

CS3213: Foundations of Software Engineering

In-class Lecture and Exercises

Hack&Roll 2026

The screenshot shows the homepage of the Hack&Roll 2026 website. The page has a parchment-like background with a wavy edge. At the top, there is a navigation bar with links: About, Past Projects, Prizes, FAQs, Sponsors, Judges, and Organisers. To the right of the navigation bar is a banner that says "Organised by" followed by the logo for "nushackers". In the center of the page is a graphic featuring three dice (an orange 20-sided die showing 20, a blue triangular die showing 2, and a red six-sided die showing 5) arranged above a banner that reads "HACK & ROLL". Below this graphic, the text "24 hours to build what you want." is displayed in a large, stylized font. Underneath this text, smaller text reads: "No problem statements, no theme. What will you build?". At the bottom of the page is a "Sign In" button.

About Past Projects Prizes FAQs Sponsors Judges Organisers

Organised by nushackers

HACK &

ROLL

**24 hours to build
what you want.**

No problem statements, no theme.
What will you build?

Sign In

Bioblitz



NUS CS3213 2025
Jan 12, 2026 - Apr 5, 2026

Edit Project Project Journal

16 OBSERVATIONS 13 SPECIES 9 IDENTIFIERS 1 OBSERVER Stats

Recent Observations View All

Anoplodesmus saussurii 2 15 hours ago Lowland Slender Squirrel Sundasciurus tenuis 1 15 hours ago Cyclosia sordidus RG 2 17 hours ago Branded Imperial Eooxylides tharis 3 16 hours ago

Most Observations 1st mtrigger 16 View All View Yours

Most Species 1st mtrigger 11 View All View Yours

Most Observed Species Sunda Colugo 2 Anoplodesmus saussurii 2 Genus Sarika 2

<https://www.inaturalist.org/projects/nus-cs3213-2025>

Bioblitz



<https://www.inaturalist.org/projects/nus-cs3213-2025>

Bioblitz

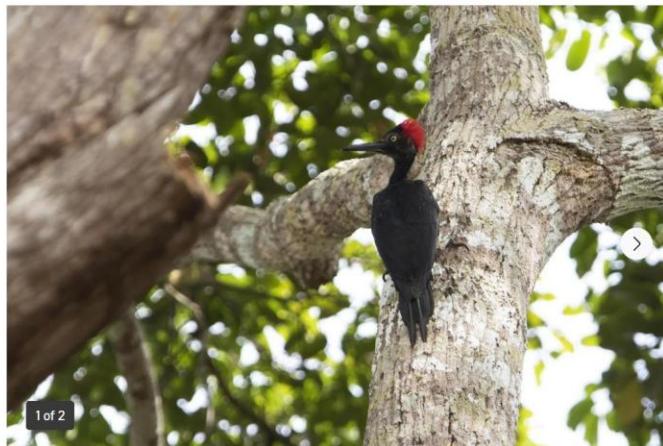
THE STRAITS TIMES

Singapore lost nearly 40% of its biodiversity in past 200 years, not as much as was believed: Study



Singapore lost nearly 40% of its biodiversity in past 200 years, not as much as was believed: Study

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A white-bellied woodpecker in Peninsular Malaysia in 2018. The massive bird requires expansive forests and represents one of Singapore's recent extinctions.

PHOTO: SIN YONG CHEE KEITA

Agenda

- Short recap
- Challenges of Requirements Engineering
- Naming the Pain in Requirements Engineering
- Requirements elicitation techniques: case studies
- Developing an interviewing guide
- Developing a questionnaire

REQUIREMENTS ENGINEERING



Requirements Elicitation Techniques

Interviews

Document Analysis

Workshops

Personas

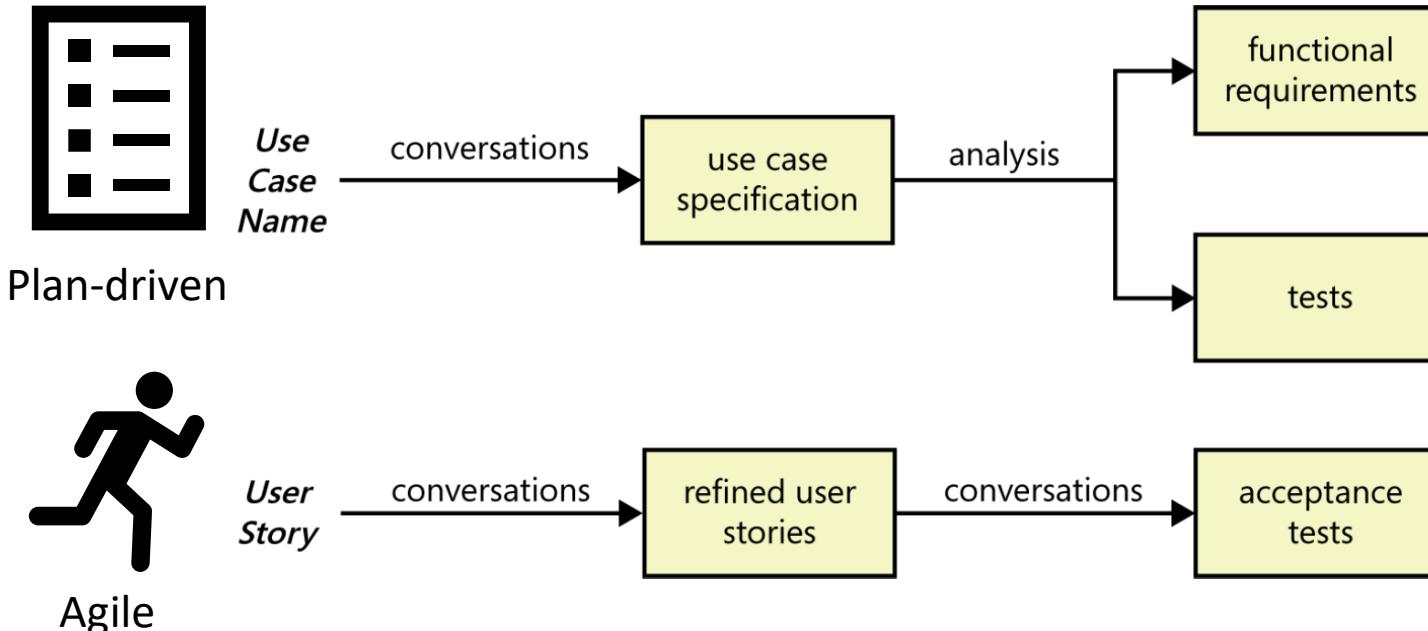
Prototyping

Focus Groups

Questionnaires/Surveys

Observation/Ethnography

Use Cases and User Stories



SRS Template

1. Introduction

- 1.1 Purpose
- 1.2 Document conventions
- 1.3 Project scope
- 1.4 References

2. Overall description

- 2.1 Product perspective
- 2.2 User classes and characteristics
- 2.3 Operating environment
- 2.4 Design and implementation constraints
- 2.5 Assumptions and dependencies

3. System features

- 3.x System feature X
 - 3.x.1 Description
 - 3.x.2 Functional requirements

4. Data requirements

- 4.1 Logical data model
- 4.2 Data dictionary
- 4.3 Reports
- 4.4 Data acquisition, integrity, retention, and disposal

5. External interface requirements

- 5.1 User interfaces
- 5.2 Software interfaces
- 5.3 Hardware interfaces
- 5.4 Communications interfaces

6. Quality attributes

- 6.1 Usability
- 6.2 Performance
- 6.3 Security
- 6.4 Safety
- 6.x [others]

7. Internationalization and localization requirements

8. Other requirements

Appendix A: Glossary

Appendix B: Analysis models

Assignment 2: SRS Group Assignment

Assignment 2: Requirements Specification

CS3213 Foundations of Software Engineering (AY25/26 Sem 2)

Submission Deadline: Mon 10/02/2025, 11:59 pm

-
- You must strictly comply with the noted deadline. No late submissions!
 - This is a **group** assignment. Acts of plagiarism are subjected to disciplinary action by the university. Please refer to <https://www.nus.edu.sg/celc/statements-and-e-resources-on-plagiarism/> for details on plagiarism and its associated penalties. *Note: it is sufficient if one member per group submits the assignment. One member may re-submit an updated version if needed.*
 - We urge you not to use AI tools for this assignment to maximize your learning outcomes. You may only use them to help polish your writing, but if you do, and we notice errors that might indicate hallucinations by a Large Language Model, you might get penalized more heavily.
 - Please use appropriate tools to create your solutions (e.g., LibreOffice/Word/LaTeX for textual submissions, or draw.io for graphical solutions). Handwritten solutions are accepted only in exceptional cases and if they are very legible.
 - Please submit this PDF document via Canvas. In case of any discrepancies regarding the submission date, the date given in Canvas will count.
 - There are **5 marks** to be scored for this assignment sheet. The worst score for any assignment sheet is 0 marks.
-

Completeness

- Do the requirements address all known customer or system needs?
- Is any needed information missing? If so, is it identified as TBD?
- Have algorithms intrinsic to the functional requirements been defined?
- Are all external hardware, software, and communication interfaces defined?
- Is the expected behavior documented for all anticipated error conditions?
- Do the requirements provide an adequate basis for design and test?
- Is the implementation priority of each requirement included?
- Is each requirement in scope for the project, release, or iteration?

Correctness

- Do any requirements conflict with or duplicate other requirements?
- Is each requirement written in clear, concise, unambiguous, grammatically correct language?
- Is each requirement verifiable by testing, demonstration, review, or analysis?
- Are any specified error messages clear and meaningful?
- Are all requirements actually requirements, not solutions or constraints?
- Are the requirements technically feasible and implementable within known constraints?

Quality Attributes

- Are all usability, performance, security, and safety objectives properly specified?
- Are other quality attributes documented and quantified, with the acceptable trade-offs specified?
- Are the time-critical functions identified and timing criteria specified for them?
- Have internationalization and localization issues been adequately addressed?
- Are all of the quality requirements measurable?

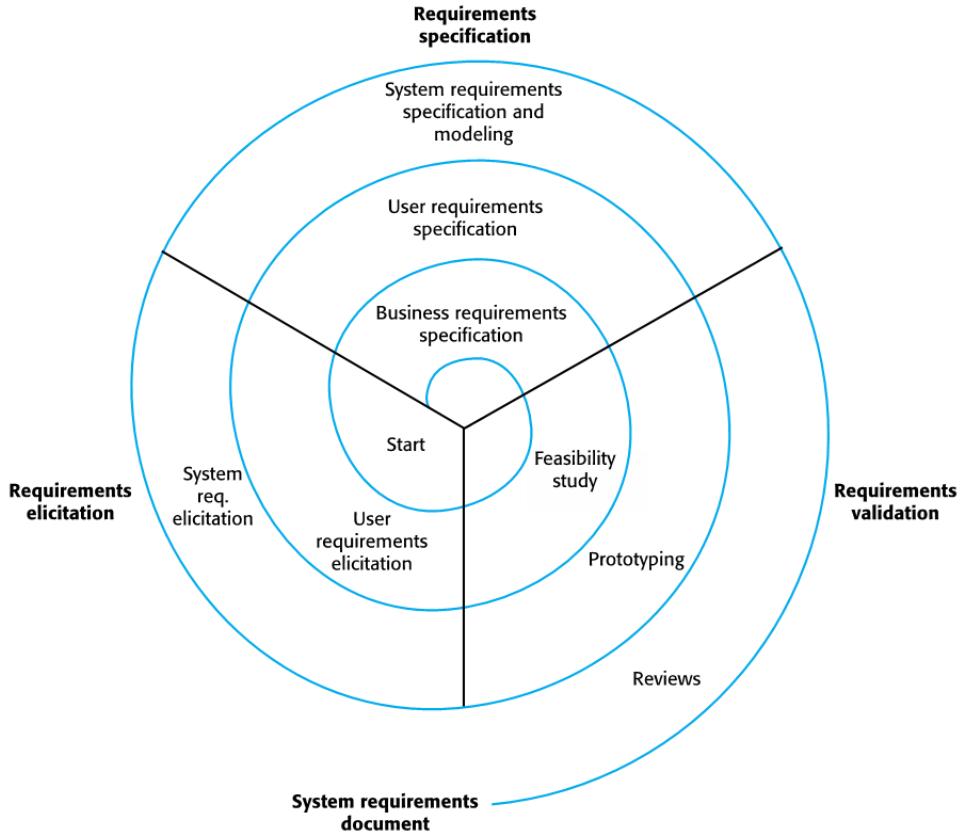
Organization and Traceability

- Are the requirements organized in a logical and accessible way?
- Are all cross-references to other requirements and documents correct?
- Are all requirements written at a consistent and appropriate level of detail?
- Is each requirement uniquely and correctly labeled?
- Is each functional requirement traced back to its origin (e.g., system requirement, business rule)?

Other Issues

- Are any use cases or process flows missing?
- Are any alternative flows, exceptions, or other information missing from use cases?
- Are all of the business rules identified?
- Are there any missing visual models that would provide clarity or completeness?
- Are all necessary report specifications present and complete?

Spiral Model

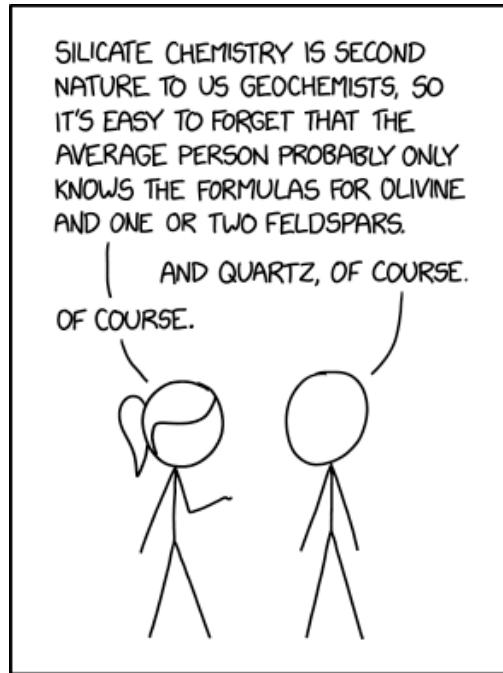


Poor Understanding of Computer Capabilities

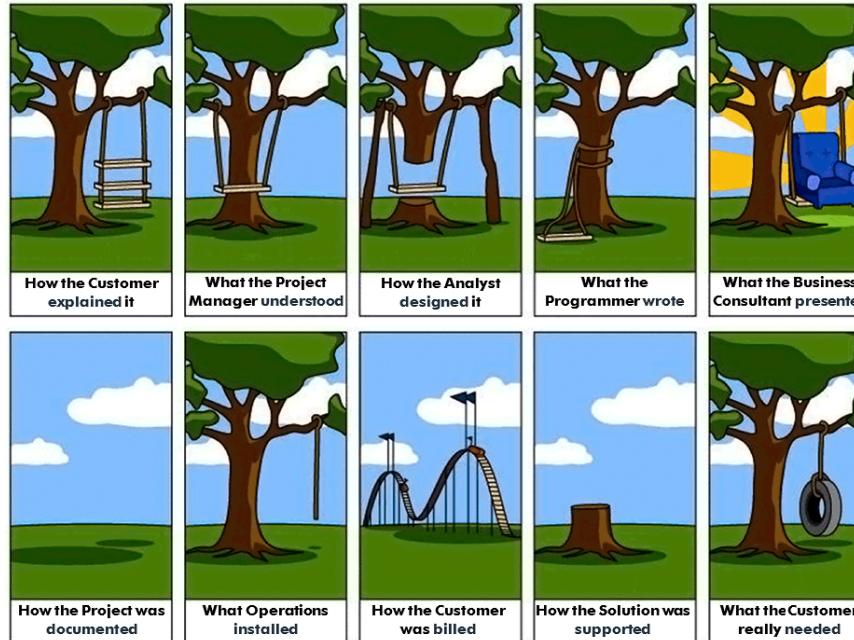


IN CS, IT CAN BE HARD TO EXPLAIN
THE DIFFERENCE BETWEEN THE EASY
AND THE VIRTUALLY IMPOSSIBLE.

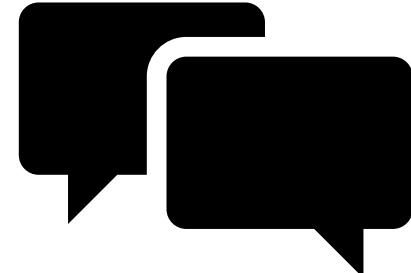
Analysts' Poor Knowledge of Problem Domain



Communication Challenges



Course Exercise: Challenges?



Why is Requirements
Engineering challenging?



Problems of Requirements Engineering

- Users' incomplete understanding of needs

Andie is sending many manual emails
(e.g., reminders) to volunteers, but
initially did not point this out as a feature

Problems of Requirements Engineering

- Users' incomplete understanding of needs
- Conflicting views of different users

Gamification features might be appealing to some user groups, but distracting to others

Problems of Requirements Engineering

- Users' incomplete understanding of needs
- Conflicting views of different users
- Users' poor understanding of computer capabilities and limitations

“Im not sure if any langgur is gps tagged and can be located by volunteers too?”

Problems of Requirements Engineering

- Users' incomplete understanding of needs
- Conflicting views of different users
- Users' poor understanding of computer capabilities and limitations
- Analysts' poor knowledge of problem domain

What does LTM and
RBL mean?

Problems of Requirements Engineering

- Users' incomplete understanding of needs
- Conflicting views of different users
- Users' poor understanding of computer capabilities and limitations
- Analysts' poor knowledge of problem domain
- It is easy to omit "obvious" information

Andie did not explicitly mention that registrations for the survey walks is within scope of the system, but it seemed obvious to her

Problems of Requirements Engineering

- User and analyst speak different languages

Andie and I had a different understanding
of what an “app” means

Problems of Requirements Engineering

- User and analyst speak different languages
- Requirements evolve over time

We started with a gamification platform,
but then realized that this would not be a
good fit

Problems of Requirements Engineering

- User and analyst speak different languages
- Requirements evolve over time
- The boundary of the system is ill-defined

Should volunteer signup be part of the system? Admin dashboard for Andie?
Automatic data analysis?
Interfacing with the existing Google spreadsheets?

Problems of Requirements Engineering

- User and analyst speak different languages
- Requirements evolve over time
- The boundary of the system is ill-defined
- Unnecessary design information may be given (psychological trait)

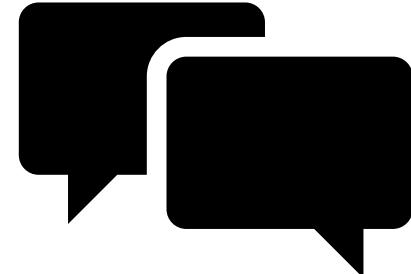
Wai Yee: framed requirements as a system built “on top” of the spreadsheets

Problems of Requirements Engineering

- User and analyst speak different languages
- Requirements evolve over time
- The boundary of the system is ill-defined
- Unnecessary design information may be given (psychological trait)
- Requirements often vague and untestable, e.g. "user friendly", "robust"

"Depends on the app, and how much space it takes up on the device."

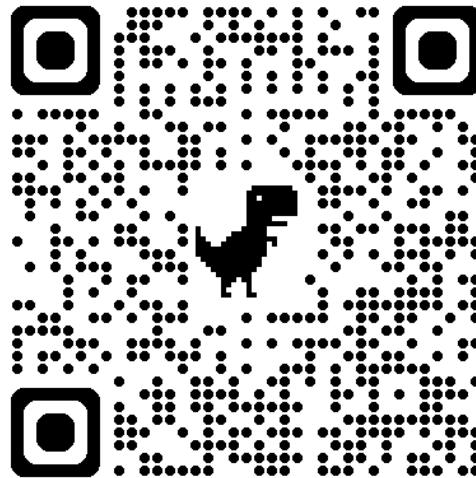
Course Exercise: Challenges?



What is the most common
way to elicit/document
requirements?



Naming the Pain in Requirements Engineering



<http://napire.org/#/explore>

Naming the Pain in Requirements Engineering

- NaPiRE initiative (Naming the Pain in Requirements Engineering)
- <http://napire.org>
- Close to 500 surveys

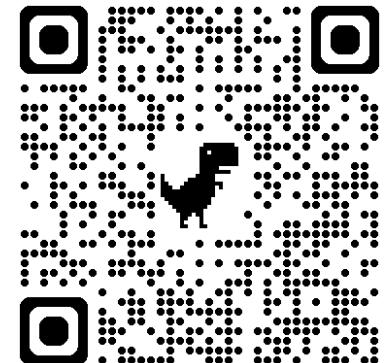
Dear Survey Participant,
thank you very much for sparing 15-30 minutes of your valuable time by answering this questionnaire!

The Requirements Engineering Survey 2012 is conducted by the Technische Universität München and the University of Stuttgart and shall help us getting a better unc industrial trends in Requirements Engineering (RE).

Goal of the survey: We are interested in your personal expectations and experiences on Requirements Engineering to understand the status quo and expectations ir Engineering process definitions, their improvement, and their application in projects -- all relying on your personal expert opinion. This shall give you insights into in the foundation to steer academic and industrial research in a problem-driven manner, i.e. it shall help detect practically relevant problems and goals in Requirements

Structure of the survey: The Requirements Engineering Survey includes (at most) 35 questions, structured into 5 categories:

1. General information about you and your company
2. Your personal expectations on a good RE
3. Status quo in RE at your company
4. Status quo in RE improvement at your company
5. Contemporary problems you experienced in RE and how these problems manifest themselves in the process



Summary Requirements Elicitation Techniques

Interviews

Document Analysis

Workshops

Focus Groups

Prototyping

Observation/Ethnography

Personas

Questionnaires/Surveys

Most projects will use a combination of different requirements elicitation techniques

How would you approach RE?

- Use Case 1: Your customer wants to replace your traditional e-commerce platform (e.g., Shopee, Lazada, Carousell, ...) with an AI chatbot
- Use Case 2: Your favorite restaurant asks you to develop an online ordering system

Which requirements elicitation approaches would be applicable?

How would you approach RE?

AI Chatbot replacing an e-commerce platform

- Large, complex system
- Many user types (buyers, sellers, customer support, marketing, logistics) and many users
- High business risk and scale
- Existing data and processes already in place

Use Case 2: Restaurant online ordering system

- Small to medium system
- Few stakeholder types (owner, staff, customers)
- Simpler workflows
- Often no formal documentation exists

Overview Techniques

Technique	AI Chatbot (E-commerce)	Restaurant System
Interviews	<input checked="" type="checkbox"/> Essential	<input checked="" type="checkbox"/> Essential
Document Analysis	<input checked="" type="checkbox"/> Essential	<input type="triangle" warning=""/> Limited
Workshops	<input checked="" type="checkbox"/> Very useful	<input type="triangle" warning=""/> Sometimes
Prototyping	<input checked="" type="checkbox"/> Essential	<input checked="" type="checkbox"/> Essential
Focus Groups	<input type="triangle" warning=""/> Selective	<input error="" type="cross"/> Rare
Observation	<input type="triangle" warning=""/> Moderate	<input checked="" type="checkbox"/> Very useful
Personas	<input checked="" type="checkbox"/> Essential	<input type="triangle" warning=""/> Lightweight
Questionnaires	<input checked="" type="checkbox"/> Very useful	<input error="" type="cross"/> Limited

More lightweight use for the restaurant use case

Interviews: Applicable to Both

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	Very high	Very high
Why	Need deep understanding of complex workflows and pain points	Need to understand daily operations and preferences
Sources	Product managers, sellers, buyers, customer support, logistics teams	Owner, cashier, kitchen staff, delivery staff
Contrast	Many interviews needed, structured and role-specific	Few interviews, informal and fast

Interviews are most often applicable (see NaPiRE)

Prototyping: Applicable to Both

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	Very high	Very high
Why	Conversational UI must be tested early	Simple flows benefit from quick feedback
Sources	Chatbot mockups, conversation flows	Order screens, menu flows
Contrast	Iterative and data-driven	Fast validation with stakeholders

Prototyping is a technique that is also most often applicable

Questionnaires / Surveys: Mostly for Use Case 1

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	High	Low
Why	Large user base allows statistical insight	Small customer base limits value
Sources	Platform users, sellers	Occasional customer feedback
Contrast	Scalable and valuable	Likely not worth the effort

Smaller customer base and simpler use case
might not make it worthwhile for the
restaurant use case

Document Analysis: Mostly for Use Case 1

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	High	Low to medium
Why	Existing platforms have rich documentation	Restaurants rarely have formal docs
Sources	Existing system specs, SOPs, API docs, customer support logs, chat transcripts	Menus, price lists, order tickets, POS reports
Contrast	Critical for understanding legacy systems	Often incomplete or informal

While many documents for an existing complex platform might exist (including documentation for interfaces to agentic systems), none or few likely exist for the restaurant use case

Workshops: Mostly for Use Case 1

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	High	Medium
Why	Align many stakeholders, resolve conflicts	Useful but may be overkill
Sources	Cross-functional teams (tech, ops, business)	Owner + key staff
Contrast	Structured, facilitated sessions	Short, informal discussions

Only some lightweight workshops (e.g., ad-hoc discussions) seem realistic for Use Case 2

Personas: For Use Case 1

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	High	Medium
Why	Many distinct user groups	Few, well-known customer types
Sources	User analytics, interviews, surveys	Owner knowledge, observation
Contrast	Formal personas essential	Lightweight personas sufficient

Personas seem highly useful for the e-commerce platform (e.g., based on market research), while some lightweight ones might be applicable for Use Case 2

Focus Groups: For Use Case 1

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	Medium	Low
Why	Gather feedback from diverse customers	Restaurant customers are harder to recruit
Sources	Buyers, sellers, power users	Regular customers
Contrast	Valuable for understanding expectations	Often unnecessary effort

Can be useful for Use Case 1 to gather feedback from different customer groups and understanding their expectations

Observation/Ethnography: Mostly Useful for Use Case 2

Aspect	AI E-commerce Chatbot	Restaurant Ordering System
Applicability	Medium	High
Why	Observe how users shop or contact support	Observe real ordering, kitchen flow
Sources	Customer journeys, support interactions	In-store ordering, kitchen operations
Contrast	Harder due to scale	Very effective and low cost

Mostly useful for the restaurant use case, as the workflows in the kitchen, peak times, etc. can be observed

Summary Requirements Elicitation Techniques

Interviews

Document Analysis

Workshops

Focus Groups

Prototyping

Observation/Ethnography

Personas

Questionnaires/Surveys

Your first assignment!

Summary Requirements Elicitation Techniques

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Personas

Recording with Wai Yee
(next week)!

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Prototypes by the teaching teams and as part
of the second group assignment!

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With the citizen science
volunteers

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With Andie and
combined with the
observational study

Week 3: Online Lectures

Week 3: Project Overview (PR)		
		PR 1: Citizen Science Effort
		PR 2: Observation Study with Wai Yee
		PR 3: Existing Spreadsheets
		PR 4: User Interface Analysis and Bioblitz (Optional)
		PR 5: Workshop with Dr. Andie
		PR: Additional Resources (Optional)
		PR Quiz
		26 Jan 5 pts

Interviewing

- **Closed/structured interview:** stakeholder answers a predefined set of questions
 - Interview guides
- **Open/unstructured interviews:** no predefined agenda
- **Semi-structured interviews:** combination
 - Most common case

Requirements Elicitation Guide

- Objective: what do you want to learn?
 - User workflows, pain points, functional requirements, non-functional requirements, business rules, ...
- Participant: which stakeholder groups are you interviewing?

Possible Structure

- Introduction
 - Purpose of the interview
 - Introductions (roles of interviewer and interviewee)
 - Expected duration
 - Confidentiality or recording permissions
- Stakeholder Background
 - Roles and responsibilities
 - How long been working in this area/with this system
 - Interaction with which parts of the system

Possible Structure

- Current system and/or process
 - “Can you walk me through how you perform <task X> from start to finish?”
 - “What tools or systems do you use?”
 - “What works well in the current process? Where do you encounter issues?”

Note that we are still trying to understand the context and current process. Avoid jumping to conclusions and solutions too quickly.

Possible Structure

- Questions about requirements
- Functional requirements
 - “If you could change one thing about the current system, what would it be?”
 - “What tasks should the new system support that it doesn’t today?”
 - “What information do you need the system to capture?”
- Non-functional requirements
 - “What expectations do you have about system speed?”
 - “Are there security or compliance regulations that must be met?”
 - “How critical is uptime?”

Possible Structure

- Business Rules and Constraints
 - “Are there any rules that the system must follow to align with internal policies?”
 - “What limitations should we be aware of (budget, resources, platforms)?”

Possible Structure

- Use *probes* to follow-up when needed
 - “Can you give an example?”
 - “What happens if that condition isn’t met?”
 - “Who else is impacted by this task/process?”
 - “How often does this occur?”
- Ending
 - Unknown unknowns: “Is there anything we didn’t cover that you think is important?”
 - Additional stakeholders: “Who else should we talk to about this topic?”
 - Snowball sampling

Overly Broad Questions

- ✗ “Can you tell me everything about your workflow?”
- ✓ “Can you walk me through what happens after you receive a request?”

Asking too broad questions makes it difficult for the interviewee to know where to start

Open-ended Questions

- “Do you like the process?”
- “How do you experience the process?”

Use open-ended questions
rather than questions that can
be answered with yes/no to get
richer responses

One Question at a Time

“How often do you use the system, what features matter most, and what frustrates you?”

“How often do you use the system?”
“What features matter most?”
“What frustrates you?”

Ask one question at a time to not
overload the interviewee

Use Neutral Language

- “What problems did you have with...?”
- “What challenges, if any, did you encounter?”

Use neutral language and avoid
biased questions

Avoid Leading Questions

Leading question: leads people to answer a question in a specific way based on the phrasing of the question

- “Don’t you think the approval process is too slow?”
- “How would you describe the approval process?”

Use neutral language

Avoid Accusatory Questions

- “Why didn’t you follow the process?”
- “What factors influenced how you handled that situation?”

Avoid triggering defensiveness

Avoid Jargon

- ✗ “How do you handle SLA violations?”
- ✓ “What happens if a request isn’t completed on time?”

Avoid jargon and use simple language

Avoid Memory-heavy Questions

Recall bias: when respondents do not remember past events accurately

✗ “How often did this problem occur last year?”

“Can you recall a recent example?”

People are unlikely to recall
frequency/times of mundane tasks or
those that happened long ago

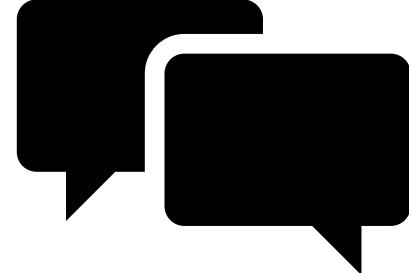
Socially Desirable Questions

Socially desirability bias: responds conceal their true opinion/behavior in a way they believe is socially acceptable

- ✗ “How do you ensure you always follow best practices?”
- “After finishing a patch, what do you need to deploy it?”

People are likely to respond in way that matches society's common expectations

Course Exercise



Develop a short interview guide for a meeting with a volunteer.

- What would be your key objectives?
- How would you structure your interview?
- What would be examples of questions you would ask?

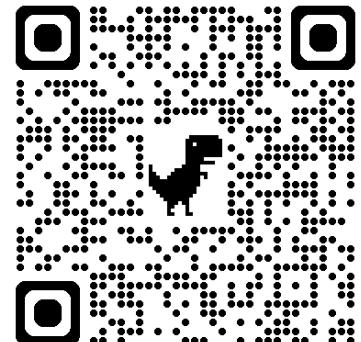
Course Exercise

Objectives:

Find out the best food options on campus.

Interview structure:

- * Theme 1
 - ** Example question 1
 - ** Example question 2
- * Theme 2
- * ...



Interview Guide for Volunteer

- Intro
 - Ask for permission to record; can decide before we share any segments
 - Personal intro and course
 - Motivation for the survey walk
 - “If you need silence at any time, just say so.”
- Context and Motivation
 - How did you get involved?
 - How long have you been doing these walks?
 - How often?
- Current Workflow

Interview Guide for Volunteer

- Current Workflow
 - When you see a langur, what's the first thing you do?
 - Can you walk me through how you currently record a sighting?
 - What tools do you use (notebook, WhatsApp, GPS device, memory, photographs)?
 - What are some of the pain points?
- Requirements
 - What would make reporting easier or more enjoyable?
 - Would it be useful to have some statistics? What stats or insights about your walks would be most interesting to you?
 - Is there any information you would like to see from other contributors?
 - Would gamification (badges, streaks) motivate or annoy you?

Interview Guide for Volunteer

- Wrapping Up
 - What was different about today compared to your usual walks?
 - Anything else that we did not talk about?

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Focus in the next exercise!

Questionnaires

- Questionnaires: work well for a large population of stakeholders
- Also useful for prioritization
- Drawback is that questions would typically mostly be closed-ended; does not allow follow-up questions
- Can be implemented as interviews, over mail, telephone, or web
 - We will focus on web-based surveys

Closed-ended vs. Open-ended Questions

- Closed-ended questions: provide only limited options to respondents
 - Pro: structured, quick to submit and analyse, statistical analysis
 - Con: do not capture the depth of nuance of qualitative insights
- Open-ended questions: free-text response
 - Pro: rich qualitative data
 - Con: more time and effort to submit and analyse the responses
 - Use sparingly to avoid *respondent fatigue*

Closed-ended vs. Open-ended Questions

Closed-ended

Which of the following have you participated in before? Select all that apply.

- Environmental volunteering (e.g., clean-ups, tree planting)
- Nature clubs or societies (e.g., Nature Society Singapore)
- Pre-university coursework or initiatives related to nature conservation
- University coursework related to ecology or conservation
- Citizen science projects (e.g., wildlife surveys, data collection)
- None of the above.

Open-ended

If you have participated in any nature conservation or citizen science activities, please briefly describe them.

Closed-ended: Multiple Choice

Which of the following have you participated in before? Select all that apply.

- Environmental volunteering (e.g., clean-ups, tree planting)
- Nature clubs or societies (e.g., Nature Society Singapore)
- Pre-university coursework or initiatives related to nature conservation
- University coursework related to ecology or conservation
- Citizen science projects (e.g., wildlife surveys, data collection)
- None of the above.

How many times have you seen the Raffles' Banded Langurs during the surveys?

Never

1 time

2 to 5 times

6 to 10 times

More than 10 times

I do not remember

Closed-ended: Likert-type Rating

- To indicate level of agreement, frequency, etc.
 - Ordered set of response options
 - Usually 5-7 points
 - Balanced along a neutral mid point

Please tell us how convenient it is to use the current system (Google Sheets and email) for registering for the walks and reporting the sightings.

Closed-ended: Likert-type Rating

- **Agreement:** Strongly disagree → Strongly agree
- **Satisfaction:** Very dissatisfied → Very satisfied
- **Frequency:** Never → Always
- **Importance:** Not at all important → Extremely important
- **Confidence:** Not at all confident → Very confident

Closed-ended: Unipolar Scale

- Measures the degree or intensity of an attribute
- Starts with a zero point
- Meaningful if a construct cannot meaningfully go into both directions

Before this course, how interested were you in nature conservation?

Not interested

Slightly interested

Moderately interested

Very interested

Extremely interested

Questionnaires: Questions

- Use simple language, rather than jargon or technical terms
- Simple syntax and sentence structure
- Specific and concrete wording
- Comprehensive and mutually exclusive response options
- Next: anti patterns (partly overlap with interviewing anti patterns)

Vague Wording

- Do you exercise regularly?
- How many days per week do you exercise for at least 30 minutes?
 - 0
 - 1–2
 - 3–4
 - 5+

Avoid ambiguous or subjective wording, so participants have a common interpretation of the question.

Double-barreled Question

✗ How do you rate the course project and lecture?

How do you rate the course project?

How do you rate the lecture project?

Each question should measure one concept only

Leading/loaded Wording

- ✗ How helpful was our friendly customer service?
- ✓ How helpful or unhelpful was our customer service?

Phrase questions neutrally to not bias the results

Unbalanced Response Options

How satisfied are you with the course?

Very satisfied Satisfied Somewhat satisfied

How satisfied are you with the course?

Not at all satisfied

Slightly satisfied

Moderately satisfied

Very satisfied

Extremely satisfied

The above option does not allow express dissatisfaction by design and pushes the answer in one direction. The response scales should reflect the full range of plausible options.

Overlapping Categories

How many hours do you study per week?
 0–10 10–20 20–30

How many hours do you study per week?
 0–9 10–19 20–30 30+

Response options must be mutually exclusive.

Missing Response Options

X What is your primary mode of transportation?

- MRT
- Bus
- Train
- Car

✓ What is your primary mode of transportation?

- MRT
- Bus
- Train
- Car
- Other (please specify)

Response options should be collectively exhaustive.

Assumptive Questions

How satisfied were you with the Bioblitz?

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very satisfied
- Extremely satisfied

Have you participated in the Bioblitz?

- Yes
- Not

How satisfied were you with the Bioblitz?

...

Do not assume experiences respondents might not have had and use filter questions.

Socially Desirable Behavior

✗ How often do you act in an environmentally responsible way to protect nature?

In the past month, how often have you done the following?

- Recycled household waste
- Chosen public transport instead of driving
- Reduced energy use at home

...

Avoid phrasing questions in such a way that they suggest that there is a right way to behave to avoid questions that measure self-image more than actual behavior

Double Negatives

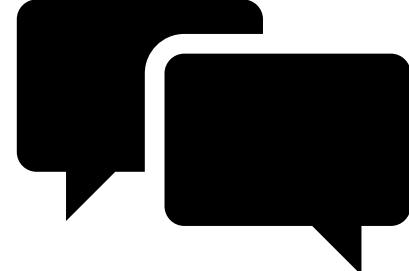
- Do you disagree that the government should not invest less in nature conservation?
- Do you think the government should invest more, less, or about the same in nature conservation? ...

Avoid double negatives and other phrasing that might require respondents to re-read the question.

Other Considerations

- Start from the questions you want to answer
- Keep the questionnaire as short as possible
- Use a consistent format (e.g., same scale lengths)
- Pilot testing
- Mandatory questions are not desirable
- Sensitive questions at the end of the questionnaire
 - Early questions should build connections
- Include “Don’t know / Not applicable” thoughtfully

Course Exercise



Develop a short questionnaire (3-5 questions) that you could send to the volunteers.

Course Exercise

What is your favorite lecture hall? Select one option.

LT 18

LT 15

Other (please elaborate): _____



