SECD2613
System Analysis and Design

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TOPIC III
Information Gathering

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Information Gathering Methods

- Interactive
- Unobstrusive

Aspect	Interactive Methods (PART 1)	Obstructive Methods (PART 2)
Definition	Methods that involve direct interaction with stakeholders to gather information.	Methods that do not require direct interaction; information is gathered passively or through existing sources.
Purpose	To obtain in-depth, qualitative insights from users and stakeholders.	To collect data unobtrusively, often for large-scale or structured analysis.
Examples	- Interviews - Focus Groups - Joint Application Design - Surveys - Brainstorming Sessions	- Document Analysis - Observations - Data Mining - System Logs Analysis - Questionnaires (Self-Administered)

PART 1:
INTERACTIVE METHOD

OBJECTIVES

- Recognize the value of interactive methods for information gathering.
- Construct interview questions to elicit human information requirements and structure them in a way that is meaningful to users.
- Understand the purpose of stories and why they are useful in systems analysis.
- Understand the concept of JAD and when to use it.
- Write effective questions to survey users about their work.
- Design and administer effective questionnaires.

INTERACTIVE METHODS TO ELICIT HUMAN INFORMATION REQUIREMENTS

INTERVIEWING	• Interview preparation • Question types • Arranging questions • The interview report • User Stories
JOINT APPLICATION DESIGN (JAD)	• Involvement • Location
QUESTIONNAIRES	• Writing questions • Using scales • Design • Administering

INTERACTIVE METHODS TO ELICIT HUMAN INFORMATION REQUIREMENTS

INTERVIEWING

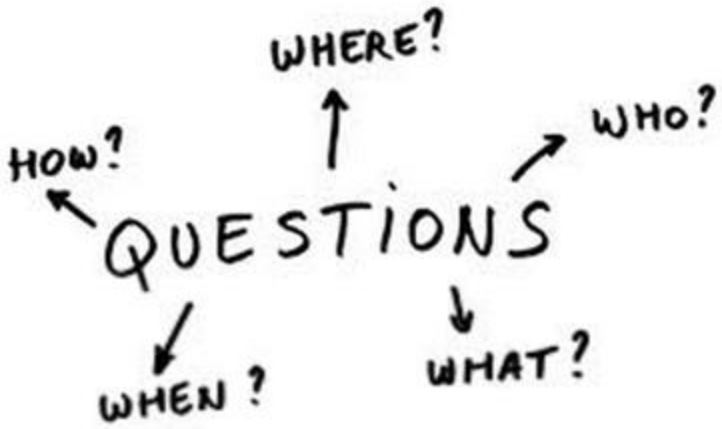
- Interview preparation
- Question types
- Arranging questions
- The interview report
- User Stories

INTERVIEWING

- Interviewing is an important method for collecting data on human and system information requirements
- Interviews reveal information about:
  - Interviewee opinions
  - Interviewee feelings
  - Goals
  - Key HCI concerns

INTERVIEW PREPARATION

- Reading background material
- Establishing interview objectives
- Deciding whom to interview
- Preparing the interviewee
- Deciding on question types and structure



2 MAIN TYPE OF QUESTIONS

OPEN-ENDED QUESTIONS

- Open-ended interview questions allow interviewees to respond how they wish, and to what length they wish
- Open-ended interview questions are appropriate when the analyst is interested in breadth and depth of reply
- Example:
  1. What is your opinion of current e-Learning system, how to improve it?
  2. Once a user is registered on your website, what are the next steps/processes?

CLOSED QUESTIONS

- Closed interview questions limit the number of possible responses
- Closed interview questions are appropriate for generating precise, reliable data that is easy to analyze
- The methodology is efficient, and it requires little skill for interviewers to administer
- Example:
  1. How many users are registered in your system?
  2. Who receives the online customer's complaint?

OPEN-ENDED QUESTIONS ADVANTAGES & DISADVANTAGES

ADVANTAGES

- Puts the interviewee at ease
- Allows the interviewer to pick up on the interviewee's vocabulary
- Provides richness of detail
- Reveals avenues of further questioning that may have gone untapped
- Provides more interest for the interviewee
- Allows more freedom
- Makes phrasing easier for the interviewer
- Useful if the interviewer is unprepared

DISADVANTAGES

- May result in too much irrelevant detail
- Possibly losing control of the interview
- May take too much time for the amount of useful information gained
- Potentially seeming that the interviewer is unprepared
- Possibly giving the impression that the interviewer is on a "fishing journey"

CLOSED QUESTIONS ADVANTAGES & DISADVANTAGES

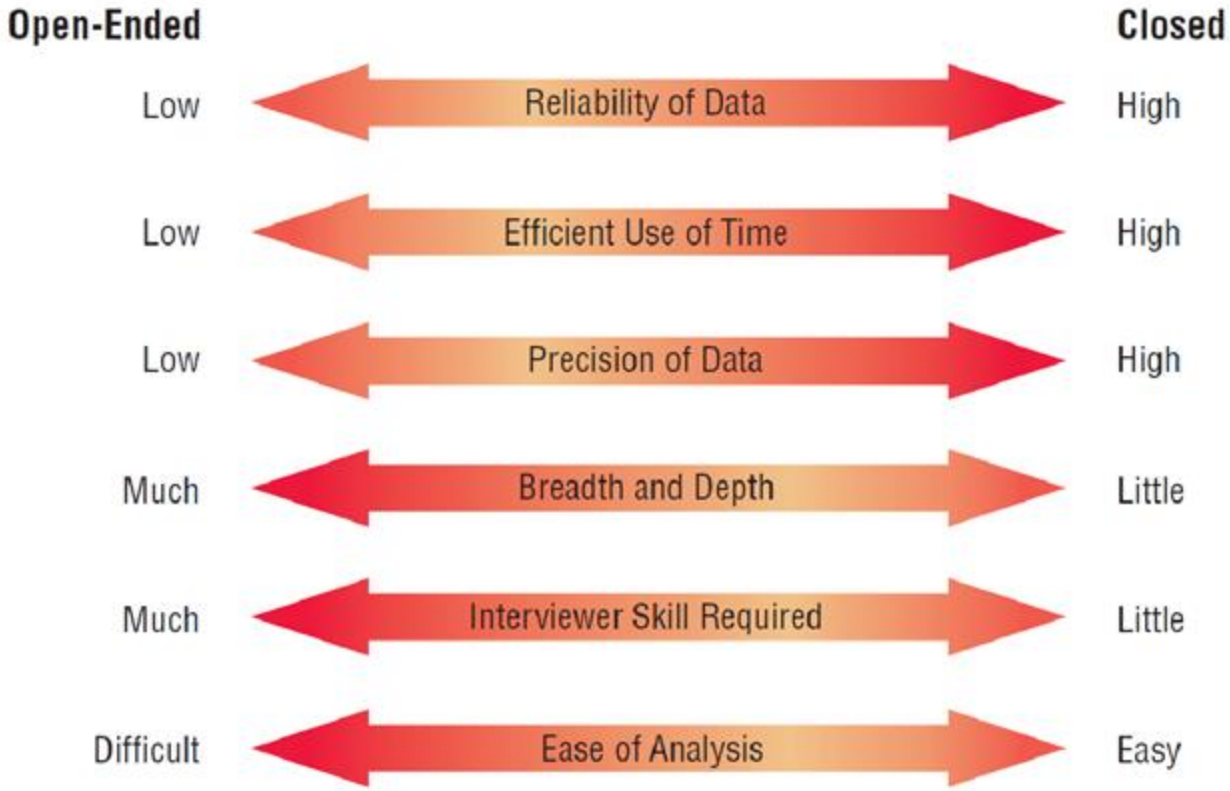
ADVANTAGES

- Saving interview time
- Easily comparing interviews
- Getting to the point
- Keeping control of the interview
- Covering a large area quickly
- Getting to relevant data

DISADVANTAGES

- Boring for the interviewee
- Failure to obtain rich detailing
- Missing main ideas
- Failing to build rapport between interviewer and interviewee

ATTRIBUTES OF OPEN-ENDED AND CLOSED QUESTIONS



OTHER TYPES OF QUESTIONS

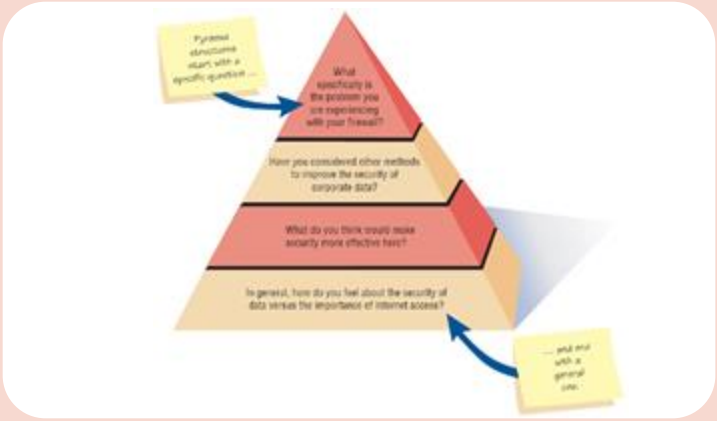
BIPOLAR QUESTIONS

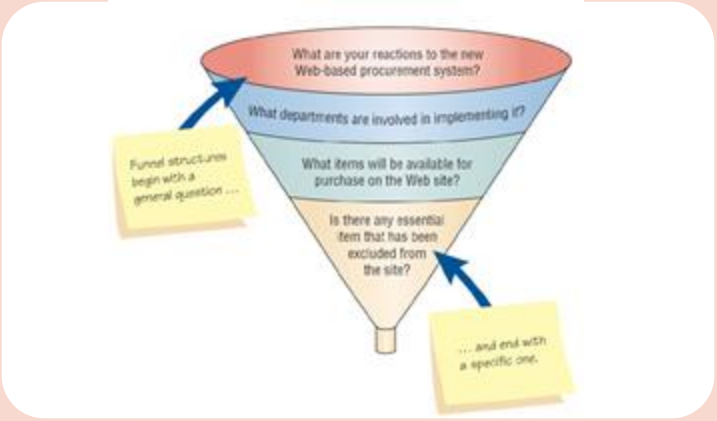
- A special kind of closed question
- Bipolar questions are those that may be answered with a “yes” or “no” or “agree” or “disagree”
- Bipolar questions should be used carefully
- Probing questions elicit more detail about previous questions

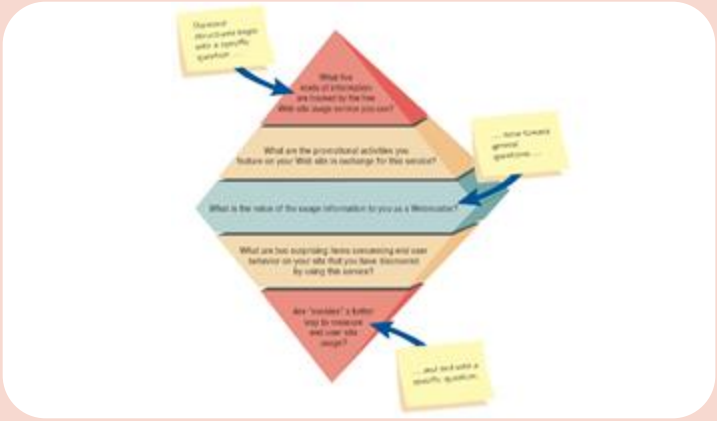
PROBE QUESTIONS

- The purpose of probing questions is:
  - To get more meaning
  - To clarify
  - To draw out and expand on the interviewee’s point
- May be either open-ended or closed
- E.g., “Why?” or “Please explain more for me”

ARRANGING QUESTIONS







PYRAMID

- Starting with closed questions and working toward open-ended questions

FUNNEL

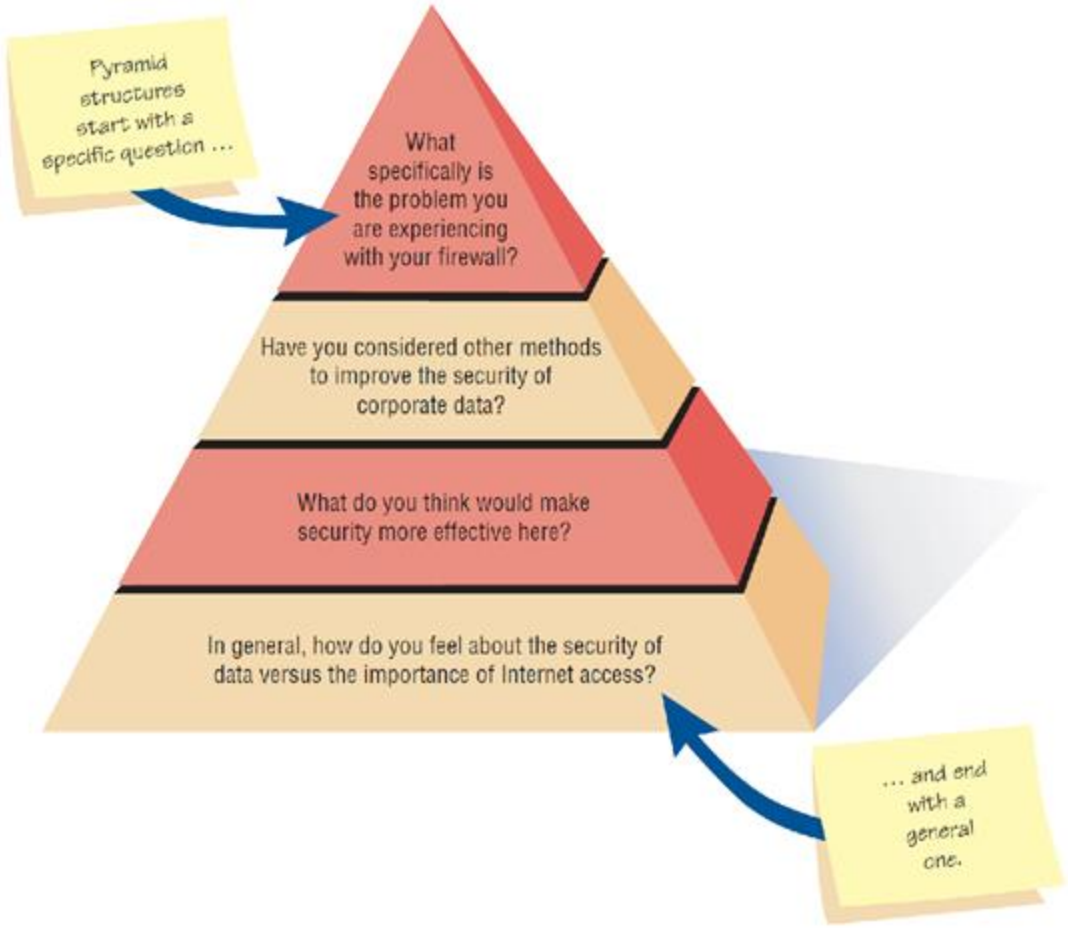
- Starting with open-ended questions and working toward closed questions

DIAMOND

- Starting with closed, moving toward open-ended, and ending with closed questions

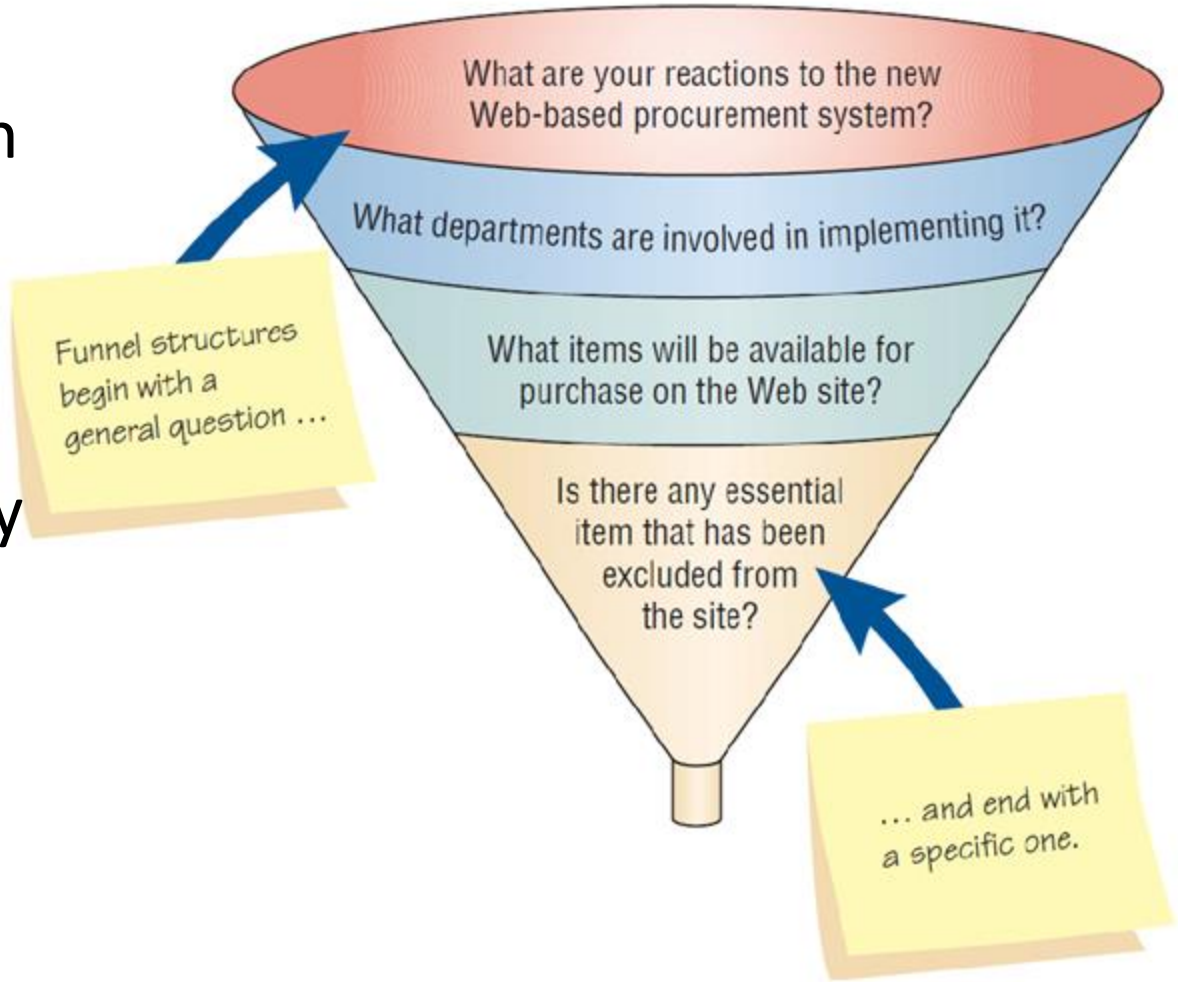
PYRAMID STRUCTURE

- Begins with very detailed, often closed questions (from Specific to General Questions)
- Expands by allowing open-ended questions and more generalized responses
- Is useful if interviewees need to be warmed up to the topic or seem reluctant to address the topic



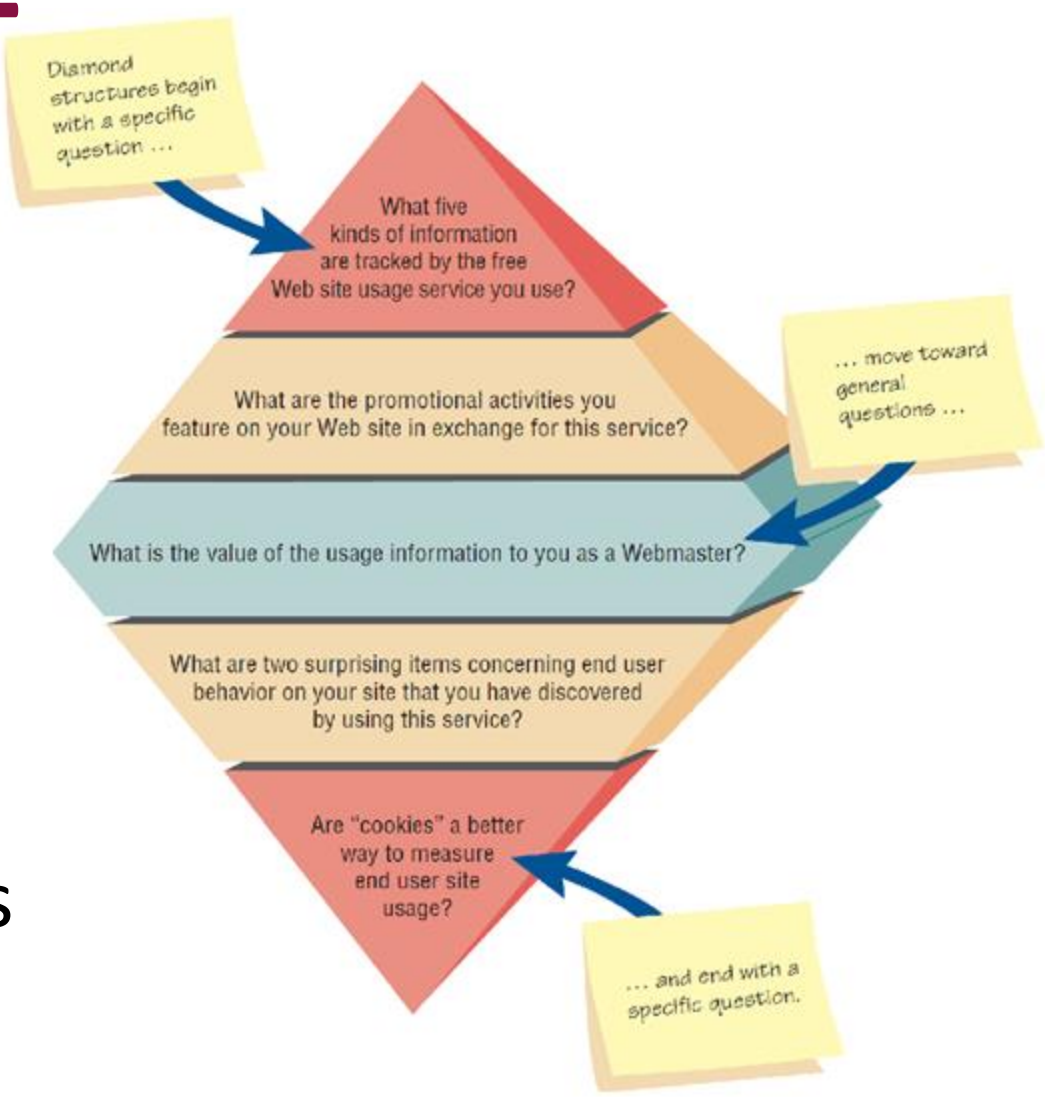
FUNNEL STRUCTURE

- Begins with generalized, open-ended questions (from broad questions then funnels to specific questions)
- Concludes by narrowing the possible responses using closed questions
- Provides an easy, nonthreatening way to begin an interview
- Is useful when the interviewee feels emotionally about the topic



DIAMOND STRUCTURE

- A diamond-shaped structure begins in a very specific way
- Then more general issues are examined
- Concludes with specific questions
- Combines the strength of both the pyramid and funnel structures
- Takes longer than the other structures



CLOSING THE INTERVIEW

- Always ask “Is there anything else that you would like to add?”
- Summarize and provide feedback on your impressions
- Ask whom you should talk with next
- Set up any future appointments
- Thank them for their time and shake hands.

INTERVIEW REPORT

- Write as soon as possible after the interview
- Provide an initial summary, then more detail
- Review the report with the respondent

STORIES

- Stories originate in the workplace
- Organizational stories are used to relay some kind of information
- When a story is told and retold over time it takes on a mythic quality
- Isolated stories are good when you are looking for facts
- Enduring stories capture all aspects of the organization and are the ones a systems analyst should look for

PURPOSE FOR TELLING A STORY

- There are four purposes for telling a story:
  1. Experiential stories describe what the business or industry is like
  2. Explanatory stories tell why the organization acted a certain way
  3. Validating stories are used to convince people that the organization made the correct decision
  4. Prescriptive stories tell the listener how to act
- Systems analysts can use storytelling as a complement to other information gathering methods

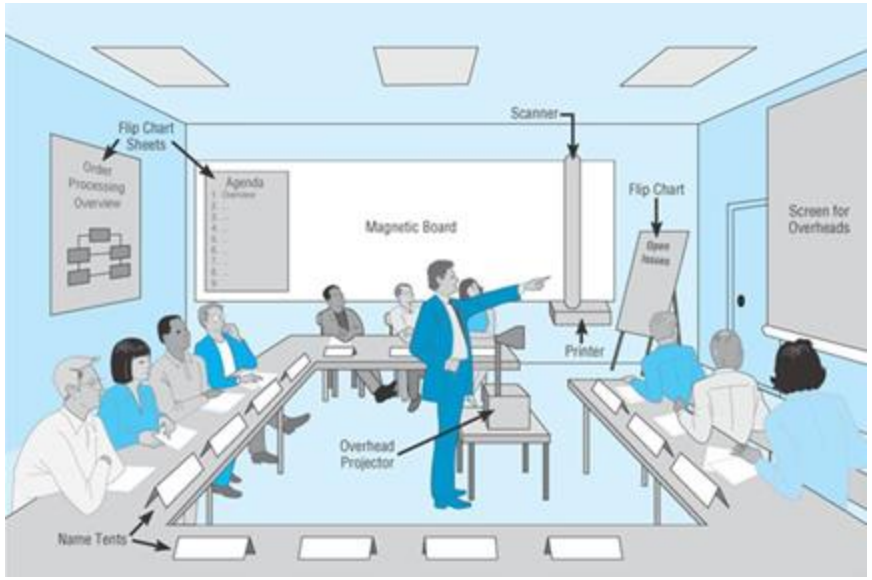
INTERACTIVE METHODS TO ELICIT HUMAN INFORMATION REQUIREMENTS

JOINT APPLICATION DESIGN (JAD)

- Involvement
- Location

JOINT APPLICATION DESIGN (JAD)

- Joint Application Design (JAD) can replace a series of interviews with the user community
- JAD is a technique that allows the analyst to accomplish requirements analysis and design the user interface with the users in a group setting
- Conditions that support the use of JAD:
  - Users are restless and want something new
  - The organizational culture supports joint problem-solving behaviors
  - Analysts forecast an increase in the number of ideas using JAD
  - Personnel may be absent from their jobs for the length of time required



WHO IS INVOLVED IN JAD?

Usually from 8 to 12 participants

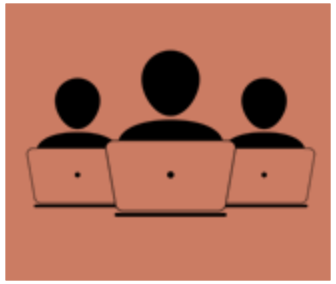
EXECUTIVE SPONSOR

The ultimate authority to make decisions about the project

IS ANALYST

- Develop logical models and specifications
- build the prototype

USERS



- Main focus of JAD
- Represent multiple levels of the organization

SESSION LEADER

- Organizes and schedule JAD activities
- Guide the JAD sessions
- Mediate disputes.

OBSERVERS

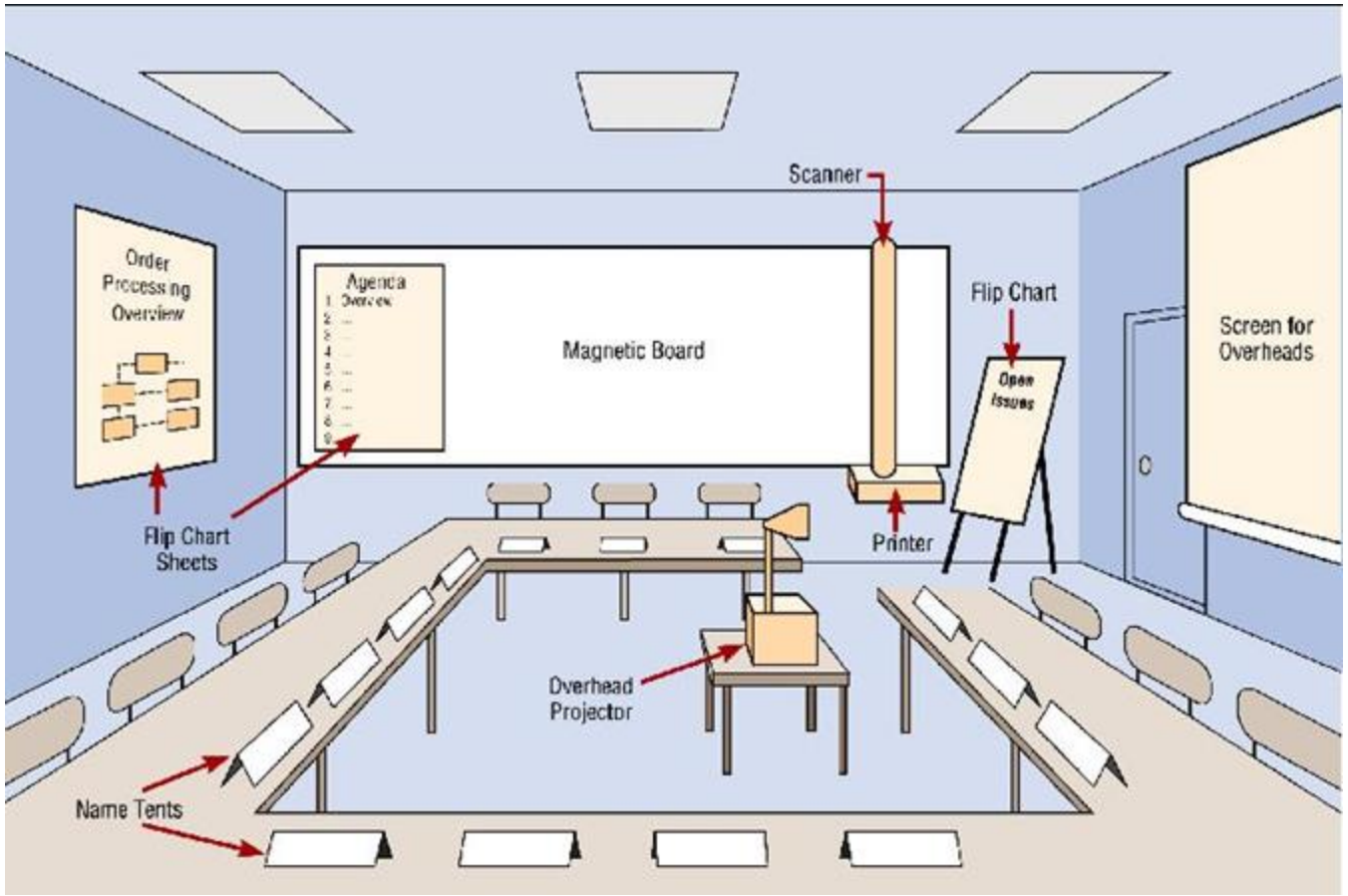
Watch and listen the session

SCRIBE

Ensure that the results of JAD sessions are documented and delivered as planned

WHERE TO HOLD JAD MEETINGS?

- Offsite, away from your organization for 2 to 4 days
  - Comfortable surroundings
  - Minimize distractions
- Attendance
  - Schedule when participants can attend
  - Agenda
  - Orientation meeting



BENEFITS AND DRAWBACKS OF JAD

BENEFITS

- Time is saved, compared with traditional interviewing
- Rapid development of systems
- Improved user ownership of the system
- Creative idea production is improved

DRAWBACKS

- JAD requires a large block of time to be available for all session participants
- If preparation or the follow-up report is incomplete, the session may not be successful
- The organizational skills and culture may not be conducive

INTERACTIVE METHODS TO ELICIT HUMAN INFORMATION REQUIREMENTS

QUESTIONNAIRES

- Writing questions
- Using scales
- Design
- Administering

QUESTIONNAIRES

Questionnaires are useful in gathering information (using open-ended and/or closed) from key organization members about:

- Attitudes of people
- Beliefs of people
- Behaviors
- Characteristics

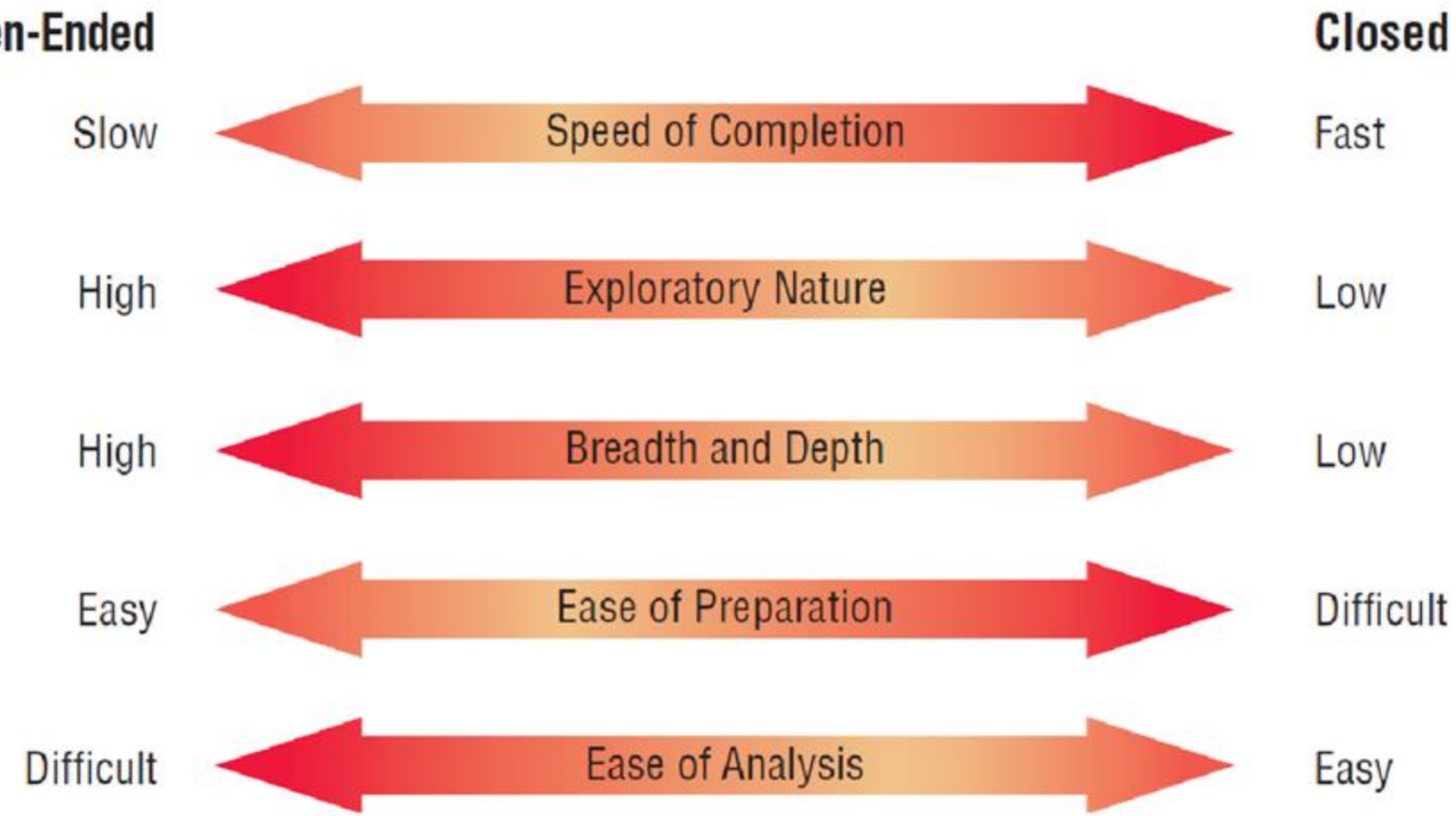
QUESTIONNAIRES

- Planning for the use of questionnaires
  1. Choose words carefully, department or unit, managers or supervisors
  2. Organization members are widely dispersed
  3. Many members are involved with the project
  4. Exploratory work is needed
  5. Problem solving prior to interviews is necessary

QUESTIONNAIRES

- Questions are designed as either:
  1. Open-ended
     - Try to anticipate the response you will get
     - Well suited for getting opinions
  2. Closed
     - Use when all the options may be listed
     - When the options are mutually exclusive

TRADE-OFFS BETWEEN THE USE OF OPEN-ENDED AND CLOSED QUESTIONS



QUESTIONNAIRES LANGUAGE

- Simple
- Specific
- Short
- Not patronizing
- Free of bias
- Addressed to those who are knowledgeable
- Technically accurate
- Appropriate for the reading level of the respondent
- Choose words carefully

MEASUREMENT SCALES

NOMINAL SCALES

- Nominal scales are used to classify things
- It is the weakest form of measurement
- Data may be calculated

What type of software do you use the most?

(1) = Word Processor

2 = Spreadsheet

3 = Database

4 = An Email Program

INTERVAL SCALES

- An interval scale is used when the intervals are equal
- There is no absolute zero
- Examples of interval scales include the Fahrenheit or Centigrade scale

How useful is the support given by the Technical Support Group?

NOT USEFUL AT ALL				EXTREMELY USEFUL
1	2	3	(4)	5

PROBLEMS WITH SCALES

- The rater (respondent) may do certain common errors in the answers.
- Major types of rater errors are:

LENIENCY

- Caused by easy raters
- Leniency error is the tendency of a manager to rate an employee higher than his actual performance.
- Reasons that a manager might do this could include avoiding confrontations, or feeling that by giving the employee a high rating, he will work harder to live up to the rating.

CENTRAL TENDENCY

- Central tendency occurs when respondents rate everything as average
- Improve by making the differences smaller at the two ends
- Adjust the strength of the descriptors
- Create a scale with more points

HALO EFFECT

- When the impression formed in one question carries into the next question.
- The halo effect is when a manager forms a positive impression of an employee's skill in one area and then gives her high ratings across all rating criteria
- Solution is to place one trait on each page of questionnaire

DESIGINING THE QUESTIONNAIRES

- Allow ample white space
- Allow ample space to write or type in responses
- Make it easy for respondents to clearly mark their answers
- Be consistent in style
- Order of Questions
  1. Place most important questions first
  2. Cluster items of similar content together
  3. Introduce less controversial questions first

ADMINISTERING QUESTIONNAIRES

- Administering questionnaires has two main questions:

Who in the organization should receive the questionnaire?

How should the questionnaire be administered?

METHODS OF ADMINISTRERING THE QUESTIONNAIRES

1. Convening all concerned respondents together at one time
2. Personally administering the questionnaire
3. Allowing respondents to self-administer the questionnaire
4. Mailing questionnaires
5. Administering over the Web or via email

ADMINISTERING OVER WEB/EMAIL

- Electronically submitting questionnaire:
  - reduced costs
  - collecting and storing the results electronically

Name	Appearance	Purpose
One-line text box		Used to obtain a small amount of text and limit the answer to a few words
Scrolling text box		Used to obtain one or more paragraphs of text
Check box		Used to obtain a yes-no answer (e.g., Do you wish to be included on the mailing list?)
Radio button		Used to obtain a yes-no or true-false answer
Drop-down menu		Used to obtain more consistent results (Respondent is able to choose the appropriate answer from a predetermined list [e.g., a list of state abbreviations])
Push button		Most often used for an action (e.g., a respondent pushes a button marked "Submit" or "Clear")

Ways to Capture Responses When Designing a Web Survey

VALIDITY AND RELIABILITY

- **VALIDITY** is the degree to which the question measures what the analyst intends to measure

- **RELIABILITY** of scales refers to consistency in response—getting the same results if the same questionnaire was administered again under the same conditions

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Thank You

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