

LECTURE 3 REQUIREMENTS GATHERING

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

1. 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

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

- 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

2. Requirements Analysis Techniques

Business Process Automation

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

Business Process Improvement

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 (BPR)

- Search for and implementation of radical change in business processes to achieve breakthrough improvements in products and services
- Goals
 - Reorganize complete flow of data in major sections of an organization
 - Eliminate unnecessary steps
 - Combine steps
 - Become more responsive to future change
- Identification of processes to reengineer
 - Key business processes
 - Set of activities designed to produce specific output for a particular customer or market
 - Focused on customers and outcome
 - Same techniques are used as were used for requirements determination
- Identify specific activities that can be improved through BPR
- Disruptive technologies
 - Technologies that enable the breaking of long-held business rules that inhibit organizations from making radical business changes

Business Process Reengineering Steps

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

Selecting an Analysis Technique

	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

2. Requirements Gathering Techniques**Requirements Gathering**

- Characteristics for gathering requirements
 - Impertinence
 - Question everything
 - Impartiality
 - Find the best organizational solution
 - Relaxation of constraints
 - Attention to detail
 - Reframing
 - View the organization in new ways

Techniques

- Interviews
 - Open-ended and close-ended questions
 - Preparation is key
- Questionnaires
 - Must be carefully designed
 - Can contain close-ended as well as open-ended questions
- Other means of gather requirements
 - Observing workers
 - Analyzing business documents
- Joint Application Design (JAD)
- Prototyping

Interviews

- Gather facts, opinions and speculations
- Observe body language and emotions
- Guidelines
 - Plan
 - Checklist
 - Appointment
 - Be neutral
 - Listen
 - Seek a diverse view

Interviews Steps

- **Selecting Interviewees**
 - Based on information needs
 - Best to get different perspectives
 - Managers

- Users
 - Ideally, all key stakeholders
- Keep organizational politics in mind
- **Designing Interview Questions**
 - Types of Questions
 - Closed-Ended Questions
 - How many telephone orders are received per day?
 - How do customers place orders?
 - What additional information would you like the new system to provide?
 - Open-Ended Questions
 - What do you think about the current system?
 - What are some of the problems you face on a daily basis?
 - How do you decide what types of marketing campaign to run?
 - Probing Questions
 - Why?
 - Can you give me an example?
 - Can you explain that in a bit more detail?
 - 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
- **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

3. JOINT APPLICATION DESIGN (JAD)

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

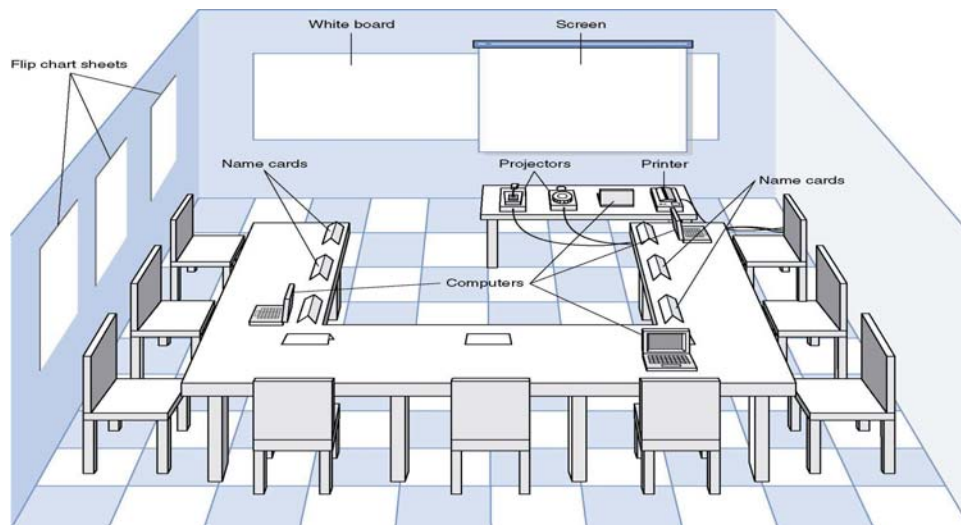
JAD Participants

- 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



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

- Mostly closed-ended questions
- 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

Administering Questionnaires

- Choosing respondents
 - Should be representative of all users
 - Types of samples
 - Convenient
 - Random sample
 - Purposeful sample
 - Stratified sample

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
- Types of information to be discovered:
 - Problems with existing system
 - Opportunity to meet new need
 - Organizational direction
 - Names of key individuals
 - Values of organization
 - Special information processing circumstances
 - Rules for processing data

Observation

- Watch processes being performed
- Serves as a good method to supplement interviews
- 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
 - Often difficult to obtain unbiased data
- Be unobtrusive
- Identify peak and lull periods

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

Prototyping

- Prototyping
 - Repetitive process
 - Rudimentary version of system is built
 - Replaces or augments SDLC
 - Goal: to develop concrete specifications for ultimate system
- Quickly converts requirements to working version of system
- Once the user sees requirements converted to system, will ask for modifications or will generate additional requests
- Most useful when:
 - User requests are not clear
 - Few users are involved in the system
 - Designs are complex and require concrete form
 - History of communication problems between analysts and users
 - Tools are readily available to build prototype
- Drawbacks
 - Tendency to avoid formal documentation
 - Difficult to adapt to more general user audience
 - Sharing data with other systems is often not considered
 - Systems Development Life Cycle (SDLC) checks are often bypassed