

Overview of Technology Management and Information Technology Management

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April, 20, 1998

Introduction

Introduction

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Goals

- Yours

Roadmap

Reading package

Goals

Yours

- **To understand the similarities and differences between technology management and information technology management**
- **To understand the implications of the differences**
- **To be able to assess your ITM strategy as an integral part of your organizational and business strategy**

Roadmap for this lecture

When does technology management fail?

When does IT management fail?

Common problems in the failure

How do you deal with the failures in TM?

Technology Management is Knowledge Management

What is Special about ITM

Globalization and TM

A three level model of IT managment

Issues in Information deployment: Level 1

Issues in Information and Communication systems: Level 2

Issues in Infrastructures of Information Processing and Comm: Level 3

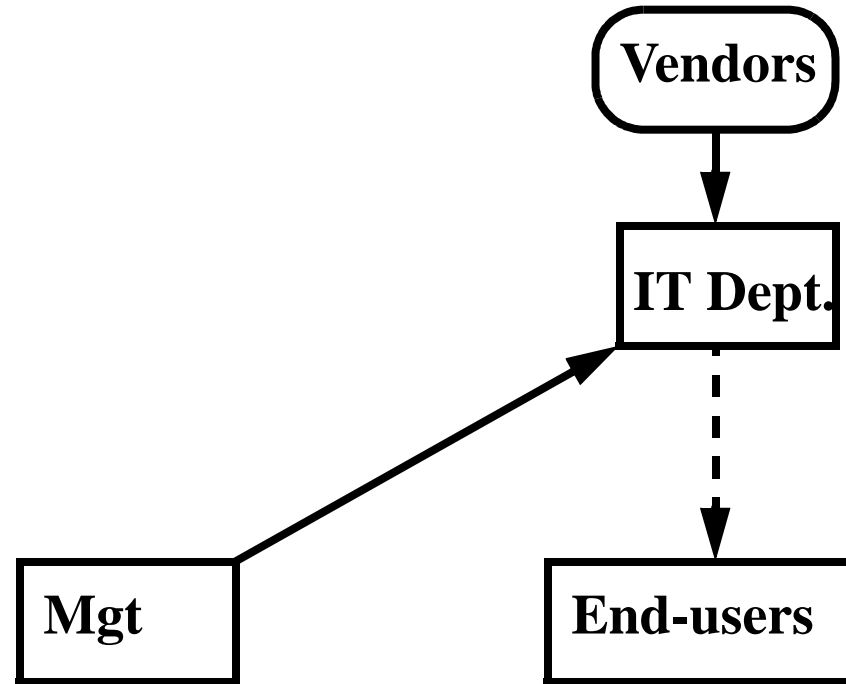
The rest of the sessions

Reading package

- **HBR paper on Information economics**
- **HBR Interview with BP CHairman**
- **HBR paper on software development**

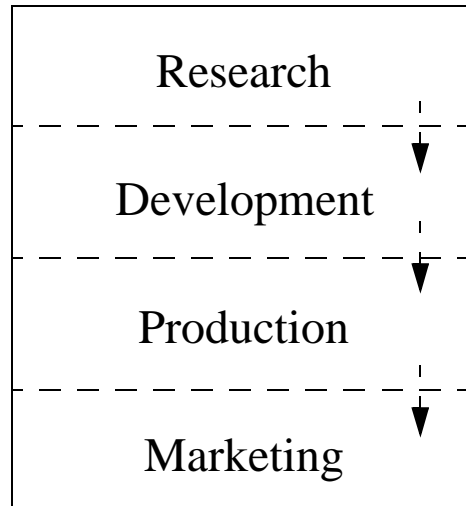
When does IT Management fails?

Traditional ITM and TM are Similar!

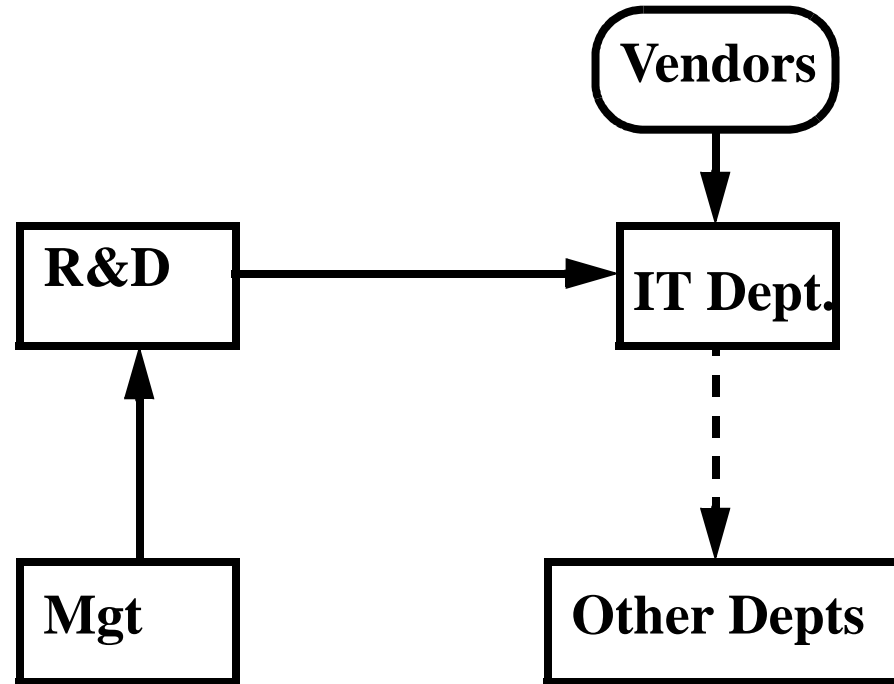


When does Technology Management Fail?

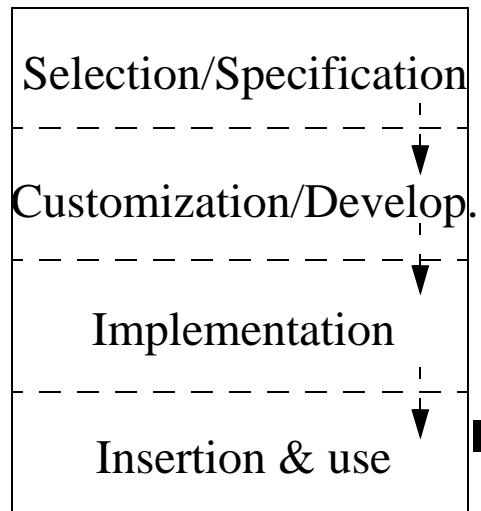
Traditional Model



When does IT Management fail?



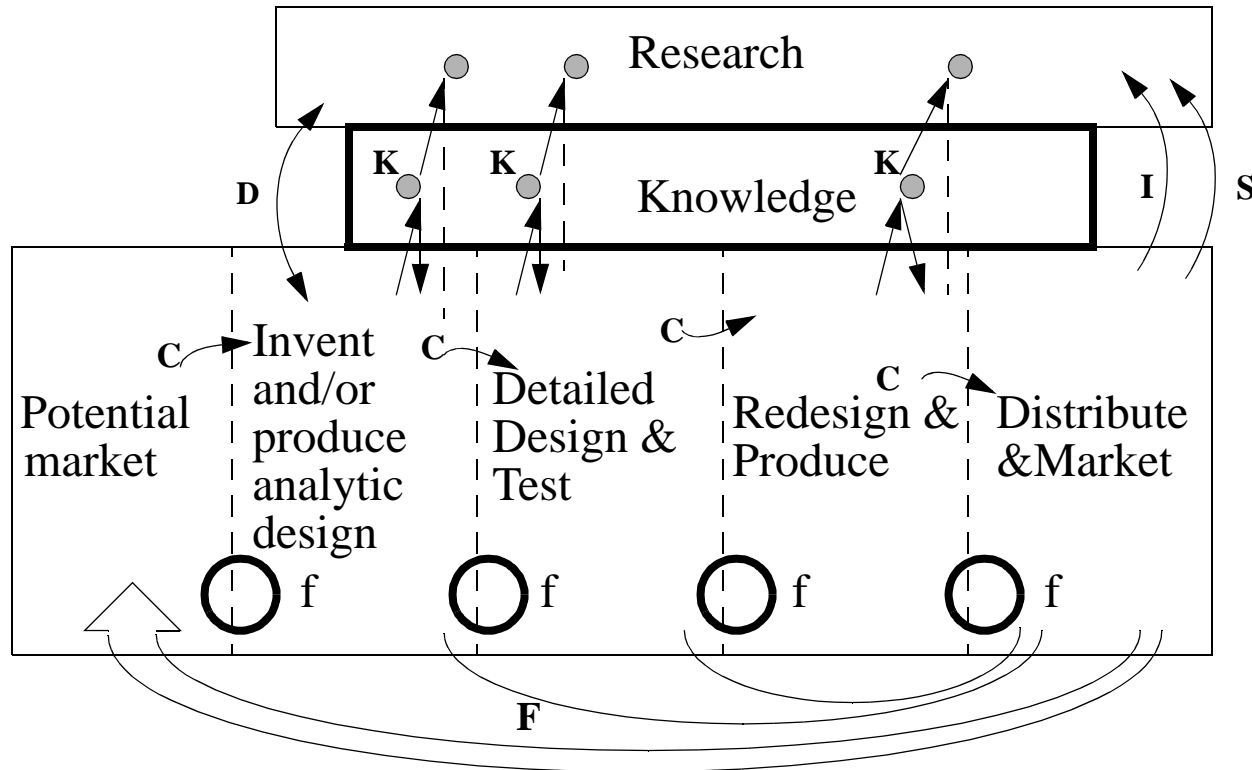
Traditional ITM and TM are Similar



Common Problems in their failures

- **Mismatch between customer needs and product**
- **Communication failures between different departments**
- **Organizational responsibility and rewards**
- **Lack of access to relevant information.**

How can we deal with the Problem in TM



C - Central chain of innovation **f** - Feedback loops **F**= Important Feedback loop
K-R - Links through knowledge to research and return **D** - Direct link from R to Design
I - Support Research (infrastructure) **S** - Support Research in Sciences and Ext. Monitoring

Technology Management is Knowledge Management

Information exchange

Information capture

Knowledge maintenance

It requires the integration of people, information and machines to create a continuous learning and evolving system

What is Special about ITM?

Pervasiveness: Direct relationship to work processes

Rate of change of technology in qualitative and quantitative terms

Power of integration for capturing and sharing knowledge

Requires extensive customization

Evolution of IT market

- **Shift from Industrial market to customer market**
- **Software quality and design is based on externalizing costs to the consumer**

Globalization of Technology management Makes It Harder? Why so?

Simulating Forces

- **Need for integration with local production and markets.**
- **Foreign acquisitions with their own labs.**
- **Access to global developments in science and technology.**
- **Access to low cost/ benefit of supply of R&D personnel.**
- **Regulations, technology transfer.**

Inhibiting forces

- **Costs of co-ordination and communication**
- **Economies of scale in R&D**
- **Fear of leakage of information**
- **Management of knowledge**

An abstraction - short and long links



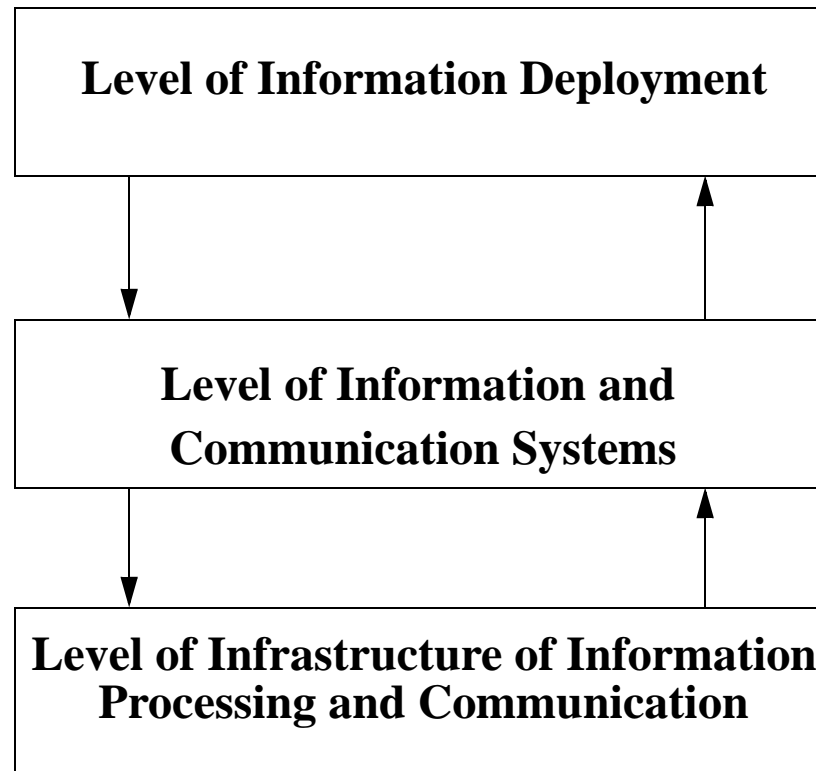
Reach, Bandwidth and Interactivity

Differences caused by distribution of activities

- **Over short links**
 - Domain vocabulary
- **Over long links**
 - Language (e.g., English/German)
 - Time zone differences
 - Regional knowledge (e.g., things often mildew)
 - Expensive face-to-face meetings
 - Domain vocabulary (e.g., sales/research)

Our experiences with engineering design suggest that the problems are complex even for the short links -- they are only made worse with the long links.

A Model of IT Management



A Three level Model of ITM from Wigand et.al., 1997

Issues in Information Deployment

IT management has to be in line with business strategy.

- **Britannica encyclopedia**
- **BP**

IT management requires that it help organizational restructuring by

- **aiding to deconstruct the organization based on information needs for achieving the business strategy**
- **using technology to reconstruct the organization by distributing information and processing**
- **capturing information and knowledge for continuous learning**
- **by creating an agile and flexible IT infrastructure to cope with rate of change in technology**

Issues in Information and Communication systems

IT management has to be dealt with similar to technology management

- **IT Project teams should include people from all affected parties**
- **IT management requires extensive knowledge management of IT use (reuse), development, maintenance**

IT customers are inside the firm

- **IT customer is everybody in the firm and outside the firm**
- **IT needs of the customers are not uniform**
- **IT deployment is critically linked to user acceptance**

Issues in Infrastructures of Information Processing and Communication

IT management has to cope with the rate of change of technology

- Deal with Legacy systems
- Deal with rapid changes in operating system and application versions
- Deal with archival of information

IT management has to deal with lack and continues changes in standardization and component based software

- The lack of standards is a problem in integration of IT
- Negotiating interface and vocabulary standards
- Finding relevant components
- Guaranteeing object quality
- Managing object versions

The Rest of the Sessions

Level of Infrastructures of Information Processing and Communication

- **Assessment Evaluation and Trade-Off of Information Technology and a case study -- Manu Kumar (April 20th-21)**
- **Reusability of System or Program -- Slaughter (April 22)**
- **Maintenance of IT and IS -- Slaughter (April 22)**

Level of Information and Communication systems

- **Human Resource Management -- Slaughter (April 22)**
- **Risk Management -- Higuera (April 23)**

Level of Information Deployment

- **Governance of IT and IS - Control and Management of IT**
- **Case: “Legacy to Network Computing or Host Oriented Legacy system to Network Computing” -Slaughter (April 23)**

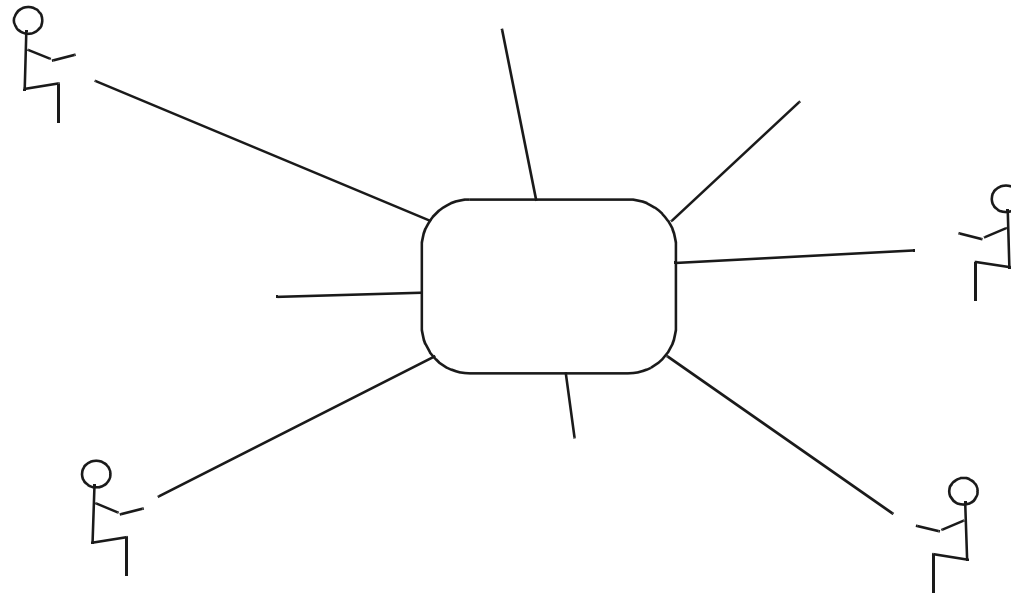
Summary

- **Do and Don'ts of Information Technology Management -- Subrahmanian (April 24)**

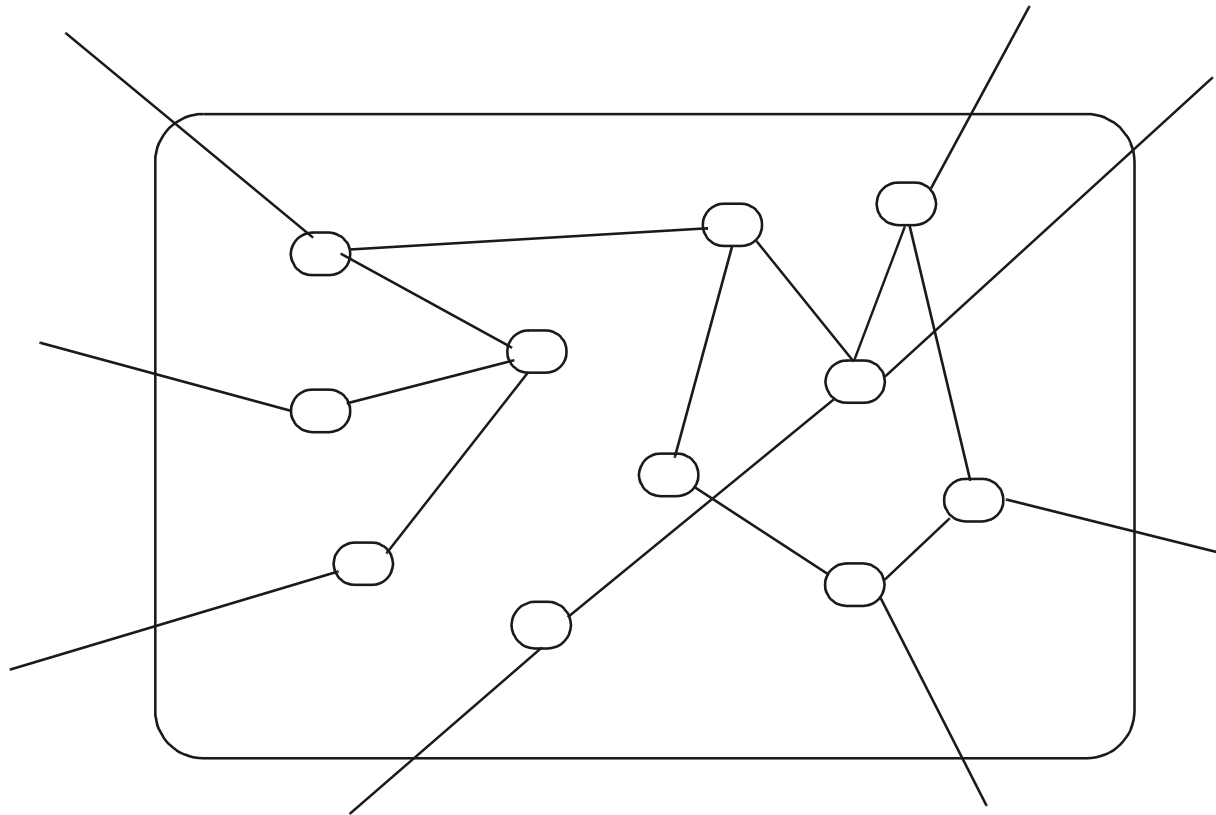
The new enabling technologies

Imagine a very large computer

- support thousands of people
- allow capture and sharing of data
- allow sharing of tools
- performance that does not degrade with size



Under the cover we see the Internet
- a computer system we have today



Future software environments

“Component” software

Load operating system from vendor when you log on

Remote FEM model as part of local simulation

CORBA and ActiveX (OLE/COM)

- **Object-oriented**
- **Centralized brokers keep headers, documentation, and advertising for objects throughout the world**
- **Some issues**
 - + **Negotiating interface and vocabulary standards**
 - + **Finding relevant components**
 - + **Guaranteeing object quality**
 - + **Managing object versions**