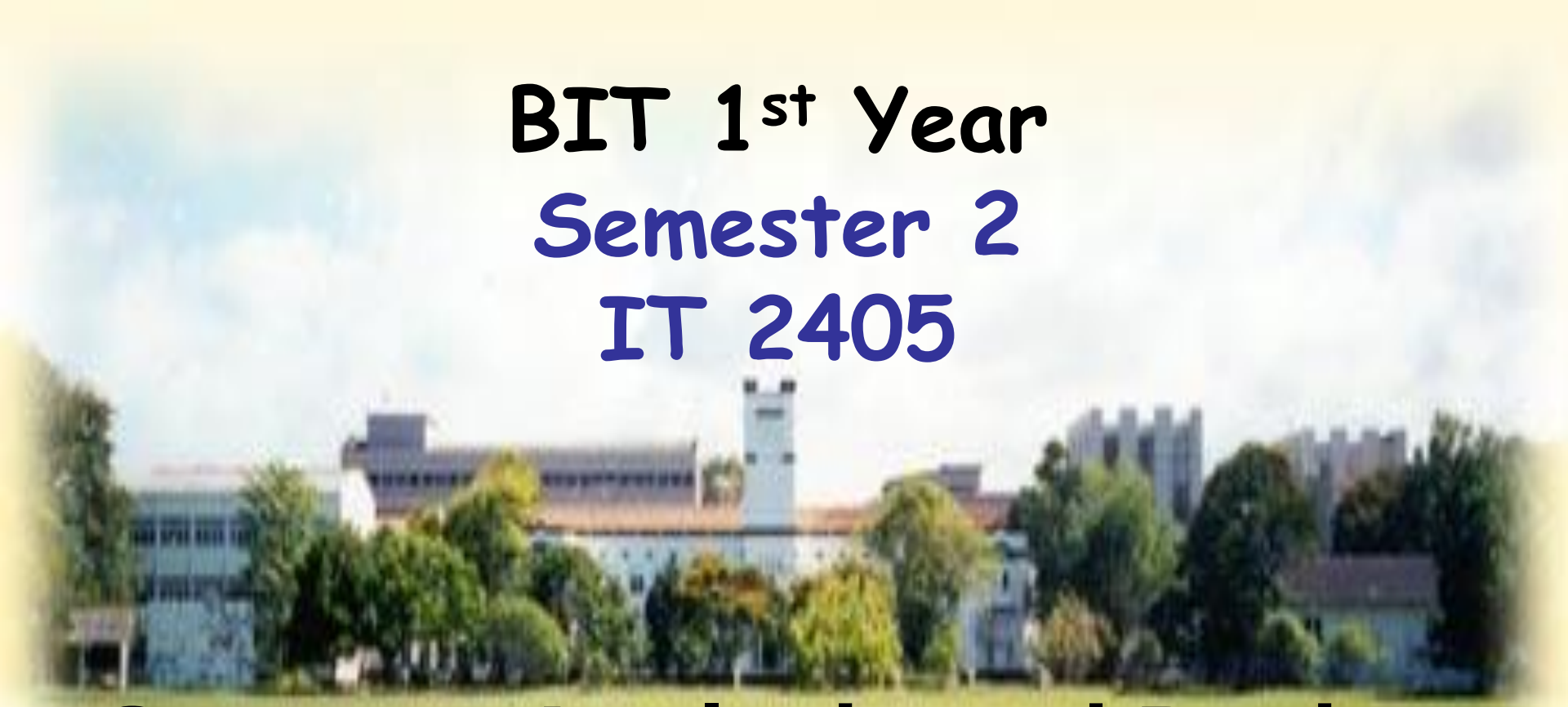

BIT 1st Year
Semester 2
IT 2405

Systems Analysis and Design
Chapter 3

G.K.A. Dias

University of Colombo School of Computing

Information Systems Development

System owners & system users initiate most Information Systems Development projects

An undesirable situation or problem/s in the organisation which hinders their progress or achieving the desired goals may be one reason to develop a new system

It could also be that a new opportunity has been identified which would bring more benefits to the organisation

UCSC

Information Systems Development……

A new requirement that may be imposed on the organisation by directives issued by Government/Management/some other External Influence

Scope Definition

This is the first stage/phase of an Information Systems Development project

The purpose of the scope definition is twofold.

1. **Is this problem/opportunity/directive worth looking at?**
2. **If the above is worthwhile doing then identifying the size and boundaries of the project, the project vision, any constraints, the participants, budget & the schedule**

Scope definition should include:

1. Identifying Base Line Problems and Opportunities.
2. Negotiate baseline scope
3. Assess baseline project worthiness
4. Develop base line schedule and budget
5. Communicate the project plan

1. Identifying Base Line Problems and Opportunities.

- Each problem, opportunities, and directives that triggered the project is assessed with respect to:
  - Urgency
  - Visibility
  - Tangible benefits
- It is also useful to list any perceived limits on the project, such as deadlines, maximum budget or general technology.

1. Identifying Base Line Problems and Opportunities.

- A senior Systems Analyst or project Manager usually leads this task.
- Most of the other participants are broadly classified as system owners.
- System users, Designers, Builders are not typically involved in this task.
- The key deliverable of this task is the *Preliminary Problem Statement*

Sample Problem Statement

Ref 1

Problem Statements

Project: Member services information system	Project manager: Sandra Shepherd
Created by: Sandra Shepherd	Last updated by: Robert Martinez
Date created: January 9, 2003	Date last updated: January 15, 2003

Brief Statements of Problem, Opportunity, or Directive	Urgency	Visibility	Annual Benefits	Priority or Rank	Proposed Solution
1. Order response time as measured from time of order receipt to time of customer delivery has increased to an average of 15 days.	ASAP	High	$175,000	2	New development
2. The recent acquisitions of Private Screenings Video Club and GameScreen will further stress the throughput requirements for the current system.	6 months	Med	75,000	2	New development
3. Currently, three different order entry systems service the audio, video, and game divisions. Each system is designed to interface with a different warehousing system; therefore, the intent to merge inventory into a single warehouse has been delayed.	6 months	Med	515,000	2	New development
4. There is a general lack of access to management and decision-making information. This will become exasperated by the acquisition of two additional order processing systems (from Private Screenings and GameScreen).	12 months	Low	15,000	3	After new system is developed, provide users with easy-to-learn and -use reporting tools.
5. There currently exist data inconsistencies in the member and order files.	3 months	High	35,000	1	Quick fix; then new development
6. The Private Screenings and GameScreen file systems are incompatible with the SoundStage equivalents. Business data problems include data inconsistencies and lack of input edit controls.	6 months	Med	Unknown	2	New development. Additional quantification of benefit might increase urgency.
7. There is an opportunity to open order systems to the Internet, but security and control are an issue.	12 months	Low	Unknown	4	Future version of newly developed system
8. The current order entry system is incompatible with the forthcoming automatic identification (bar-coding) system being developed for the warehouse.	3 months	High	65,000	1	Quick fix; then new development

UCSC

2. Negotiate baseline scope

- Scope defines the boundary of the project.
- Scope can change during the project.
- Initial project plan must establish the preliminary or baseline scope.

Project Scope can be described in terms of :

- What type of data described the system been studied? Eg. Customers, Orders, Products etc.
- *What are the business processes in the system(customer management, order entry, order fulfillment) etc.*
- *What are the System interface with users, locations & other systems (e.g. Customers, Sales reps, Regional sales offices, Accounts receivable etc.)*

3. Assess Baseline Project Worthiness

- This is where we answer the question, “Is this project worth looking at?”
- There is no physical deliverable other than GO or No GO decision.
- Remaining tasks of the Preliminary investigation phase are necessary only if the project has being deemed worthy and approved to continue.

4. Develop Baseline Schedule and Budget

- Initial plan should consist of at least the following:
  - A preliminary master plan that includes schedule and resource assignments for the entire project.
  - Detail plan and schedule for completing the next phase of the project.
- The deliverables of this task is the baseline project plan and schedule.

5. Communicate the Project Plan

- Unless the project has been predetermined to be of the highest priority (eg. Based on a strategic planning process),
  - Then it must be presented and defended to a steering body for approval.
  - Most organizations use a steering body to approve and monitor projects and progress.

Problem Analysis Phase

- This phase answers the following questions:
  - "Are the problems really worth solving?"
  - "Is a new system really worth building?"
- The goal of this phase is to study and understand the problem domain well enough to thoroughly analyze its problems, opportunities, and constraints.
- This phase typically includes:
  Understanding of the problem domain,
  Analyse problems and opportunities, Analyse business processes, Establish system improvement objectives, Update/Refine project plan,
  Communicate findings and recommendations.

THE BUSINESS COMMUNITY

(approval to continue project—from preliminary investigation)

Project Charter

SYSTEM OWNERS AND USERS (OR STEERING COMMITTEE)

SYSTEM IMPROVEMENT OBJECTIVES

2.1 Understand the problem domain

Problem Domain and Business Vocabulary

2.2 Analyze problems and opportunities

current system documentation, system models

problem statements, cause/effect analyses

2.6 Communicate findings and recommendations

problem analyses, system models, and system improvement objectives

Repository

problem domain, process models, process analysis

2.3 (opt) Analyze business processes

project plan

problem analyses, system improvement objectives, and constraints

Updated Project Plan

2.5 Update or refine the project plan

System Improvement Objectives

2.4 Establish system improvement objectives

Problem Analysis Phase

- Understanding the of the problem domain

  -The team initially attempts to learn about the current system.

  -Task led by the project manager but facilitated by the lead Systems Analyst.

  -The deliverables of this the problem tasks are an understanding of the Problem Domain and Business Vocabulary.

  - Context diagram, use case diagram , Functional Decomposition diagram etc are drawn at this stage.

Problem Analysis Phase

- Analyze Problems and Opportunities
- In addition to learning about the current system, the project team must work with the system owners and system users to analyze problems and opportunities.
- Cause-and-effect Analysis : A technique in which problems are studied to determine their causes and effects.
- The deliverables of this task are the updated problem statements and the Cause-and-effect Analysis document.

Cause-and-effect Analysis

PROBLEMS, OPPORTUNITIES, OBJECTIVES, AND CONSTRAINTS MATRIX

Project:	Member Services Information System	Project Manager:	Sandra Shepherd
Created by:	Robert Martinez	Last Updated by:	Robert Martinez
Date Created:	January 21, 2003	Date Last Updated:	January 31, 2003

CAUSE-AND-EFFECT ANALYSIS		SYSTEM IMPROVEMENT OBJECTIVES	
Problem or Opportunity	**Causes and Effects**	**System Objective**	**System Constraint**
1. Order response time is unacceptable.	1. Throughput has increased while number of order clerks was downsized. Time to process a single order has remained relatively constant. 2. System is too keyboard-dependent. Many of the same values are keyed for most orders. Net result is (with the current system) each order takes longer to process than is ideal. 3. Data editing is performed by the AS/400. As that computer has approached its capacity, order edit responses have slowed. Because order clerks are trying to work faster to keep up with the volume, the number of errors has increased. 4. Warehouse picking tickets for orders were never designed to maximize the efficiency of order fillers. As warehouse operations grew, order filling delays were inevitable.	1. Decrease the time required to process a single order by 30%. 2. Eliminate keyboard data entry for as much as 50% of all orders. 3. For remaining orders, reduce as many key-strokes as possible by replacing keystrokes with point-and-click objects on the computer display screen. 4. Move data editing from a shared computer to the desktop. 5. Replace existing picking tickets with a paperless communication system between member services and the warehouse.	1. There will be no increase in the order processing workforce. 2. Any system developed must be compatible with the existing Windows 95 desktop standard. 3. New system must be compatible with the already approved automatic identification system (for bar coding).

FIGURE 5-12 A Sample Cause-and-Effect Analysis

Problem Analysis Phase

- Analyze Business Processes

- This task is appropriate only to Business Process Redesign (BPR) projects or Systems Development projects that require significant business process redesign.

- .One or more systems/business analysts facilitate the task.

- Deliverables : Process models (eg.DFD) and process analysis.

Problem Analysis Phase

- Establish system improvement objectives

-The purpose is to establish the against which any improvements to the system will be measured. And to identify any constraints that may limit flexibility in achieving those improvements.

- The criteria for success should be measured in terms of objectives.

Problem Analysis Phase

- Update or refine the project plan
- Scope (identified in Scope Definition phase) may have
  - Grown or diminished in size and complexity
- Reevaluate project scope and update or refine the project plan accordingly.
- The project manager, in conjunction with system owners and the entire project team, facilitates this task.

Problem Analysis Phase

- Communicate findings and recommendations
  - The project manager and executive sponsor should jointly facilitate this task.
  - Findings and recommendations are communicated to the business community.

Problem Analysis Phase

- One of the following decisions must be made after the conclusion of this phase.
  - Authorize the project to continue.
  - Adjust the scope, cost, and/or schedule for the project and then continue
  - Cancel the project due to
    - lack of resources
    - realizing problems and opportunities not as important as anticipated.
    - benefits of the new system are not likely to exceed the costs.