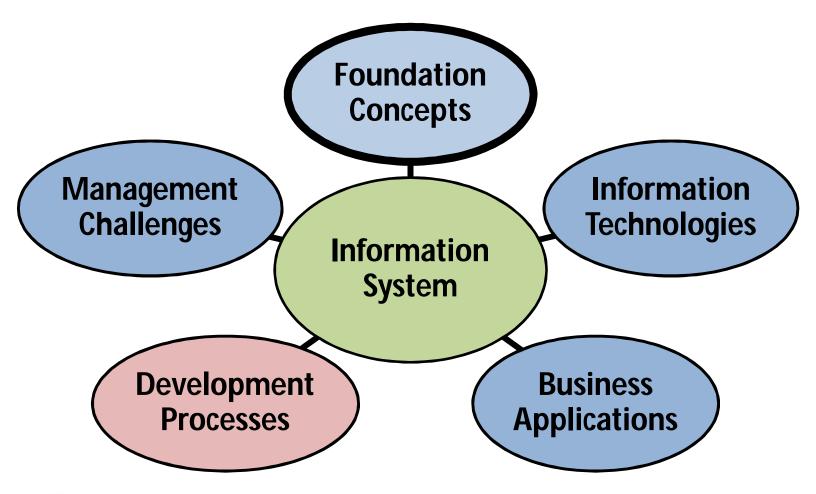
Module IV

Development Processes

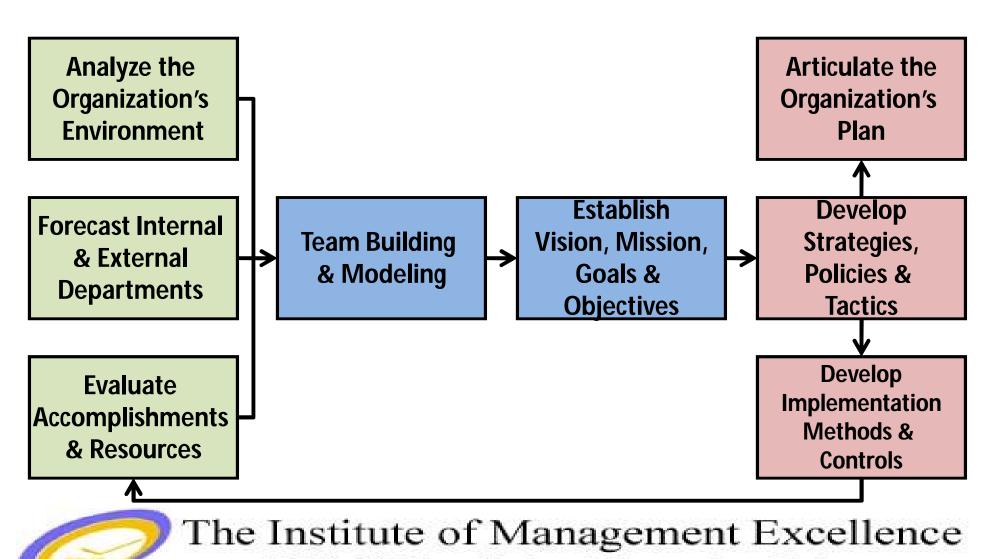
IS Knowledge Framework for Business Professionals





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Organizational Planning



Organizational Planning Methodologies

- Scenario Approach
- Planning for Competitive Advantage

Scenario Approach

Scenario approach to Strategic IS Planning, teams of business and IS managers create and evaluate a variety of business scenarios.

Planning for Competitive Advantage

Following models can be used in a strategic planning

- Competitive Forces (competitors, customers, suppliers, new entrants and substitutes)
- Competitive Strategies (cost leadership, differentiation, growth, innovation and alliances)
- Value Chain



Strategic Opportunities Matrix

Helps to evaluate the strategic risk/payoff potential of proposed business/IT opportunities

High

Strategic Business Potential Low High Risk
High Payoff
Opportunities

High Risk
Low Payoff
Opportunities

High Success
High Payoff
Opportunities

Safe, but Low Payoff Opportunities

Low High

Firm's Ability to Deliver with IT

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Business Models

- A business model is a conceptual framework that expresses the underlying economic logic and system that prove how a business can deliver value to customers at an appropriate cost and make money.
- Components of business model are: Customer value, Scope, Pricing, Revenue source, Connected activities, Implementation, Capabilities, Sustainability

E-Business Models

Components of Business Model	Questions Specific to E-Business Models
Customer Value	What is it about Internet technologies that allows your firm to offer its customers something distinctive? Can Internet technologies allow you to solve a new set of problems for customers
Scope	What is the scope of customers that Internet technologies enable your firm to reach? Does the Internet alter the product/service mix that embodies the firm's products?
Pricing	How does the Internet make pricing different?



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E-Business Models

Components of Business Model	Questions Specific to E-Business Models	
Revenue Source	Are revenue sources different with the Internet? What is new?	
Connected Activities	How many new activities must be performed as a result of the Internet? How much better can Internet technologies help you to perform existing activities?	
Implementation	How do Internet technologies affect the strategy, structure, systems, people and environment of the firm?	

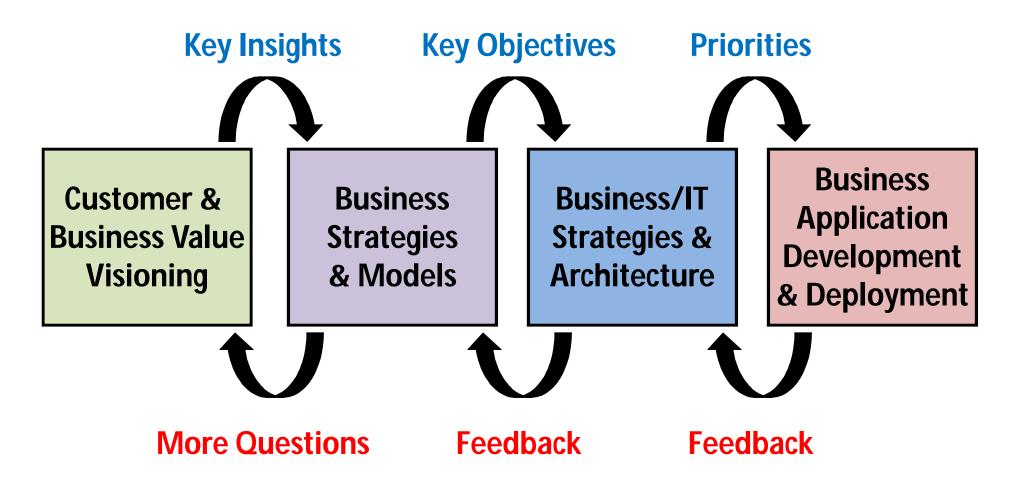


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E-Business Models

Components of Business Model	Questions Specific to E-Business Models
Capabilities	What new capabilities do you need? What is the impact of Internet technologies on existing capabilities?
Sustainability	Do Internet technologies make sustainability easier or more difficult? How can your firm take advantage of it?

Business/IT Planning





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Business/IT Planning

Strategy Development

 Developing business strategies that support a company's business vision.

Resource Management

 Developing strategies plan for managing or outsourcing a company's IT resources, including IS personnel, HW, SW, data and network resources

Technology Architecture

 Making strategic IT choices that reflect an IT architecture designed to support a company's business initiatives

IT Architecture

It s a conceptual design or blueprint, that includes the following major components:

- Technology Platform
- Data Resources
- Applications Architecture
- IT Organizations

Identifying Business/IT Strategic Positioning Matrix: Strategies

Helps a company optimize the strategic impact of Internet technologies for e-business and commerce applications.

> High **External Drivers**

Customer Connectivity/ Collaboration/ **Technology**

Low

Global Market Penetration

Cost and Efficiency Improvements **Product/Services Transformation**

Performance Improvement in **Business Effectiveness**

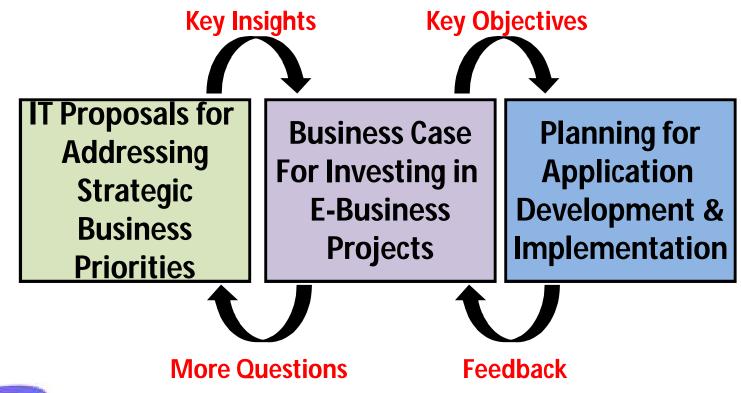
Internal Drivers High E-business Processes/Collaboration/Cost Containment



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Business Application Planning

Business application planning process begins after the strategic phase of business/IT planning has occurred.



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Implementation Challenges

- Implementing Information Technology
- End User Resistance and Involvement
- Change Management

Implementation

- Implementation is doing what you planned to do
- As a process that carries out the plans for changes in business/IT strategies and applications

System Implementation

- Hardware and software acquisition
- Software development
- Testing of programs and procedures
- Conversion of data resources
- Conversion alternatives
- Education and training of end users and specialists who will operate a new system

Introducing Change through IT

Redefine **New Business Core Business** evels of Change **Initiatives Best Practices Process** Reengineering Model **Best Practices Improve Efficiency Efficiency Extended** Single Core Supply Value Chain **Function** Chain **Processes**

Scope of Business Change



End User Resistance and Involvement

The implementation of new work support technologies can generate fear and resistance to change in employees.

- Proper education and training reduce end user resistance to new information technologies
- Even more important is end user involvement in organizational changes and in the development of new information systems

Change Management

	<u>_</u>				
1	High (Technology	Process	People
n Business	on Business	nal Strategic	 Enterprise Architecture Supplier Partnership Systems Integrators Outsourcing 	 Ownership Design Enterprisewide Processes Internetprise processes 	 Change leaders Loose/tight Controls Executive sponsorship & support Aligning on conditions of satisfaction
	Impact o	Operation	Technology SelectionTechnology SupportInstallation Requirements	Change ControlImplementationManagementSupport Processes	RecruitmentRetentionTrainingKnowledge Transfer
					N.

Low Level of Difficulty/Time to Resolve

High



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Change Management Process

	Setup Analysis Definition Transition
Create Change Vision	Understand - Create Compelling Change Story Strategic Vision - Make Vision Comprehensive & Operational
Define Change Strategy	-Assess Readiness Change -Select Best Change Configuration
Develop Leadership	Create Leadership -Lead Change Program Resolve -Develop Leadership Capability
Build Commitment	-Build Teams - Transfer Know. & Skills -Manage Stakeholders -Manage Resistance - Communicate
Manage People Performance	Establish Needs -Implement Performance Management -Implement People Practices
Deliver Business Benefits	Build Business Quantify Case Sustain Benefits
Develop Culture	Understand Design Target Implement Cultural Change Current Culture
Design Organization	Understand Design Current Org. Design Target Org.



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IS Development

The Systems Approach

 The Systems Approach to problem solving uses a systems orientation to define problems and opportunities and develop solutions.

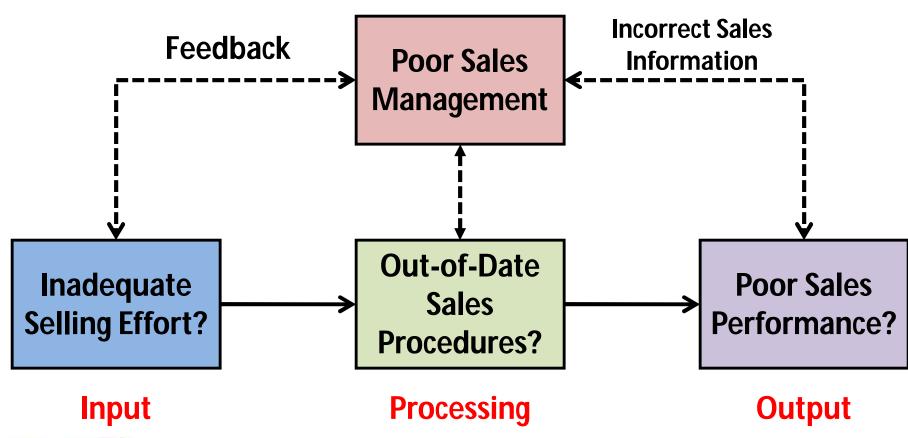
IS Development

Analyzing a problem and formulating a solution involve the following activities.

- Recognize and define a problem or opportunity using systems thinking
- 2. Develop and evaluate alternative system solutions
- Select the system solution that best meets your requirements
- Design the selected system solution
- Implement and evaluate the success of the designed system

System Thinking Example

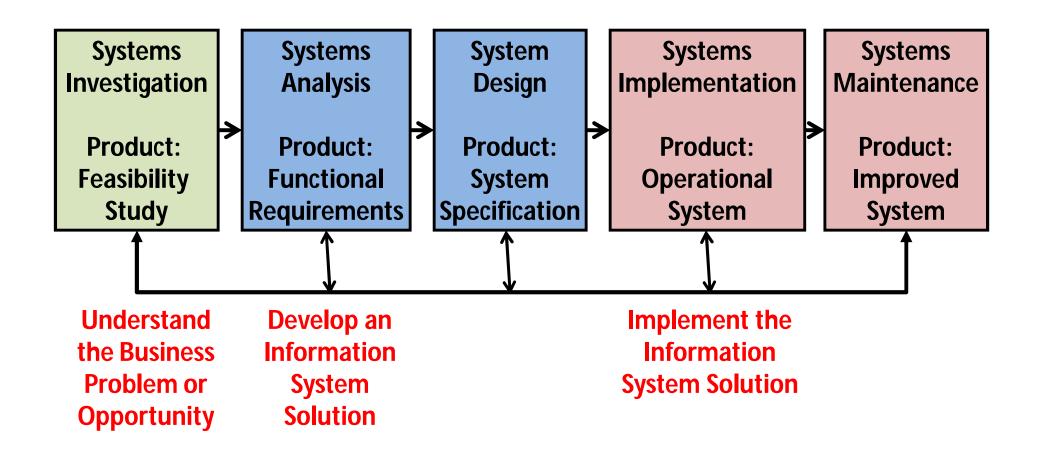
Control





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System Development Life Cycle





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Prototyping

- The rapid development and testing of working models
- Used in design phase
- Especially useful when end user requirements are hard to define

Prototyping Process Identify an Eng User's Business Requirements **Develop Business System Prototypes Prototyping** Cycle **Review the Prototypes** to Better Meet End **User Requirements Maintenance** Cycle **Use and Maintain** The Accepted **Business System**



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Systems Development Process

- Do we have business opportunities?
- What are our business priorities?
- How can IT provide information systems solutions that address our business priorities?

Feasibility Study

A preliminary study where the information needs of prospective users the resource requirements, costs, benefits, and feasibility of a proposed project are determined

Feasibility Categories

- Organizational Feasibility
- Economic Feasibility
- Technical Feasibility
- Operational Feasibility

- Human Factors Feasibility
- Legal/Political Feasibility

Feasibility Categories

Organizational Feasibility	Economic Feasibility
 How well the proposed system supports the business priorities of the organization 	 Cost Savings Increased Revenue Decreased Investment Requirements Increased Profits
Technical Feasibility	Operational Feasibility



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Cost/Benefit Analysis

- Tangible costs and benefits can be quantified with a high degree of certainty
 - -Example: decrease in operating costs
- Intangible costs and benefits are harder to estimate
 - -Example: improved customer service

E-Commerce Business Feasibility Study Example

Organizational Feasibility	Economic Feasibility
 How well a proposed e-commerce fits the company's plants for developing Web-based sales, marketing and financial systems 	 Savings the labor costs Increased sales revenue Decreased investment in inventory Increased profits
Technical Feasibility	Operational Feasibility
 Capability, reliability and availability of Web store hardware software and management services 	Acceptance of employeesManagement supportCustomer and supplier acceptance



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Human Factors Feasibility

- Assess
 - -Employee, customer, supplier acceptance
 - Management support
 - The right people for the various new or revised roles

Legal/Political Feasibility

- Assess
 - Possible patent or copyright violations
 - Software licensing for developer side only
 - Governmental restrictions
 - -Changes to existing reporting structure

Systems Analysis

- An in-depth study of end user information needs
- That produces functional requirements that are used as the basis for the design of a new information system

Systems Analysis

- Detailed study of
 - The information needs of a company and end users.
 - The activities, resources, and products of one or more of the present information systems being used.
 - The information system capabilities required to meet information needs of users and stakeholders
- End users are important members of the development team

Organizational Analysis

- Study of the organization including:
 - Management Structure
 - People
 - Business Activities
 - Environmental Systems
 - Current Information Systems
 - Document input, processing, output, storage and control

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Logical Analysis

- Analysis of the Present System
- Construction of a logical model of the current system
- Logical model
 - A blueprint of what the current system does

Functional Requirements Analysis & Determination

- Determine specific business information needs
 - 1. Determine what type of information each business activity requires.
 - 2. Determine the information processing each system activity is needed to meet these needs.

Functional Requirements

- End user information requirements that are not tied to the hardware, software, network, data, and people resources that end users presently use or might use in the new system
- What the system must do
- Functional Requirement categories
 - User Interface
 - Processing
 - Storage
 - Control



Systems Design

- Modify the logical model until it represents a blueprint for what the new system will do
- Physical design:
 - How the system will accomplish its objectives

Systems Design

User Interface Design

Screen, Form, Report and Dialog Design Data Design

Data Element Structure Design

Process Design

Program and Procedure Design

System Design



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User Interface Design

- Focuses on supporting the interactions between end users and their computerbased applications
- Frequently prototype the user interface

System Specifications

- Formalize design of
 - User interface methods
 - Products
 - Database structures
 - Processing
 - Control procedures
- Specifications for hardware, software, network, data, and personnel

End User Development

- IS professional plays a consulting role
- End user does his/her own application development

- Contrast in traditional life cycle:
 - End user is customer
 - IS profession does development

End User Development

Control

What controls are needed to protect against accidental loss or damage? Is there a need to control access to data used by the application?

Input
What data are
Available, in what
form?

Processing what operations on the inputs are needed to produce the desired output?

Output
What information is
needed by end users and
in what form should the
output be presented?

Storage

Does the application use previously stored data?

Does it creates data that must be stored for future use by this or other applications?



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Evaluating Hardware, Software & Services

- Must acquire hardware, software
- Companies may ask suppliers to present bids and proposals
- May score different products
 - Determine evaluation factors
 - Assign each product points on each factor
 - May require benchmark tests
 - Simulate processing of task and evaluates the performance

Hardware Evaluation Factors

- Performance
- Cost
- Reliability
- Compatibility
- Technology
- Ergonomics
- Connectivity
- Scalability
- Software
- Support

Software Evaluation Factors

- Quality
- Efficiency
- Flexibility
- Security
- Connectivity
- Maintenance
- Documentation
- Hardware

IS Services Evaluation Factors

- Performance
- Systems development
- Maintenance
- Conversion
- Training
- Backup
- Accessibility
- Business Position
- Hardware
- Software

System Testing

- Testing and debugging software
- Testing website performance
- Testing new hardware
- Review of prototypes of displays, reports and other output

Data Conversion

- Converting data elements from old database to new database
- Correcting incorrect data
- Filtering out unwanted data
- Consolidating data from several databases
- Organizing data into new data subsets

Importance of Data Conversion

 Improperly organized and formatted data is major causes of failures in implementing new systems.

Documentation

User Documentation

Sample data entry screens, forms, reports

Systems Documentation

- Communication among people responsible for developing, implementing and maintaining system
- Important in diagnosing errors and making changes

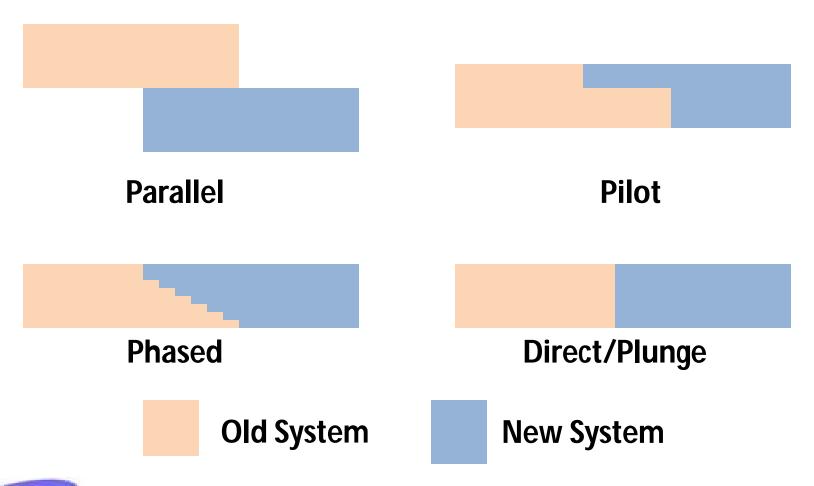
Training

- End users must be trained to operate new system
- Educate managers and end users in how the new technology impacts the company's business operations and management

Conversion

 Conversion from use of present system to operation of new system

Major forms of Conversion



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Direct Conversion

- Turn off old system
- Turn on new system

- Direct is least expensive method
- Riskiest method

Parallel Conversion

 New and old systems run simultaneously until end users and project coordinators are satisfied that the new system is functioning correctly

Low risk

Highest cost method: perform all functions with both systems

Pilot Conversion

- When new system is installed in multiple locations
- Convert to new system in single location
- Once complete in pilot location,
 - Evaluate and make any necessary changes

Phased Conversion

- Incremental approach to conversion
- Bring in new system as a series of functional components

- Lower risk
- Takes the most time

Systems Maintenance

- Corrective: fix bugs and logical errors
- Adaptive: add new functionality to accommodate changes in business or environment
- Perfective: improve performance
- Preventive: reduce chances of failure

Post-Implementation Review

- Ensure new system meets the business objectives
- Periodic review or audit

Implementation Challenges

- New system involves major organizational change
- Manage changes to
 - Business processes
 - Organizational structures
 - Managerial roles
 - Work assignments
 - Stakeholder relationships

User Resistance

- New way of doing things generates resistance
- Key to solving is
 - User involvement in organizational changes and development of new systems
- User involvement
 - -End users on systems development teams
 - End user ownership of new system