



15.965 Technology & Strategy

Technology and Strategy

Strategic management in high-tech

21 April 2009

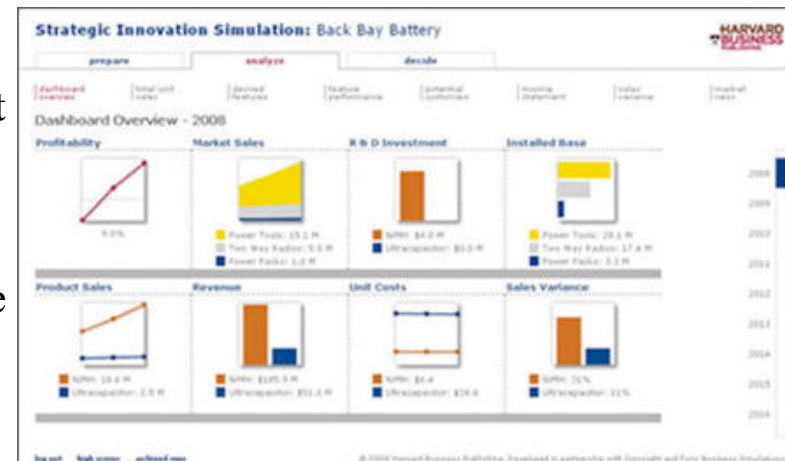


Massachusetts Institute of Technology

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- Questions arising from the 4th Paper?
 - Questions about your projects?
 - Who will win in smartphones – and why will they win?
 - What do we learn from Apple (2008) and smartphone cases?
 - How did Apple get where it is today?
 - What is the essence of strategy in high-tech?
 - Briefing for next week: Back Bay Battery

Back Bay Battery

- This simulation illustrates the challenges around innovation and risk that face product development managers who need to
 - balance financial goals against the need to innovate
 - capitalize on new product/market opportunities
 - guard against disruptive technologies:
- **Project Teams** must evaluate resource requirements, product performance, investment timing, and end-market opportunities for new technology in the context of nebulous market information and constraining financial performance criteria



Strategy and technology

Demand opportunity

- segments
- behaviour change
- diffusion and adoption
- chasm

Technological infrastructure

- architecture
- parameters
- envelope and trade-offs
- innovation trajectory

Co-evolution & transitions

- episode, era
- dominant design
- radical vs incremental
- architectural vs modular
- disruptive

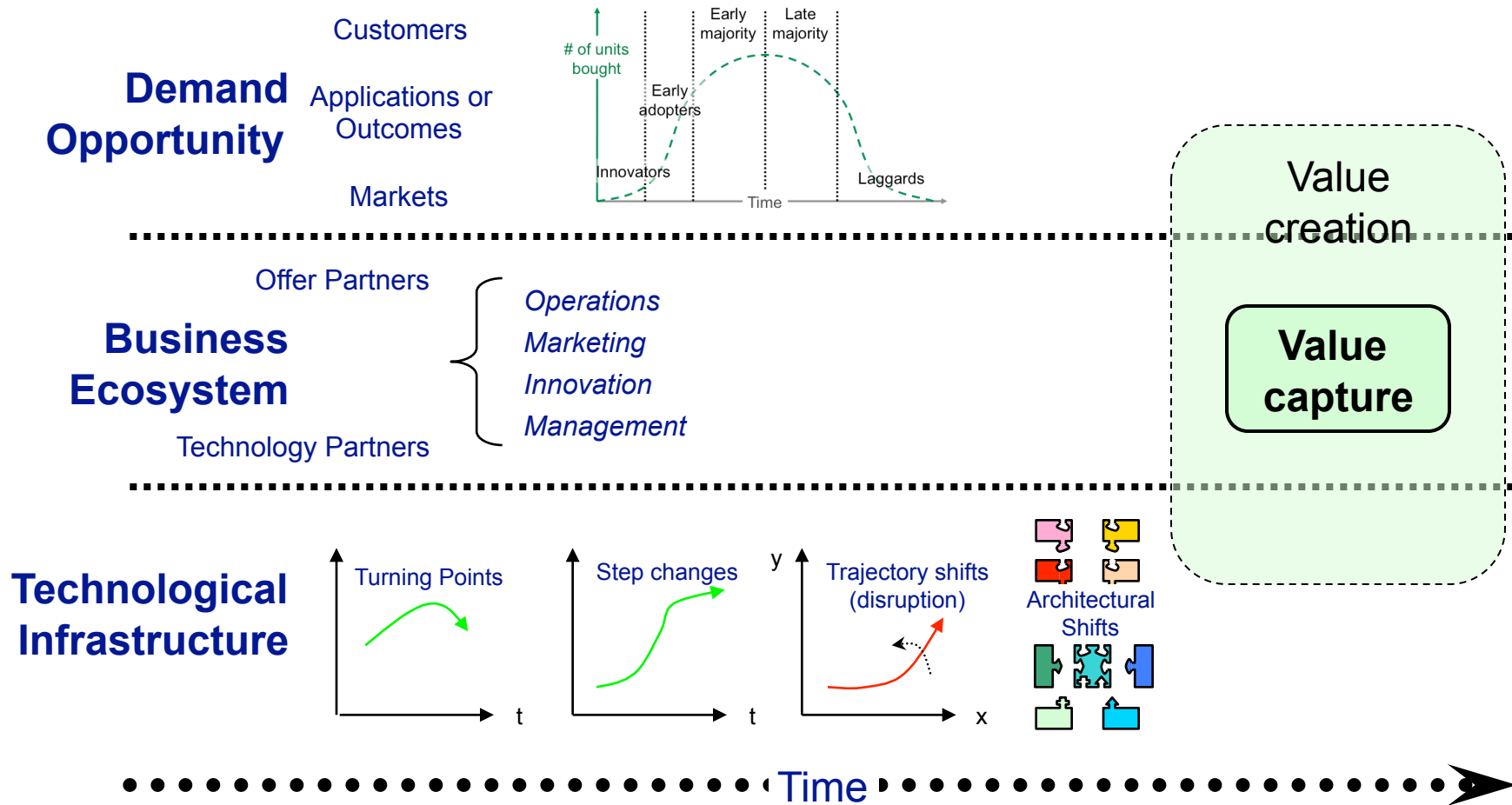
Business ecosystems, value creation and value capture

- niche
- lead/follow
- co-opetition
- inimitability
- focus on locus of value
- standards
- modularity

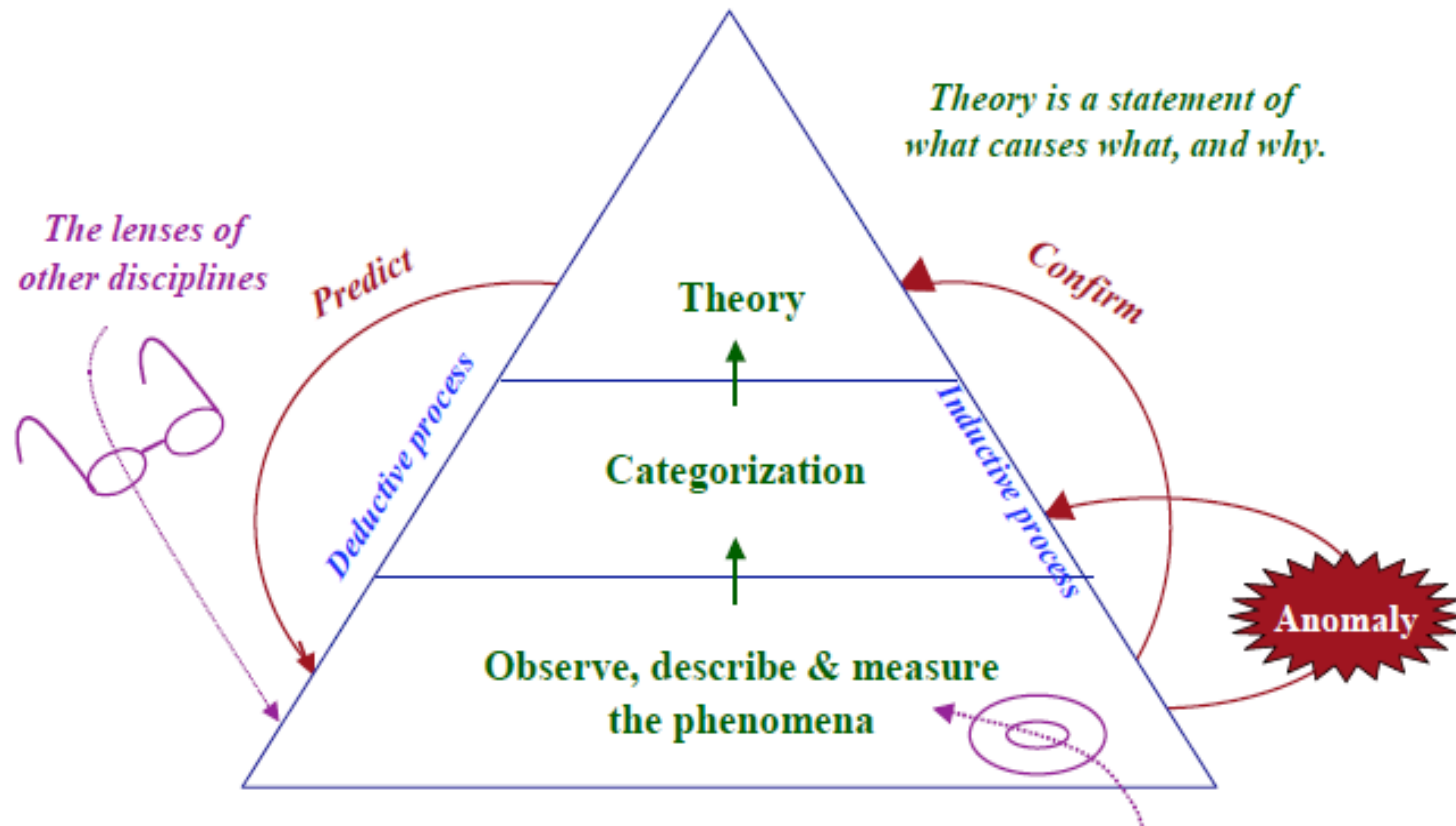
Decision making

- common goals, balanced power
- focus on timely, objective facts
- embrace uncertainty
- several options

Two simultaneous challenges: *create value*, at the same time ensure that you can *capture value*



The process of *theory*-building



Clayton Christensen and Michael Raynor,
"Why Hard-Nosed Executives Should Care About Management Theory",
Harvard Business Review, September 2003, pages 66-74



Theory

noun

1. a belief or principle that guides action or assists comprehension or judgment¹
2. a set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena¹
3. a well-substantiated explanation of some aspect of the natural world; an organized system of accepted knowledge that applies in a variety of circumstances to explain a specific set of phenomena

1: American Heritage® Dictionary, © 2000 Houghton Mifflin

2: WordNet®, © 2005 Princeton University





Strategy

noun

1. a plan, method or series of maneuvers or strategems for obtaining a specific goal or result¹
2. the science and art of military command as applied to the overall planning and conduct of large-scale combat operations²
3. the art or skill of using strategems in endeavors such as politics and business²

1: Random House Unabridged Dictionary, © Random House Inc. 2006

2: American Heritage[®] Dictionary, © 2000 Houghton Mifflin





What is the essence of strategy in high-tech?

- Anticipation
- Timing
- Uncertainty
- Co-opetition
- Focus
- Adaptation
- Options
- Metamorphosis

What is Strategy?

- Operational effectiveness means performing similar activities better than rivals
- ...[S]trategic positioning means performing *different* activities from rivals' or performing similar activities in *different ways*
- Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value
- Strategy is creating fit among a company's activities. The success of a strategy depends on doing many things well – not just a few- and integrating among them
- A company can outperform rivals only if it can establish a difference that it can preserve
- ...[S]trategic positions should have a horizon of a decade or more, not of a single planning cycle. Continuity fosters improvements in individual activities and the fit across activities, allowing an organization to build unique capabilities and skills tailored to its strategy. Continuity also reinforces a company's identity.

Michael Porter, "What is Strategy", Harvard Business Review, Volume 74, Issue 6, pages 61 to 78 (November to December 1996)

Models of strategy that emphasize market power

Competitive Forces

- Five forces
 - entry barriers
 - threat of substitution
 - bargaining power of buyers
 - bargaining power of suppliers
 - rivalry amongst incumbents
- “[T]he key aspect of the firm’s environment is the industry or industries in which it competes”
- Economic rents are monopoly rents, flowing from ability to impede competition

Strategic Conflict

- Uses the tools of game theory to analyze the nature of competitive interaction amongst competitors
- Focuses on how a firm can influence the behavior and actions of other firms, and thus the market environment
- Strategic moves that require irreversible commitments
- Strategic signaling
- Commitment and reputation

Managing in an Age of Modularity

- Modularity does more than accelerate the pace of change or heighten competitive pressures. It also transforms relations among companies. [They] rapidly move in and out of joint ventures, technology alliances, [and] subcontracts...as they compete in a relentless race to innovate.
- Being part of a shifting modular cluster of companies in a constantly innovating industry is different from being one of a few dominant companies in a stable industry. No strategy or sequence of moves will always work; as in chess, a good move depends on the layout of the board, the pieces one controls and the skills and resources of one's opponent
- Because modularity boosts the rate of innovation, it shrinks the time business leaders have to respond to competitors' moves
- Success in the marketplace will depend on mapping a much larger competitive terrain and linking one's own capabilities and options with those emerging elsewhere, possibly in companies very different from one's own.
- Creating, watching and nurturing a portfolio of [strategic] options will become more important than the pursuit of static efficiency per se.

Carliss Baldwin and Kim Clark, "Managing in an Age of Modularity", Harvard Business Review, Volume 75, Issue 5, pages 84 to 93 (September 1997)

Strategy as Active Waiting

- Successful executives who cut their teeth in stable industries...often stumble after entering more volatile markets. They falter.. because they mistakenly believe that they can gaze deep into the future and draft a long-term strategy that will [achieve] a sustainable competitive advantage.
- Companies that play in volatile markets face a steady stream of small- and medium-sized opportunities, interspersed with periodic chances to create significant value. *Golden opportunities* are the infrequent occasions when a firm can create [and capture] significant value disproportionate to the resources invested, in a short period of time.
- [*S*udden-death threats are... major environmental shocks that can put a company out of business in relatively short order.
- ...[T]here is much [managers] can do to prepare their firms to capitalize on a golden opportunity, or weather a sudden-death threat, when one arises.
- To survive and thrive in volatile markets, managers can pursue a strategy of *active waiting*, which consists of anticipating, preparing for and seizing opportunities and dealing with threats as they arise.

Donald Sull, "Strategy as Active Waiting", Harvard Business Review, Volume 83, Issue 9, pages 120 to 129 (September 2005)

Dynamic Capabilities

- The firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.
- *“The dynamic capabilities framework analyzes the sources and methods of wealth creation and capture by private enterprise firms operation in environments of rapid technological change.”*
- *“[P]rivate wealth creation in realms of rapid technological change depends in large measure on honing internal technological, organizational and managerial processes inside the firm.”*
- *“Because this approach emphasizes the development of management capabilities, and difficult-to-imitate combinations of organizational, functional and technological skills, it integrates and draws upon research in such areas as the management of R&D, product and process development, technology transfer, intellectual property, manufacturing, human resources, and organizational learning.”*

David J Teece, Gary Pisano and Amy Shuen, “Dynamic Capabilities and Strategic Management”, Strategic Management Journal, Volume 18, Issue 7, pages 509 to 533(1997)

Dynamic Capabilities

- In ... markets, where the competitive landscape is shifting, the dynamic capabilities by which firm managers ‘integrate, build, and reconfigure internal and external competencies to address rapidly changing environments become the source of sustained competitive advantage.
- Dynamic capabilities consist of specific strategic and organizational processes like product development, alliancing, and strategic decision making that create value for firms... by manipulating resources into new value-creating strategies.
- [Dynamic capabilities] are ... very frequently used to build new resource configurations in the pursuit of temporary advantages (logic of opportunity).

Kathleen M Eisenhardt and Jeffrey A Martin, “Dynamic Capabilities: What are They”, Strategic Management Journal, Volume 21, pages 1105 to 1121 (2000)