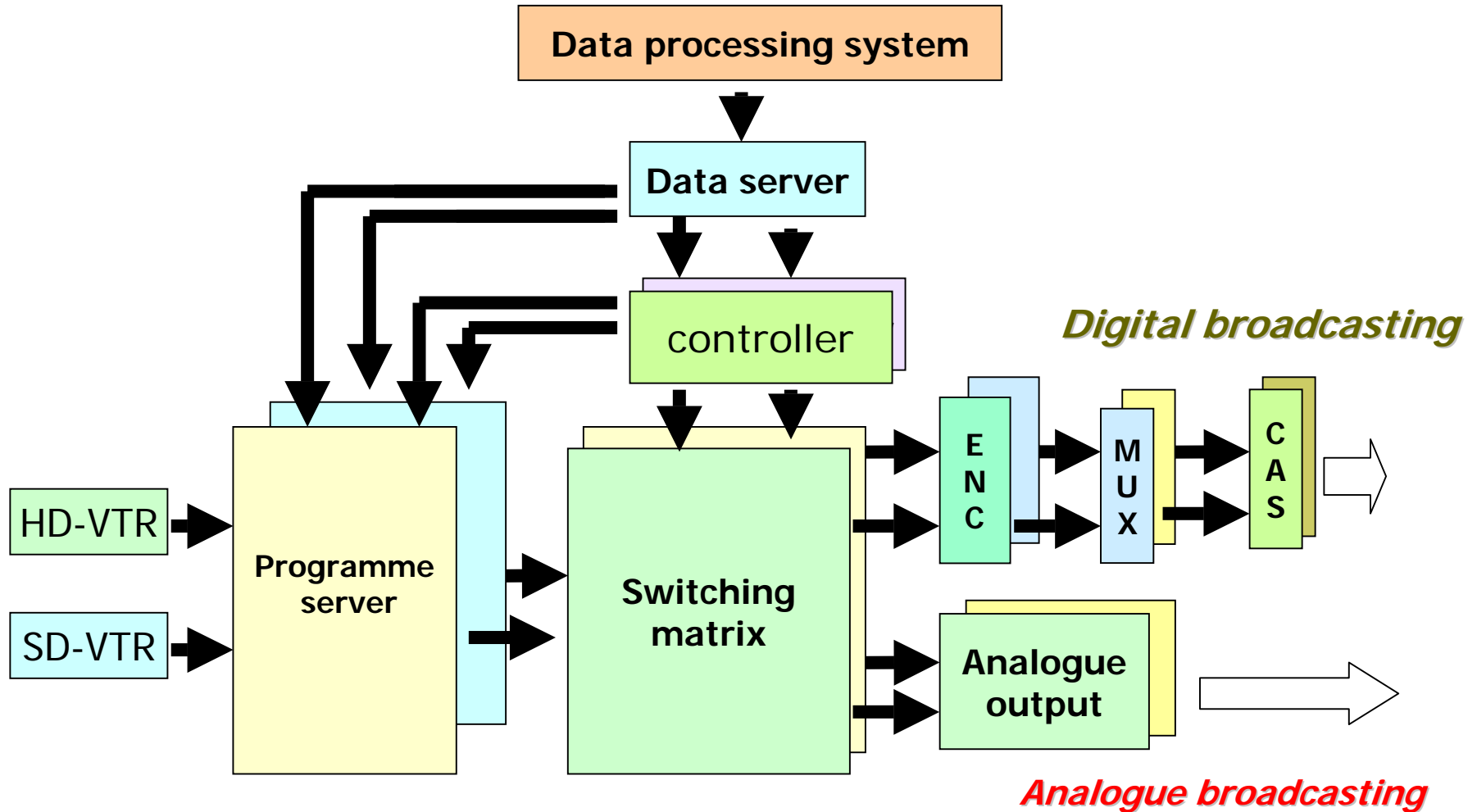
UPS: 1000KVAx2 Redundant operation

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

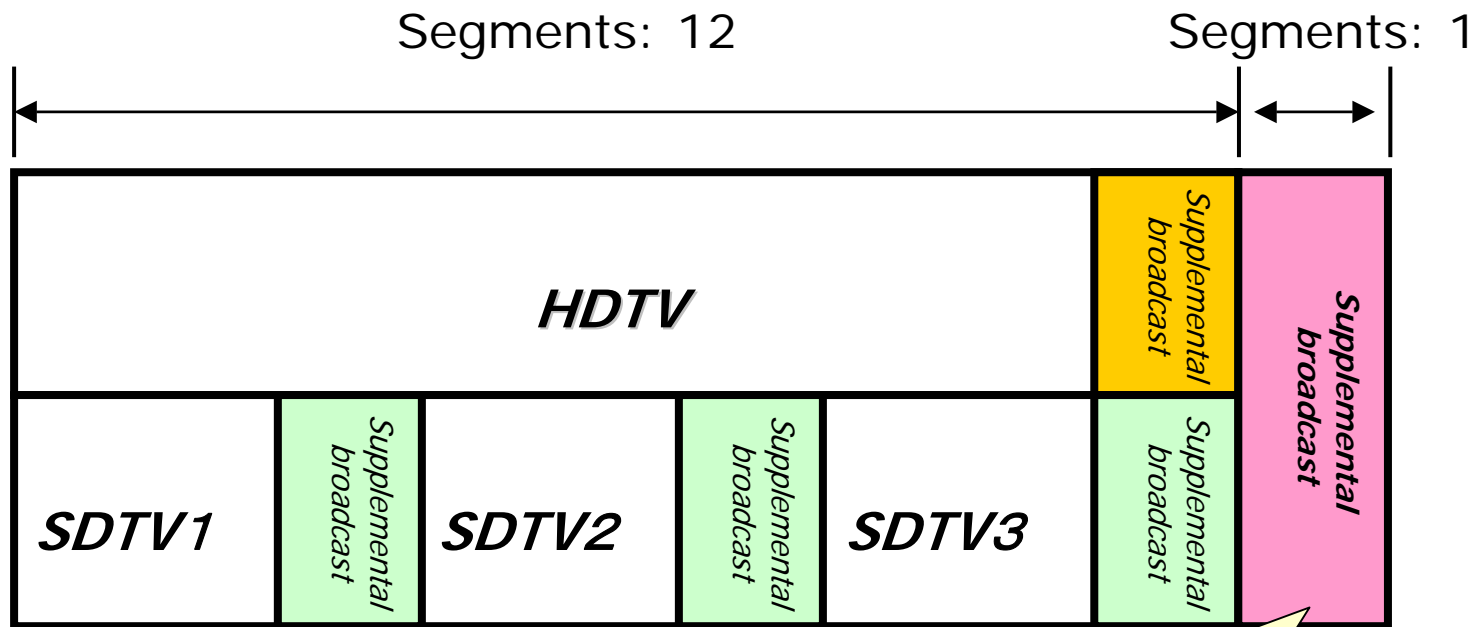
□ Efficient monitoring and operations

- Integrated monitoring system
- Multi-monitor, Touch panel

Master control system (3)



Applications



1 segment service for mobile phone

Tokyo Broadcasting System



Architecture concept

□ Two-step approach

✓ First step

from end of 2003

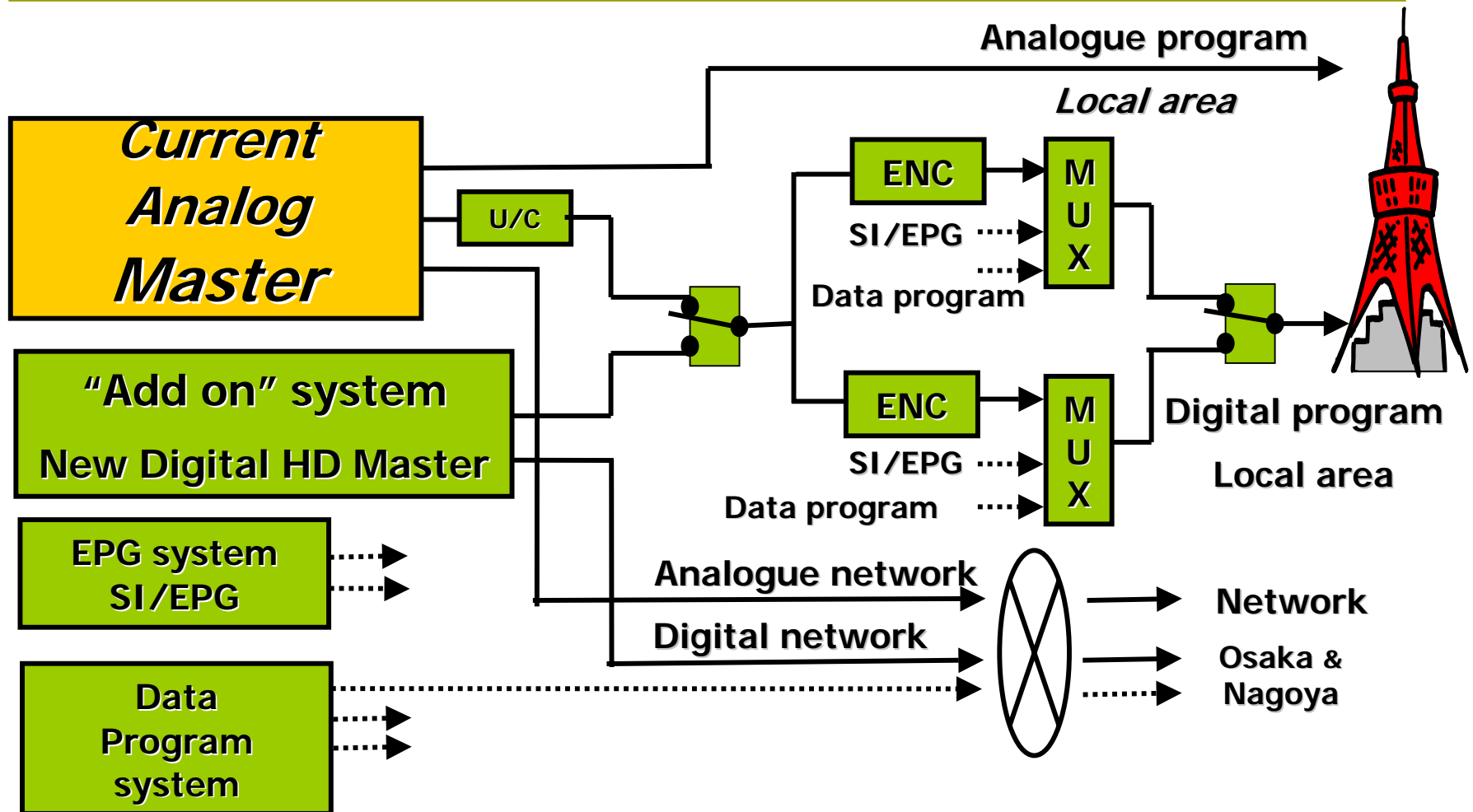
"Add on" system

✓ Second step

from end of 2004

Full digital

"Add on" system



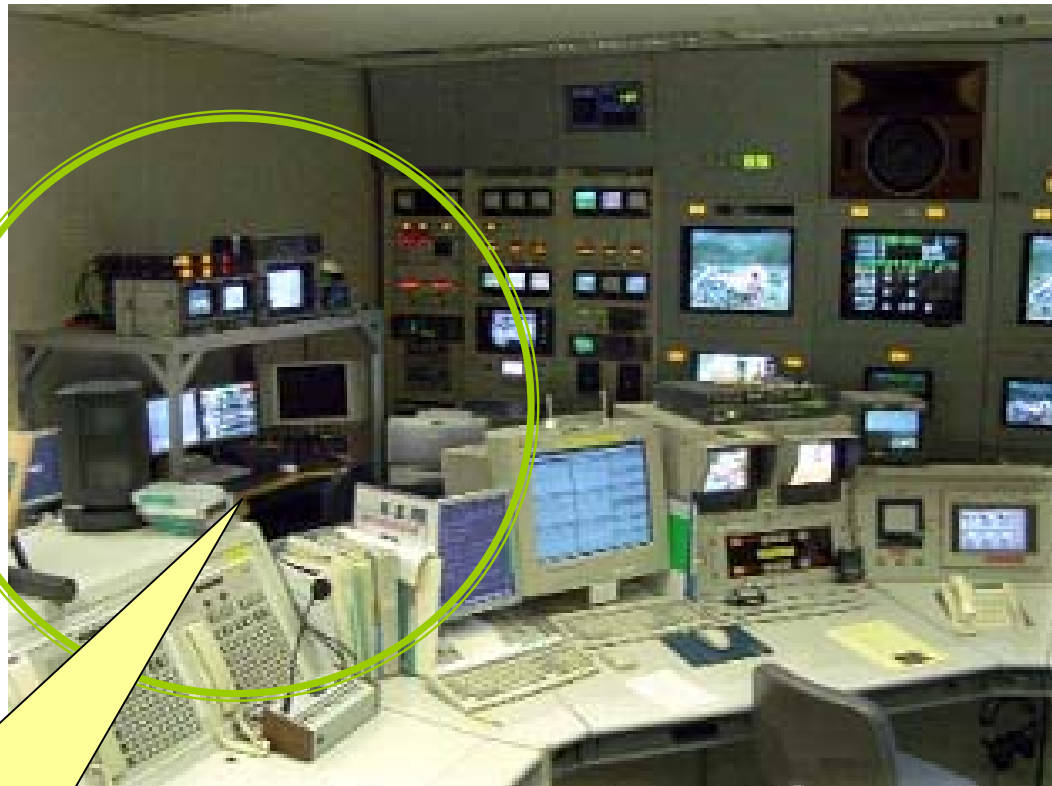
Monitoring system

Analogue program
Local Network

Digital program
Local Network



"Add on" monitoring system



"Add on" system

Transmission parameter

□ First stage

13 segment 64QAM $\frac{3}{4}$ 18.2Mbps

| | | | |
|----------|-------|--------------|----------------|
| HD Video | Audio | SI & caption | Data broadcast |
|----------|-------|--------------|----------------|

□ Final stage

12 segment 64QAM $\frac{3}{4}$ 16.8Mbps One-seg

| | | | | |
|----------|-------|--------------|----------------|----------------|
| HD Video | Audio | SI & Caption | Data broadcast | Mobile service |
|----------|-------|--------------|----------------|----------------|

Fuji television



Architecture concept

□ **Cost minimum**

□ **Simple system**

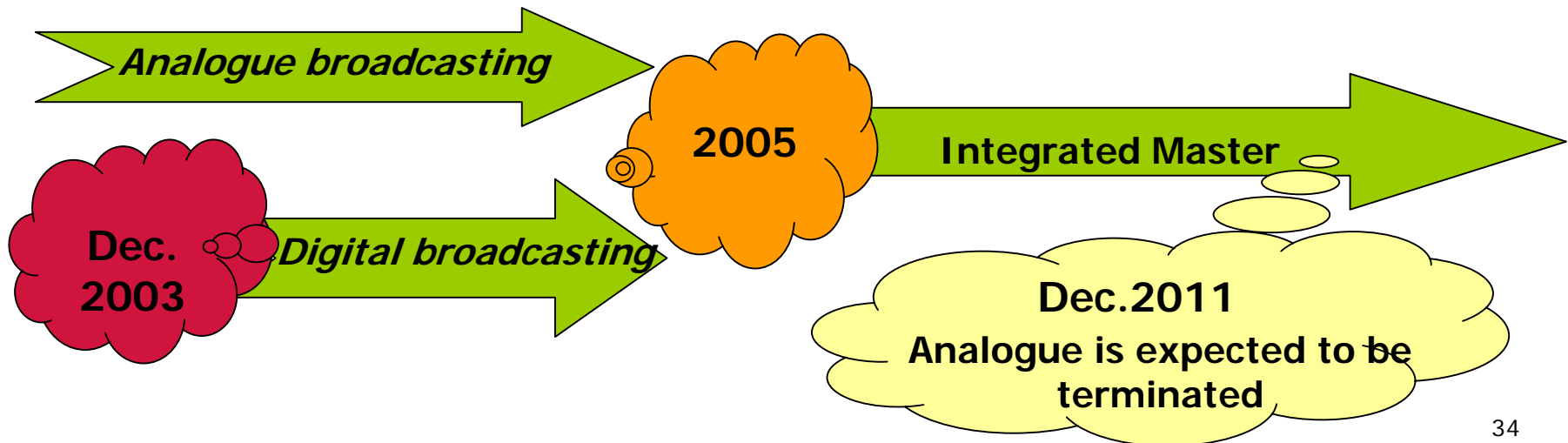
Renewal plan

□First stage

Master system is "Add on" system

□Second stage

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



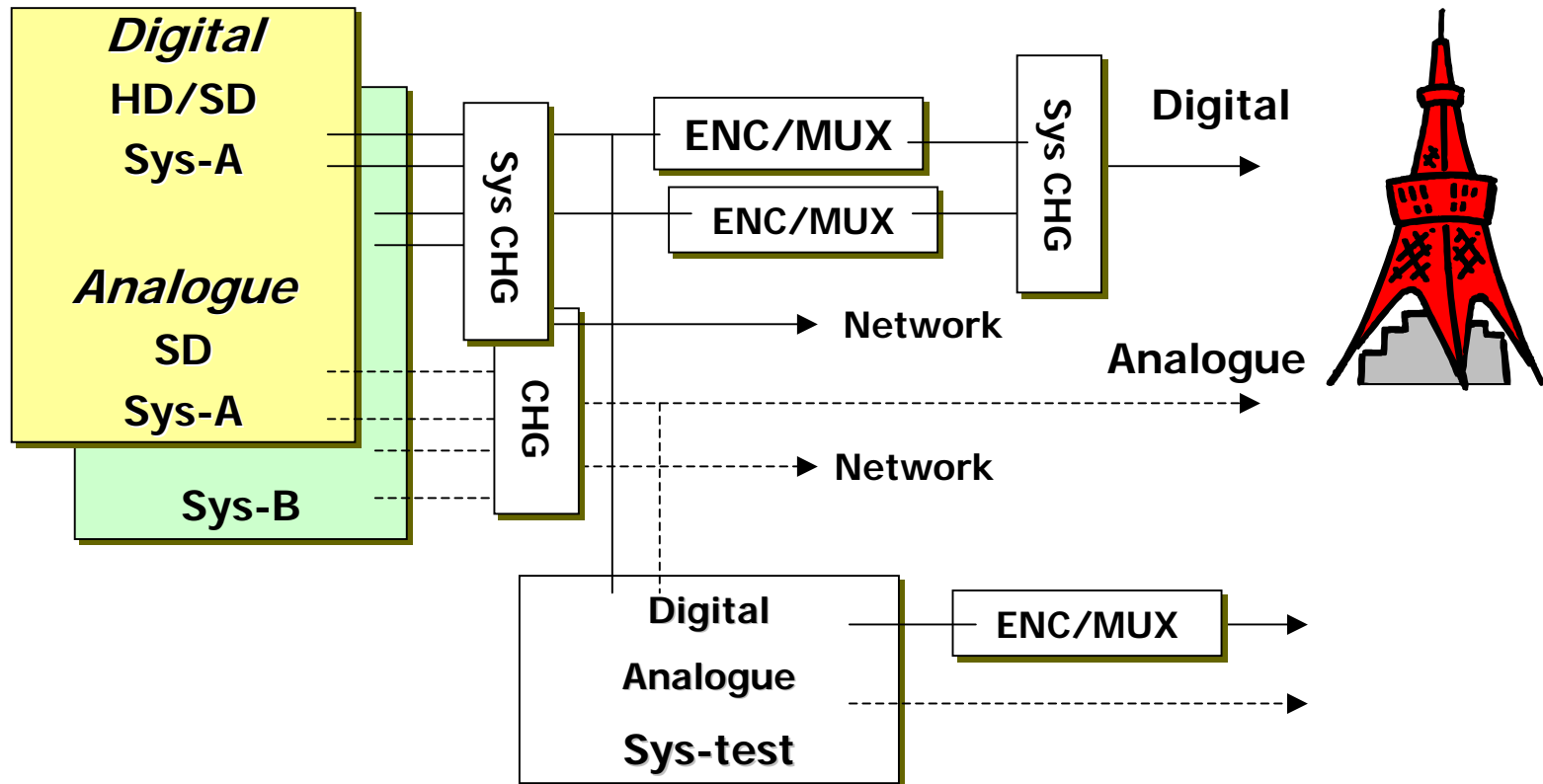
TV Tokyo



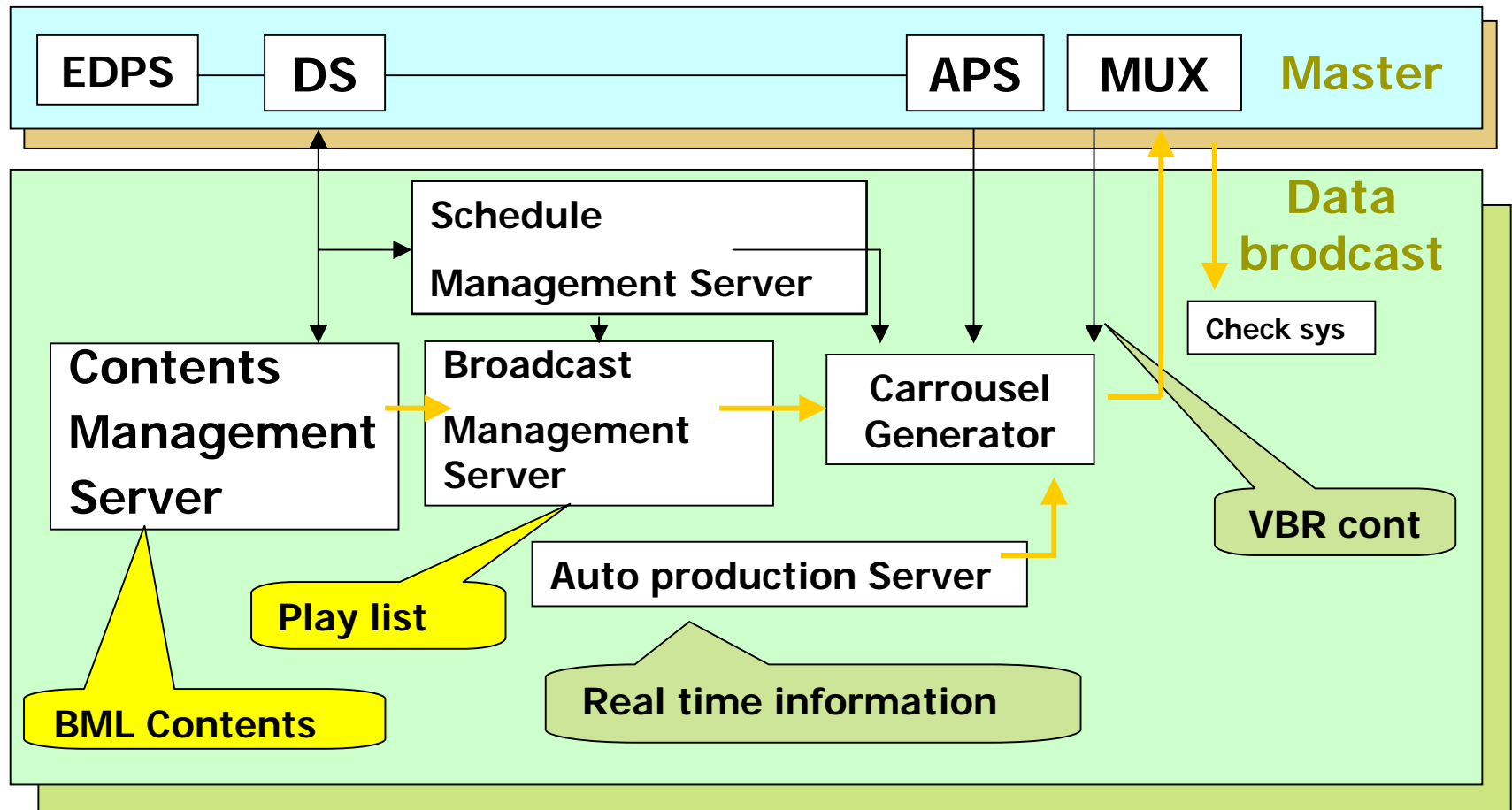
Architecture concept

- ❑ **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

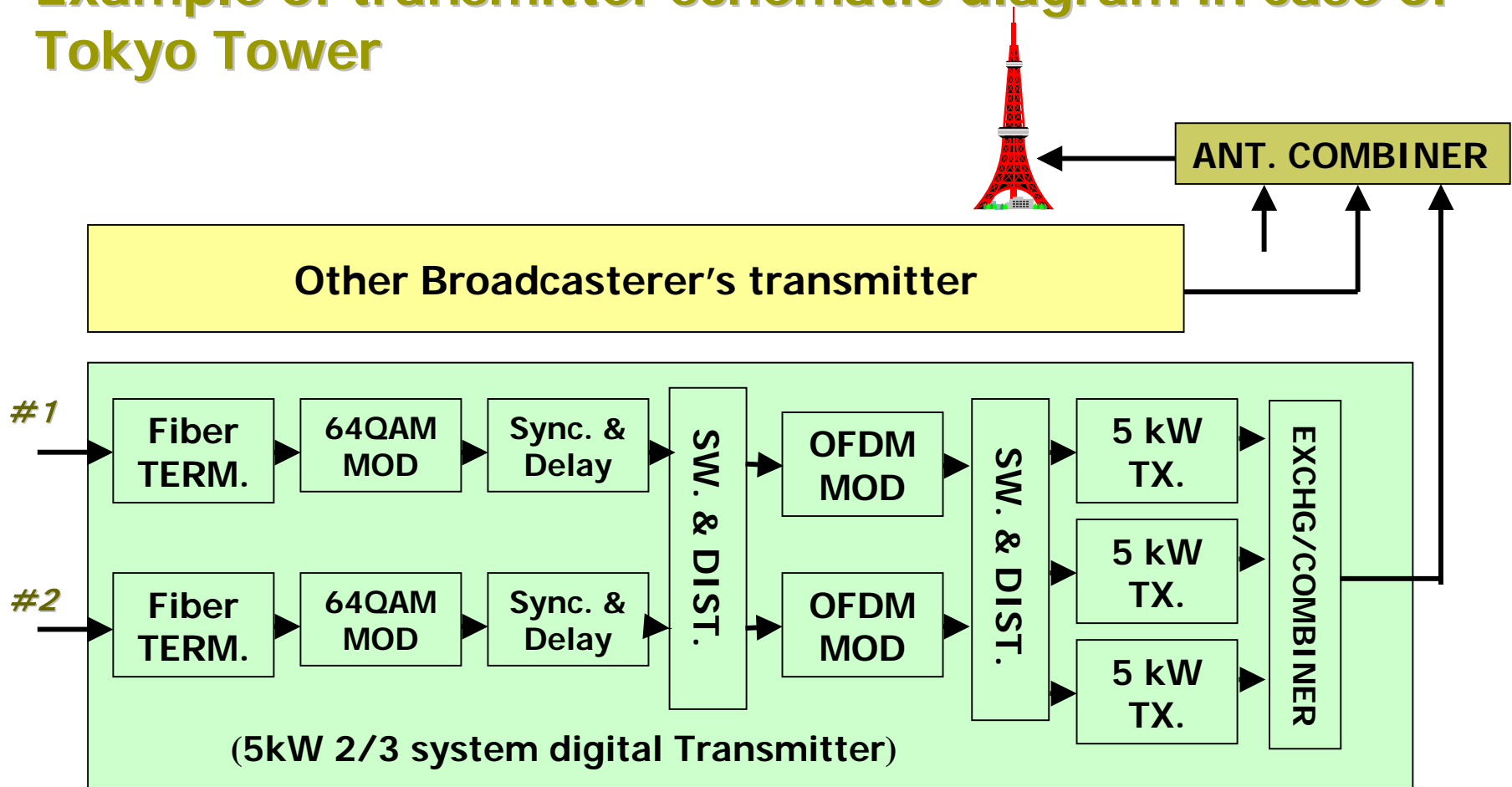


Micro wave



Digital transmitter system

Example of transmitter schematic diagram in case of Tokyo Tower



Digital Transmitter system

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



TOSHIBA



NEC

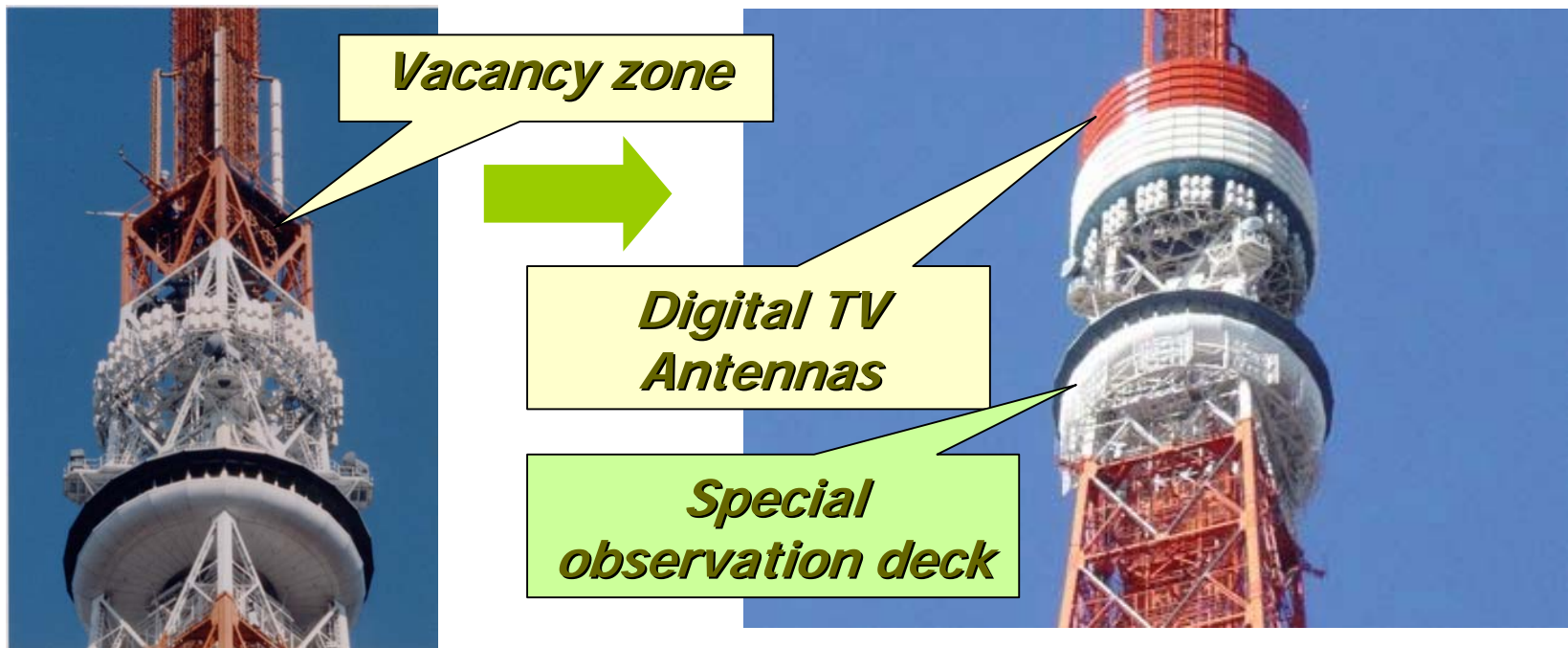
Antennas(1)

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



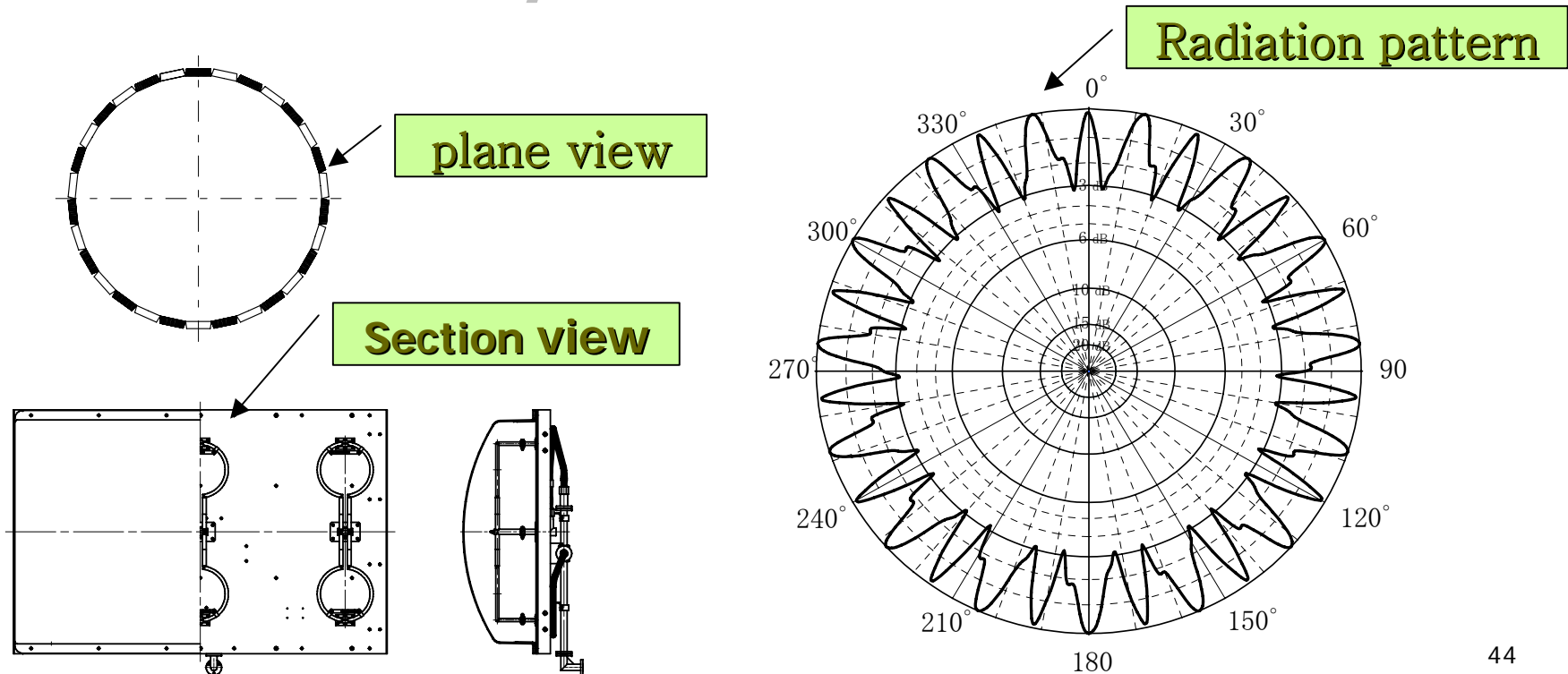
Antennas(2)

□ 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.



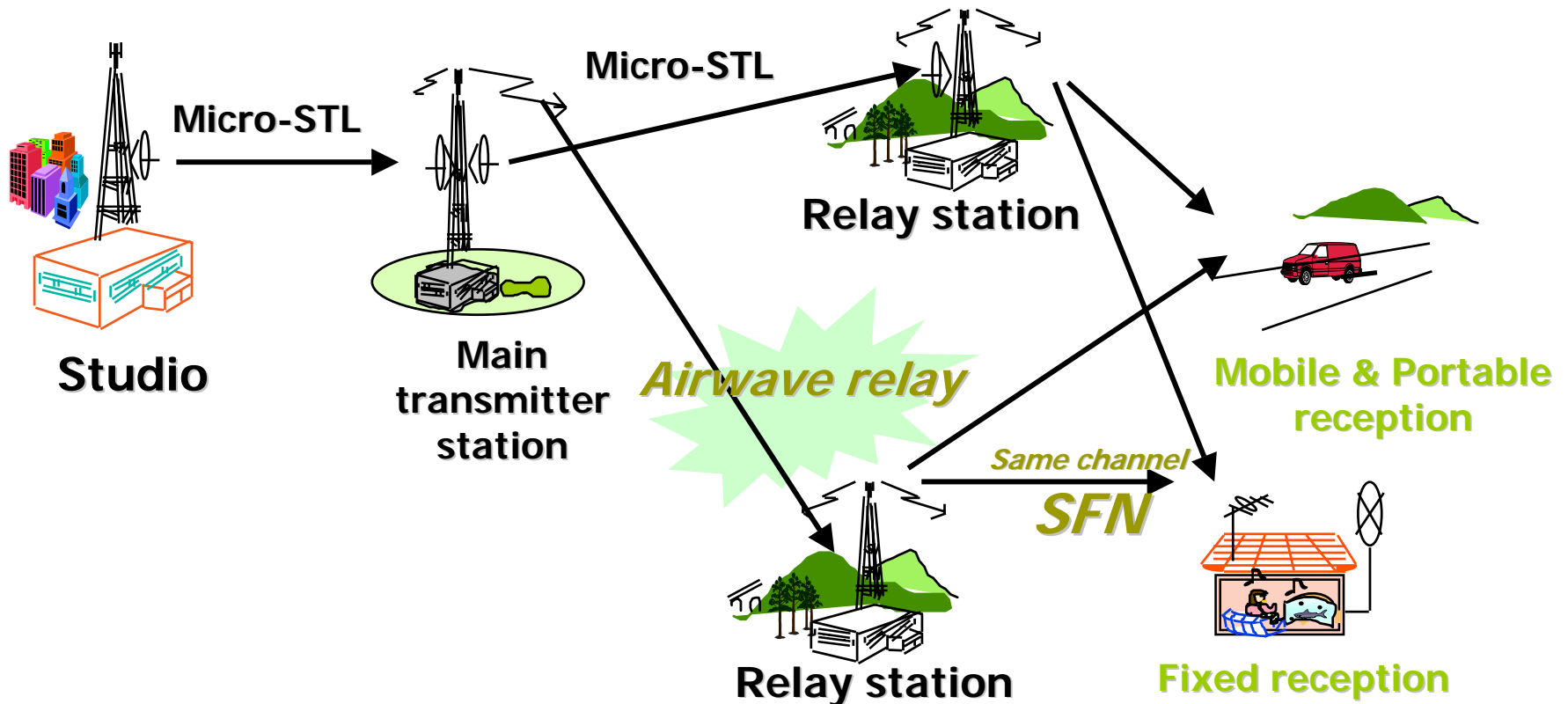
Antennas(3)

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



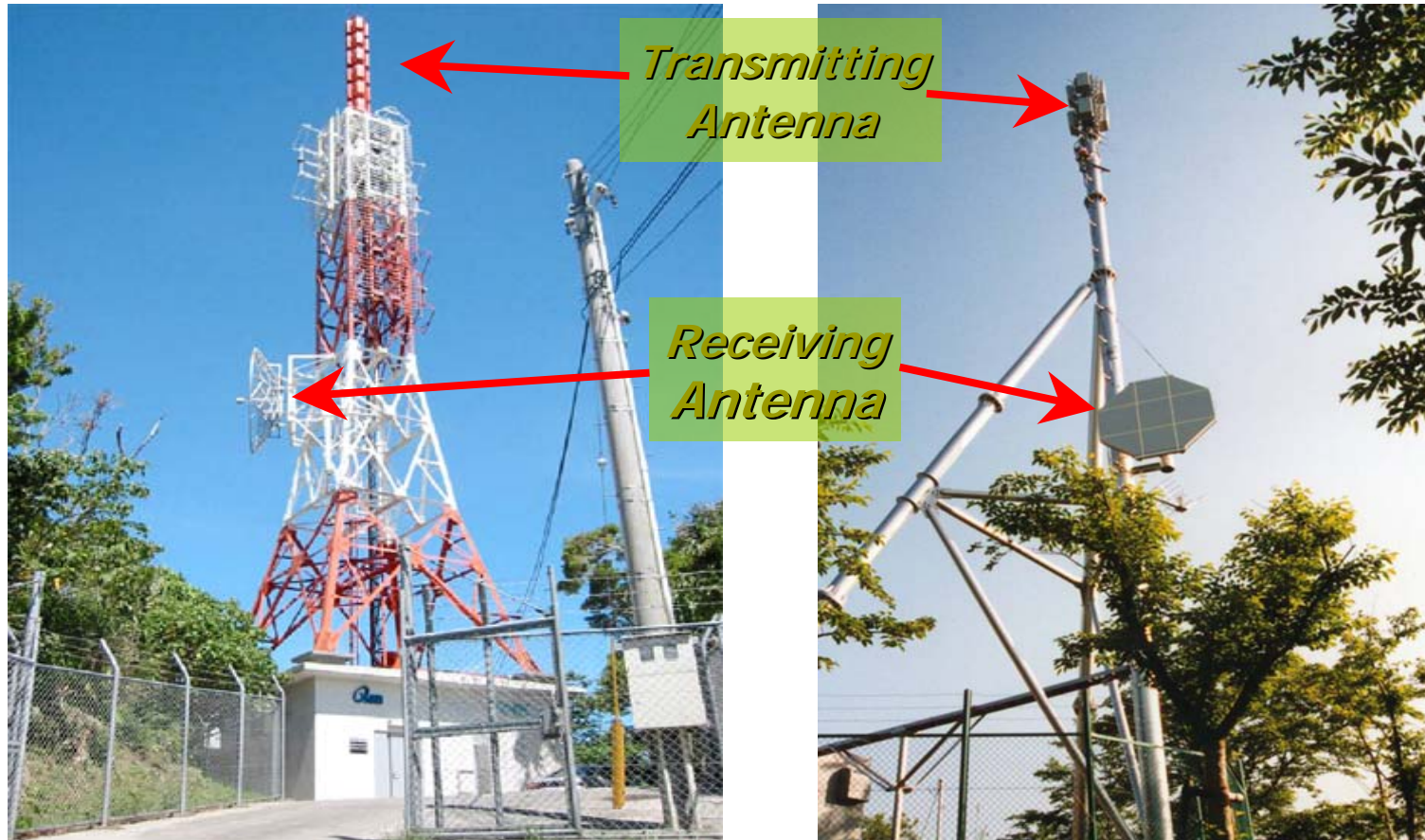
Transmission network chain

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



Relay station

Airwave relay station



ISDB-T seminar in Venezuela



*Thank you
for your attention !
END*

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