

Requirements analysis

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.

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

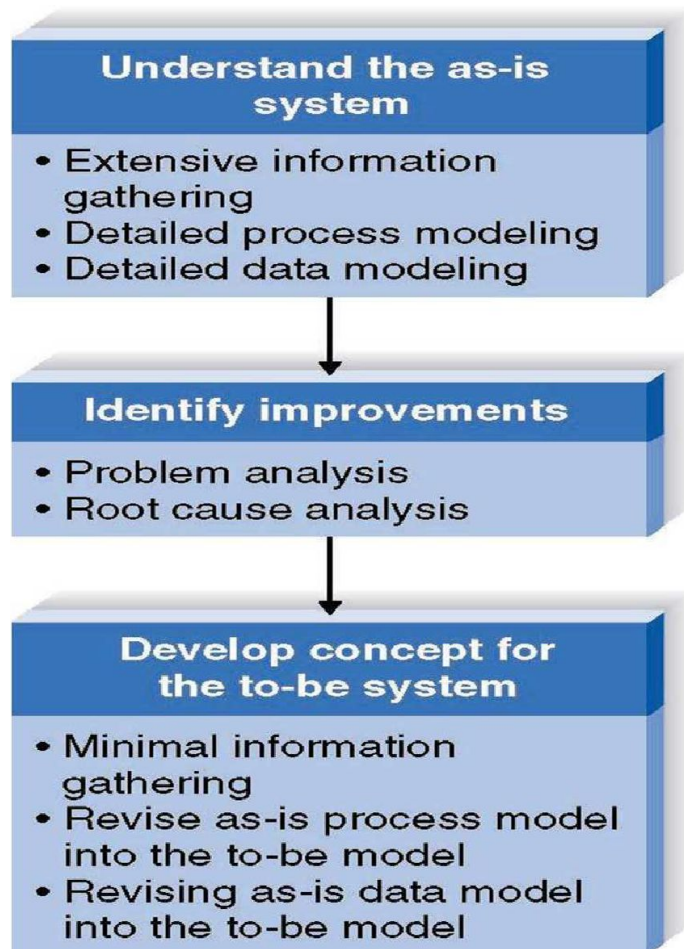
- Participation by business users is essential.
- Three techniques help users discover their needs for the new system:
 - Business Process Automation (BPA)
 - Business Process Improvement (BPI)
 - Business Process Reengineering (BPR)

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



Goal:

Efficiency for users

Identifying Improvements in As-Is Systems

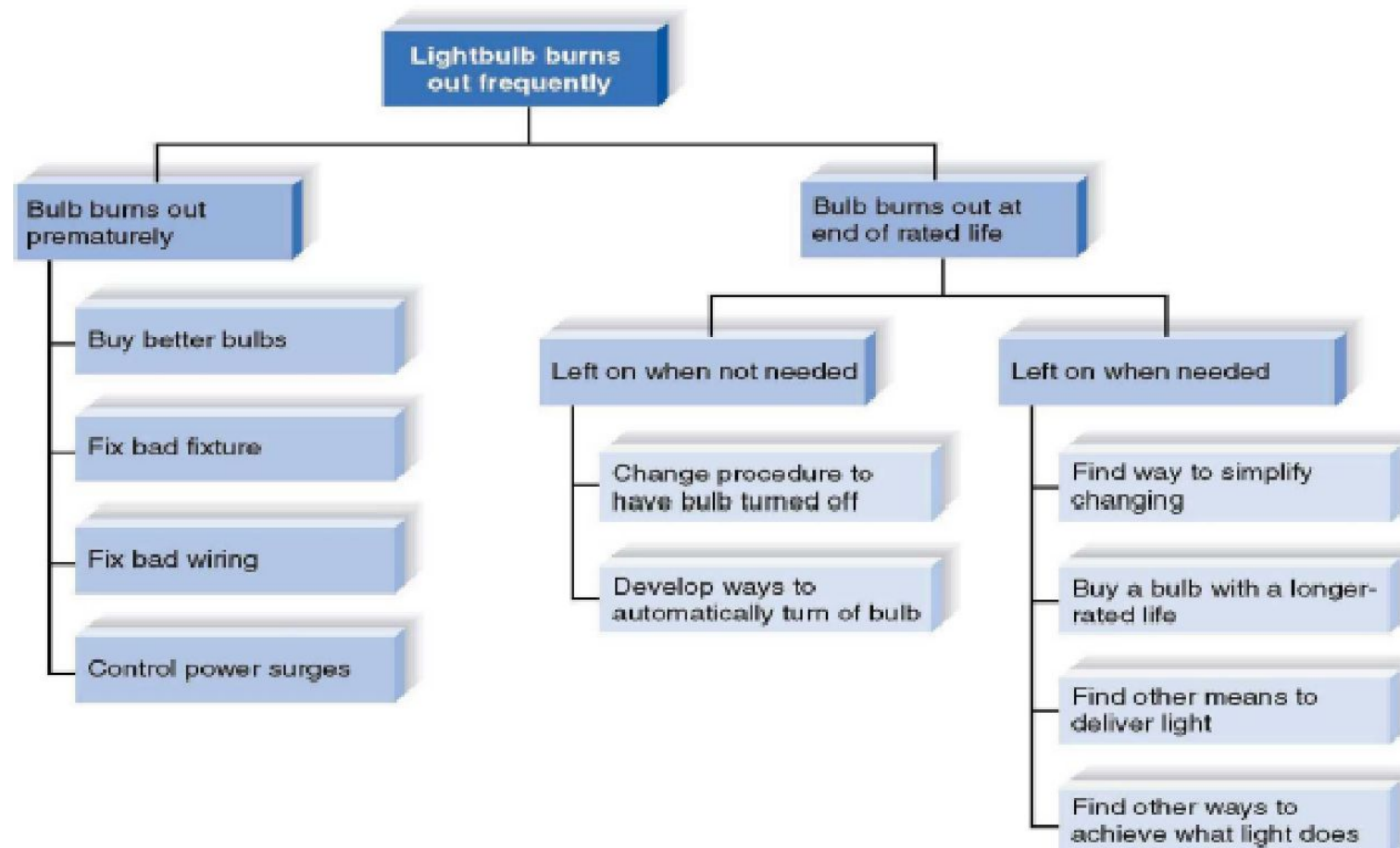
- **Problem Analysis**

- 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.

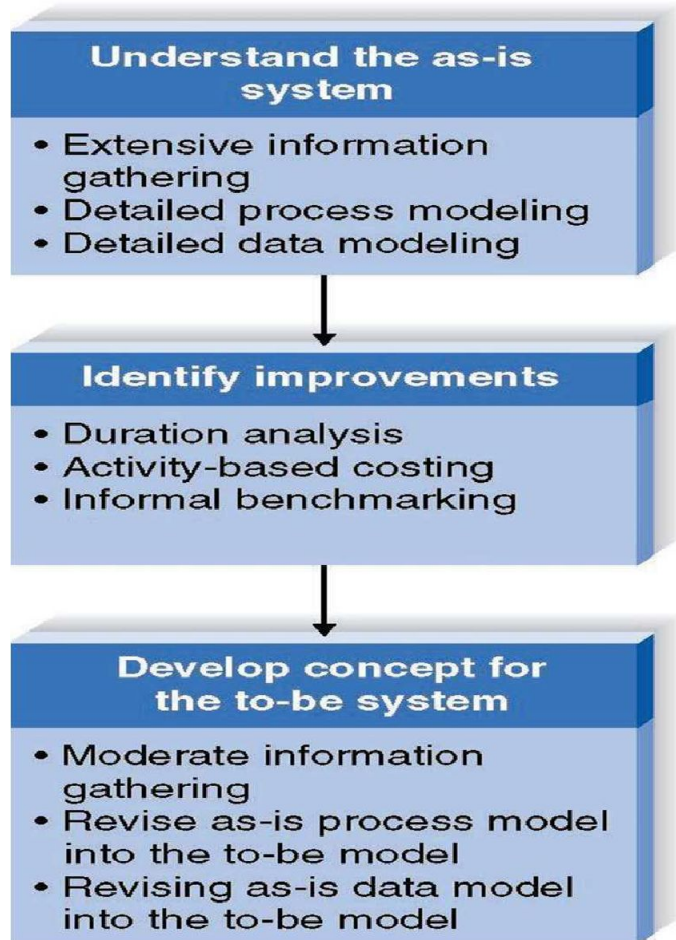
Root Cause Analysis Example



Business Process Improvement

Goal:

Efficiency and effectiveness for users.



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.

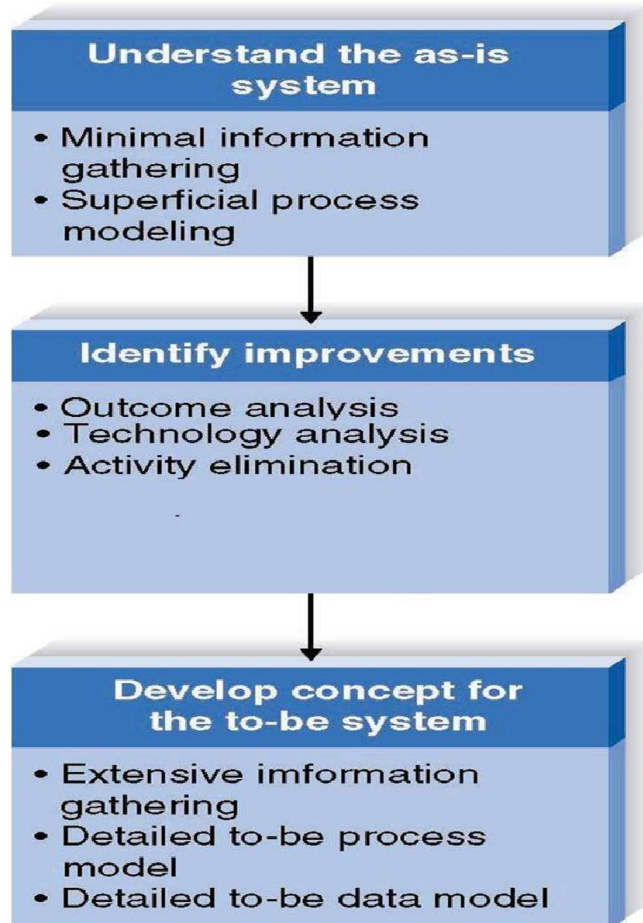
Activity-Based Costing

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

Business Process Reengineering

Goal:

Radical redesign of business processes.



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.

Comparing Analysis Techniques

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

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.

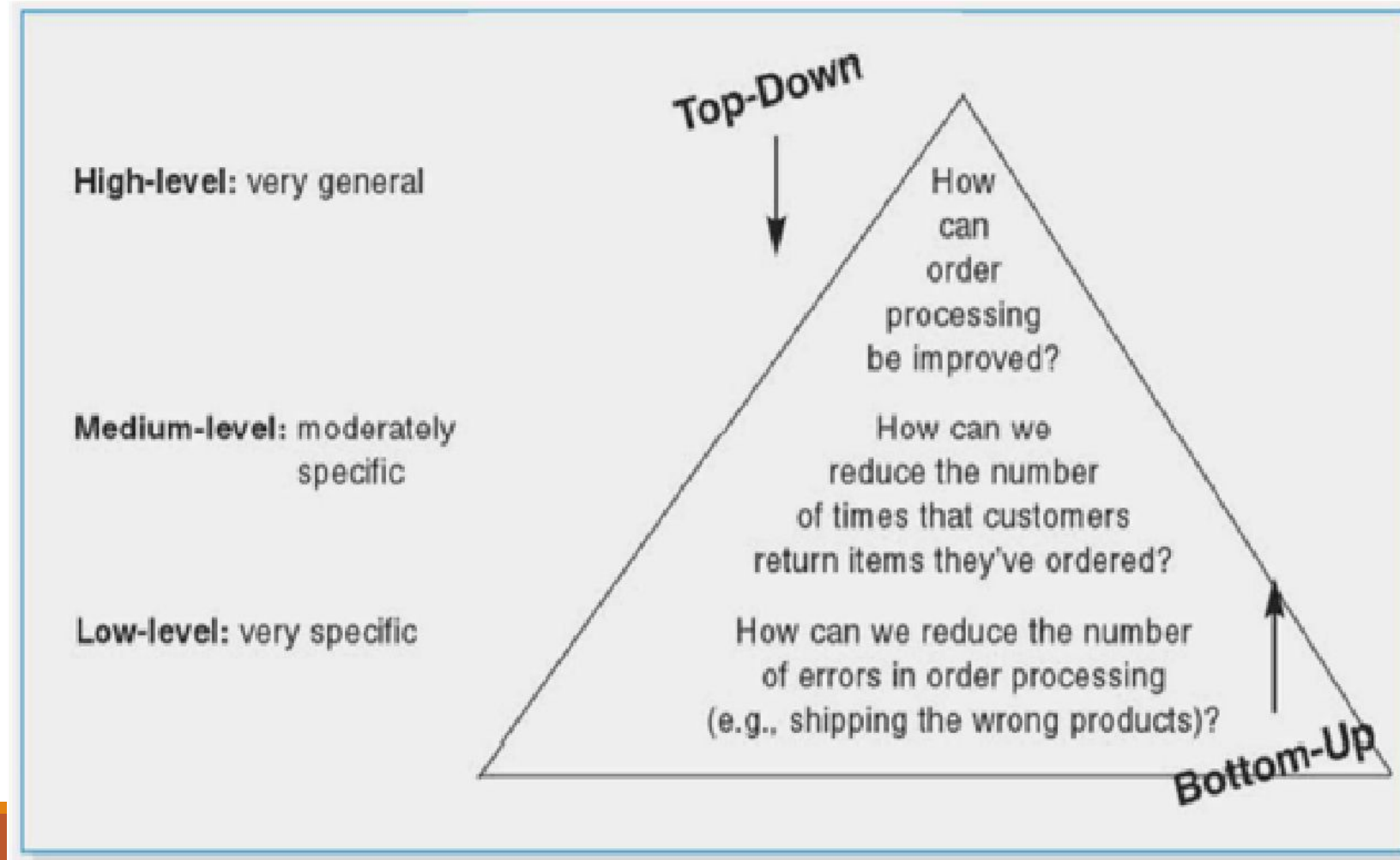
Three Types of Questions

Types of Questions	Examples
Closed-Ended Questions	<ul style="list-style-type: none">• How many telephone orders are received per day?• How do customers place orders?• What information is missing from the monthly sales report?
Open-Ended Questions	<ul style="list-style-type: none">• What do you think about the way invoices are currently processed?• What are some of the problems you face on a daily basis?• What are some of the improvements you would like to see in the way invoices are processed?
Probing Questions	<ul style="list-style-type: none">• Why?• Can you give me an example?• Can you explain that in a bit more detail?

Designing 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

Top-Down and Bottom-up Questioning Strategies



Preparing for the Interview

- 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

Post-Interview Follow-Up

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

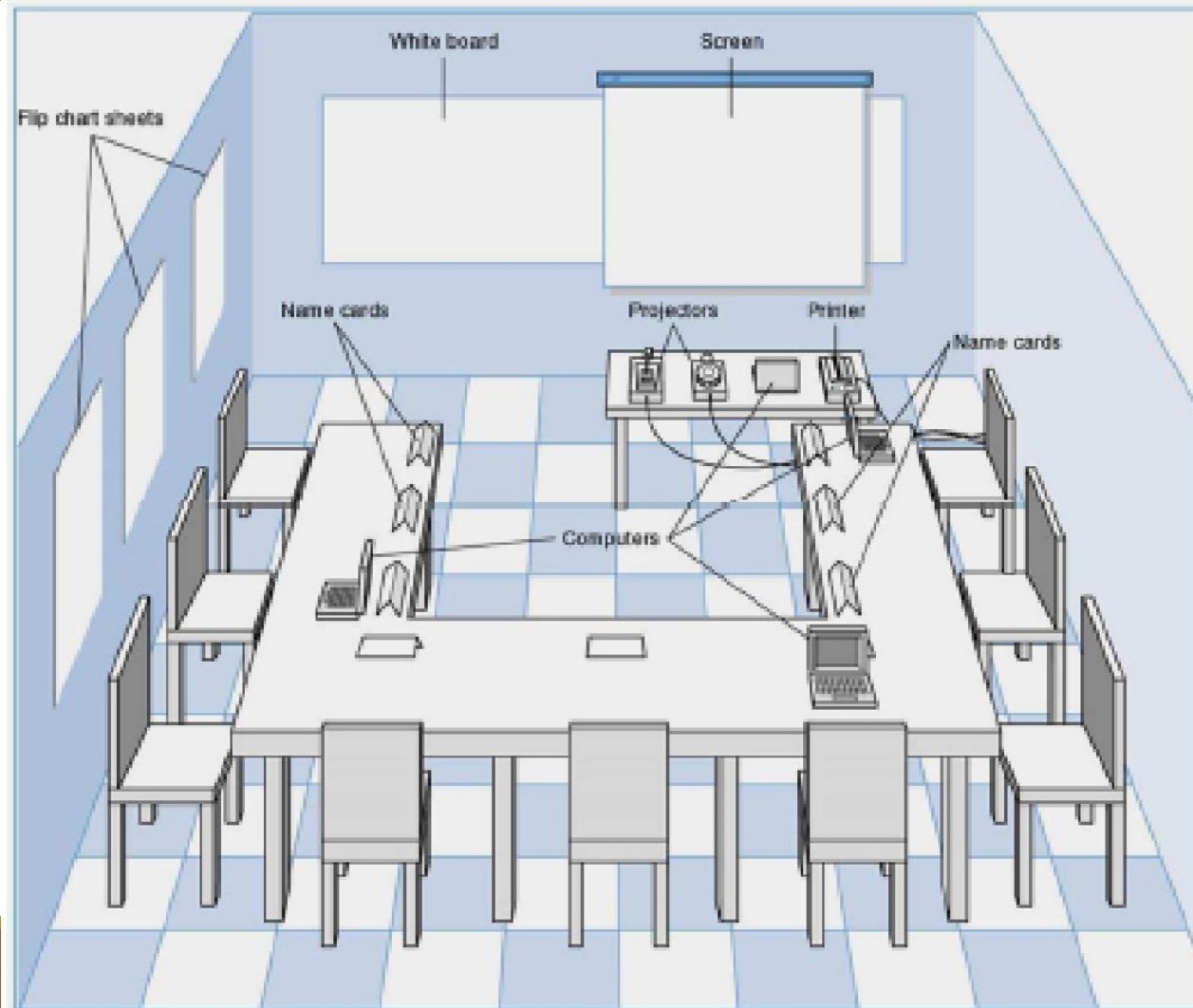
Joint Application Development (JAD)

- 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 Meeting Room



Conducting 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

Post JAD Follow-up

- Post session report is prepared and circulated among session attendees.
- The report should be completed approximately a week to two after the JAD session.

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 nonthreatening 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 nonuse 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.