EE-402A: Topics in International Technology Management
Autumn 2009: "Technology Strategies in Asia Business"

Technology Strategies in Silicon Valley and Asia: Contrasting Patterns of Open Innovation

Stanford University
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Visitors and Registered Students Are Welcome!

- Weekly public lecture / panel discussion series presented by the US-Asia Technology Management Center <http://asia.stanford.edu>
  - Through 12/03/09
- This year's theme: Intentionally ambiguous
  - Technology strategies for / by companies in Asia
  - Technology strategies for / by Asian companies (anywhere)
- Today:
  - Analyze technology strategies: their functions
  - Compare innovation models in Silicon Valley and in Asia
  - First, administrative items:

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Important info for students registering for course credit

- **Register in Axess**
  - **EE-402A "Topics in International Technology Management"**
- **Credit requirements: see Syllabus**

  (1) On-site attendance at eight (8) of ten (10) sessions --
  - **Must sign weekly sign-up sheet at auditorium**
  - **Waived for SCPD students**

  (2) Email comments on nine (9) of the ten (10) sessions
  - **Submit comments by email within two weeks of session**
    - **To Prof. Dasher <rdasher at stanford dot edu>**
    - **With cc to Sakiko <skeda at stanford dot edu>**
    - **In-line text only: NO ATTACHMENTS**

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Request for today, 9/24
Everyone: students and visitors

- Please fill out survey form and leave with Sakiko or with me

- For students registering, the survey form is your on-site attendance record for 9/24/09
  - In addition, you will need to submit comments on the content of today's lecture within two weeks

Some upcoming sessions

Date	Speaker	Topic
10/01	Avinash Agrawal, Bill Ihrie, Sandeep Sood	PANEL Managing R&D outsourcing in India
10/08	Joseph Bach, Partner Nixon Peabody LLP	Technology Strategies in Greater China: Intellectual Property Considerations
10/15	Chang-Gyu Hwang, Former CTO, Samsung Electronics	The Prospects for New Industries Created by Fusion Technologies
… 12/03	Shigeru Azuhata, Sr VP, GM over R&D, Hitachi Group	Closing keynote confirmed. Title TBA

Technology Strategy: Functions and Challenges for Corporate Management

Technology Strategy Questions for Corporate Management

- What technologies do I use in my products, and how do I obtain and integrate them?

  And / or:

- What do I do with my existing technologies?
- How do I use technologies to support my current operations and processes?
- What technologies will I need in the future?
  - How do I obtain them?
  - What knowledge do I need in order to use them?

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Technology decisions are usually subordinate to business factors

Selection and integration into products	• Cost / benefit analysis • Technology standards • Ease of integration
Use of own technology	Business decisions about IP use: • Keep secret vs. patent • Use in products, license out, or hold
Use of technologies in operations and processes	• Legacy systems • Interoperability with supplier and customer systems
Future technologies	• Co. business model & roadmap • Positioning vs. competitors • Cost of R&D or strategic M&A

Technology strategies fall into four tasks: How to …

- Acquire it
- Integrate it
- Manage it
- Dispose of it

- All tasks require supporting knowledge
  - Know-how: understanding of underlying principles, knowledge of related areas, ability to tweak
- (Acquisition, integration, disposition) = technology or knowledge innovation
  - Many business innovations do not involve technology

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Innovation

Innovation: fundamental nature

- More than just technology transfer or commercialization of research results
- Instead: innovation is a basic, essential aspect of human nature
  - Adapt to new situations
  - Avoid boredom (and loss of productivity, etc.)
- Innovation typically pulls business into one of two directions
  - (A) Toward higher value-added products & services (e.g. shift from materials to components to systems to final products)
  - (B) Toward greater efficiency (e.g. split up a vertically integrated business into several specialized providers)

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Innovation is particularly important in a recession

- **Need new things to stimulate customer spending**
  - Remind customer that company cares about them
- **Recessions bring out unmet market needs**
  - "Nesting" -- improve life right around person
    - Repair, rather than buy new
    - Improve comfort and entertainment in immediate environment
    - Examples: Car radio, computer games, energy efficient appliances
  - Improving personal competitiveness
    - Examples: cosmetics, social networking
  - Consumer desire for positive dreams about a better situation
    - *Fortune* magazine, Tesla sports car

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Types of innovation in business

Add new feature or tech to existing product	Nintendo "Wii" (new feature added to existing product category)
Take tech / product to new market / app	Games that brought Nintendo DS to "mature" markets
New combination of techs	Apple i-Phone
Change of (business) process or operation	Company outsources employee medical services to specialist firm
New business model	Flat rate for cellular phone service
Completely new	(c. 1980) Personal computer ? Walkman? iTunes?

Drivers of business innovation

- Push factors
  - Technology development
  - Technology economics change (e.g. cost reductions)
  - Competitor behavior
- Pull factors
  - New business opportunities (unmet market needs / demand)
  - Maintenance of strong customer relations (so that they don't lose interest)

- Pull factors are essential for success

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Incremental and disruptive innovation

- Most innovations are incremental (small changes)
- Disruptive innovations have much greater impact
  - May transform an existing industry (change cost structure, bring in fundamentally different new business model)
  - May create a new industry
  - May lead to industry clustering (creates new supply chain)

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Silicon Valley: Series of economic booms that came from disruptive innovations

"Silicon Valley" term first used in 1971

Each boom built on the previous one

- Silicon wafer manufacturing (early 1970's) --Si crystal growth
- Silicon microelectronics (from 1970's) -- microprocessors
- Computer systems (from late 1970's) -- workstations, PCs, RISC & graphics processors, OS standards
- Software (from mid-late 1980's) -- relational database software, graphic user interfaces
- Internet (from mid-1990's) -- hypertext (graphic browsing)
- E-commerce / dot-coms (late 1990's) -- DSL Internet
- Network infrastructure (2000) -- optical networks
- Web 2.0 / social networking -- new business models
- Next? ... (healthcare, cleantech & energy, global ideas, etc.)

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Silicon Valley success

- Silicon Valley was not always the place where the disruptive innovations were invented
- But, it provides a good environment to capitalize on disruptive innovation
  - Up-to-date knowledge and interest in new ideas
    - Strong universities
    - Cross-sector human networking
  - Entrepreneurial culture
    - Low tolerance of resistance to change
    - Good resources to create new start-up companies
    - Good environment to grow the start-ups into major corporations
- Success depends on system of "open innovation"

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