Pearl 111
Requirements Engineering
Lecture 2

Klaas Sikkel

What we'll do this morning

- ***Lecture (with exercises) (1+2)***
  1. Introduction to case study "NS Passenger Services"
  2. Stakeholders
  3. Mission statement
  4. User stories
- ***Lab session (3+4)***
  - Specifying requirements for an app for NS Passenger Services

Case study: “NS Passenger Services”

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- NS is the major railway carrier in the Netherlands
  - runs all intercity trains and many regional trains
  - exploits all railway stations
- The public image of NS could be better
  - Most people take the train because they need to, *not* because they like it
  - The service is actually better than most people think
  - Nevertheless NS has some serious issues

Case study: “NS Passenger Services”

- Potential good idea:
  NS app to give feedback about service quality

- If this is a success, it could contribute to
  - Improved service quality
  - Improved perceived service quality
  - Improved customer loyalty

Case study: “NS Passenger Services”

- The app makes it easy to communicate shortcomings immediately (about, e.g.,
  - Travel information;
  - Cleanliness of the train;
  - Availability of seats;
  - Behaviour of the conductor)
- Positive feedback is also possible, of course ☺

Plan

- Having a prototype built
- Test how the customers react

  The prototype sends all complaints to the research company *(<u>not</u> to NS staff who should act upon it with the real app)*

- After testing the prototype, decide whether or not to introduce the app

MR Research

NS

Project 1: Building the prototype

- This is the project we work on this morning – with a focus on specifying requirements
- (Project 2, testing the prototype with real customers, would be a next project, carried out by a different group within MR Research)

- Question: What is the goal of Project 1?

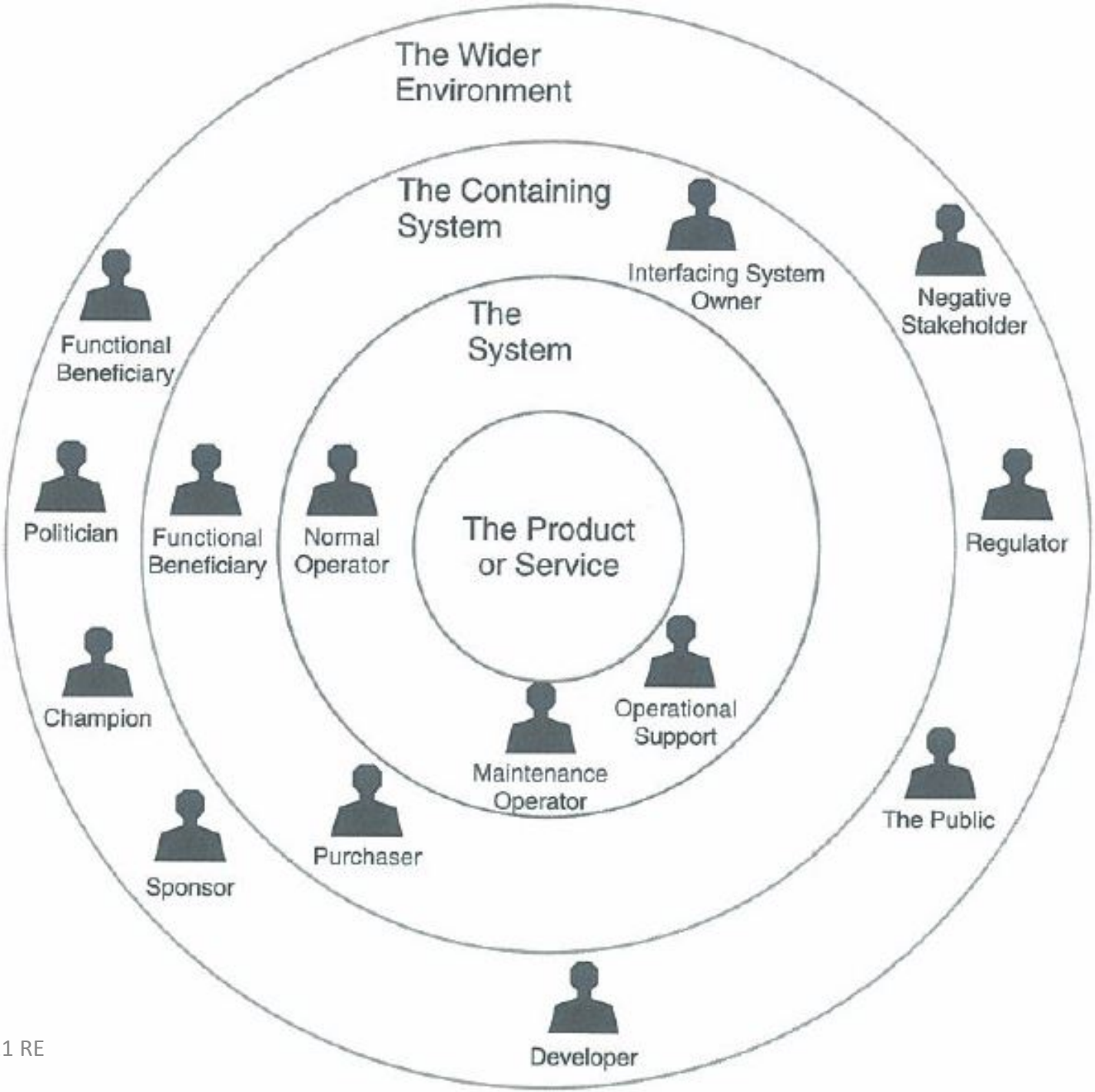
Project goal vs. External goal

- **Project goal:** realising a prototype for an NS feedback app
- **External goal:** making it possible to test the feasibility of a feedback with real customers

2. Stakeholders

- See appendix RE_A,
  Alexander & Beus-Dukic, Chapter 2

- **Stakeholder =**
  Person or legal body having some direct or indirect relation to the system and thereby a valid interest in its development


The Wider Environment
The Containing System
The System
The Product or Service
Functional Beneficiary
Politician
Champion
Sponsor
Functional Beneficiary
Normal Operator
Maintenance Operator
Purchaser
Interfacing System Owner
Operational Support
Developer
Negative Stakeholder
Regulator
The Public

Stakeholders: **Exercise**

Try to list as many stakeholders as you can for the NS feedback app prototype

(use the union model, starting from the inside)

[Do this together with the person(s) next to you – 10 minutes]

3. Mission statement

Technical, IT-specific definition:

- **Mission statement** =
  Standardized way of describing the essential charateristics of the system to be delivered

- Example:

- ***Motivation*** At secondary schools in the Netherlands, pupils have to choose a profile and specific subjects. Recent research has shown that most pupils (and their parents) struggle with this. IT-company Gecko thinks that it is possible to build a system that can help pupils to make a good choice, based on recommender algorithms and the data of 3.000.000 pupils in their database.
- ***Type of system*** The system will consist of a web interface and a recommendation engine that uses the (existing) Gecko database.

- ***Goal of the system*** Giving meaningful recommendations for profiles and subjects
- ***Exclusions*** The recommendations only give subjects that are commonly offered. Some schools offer ‘exotic’ subjects (e.g. Russian). The system cannot take such subjects into account.
- ***Approach*** The recommendation engine is to be based on two principles:
  (1) future grades for a subject can be predicted from a pupil’s past grades;
  (2) it is taken into account which factors the pupil considers important for choosing subjects.

Mission Statement: **Exercise**

- For a mission statement for the NS feedback app prototype, write the following paragraphs
  - Motivation
  - Type of system
  - **Goal of the system**
  - **Exclusions**
  - Approach

[Do this together with the person(s) next to you – 10 minutes]

Answer (partial)

- **Goal of the system:** The prototype will be used for a feasibility study about the usefulness of this app.
- **Exclusions:** The prototype does not send messages to NS staff who—in case of a real system—should have to act upon them.

4. User stories

- User stories decribe the functionality of the system from the user's perspective

- Standardized phrasing:
  - As a [stakeholder] I want ...
  - As a [stakeholder] I want ... so that ...

User stories - examples

- As a customer I want to pay with a credit card
- As a sales manager I want to have access to the current sales figures at any time

User stories - examples

- As a pupil I want to indicate what I find important for choosing subjects

- As a pupil I want to indicate a priority for each of the following aspects:
  - carreer perspective
  - subjects that I like
  - subjects that I am good at
  - subjects that are also chosen by my friends

User stories - examples

- As a system I want to have the data of at least 2.000.000 pupils who completed high school, so that I can give reliable recommentations

Acceptance criteria

- As a customer I want to pay with a credit card
  - Test with valid Mastercard (pass)
  - Test with expired VISA card (fail)
  - Test with ING bank pass (fail)

Quality requirements

- Quality requirements do not state which functionality is asked for, but how well (how fast, how reliable, ...) the functionality should be

- The wifi capacity should allow 150 students to log in simultaneously

Quality requirements

- Quality requirements do not need to be formulated as user stories:

- "~~As 150 students we want to log in simultaneously~~"
  The wifi capacity should allow 150 students to log in simultaneously

Security Requirements

Many security requirements are quality requirements

- E.g., that it is not possible to bypass the authorization is a property of the system as a whole, rather than one particular function
- Like most quality requirements, security requirements are difficult to test
  - For the secure passes/tags project, you need proper argumentation why your design choices implement the security requirements

User stories: **Exercise**

In the NS feedback app prototype, passengers can choose 1 of 4 categories:

Travel information / cleanliness / availability of seats / the conductor

For this category, the user can give a grade (1–10) and comments. The comments are optional, but giving a grade is mandatory.

Phrase this as a user story with acceptance criteria

[5 minutes, together with the person(s) next to you]

Answer

- As a passenger I want to choose one of the categories […], give a grade, and (optionally) give comments.
  - Test with grade and text (pass)
  - Test with grade and no text (pass)
  - Test with text and no grade (fail)
  - Test with grade 12 (fail)

Lab session next two hours:

- Complete the mission statement
- Think of some appropriate requirements
- Ask questions to a representative of NS Passenger Services (11:45 – 12:00)
- Complete the user stories
- Prioritize the user stories
  (see A primer on Requirements Analysis, section 5.1)

Ask questions to a representative of NS Passenger Services (11:45 – 12:00)

- There are two types of things you may want to ask:
  - We thought that requirement X would be a good one; what do you think of that?
  - What would you consider most important for this app?
    Or: What would you consider more important: feature A or B?