

SENG321: Requirements Engineering

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Outline

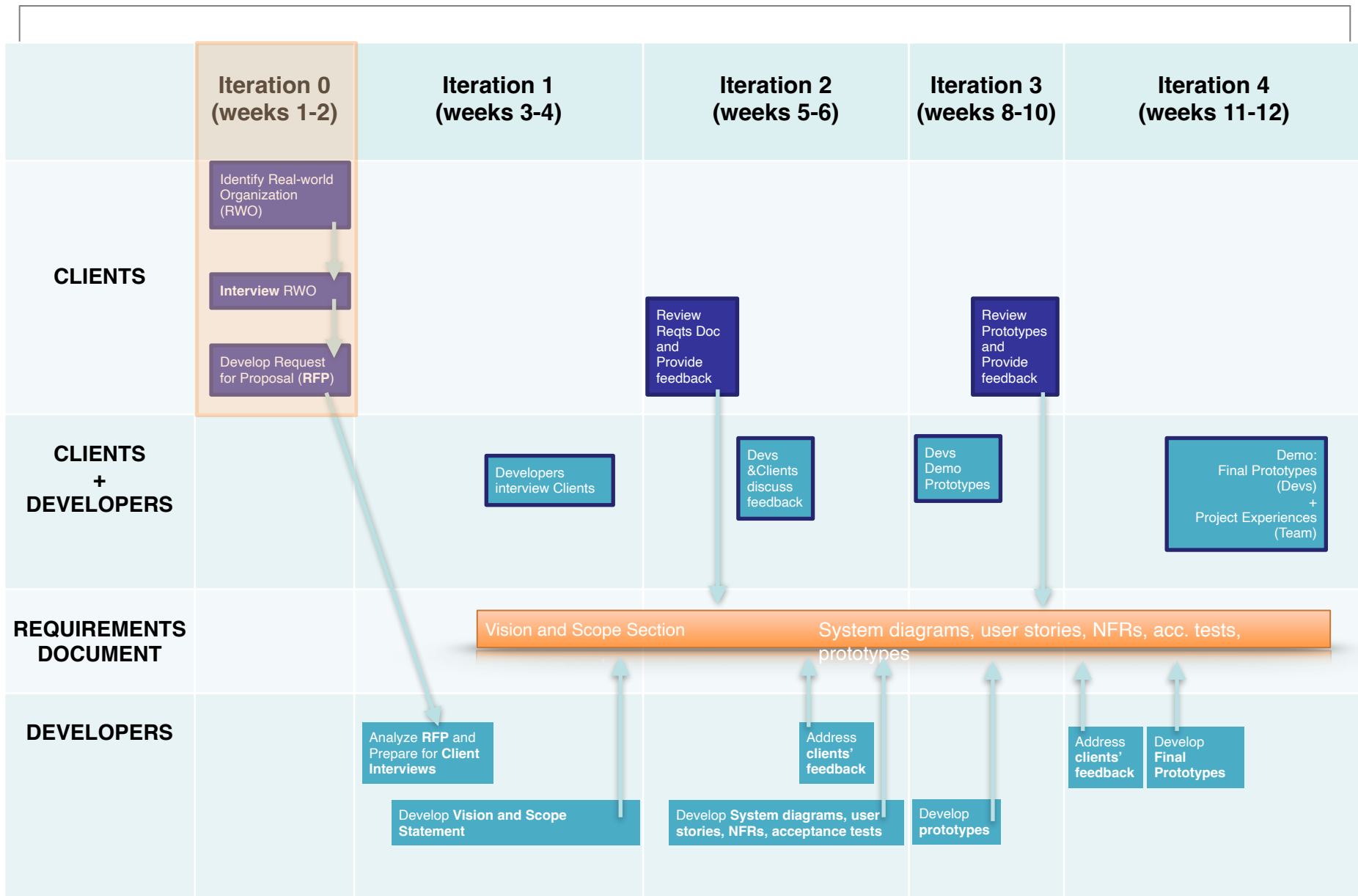
Brief Projects update

Requirements Elicitation I – interviews

Techniques, advantages and disadvantages

Defining Business Requirements

The Vision and Scope Document



Reqs Elicitation: Goals and Info to gather

Identify the business need and objectives

Identify the product's expected user classes and other stakeholders

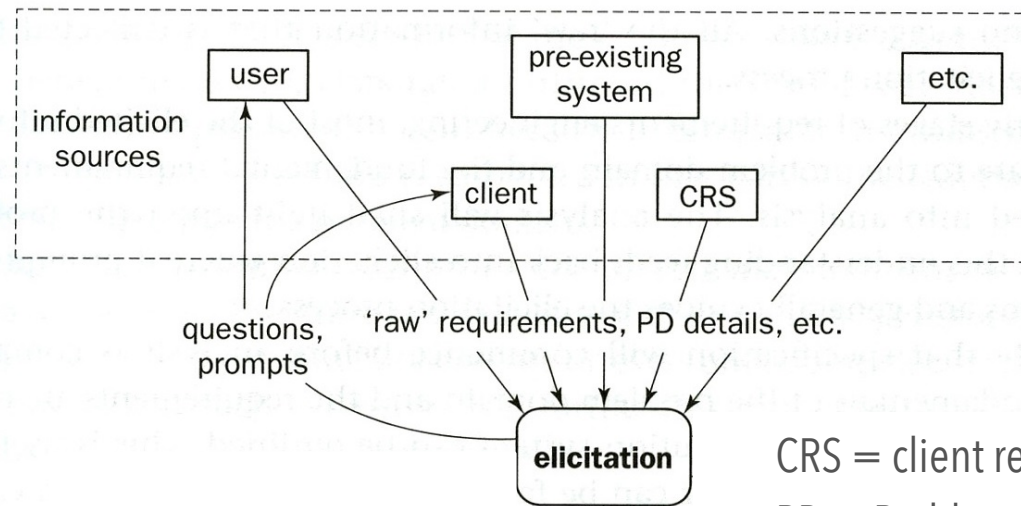
Understand user tasks and goals, business objectives

Learn about the environment in which the new product will be used

Reqs Elicitation

From what sources can this info be gathered?

By which mechanisms or techniques it may be gathered?



CRS = client requirements specification

PD = Problem Description

Requirements elicitation

One of the very difficult activities in RE

Gathering information from stakeholders is hard

- Availability of stakeholders

- Bias in communicating requirements

- Conflictual situations among stakeholders

- Tacit/situated knowledge

An Overview — Main Elicitation techniques

Background reading/inspection of documents

Interviews (open ended or structured)

Questionnaires

Observations

Group techniques (JAD, Participatory design, focus groups)

Contextual Design

Newer methods:

Data mining (DM) techniques in eliciting from large groups

DM for requirements discovery **at runtime**

Elicitation *at design time*

Define major service areas for the client – e.g. retail sales, inventory management, billing, advertising, etc.

Define areas where there is a need for automation/improvement

Are there manual processes that could be automated?

Are there any system processes with manual or system workarounds?

Are there any processes that are duplicated in whole or part by multiple people/roles?

Identify the goals and objectives for the service/organization

Identify assumptions and constraints

Understand the business and its operations *as_is*

Discovering requirements *at runtime* in unpredictable environments

Worked with a team of 4 rowers
Crossing the Atlantic Ocean

Data mining techniques to
discover patterns in usage and
context



→ emerging contextual requirements

Elicitation techniques

Interviews

Most widely used technique in requirements engineering

Analysts interview future users of the system individually to find out
what the present system does and
what changes are needed

The information gathered during the interviews allows for a design that eliminates the shortcomings of the current one.

Elicitation techniques

Interviews

Advantages

- Access to individual stakeholders and their opinions
- Rich collection of information
- Ability to adapt questions to particular situations



Disadvantages

- Information from multiple sources, hard to analyze
- Difficult to be a skilled interviewer
- May intimidate the interviewee

Best practices for Interviews

- Establish report
- Stay in scope
- Prepare questions ahead of time
- Listen actively

Elicitation techniques

Interviews

Five steps of an interview:

Preparing for the interview

Planning and scheduling the interview

Opening and closing the interview

Conducting the interview

Following up for clarification

Types of interviews:

- structured
- unstructured

Supporting material in Github [Lectures/LectureNotes/interviewingtips.md](#)

Elicitation techniques

Structured Interviews

Advantages

1. Forces an **organization** on the interview
2. Very **goal-directed**
3. Attempts to **remove distortion** from interviewees subjectively
4. Allows better **integration** of material after the interview
5. Forces the interviewee to be **systematic**
6. Requirements engineer **identifies gaps** in the knowledge which acts as a basis for questions
7. **Purpose** of session is clear to interviewee

Disadvantages

1. Needs **more preparation** by the requirements engineer
2. Needs to **study background** material extensively
3. May **overconstrain the interviewee**, preventing discovery of requirements
4. May **intimidate** the interviewee

Elicitation techniques

Unstructured Interviews

Advantages

1. Appropriate when the RE wants to **explore** an issue
2. Facilitates description of domain in a way that is **easy for the interviewee**
3. **Goal** is to establish rapport and to get a broad view

Disadvantages

1. Data acquired is often **unrelated and difficult** to integrate
2. Often exhibits **lack of structure**
3. Does not allow gathering of **specific knowledge**
4. Takes time and **training** to do well
5. **Similar questions** asked in future sessions may annoy interviewee

Elicitation techniques

In the world of big data (to be cont'd)

Online reviews, user forums everywhere

Ongoing monitoring of customer satisfaction and suggestions → ideas for new features

Dedicated roles: community manager, customer success manager → inform user stories, new features for development

Machine learning or other natural language text processing techniques to focus improvement

Establishing the Business requirements

"a set of information that, in the aggregate, describes a need that leads to one or more projects to deliver a solution and the desired ultimate business outcomes"

Functionality should not be built unless it relates to Business Requirements

Define and quantify* Business Objectives (should illustrate

* using Success Metrics, as in this Table

TABLE 5-1 Examples of financial and nonfinancial business objectives

Financial	Nonfinancial
<ul style="list-style-type: none">■ Capture a market share of X% within Y months.■ Increase market share in country W from X% to Y% within Z months.■ Reach a sales volume of X units or revenue of \$Y within Z months.■ Achieve X% return on investment within Y months.■ Achieve positive cash flow on this product within Y months.■ Save \$X per year currently spent on a high-maintenance legacy system.■ Reduce monthly support costs from \$X to \$Y within Z months.■ Increase gross margin on existing business from X% to Y% within 1 year.	<ul style="list-style-type: none">■ Achieve a customer satisfaction measure of at least X within Y months of release.■ Increase transaction-processing productivity by X% and reduce data error rate to no more than Y%.■ Develop an extensible platform for a family of related products.■ Develop specific core technology competencies.■ Be rated as the top product for reliability in published product reviews by a specified date.■ Comply with specific federal and state regulations.■ Receive no more than X service calls per unit and Y warranty calls per unit within Z months after shipping.■ Reduce turnaround time to X hours on Y% of support calls.

Analyst Questions

Executive Responses

What motivates your interest in a chemical tracking system?

Managing chemical inventories manually costs too much and is inefficient.

How much would you like to reduce your chemical expenses?

By 25% within one year.

What is keeping you from cutting by 25% today?
What is causing the high cost and inefficiency?

We buy unnecessary chemicals because we don't know what we have in inventory. We discard too much unused material that has expired.

Anything else I should know?

Placing orders is complicated; it takes users a long time. The government reports we create are manually generated, which takes far too much time.

FIGURE 5-4 Example of a conversation between a business analyst and an executive sponsor.

Business requirements might conflict

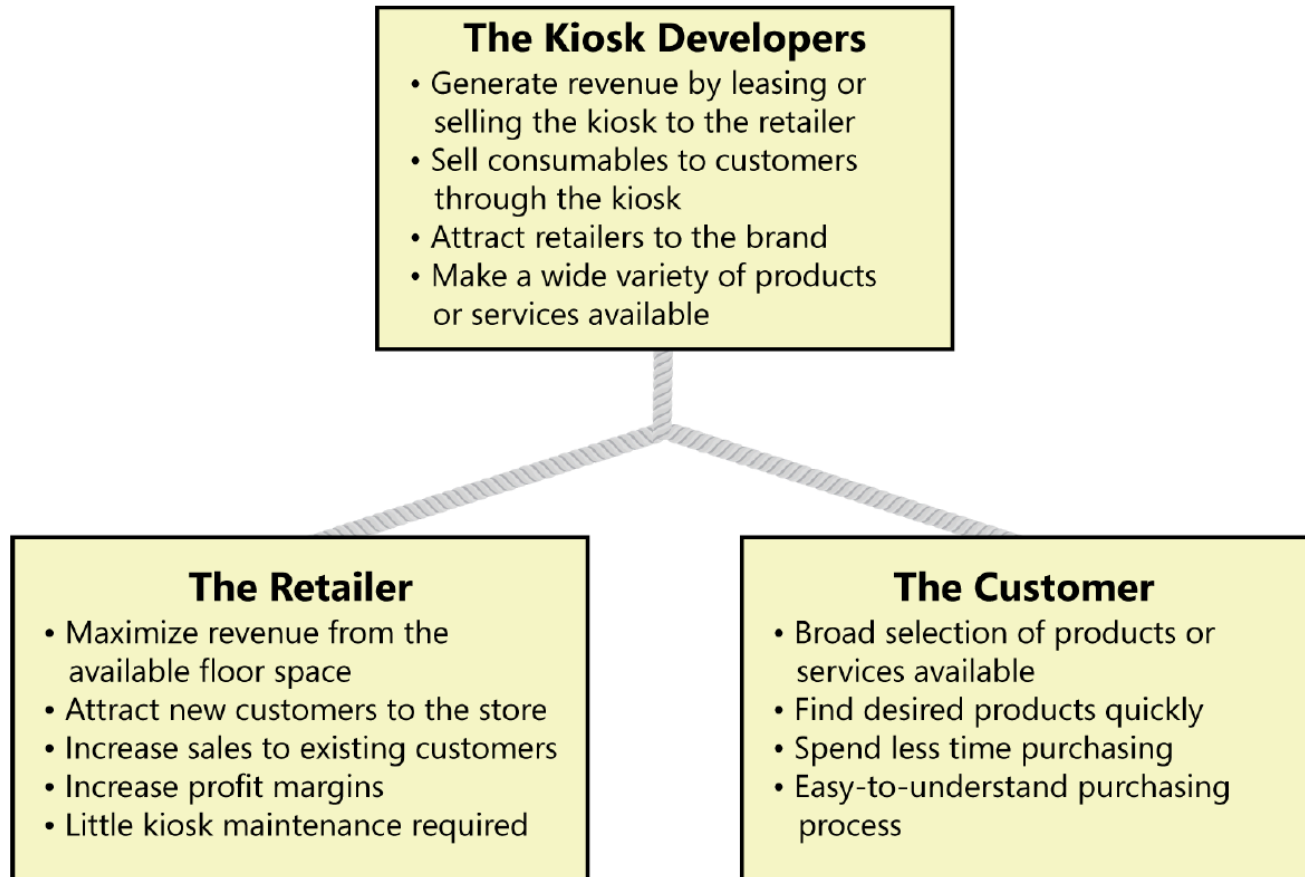
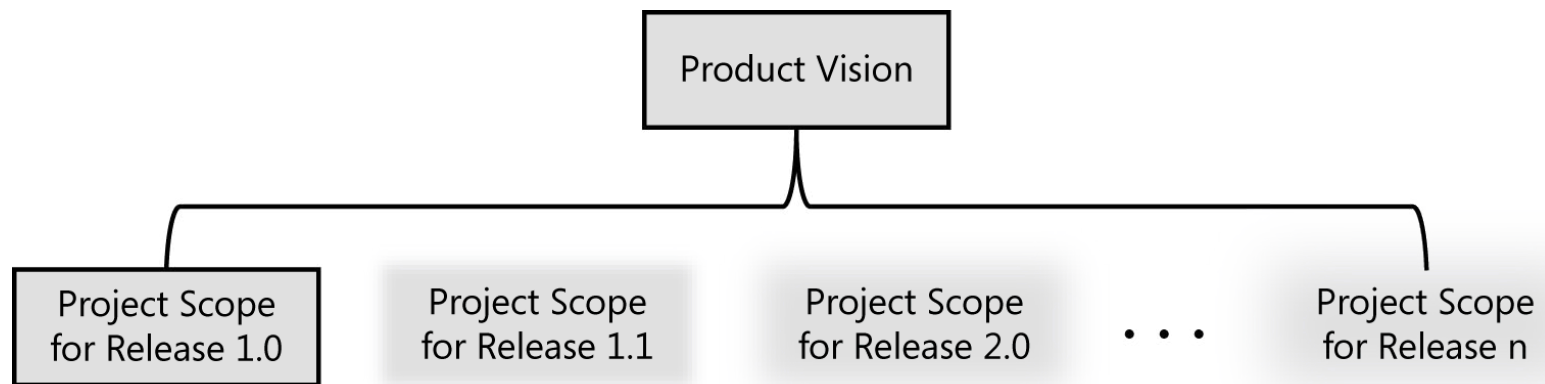


FIGURE 5-2 Stakeholders for a kiosk don't always have congruent business interests.

Product Vision and Project Scope

Product Vision describes the product that will help the organization achieve its Business Objectives

Product vision defines the Product/Project Roadmap



Product Vision and Project Scope

Define **Major Features**

- Questions to answer to *define the scope*:
 - which user capabilities are needed?
 - do they help accomplish the business objectives?
 - what are their priorities and constraints (financial, deployment, time-to-market)?

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The Vision and Scope Document

It is **the first Developer team Deliverable**

Template suggested in the Textbook (Appendix C).

In our Project relevant sections are included in the **Requirements Document** template (GH Project space)

It contains the **Business Requirements, Product Vision** and **Project Scope**