

GeoZone – Requirement analysis and use case analysis

Chapter 5



GeoZone project

Develop a geographical standard for zone spatial representation

Implementation of the data product specification document

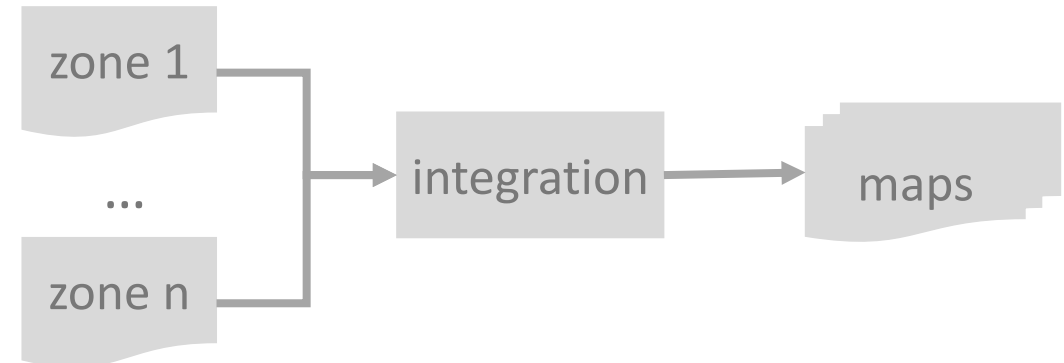
Test the standard in a pilot

Spatial Data Specification on Zoning version 1.0

Data product specification document for the *zone* geographical component
Working draft – 0.1

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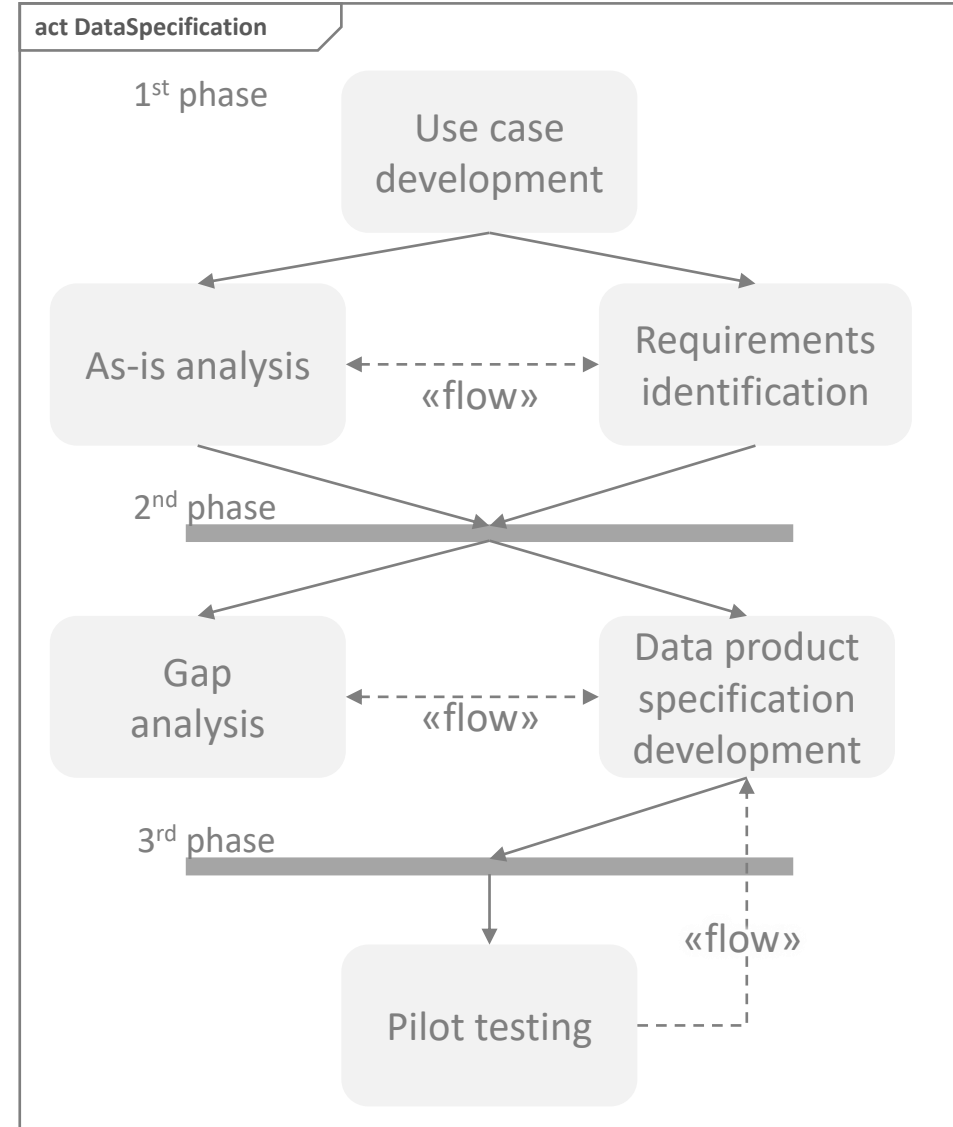


Methodology for the development of data specifications

Phase 1. Requirements identification

Phase 2. Data product specification

Phase 3. Pilot test



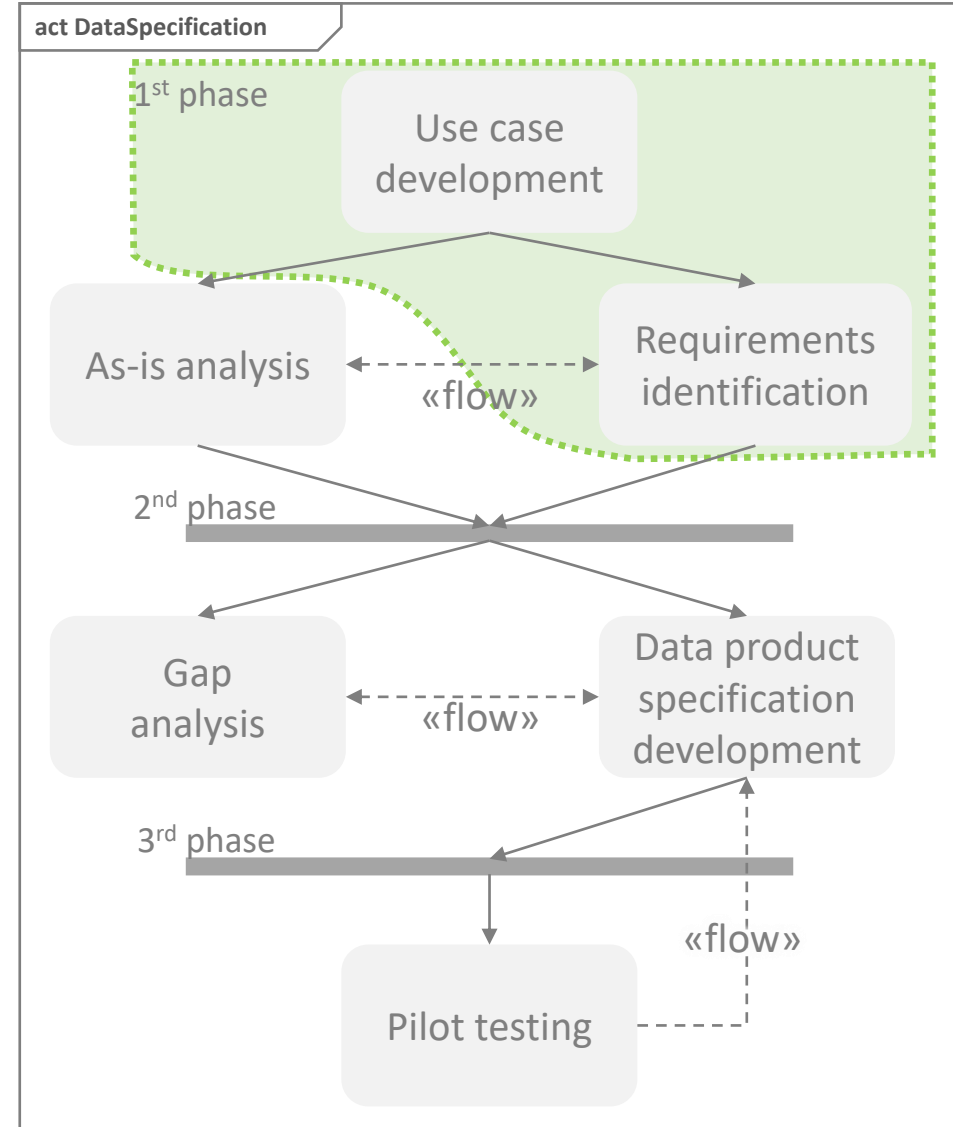
Requirement analysis and use case analysis

- Requirements analysis

the process of defining user expectations for new software being built or modified

- Use case analysis

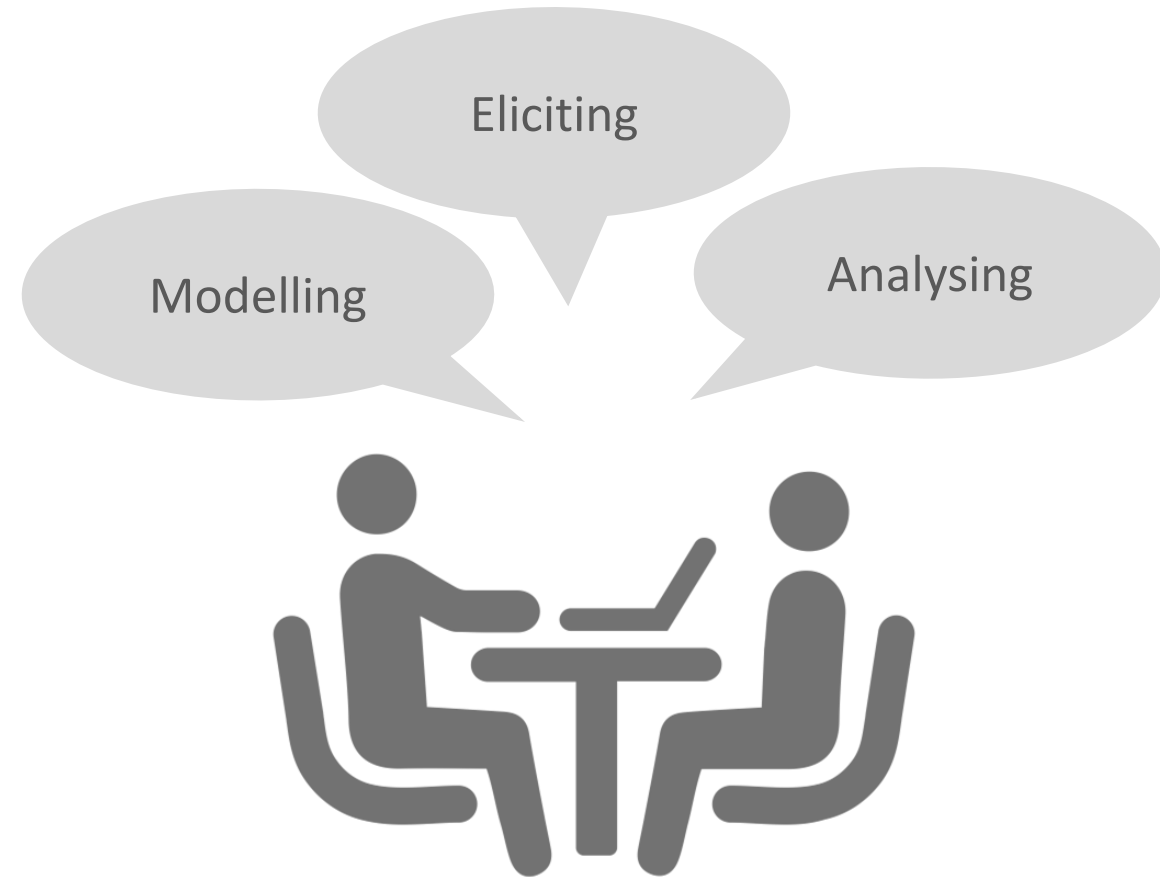
the process used to model the system functionalities from the perspective of a system user



Requirement analysis

Scope:

- to define the functionality of a system
- to define the expected system behaviour
- to check whether the system is providing all the functionalities required by users



● Requirements type

Functional requirements

- Details of operations conducted
- Data handling logic
- Descriptions of system reports or other outputs
- Complete information about the workflows performed by the system
- Fulfil regulatory requirements

Non-functional requirements

- Observable at runtime
 - i. Performance
 - ii. Availability/Reliability
 - iii. Usability
- Not observable at runtime
 - i. Extensibility/Adaptability
 - ii. Portability
 - iii. Maintainability

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Other requirements

System requirements

- Organizational constraints
- Operational constraints
- Legislative and Ethical constraints

Transition drivers

- Technological
 - *Data conversion and migration*
 - *Pilot testing*
 - *Infrastructure transition*
- Organisational
 - *User access and security rights*
 - *User preparation and transition*
 - *Business continuity*

● Use case analysis as a technique to identify requirements

Use cases describe the interaction between the system and external users that leads to achieving particular goals

- It is a good approach for finding **what** the system should do
- It offers a “familiar” representation of the system to stakeholders
- It is scalable
- It helps formulate system tests

Use case elements



Use case

It represents a discrete unit of interaction between an actor and the system



Actor

Whoever interacts with the use case under evaluation

- *Primary actor*
- *Secondary actor*



Goal

The final successful outcome that completes the process

- *Extent of the system*
- *Scope/Out of scope*



Scenario

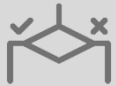
The sequence of discrete actions/interactions that takes place between the involved actors and the system

Use case elements - continue



Stakeholders

It is a role played by a person that has some sort of interest in the outcome of the system



Preconditions

Conditions that must hold before the execution of a task and will not be checked again after that



Triggers

The events that cause the beginning of the use case



Success end condition

The interests of the stakeholders have been satisfied at the end of the use case



Post-conditions

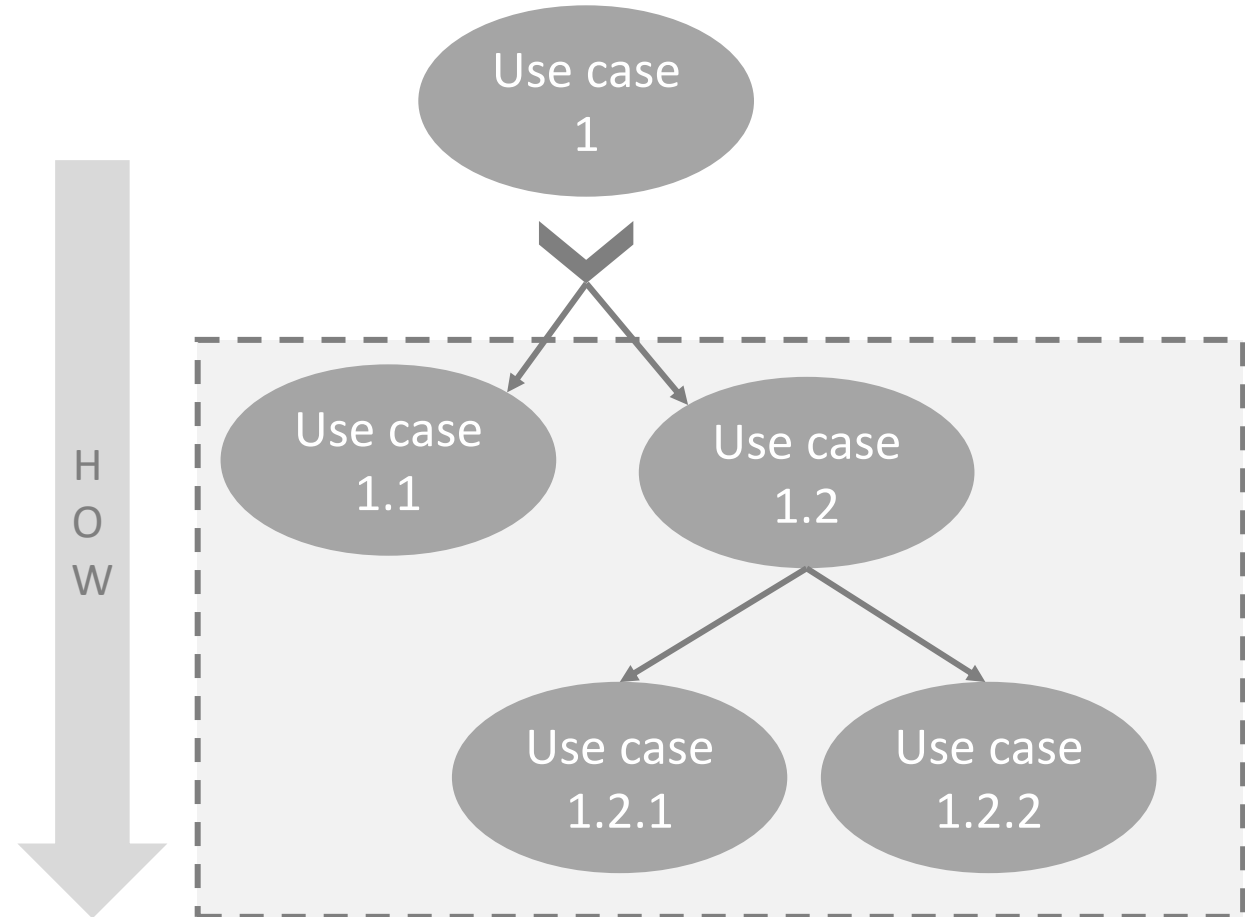
Conditions that should hold after the execution of a task

Use case - example

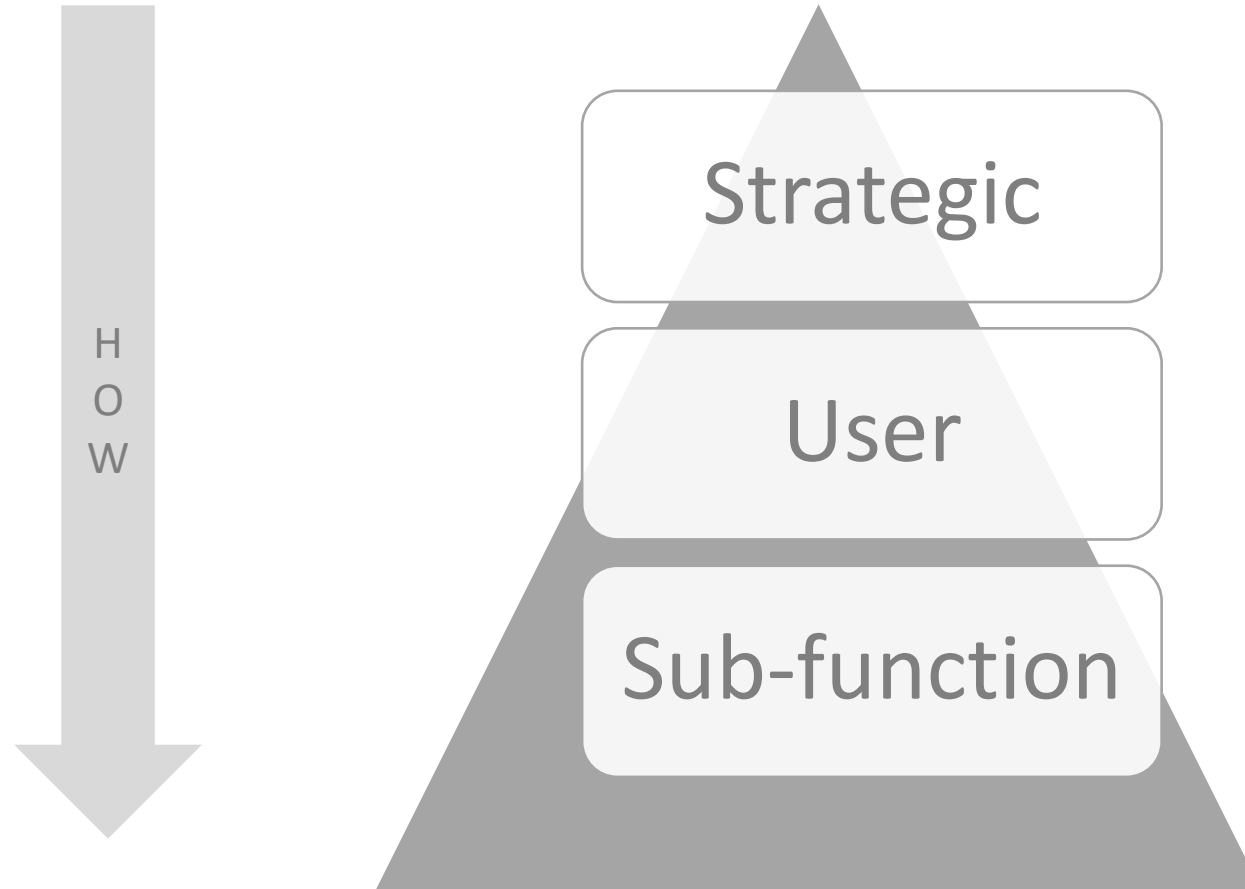
Element	Example
Use case	Find out the equine-disease-free zones (EDFZ) in XY country
Actor	Veterinarian
Goal	To check the presence of EDFZ in XY and eventually identify their location
Scenario	<ol style="list-style-type: none">1. Open the webGIS application2. Set the type of zone = EDFZ3. Select the country = XY4. Check the results
Stakeholders	The Member States that wish to control the cross-border transportations
Preconditions	WebGIS application is working
Trigger	The request of a racehorses owner to participate to the event in XY
Success end-condition	The zone has been found out and the map with the EDFZ is presented by the software

Use case goal





Risk: use case goal can be unfolded into smaller and smaller goals

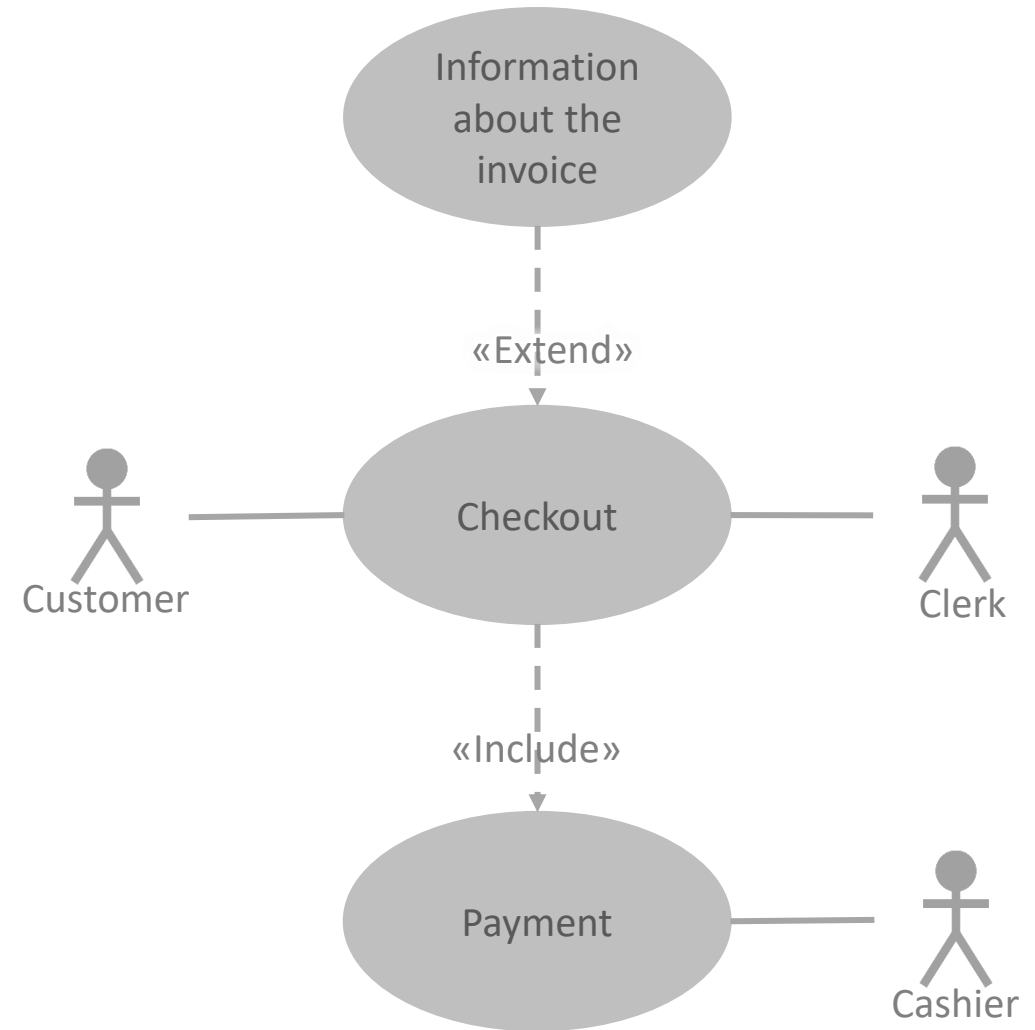


● Use case goal's level



Use case diagram

	Actor with the role
	Use case with the use case's name
	Association between actor and use case
	Relationship: <ul style="list-style-type: none">• extend indicates that an element extends the behavior of another• include indicates that the source element includes the functionality of the target element.



Use case description table

		ID: Use Case ID. In case of many use cases, the ID is used to unique identify the use case
Name of the use case	Name	Name of the use case. The use case name should provide a quick idea of the scenario described (as a short active verb phrase). Example: Draw a zone.
Actors (primary and secondary)	Actor	Two types of actors can be identified: 1) <u>Primary</u> : the actor with the goal of the system. It is the one that obtains a “result” from the system. Example: Spatial planner in the Member Country 2) <u>Secondary</u> : it is an external actor which provides a service to the system. Example: a veterinarian who has to do some research about the zones.
Goal : what the primary actor wants	Goal	A statement that describes the successful scenario. Example: Draw the zone’s boundary and to store the related characteristics of an Avian Influenza infected zone.
Level (summary, primary, sub-function)	Level	i.e.: Summary, Primary Task, Sub-function
Description	Description	The description of the use case. It can be in form of a brief “system-in-use story”: a single, highly specific, example story of an actor using the system. Example: The spatial planner defines the extent of the zone and draws the boundary according to a protocol derived from the legislation of the Member Country.
Pre-condition	Pre-condition	Preconditions specify the conditions that must hold true before the scenario of the use case starts and will not be checked again after that. Example: Ancillary spatial data (e.g. river branches, major roads, administrative boundaries, etc.) are available to the spatial planner.
Post-condition	Post-condition	Post-conditions specify what must have been achieved at the end of a successful use case. Example: the Zone has been drawn.
Relationship with other use case	Relationship with other use cases	List the reference with other use cases.
Sequence : steps for the successful scenario	Flow of Events – Successful scenario	
	Step 1 ..	Put here the steps of the scenario from trigger to goal delivery. Example: The spatial planner verifies the quality of the spatial information.
	Extensions: the conditions causing branching. Example: the zone extent is bigger than the country boundary	
	Step a1 ..	Action performed from the trigger of condition to the alternative end scenario.

Build use case



System-in-use story

To identify the non-functional requirements
required properties or qualities of the system



Card

stories are written as cards



Conversation

refined through a conversation between domain experts and the analyst



Confirmation

conditions and criteria for which the system would be accepted or rejected

Link images & icons

- Slide 5: job interview by Delwar Hossain from the Noun Project <https://thenounproject.com/search/?q=interview&i=1250151>
- Slide 11: Use case description by Swen-Peter Ekkebus from the Noun Project <https://thenounproject.com/search/?q=use+case&i=1234075>
- Slide 11, slide 16 and slide 18: Use case diagram actor by Swen-Peter Ekkebus from the Noun Project <https://thenounproject.com/search/?q=use%20case%20&i=1234074>
- Slide 11 and slide 18: scope by Tong Chalita from the Noun Project <https://thenounproject.com/search/?q=scope&i=150635>
- Slide 11: scenario by Vectors Point from the Noun Project <https://thenounproject.com/search/?q=scenario&i=2763497>
- Slide 12: Stakeholders by Eucalyp from the Noun Project <https://thenounproject.com/search/?q=stakeholder&i=2743272>
- Slide 12: condition by Arthur Shlain from the Noun Project <https://thenounproject.com/search/?q=condition&i=101727>
- Slide 12: activate by P Thanga Vignesh from the Noun Project <https://thenounproject.com/search/?q=trigger&i=3451738>
- Slide 12 and slide 18: complete by Dicron Studio from the Noun Project <https://thenounproject.com/search/?q=COMPLETENESS&i=2215459>
- Slide 12: condition by Eucalyp from the Noun Project <https://thenounproject.com/search/?q=if+condition&i=2470225>
- Slide 18: Compare by LAFS from the Noun Project <https://thenounproject.com/search/?q=compare&i=3377694>
- Slide 18: Error by Deemak Daksina from the Noun Project <https://thenounproject.com/search/?q=failure&i=1582580>
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- Slide 19: rule by akash k from the Noun Project <https://thenounproject.com/search/?q=rules&i=2631577>