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IS321

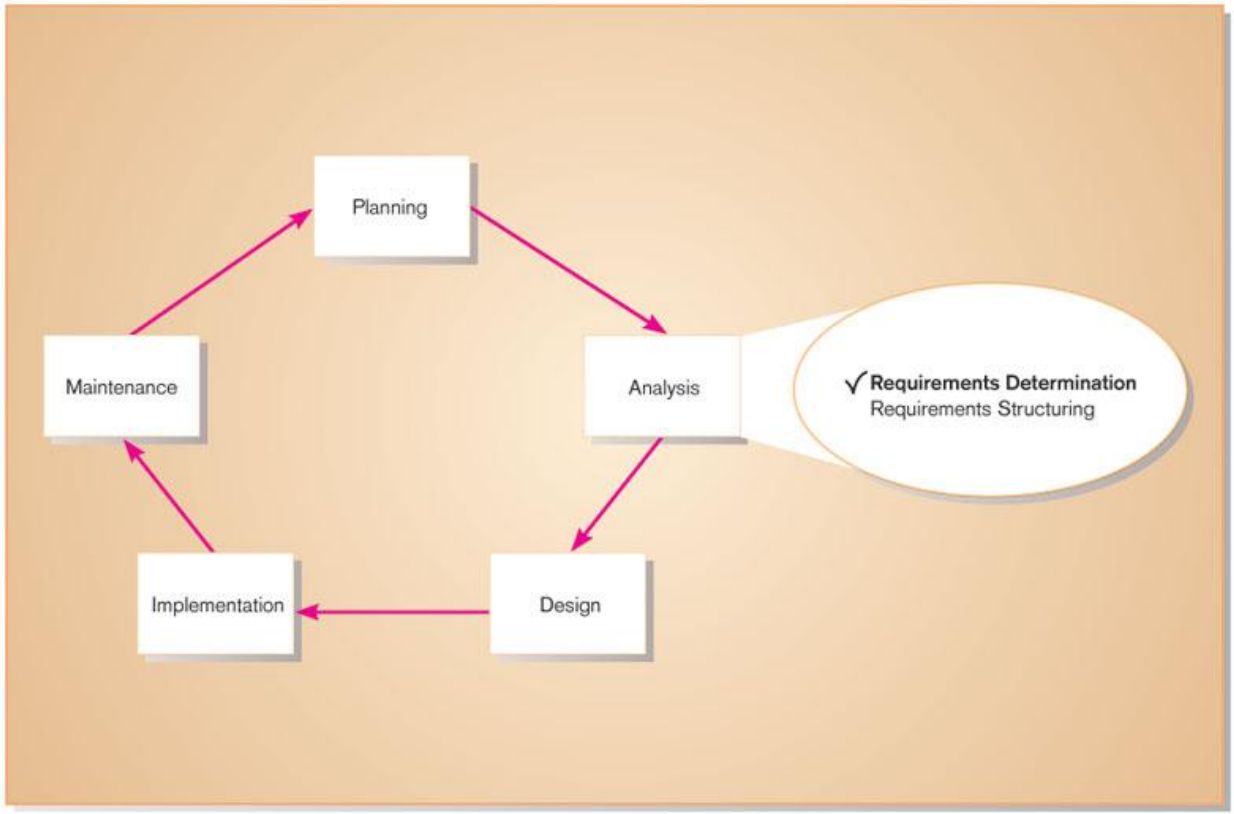
Chapter 6
Determining System Requirements

Learning Objectives

- ✓ Describe interviewing options and develop interview plan.
- ✓ Explain advantages and disadvantages of worker observation and document analysis.
- ✓ Explain how computing can support requirements determination.
- ✓ Modern methods for determining system requirements: (JAD & prototyping).

System Requirements Determination

Figure 6-1 Systems development life cycle with analysis phase highlighted



Characteristics for Successful Requirements Determination

- Impertinence
  - You should question everything.
- Impartiality
  - Your role is to find the best solution to a business problem or opportunity.

Characteristics for Successful Requirements Determination

- Relaxing constraints
  - Assume that anything is possible and eliminate the infeasible
  - Example: Do not accept this statement: “We’ve always done it that way, so we have to continue the practice.”
- Attention to details
  - Every fact must fit with every other fact.

Characteristics for Successful Requirements Determination

- Reframing
  - You must challenge yourself to look at the organization in new ways.
  - You must careful not to jump to the following conclusion: “I worked on a system like that once-this new system must work the same way as the one I built before.”

Deliverables of Requirements Determination

- From interviews and observations
  - Interview transcripts, observation notes, analysis of documents
- From existing written documents
  - Strategy statements, business forms, procedure manuals, job descriptions, training manuals, system documentation, flowcharts
- From computerized sources
  - JAD session results, CASE repositories, system prototype displays and reports

Traditional Requirements Determination Methods

- Interviewing individuals
- Interviewing groups
- Observing workers
- Studying business documents

What is Interviewing?

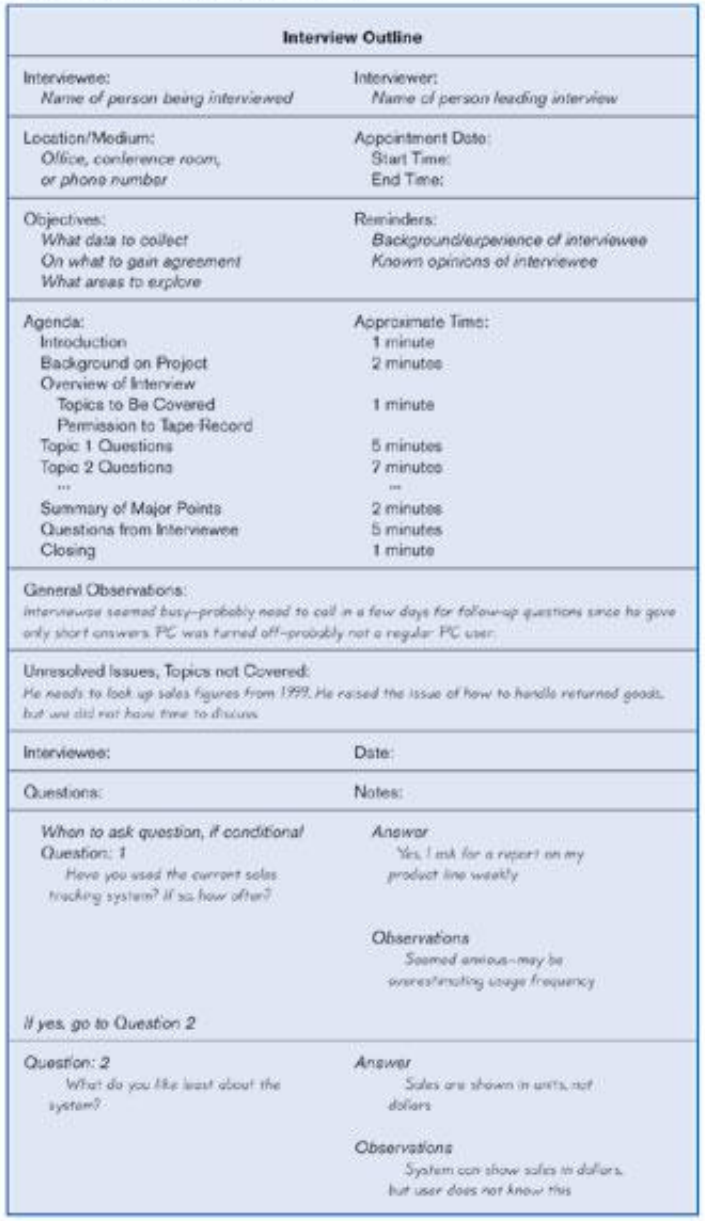
- Dialogue with user or manager to obtain their requirements

- Two forms:
  - Open-ended: conversational, questions with no specific answers in mind
  - Closed-ended: structured, questions with limited range of possible answers

Guidelines for Effective Interviewing

- Plan the interview.
  - Prepare interviewee: appointment, priming questions.
  - Prepare agenda, checklist, questions.
- Listen carefully and take notes (tape record if permitted).
- Review notes within 48 hours.
- Be neutral.
- Seek various views.

Figure 6-2 Typical interview guide



Interview Outline

Interviewee: *Name of person being interviewed*	Interviewer: *Name of person leading interview*
Location/Medium: *Office, conference room, or phone number*	Appointment Date: Start Time: End Time:
Objectives: *What data to collect* *On what to gain agreement* *What areas to explore*	Reminders: *Background/experience of interviewee* *Known opinions of interviewee*
Agenda: Introduction Background on Project Overview of Interview Topics to Be Covered Permission to Tape Record Topic 1 Questions Topic 2 Questions ... Summary of Major Points Questions from Interviewee Closing	Approximate Time: 1 minute 2 minutes 1 minute 5 minutes 7 minutes ... 2 minutes 5 minutes 1 minute
General Observations: *Interviewee seemed busy—probably need to call in a few days for follow-up questions since he gave only short answers. PC was turned off—probably not a regular PC user.*	
Unresolved Issues, Topics not Covered: *He needs to look up sales figures from 1999. He raised the issue of how to handle returned goods, but we did not have time to discuss.*	
Interviewee:	Date:
Questions:	Notes:
When to ask question, if conditional Question: 1 *Have you used the current sales tracking system? If so, how often?* *If yes, go to Question 2*	*Answer* *Yes, I ask for a report on my product line weekly* *Observations* *Seemed anxious—may be overestimating usage frequency*
Question: 2 *What do you like least about the system?*	*Answer* *Sales are shown in units, not dollars* *Observations* *System can show sales in dollars, but user does not know this*

Interview Guide is a document for developing, planning and conducting an interview.

Disadvantages of Individual Interviews

- Interview one person at a time
- Advantages
  - Easier to schedule than group interviews
- Disadvantages
  - Contradictions and inconsistencies between interviewees
  - Follow-up discussions are time consuming
  - Difficult to summarize

Group Interviews

- Interview several key people together
- Advantages
  - More effective use of time
  - Can hear agreements and disagreements at once
  - Opportunity for synergies
- Disadvantages
  - More difficult to schedule than individual interviews

Nominal Group Technique (NGT)

- A facilitated process that supports idea generation by groups.
- Process
  - Members come together as a group, but initially work separately.
  - Each person writes ideas.
  - Facilitator reads ideas out loud, and they are written on blackboard.
  - Group discusses the ideas.
  - Ideas are prioritized, combined, selected, reduced.

Directly Observing Users

- What is **Direct Observation**?
  - Watching users do their jobs
  - Can provide more accurate information than self-reporting (like questionnaires and interviews)
  - Can cause people to change their normal operating behavior
  - Time-consuming and limited time to observe

Analyzing Procedures and Other Documents

- What is **Document Analysis**?
  - Review of existing business documents
  - Can give a historical and “formal” view of system requirements

Analyzing Procedures and Other Documents (cont.)

- Types of information to be discovered:
  - Problems with existing system
  - Opportunity to meet new need
  - Organizational direction
  - Names of key individuals
  - Special information processing circumstances
  - Reasons for current system design

Analyzing Procedures and Other Documents (cont.)

- Four types of useful documents
  - Written work procedures
    - Describes how a job is performed
    - Includes data and information used and created in the process of performing the job or task
  - Business form
    - Explicitly indicate data flow in or out of a system
  - Report
    - Primary output of current system
    - Enables the analyst to work backwards from the report to the data that generated it
  - Description of current information system

Figure 6-3 Example of a procedure

GUIDE FOR PREPARATION OF INVENTION DISCLOSURE
(See FACULTY and STAFF MANUALS for detailed Patent Policy and routing procedures.)

(1) DISCLOSE ONLY ONE INVENTION PER FORM.

(2) PREPARE COMPLETE DISCLOSURE.

The disclosure of your invention is adequate for patent purposes ONLY if it enables a person skilled in the art to understand the invention.

(3) CONSIDER THE FOLLOWING IN PREPARING A COMPLETE DISCLOSURE:

(a) All essential elements of the invention, their relationship to one another, and their mode of operation.

(b) Equivalents that can be substituted for any elements.

(c) List of features believed to be new.

(d) Advantages this invention has over the prior art.

(e) Whether the invention has been built and/or tested.

(4) PROVIDE APPROPRIATE ADDITIONAL MATERIAL.

Drawings and descriptive material should be provided as needed to clarify the disclosure. Each page of this material must be signed and dated by each inventor and properly witnessed. A copy of any current and/or planned publication relating to the invention should be included.

(4) INDICATE PRIOR KNOWLEDGE AND INFORMATION.

Pertinent publications, patents or previous devices, and related research or engineering activities should be identified.

(5) HAVE DISCLOSURE WITNESSED.

Persons other than coinventors should serve as witnesses and should sign each sheet of the disclosure only after reading and understanding the disclosure.

(7) FORWARD ORIGINAL PLUS ONE COPY (two copies if supported by grant/contract) TO VICE PRESIDENT FOR RESEARCH VIA DEPARTMENT HEAD AND DEAN.

Written work procedure is a business document that formally describes work processes, provides useful information regarding system functionality and logic.

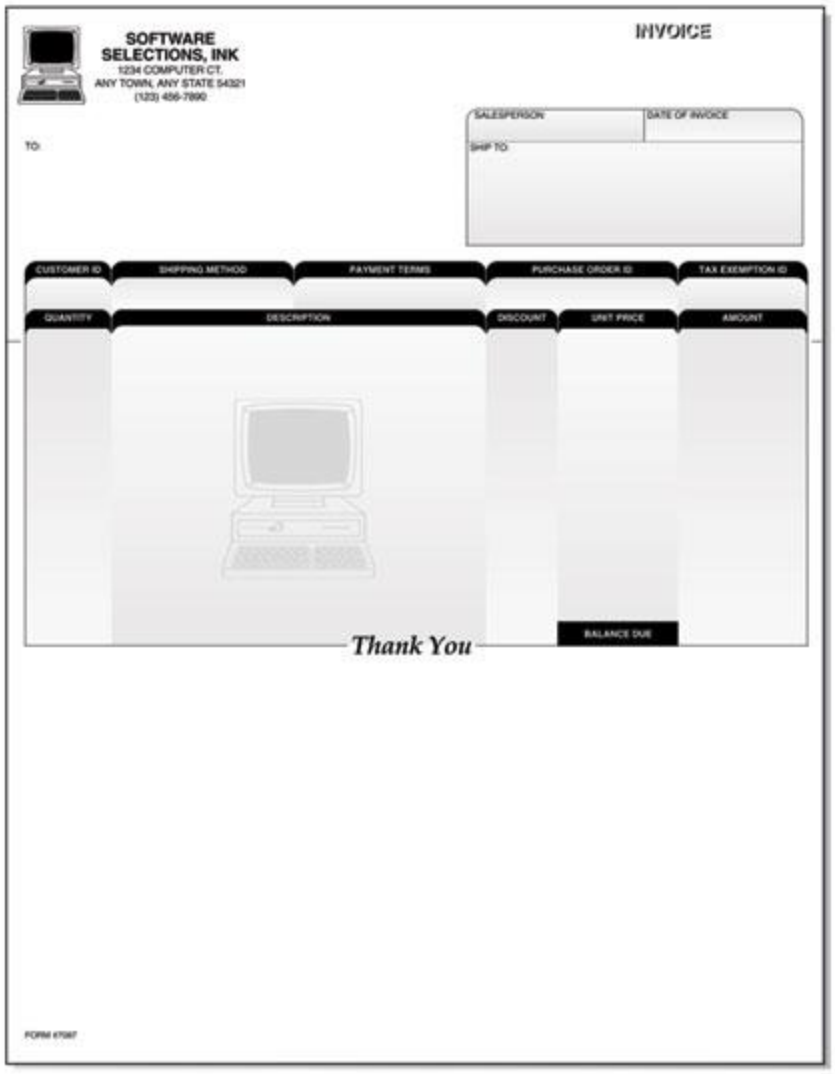
Potential Problems with Procedure Documents

- May involve duplication of effort.
- May have missing procedures
- May be out of date
- May contradict information obtained through interviews

Formal vs. Informal Systems

- Formal
  - The official way a system works as described in organization's documentation
  - Procedure documents describe formal system
- Informal
  - The way a system actually works in practice
  - Interviews and observation reveal informal system

Figure 6-4 A blank invoice form



Source: http://www.giraffeonline.com. Used by permission.

Business form is a document that contains useful information regarding data organizations and possible screen layouts.

Contemporary Methods for Determining Requirements

- Joint Application Design (JAD)
  - Brings together key users, managers, and systems analysts
  - Purpose: collect system requirements simultaneously from key people
  - Conducted off-site
- Group Support Systems
  - Facilitate sharing of ideas and voicing of opinions about system requirements

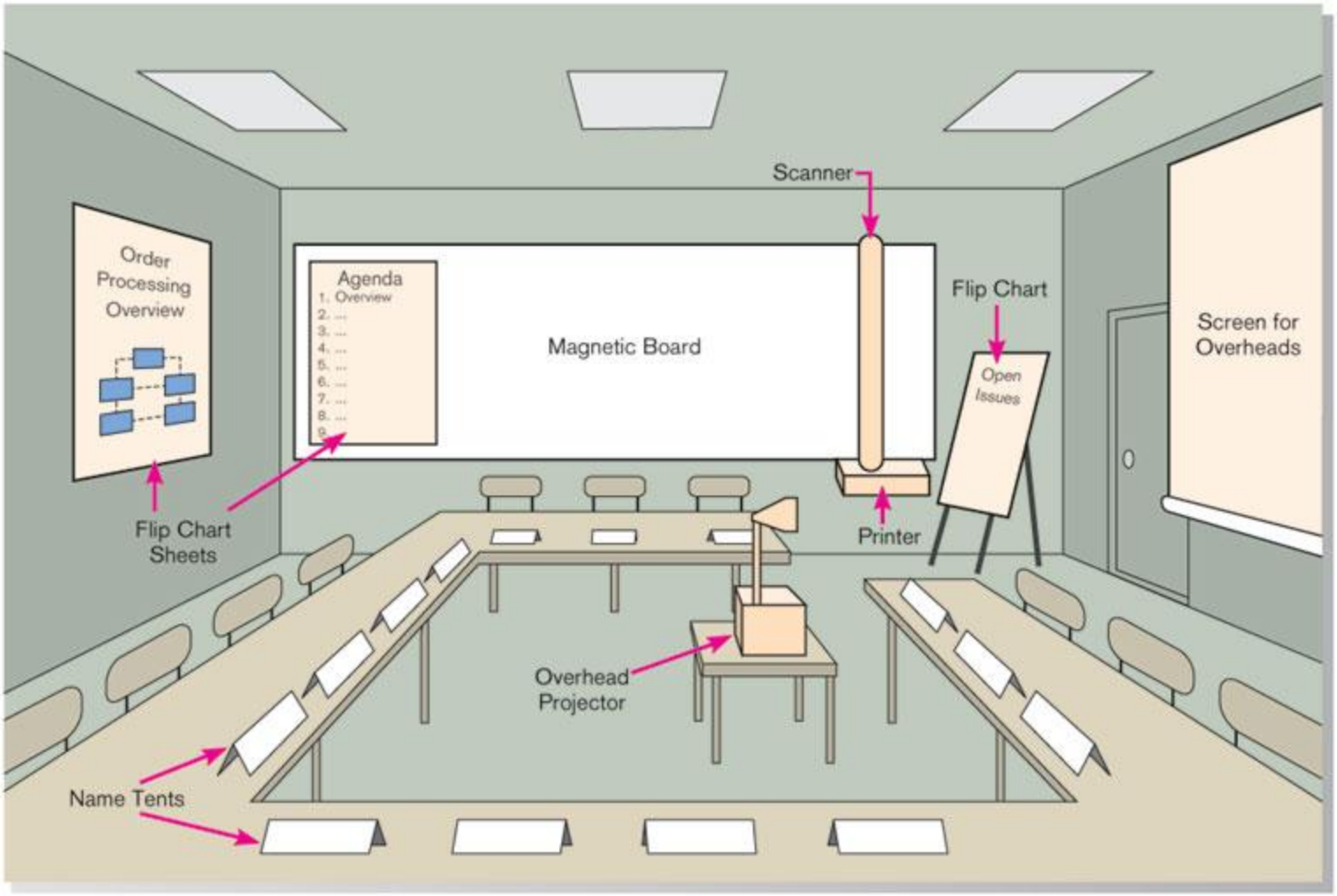
Contemporary Methods for Determining Requirements (cont.)

- CASE tools
  - Used to analyze existing systems
  - Help discover requirements to meet changing business conditions
- System prototypes
  - Iterative development process
  - Simple working version of system is built
  - Refine understanding of system requirements in concrete terms

Joint Application Design (JAD)

- Intensive group-oriented requirements determination technique
- Team members meet in isolation for an extended period of time
- Highly focused

Figure 6-6 Illustration of the typical room layout for a JAD



Source: Adapted from Wood and Silver, 1995.

JAD Participants

- Session Leader: facilitates group process
- Users: active, speaking participants
- Managers: active, speaking participants
- Sponsor: high-level supporter, limited participation
- Systems Analysts: should mostly listen
- Scribe: record session activities
- IS Staff: should mostly listen

Joint Application Design (cont.)

- End Result
  - Documentation detailing existing system
  - Features of proposed system
- CASE Tools During JAD
  - Upper CASE tools are used
  - Enables analysts to enter system models directly into CASE during the JAD session
  - Screen designs and prototyping can be done during JAD and shown to users

Prototyping

- 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 existing form
  - History of communication problems between analysts and users
  - Tools are readily available to build prototype

Prototyping (cont.)

- Drawbacks
  - Tendency to avoid formal documentation
  - Difficult to adjust to potential users
  - Sharing data with other systems is often not considered
  - Systems Development Life Cycle (SDLC) checks are often bypassed

Summary

- In this chapter you learned how to:
  - ✓ Describe interviewing options and develop interview plan.
  - ✓ Explain advantages and pitfalls of worker observation and document analysis.
  - ✓ Explain how computing can support requirements determination.