

Complementary Products and Modular Innovation in Internet Telephony

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Research Project

- **A Case Study on Internet Telephony :**
 - How will Internet Telephony affect Existing Firms, as well as New Entrants ?
- **Goals of Research**
 - Better Understanding of Innovation Processes in Systems Industries
 - Best Practices for Managing Product Innovation in Systems/Network Industries
 - Predictions for Evolution of Industry Structure

Research Builds on Legacy

- **Large body of research on Innovation in the Management/Economics Literature :**
 - Innovators are not always the ones who appropriate the returns from innovation
 - Importance of complementary assets
- **Michael Cusumano's research :**
 - Book "Microsoft Secrets", Free Press (1995)
 - Strategic analysis of innovation processes, and product development

Technological Innovation can shake Industry Structure

Question : **How does Innovation Developed by Entrants Affect Established Firms ?**

Answer : **It Depends on the Type of Innovation**

- **Whether Innovation is Competence-Enhancing or Destroying**
- **Whether it Affects Components or Linkages between them**
- **Whether Innovation is a Complement or a Substitute**

Modular Innovation

- **Modular Innovation = Innovation on the Components, Not on the Linkages between Components**
- **Reinforces, rather than Obsoletes, the Architecture**
- **Enhances, rather than Devalues, Competence**

Strategic Investments Can Affect Competitive Dynamics

- **At a certain point in time, an Entrant Chooses which Type of Innovation to pursue**
- **Depending on which Type of Innovation (complement or substitute) is being pursued, radically different outcomes await the Incumbent firm**

Established Firms can affect the Type of Innovation pursued by Entrants by Encouraging Modular Innovation

Three Examples

- **Intel and Boardmakers**

- share design info with board makers
- integrate into new MMX chip audio and video functions
- boardmakers invest in further enhancements

- **Microsoft and Independent Software Developers**

- developers conference, Software Development Kits
- integrate into operating system features developed by third-parties; integrate into operating system browsing as a function;

- **Adobe and Third-Party Developers**

- “extensible architecture” for the core products
- large number of plug-ins developed by third parties

“Breed, Skim and Absorb” : One Possible Scenario

- **Breed : Encourage innovation on complementary products by third-parties**
- **Skim : Pick from the complementary products the features that proved successful**
- **Absorb : Absorb the features developed by complementary innovators in new versions of platform products**

Hypothesis

Strategic Investments made by Established Firms will Affect the Supply of Innovations, by Manipulating Entrants Incentives to Develop Complementary Products.

i.e. Incumbents Foster Modular Innovation.

Internet Telephony : Research Strategy

- **Visit several Firms Members of the ITC**
- **In-Depth Case-Study of One or Two Firms**
- **Conference Calls**