



Massachusetts Institute of Technology
Sloan School of Management

Generating Business Value from Information Technology¹
15.571

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- Class time:** To be determined
- Class Location:** To be determined
- Office Hours** To be determined
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- Course Assistant:** To be determined

IT is pervasive in today's firms. For many firms IT is the single largest capital investment, often exceeding 50% of capital expenditure. IT is an important vehicle for firms to achieve their business goals and has enabled radically lower cost structures, new levels of customer service, new products, new markets and changed the nature of many jobs. No longer can all the IT decisions be delegated to the technical personnel of the firm. New skills are now demanded of all managers including dealing with IT issues with confidence and competence. Managers are required to make complex IT investment and capability decisions involving technical, competitive, financial, and organizational choices.

¹ This course is only open to masters' level students.

This course covers what every senior manager needs to know about using IT to enable strategy and get more value from IT. In this course we take the strategic perspective of the general manager and study how these leading firms get more value from their IT investments. The course focuses on the strategic impact and business value that can be achieved rather than the details of the technology. Issues around IT governance will pervade the course. An IT background is not required and this is not a ‘technical’ course.

In recent years there have been spectacular failures of large information technology (IT) investments—major enterprise resource planning (ERP) systems initiatives that were never completed, e-business initiatives that were ill-conceived or poorly executed and new systems developed that were never conceived or used effectively. In contrast, some firms use IT more effectively and get above industry average returns from their IT investments year after year. These successful firms not only make better IT decisions, they also implement better. These firms must have better IT governance—they identified who should make the key IT decisions and how they should be accountable more effectively than their competitors.

This is an integrative course including issues of business strategy, finance and the study of organizations and people also covered in other parts of the MBA. The creation of business value requires the successful integration of these issues with the potential of IT. The course draws heavily on the research at the MIT Sloan Center for Information Systems Research and uses Sloan developed case studies.

The course will commence by exploring a firm’s different management objectives for investing in IT and introduce the concepts of IT Governance and the IT portfolio. Like any other investment portfolio the IT portfolio must be aligned with strategic objectives and balanced for risk versus return. Careful consideration will be given to the relationship between business strategy and the IT portfolio and assessing the firm's alignment.

After this introductory material two major topics will be addressed: **Business Operating Models** and **Ensuring Business Value**.

The focus of the first part of the course is to understand how IT enables four fundamental business operating models. This part commences by introducing the concept of business operating models and the role of IT. The implementation of these models are studied via a series of case studies including UPS, Merrill Lynch, 7-Eleven Japan, and Manheim as they strive for the optimal combination of online and physical business models.

Then we will move to the pragmatic issues of ensuring business value covering topics including: IT governance, the IT investment decision, providing the IT infrastructure and architecture, IT outsourcing, and the role of the Chief Information Officer (CIO).

We will explore these issues via lectures, case studies, and seminar sessions where groups will present short sessions on topics and generate class discussion. Assessment will be based on a group presentation, an individual term paper, and contribution to class learning.

Part of the learning will occur during the preparation of a single or multi-authored term paper on a topic of the students' choosing. A number of suggested topics are provided at the back of this document and sample projects from previous years will be on Sloan Space.

The course aims to provide:

- A practical understanding of the strategic opportunities to create business value from IT
- A practical understanding of the way business value is created and the potential barriers
- A series of frameworks to help understand how to generate business value from IT
- A set of case studies of how business value was or was not generated
- A forum to discuss the issues and learn from each other in a collegial way
- An opportunity to apply the concepts in a project

Course Goals

Students should:

- Be prepared, as general managers, to lead the firm in the appropriate use of information technology to achieve the enterprises strategy;
- Understand from a business perspective how to generate business value from IT investments:

Objectives

Students will:

- Be able to perform strategic analysis to determine where information technology can provide business value;
- Understand the concept of managing the information technology portfolio;
- Be able to design and evaluate a firm's IT governance;
- Be able to prepare an information technology investment proposal;
- Understand why some firms are better able to convert their IT investments into business value;
- Understand the strategic opportunities, viability, and threats of IT enabled business models;
- Have gained insight into the way IT influences business strategy and changes the basis for competition;
- Be able to contribute to the information technology planning process;
- Be aware of the relationship between information technology and firm performance;
- Be able to contribute to establishing the firm's IT architecture;
- Understand the risks and benefits from outsourcing.

Schedule and Preparation for Sessions

The schedule below contains the details of the course with each major topic in CAPITAL LETTERS. This course has three main methods of learning, summarized as:

Class meetings and case studies. There are a few lecture/discussion sessions on the concepts with important pre-readings. The others sessions are detailed case studies that require significant preparation and discussion in class.

Term Paper (out of session time). There is a term paper required for students to explore one topic in more detail. *To receive feedback on your idea for a term paper, a one-page proposal is due on April 9 (non-compulsory and non-graded).*

Group presentations. There is a group presentation to practice making engaging management presentations on complex topics.

To gain most value from the cases it is important to come ready to discuss, argue, interpret, and give advice on the major issues. The cases will be run on a very interactive basis with all participants given an opportunity to contribute. To focus your reading and analysis a list of discussion questions for each case is provided at the back of this document.

When preparing case studies, I suggest three steps:

1. Read the discussion questions for the case.
2. Read the case and perform an industry analysis (e.g., Porter 5 factor analysis) and identify the critical success factors for the firm. These concepts will be discussed in sessions 1 & 2.
3. Prepare brief answers for each discussion question and meet with your group if time permits.

Please see the note on case analysis “The Use of Cases in Management Education” at the back of this document.

The list of readings for each session is prioritized in order of importance. You are expected to have completed the readings even though each reading may not be discussed in detail in every class. All required readings are in the course pack.

Readings are of four types.

1. Cases that must ALL be carefully prepared.
2. Readings that are to be read carefully. These are listed in the pre-reading column in order of priority.
3. Readings specified as (skim) are important topic areas in which you should have only a brief "overview" understanding.
4. Readings specified as (further) are recommended only for students who are particularly interested in the topic and are not required reading. These readings are not provided in the reading pack.

The course is more heavily loaded with readings in the early sessions. There are no readings in the last 6 sessions to clear time for the term paper. Please plan your time for the course accordingly.

CLASS SCHEDULE

Text:

A Course Pack of readings.

Suggested texts (but not required) are:

Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill and D. Robertson, Harvard Business School Press, 2006, ISBN 1-59139-839-8.

IT Governance: How Top Performers Manage IT Decision Rights for Superior Results, P. Weill and J. Ross, Harvard Business School Press, 2004, ISBN 1-59139-253-5

Place to Space: Migrating to eBusiness Models, P. Weill & M. Vitale, Harvard Business School Press, 2001, ISBN 1-57851-245-X

Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology, P. Weill and M. Broadbent, Harvard Business School Press, 1998, ISBN 0-87584-830-3.

N0	DATE	TOPIC	PRE-READING
INTRODUCTION			
1		KEY IT DECISIONS and IT GOVERNANCE	Ross & Weill, "Six IT Decisions Your IT People Shouldn't Make", HBR Nov 2002 Ross & Weill, "Recipe for Good Governance" from <i>CIO Magazine</i> , June 15, 2004 issue. Ross, Weill & Robertson, <i>Enterprise Architecture as Strategy: Creating a Foundation for Business Execution</i> (R, W, & R). Chapter 1
2		IT PORTFOLIO and BUSINESS STRATEGY	Weill & Broadbent: Chapter 2 Jeffery & Leliveld, "Best Practices in IT Portfolio Management," <i>MIT Sloan Management Review</i> , Spring '04 (skim) Luftman, J. "Align in the Sand" (skim); Markides, C. "In Search of Strategy" plus "Executive Briefings of the Cases" (skim).
IT ENABLED-BUSINESS OPERATING MODELS — What is possible			
3		BUSINESS OPERATING MODELS	Ross, Weill & Robertson, Chapters 2 & 3

N0	DATE	TOPIC	PRE-READING
4		Unification model Case: UPS	Visit: www.ups.com
5		Replication Model Case: 7-Eleven Japan	
6		Diversification Model Case: Manheim	Visit: www.manheim.com
7		Coordination Model Case: Merrill Lynch	Visit: www.ml.com , www.schwab.com & www.citi.com
8		GUEST SPEAKER: Andy Brown, Chief Technology Architect & Head Of Market Data Infrastructure Services, Merrill Lynch	
9		IT GOVERNANCE 1	Weill & Ross: Chapters 1 & 5 Weill, P. & Ross, J., "How Effective is Your IT Governance," <i>MIT-Sloan CISR Research Briefing</i>
10		IT GOVERNANCE 2	Ross, Weill & Robertson, Chapter 6
ENSURING BUSINESS VALUE — Pragmatic			
11		Case: State Street Corporation	Visit: www.statestreet.com/
12		Case: Banknorth	Clemons & Bradley, Chapter 4 that deals with Scenario Analysis in Bradley & Nolan, <i>Sense and Respond</i> . (Skim)

N0	DATE	TOPIC	PRE-READING
13		LINKING IT INFRASTRUCTURE TO STRATEGY I	Broadbent & Weill, "Management by Maxim," <i>Sloan Management Review</i> , Spring 1997 (skim); Weill, Broadbent and Subramani, "Building IT Infrastructure for Strategic Agility," <i>Sloan Management Review</i> , Fall 2002; Weill & Broadbent: Chapter 4 (skim).
14		LINKING IT INFRASTRUCTURE TO STRATEGY II	Hagel & Seely Brown, "Your Next IT Strategy," Oct. 2001, <i>Harvard Business Review</i> Reprint R0109G (Skim)
15		GROUP PRESENTATIONS Group 1 IT Enabled Business Model Group 4a IT Outsourcing	
16		Case: Delta Airlines	
17		STAGES OF ENTERPRISE ARCHITECTURE MATURITY	Ross, Weill & Robertson, Chapters 4 & 5; Ross & Weill, "Understanding the Benefits of Enterprise Architecture," MIT CISR Research Briefing, July 2005.
18		USING OUTSOURCING STRATEGICALLY Case: Dow Chemical	Ross, Weill & Robertson, Chapter 7

N0	DATE	TOPIC	PRE-READING
19		IS PLANNING Case: Style Industries	Ross, Weill & Robertson, Chapter 8
20		IT INVESTMENT DECISION	<p>Jeffery & Leliveld, “Best Practices in IT Portfolio Management,” <i>MIT Sloan Management Review</i>, Spring '04 (In course pack at session 2-1).</p> <p>Ford, J. “Evaluating Investments in IT,” <i>Australian Accountant</i>;</p> <p>Weill & Broadbent: Chapter 3;</p> <p>Willcocks, L. “IT Evaluation: Managing the Catch 22,” <i>European Management Journal</i> (<i>skim</i>).</p> <p>Fichman, Keil, & Tiwana, “Beyond Valuation: “Options Thinking” in IT Project Management,” <i>California Management Review</i> (<i>skim</i>).</p> <p>Benaroch, M., “Managing Investments in Information Technology Based on Real Options Theory,” <i>Journal of MIS</i> (<i>further</i>)</p>
21		Case: Colway Stores	Complete the analysis as a group exercise and prepare up to three pages of overhead transparencies of your analysis and rankings for a possible presentation. Also email the group’s answers to Questions 1 & 2 to the course assistant by 5pm the night before class. Please sit in groups in the session.
22		GROUP PRESENTATIONS Group 3 Information System Planning Group 7 Applying Real Options to IT Investment Justification	

N0	DATE	TOPIC	PRE-READING
23		GUEST SPEAKER: Karl Wachs CIO Celanese	Visit: www.celanese.com
24		GROUP PRESENTATIONS Group 5 Role of CIO Group 6 Tools for the Implementation of IT Governance	
25		Group 4b IT Offshoring - India/Russia THE ROLE OF MANAGEMENT Case: The Information Technology System that Couldn't Deliver	Ross, Weill & Robertson, Chapter 9
26		IT SAVVY & COURSE SUMMARY	

ASSESSMENT

The assessment of the course will have the following components:

Assignment	Weighting	Due
Term Paper (2500 words)	40%	Anytime <i>before or during</i> the second to last class May 11. Please time your submission to manage your workflow. Term paper to be written in groups of three, two, or individually (your choice). To receive feedback a non-compulsory and non-graded one page proposal is due by April 11.
Contribution to class learning	30%	See details below.
Group Presentation	30%	Presentation date as per schedule. Slide pack due for grading the next day (i.e., 5 PM Friday) after your group's scheduled presentation. Please read the group project topics at the back of this document. By February 5 you will need to email your top three choices for group projects (i.e. select

to be in groups 1 thru 7) to the TA listed on the first page of this syllabus. We will make every effort to accommodate your choices. To provide group stability, students are required to commit to take (and not drop) the course by the end of the second week of classes (i.e., February 17) as is consistent with the *Sloan Professional Standards* guidelines.

Term Paper

The term paper is an opportunity for you to explore one area in more detail. Any one of the options listed at the back can be chosen for the final project. A non-compulsory, non-graded **proposal** (1 page) is due on or before April 11 outlining your project. The **proposal** will be returned promptly with feedback. The proposal is not a contract and will not be used to assess the final report.

Students are encouraged to choose a topic that will be useful in their jobs or career aspirations. The project **term paper** (excluding appendices) shall not exceed 2,500 words. Papers marked confidential will be treated in the strictest confidence.

Please do not exceed the word limits for the term paper, as the extra material will not be assessed. Instead liberally use appendices for all supporting materials.

Term papers should be written in a style suitable for submission to boards and senior managers of firms. Examples of excellent projects completed previously will be placed on Sloan Space.

Contribution to Class Learning

As an integrative course, with case studies and fieldwork, much of the learning is dependent on accessing the combined knowledge and experience of the group. It is everyone's job to keep the discussion productive and moving forward. In class discussions it is equally as important to talk about *how* to do something as *what* to do.

Contributions don't all have to be original flashes of insight—but they are very welcome! Class members who summarize, clarify, simplify, or suggest what else needs to be covered can also make a valuable contribution. If you are shy about contributing, prepare well and speak longer when you have the floor. If you are confident about speaking in public, focus on increasing the quality-to-airtime ratio of your contributions. Take some risks, but only after you have done the analysis and assessed the evidence.

In evaluating your contribution to class learning the following are important². Positive characteristics are:

² Adapted from McQueen.

- Professional & ethical behavior at all times
- Useful ideas, coherently and succinctly expressed
- Good analysis supported by case facts or experience
- Relevance to previous contributions i.e., ability to listen
- Constructive disagreement
- Regard, respect and acknowledgment of other's contributions
- "Show and tell" contributions
- Good questions after group presentations
- Readiness to contribute on receiving a "cold call"

Negative contribution characteristics include:

- Arriving late to class.
- Lack of involvement—silence, detachment or disinterest
- Leading discussion into unrelated topics
- Spending undue amount of time on minor points
- Long, rambling comments
- Being absent or unprepared

If you are concerned about your contribution to class learning please make an appointment to see the TA.

Group Presentation:

The group presentation is a very important part of the class learning and excellent practice. A series of group tasks are provided at the back of this document. Please read the group tasks and submit your top three preferences. The group deliverable is a 20-minute presentation followed by 15 minutes of questions (35 minute total time limit). The slide set is due for grading three days after the presentation. No report is required.

Group assignments will be assessed for the following:

- Conceptual understanding and insight
- Clarity of argument and expression
- Quality of investigation and basis for conclusions
- Conclusions and / or recommendations
- Persuasiveness and clarity of oral and written presentation
- Effectiveness when answering questions
- Contribution to class learning

Term Paper Options

1. Case Study Write Up

The term paper is a detailed analysis and write-up of any one or two of the cases we studied. Choose the case(s) that interest(s) you most and creatively design the format of your paper. The paper should include the following:

1. Additional information on the firm or the issue from public sources.
2. Answers to the questions for the case.
3. The business model schematic for the firm (if applicable).
4. Your prediction of the success of the business model for the firm in the case (if applicable).
5. A discussion of the critical success factors and core competencies for the business model in general (if applicable).
6. Your analysis of the lessons for management from the case(s).

2. Information Technology Project Proposal

Identify an emerging trend in Information Technology relevant to your (an) organization and write a convincing project proposal for your (the) CEO.

The proposal should include:

- a. Business case for the new technology.
- b. Brief description of the technology.
- c. Shortcomings of the existing method.
- d. Cost, time, and feasibility estimates.
- e. Justification for the investment.
- f. Challenges of implementation.

Examples of potential areas of information technology are: bar coding, , electronic funds transfer, intranets, electronic markets, automatic voice response (AVR), web conferencing, web services, CRM, or wireless technology. Emphasis should be placed on clear, brief presentation of the issues.

3. Case Study of a Particular IT Implementation

Write a case study of an actual implementation of IT in any organization or industry. The case can concentrate on any interesting aspect of the use of the IT. Cases concentrating on the following have been interesting in the past:

- a. The decision process to invest in IT.
- b. The link between IT and business strategy.
- c. The difficulties and successes of actually implementing IT in the work place.
- d. The costs and benefits of an IT implementation.
- e. The way work changed with the new system.
- f. A stakeholder analysis for inter-organizational systems.

The case should concentrate on one particular aspect of the IT implementation rather than tell the whole story. Typically, the first two-thirds of the case study describes the situation whilst the last third analyses the events, drawing conclusions and making recommendations. Often the analysis draws on a concept, model, or framework covered in the course.

4. *Measuring the Impact of IT*

Perform a study of an existing information system in an organization to determine its financial impact. Typical questions are:

- Was the system a good investment?
- Did the system impact income, sales, productivity, or labor costs?
- Did the system have other financial impacts?
- How was the system cost justified?
- Lessons learned for future IT investments.

5. *A Reach and Range Infrastructure Analysis*

The Reach and Range framework is a useful tool for infrastructure analysis for senior management use. Perform an analysis of the current reach and range (Weill & Broadbent, Chapter 4) of the IT infrastructure of your (any) organization. Perform a strategic analysis and assess what changes will be necessary to the reach and range of the IT infrastructure in the next five years.

6. *Architecture*

It is often challenging for firms to incorporate both the business and technical considerations in the process for setting enterprise architectures. Why is IT architecture so difficult for large firms? What architecture approaches would you recommend to large firms?

Alternatively, perform a stage of architecture maturity analysis for an enterprise of your choice.

7. *An Essay (up to 2500 words)*

The information age is upon us. This will bring with it great improvements and opportunities but also threats and dislocations. The boundaries between firms will fade, more information will flow faster, privacy will be invaded, and jobs will change. Other jobs will disappear forever. A distinction will occur between those who are information rich and those who are disadvantaged by being information poor.

Discuss.

OR

"Information systems departments may become obsolete. Outsourcing, decentralized IT, on demand, utility computing are all changing the need for an IT organization. Perhaps there will be little if any role for the IS department to play."

Discuss.

OR

What is the role of the enterprise CIO in firms with several business units.

Discuss

8. Critique the IT Governance Arrangements

Perform an analysis and provide a consulting report on the suitability of the IT Governance arrangements in an enterprise. Identify the strengths and weaknesses of the arrangements and make recommendations.

9. Any other project

Any other project related to the course and of interest to the student can be chosen. Students choosing this options are advised to submit a proposal.

Group Tasks**Task for Group 1
IT Enabled Business Models in One Industry**

The aim is to understand the current and potential use of IT enabled business models (i.e., e-business) in one industry. Groups will choose an industry to carefully investigate (e.g., retail banking, travel, car manufacturing, specialty retail, legal services). Examples of projects completed by student groups in previous years will be placed on Sloan Space.

The aim of your group assignment is to understand the actual and potential impact of IT for your chosen industry. The intent is to profile, from a senior management perspective, the network of buyers and sellers and exchange of information in the industry. Many industries are undergoing change with the boundaries of the particular industry blurring. To account for these changes you should take a broad definition of your industry. To provide focus you should take the perspective of one type of firm (e.g., large insurance company in the insurance industry, a boutique label in the music industry, a largest travel agent in the travel industry) but NOT a particular firm (e.g., Citibank or MIT Sloan or The IRS).

To complete your analysis I suggest you:

- Perform a detailed industry analysis using a series of tools including those covered in class (e.g., Porter's five factors, business operating models, etc.)
- Conduct a literature review particularly of studies of the market power of the participants and the current use of IT enabled business models.
- Interview participants in the industry—I should be able to give you pointers to people who may be helpful

- Consider using Scenario Analysis as described by Clemons and Bradley in the reading for session 13.
- Analyze future viable IT enabled business models.

This is an emerging and fast changing area so I have no firm views on your group's deliverables for the project. However, to provide a general guideline, the presentation should draw on your work in the following areas:

- Identification and definition of the industry
- A very brief discussion of the traditional participants and stakeholders, roles and responsibilities, relative power of the stakeholders (e.g., market shares etc.), regulations, profitability, and growth.
- Brief discussion of the drivers of change in the industry and identification of the leaders.
- Profile of the current practice of business, both marketplace (physical) and marketpace (electronic).
- Identification of the likely changes to the industry enabled or caused by IT and other major factors (regulation, globalization, concentration, disintermediation, etc.)
- Identification of the key (current and emerging) business operating model in the industry. This is the major deliverable of the project.
- Prediction of the state of the industry in five years (e.g., business models).
- Recommendations for firms of the type you have focused on.

Task for Group 2 Compliance

To better understand effective ways to meet the ever increasing need for compliance conduct a study on how IT assets are being used for compliance. The scope of the study can either be compliance in general in 2006/7 in a US listed firm or compliance for any firm to one specific requirement such as Sarbanes Oxley, HIPA, Privacy, Basel II, etc.

Important issues include:

1. What are the key challenges of compliance in general?
2. How do firms organize to achieve compliance (e.g., chief compliance officer, agreements, incentives etc.)?
3. What tools, methods, techniques are used for compliance?
4. What is the role of IT in compliance?

5. Brief case studies of one or two successful compliance initiatives in any organization from the literature.
6. How can firms build a modular compliance capability so that each they do not need to start over each time there is a new compliance requirement?

Task for Group 3 Information Systems Planning

To better understand IS planning, conduct interviews with two or three consulting firms with IS Planning practices. Contact me to get the names and contact details of two consulting firm (e.g., from BCG and Microsoft) who have agreed to talk with you.

Important issues include:

1. How do they define IS Planning?
2. Typically, which group/person in an organization are their clients. Why are they usually called in?
3. What is the general approach the consulting firm uses?
4. What tools, methods, techniques are used?
5. Brief (anonymous) descriptions of one or two successful engagements.
6. How do they determine if it was a successful engagement?
7. How to choose an IS planning consultant.

Finally, identify the strengths and weaknesses of the approach the consulting firm uses.

Group 4 Tasks IT Outsourcing

Outsourcing of IT is increasing at approximately 10% per annum in large organizations. However, there is little guidance for what IT activities should and shouldn't be outsourced. Prepare a presentation and report for a group of senior managers from many different organizations addressing the following.

What is IT outsourcing?

1. What are the different types of outsourcing arrangements and what IT activities can be outsourced?

2. Describe one or more examples of organizations that have outsourced.
3. In what circumstances should an organization consider outsourcing and what are the risks?
4. Produce a framework to help a firm decide whether and what IT activities should be outsourced.

Information Sources:

1. Several books and articles by Rudy Hirschheim or Mary Lacity or Leslie Wilcocks.
2. Firms that have outsourced – see me for details.

Task for Group 5 **Role of CIO**

Your group has been invited to the next meeting of the CEO Circle to present on the “Role of the CIO.” The CEO Circle is a group of about 100 London and New York based CEOs who meet on a regular basis to discuss issues of mutual interest and hear from speakers.

At a previous meeting several of the members mentioned the challenge of the managing the most senior information technology manager in the organization.

Prepare a 20-minute presentation (followed by 15 minutes of questions) on the role of the CIO.

In your address consider:

1. The role and responsibilities of the CIO.
2. The type of person and skills required for the job.
3. How to assess the performance of the CIO
4. Recommendations for managing the CIO.

Information sources:

1. Mark Polansky CIO Search Consultant with Korn Ferry in NYC <email is available from Professor Weill>
2. CIO Magazine Top 100 CIOs

Task for Group 6
Tools for Implementation of IT Governance

There is a growing market for tools that claim to help implement all or part of IT governance. Conduct a study on the market of IT governance tools.

Important issues include:

1. Estimate the size of the market?
2. Identify the key players in the market (e.g., ProSight, etc.) either via your own research or using third party analysis (e.g., Gartner – see TA for details on how to access Gartner materials)?
3. Conduct a case study of one or more tools used in an organization. See me for introductions to tool vendors who can provide case study sites. Consider:
 - What was the motivation for adopting the tool?
 - Was there a formal business case and what were the details?
 - What were the costs and benefits?
 - What were the critical success factors for successful implementation?
4. What are your predictions for the market for IT governance tools?

Task For Group 7
Applying Real Options to IT Investment Justification

The Real Options framework is a promising way to value particular types of IT investment.

1. Conduct a review of the managerial literature.
2. Demonstrate IT options to several different types of IT investments.
3. Provide recommendations for the use of options for IT investments.
4. (Optional) Provide a case study of IT options use in a firm.

Information sources:

1. M. Amram and N. Kulatilaka, *Real Options: Managing Strategic Investment in an Uncertain World*, Harvard Business School Press, 1999.
2. M. Benaroch, “Managing Investments in Information Technology Based on Real Options Theory,” *Journal of MIS*, Vol. 19, No. 2, pp. 43-84, Fall 2002. (More technical treatment.)
3. T. A. Luehrman, “Investment Opportunities as Real Options: Getting Started on the Numbers,” *Harvard Business Review*, July-August 1998.

CASE ANALYSIS & DISCUSSION QUESTIONS

The Use of Cases in Management Education³

Perhaps the most important benefit derived from using cases is that they help us learn how to ask the right questions. An able business leader once commented: “Ninety percent of the task of a top manager is to ask useful questions. Answers are relatively easy to find, but asking good questions – that is the more critical skill.”

“Discussion questions” suggested in connection with the preparation of a case do not exempt you from the task of identifying the key problems. You must still ask yourself, “What really are the problems that this manager has to resolve?” So often we manipulate facts and figures without defining the *problems* for which we seek solutions.

Cases help us sharpen our analytical skills. We work with facts and figures to produce quantitative and qualitative evidence supporting recommendations and decisions. Challenged by both the instructor and colleagues to defend arguments, students develop an increasing ability to think and reason rigorously.

In addition, cases and case discussions provide a focal point for an exchange among students of the lessons of experience. As we approach case problems, we often unconsciously bring to bear the observations, experiences, and rules-of-thumb that has accumulated during years of operating in a managerial environment. Case discussions provide a vehicle for reassessing these lessons and for gaining an increased measure of learning from them.

Cases are useful for developing sets of principles and concepts that can be applied in practice. We consider each case for itself. Out of each case, however, will come important concepts and approaches. Taken together, a series of cases should help us develop some key ideas that can be applied in specific managerial situations.

There is one final benefit that we seek to achieve by using business case studies: to renew the sense of fun and excitement that comes with being a manager. You may see a number of cases in businesses that you are relieved not to be in! But you should come to sense once again that being a manager is a great challenge – intellectually, politically, and socially.

The classroom is a place for you to express, support and defend your conclusions and recommendations. We learn through controversy and discussion. The effective use of cases as a learning vehicle depends heavily on class participation. Through interchange and constructive controversy we build analytical skills, develop judgment, and gain conceptual understanding. There is, therefore, a burden of

³ Extracts from “The Use of Cases in Management Education”, Professor E. Raymond Corey, Harvard Business School, 1976

responsibility on each student, not only for his or her education but for the learning of all other students as well.

Perhaps the greatest pedagogical benefit of the case method is that it generates a high degree of involvement in the learning process. People learn the most from those things in which they are most deeply involved. But it follows, too, that little can be learned from even the best cases without solid preparation.

Class discussion also promotes rigorous thinking and develops communication skills. It encourages “thinking on your feet” and responding to questions under pressure. Talking in class, expressing and defending your views – a rigorous and tension-building experience when you are in it – becomes one of the most valued parts of the educational experience.

As important as participating is, however, listening is more important. It’s easy to become so preoccupied with what we think that we become closed to the thoughts of others in the discussion. It is just as important to be open-minded and willing to shift positions in class as it is in business. The measure of your individual progress in any one case discussion should not be based on your assessment of whether your ideas were right, but on how much you took from the class that you didn’t know when you entered it.

CASE STUDY DISCUSSION QUESTIONS

1. DISCUSSION QUESTIONS FOR UPS

1. Describe UPS and its business environment.
2. Critique UPS’ strategy for on line business and its business model.
3. Critique UPS’ approach to managing IT. How well does UPS’ IT infrastructure prepare the firm for: (1) extending the core business and, (2) entering new businesses?
4. What are the major IT enabled business opportunities facing UPS going forward?
5. How effectively does UPS govern IT? What are the key mechanisms?
6. Lessons learned?

2. DISCUSSION QUESTIONS FOR MERRILL LYNCH

1. Do you think Merrill Lynch has moved at the appropriate speed in responding to market changes?
2. What is the Integrated Choice business model?
3. What are the implications of Integrated Choice? For clients? For financial consultants? For the firm?
4. What are the major actions Merrill should take?

3. DISCUSSION QUESTIONS FOR 7-ELEVEN JAPAN

1. What are the characteristics and trends in traditional Japanese retailing? Convenience stores (CVS)?
2. What is Seven-Eleven Japan's value proposition to their customers to justify their average 10% premium over supermarket prices?
3. What were the critical success factors for Seven-Eleven Japan?
4. What is the business model?
5. Can Seven-Eleven sustain the advantage? If so, how?
7. Lessons learned.

4. DISCUSSION QUESTIONS FOR MANHEIM

1. Describe and analyze the car remarketing industry
2. What is the Manheim Interactive business model? How does the model integrate with Manheim Auctions?
3. What are the challenges facing Hal Logan for successful implementation of the model?
4. What should Hal Logan do now?

5. DISCUSSION QUESTIONS FOR STATE STREET CORPORATION

1. Assess the likely effectiveness of IT governance at State Street Corporation as they move towards implementing "One State Street."
2. What changes should the CIO or his colleagues make, to their IT governance arrangements?
3. In June 2004, Ron Logue was appointed as the new CEO of State Street. What implications will this appointment have for IT governance? What actions should the CIO (Joe Antonellis – appointed late 2002) take?
4. In late 2004 Joe Antonellis' role as EVP and CIO was expanded to include all operations as well as IT. Should the State Street Corporation IT governance change? How?

6. DISCUSSION QUESTIONS FOR BANKNORTH

1. How successful has Banknorth been? How have they achieved their success?
2. Using the evidence from the case and Appendix 1 carefully evaluate the effectiveness of IT governance at Banknorth.
3. What is your answer to the question in the last sentence of the case?

4. John Petrey, Banknorth's CIO, has asked you to provide a set of recommendations for improving the effectiveness of their IT governance. What should John do before the upcoming Board meeting? What should he present at the meeting?

7. DISCUSSION QUESTIONS FOR DELTA

1. What is Delta's business model?
2. Why did Delta build the Delta Nervous System?
3. Critique the DNS implementation. Was the DNS a good investment?
4. How can Delta generate benefits from the DNS going forward?
5. What are the lessons other companies can learn from the Delta case?

8. DISCUSSION QUESTIONS FOR DOW CHEMICAL

1. What is Dow's business model? What is Dow's architecture maturity stage?
2. Discuss the role of outsourcing at The Dow Chemical Company. How would you classify Dow's outsourcing arrangements? How effectively does Dow manage these relationships?
3. How has outsourcing contributed to Dow's success? To Dow's risks?
4. Describe the Federated Broker Model. Do you think Dow will realize the vision of the Federated Broker Model? Why or why not?
5. What do you feel are the biggest IT challenges Dow is facing? What are the implications for the business?

9. DISCUSSION QUESTIONS FOR STYLE INDUSTRIES

1. Describe and assess Style's business objectives.
2. Describe the existing IT portfolio at Style.
3. What should Style do now?

10. DISCUSSION QUESTIONS FOR COLWAY STORES

(Complete the analysis as a group exercise and prepare up to three pages of overhead transparencies of your analysis and rankings for a possible presentation. Also email the group's answers to Questions 1 & 2 to the course assistant by 5pm the night before class)

1. Determine whether to proceed or not for each project.
 2. Rank the projects that are to proceed.
- Assume:
- a) Same economic conditions as today
 - b) Colway can probably fund all the projects
 - c) The paybacks are good estimates
 - d) No tax, inflation effects or salvage value to projects

11. DISCUSSION QUESTIONS FOR THE INFORMATION TECHNOLOGY SYSTEM THAT COULDN'T DELIVER

1. Analyse the company's handling of the project.

READING MATERIALS

Text:

A Course Pack of readings

Suggested texts (but not required) are:

Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill and D. Robertson, Harvard Business School Press, forthcoming June 2006.

IT Governance: How Top Performers Manage IT Decision Rights for Superior Results, P. Weill and J. Ross, Harvard Business School Press, 2004, ISBN 1-59139-253-5

Place to Space: Migrating to eBusiness Models, P. Weill & M. Vitale, Harvard Business School Press, 2001, ISBN 1-57851-245-X

Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology, P. Weill and M. Broadbent, Harvard Business School Press, 1998, ISBN 0-87584-830-3.

Cases⁴:

- Hoffman, F., & Weill, P., "Banknorth: Designing IT Governance for a Growth-Oriented Business Environment," MIT CISR Working Paper No. 350, November 2004.

⁴ For information on how to obtain all MIT-Sloan CISR working papers, case studies, and companion videotapes, please see <http://web.mit.edu/cisr/www/html/publications.html>.

- Nagayama, Kei & Weill, Peter. “Seven-Eleven Japan Co., Ltd.: Reinventing the Retail Business Model,” MIT Sloan CISR Working Paper No. 338, January 2004.
- Rangan, V. K. & Bell, M. “Merrill Lynch: Integrated Choice,” Harvard Business School Press, Case N9-500-090, May 2000.
- Reimus, Byron, “The Information Technology System That Couldn’t Deliver.” Harvard Business School Press, Harvard Business Review Reprint 97308, May 1, 1997.
- Ross, J. “E-Business at Delta Airlines: Extracting Value from a Multifaceted Approach,” MIT-Sloan CISR Working Paper 317, August 2001.
- Ross, J. “United Parcel Service: Delivering Packages and E-Commerce Solutions,” MIT-Sloan CISR Working Paper 318, August 2001.
- Ross, J. & Beath, C., “The Federated Broker Model at the Dow Chemical Company: Blending World Class Internal and External Capabilities,” MIT Sloan CISR Working Paper 355, July 2005.
- Ross, J. & Beath, C., “Sustainable Value from Outsourcing: Finding the Sweet Spot,” MIT Sloan CISR Research Briefing, Vol. V, No. 1A, March 2005.
- Ross, J. & Weill, P., “Understanding the Benefits of Enterprise Architecture,” MIT Sloan Research Briefing, Vol. V, No. 2B, July 2005.
- Sager, M., Butler, C., & Weill, P. “Style Industries Pty Ltd,” MIT CISR Case Study (unnumbered), 1993, revised 1995 and 2002 (Hoffman & Weill).
- Weill, P. & Raisbeck, P. “Colway Stores: IT Council Investment Sub-Committee,” MIT CISR Case Study (unnumbered), 1999, revised 2002 (Weill & Hoffman)
- Weill, P. & Woodham, R., “State Street Corporation: Evolving IT Governance,” MIT-Sloan CISR working paper 327, Revised August 2002.
- Woodham, R. & Weill, P. “Manheim Interactive: Selling Cars Online”, MIT-Sloan CISR working paper 314, February 2001.

Articles and Book Chapters:

- Benaroch, M., “Managing Investments in Information Technology Based on Real Options Theory,” *Journal of MIS*, Vol. 19, No. 2, pp. 43-84, Fall 2002. (More technical treatment.)
- Broadbent, M. & Weill, P. “Management by Maxim: How Business and IT Managers Can Create IT Infrastructures,” *Sloan Management Review* 38(3), Spring 1997, pp. 77–92. Reprint 3836.
- Clemons, E. & Bradley, S. “Strategic Uncertainty and the Future of Online Consumer Interaction (Chapter 4) in *Sense and Respond: Capturing value in the network era*, eds. S. Bradley and R. Nolan., Harvard Business School Press: Boston, MA, 1998.
- Fichman, Robert G., Keil, Mark, & Tiwana, Amrit, *Beyond Valuation: “Options Thinking” in IT Project Management*,” *California Management Review*, Vol. 47, No. 2, Winter 2005, p. 74–96.
- Ford, J. “Evaluating Investments in IT,” *Australian Accountant*, December 1994, pp.23–28.

- Hagel, J. & Seely Brown, J. “Your Next IT Strategy,” *Harvard Business Review*; Boston, October 2001.
- Jeffery, M, & Leliveld, I. “Best Practices in IT Portfolio Management,” *MIT Sloan Management Review*, 45(3), Spring 2004.
- Luftman, J. “Align in the Sand,” *Computerworld*, February 17, 1997.
- Markides, C. “In Search of Strategy,” *Sloan Management Review*, 40(3), Spring 1999, p.6–7.
- Ross, J. & Weill, P., “Stages of IT Architecture: Pursuing Alignment and Agility,” MIT Sloan CISR Research Briefing, Vol. II, no. 2A, July 2002.
- Ross, J. & Weill, P., “Recipe for Good Governance,” *CIO*, Vol. 17, No. 17, June 15, 2004, pp. 36–42.
- Ross, J. & Weill, P. “Six IT Decisions Your IT People Shouldn’t Make,” *Harvard Business Review*, Boston, October 2002.
- Ross, J., Weill, P., & Robertson, D., “*Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*,” Harvard Business School Press, 2006, Chapters 2, 3, 4, 5, & 6.
- Various, “Executive Briefings of the Cases,” *Sloan Management Review*, 40(3), Spring 1999, pp. 153–159.
- Weill, P. & Broadbent, M. “Describing and Assessing IT Governance—the Governance Arrangements Matrix,” *MIT-Sloan CISR Research Briefing (II)* 3E, October 2002.
- Weill, P. & Broadbent, M. *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*, Harvard Business School Press, 1998, Chapters 2, 3 & 4.
- Weill P, & Ross, J. *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Harvard Business School Press, 2004, Chapters 1 & 5
- Weill, P. & Ross, J., “How Effective is Your IT Governance?” *MIT-Sloan CISR Research Briefing (V)* 1B, March 2005.
- Weill, P., Subramani, M. & Broadbent, M. “Building IT Infrastructure for Strategic Agility,” *Sloan Management Review*, (44) 1, Fall 2002, pp. 57–65.
- Weill, P. & Woodham, R. “Effective IT Governance,” *MIT-Sloan CISR Research Briefing*, (I) 2B, September 2001.
- Willcocks, L. “IT Evaluation: Managing the Catch 22,” *European Management Journal*, Vol 10, No 2, June 2, 1992, p. 220–229

A reading pack containing copies of the required cases, chapters, and articles listed above must be purchased from the Sloan School CopyTech Center in E52’s basement.

Books:

The following books are useful for further reference for students interested in pursuing a particular topic in more detail:

- Amram, Martha, & Kulatilaka, Nalin *Real Options: Managing Strategic Investment in an Uncertain World*, Harvard Business School Press: Boston, MA 1999. A practical discussion of applying real options to many types of investments including IT.
- Bradley, S. & Nolan, R. *Sense and Respond: Capturing value in the network era*, Harvard Business School Press: Boston, MA, 1998. *An interesting collection of chapters written by a variety of authors in addition to the editors (e.g., Sviokla, Upton, and Malone).*
- Davenport, T. *Process Innovation: Re-engineering Work Through IT*, Harvard Business School Press: Boston, MA, 1993.
- Davenport T. & Prusack, L. *Working Knowledge*, Harvard Business School Press: Boston, MA, 1997. *A very well written book on knowledge management from a practical perspective.*
- Davenport, T. *Information Ecology: Mastering the Information and Knowledge Environment*, Oxford University Press, 1997. *A thought-provoking book on information written from a conceptual perspective.*
- Downes, L. & Mui, C. *Unleashing the Killer App*, Harvard Business School Press: Boston, MA, 1998. *A really good idea.*
- Dell, M. & Fredman, C. *Direct from Dell: Strategies that revolutionized an industry*, Harper Business, 1999. *An insightful description of the Dell Direct model by the founder.*
- Earl, M.J. *Information Management: The Organisational Dimension*, Oxford University Press 1996. *An interesting collection of readings.*
- Earl, M.J. *Management Strategies for Information Technology*, Prentice Hall 1989. *A classic book on IS planning.*
- Hagel, J. & Armstrong, A. *Net Gain: Expanding Markets through virtual communities*, Harvard Business School Press: Boston, MA, 1997. *An interesting easy to read book on virtual communities by two consultants from McKinsey and Co.*
- Hammer, M. & Champy, J. *Reengineering the Corporation: A Manifesto for Business Revolution*, Nicholas Brealey Publishing, 1993. *The classic book on BPR – easy reading.*
- Hammer, M. & Stanton, S. *The Reengineering Revolution: A Handbook*, 1st Edition, Harper Collins Publishers, 1995. *The second installment.*
- Kalakota, R. & Robinson, M. *e-Business: 2.0: Roadmap for Success*, Second Edition, Addison-Wesley, Inc.: Reading, MA, 2001.
- Keen, P.G.W & Knapp, E. *Every Manager's Guide to Business Processes*, Harvard Business School Press: Boston, MA, 1995. *Another good guide by Keen this time in to BPR and related issues.*
- Keen, P.G.W. & Balance, C. *OnLine Profits: A Manager's Guide to Electronic Commerce*, Harvard Business School Press: Boston, MA, 1997. *An excellent introduction and glossary of terms.*

- Keen, P.G.W. *Shaping the Future*, Harvard Business School Press 1991. *A classic – probably the best book on the topic of IT value.*
- McNurlin, B. and Sprague, R. *Information Systems Management in Practice*, Pearson/Prentice Hall, Seventh Edition. *An excellent general text.*
- Nolan, D., *Dot Vertigo: Doing Business in a Permeable World*, John Wiley & Son, 2001. *An interesting analysis of the dot com phenomena.*
- Porter, M., *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press (a Division of Macmillan, Inc.), 1985. *A classic!*
- Quinn, J.B. *Intelligent Firm*, Free Press: New York, NY, 1992. *Great but dense books on how organizations are changing to be knowledge based and compete with electronic commerce.*
- Robson, W. *Strategic Management and Information Systems: An Integrated Approach*, Second Edition Pitman 1998.
- Stewart, T. *Intellectual Capital*, Nicholas Brealey Publishing: London, 1997. *A light, well-written book on knowledge management written by the journalist who is credited for drawing attention to the issue.*
- Tapscott, D., Ticoll, D. & Lowy, A. *Digital Capital: Harnessing the Power of Business Webs*, HBS Press, 2000. *An excellent description of eBusiness models.*
- Tapscott, D. *Digital Economy*, McGraw-Hill, 1996. *A thought provoking book on the ‘promise and peril’ of electronic commerce. New York Times bestseller.*
- Timmers, P. *Electronic Commerce: Strategies and Model’s for Business to Business Trading*, Wiley, 2000. *An interesting and detailed book on B2B business models.*
- Treacy, M. and F. Wiersema. *The Discipline of Market Leaders*, Addison-Wesley, 1995. *An excellent book on the three key value disciplines and the organizational capabilities required for each.*