PONTIFICAL CATHOLIC UNIVERSITY OF RIO GRANDE DO SUL
FACULTY OF INFORMATICS
COMPUTER SCIENCE GRADUATE PROGRAM

QUALITY INSPECTION TO EVALUATE BDD SCENARIOS

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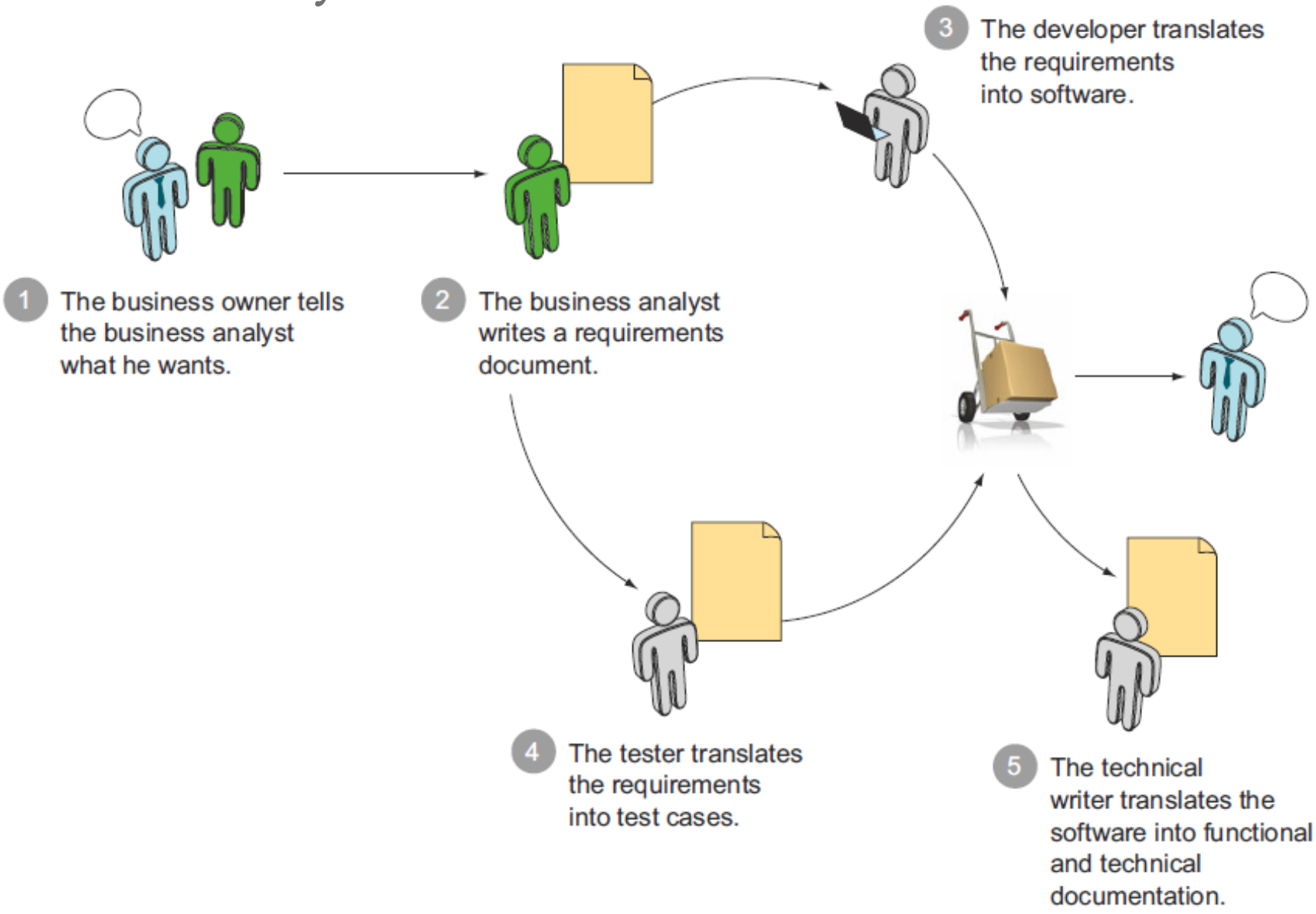
Supervisor: Sabrina Marczak, PhD

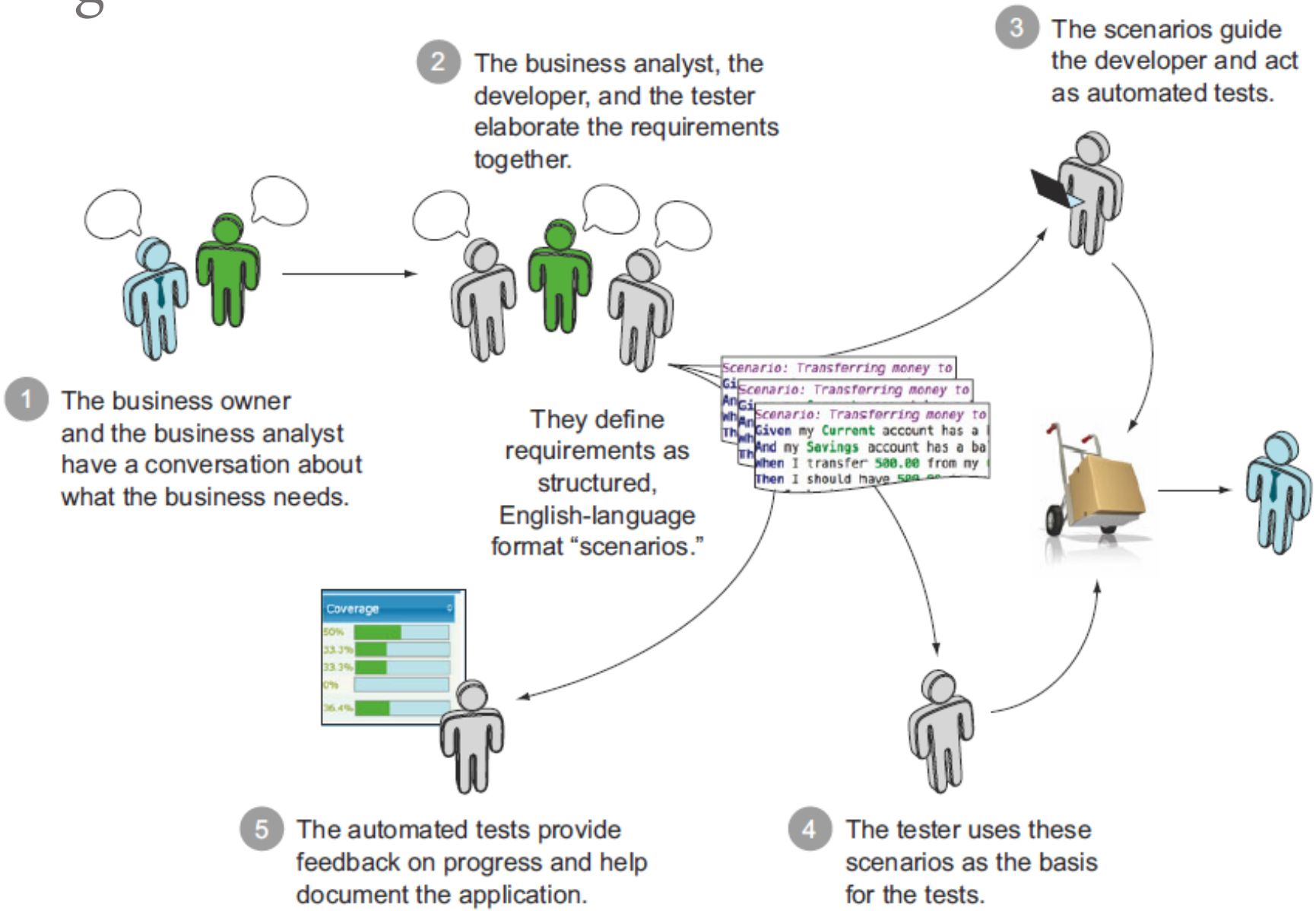
Agenda

- Behavior Driven Development
  - oIntroduction
  - oWriting difficulties
- Problem statement
  - oLack of writing guidance for BDD
- Research Proposal
  - oQuestions
  - oPlan
  - oTimetable

Before BDD: many documents



BDD: single executable documentation



BDD: documentation formatted as stories and scenarios

```
Feature: Earning Frequent Flyer points from flights
In order to encourage travellers to book with Flying High Airlines
more frequently
As the Flying High sales manager
I want travellers to earn Frequent Flyer points when they fly with us
```

A short description of the feature follows the title.

```
Scenario: Earning standard points from an Economy flight
Given the flying distance between Sydney and Melbourne is 878 km
And I am a standard Frequent Flyer member
When I fly from Sydney to Melbourne
Then I should earn 439 points

Scenario: Earning extra points in Business class
Given the flying distance between Sydney and Melbourne is 878 km
And I am a standard Frequent Flyer member
When I fly from Sydney to Melbourne in Business class
Then I should earn 878 points
```

One or more scenarios follow.

BDD: difficulties

What scenarios are worthy to be described?

How to break features and requirements into scenarios?

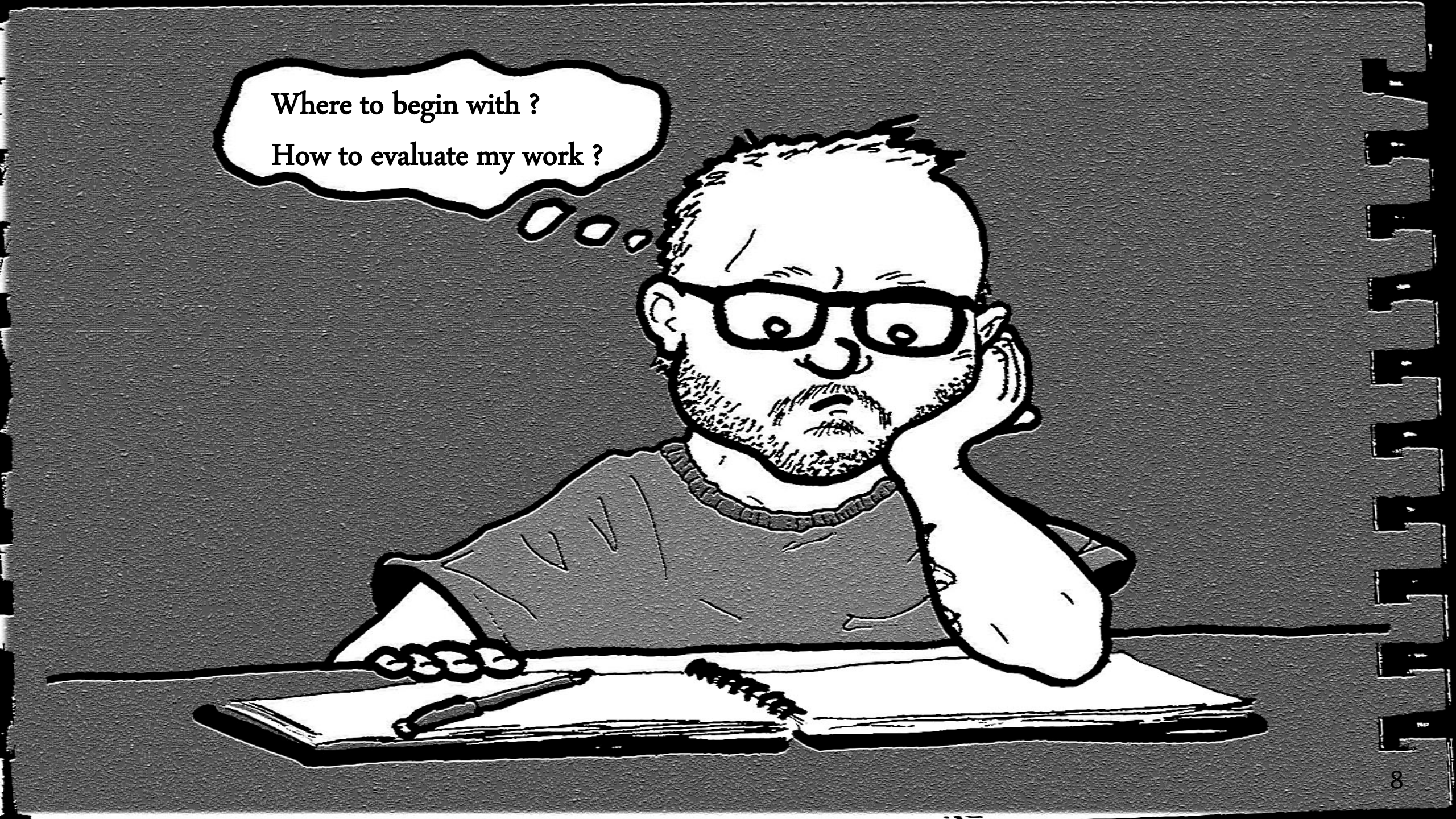
"dificuldade, as vezes, principalmente no começo, digamos, de criar features e tentar utilizar o Gherkin e não ter experiência disso e não ter a visão de como quebrar, como olhar para um requisito" (R16)

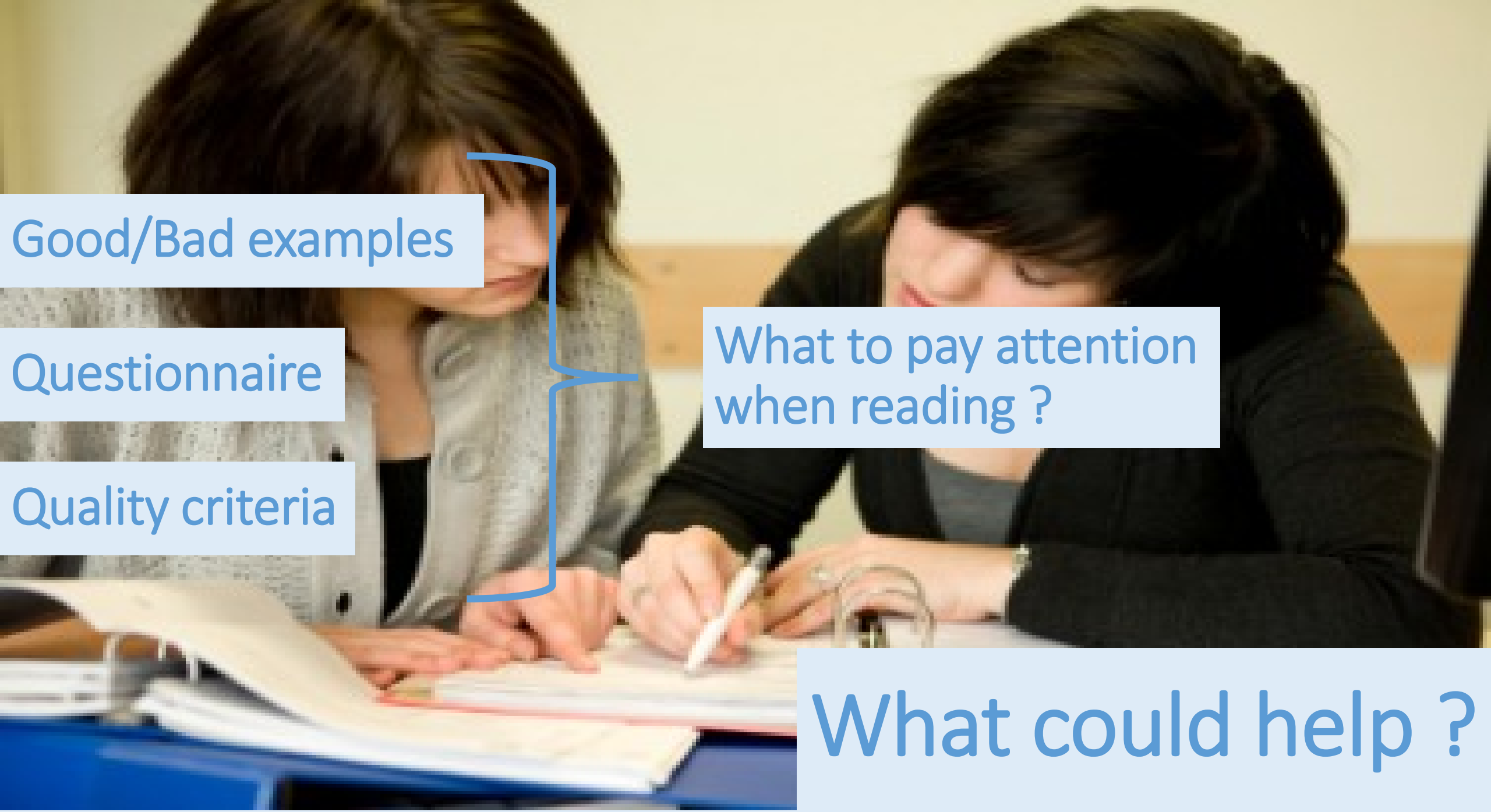
How to write scenarios that are easy to automate ?

"Para o analista de negócio do projeto é muitas vezes difícil escrever cenários que podem ser facilmente automatizados pela equipe técnica." (R21)

What other characteristics should a writer worry about ?

It's **difficult to write** a really good short story because it must be a complete and finished reflection of life with only a few words to use as tools. There **isn't time for bad writing in a short story**. (Edna Ferber)


Where to begin with ?
How to evaluate my work ?



Good/Bad examples

Questionnaire

Quality criteria

What to pay attention when reading ?

What could help ?

What to pay attention when reading

*A **reading technique** increases the effectiveness of individual reviewers by providing **guidelines** that they can use to examine (or "read") a given software document and identify defects.*

Good/bad examples: just enough details

```
Scenario: Register for online banking
Given that Bill wants to register for online banking
When he goes to the registration page
And he enters 'Bill' in the first name field
And he enters 'Smith' in the surname field
And he enters 'bill@smith.com" in the email field
And he enters '01/01/1980' in the date of birth field
And he enters '1 George street' in the street field
And he enters 'Sydney' in the city field
And he enters '2000' in the post code field
And he clicks on submit
Then his application should be created in a pending state
And he should be sent a PDF contract to sign by email
```

❶ A detailed account of the application process

The expected outcomes

This is very dense, and it contains a lot of detail about what values should go in each field on the registration page ❶. But do you really need this much detail?

```
Scenario: Register for online banking
Given that Bill wants to register for online banking with the following
     details:
first-name|surname|email          |dob       |street|city   | postcode
Bill      |Smith  |bill@smith.com|01/01/1980| ...  |Sydney| 2000
```

❶ Field values are now stored in a table.

Questionnaire on Use Cases

Pass/Fail Tests for Use Case Fields

All of them should produce a "yes" answer.

Field	Question
Use case title.	1 Is the name an active-verb goal phrase, the goal of the primary actor?
	2 Can the system deliver that goal?
Scope and Level:	3 Are the scope and level fields filled in?
Scope.	4 Does the use case treat the system mentioned in the Scope as a black box? (The answer may be 'No' if the use case is a white-box business use case, 'Yes' if it is a system requirements document).
	5 If the Scope is the actual system being designed, do the designers have to design everything in the Scope, and nothing outside it?
Level.	6 Does the use case content match the goal level stated in Level?
	7 Is the goal really at the level mentioned?
Primary actor.	8 Does the named primary actor have behavior?
	9 Does it have a goal against the SuD that is a service promise of theSuD?
Preconditions.	10 Are they mandatory, and can they be put in place by the SuD?
	11 Is it true that they are never checked in the use case?
Stakeholders and interests.	12 Are they mentioned? (Usage varies by formality and tolerance) Must the system satisfy their interests as stated?
Minimal guarantees.	13 If present, are all the stakeholders' interests protected?
Success guarantees.	14 Are all stakeholders interests satisfied?
Main success scenario.	15 Does it run from trigger to delivery of the success guarantee?
	16 Is the sequence of steps right (does it permit the right variation in sequence)?
	17 Does it have 3 - 9 steps?

User Stories quality criteria

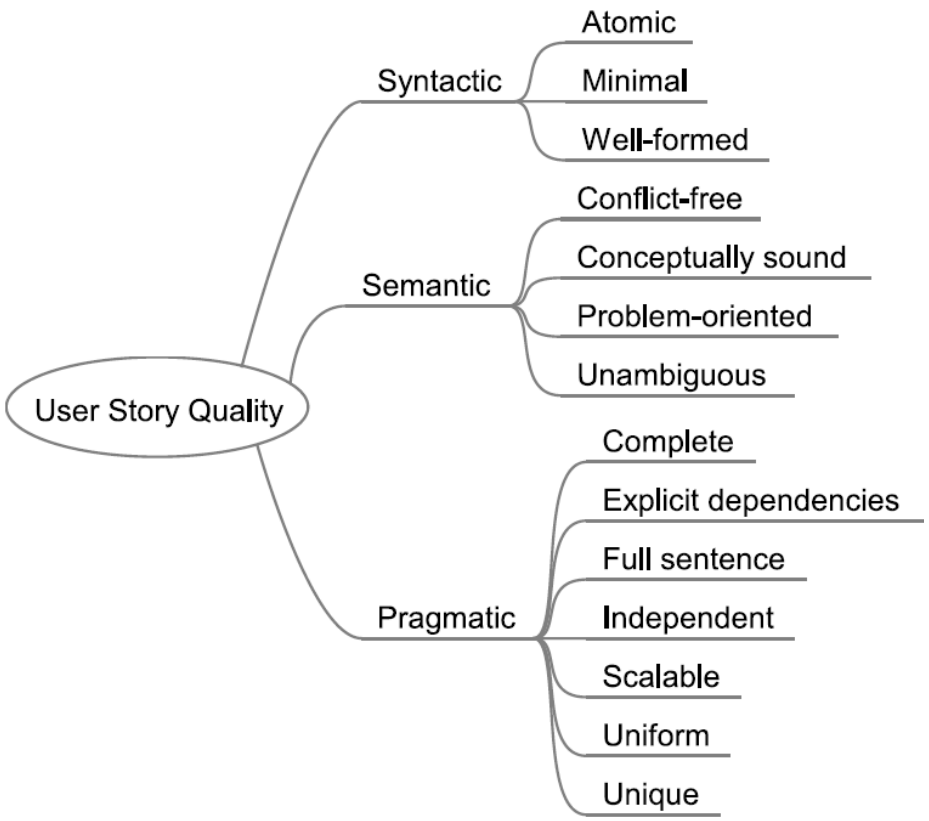


Fig. 1. Quality User Story Framework

TABLE II
USER STORIES THAT BREACH QUALITY CRITERIA FROM TWO REAL-WORLD CASES

ID	Description	Issues
US_1	As a User, I'm able to click a particular location from the map and thereby perform a search of landmarks associated with that latitude longitude combination	Not atomic: two stories in one
US_2	As a care professional I want to see the registered hours of this week (split into products and activities). See: Mockup from Alice NOTE: - First create the overview screen - Then add validations	Not minimal, due to additional note about the mockup
US_3	Add static pages controller to application and define static pages	Missing role
US_4	As a User, I want to open the interactive map, so that I can see the location of landmarks	Conceptual issue: the end is in fact a reference to another story
US_5 US_6	As a User, I'm able to edit any landmark As a User, I'm able to delete a landmark which I added	Conflict: US_5 refers to any landmark, while US_6 only to those that user has added
US_7	As a care professional I want to save a reimbursement. - Add save button on top right (never grayed out)	Hints at the solution
US_8	As a User, I am able to edit the content that I added to a person's profile page	Unclear: what is content here?
US_9	As an Administrator, I am able to view content that needs to be reviewed	The type of content is not specified
US_{10}	Server configuration	In addition to being syntactically incorrect, this is not even a full sentence
US_{11} US_{12}	As an Administrator, I am able to add a new person to the database followed by As a Visitor, I am able to view a person's profile	Viewing relies on first adding a person to the database
US_{13}	As a care professional I want to see my route list for next/future days, so thatI can prepare myself (for example I can see at what time I should start traveling)	Difficult to estimate because it is unclear what see my route list implies
US_{14}	As an Administrator, I receive an email notification when a new user is registered	Deviates from the template, no *"wish"* in the means
EP_A US_{15}	As a Visitor, I'm able to see a list of news items, so that I can stay up to date on news As a Visitor, I'm able to see a list of news items, so that I can stay up to date on news	The same requirement is repeated both in epic EP_A, and in a user story US_{14}

re·search
order to gather new
about a subject

Research Objectives

Create a new (or adapt an existing one) reading technique that would guide the reader during an inspection process to evaluate the quality of BDD scenarios.

Objectives:

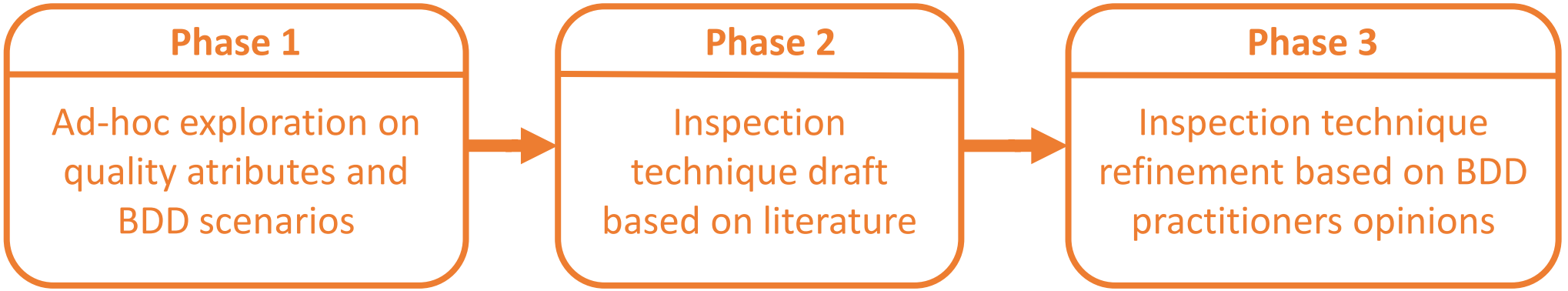
1. Summarize the existent **quality attributes applicable to acceptance tests**, on the BDD scenario format;
2. Summarize the **problems that the written form of BDD scenarios may have**, according to the experience of its practitioners;
3. Propose a new **reading technique**, that would guide the reader during an inspection process, that uses the quality attributes during the evaluation of BDD scenarios
4. **Validate** the effectiveness and usefulness of the proposed reading technique with practitioners;

Research Questions

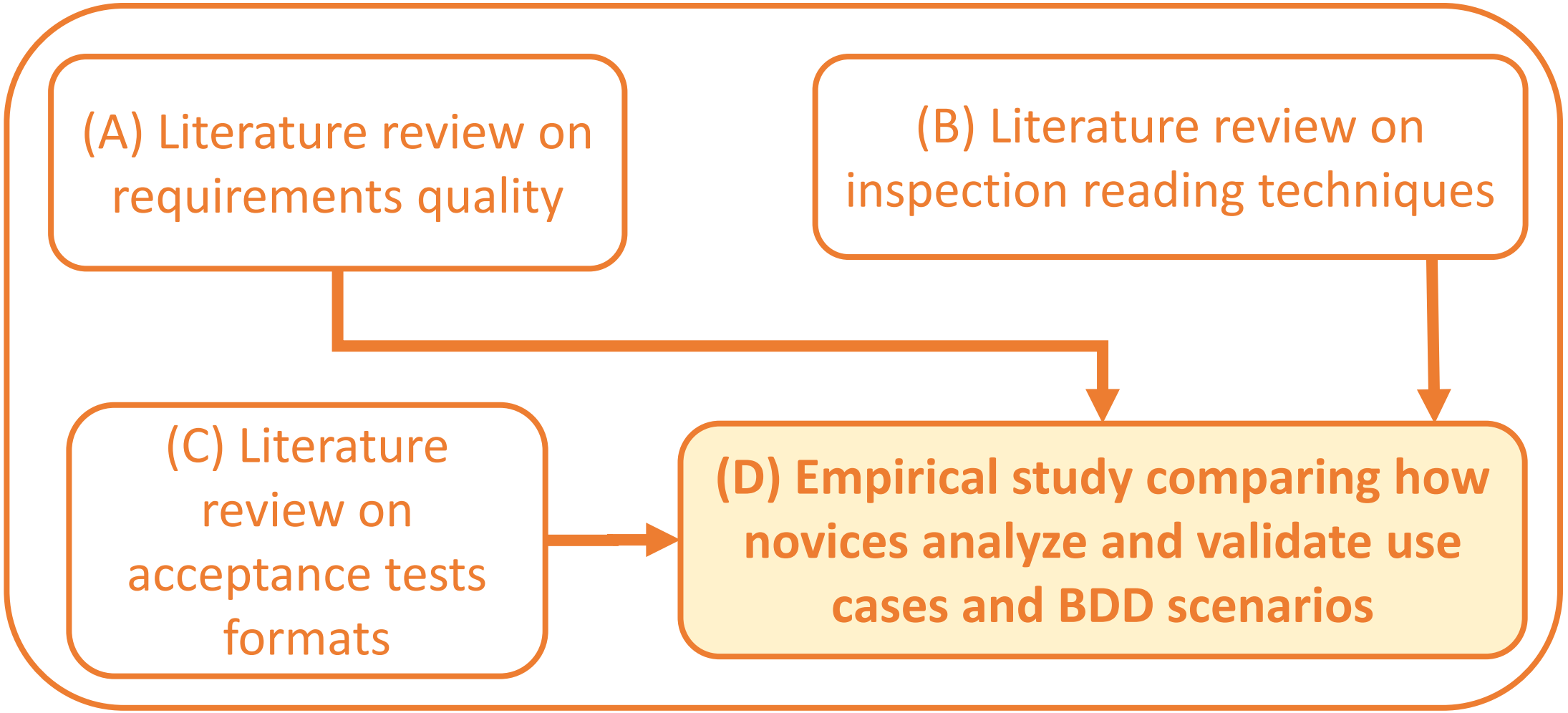
__What__ is a "good" BDD scenario, in terms of the quality attributes it demonstrates, for a member of a software development team ?

__How__ are the quality attributes used during the evaluation of a single BDD scenario by a member from a software development team ?

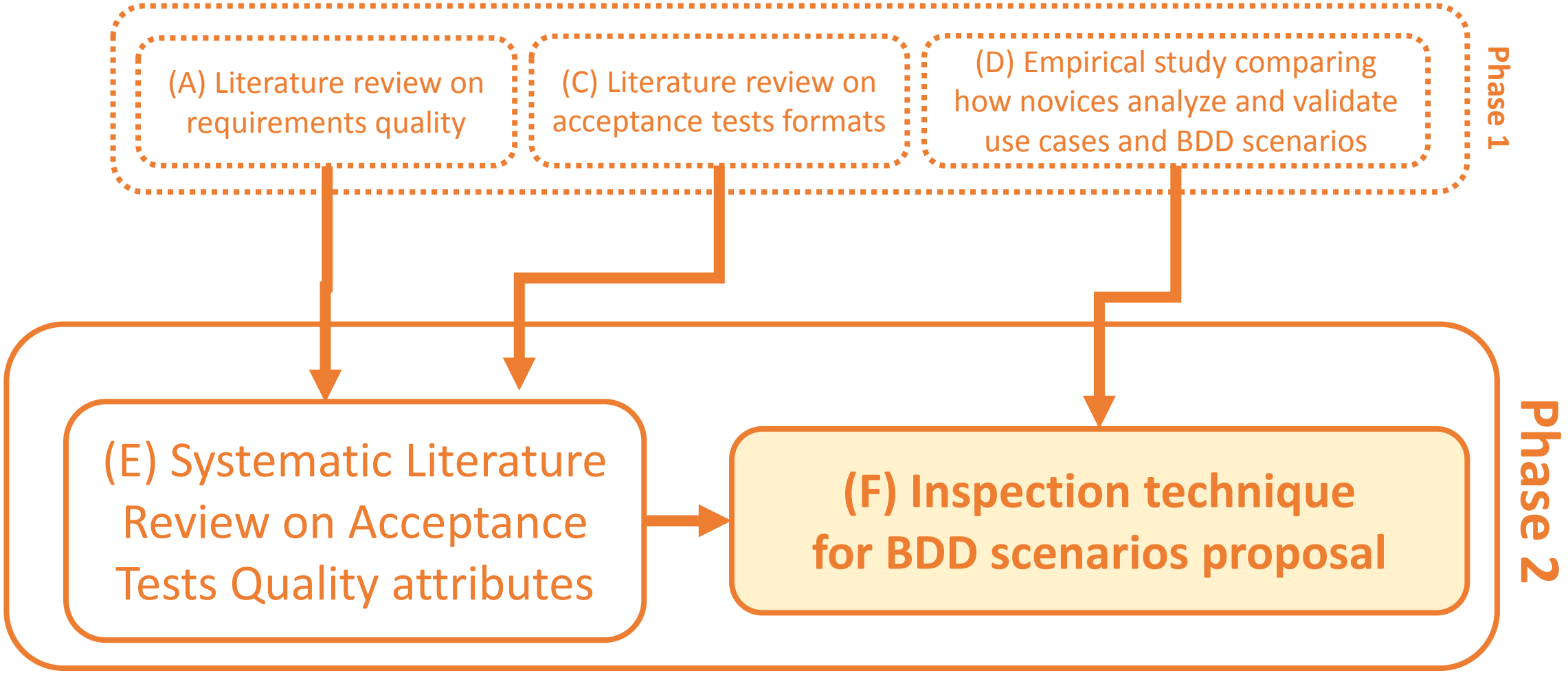
Research Plan: Summary



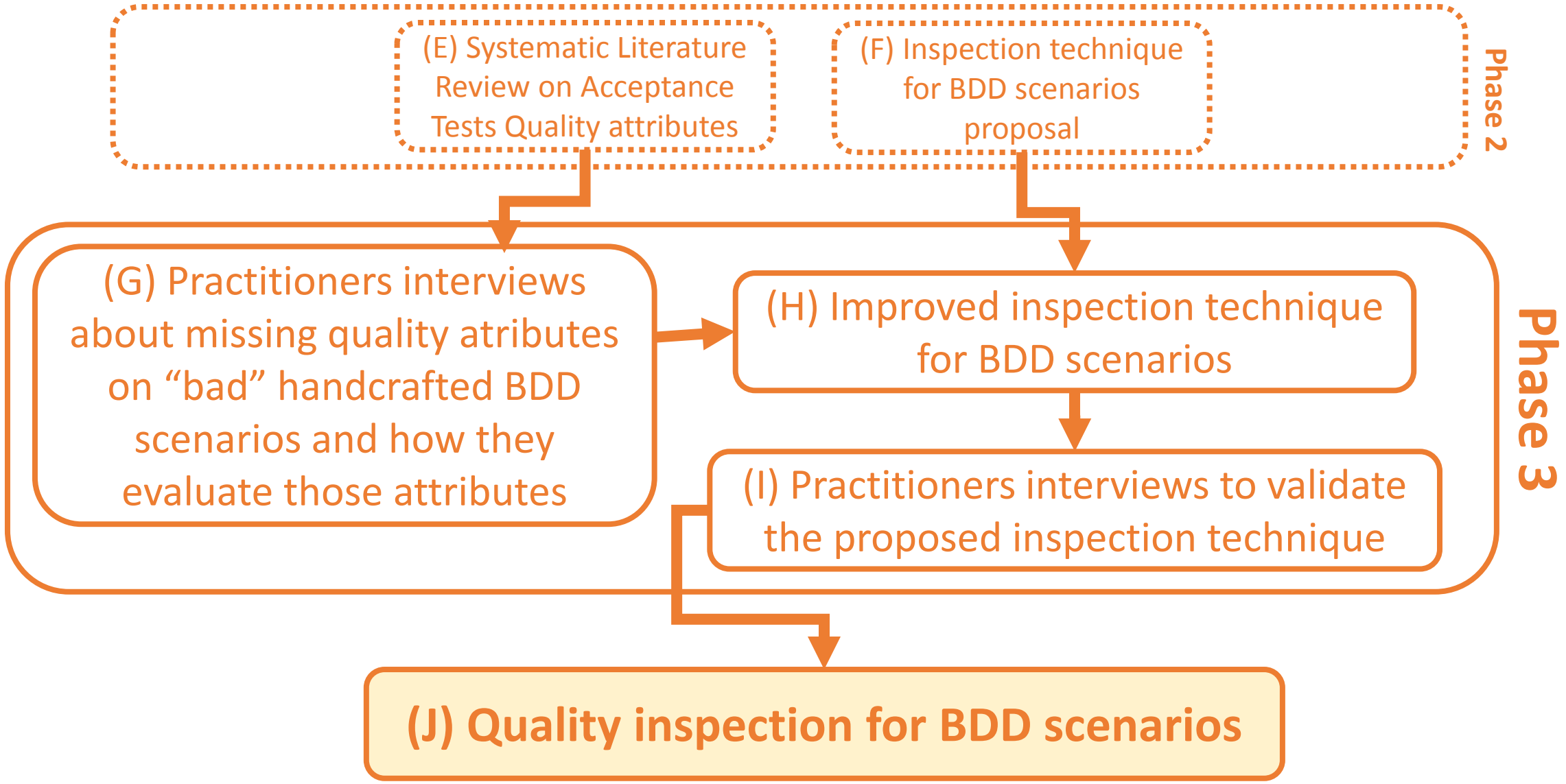
Research Plan: detailed phase 1



Research Plan: detailed phase 2



Research Plan: detailed phase 3



Research Timetable

#	Activities	Months on 2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													

Questions ?

Research Timetable – No animation

#	Activities	Months on 2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	**Empirical study - reporting (Phase 1, Activity D)** *result mapping along with inspection technique draft*	■											
2	**Systematic Literature Review - planning (Phase 2, Activity E)** *search query construction and protocol review*	■											
3	**Systematic Literature Review - execution (Phase 2, Activity E)** *abstracts reading, paper selection, full reading*		■										
4	**Systematic Literature Review - reporting (Phase 2, Activity E)** *results mapping, monography writing*			■									
5	**Inspection technique proposal and validation with a BDD expert (Phase 2, Activity F)** *reflect monography attributed maping on inspection technique draft after validatio*			■	■								
6	**Practitioners Interview - planning (Phase 3, Activity G)** *exemples mapping and protocol review presentation*				■	■							
7	**Practitioners Interview - execution (Phase 3, Activity G)** *interviews execution, progress report presentation*						■	■					
8	**Practitioners Interview - reporting (Phase 3, Activity G)** *results mapping*								■	■			
9	**Quality inspection final changes (Phase 3, Activity H)** *reflect interviews maping on it, justify each question and changes*										■		
10	**Specialist Interviews to evaluate the proposed quality inspection (Phase 3, Activity I)** *justify good/bad decisions and final validations*											■	
11	**Dissertation final report (Phase 3, Activity J)** *results mapping, dissertation writing*								■	■	■	■	■
Phase 1 period - 2016 to Jan/2017		■											
Phase 2 period - Jan to Apr		■	■	■	■								
Phase 3 period - May to Dec					■	■	■	■	■	■	■	■	■

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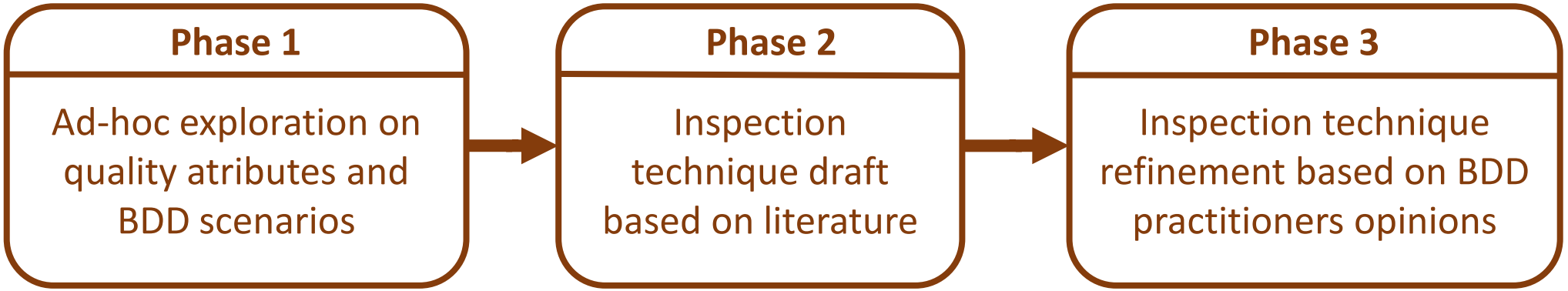
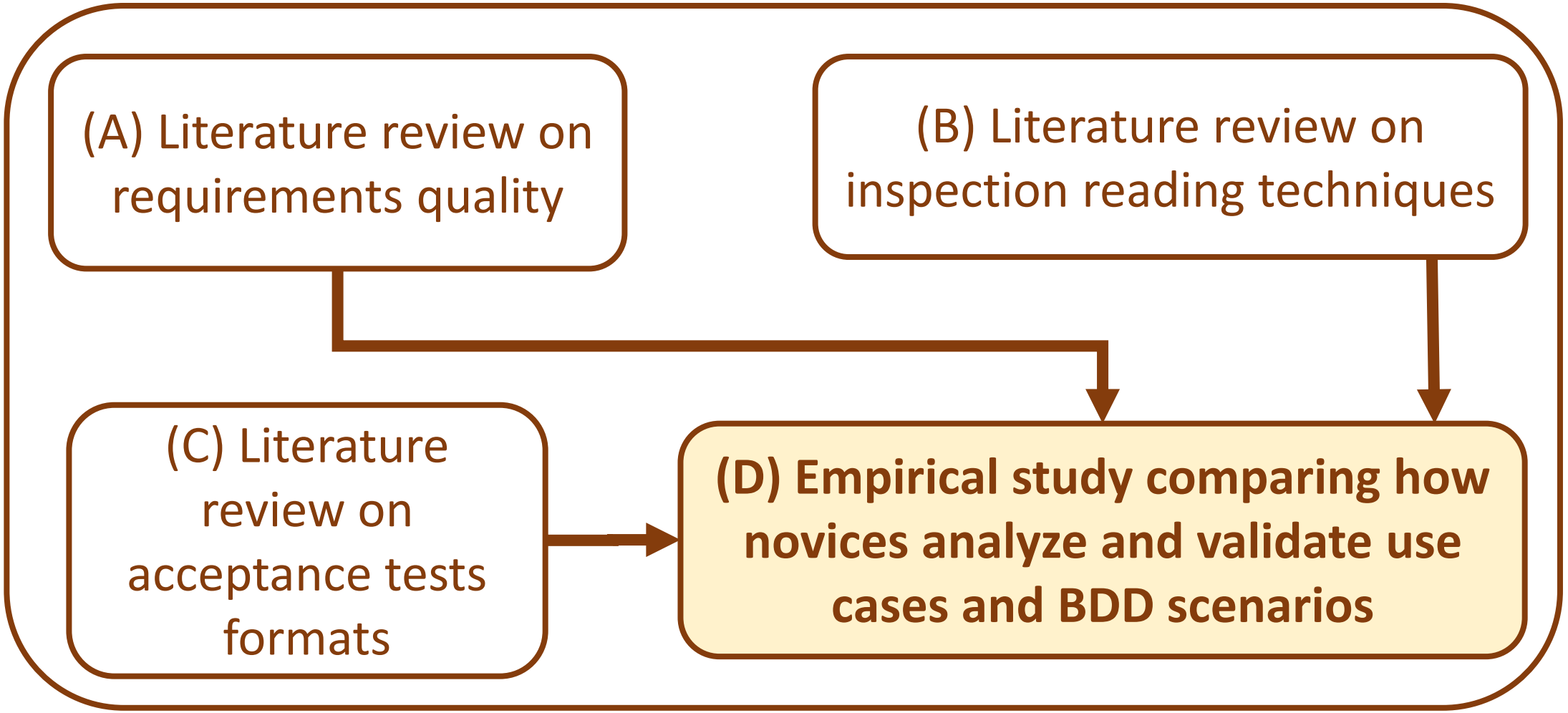
Research Plan: detailed phase 1