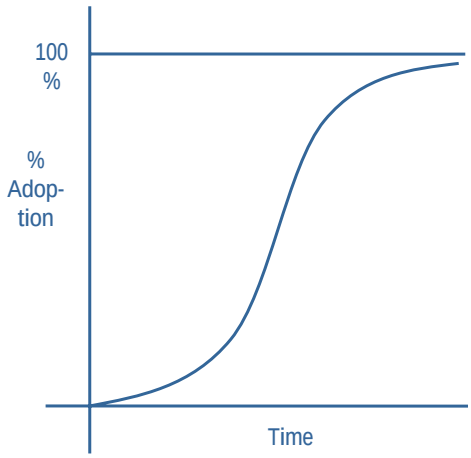
MI 703 Session #10

Mini-Lecture: IT Adoption, Diffusion and Implementation

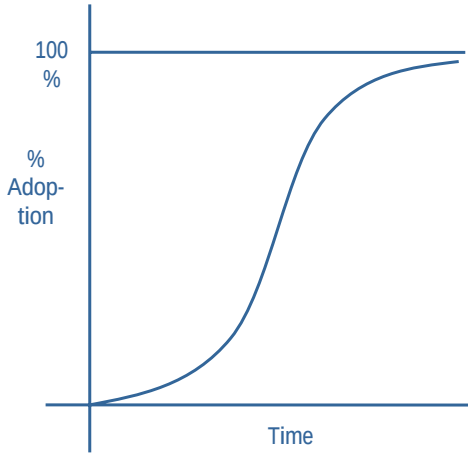
IT Innovation: Adoption, Diffusion, Assimilation

- Why IT innovation matters
  - Information technology has become an important pervasive innovation enabler
  - Innovative capabilities have become an increasingly important source of competitive advantage
- Two perspectives
  - Technology supplier perspective
    - How can we be more innovative? What techs should we invest in?
    - How can we get our innovations diffused and assimilated?
  - Technology adopter perspective
    - Which techs are important? Which are destined to succeed or fail?
    - Should we adopt? When? How should we manage assimilation?

The Technology Adoption S-curve



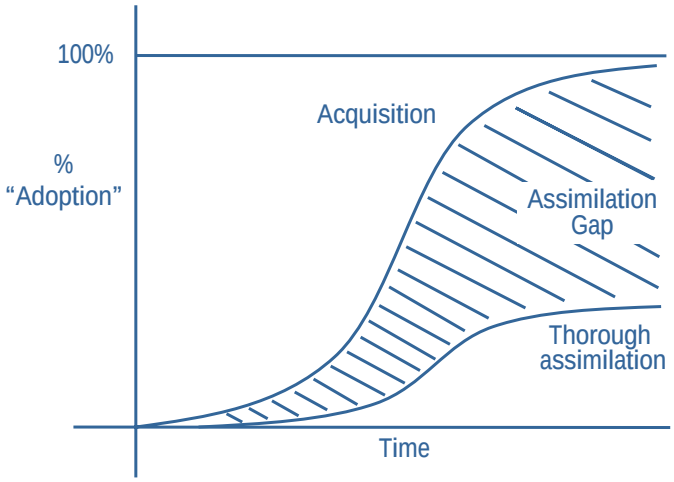
Obstacles to Diffusion of "Good" Techs: 1. Standards Wars



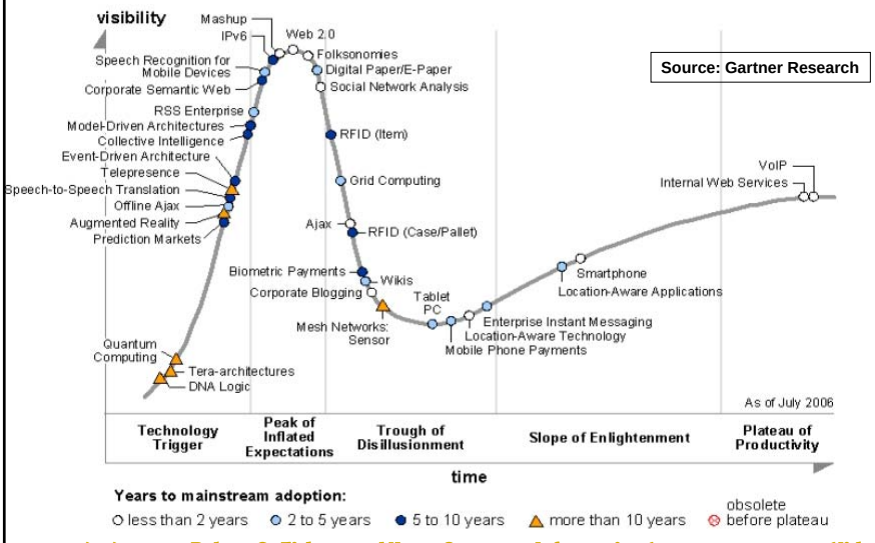
Winning a Standards War:

- First mover advantage
- Leveragable installed base
- Strong IP protection
- Robust ecosystem
- Strong brand/reputation
- High switching costs

Obstacles to Diffusion of "Good" Techs: 2. The IT Assimilation Gap



Obstacles to Diffusion of "Good" Techs: 3. "Excessive" Hype



Who Should be an Early Adopter?

- Firms that have greater innovation-related needs (opportunities) and capabilities
  - Top Management Support: Public endorsement, allocates resources
  - Firm Structure: The firm is relatively large, profitable and has slack resources.
  - Human Resources: Senior managers and staff have greater education, professionalism, and technical expertise
  - Compatibility: The firm has technologies, strategies, practices, skills and values are compatible with the innovation
  - Related Knowledge: The firm has greater base of knowledge related to the innovation

IT Assimilation Challenges

- Suppose a firm is thinking about adopting an emerging IT (RFID, VoIP, etc.). What questions must they answer?
  - Should we adopt? How aggressively?
  - Who should use the technology? How?
  - What complementary changes to strategy, structure, policies, processes, roles and incentives should be made?
  - How should we manage the implementation?
  - How can we encourage employees to accept and use the technology?
  - How can we keep the technology from "freezing" at a low level of use?

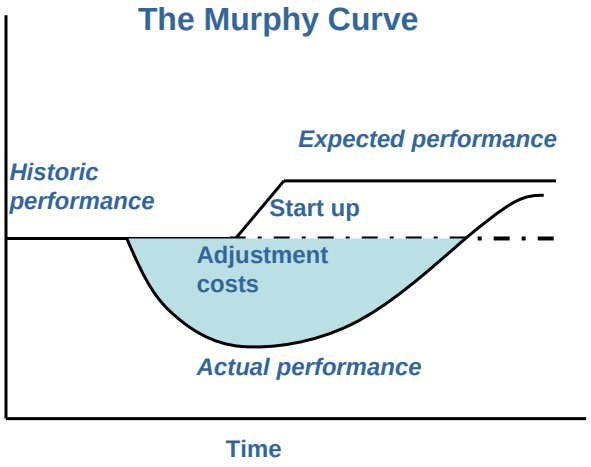
Managing IT Implementation

- Diagnosing the kind of barriers you face
  - High uncertainty about costs and benefits?
  - Organizational inertia?
  - Technology immaturity and complexity?
  - Resistance to change?
- Pick the right tactics for the right barriers

Implementation Barriers and Tactics

Barriers	Tactics
High uncer-tainty about costs & benefits	◆Engage in technology scanning ◆Invest in hands-on learning (trials, prototypes, pilots) ◆Use Incremental implementation
Organizational inertia	◆Empower an Innovation Champion ◆Align with a crisis (or "construct" one?) ◆Foster a culture of innovation
Technology immaturity and complexity	◆Do a self assessment: can we handle it? ◆Promote organizational learning ◆Use incremental implementation
Resistance to change	◆Diagnose likely forms resistance ◆Assess degree of likely technology acceptance ◆Promote grass-roots diffusion with lead users

Why is "Hands on" Organizational Learning Important?



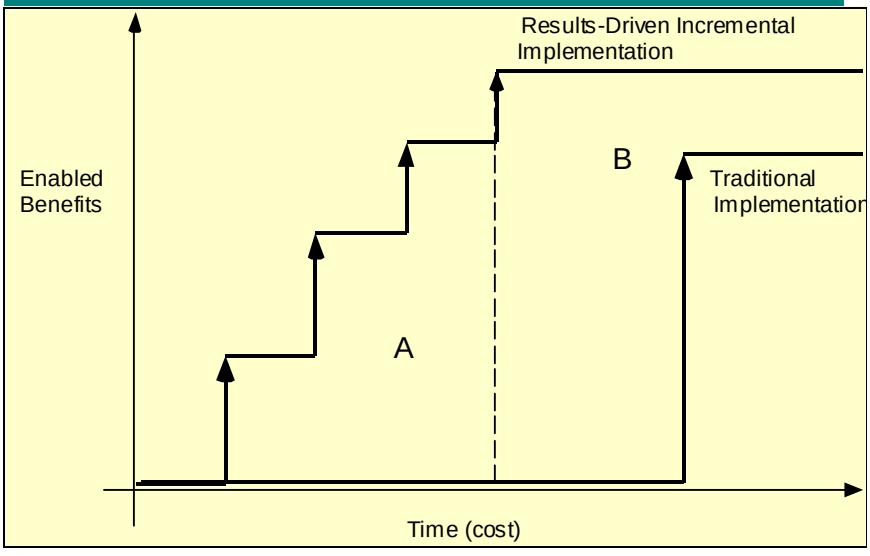
Why does the Murphy Curve happen?

- Unforeseen mis-matches between technology & organization
- They are unforeseen because...
  - New technologies not really understood until actually used
  - Managers often don't actually know what is being done by subordinates
  - Few organizational processes understood by anyone to the level of a science; much of what people know is tacit rather than explicit

Murphy Curve: Implications

1. Try to anticipate and moderate "mismatches" and adjustment costs
   - Prototyping and simulations of technology AND organization
   - Learning from prior adopters
   - Learning during and after actual implementation
2. Don't count on immediate performance improvements for a complex implementation
   - Consider adjustment costs when justifying projects
   - Have a "Plan B"!
3. Don't ignore or bury problems
   - Even well run projects have setbacks; pay close attention and learn from them
   - Don't be too quick to assign blame

Incremental Software Implementation: A Results-Driven Approach



Key RDI Principles

1) Use targeted business results to drive decision making throughout the process
2) Divide the implementation into a series of non-overlapping increments, each of which enables measurable business improvements--*even if no further increments are implemented*
3) Ensure each increment implements everything required to produce desired results (software functionality and organizational change)
4) Size the increments so that each can be implemented in a short time (ideally three months or less)
5) Use the results of each increment as a basis to flesh out and adjust the plan for subsequent increments

Advantages of the RDI Approach

- Learning Benefits
  - Incrementalism divides learning into manageable segments
  - Performance targets => direct learning to most relevant areas
  - Observation of results occurs regularly, and in proximity to the actions that produced the results
  - Implementation team must learn intensively due to the short time frame for each increment
  - Completion of each increment lays a foundation of knowledge for subsequent increments
- Momentum Benefits
  - Multiple, concrete deadlines w/ short time frames avoids inertia
  - Using business results as driver promotes scope control
  - Early, recurrent results promote confidence & morale

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Conclusions

- IT Innovation is a key driver of organizational competitiveness
- Managers need to systematical assess and plan for emerging technology adoption
  - Gartner's STREET process
  - Analyze obstacles to diffusion
    - Low inherent superiority, standards wars, "excessive" hype, assimilation gap
- After adoption has been decided, the hard part begins!
  - Assess the nature of implementation barriers
    - Uncertainty, inertia, complexity/immaturity, resistance to change
  - Choose the right set of tactics and processes