

Overview and Selection of Elicitation Techniques

Requirements Engineering II

Agenda

1. Introduction
2. Overview of Elicitation Techniques
 - a. Interview-based
 - b. Questionnaires
 - c. Introspective and observational
 - d. Contrived
3. Selection of Elicitation Techniques
 - a. Dieste et al. 2008
 - b. Hickey & Davis 2003
 - c. Zowghi & Coulin 2005

Introduction

Requirements are spread across many sources

- Stakeholders
- Documentation
- Existing systems
- ...

Requirements Elicitation

- "Uncovering, extracting & surfacing the users' needs"
- Many requirements -> prioritisation & negotiation

Introduction

Requirements Elicitation Process

- Understand the application domain
- Identify the sources of requirements
- Analysing the stakeholders
- Selecting the appropriate technique
- Eliciting the requirements

Introduction

Technique

- Success of requirement elicitation depends on the selection of right techniques
- Decision criteria involve
 - Type of system
 - Project status
 - Project constraints (time, availability of stakeholders,...)
 - Application domain
 - ...

There's no "one size fits all" technique, the secret is to find the right mix!

Overview of Elicitation Techniques

Interview-based techniques

Interview

- Highly depends on interviewer skills
- Goal: collecting fast a large amount of data
- Types: structured, semi-structured, unstructured
- Structured: Volere-Template
- Unstructured: exploration in case of limited domain knowledge

Laddering

- Short questions -> arrange answers into organized, hierarchical structure
- Goal: clarify requirements and categorize domain entities

Overview of Elicitation Techniques

Questionnaires

Questionnaires

- Used in early stage of requirement elicitation
- Types: open / closed questions
- Goal: collect information from many stakeholders
- Drawback:
 - Limited in depth
 - Not possible to delve on a topic
 - No clarification / correction of misunderstandings

Overview of Elicitation Techniques

Introspective and Observational Methods

Introspection

- Elicitation based on analyst's assumptions
- Effective if analyst is familiar with domain and business process
- Used if users have no experience with software systems

Domain Analysis

- Studying documentation and applications
- Goal:
 - Get domain knowledge
 - Identify reusable concepts & components
- Often enhanced by observation & interviews

Overview of Elicitation Techniques

Observational Methods

Ethnography

- Observation of process execution
- Goal:
 - Identify e.g. usability
 - Investigate interaction between different users & system

Task Analysis

- Decompose high-level tasks into subtasks
- Goal: create hierarchy of tasks
- Illustrates the interaction of user & system

Overview of Elicitation Techniques

Observational Methods

Protocol Analysis

- Execution of task & talking through aloud
- Goal: discover implicit knowledge
- Drawback: not normal execution of task possible

Overview of Elicitation Techniques

Contrived Techniques

Card Sorting

- Sort domain entities into groups
- Goal: get idea of entities and relationships
- Important that all entities are included

Prototyping

- Expensive but powerful method
- Goal:
 - Gather detail information
 - Get accurate user feedback
 - Involve stakeholders

Selection of Elicitation Techniques

Dieste et al. (2008) examined **43 different elicitation techniques and 50 variables** to describe their effects including

- number of elicited requirements
- time spent
- efficiency
- type of knowledge gained
- correctness and importance of elicited requirements

Selection of Elicitation Techniques

They found out that

- Introspective techniques (e.g. protocol analysis) aren't as productive as **interviews, card sorting, and laddering**
- To elicit specialized types of knowledge, you should **complement interviews with contrived techniques**
- **Structuring interviews** makes them more effective
- Structured interviews can be **augmented with mock-ups, scenarios, and storyboarding**

Selection of Elicitation Technique

Hickey & Davis (2003) conducted interviews with the **world's leading requirements elicitation professionals** and examined their approaches:

- formulate **constraints and goals**
- identify **criteria for success**
- always use **brainstorming and interviews**
- ask stakeholders about **pain points** (what keeps them awake at night)

Selection of Elicitation Techniques

Lessons learned from the experts

- **Collaborative sessions with multiple stakeholders** are the default approach in eliciting requirements
- **Team-building** helps establishing communication
- Use **observation** whenever it is possible and a system exists
- The **Volere template** is an effective way to categorize requirements
- **Issues lists** help to stay focused

Selection of Elicitation Techniques

Lessons learned from the experts

- Use **models** to
 - a) facilitate communication
 - b) uncover missing information
 - c) organize information
 - d) uncover inconsistencies

but remember that their **purpose is to help the thought process**, not serve as final customer documentation
- Questionnaires and system archaeology are seldomly used

Selection of Elicitation Techniques

(Source: Zowghi & Coulin 2008)

Table 2.1 Techniques and approaches for elicitation activities.

	Interviews	Domain	Groupwork	Ethnography	Prototyping	Goals	Scenarios	Viewpoints
Understanding the domain	X	X	X	X		X	X	X
Identifying sources of requirements	X	X	X			X	X	X
Analyzing the Stakeholders	X	X	X	X	X	X	X	X
Selecting techniques and approaches	X	X	X					
Eliciting the Requirements	X	X	X	X	X	X	X	X

Selection of Elicitation Techniques

(Source: Zowghi & Coulin 2008)

Table 2.2 Complementary and alternative techniques and approaches

	Interviews	Domain	Group work	Ethnography	Prototyping	Goals	Scenarios	Viewpoints
Interviews		C	A	A	A	C	C	C
Domain	C		C	A	A	A	A	A
Group-work	A	C		A	C	C	C	C
Ethnography	A	A	A		C	C	A	A
Prototyping	A	A	C	C		C	C	C
Goals	C	A	C	C	C		C	C
Scenarios	C	A	C	A	C	C		A
Viewpoints	C	A	C	A	C	C	A	

Some expert advices

"Analysts should **always ask, never tell**"

"Never trust marketing personnel, always **learn requirements yourself**"

"**Users are more important** than the paying customers"

"Always **document the business case and quantify it financially** prior to eliciting requirements"

References

Zowghi D, Coulin C. 2005

Requirements Elicitation: A Survey of Techniques, Approaches and Tools

Dieste O., Juristo N., Shull F. 2008

Understanding the Customer: What do we know about Requirements Elicitation?

Hickey A., Davis A. 2003

Elicitation Technique Selection: How Do Experts Do It?