15.912 Technology Strategy
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# Vertical and Horizontal Strategies in Converging Ecosystems

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# Agenda

- Evolving Ecosystems and Value Chains
- Technological Convergence
- Vertical and Horizontal Strategies

# Digital Convergence

- Convergence: when technologies become similar, functionalities of different products can merge
- Uniting the functionality of computers, TVs, and telephones.
- Implication: digital content changes value creation
  - New S-curves create new markets
  - Faster and higher market evolution curves

# Problem with Convergence: everyone knows it'll happen, but when, where, and how?!

- Most predictors of convergence have been wrong!
  - ….we've been predicting it since the 1960s!
  - Failed to see massive managerial creativity and inter-firm coordination barriers
  - Convergence may be non-linear and partial (some parts converge while other do not) because it is a 2-sided market:
    - Requires content to develop to make the products worthwhile!

# Be Vertical if you Can...it Creates Value that you can Capture

- Customers want full solutions
  - Cross the chasm with complete bundles of product and service
- Components not widely available
  - Lack of modularity
  - Difficult to transact with suppliers and complements
- Hold-up problems
  - Small number of suppliers can extract all of the value
  - High transaction costs to coordinate with suppliers

# The logic of vertical solutions

- Vertical also works if:
  - Tight integration between layers produces superior performance
    - Game machines
      - hardware is highly optimized for specific applications (graphics and visuals)
  - Razor & blades business models
    - Give away hardware (software) to sell the complement
      - iPod ("give away" the music to drive hardware sales)
      - Game machines (subsidize the hardware to sell software)

# Vertical Examples

- Ford Motor Company
  - Backward integrated into rubber and steel to ensure high quality supply
- IBM
  - Largest manufacturer of ICs from 1960s to mid-1980s
- AT&T
  - Made everything from ICs to service for all customers

...BUT NOTICE THAT THEIR VERTICAL STRATEGIES ALL DISAPPEARED...

# Be Vertical if you can…but it is hard to be Vertical forever!

- Customer's needs change, and your solutions aren't as desired…
    - Disruptive technologies
- Uniqueness is eventually imitated
- Complementary assets become less tightly held
- Scale and Scope economies can become really important in one of the horizontal layers…
    - E.g., Microprocessors, Operating Systems, Genomics
- Potential Worst Case Scenario: convergence allows a large firm from another ecosystem to come and eat your lunch!
    - e.g., Apple and Google invade Nokia's space!

# Why go horizontal?
## H=Horizontal Solutions

- **Huge scale in components has led to horizontal solutions in computers**
  - CPUs--- $1 billion to design, $3 billion to build
  - LCDs--- $1 billion million to build
  - OSs--- $1+ billion and 4 yrs to design, $100 million/yr to support
  - No company can internalize the scale requirements
- **Availability of credible suppliers, declining transactions cost (facilitated by IT), growing modularity, makes horizontal strategies feasible**

# Horizontal: Advantage to those solving the problems

n **Coordination is still a nightmare in the horizontal model**

  u who is responsible?

n **Competitive advantage comes from:**

  u dominant scale & solving coordination problems

    F common interfaces/ plug & play

    F opportunities for coordinators & contractors

      F Business process outsourcing

        F Accenture, IBM Global Services, Wipro

# Solve horizontal problems through: Externalities & Standards

- **Standards & network effects generate Lock-in & Lock-out:**
  - **Lock-in:**
    - customer sinks so much investment in complementary assets, it is cheaper to stick with known migration path than switch to (even) superior technology
  - **Lock-out:**
    - exclusion from a standard can be very difficult to reverse
- **Standard setters can change the direction of their industries**

# Scale & Scope=
# The Incumbent Advantage

*Start-ups pioneer*

**But scale and scope allow incumbent firms to imitate and overwhelm**

Incumbents grab the advantage by exploiting their advantages in size (*scale*) & their advantages of breadth (*scope*)

# Advantages from Scale & Scope

- Scale is only an advantage if managers will:
  - cannibalize themselves
    - E.g., will Microsoft drive virtualization?
    - E.g., will Oracle drive on-demand CRM?
  - cross-subsidize
    - Internet Explorer vs. Netscape Navigator

- Scope is an advantage if there are opportunities to:
  - bundle
    - Microsoft Office
    - Intel – Centrino & WiFi
    - IBM - Linux

# Looking forward

- **Read the Nokia case and Phone article packet**
- **Next session: Last   IT/Communications Case:**
  - **Apple, Google, Nokia Phone Strategy Comparison**