SENG 471

Software Requirements Engineering

Requirements Elicitation

[Bra02]

Requirements Elicitation

- Information to elicit
  - Relevant to develop a system
- Elicitation techniques
  - Existing documents/data
  - Interviews + questionnaires
  - Group techniques + participant observation
  - ……
- Sources of information
  - People – roles/responsibilities ???
  - Existing system/products
  - Any writings

Fun Reality

Challenges of Elicitation

- Thin spread of domain knowledge
  - Multiple sources, conflicts
- Tacit knowledge
  - Difficult to verbalize
- Limited observability
  - The problem owners are too busy
- Bias
  - Not free to tell, not want to tell

Bias - Examples

- Social pressure → interviewer's cues
- Group think → reactions of other experts
- Impression management → imagined reactions
- Wishful thinking → hopes / possible gains
- Appropriation → selective interpretation
- Misrepresentation → misfit response mode
- Anchoring → ignorance of contradictory data
- Inconsistency → forgotten assumptions
- Availability → recall some data but not all
- Underestimation of uncertainty → factor of 2 or 3

SE = Software Engineers

Elicitation

- Exercise: Loan approval
  - Loan approval department in a large bank
  - SE are trying to elicit the rules and procedures for approving a loan
- Why might this be difficult?

Elicitation Techniques

- **Traditional**
  - Introspection
  - Reading existing documents
  - Analyzing hard data
  - Interviews
  - Surveys / Questionnaires
  - Meetings
- **Collaborative**
  - Focus groups
  - Prototyping
  - Participatory design
- **Contextual**
  - Ethnographic techniques
  - Discourse analysis
  - Sociotechnical methods
- **Cognitive**
  - Task analysis
  - Protocol analysis
  - Knowledge acquisition techniques

Traditional - Introspection

- Requirements analyst “imagines” what kind of system is required.
- Advantages:
  - ?
- Disadvantages:
  - ?
  - ?

Traditional - Background reading

- Sources of information:
  - company reports, organization charts, policy manuals, job descriptions, documentation of existing systems, etc.
- Advantages:
  - ?
  - ?
  - ?
- Disadvantages:
  - ?

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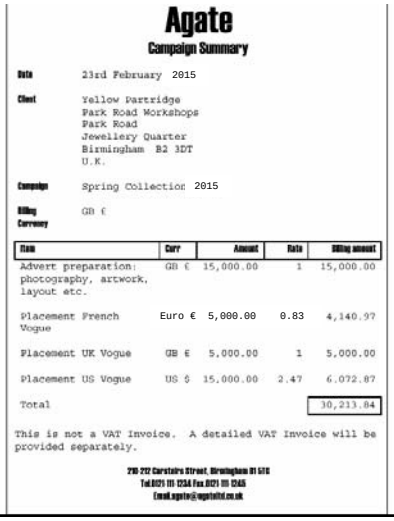
Traditional - Analyze hard data

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



Agate

Campaign Summary

Date 23rd February 2015

Client Yellow Partridge
Park Road Workshops
Park Road
Jewellery Quarter
Birmingham B2 3DT
U.K.

Campaign Spring Collection 2015

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	Euro €	5,000.00	0.83	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.

[redacted]

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Traditional - Interviews

- Types ➔ structured, open-ended
- Advantages:
  - Uncover opinions, feelings, goals, hard facts
  - Probe in depth, and adapt follow-up questions
- Disadvantages:
  - Hard to ….
  - Difficult to ….
- Watch for:
  - Unanswerable questions, tacit knowledge
  - Interviewer's attitude

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Traditional - Questionnaires

- Advantages → collect attitudes, beliefs, characteristics
  - Collect from large numbers of people
  - Be administered remotely
- Disadvantages
  - Simplistic, little context …..
- Watch for bias:
  - Sample selection and size
  - Open ended questions
  - Leading questions and appropriation
  - Ambiguous questions

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Questionnaires - Right or Wrong

3. How useful is the current system to you? (*use reverse page*)
4. How long have you taken charge of the current responsibility? (*check one only*)
   - ☐ ≤ 1 year
   - ☐ 1-3 years
   - ☐ ≥ 3 years
6. Do you use the current system for:
   - visualizing design ☐
   - tracking usage ☐
   - creating simulation ☐
7. Is your experience with the current system positive?

Strongly Disagree — Agree — Strongly Agree

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Traditional - Meetings

- Used for summarization and feedback
  - Meet with stakeholders at the end of each stage
  - Have a clear objective for every meeting
  - Plan the meeting carefully (schedule, location, agenda, follow-up)

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Collaborative - Focus groups

- Brainstorming, JAD/RAD workshops
- Advantages:
  - Natural interaction between people
  - Gauge reaction to stimulus materials
- Disadvantages:
  - Might be uncomfortable for participants
  - Danger of groupthink, superficial responses
- Watch for bias:
  - Sample, dominance and submission

Collaborative - JAD/RAD

- Joint/Rapid Application Development (JAD/RAD)
- Principles:
  - Group dynamics
  - Visual aids
  - Organized, rational process
  - WYSIWYG documentation approach
    → a resulted, agreed document

Contextual - Participant observation

- Approach
  - Ethnographic
  - Observation
- Advantages
  - Contextualized
  - Reveals details that other methods cannot
- Disadvantages
  - Extremely time consuming!
  - No involvement in the results of proposed changes

Recap

- Requirements elicitation
  - Challenges of elicitation
  - Elicitation techniques