Course: Software Requirements Engineering

Week 6: Elicitation Techniques (Part 2)

Lecturer: Yimer Amedie (MSc.)

Addis Ababa Science and Technology University

April, 2026

Contents

- Introduction
- Focus group, Prototyping
- Surveys/questionnaires
- Document, system & user interface analysis
- Technique selection
- Stakeholder engagement
- Guiding principles

Figure 1. *The software requirements*
Note. Image generated using Sora by OpenAI (2026).

Learning Outcomes

After completing this lesson, you will be able to:

- Explain advanced elicitation techniques
- Select appropriate techniques based on context
- Apply prototyping and survey design
- Analyze documents, interfaces, and UI
- Engage stakeholders using guiding principles

Introduction

Interview

For deep insights

Workshop

For collaboration

Brainstorming

For creativity

Observation

For real context

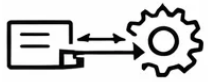
Facilitation

For guidance

Elicitation Techniques – Part II

Focus Group

Interface Analysis



System

User

Prototyping

Questionnaires (Surveys)

Document Analysis

Focus Group

Focus groups are a **qualitative** elicitation technique

- Small group discussion
- Selected stakeholders
- Moderated session
- Opinion gathering
- Structured interaction

Focus Group – Process (Execution)

- ✓ Focus group process involves several structured steps

1. Define objectives
2. Select participants
3. Prepare discussion guide
4. Conduct session
5. Analyze results

Focus Group – Advantages

- ☑ Diverse perspectives
- ☑ Interactive discussion
- ☑ Quick feedback
- ☑ Idea exploration
- ☑ User-centered insights

Figure 2. *Focus group discussion*
Note. Image generated using Sora by OpenAI (2026).

Focus Group – Challenges

Dominant participants

Groupthink risk

Scheduling issues

Moderation required

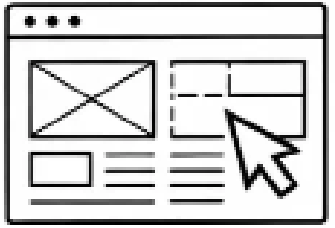
Limited depth

Focus Group – When to Use

- ✓ Early-stage exploration
- ✓ User feedback collection
- ✓ Concept validation
- ✓ Diverse stakeholder input
- ✓ Complement other techniques

Prototyping

- Prototyping is an elicitation technique that involves creating an early model or representation of the system
  - Visual representation
  - User feedback tool
  - Iterative approach
  - Reduces ambiguity

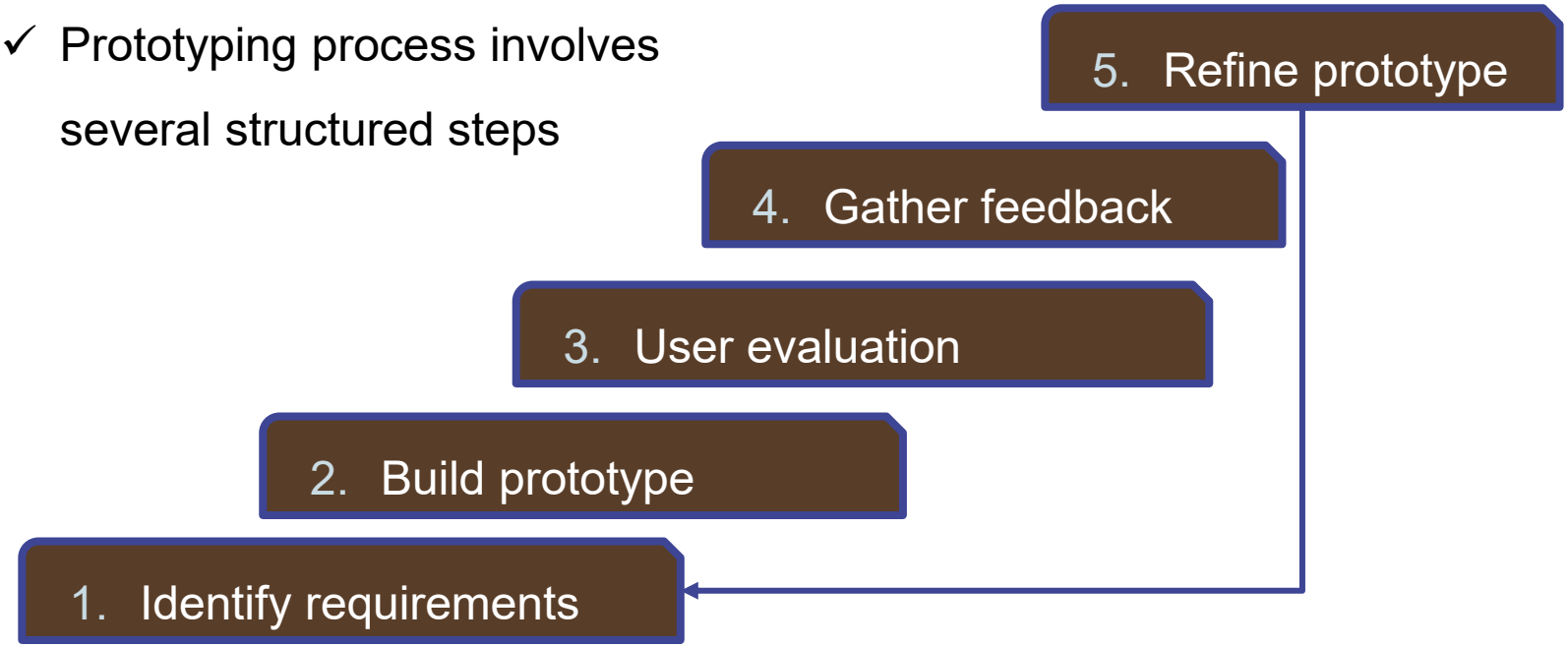


Prototyping – Types

Figure 3. *The types of prototyping in requirement elicitation*
Note. Image generated using Sora by OpenAI (2026).

Prototyping – Process (Execution)

- ✓ Prototyping process involves several structured steps



Prototyping – Advantages

- Prototyping offers several advantages in requirements elicitation.
  - ☑ Visual clarity
  - ☑ Early validation
  - ☑ User involvement
  - ☑ Reduces rework
  - ☑ Improves usability

Prototyping – Challenges

- Prototyping also has challenges that must be managed carefully
  - ≠ Time and cost
  - ≠ Misleading expectations
  - ≠ Overfocus on UI
  - ≠ Frequent changes
  - ≠ Resource intensive

Questionnaires/Surveys

- ✓ Structured data collection
- ✓ Large audience coverage
- ✓ Standardized questions
- ✓ Quantitative and qualitative data
- ✓ Remote elicitation method

Design Effective Survey

- ✓ Clear and concise questions
- ✓ Avoid ambiguity
- ✓ Logical structure
- ✓ Balanced question types
- ✓ Pilot testing

Survey – Advantages & Challenges

- ☑ Cost-effective
- ☑ Wide reach
- ☑ Fast data collection
- ☑ Easy analysis
- ☑ Standardization

- ≠ Low response rate
- ≠ Limited depth
- ≠ Misinterpretation
- ≠ No real-time clarification
- ≠ Bias in responses

Document Analysis

- ❑ Review existing documents
- ❑ Extract requirements
- ❑ Understand current system
- ❑ Identify constraints
- ❑ Support other techniques

Sources of Document

- Document analysis relies on various sources of information.
  - Business process documents
  - System manuals
  - Policies and regulations
  - Reports and records
  - Technical specifications

Document Analysis – Advantages

- ☑ No stakeholder dependency
- ☑ Historical insights
- ☑ Cost-effective
- ☑ Detailed information
- ☑ Supports validation

Document Analysis – Challenges

≠ Outdated information

≠ Incomplete documents

≠ Misinterpretation risk

≠ Time-consuming

≠ Lack of context

System Interface Analysis

- System interface analysis focuses on understanding how a system interacts with other systems (Beatty, 2013).
  - Analyze system interactions
  - Identify external systems
  - Define data exchange
  - Understand dependencies
  - Ensure integration requirements

System Interface Analysis – Execution

- ✓ Executing system interface analysis involves several steps

1. Identify interfaces
2. Analyze data flow
3. Review protocols
4. Document interactions
5. Validate with stakeholders

System Interface Analysis – Challenges

- ≠ Complexity
- ≠ Technical dependency
- ≠ Incomplete documentation
- ≠ Changing interfaces
- ≠ Coordination issues

User Interface Analysis

- User interface analysis focuses on how users interact with the system (Beatty, 2013).
  - Analyze screens and workflows
  - Improve usability
  - Identify user requirements
  - Support design decisions

User Interface Analysis – Techniques

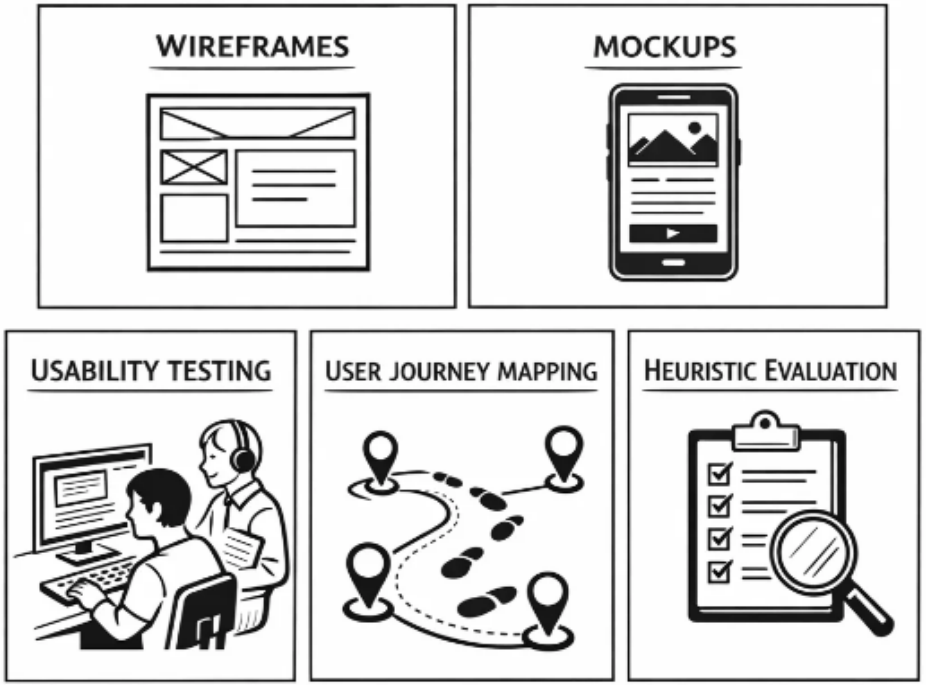


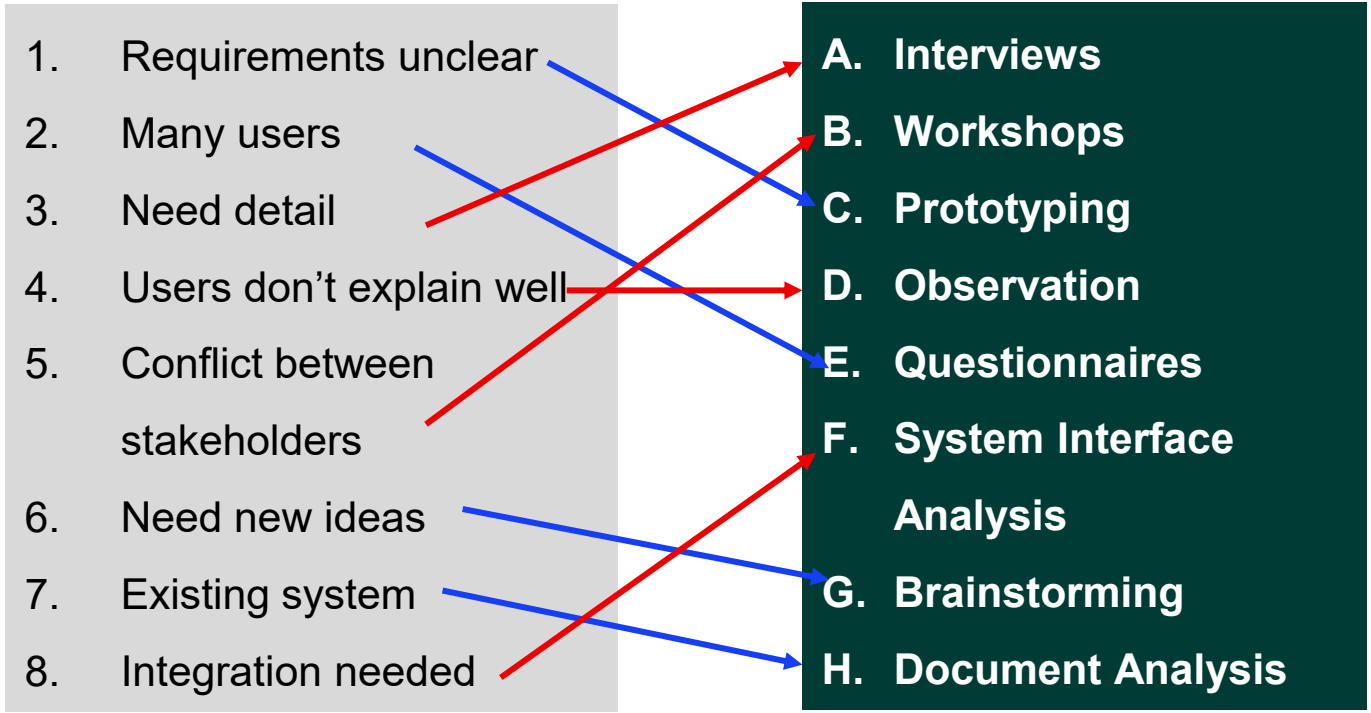
Figure 4. *UI Analysis Techniques*
Note. Image generated using Sora by OpenAI (2026).

User Interface Analysis – Challenges

- ≠ Subjective feedback
- ≠ Changing preferences
- ≠ Time-consuming
- ≠ Requires user involvement
- ≠ Design complexity

Elicitation Techniques – Activity

Match – When to Use What



Technique Selection … (1/2)









- ✓ Based on project context
- ✓ Stakeholder availability
- ✓ Requirement complexity
- ✓ Time and cost constraints
- ✓ Combination of techniques

Technique Selection … (2/2)

Project Characteristic	Recommended Techniques
New application	Interviews, workshops, system interface analysis
Replacement project	Observations, document analysis, UI analysis
Mass-market software	Focus groups, questionnaires
Complex domain	Observations, interviews with experts
Distributed users	Questionnaires, virtual workshops
Tight schedule	Workshops (efficient group sessions)

Criteria for Selection

- Several criteria guide the selection of elicitation techniques.
  - ☑ Objective of elicitation
  - ☑ Stakeholder type
  - ☑ Data type needed
  - ☑ Project phase
  - ☑ Resource availability

Stakeholder Engagement

- ✓ Active participation
- ✓ Clear communication
- ✓ Trust building
- ✓ Continuous involvement
- ✓ Feedback mechanisms

Example: Identify engagement techniques for online learning system.

- ✓ **Students** ➔ Surveys + Focus Groups
- ✓ **Instructors** ➔ Workshops + Interviews
- ✓ **Admin** ➔ Document Analysis + Interviews
- ✓ **IT Team** ➔ Interface Analysis + Workshops

Guiding Principles … (1/2)

General

- ✓ Understand before documenting
- ✓ Focus on stakeholder value
- ✓ Use multiple techniques
- ✓ Adapt to context
- ✓ Ensure continuous validation

Communication & Collaboration

- ✓ Active listening
- ✓ Clear and simple language
- ✓ Encourage participation
- ✓ Manage conflicts constructively
- ✓ Build trust with stakeholders

Guiding Principles … (2/2)

Quality & Analysis

- ✓ Seek completeness and clarity
- ✓ Avoid assumptions
- ✓ Validate with evidence
- ✓ Document consistently
- ✓ Trace requirements

Ethical & Practical

- ✓ Respect stakeholder time
- ✓ Ensure confidentiality
- ✓ Be unbiased
- ✓ Stay objective
- ✓ Continuously improve techniques

Linking Techniques to Stages

DISCOVERY	EXPLORATION	ORGANIZATION	VALIDATION	MANAGEMENT
Interviews	Brainstorming	Workshops	Prototyping	Facilitation
Observation	Workshops	Document Analysis	Surveys	Interface Analysis
Brainstorming	Prototyping		Observation	Continuous Engagement
Focus Groups				

Summary

- ✓ Advanced techniques: Focus Groups, Prototyping, Surveys, Document & Interface
- ✓ Analysis Techniques support large-scale, complex, and distributed environments
- ✓ Prototyping and UI analysis improve requirement clarity and usability
- ✓ Technique selection depends on context, stakeholders, and objectives
- ✓ Stakeholder engagement and guiding principles ensure effective elicitation

References

1. Beatty, K. W. (2013). Software Requirements (3rd ed.). Washington: Microsoft Press.

Thank You!