Information-Based Economy

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Stanford Center for Technology and Innovation
Toshihiko Hayashi

GDP by Industry

Broadband Subscribers

Volume of Information Generated in Bits

Data: Ministry of Internal Affairs and Communications
The Ubiquitous Index

Index based on the degree of expansion and deepening of ubiquitous communications

Four Layer Model of Network

1. Contents/applications
2. Platform
3. Network services
4. Physical architecture
Policy Debates on:

- Network neutrality
  - Heavy users vs light users
  - Who pays for investment

- Vertical integration
  - Competition policy
  - Leverage

- Next generation network
  - Network atavism
  - Regulatory reversion?

What is Platform?

- Basic rules and protocols like the operating system of PC that enable secure and safe information flows, transactions and payments in the network.

  (eg) copyright management, billing, payment, authentication, security, privacy protection
Network Effects

- Quality is determined by the product of intrinsic value and number of subscribers.
- Competition is likely to end in a landslide victory for one.
- Survivor may not be the fittest.
- Lock-in Effect, Path Dependency

Digital Contents

- Ordering, delivery, payment and consumption all take place within the network for digital contents like music, video or educational contents.
- The setup costs to create the original are high but the marginal cost of reproduction is almost nil.
  - Can claim only zero price in market.
### Business Models

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### Economic Impacts of ICT

**Consumers**
- Convenience
- New Products
- Work, Lifestyle

**Corporations**
- Corporate Organization
- Market Reorientation
- Value Creation

**Upsides**
- Freedom Lost?
- Transfer of Property Rights
- Digital Divide

**Downsides**
- Transition Costs
- Confusions
- Increased Competition
- Property Right
Challenges for Economics

- Material Production Model Outdated
- Metamorphosis of Competition in Markets
- Market Limitations for Digital Products
- Law and Economics Required
- Analogy to Species Competition Model in Biology

Logistic Equation

\[ \dot{N}(t) = (\varepsilon - \alpha N(t))N(t) \]

Natural growth rate = \( \varepsilon \)
Logistic coefficient = \( \alpha \)

Solution given by

\[ N(t) = \frac{\alpha N_0}{\alpha N_0 + (\varepsilon - \alpha N_0)e^{-\alpha t}} \]
Logistic Curves

\[ N_1 = (\varepsilon_1 - \alpha_1 N_1 - \beta_2 N_2)N_1 \]
\[ N_2 = (-\varepsilon_2 + \beta_1 N_1 - \alpha_2 N_2)N_2 \]
Coexistence of NO and VNO