



PERANCANGAN SISTEM INFORMASI

Session 3 Requirements Determination

Based on **System Analysis & Design 2nd Edition**

Authors : Alan Dennis & Barbara Haley Wixom

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Objectives

- Become familiar with the analysis phase of the SDLC.
- Understand how to create a requirements definition.
- Become familiar with requirements analysis technique.
- Understand when to use each requirements analysis techniques.
- Understand how to gather requirements using interviews, JAD sessions, questionnaires, document analysis, and observation.
- Understand when to use each requirements-gathering techniques.



Key Definitions

- The *As-Is system* is the current system and may or may not be computerized
- The *To-Be system* is the new system that is based on updated requirements
- The *System Proposal* is the key deliverable from the Analysis Phase



Key Ideas

- The goal of the analysis phase is to truly understand the requirements of the new system and develop a system that addresses them -- or decide a new system isn't needed.
- The System Proposal is presented to the approval committee via a system *walk-through*.
- Systems analysis incorporates initial systems design.
- Requirements determination is the single most critical step of the entire SDLC.



REQUIREMENTS DETERMINATION



What is a Requirement?

- A statement of what the system must do
- A statement of characteristics the system must have
- Focus is on business user needs during analysis phase
- Requirements will change over time as project moves from analysis to design to implementation



Requirement Types

■ Functional Requirements

- A process the system has to perform
- Information the system must contain

■ Nonfunctional Requirements

- Behavioral properties the system must have
 - Operational
 - Performance
 - Security
 - Cultural and political



Documenting Requirements

- Requirements definition report
 - Text document listing requirements in outline form
 - Priorities may be included
- Key purpose is to define the project scope: what is and is not to be included.



Determining Requirements

- Participation by business users is essential
- Three techniques help users discover their needs for the new system:
 - Business Process Automation (BPA)
 - Business Process Improvement (BPI)
 - Business Process Reengineering (BPR)



Basic Process of Analysis (Determining Requirements)

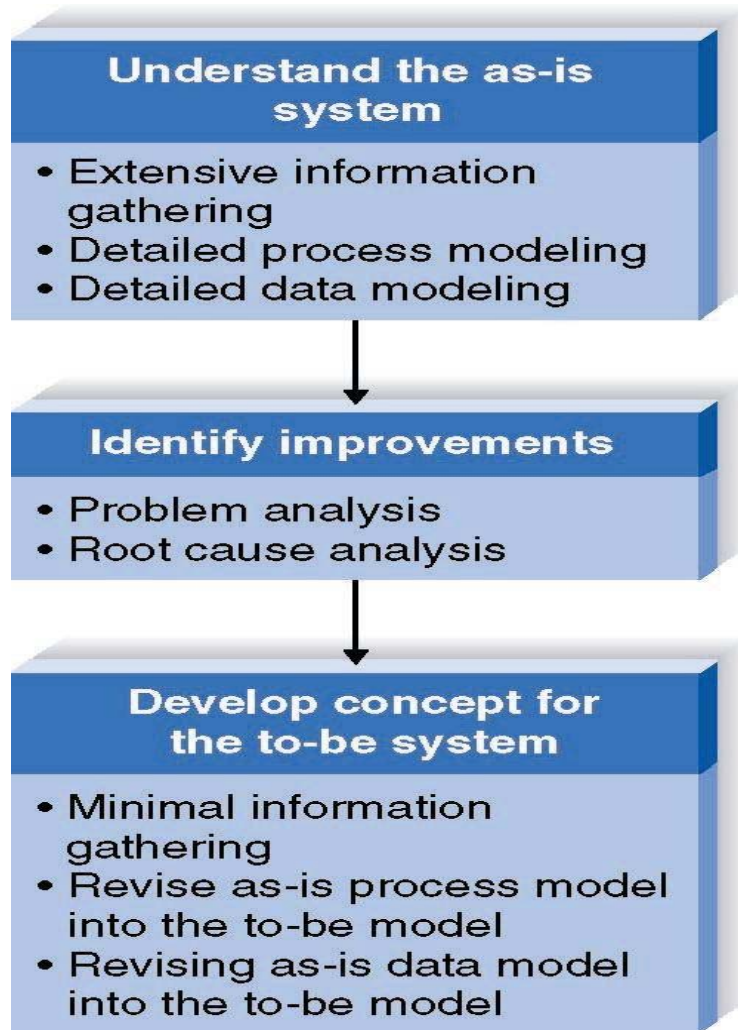
- Understand the “As-Is” system
- Identify improvement opportunities
- Develop the “To-Be” system concept
- Techniques vary in amount of change
 - BPA – small change
 - BPI – moderate change
 - BPR – significant change
- Additional information gathering techniques are needed as well



REQUIREMENTS ANALYSIS TECHNIQUES



Business Process Automation



What is the Goal?



Identifying Improvements in As-Is Systems

■ Problem Analysis

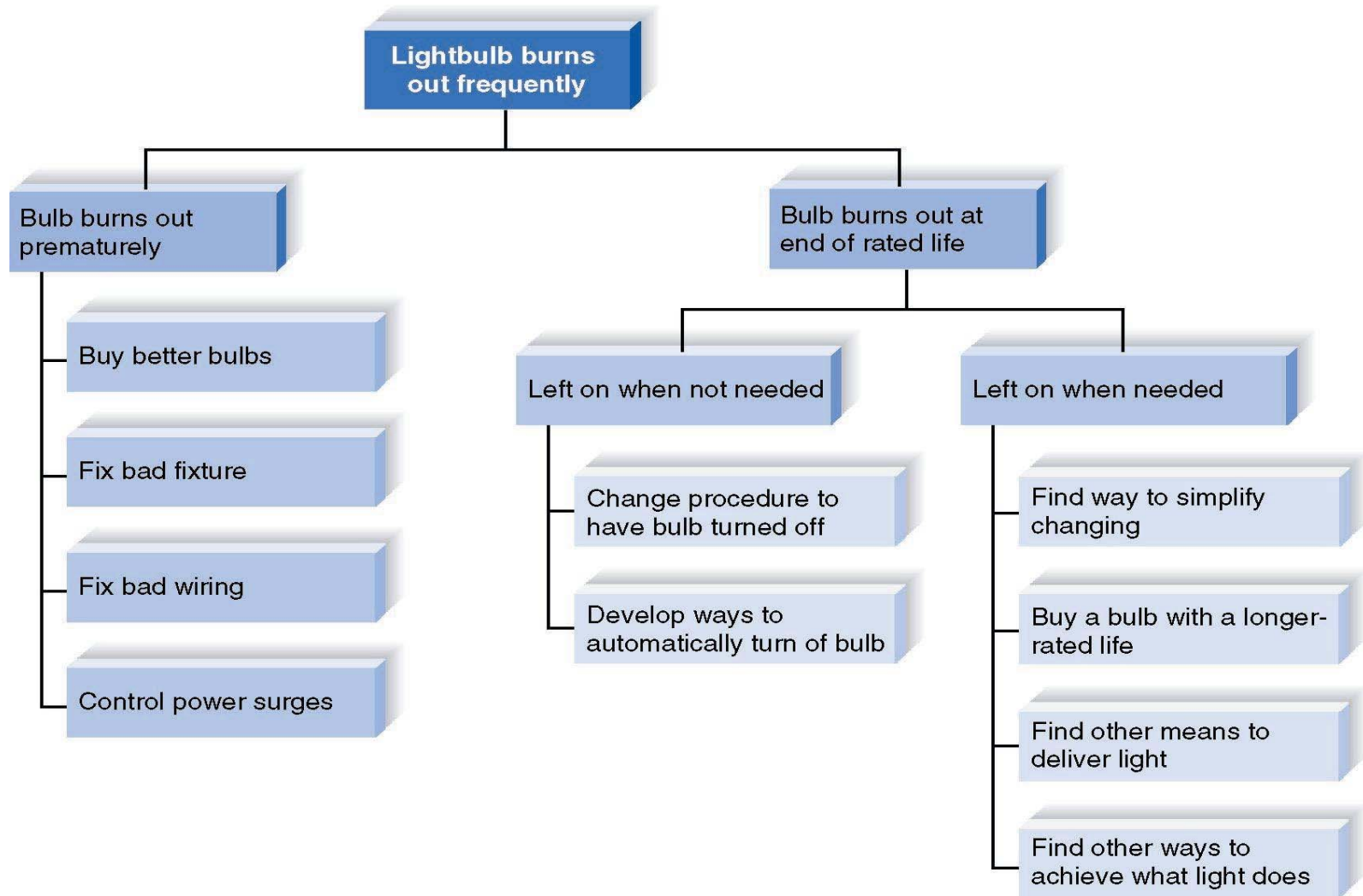
- Ask users to identify problems and solutions
- Improvements tend to be small and incremental
- Rarely finds improvements with significant business value

■ Root Cause Analysis

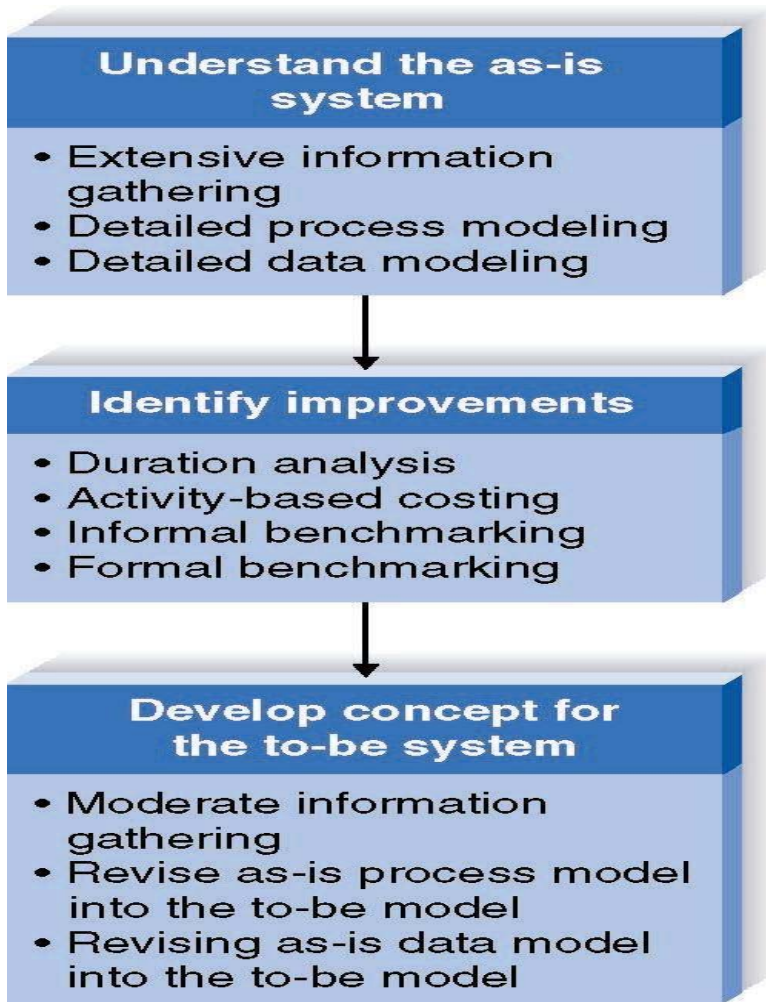
- Challenge assumptions about why problem exists
- Trace symptoms to their causes to discover the “real” problem



Root Cause Analysis Example



Business Process Improvement



What is the Goal?



Duration Analysis

- Calculate time needed for each process step
- Calculate time needed for overall process
- Compare the two – **a large difference indicates a badly fragmented process**
- Potential solutions:
 - **Process integration** – change the process to use fewer people, each with broader responsibilities
 - **Parallelization** – change the process so that individual step are performed simultaneously



Activity-Based Costing

- Calculate cost of each process step
- Consider both direct and indirect costs
- Identify most costly steps and focus improvement efforts on them

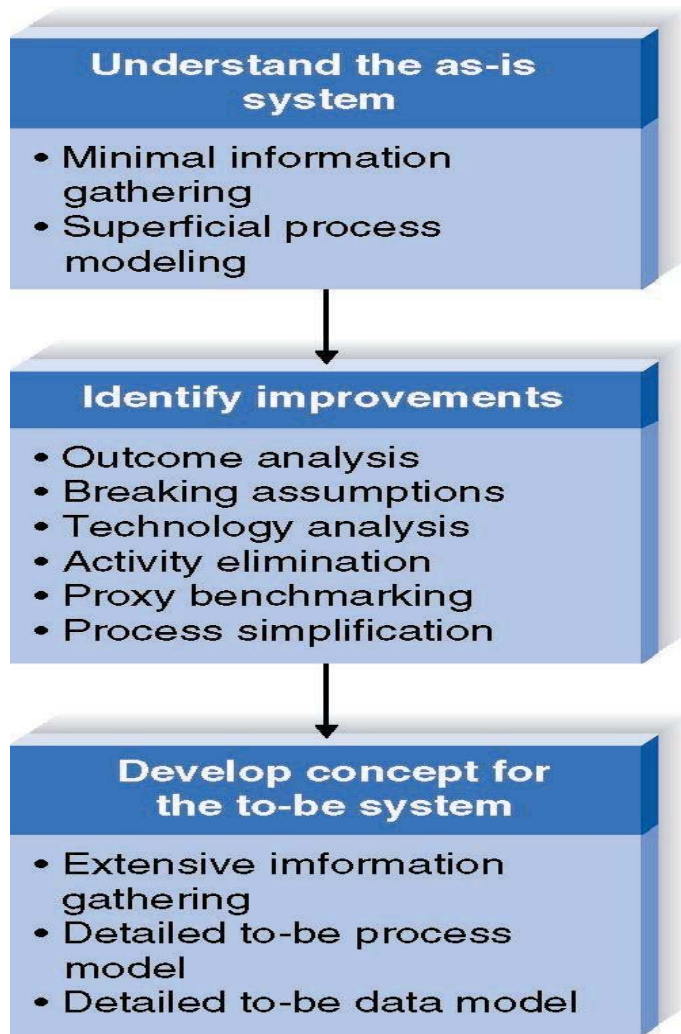


Benchmarking

- Studying how other organizations perform the same business process
- Informal benchmarking
 - Common for customer-facing processes
 - Interact with other business' processes as if you are a customer



Business Process Reengineering



What is the Goal?



Outcome Analysis

- Consider desirable outcomes from customers' perspective
- Consider what the organization *could* enable the customer to do



Technology Analysis

- Analysts list important and interesting technologies
- Managers list important and interesting technologies
- The group identifies how each might be applied to the business and how the business might benefit



Activity Elimination

- Identify what would happen if each organizational activity were eliminated
- Use “force-fit” to test all possibilities



Your Turn

- How do you know whether to use business process automation, business process improvement, or business process reengineering?
- Provide two examples.



Selecting an Analysis Technique

- Potential business value
- Project cost
- Breadth of analysis
- Risk



Characteristics of Analysis Techniques

	Business Process Automation	Business Process Improvement	Business Process Reengineering
Potential Business Value	Low-Moderate	Moderate	High
Project Cost	Low	Low-Moderate	High
Breadth of Analysis	Narrow	Narrow-Moderate	Very Broad
Risk	Low-Moderate	Low-Moderate	Very High



REQUIREMENTS-GATHERING TECHNIQUES



Interviews

- Most commonly used technique
- Basic steps:
 - Selecting Interviewees
 - Designing Interview Questions
 - Preparing for the Interview
 - Conducting the Interview
 - Post-Interview Follow-up



Selecting Interviewees

- Based on information needs
- Best to get different perspectives
 - Managers
 - Users
 - Ideally, all key stakeholders
- Keep organizational politics in mind



Types of Questions

Types of Questions	Examples
Closed-Ended Questions	* How many employees will be trained ? * -- * --
Open-Ended Questions	* What do you think about the existing system ? * -- * --
Probing Question	* Can you give me an example ? * -- * --



Organizing Interview Questions

- Unstructured interview useful early in information gathering
 - Goal is broad, roughly defined information
- Structured interview useful later in process
 - Goal is very specific information



Structuring the Interview

- You can check this out in page 117



Interview Preparation Steps

- Prepare general interview plan
 - List of question
 - Anticipated answers and follow-ups
- Confirm areas of knowledge
- Set priorities in case of time shortage
- Prepare the interviewee
 - Schedule
 - Inform of reason for interview
 - Inform of areas of discussion



Conducting the Interview

- Appear professional and unbiased
- Record all information
- Check on organizational policy regarding tape recording
- Be sure you understand all issues and terms
- Separate facts from opinions
- Give interviewee time to ask questions
- Be sure to thank the interviewee
- End on time



Conducting the Interview Practical Tips

- Take time to build rapport
- Pay attention
- Summarize key points
- Be succinct
- Be honest
- Watch body language



Post-Interview Follow-Up

- Prepare interview notes
- Prepare interview report
- Have interviewee review and confirm interview report
- Look for gaps and new questions



Joint Application Development

- A structured group process focused on determining requirements
- Involves project team, users, and management working together
- May reduce scope creep by 50%
- Very useful technique



JAD Participants

■ Facilitator

- Trained in JAD techniques
- Sets agenda and guides group processes

■ Scribe(s)

- Record content of JAD sessions

■ Users and managers from business area with broad and detailed knowledge

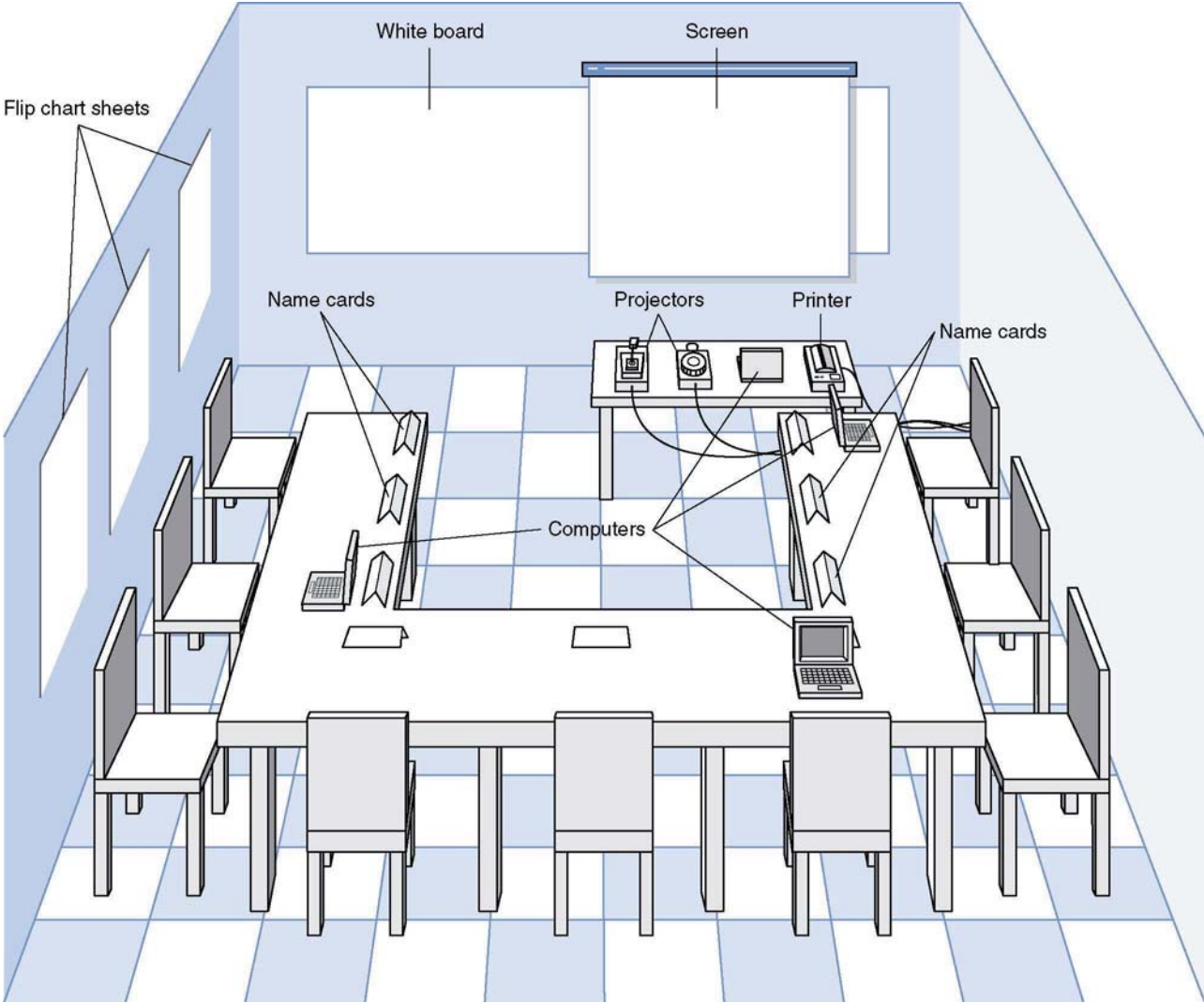


JAD Sessions

- Time commitment – ½ day to several weeks
- Strong management support is needed to release key participants from their usual responsibilities
- Careful planning is essential
- e-JAD can help alleviate some problems inherent with groups



JAD Meeting Room



The JAD Session

- Formal agenda and ground rules
- Top-down structure most successful
- Facilitator activities
 - Keep session on track
 - Help with technical terms and jargon
 - Record group input
 - Stay neutral, but help resolve issues
- Post-session follow-up report



Managing Problems in JAD Sessions

- Reducing domination
- Encouraging non-contributors
- Side discussions
- Agenda merry-go-round
- Violent agreement
- Unresolved conflict
- True conflict
- Use humor



Questionnaires

- A set of written questions, often sent to a large number of people
- May be paper-based or electronic
- Select participants using samples of the population
- Design the questions for clarity and ease of analysis
- Administer the questionnaire and take steps to get a good response rate
- Questionnaire follow-up report



Good Questionnaire Design

- Begin with non-threatening and interesting questions
- Group items into logically coherent sections
- Do not put important items at the very end of the questionnaire
- Do not crowd a page with too many items
- Avoid abbreviations
- Avoid biased or suggestive items or terms
- Number questions to avoid confusion
- Pretest the questionnaire to identify confusing questions
- Provide anonymity to respondents



Document Analysis

- Study of existing material describing the current system
- Forms, reports, policy manuals, organization charts describe the formal system
- Look for the informal system in user additions to forms/report and unused form/report elements
- User changes to existing forms/reports or non-use of existing forms/reports suggest the system needs modification



Observation

- Watch processes being performed
- Users/managers often don't accurately recall everything they do
- Checks validity of information gathered other ways
- Be aware that behaviors change when people are watched
- Be unobtrusive
- Identify peak and lull periods



Selecting the Appropriate Requirements-Gathering Techniques

- Type of information
- Depth of information
- Breadth of information
- Integration of information
- User involvement
- Cost
- Combining techniques



Selecting the Appropriate Techniques

	Interviews	JAD	Questionnaires	Document Analysis	Observation
Type of Information	As-Is Improve. To-Be	As-Is Improve. To-Be	As-Is Improve.	As-Is	As-Is
Depth of Information	High	High	Medium	Low	Low
Breadth of Information	Low	Medium	High	High	Low
Integration of Info.	Low	High	Low	Low	Low
User Involvement	Medium	High	Low	Low	Low
Cost	Medium	Low- Medium	Low	Low	Low- Medium



Summary

- The analysis process focuses on capturing the business requirements for the system
- Functional and non-functional business requirements tell *what* the system must do
- Three main requirements analysis techniques are BPA, BPI, and BPR
- These techniques vary in potential business value, but also in potential cost and risk



Summary, continued

- There are five major requirements-gathering techniques that all systems analysts must be able to use: *Interviews, JAD, Questionnaires, Document Analysis, and Observation.*
- Systems analysts must also know how and when to use each as well as how to combine methods.

