Eliciting Requirements

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Contents

- Basics of elicitation
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  - Dealing with Bias
- A large collection of elicitation techniques:
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  - Hard data collection
  - Interviews
  - Questionnaires
  - Group Techniques
  - Participant Observation

Difficulties of Elicitation

- **Thin spread of domain knowledge**
  - It is rarely available in an explicit form (i.e. not written down)
  - ...distributed across many sources.
  - ...with conflicts between knowledge from different sources
- **The "say-do" problem**
  - People find it hard to describe knowledge they regularly use

Difficulties of Elicitation (cont.)

- **Limited Observability**
  - The problem owners might be too busy coping with the current system.
  - Presence of an observer may change the problem.
    - E.g. Probe Effect;
- **Bias**
  - People may not be free to tell you what you need to know.
  - People may not want to tell you what you need to know.

Example

- Loan approval department in a bank
  - The analyst is trying to elicit the rules and procedures for approving a loan.
- Why this might be difficult:
  - Implicit knowledge:
    - no document in which the rules for approving loans are written down.
  - Conflicting information:
    - Different bank staff have different ideas about what the rules are.
  - Say-do problem:
    - The loan approval process described to you by the loan approval officers is quite different from your observations of what they actually do.

Example (cont.)

- Why this might be difficult:

  - Probe effect:

    - The loan approval process used by the officers while you are observing is different from the one they normally use.

  - Bias:

    - The loan approval officers fear that your job is to computerize their jobs out of existence, so they are emphasizing the need for case-by-case discretion (to convince you it has to be done by a human!)

Elicitation Techniques

- Traditional techniques
  - Reading existing documents
  - Analyzing hard data
  - Interviews
  - Surveys / Questionnaires
  - Meetings
- Collaborative techniques
  - Focus Groups
  - Prototyping

Background Reading

- **Sources of information:**
  - Company reports, organization charts, policy manuals, job descriptions, reports, documentation of existing systems, etc.
- **Advantages:**
  - Helps you get an understanding of an organization before meeting the people who work there.
  - Helps to prepare for other types of fact finding.
    - e.g. by being aware of the business objectives of the organization.
  - may provide detailed requirements for the current system.
- **Disadvantages:**
  - Written documents often do not match up to reality.
  - Can be long-winded with much irrelevant detail.
- **Appropriate for**
  - Whenever you not familiar with the organization being investigated.

"Hard Data" and Sampling

- Hard data includes facts, graphs and figures…
  - Forms, Invoices, financial information,…
  - Reports used for decision making,…
  - Survey results, marketing data,…
- Sampling
  - Sampling used to select representative set from a population
    - Purposive Sampling - choose the parts you think are relevant without worrying about statistical issues.
    - Simple Random Sampling - choose every kth element
    - Clustered Random Sampling - choose a representative subpopulation and sample it

"Hard Data" and Sampling (cont.)

- **Sample Size is important**
  - balance between cost of data collection/analysis and required significance
- **Process:**
  - Decide what data should be collected - e.g. banking transactions
  - Determine the population - e.g. all transactions at 5 branches over one week
  - Choose type of sample - e.g. simple random sampling
  - Choose sample size - e.g. every 20th transaction

Example of hard data

- **Questions:**
  - What does this data tell you?
  - What would you do with this data?

Agate
Campaign Summary

Date	23rd February 1999
Client	Yellow Partridge Park Road Workshops Park Road Jewellery Quarter Birmingham B2 3DT U.K.
Campaign	Spring Collection 1999
Billing Currency	GB £

Item	Curr	Amount	Rate	Billing amount
Advert preparation: photography, artwork, layout etc.	GB £	15,000.00	1	15,000.00
Placement French Vogue	FFr.	47 000,00	11.35	4,140.97
Placement UK Vogue	GB £	5,000.00	1	5,000.00
Placement US Vogue	US $	15,000.00	2.47	6.072.87
Total				30,213.84

This is not a VAT Invoice. A detailed VAT Invoice will be provided separately.

Interviews

- **Types:**
  - **Structured** - agenda of fairly open questions
  - **Open-ended** - no pre-set agenda
- **Advantages**
  - Rich collection of information
  - Good for uncovering opinions, feelings, goals
  - Can probe in depth

Interviews (cont.)

- **Disadvantages**
  - Large amount of qualitative data can be hard to analyze
  - Hard to compare different respondents
  - Interviewing is a difficult skill to master
- **Watch for**
  - Unanswerable questions ("how do you tie your shoelaces?")
  - Interviewer's attitude may cause bias (e.g. variable attentiveness)

Questionnaires

- **Advantages**
  - Can quickly collect info from large numbers of people
  - Can be administered remotely
  - Can collect attitudes, beliefs, characteristics
- **Disadvantages**
  - Simplistic categories provide very little context

Questionnaires (cont.)

Note: Questionnaires MUST be prototyped and tested!

- **Watch for:**
  - Small sample size (lack of statistical significance)
  - Open ended questions (very hard to analyze!)
    - "What are you planning to buy today at the supermarket?"
  - Ambiguous questions (I.e. not everyone is answering the same question)
    - "Where do you like to shop?" => regular grocery shopping, gas, or online website, etc.

Meetings

- Used for summarization and feedback
  - E.g. meet with stakeholders towards the end of each stage:
    - to discuss the results of the information gathering stage.
    - to conclude on a set of requirements.
    - to agree on a design etc.
  - Use the meeting to confirm what has been learned, talk about findings.

Meetings (cont.)

- Meetings are an important managerial tool
  - Used to move a project forward
  - Every meeting should have a clear objective:
    - E.g. presentation, problem solving, conflict resolution, progress analysis, gathering and merging of facts, training, planning,...
  - Plan the meeting carefully:
    - Schedule the meeting and arrange for facilities
    - Prepare an agenda and distribute it well in advance
    - Keep track of time and agenda during the meeting
    - Follow up with a written summary to be distributed to meeting participants
    - Special rules apply for formal presentations, walkthroughs, brainstorming, etc.

Group Elicitation Techniques

- **Types:**
  - Focus Groups
  - Brainstorming

- **Advantages**
  - More natural interaction between people than formal interview
  - Can measure reaction to stimulus materials (e.g. mock-ups, storyboards, etc.)

Group Elicitation Techniques (cont.)

- **Disadvantages**
  - May create unnatural groups (uncomfortable for participants)
  - Requires a highly trained facilitator
- **Watch for**
  - sample bias

Joint/Rapid Application Development

- ## JAD & RAD Principles:

  - **Group Dynamics - use workshops instead of interviews**

  - **Visual Aids**

    - Lots of visualization media, e.g. wall charts, large monitors, graphical interfaces

  - **Organized, Rational Process**

    - Techniques such as brainstorming and top-down analysis

- ## Notes:

  - **Choose workshop participants carefully**

    - They should be the best people possible representing various stakeholder groups

Participant Observation

- Approach
  - Observer spends time with the subjects
    - Joining in long enough to become a member of the group
    - Hence appropriate for longitudinal studies
- Advantages
  - Contextualized
  - Reveals details that other methods cannot.
- Disadvantages
  - Extremely time consuming!

Main references

- **Prof Steve Easterbrook, lecture notes, University of Toronto, Canada.**

Q&A