SYSTEM ANALYSIS AND DESIGN
SCD 2613

Topic 2
Information System Analysis

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An Overview

❑ Gather Information

❑ Methods for Information Gathering

❑ Define system requirements

❑ Process Specification Method

❑ Prioritize requirements

❑ Prototyping.

❑ Generate alternatives

❑ Review recommendations with management

Gather Information

- During analysis phase, you must describe a set of system capabilities in much details.
  - Need to detail the high-level capabilities into detailed system requirements
- The analysis phase involves gathering a considerable amount of information, i.e. system requirements.
  - from people who will be using the system.

Gather Information

- Gather information about system requirements
  - System requirements – capabilities & constraints that the new system must do.
  - Two categories of **system requirements:**
    - **Functional** requirements
    - **Technical** requirements

Method for Information Gathering

- Two type of methods for information gathering:
  1. Interactive methods
  2. Unobtrusive methods

1. Interactive Method

- Used to elicit human information requirements by talking with and listening to people through a question.

Individual
Interviews
Questionnaires

Group
JAD

Interviewing

- Important method for collecting data
- Interviews reveal information about:
    - Interviewee opinions
    - Interviewee feelings
    - Goals
    - Key HCI concerns
- Six steps in preparing the interviews:
    - Reading background material
    - Establishing interview objectives
    - Deciding whom to interview
    - Preparing the interviewee
    - Deciding on question types and structure
    - Follow-up

Question Types

a) Open-ended
   – allow interviewees to respond how they wish, and to what length they wish
   – appropriate when the analyst is interested in breadth and depth of reply

b) Closed
   – limit the number of possible responses
   – appropriate for generating precise, reliable data that is easy to analyze
   – is more efficient, it require little skill for interviewers to administer

Arranging Questions

- Two ways of organizing interviews :

  i.   Pyramid - starting with closed questions and working toward open-ended questions

  ii. Funnel - starting with open-ended questions and working toward closed questions

- Diamond

  – Combines both pyramid and funnel

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

Joint Application Design (JAD)

- Joint Application Design (JAD) can replace a series of interviews with the user community.
  - technique that allows analysts to accomplish requirements analysis and design the user interface with the users in a group setting.

When to Use JAD

- JAD may be used when
    - 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.

JAD Personnel

- JAD involves
  - Analysts.
  - Users.
  - Executives.
  - Observers.
  - A scribe.
  - A session leader.

2. Unobtrusive Methods

- Unobtrusive methods are less disruptive in eliciting information requirements, e.g.,
    - sampling
    - Investigation
    - observing
- May consider use multiple methods approach
    - Used in conjunction with interactive methods
    - Will result in a more complete picture of human information requirements

Sampling

- A process of systematically selecting representative elements of a population

- Involves two key decisions:
  – What to examine
  – Which people to consider

Sampling Design

- To design a good sample, analysts must follow four steps:
  - Determining the data to be collected or described
  - Determining the population to be sampled
  - Choosing the type of sample
  - Deciding on the sample size

Investigation

- The act of discovery and analysis of data
- Hard data
  - Quantitative
  - Qualitative

Analyzing Quantitative Documents

- Reports used for decision making

- Performance reports

- Records

- Data capture forms

- Ecommerce and other transactions

Analyzing Qualitative Documents

- Key or guiding metaphors

- Insiders vs. outsiders mentality

- What is considered good vs. evil

- Graphics, logos, and icons in common areas or Web pages

- A sense of humor

- Email messages and memos

- Signs or posters on bulletin boards

- Corporate Web sites

- Manuals

- Policy handbooks

Observation

- Observation provides insight on what organizational members actually do

- See firsthand the relationships that exist between decision makers and other organizational members

- Can also reveal important clues regarding HCI concerns

Define System Requirement

- The question that always rises is whether to study and document the existing system or whether to document only the requirements of the new system.

- Today's fast-pace world, there is no time, or money to review all the old systems and document all the inefficient procedures.

Process Specification

- **Process specification** is the method available for documenting and analyzing the logic of structured decisions
  - E.g., structured English, decision tables, and decision trees.
- Process specifications are created for primitive processes and some higher level processes on a data flow diagram.
- They are also called minispecs.

Prioritize Requirements

- Once the system requirements are well understood and detailed models of the requirements are completed, it is important to establish which of the functional and technical requirements are most critical.

- It is desirable but not essential.

Prototyping

- Creating prototypes of parts of the new system can be very valuable during systems analysis.

- To better understand the user's needs.

- Using sample screens, reports, etc

Generate & Evaluate Alternatives

- When requirements are prioritized, the analyst can generate several alternatives by eliminating some of the less important.

- If you propose a lot of alternatives, so there will be more models you have to draw and describe!

Review recommendations with management

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