



**Platforms for the Development of Digital Television
Broadcasting and the Internet in Japan**

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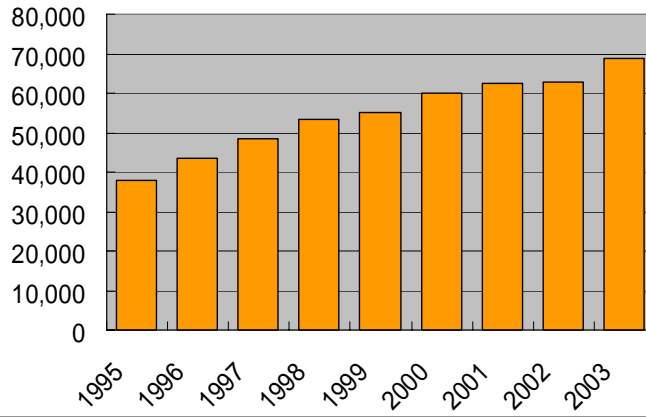
I. Introduction
**A. Overview of IT, DTV,
and the Internet in Japan**

Source of all statistical graphs in this presentation: MIC,
Information and Communication in Japan (2005 White Paper),
June 2005.



Communications Industry: GDP (Value Added, 1995 prices)

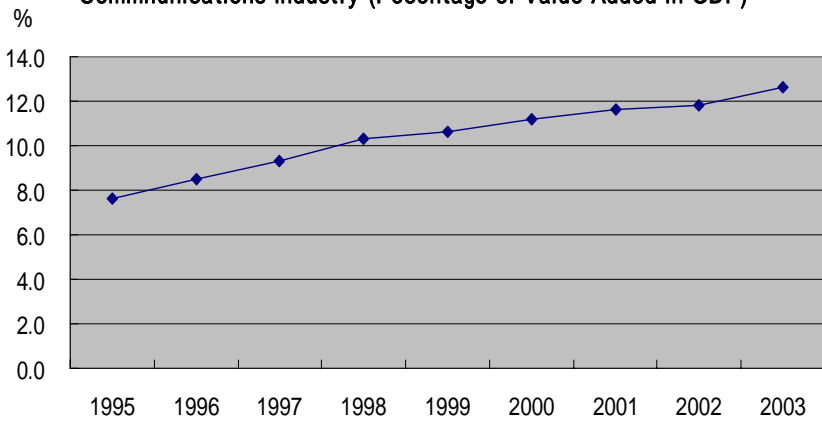
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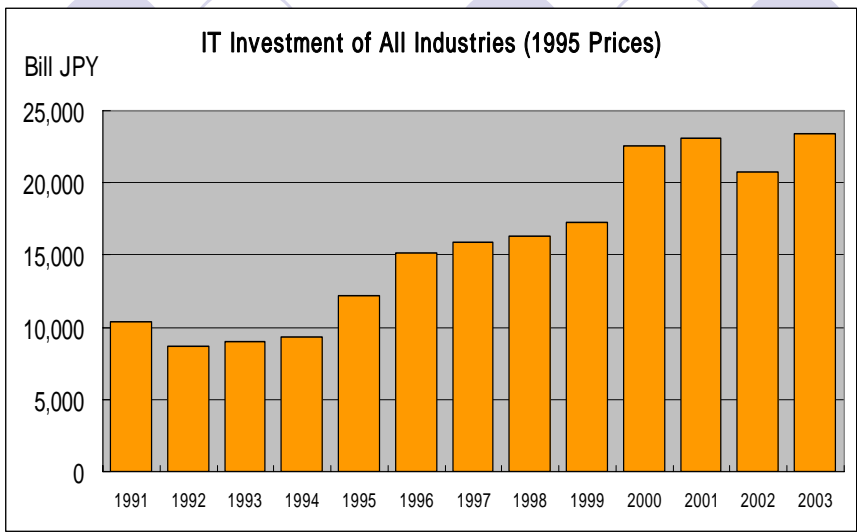
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Communications Industry (Percentage of Value Added in GDP)



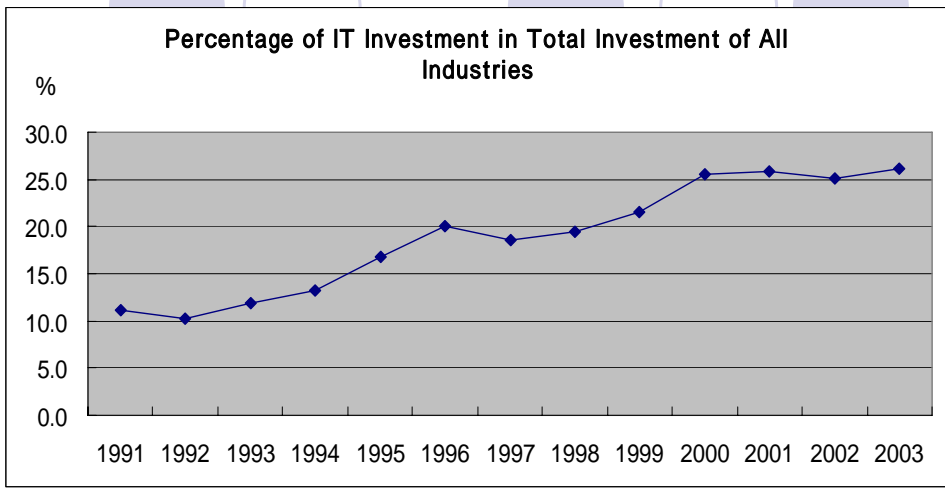
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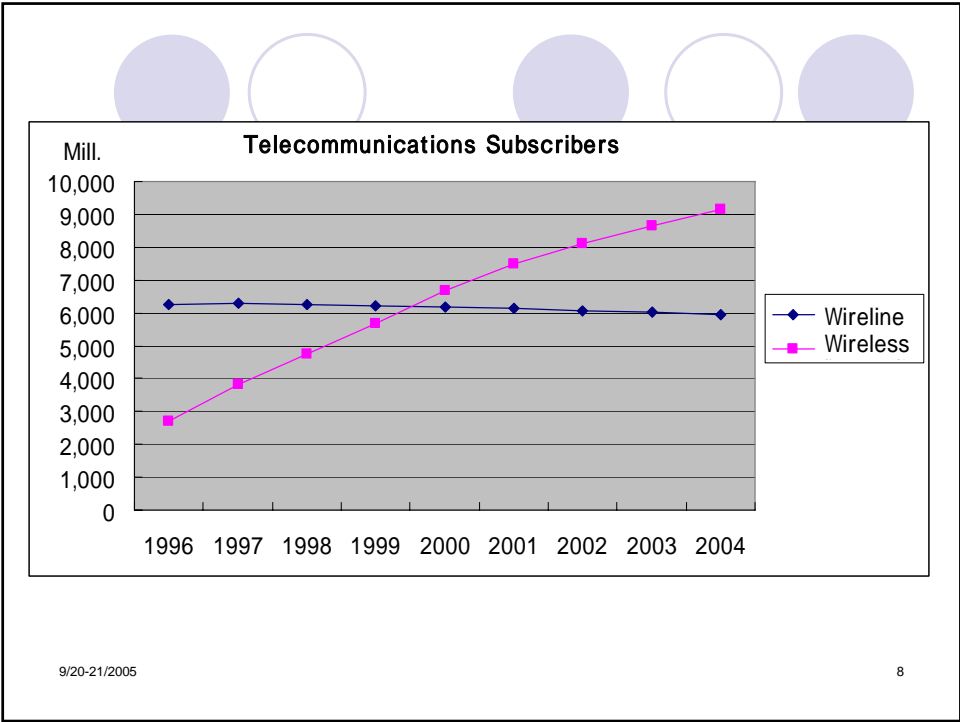
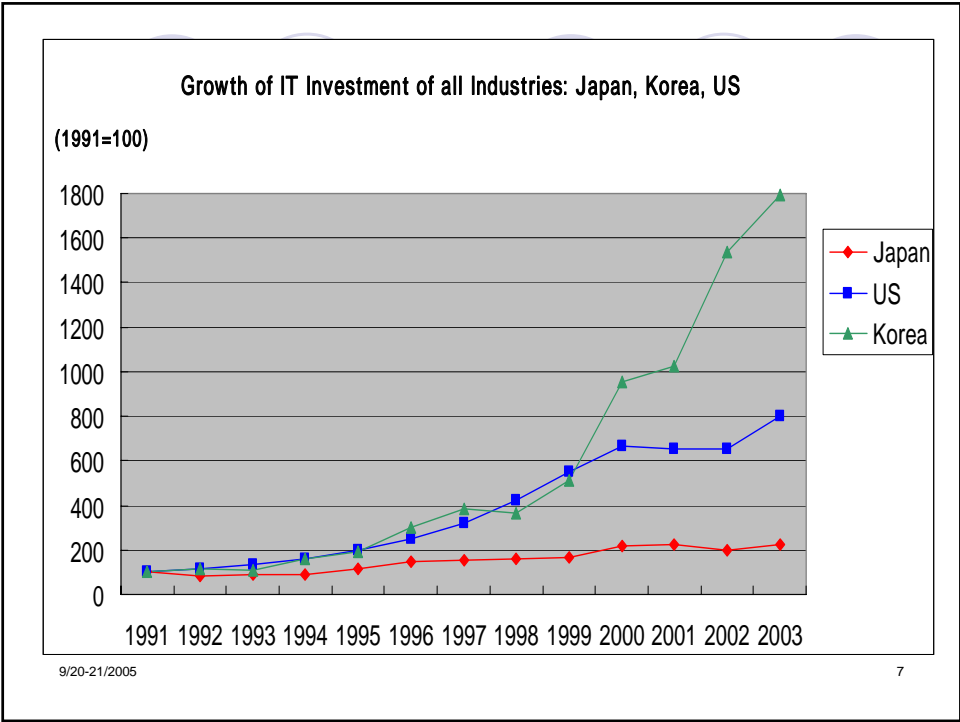
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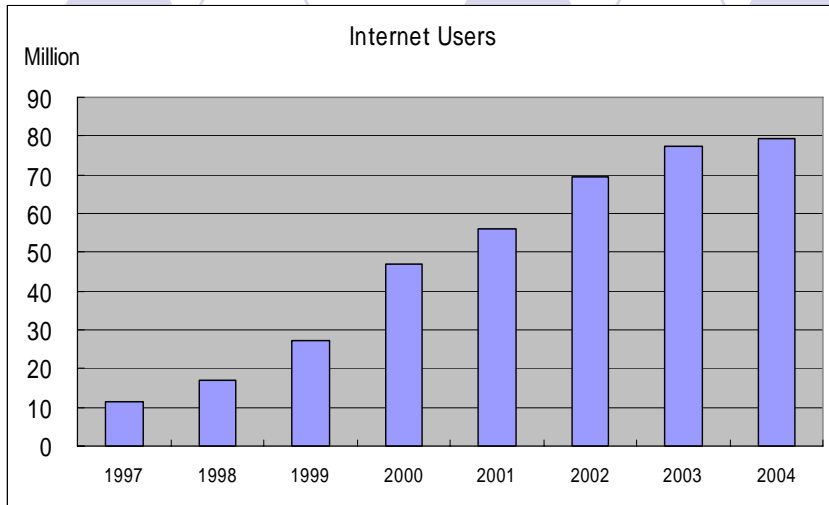
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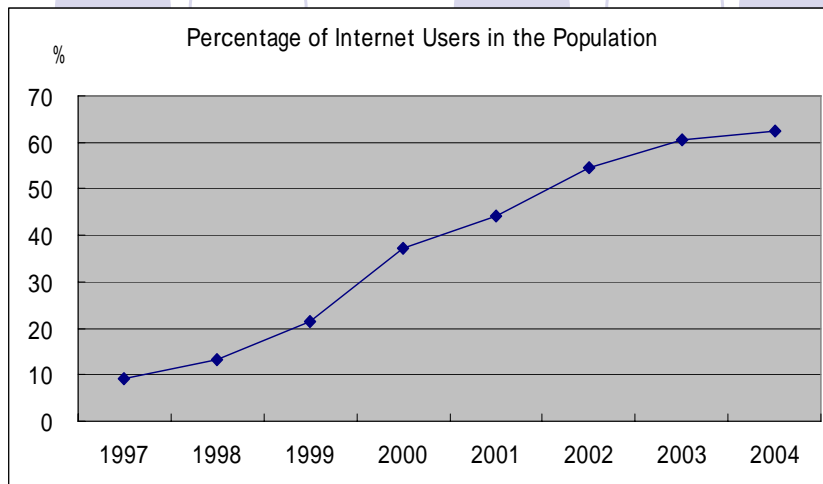
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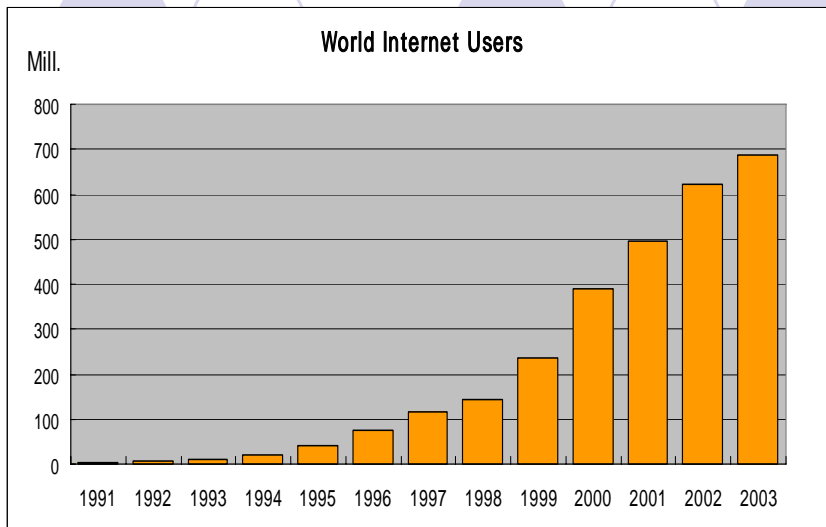
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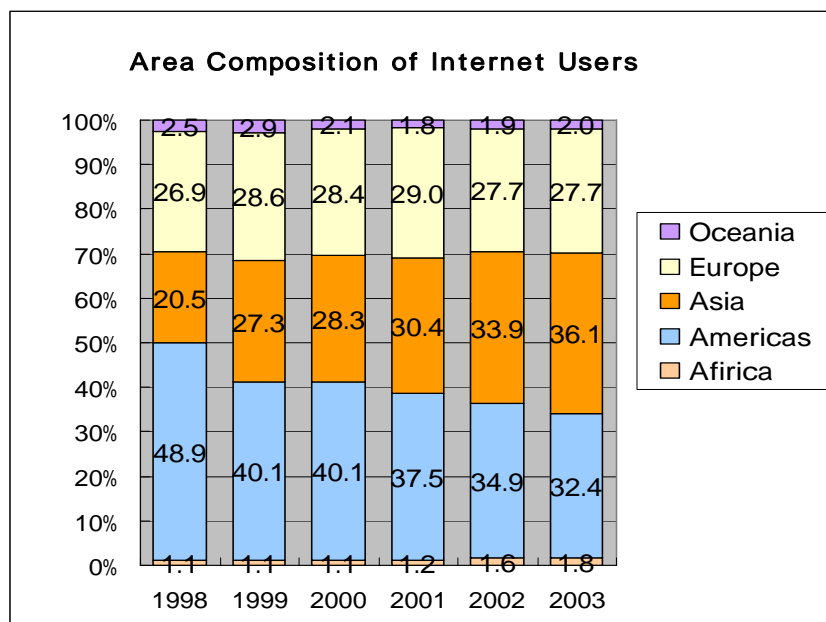
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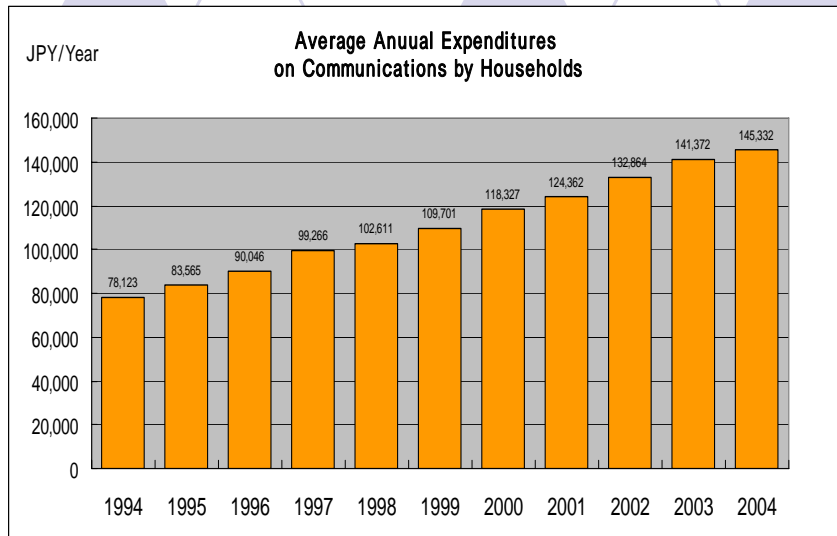
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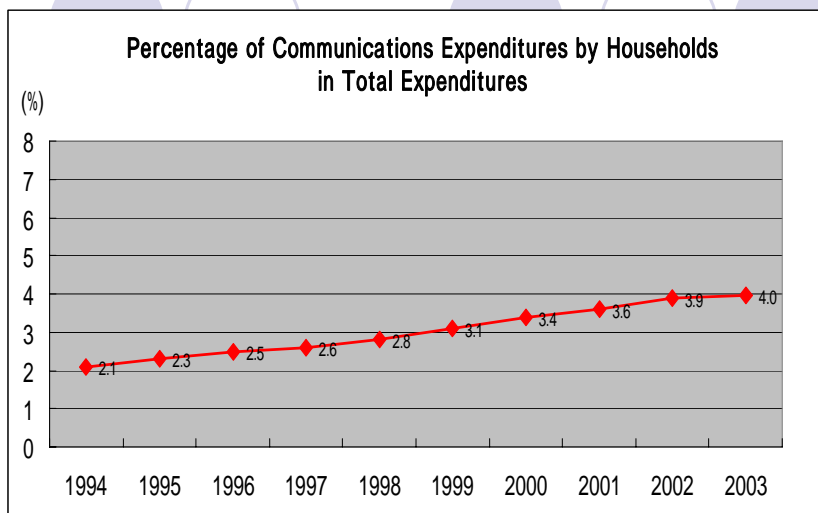
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I. Introduction

B. Objective of this presentation

Impact of the introduction of Digital Television (DTV) in Japan

Possibilities of processing DTV content by using the power of computer and storage technologies

DTV's competition and coordination with the Internet



II. Digital Broadcasting and the Internet in Japan

A. Start of DTV in Japan (1/2)

1. Terrestrial DTV

Digital terrestrial television started at the end of 2003.

By 2011 analog television will be terminated.

regulated by Ministry of Internal Affairs and Communication (MIC)



II. Digital Broadcasting and the Internet in Japan

A. Start of DTV in Japan (2/2)

2. Other DTV's

1996: CS broadcasts

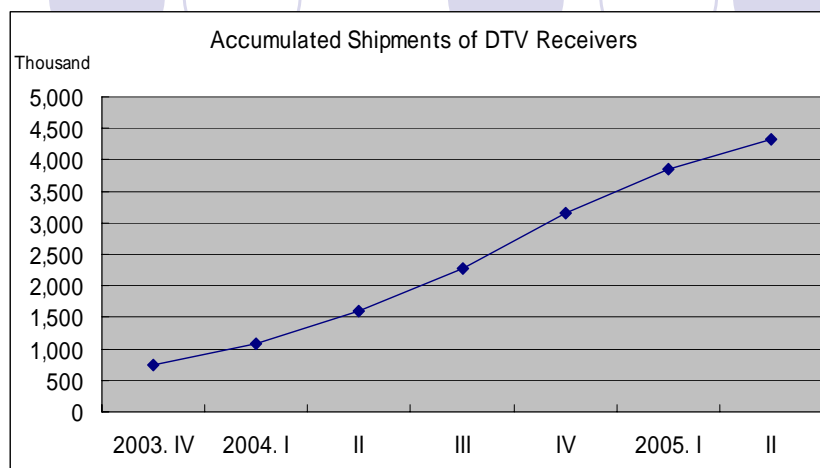
1998: cable TV

2000: BS broadcasts



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II. Digital Broadcasting and the Internet in Japan

B. Terrestrial TV in Japan (1/4)

1. Statistics

Terrestrial TV's revenue:

80% of all revenue for broadcasting

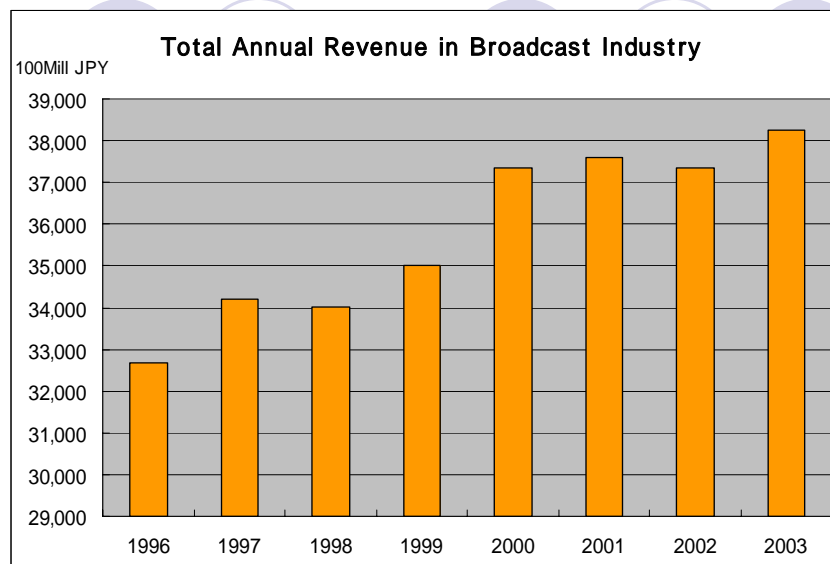
**Per capita (per consumer) annual revenue: JPY30,000
(US\$250)**

Japanese households watch TV 3 hours per day.



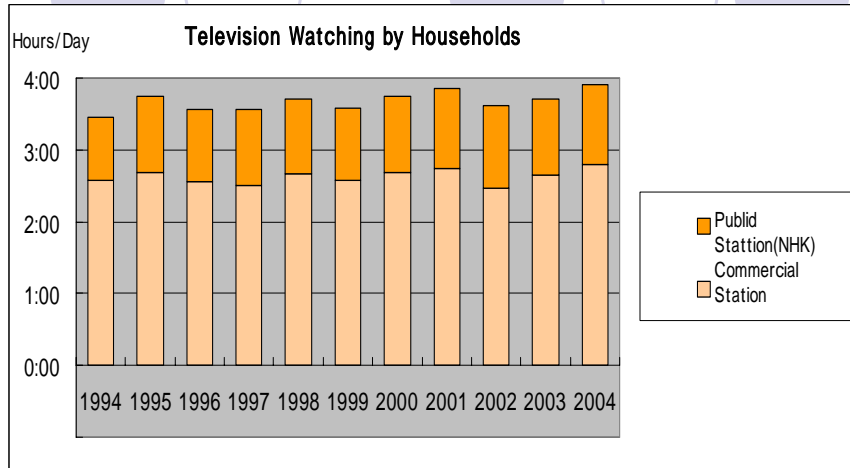
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II. Digital Broadcasting and the Internet in Japan

B. Terrestrial TV in Japan (2/4)

2. Regulation

DTV considered to replace analog with digital content

not a new service

few changes in rules or regulations

no new entry



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II. Digital Broadcasting and the Internet in Japan

B. Terrestrial TV in Japan (3/4)

3. Economics

monopolistic status

no new licenses

average profits quite high

broadcasters in urban areas can bear costs for DTV transition

those located in rural areas may not



II. Digital Broadcasting and the Internet in Japan

B. Terrestrial TV in Japan (4/4)

4. Impact of DTV transition explained from technological aspect

a. noise reduction

b. realization of HDTV

c. spectrum saving

d. possibility of interactive TV



II. Digital Broadcasting and the Internet in Japan

C. Impact of DTV

Possible to process DTV content after they are broadcast

desirable to prepare environment for content processing

DTV and the Internet may be competitive and complementary

Convergence of broadcasting and telecommunications.



III. Platforms for Efficient Utilization of DTV

A. Restrictions on content utilization

with DTV in Japan (1/2)

1. Rigid restrictions on utilizing content

All DTV programs are broadcast scrambled

B-CAS card required for viewing

Copy-once requirement



III. Platforms for Efficient Utilization of DTV

A. Restrictions on content utilization

with DTV in Japan (2/2)

2. Implications

Possible for a broadcaster to introduce pay TV

no broadcaster intends to introduce pay TV

“TiVo” in U.S.

Potential benefits of applications software for DTV
content blocked by restrictions

<Figure 1>



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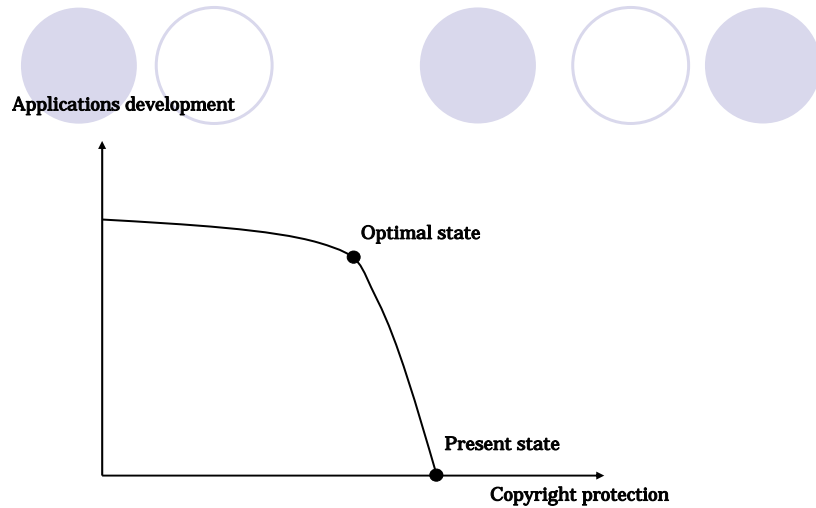


Figure 1: Tradeoff of Copyright Protection and Applications Development

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III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (1/6)

1. Present state of DTV

lot of content but no applications software

like computers in earlier days

little applications software but with a lot of analog content



III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (2/6)

2. Preparing environment for transactions of content with a copyright

Business codes

Database and network system



III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (3/6)

3. Transactions system for DTV content

Transacting goods and services

market mechanism

**differences between (ordinary) goods and services
and content**

Content can be copied with or without modification.



III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (4/6)

4. Degree of complexities in transactions of content

Cost of transacting digital content is high.



III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (5/6)

5. System for transactions of digital content to be built on copyright laws

Many “rights” in relation to content

Status of rights to be attached to content

Information set: *descriptor*

Database of descriptors of content

Record of transactions of real estate



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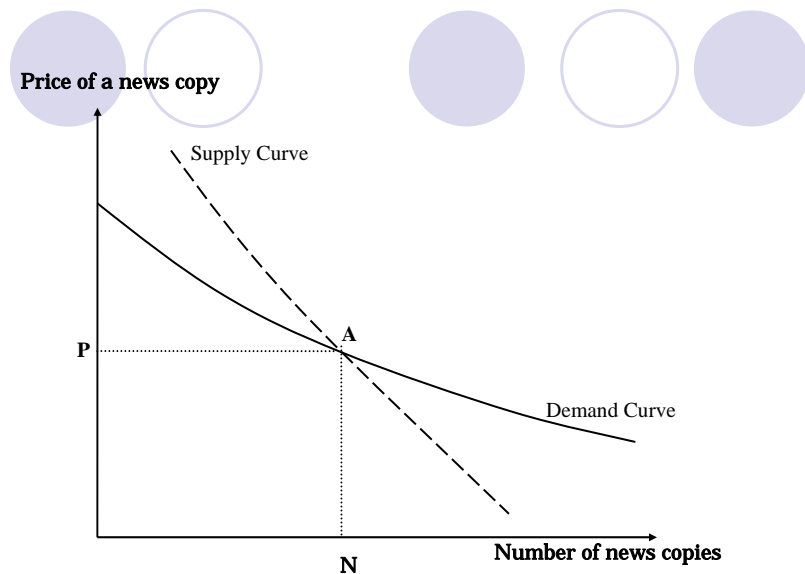
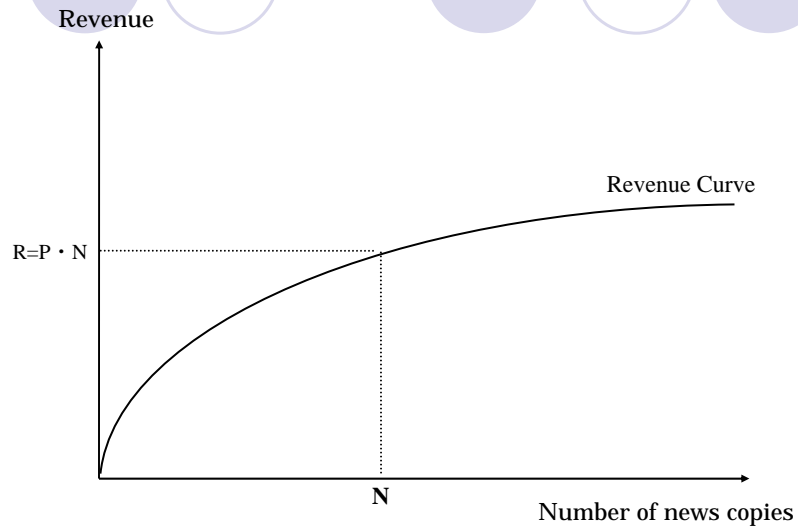


Figure 2a-1: An Example of Transaction of Copies of DTV News

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Figure 2a-2: An Example of Transaction of Copies of DTV News



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III. Platforms for Efficient Utilization of DTV

B. Platforms for DTV applications (6/6)

6. Example of simple descriptor of DTV news content

<Figure 2b>



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Descriptor of Video Copy for Transaction

1. Video Characteristics

Title: Morning News Class.: General News
Broadcast by: XYZ Network, Inc. at: Tokyo and other locations
on: 02/15/2005
time: 9:00-10:00AM
duration: 45 min

Commercials: not included

2. Supply-Price Schedule

Price per Copy (yen)	No. of Copies registered for sale
1,000	~ 5,000
700	~ 1,000
500	~ 2,000
310	~ 5,000
220	~ 10,000
160	~ 20,000
100	~ 50,000
80	50,000 ~

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Figure 2b-1: Example of Descriptor of News Video for Sale

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Descriptor of Video Copy for Transaction

3. Current Registration for Purchasing a Copy

No. of Copies for Effective Purchase: **2513**
No. of Copies Delivered: **0**
Price Currently Bid: **310 yens**
Closing Time of Current Offer: **Noon, 2/16/2005**

4. Conditions for Copy Utilization

- Must use equipment with B-CAS compliance
- Utilization Type: **A2**
 - May retain single copy for viewing;
Duplicate copies not allowed.
 - May cut and use any portion(s) of video, but only one cut is allowed.
Duplicating cut portion(s) not allowed.
Cut portion(s) will be removed from the original video; the original video will be shortened by the (total) length of cut portion(s).
 - Any video to which cut portion(s) of the original video are pasted may not be duplicated; such shall be used under the copy-once restriction.

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Figure 2b-2: Example of Descriptor of News Video for Sale

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III. Platforms for Efficient Utilization of DTV

C. Status of broadcasters (1/2)

1. Monopoly in the supply of broadcast content

**little incentive to let DTV content be utilized
with applications software for the benefit of
consumers**



III. Platforms for Efficient Utilization of DTV

C. Status of broadcasters (2/2)

2. Recent trend:

Content on IP-TV (August 2005)

by commercial broadcasters

**Disclosure obligation of DTV content by direct
governmental regulations**

Information and Communication Council (July 2005)

DTV content to be supplied via the Internet



IV. Competition and Coordination of DTV and the Internet

A. Vertical Structure of DTV and the Internet (1/2)

1. Vertical structure in communications industry

Division of labor viewed vertically

<Figure 3>



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<i>Services</i>	Telephony	Internet	Cable TV	Broadcast	<i>Mode of Supply</i>
Contents	(Contents of telephone and fax)	E-mails, Web	Broadcast Contents		Competitive
Networking	Voice Transmission	IP-Packet Transmission	Cable Transmission	Broadcasting	
Media	Electric current, Optical rays			Spectrum	Monopolized
	Twisted and coaxial cables, Optical fibers			(Antennas)	
Equipment Structures and Spaces	Tunnels, Tubes, Poles, etc.			Terrestrial spectrum spaces	
	Terrestrial (physical) spaces				
<i>Infrastructure</i>	Wired			Wireless	

Figure 3: The Layers Structure of the Services for Information Transmission

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IV. Competition and Coordination of DTV and the Internet

A. Vertical Structure of DTV and the Internet (2/2)

2. Competition and growth

Activities competing and substituting within single layer

twisted copper pair to optical fibers

telephony from traditional voice transmission to new

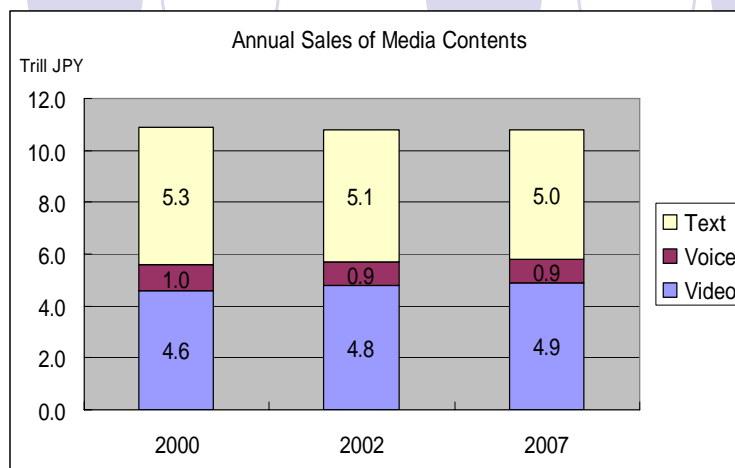
IP-packet transmission

Best to promote competition layer-wise



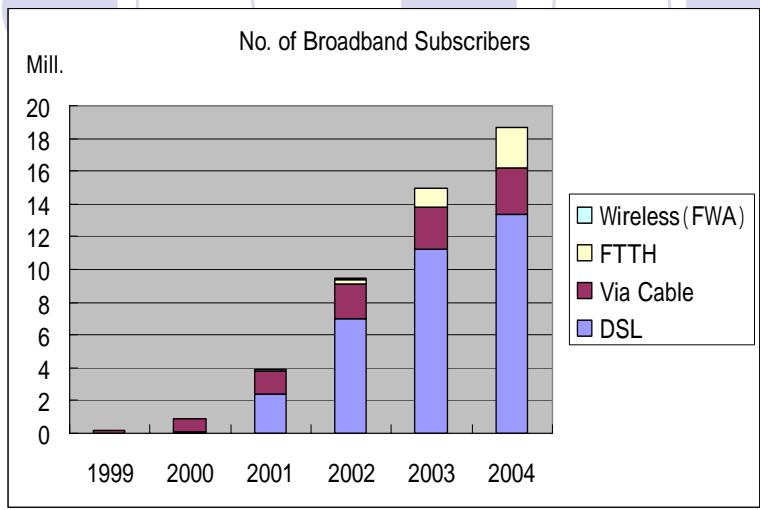
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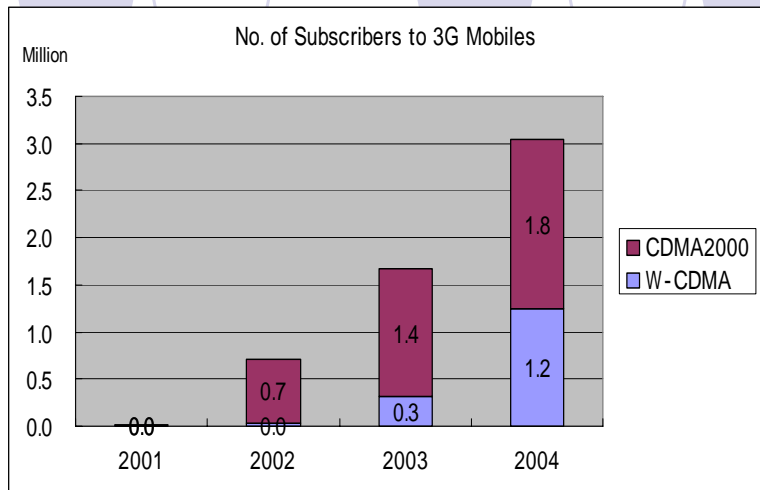
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IV. Competition and Coordination of DTV and the Internet
B. Monopoly in the infrastructure layer (1/3)

Legal and economic basis of supply of infrastructure layer not clearly established

1. Wired communication

NTT supplies large portion of communications infrastructure

“given” at the time of privatization



IV. Competition and Coordination of DTV and the Internet
B. Monopoly in the infrastructure layer (2/3)

2. Wireless communication

Spectrum assigned by MIC without charging economic values

far from being competitive or with free entry



IV. Competition and Coordination of DTV and the Internet
B. Monopoly in the infrastructure layer (3/3)

3. Implications of monopoly

Monopolistic profits

**Internal cross-subsidization in upper-layer
competition**



IV. Competition and Coordination of DTV and the Internet
C. Policies for fair competition at level-playing field (1/6)

1. Designation of “monopoly-front service”

to be determined by the government

regulate supply of services located at front level

**so that monopolized group function as if a
competitive group**



IV. Competition and Coordination of DTV and the Internet
C. Policies for fair competition at level-playing field (2/6)

2. Vertical separation

Monopolistic operator be vertically separated from competitive activities

structurally or in accounting

No regulation on competitive activities

supply of monopoly-front service be open to all purchasers



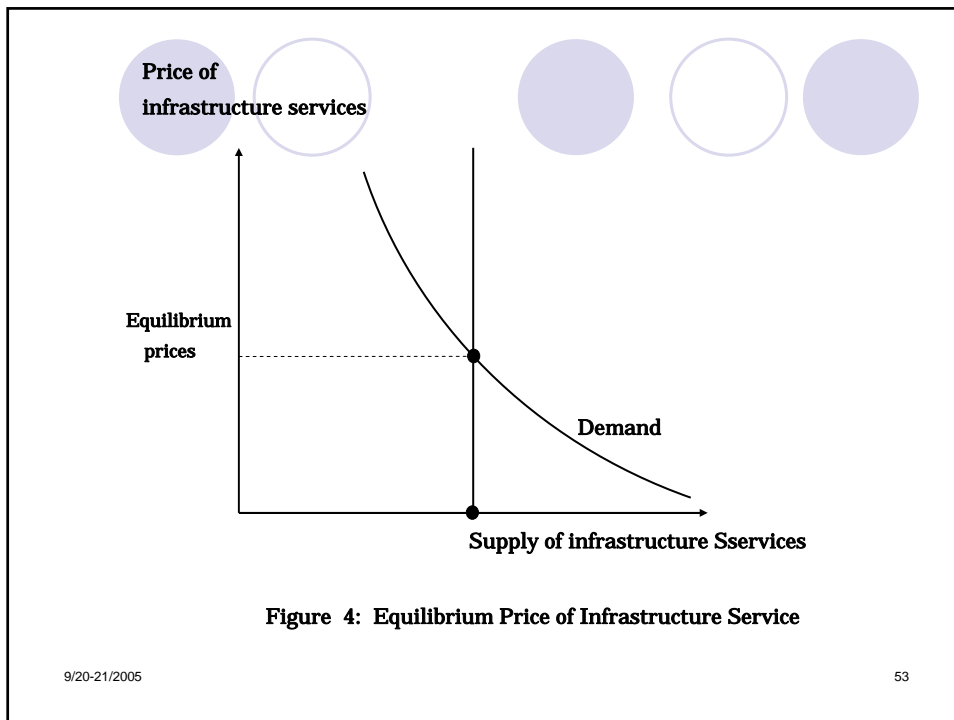
IV. Competition and Coordination of DTV and the Internet
C. Policies for fair competition at level-playing field (3/6)

3. Regulation of monopoly

Monopolistic operator must act as price taker in supply of infrastructure

<Figure 4>






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IV. Competition and Coordination of DTV and the Internet
C. Policies for fair competition at level-playing field (4/6)

4. Implications

Most difficulties and complexities in communications industry arise from that every activity must use some infrastructure (including space), which cannot be supplied competitively without governmental regulations.

<Figure 5>

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<i>Services</i>	<i>Economic units</i>		<i>Mode of supply</i>
Final demand	Consumers, Firms, Governments, Public entities, etc		Competitive
Content supply	Content suppliers (newspapers, publishers, producers of music and video contents, news agencies, advertising agencies, etc.)	Web, E-mails, and other data	
Information Transmission	Network-service providers (broadcast, telephone, access, backbone, Internet, etc.)		
Infrastructure	Supply of infrastructure for information transmission (wired, wireless)		Monopolized

Figure 5: The Structure of IT Industries under Vertical Separation

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IV. Competition and Coordination of DTV and the Internet

C. Policies for fair competition at level-playing field (5/6)

5. Public corporations for infrastructure supply

- a. Short-run behavior of monopolistic operator to simulate short-run service market**
- b. Long-run behavior of monopolistic operator to simulate competitive capital market**

***Prohibited* from maximizing rate of return from investment**



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IV. Competition and Coordination of DTV and the Internet
C. Policies for fair competition at level-playing field (6/6)

6. Policy recommendations

Enforce monopoly-front and the price-taker requirements

