

Course: Software Requirements Engineering

Week 3: Requirements Elicitation Foundations

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Contents



- Introduction
- Elicitation fundamentals
- Stakeholder analysis
- Preparation strategies
- Objectives
- Understanding system context

Figure 1. *The software requirements*

Note. Image generated using Sora by OpenAI (2026).

Learning Outcomes

After completing this lesson, you will be able to:

- Define requirements elicitation
- Identify and categorize stakeholders
- Prepare effectively for elicitation sessions
- Define clear elicitation objectives
- Analyze and describe the system context

Introduction ... (1/2)

In practice, requirements
are rarely

- ✓ Fully known at the start
- ✓ Clearly stated by stakeholders

Common
challenges include

- Stakeholders have implicit or unclear needs
- Communication gaps between users and developers
- Conflicting requirements from different stakeholders
- Changing business environments

Introduction ... (2/2)

Without a proper approach:

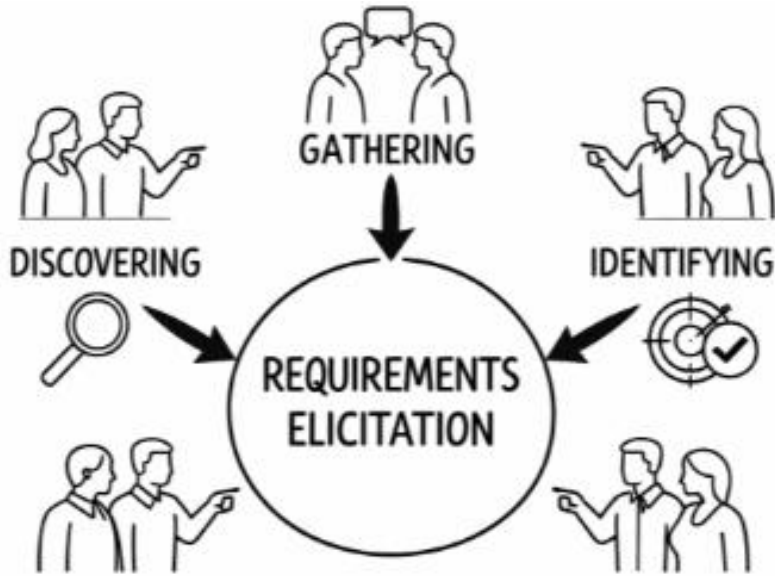
- Projects risk **failure**, **rework**, or **cost overruns**

Therefore, we need a **systematic process**

- to **uncover** true requirements.

This systematic process is known as
Requirement Elicitation

Overview of Elicitation



- ✓ The process of **discovering**, **gathering**, and **identifying** the needs and expectations of stakeholders for a software system (Chemuturi, 2013)

Elicitation transforms *ideas and expectations* into **clear, usable requirements**

Figure 2. Concept of requirement elicitation

Note. Image generated using Sora by OpenAI (2026).

Overview of Elicitation ... (2/4)

Requirement Elicitation

Involves **communication with stakeholders** to understand:

- ✓ What the system should do
- ✓ How the system should behave
- ✓ The constraints under which the system operates

Is elicitation means **simply asking users what they want?**

It requires **investigation, analysis, and clarification** because stakeholders often:

- Do not clearly know their needs
- Cannot express requirements clearly
- Have conflicting requirements

Overview of Elicitation ... (3/4)

Elicitation Vs Gathering

Elicitation	Gathering
Active, collaborative process	Passive collection
Involves discovery and analysis	Simply collecting stated needs
Requires probing beneath the surface	Accepting surface-level input
Iterative and ongoing	Often one-time event

Overview of Elicitation ... (4/4)

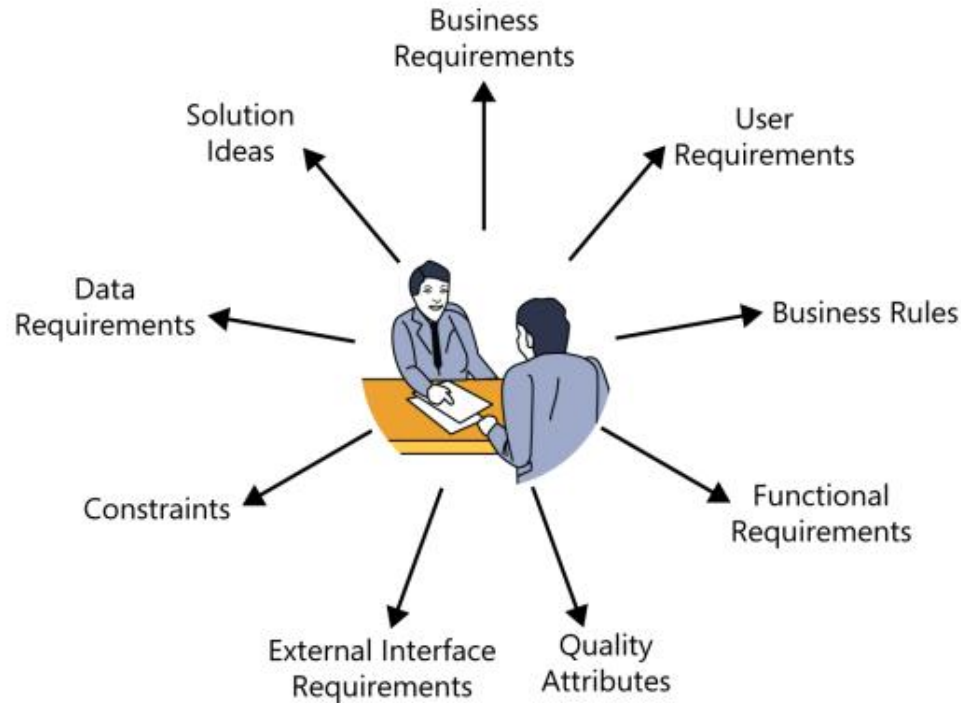


Figure 3. *Classifying customer input (source: Beatty, 2013)*

Elicitation – Key Importance ... (1/2)

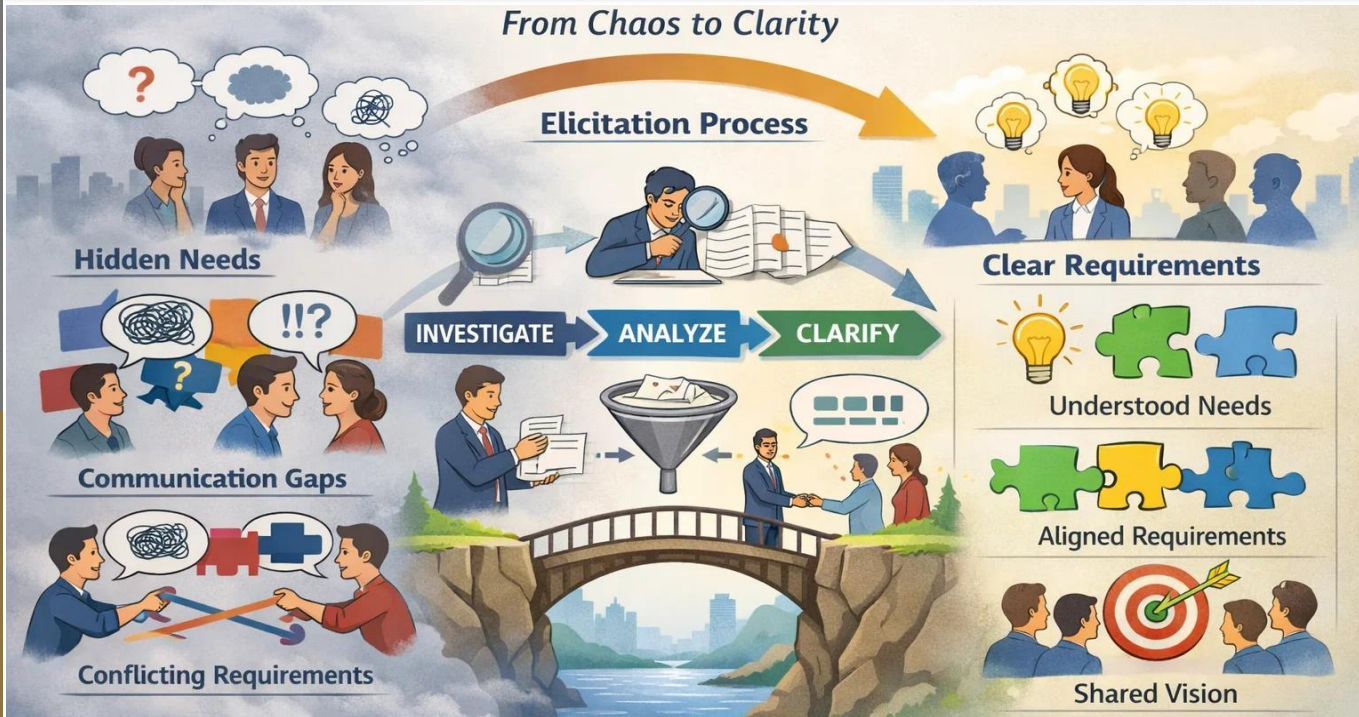


Figure 4. Elicitation process – from chaos to clarity

Note. Image generated using Sora by OpenAI (2026).

Elicitation – Key Importance ... (2/2)



Prevents project failure

- ✓ Clear requirements reduce misunderstandings and major risks



Reduces rework

- ✓ Early accuracy avoids costly changes later



Improves quality

- ✓ Better requirements lead to better solutions

Requirements Elicitation – Activities

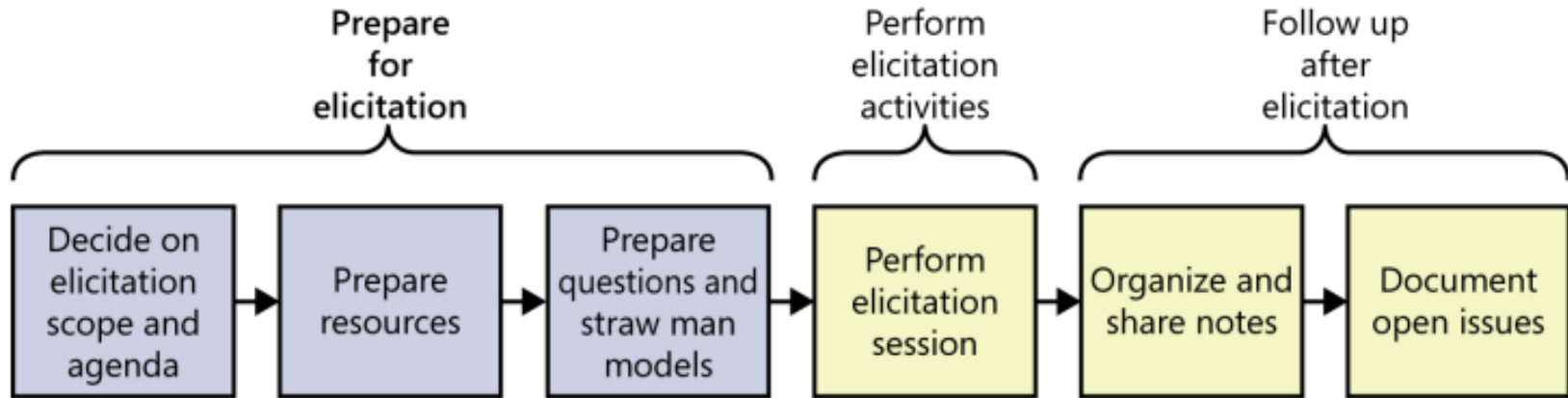


Figure 5. *Activities for a single requirements elicitation session*
(Source: Beatty, 2013)

Requirements Elicitation – Preparation

Why preparation is Necessary?

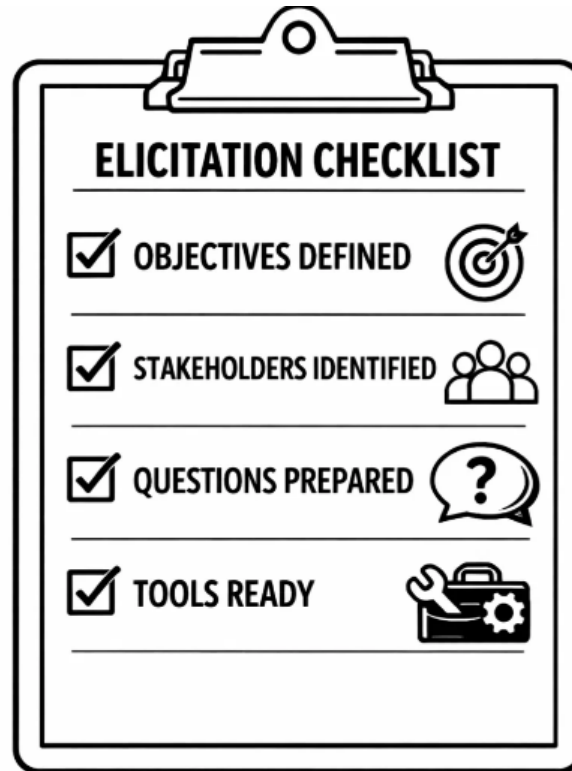
- ✓ Ensures structured sessions
- ✓ Saves time
- ✓ Improves quality

Preparation Activities

- ✓ Define scope
- ✓ Identify stakeholders
- ✓ Select techniques
- ✓ Schedule sessions

Elicitation – Checklist

- ✓ During the preparation phase, checklist is a tool that helps ensure nothing important is missed before conducting a session.



Objectives of Requirements Elicitation

The main objectives are:

- ✓ Identify stakeholders
- ✓ Understand the problem domain
- ✓ Discover FRs and NFRs
- ✓ Understand business rules
- ✓ Identify constraints
- ✓ Identify assumptions

Defining Objectives

Why Objectives Matter?

Clear objectives ensure:

- ✓ Focused discussions
- ✓ Efficient sessions
- ✓ Relevant requirements

Types of Objectives

- ✓ Business objectives
- ✓ User objectives
- ✓ System objectives

Example

- ✓ Understand how customers apply for loans
- ✓ Identify pain points in current system

Defining Objectives – Activity

Scenario: A university is developing a digital course registration system. Students complain about delays, while administrators want better reporting.

➤ Define 3 elicitation objectives

Objectives:

- ✓ Understand workflow
- ✓ Identify issues
- ✓ Define features

Stakeholders in Requirements Elicitation



End Users



Customers



Business Managers



System Administrators



Developers



Regulators



Partners

Anyone who:

- ✓ Uses the system
- ✓ Is affected by the system
- ✓ Influences the system development

Individuals or groups, Affect or are affected

Stakeholders – Types

- ✓ **Primary:** Directly use the system.
Examples: End users, Customers, Operators
- ✓ **Secondary:** They support or maintain the system but may not use it daily.
Examples: System administrators, Maintenance teams, IT support staff
- ✓ **External:** People or organizations outside the company but affected by the system.
Example: Government regulators, Suppliers, Business partners

Stakeholders – Types: Example

Assume a University Registration System

List and describe

- Primary, Secondary, and External stakeholders
- ✓ **Primary stakeholders** include **students** and **lecturers** who directly use the system.
- ✓ **Secondary stakeholders** include **IT staff** and **system administrators** who maintain the system.
- ✓ **External stakeholders** include **government education authorities** that require academic reports.

Stakeholders – Identification Techniques



Brainstorming



Interviews



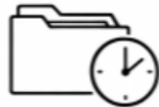
Organizational charts



Document analysis



Expert consultation

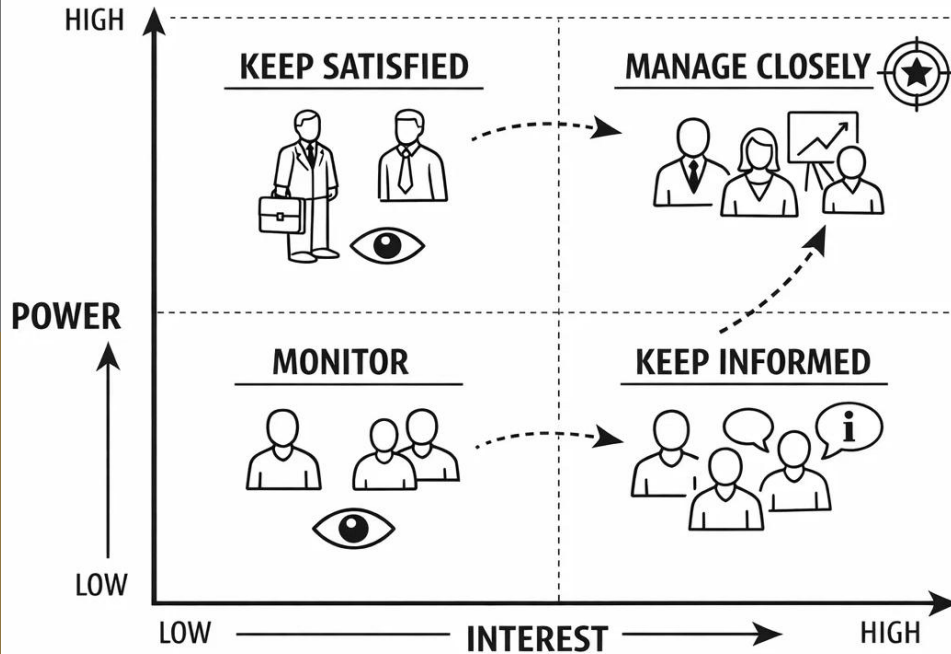


Previous project records

Stakeholders – Identification steps

- 1. Understand the System**
 - Know:**
 - ✓ The system purpose
 - ✓ The environment where it will be used
- 2. Brainstorm Possible Stakeholders**
 - Ask questions like:**
 - ✓ Who will use the system?
 - ✓ Who will maintain it?
 - ✓ Who will pay for it?
 - ✓ Who will be affected by it?
- 3. Group Stakeholders**
 - Organize them into categories:**
 - ✓ Users, Managers, Technical staff, External parties
- 4. Analyze Stakeholder Influence**
 - Check:**
 - ✓ Their **power**, **interest**, and **impact** on the project

Stakeholders – Power-Interest Grid



The **Power-Interest Grid** is a stakeholder analysis **tool** used to

- ✓ **classify** stakeholders based on their **level of power and interest** in a project,
- ✓ helping project managers decide how to **manage** and **communicate** with them.

Stakeholders – Power-Interest Grid: Example

Example: Online Shopping System

Stakeholder	Power	Interest	Category
CEO	High	High	Manage Closely
Customers	Low	High	Keep Informed
Government tax authority	High	Low	Keep Satisfied
Office staff not using system	Low	Low	Monitor

Advantages

- ✓ Helps **prioritize stakeholders**
- ✓ Improves **communication planning**
- ✓ Reduces **conflicts**
- ✓ Ensures **important stakeholders are not ignored**

Activity: Library Management system Project

1. Identify and categorize Stakeholders

Stakeholder	Type	Description
Example: Student	Primary	Uses the system to access materials

2. Analyze the stakeholders

Stakeholder	Interest	Influence	Expectation
Librarian	High	Medium	Easy book management

- ✓ **Interest:** How much the stakeholder cares about the system
- ✓ **Influence (Power):** Ability to affect project decisions
- ✓ **Expectations:** What they want from the system

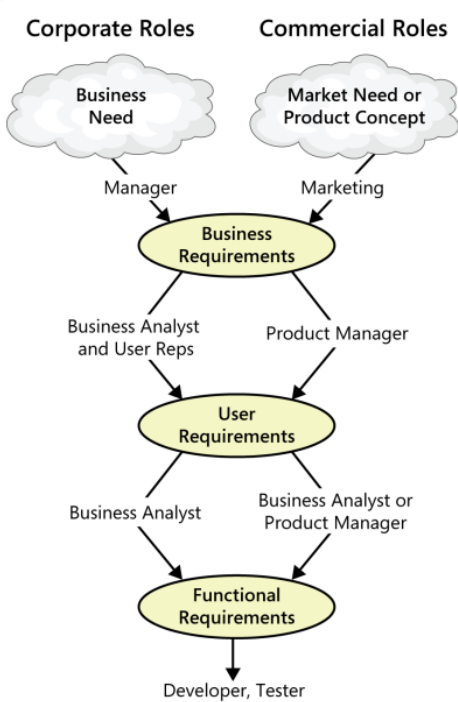
Stakeholders – Roles & Challenges

Stakeholder	Role
End Users	Use the system
Customers	Pay for the system
Business Managers	Define business goals
System Administrators	Maintain the system
Developers	Build the system
Regulators	Ensure legal compliance

Challenges:

- Availability issues
- Lack of interest
- Conflicts

Working with the three levels



- ✓ **Product manager** define what features to include in the new product.
- ✓ User requirements & features must align with business requirements
- ✓ **Developers** design solutions based on FRs & NFRs
- ✓ **Testers** determine how to verify whether the requirements were correctly implemented
- ✓ BAs must use good judgment on the **appropriate level of documentation detail**

Figure 6. An example of how different stakeholders participate in requirements development (source: Beatty, 2013)

Understanding Context

✓ Context refers to the environment in which the system operates.

✓ **Requirements need to be framed in a context.**

Elements

- ✓ Organizational structure
- ✓ Business processes
- ✓ External systems
- ✓ Regulations
- ✓ Technology constraints

Why Context is Important?

- ✓ Prevents missing requirements
- ✓ Helps define system boundaries
- ✓ Improves system integration

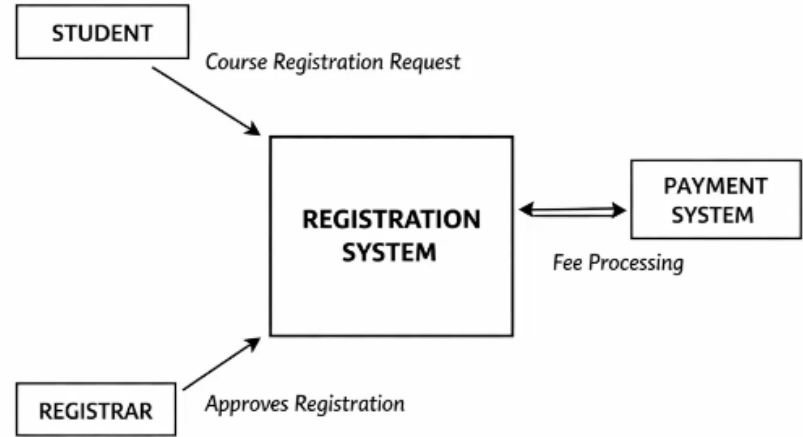
Context Diagram

- Provides a simple, high-level visualization of a system and its interactions with external entities.
 - ✓ Shows high-level view of the system Identifies
 - ✓ external entities (users, systems, organizations)
 - ✓ Illustrates data flow between system and actors
 - ✓ Used in early requirements elicitation

Context Diagram – Example

Consider University Registration System, and draw the context diagram.

- **External Entities:** Student, Registrar, Payment System
- **System:** Registration System
- **Interactions:**
 - ✓ **Student** → Course Registration Request
 - ✓ **System** → Payment System (fee processing)
 - ✓ **Registrar** → Approves registration



Context Diagram – Risks

- Context diagrams are powerful but can introduce risks if not developed carefully.
 - ≠ **Missing external entities** → **incomplete requirements**
 - ≠ **Incorrect system boundary** → **scope issues**
 - ≠ **Ignoring data flows** → **integration failures**
 - ≠ **Over-simplification** → **hidden dependencies**
 - ≠ **Lack of validation** → **stakeholder misalignment**

Context Diagram – Risks – example

University Registration System Risks

- ≠ **Missing Payment System → fees not handled**
- ≠ **Ignoring Ministry/Regulator → compliance issues**
- ≠ **Wrong boundary → includes/excludes grading system incorrectly**
- ≠ **Missing data flow → no approval process from registrar**

Context Diagram – Activity

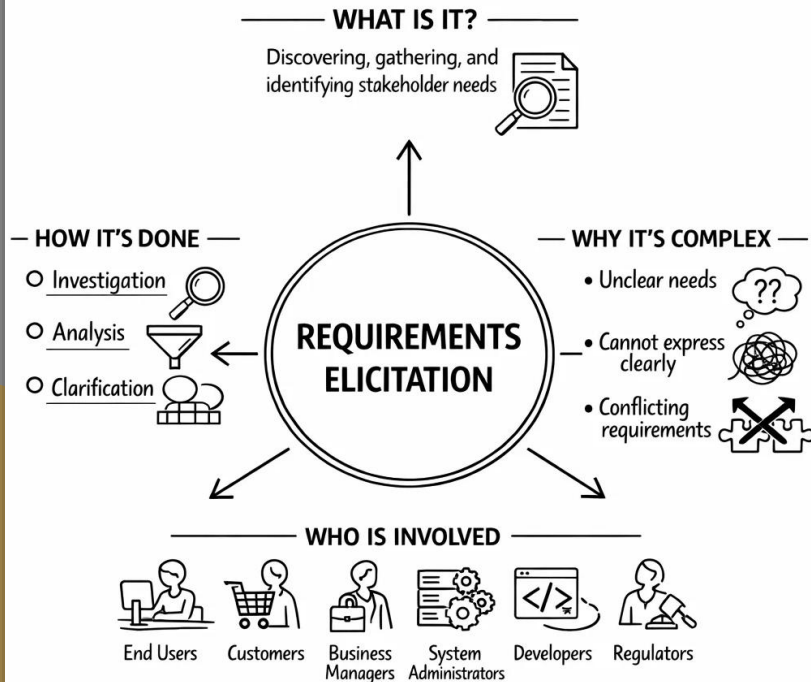
Assume A banking system must integrate with external regulatory systems.

1. Explain the importance of context
2. Identify possible risks if context is ignored

Answers:

1. **Context** ensures compliance and integration
2. **Risks**: system failure, legal issues, missing requirements

Summary



- ✓ Elicitation is about understanding real needs
- ✓ Stakeholder analysis ensures right people are involved
- ✓ Preparation improves efficiency
- ✓ Objectives guide the process
- ✓ Context defines system boundaries

Figure 7. Requirement elicitation: the what, why, how and who
Note. Image generated using Sora by OpenAI (2026).

References

1. Beatty, K. W. (2013). Software Requirements (3rd ed.). Washington: Microsoft Press.
2. Chemuturi, M. (2013). Requirements Engineering and Management for Software Development Projects. New York Heidelberg Dordrecht London: Springer. doi:10.1007/978-1-4614-5377-2

Thank You!

