

**A New Regulatory Framework for the Telecommunications
Industry in the Age of Convergence (Outline)**

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I. "Convergence" of Services - Examples

A. Substitution of wired access (POTS, ISDN)

PHS (PCS) (mobile access)

Cable telephony, WLL (wideband access)

Internet telephony (access of low price)

B. Substitution of broadcasting services

CS (DBS) broadcasting ("more channels")

Internet radio, internet TV ("more programs")

C. Substitution of internet access

IP/ISDN (flat-rate access)

DSL, Cable modem (flat-rate and wideband access)

II. Reasons of the need for public regulation

A. Control of monopolies

1. Monopolies arising from standardization

Windows 95/98, TCP/IP for the Internet

2. Monopolies arising from scale/scope economies

"platform business" in DBS

3. "Bottleneck" monopolies

telephone access cables and facilities

4. Monopolies remaining for historical reasons

AT&T, NTT

B. Managing the supply of public resources

radio spectrum, orbital space for geostationary satellites

C. Universal services

D. Contents regulation

protection of youths, safety

education, culture

E. Industrial policies (?)

"infant-stage" services

III. Division of IT services for regulatory purposes (a theory of unbundling)

A. Properties of "desirable" framework

Fair and equal regulation (no discrimination)

- similar services to be treated equally

Neutral with respect to technological progress

Minimize evil of monopolies (maximize benefit of competition)

- need for a functional approach

B. Traditional approach

- based on service providers

C. Functional division

- based on the characteristics of services

(Figure 1)

1. "Horizontal" division

- classification of a service based on its location in the network considered as a planar graph (nodes and links)
- examples : access, local exchange, local broadcast, interexchange, control (signaling), etc.

2. "Vertical" division

- classification of a service based on its location in the network considered as stack of functional layers (cf. OSI's 7 layers)

- examples : infrastructure and spaces for infrastructure, transmission cables/fibers, IP services, one-stop shopping ("platform" services), WWW contents providers

3. Horizontal and vertical division

- classification of a service into a cell of two-dimensional arrays

IV. Principles of regulation with the functional division of services

A. "The appropriate degree of division (the degree of fineness)" depends on technological and market conditions.

- division tends to become finer as technology advances and new services emerge
- examples : unbundling of hardware and software for mainframes, WWW browser to be separated from operating systems in PC

B. Monopoly and competitive services should be classified into separate cells.

- minimize the size of "monopolistic cells," minimize regulation
- introduce competition as widely as possible
- need to control monopolies with respect to pricing, service provision

C. Entry and /or subsidization across cell boundaries

- OK at the infant stage of service development (but need regulation when "jump entry" into a non-neighboring cell is attempted.)
- need to be regulated once the supply of the service grows
- never allow cross subsidization under monopoly power

D. Structural vs. accounting safeguards

V. Case studies

A. Access route bottleneck, narrowband and wideband

Minimize the influence of bottleneck monopoly

- (1) separating access service from local exchange service

- (2) separating the service given by access cables from the service given by the flow of data on cables

B. Dominance by "platform providers" in DBS (CS broadcast in Japan)

(Figure 2)

Minimize the evils of cross-subsidization and vertical integration by

- (1) separating infrastructure (satellite) services, customer services (billing), and the supply of STB,
- (2) except during "the infant stage"

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