**ITEC 630**

*Information Systems Analysis, Modeling, and Design*

***Lecture Notes***

**Project Management**

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**Learning objectives**

1. Explain how organizations identify business needs to build information systems.
2. Recognize the importance of linking the information system to business needs.
3. Collect information to create a system request.
4. Describe technical, economic, and organizational techniques used for feasibility analysis.
5. Familiarize with techniques to perform an economic feasibility (cost-benefit) analysis.
6. Explain how projects are selected in some organizations.
7. Describe various approaches to the SDLC for structuring a development project.
8. Explain how to select a project methodology based on project characteristics.
9. Become familiar with project estimation.
10. Be able to create a project work plan.
11. Describe project staffing issues and concerns
12. Describe and apply techniques to coordinate and manage the project.
13. Explain how to manage risk on the project.
14. **Describe three ways to acquire a system: custom, packaged, and outsourced alternatives.**
15. **Create an alternative matrix.**
16. **Generate and maintain an effective systems proposal.**

**Overview**

To deliver an information system that is developed within a specified time frame, within budget, and with acceptable quality to users, systems analysts must manage the project effectively. The project management is a process of planning, scheduling, monitoring, and reporting and it is executed during the entire software development life cycle (SDLC).

The project management fundamentals describe all important project management capabilities of project managers or systems analysts. They include (1) project identification and initiation, defining the problem, (2) determining project feasibility and selecting the project, (3) creating the project plan and staffing the project, (4) managing and controlling the project, (5) analyzing and selecting a strategy to acquire the proposed system, (6) using the project management tools to manage the project, and (7) write the systems proposal.

During the system analysis phase, project managers or systems analysts gather facts about systems projects to discover information systems’ requirements which will be analyzed to build logical models of the new systems. Project managers or systems analysts conduct fact-finding using interactive methods and unobtrusive methods. The results of fact-finding will be used to build logical models of the proposed systems and to document systems’ requirements. These activities are based on techniques and tools such as data flow diagrams and data dictionaries presented in detail in later. The end product for the systems analysis phase is the system proposal. The system proposal describes management and user requirements, systems hardware and software, costs and benefits, and alternatives.

The use of project management software and techniques to schedule and monitor projects such as Gantt charts and PERT charts are introduced.

***Note #1: All links provided in this lecture can be activated with a "Ctrl + Click"; however, you can also activate these links by copy and paste the link content to the Web browser address bar, just in case.***

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**PROJECT IDENTIFICATION AND INITIATION**

In an organization, a project is identified when a recognized business need could be implemented using information technology. An organization then initiates the project by analyze and evaluate its objectives and goals to propose building a new system. The project is entering its planning phase and systems analysts should put together a system request document that consists of information such as the project's sponsor, business need, business requirements, and business value. The system request document is then submitted to a management committee for approval.

#### *Project Identification & Initiation & Build a System Request*

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**FEASIBILITY ANALYSIS**

The next step in the planning phase is to conduct a feasibility analysis to determine the technical, economic, and organizational feasibility of the system.

The technical feasibility focuses on whether the system can be designed, implemented, and installed based on available organization resources, on availability of current technology, on compatibility with existing systems, and on the size of the project.

The economic feasibility analyses cost versus benefit to decide whether the system should be built or not. The analysis covers development costs, operational costs, tangible benefits, and intangible costs and benefits. The project manager or systems analyst should be familiar the following cost-benefit analysis techniques to perform an economic feasibility analysis.

#### Cash Flow Analysis and Measures

#### Return on Investment

#### Break-Even Point

#### Discounted Cash Flow Technique

#### Net Present Value (NPV)

#### Identify Costs and Benefits

#### Assign Values to Costs and Benefits

Finally, the organizational feasibility analysis assesses how well the system will be accepted by its users and incorporated into the ongoing operations of the organization.

#### *Feasibility Analysis (go to the section “Feasibility Analysis”)*

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**PROJECT SELECTION**

When the feasibility analysis is completed and submitted back to the approval committee along with a revised system request, the committee then decides whether to approve or reject the project. Note that the project selection process takes into account all of the projects in the organization.

#### *Project selection*

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**Once a project has been selected, the project manager or systems analyst plans the project by selecting a project methodology, creating the project work plan, identifying project-staffing requirements, and preparing to manage and control the project. During this time, several project management deliverables are produced including the work plan, staffing plan, standards list, project charter, and risk assessment.**

**CREATING THE PROJECT PLAN**

Several project methodologies that can be used to structure a development project are as follows:

* Waterfall development and its variations: parallel development and the V-model
* Rapid application development (RAD), including iterative development, system prototyping, and throwaway prototyping
* Agile development, including extreme programming, Scrum, and others.

In order to select the most appropriate methodology to use for the project, project managers or systems analysts evaluate the following project characteristics:

* clarity of user requirements
* familiarity with technology
* complexity
* reliability
* time frame
* schedule visibility

The project manager or systems analyst then estimates the time frame for the project and identifies tasks needed to complete the project. The function-point analysis technique can be used to estimate the project time and a work breakdown structure (WBS) is used to keep track of all tasks along with their durations, dependencies, and statuses.

Next, the project manager or systems analyst creates the project work plan that is based on all tasks listed in the WBS and associated project resources (such as people assigned to perform tasks, the actual hours that the tasks took, and the variances between estimated and actual completion times.)

#### *Creating the Project Plan*

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#### *The Function Point Approach*

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**STAFFING THE PROJECT**

The project staffing includes the following activities: determining how many people should be assigned to the project, matching people's skills with the needs of the project, motivating them to meet the project's objectives, and minimizing project team conflict that will occur over time. All of these activities are arranged and recorded in a deliverable for the project called a staffing plan.

#### *Staffing the Project*

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**MANAGING AND CONTROLLING THE PROJECT**

Once the project begins, the project managers or systems analysts monitor the progress of the team on the project tasks. They can use the project management tools such as the Gantt chart and PERT chart to evaluate project progress and redirect resources, if necessary. In addition, they should avoid or minimize scope creep or feature creep getting into the schedule, know how to use techniques such as timeboxing to deal with shortened time frames, and be able to access and manage the project risks.

#### *Managing and Controlling the Project*

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**SYSTEM ACQUISITION STRATEGIES**

**During the design phase**, **the project team** must come up with an approach to acquire the proposed system. There are three primary **approaches that can be select to create the new system and they include cu**stom development, **buying pa**ckaged software, or outsourcing. Each of these three choices has its strengths and weaknesses and each could selected based on characteristics of the project.

#### *System Acquisition Strategies*

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**INFLUENCES ON THE ACQUISITION STRATEGY**

**In general, each of the acquisition strategies just discussed in the above has its strengths and weaknesses. Therefore, it is important to take into account in the selection process other organization features and resources. They are the uniqueness of “business need” for the system the amount of “in-house experience” that is available to build the system, the importance of the “project skills” to the company, the existence of “good project management” and the “amount of time available” to develop the application.**

#### *Influences on the Acquisition Strategy*

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**SELECTING AN ACQUISITION STRATEGY**

**To make a decision on a specific acquisition strategy for the system, the project manager or systems analyst could use an alternative matrix that presents feasibility information for several candidate solutions in a way for easy comparison.**

#### *Selecting an Acquisition Strategy*

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**PROJECT MANAGEMENT TOOLS**

**Project managers utilize several tools to help manage projects. The Gantt chart and PERT chart are two graphical tools that project managers or systems analysts are widely used to understand the relationship between project tasks and to monitor progress on the project.**

* A Gantt chart shows activities over a period of time and it is **appropriate when planning activities that are done in sequence**
* A PERT chart shows **the order of** precedence and it can be used to **determine slack time** and identify **the critical path (**the longest path through the activities).

#### *The Gantt chart and PERT chart*

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**THE SYSTEMS PROPOSAL**

Documentation is a major means of communication during the entire SDLC and it should be considered as an integral part of the various phases of the life cycle. The end product for the systems analysis phase is the system proposal and it is one important document of systems documentation that project managers or systems analysts must generate and maintain.

#### *Template of System Proposal (go to FIGURE 3-14 Outline of the Tune Source System Proposal)*

[**http://proquestcombo.safaribooksonline.com.ezproxy.umuc.edu/book/software-engineering-and-development/9781118057629/chapter-1-the-systems-analyst-and-information-systems-development/navpoint-20#X2ludGVybmFsX0h0bWxWaWV3P3htbGlkPTk3ODExMTgwNTc2MjklMkZuYXZwb2ludC00MyZxdWVyeT0lMjJzeXN0ZW0lMjBkb2N1bWVudGF0aW9uJTIy**](http://proquestcombo.safaribooksonline.com.ezproxy.umuc.edu/book/software-engineering-and-development/9781118057629/chapter-1-the-systems-analyst-and-information-systems-development/navpoint-20#X2ludGVybmFsX0h0bWxWaWV3P3htbGlkPTk3ODExMTgwNTc2MjklMkZuYXZwb2ludC00MyZxdWVyeT0lMjJzeXN0ZW0lMjBkb2N1bWVudGF0aW9uJTIy)

#### *Another template of System Proposal (go to FIGURE 3-16 System Proposal Template)*

[**http://proquestcombo.safaribooksonline.com.ezproxy.umuc.edu/book/software-engineering-and-development/uml/9781118037423/chapter-3-requirements-determination/navpoint-48?query=((system+proposal))#snippet**](http://proquestcombo.safaribooksonline.com.ezproxy.umuc.edu/book/software-engineering-and-development/uml/9781118037423/chapter-3-requirements-determination/navpoint-48?query=((system+proposal))#snippet)

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1. Alan Dennis, Barbara Haley Wixom, and **Roberta M. Roth** (2012). **System Analysis and Design, Fifth Edition, John Wiley & Sons**.  
   < http://proquestcombo.safaribooksonline.com.ezproxy.umuc.edu/book/software-engineering-and-development/9781118057629 >
2. Alan Dennis, Barbara Haley Wixom, and David Tegarden (2012). Systems Analysis and Design with UML, 4th Edition, John Wiley & Sons.  
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