Requirements Engineering for Sustainability - Prototypes

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#SustainabilityDesign
#KarlskronaManifesto

Timeline

- Tuesday 29.3
  - 10-12 Open lecture "Software engineering for sustainability – The Karlskrona manifesto", Room 4511
  - 12-16 Opening of the course, Room 7441
- Wednesday 30.3
  - 18-22 LUT Beach Sauna, student idea presentations & discussions
- Thursday 31.3
  - 10-12 Stakeholder model and goal modelling, Room 4511
  - 12-14 Course work, Room 4511
- Friday 1.4
  - 10-12 System vision, Sustainability analysis and use cases, Room LS204
  - 12-14Course work, Room LS 204
- Monday 4.4.
  - 10-14 Intermediate presentations, Room 7441
- Tuesday 5.4
  - 12-16 Course work, Room 7441
- Wednesday 6.4
  - 8-10 Briefing for presentations, Room 7441
  - 10-12 Course work, Room 7441
- Thursday 7.4
  - 10-14 Course work, Room 7441
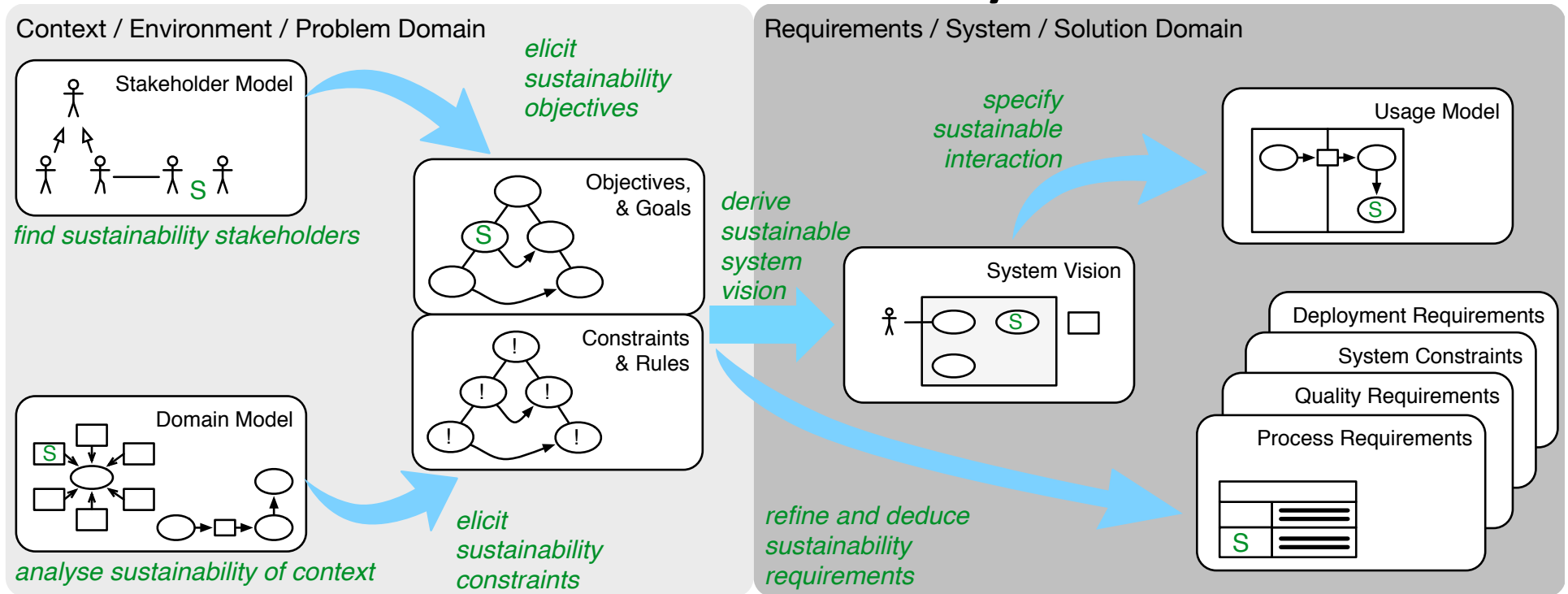- Friday 8.4
  - 12-16 Final presentations, Room 7441

Outline & Overview

Documentation

Technical Report

Presentation

Requirements Engineering for Sustainability

Context / Environment / Problem Domain

Stakeholder Model

elicit sustainability objectives

find sustainability stakeholders

Objectives, & Goals

Domain Model

analyse sustainability of context

Constraints & Rules

elicit sustainability constraints

derive sustainable system vision

Requirements / System / Solution Domain

specify sustainable interaction

Usage Model

System Vision

refine and deduce sustainability requirements

Deployment Requirements
System Constraints
Quality Requirements
Process Requirements

Example checklist for analyzing environmental sustainability for a software system.

Guiding Questions for Green RE:
1. Does the system have an explicit sustainability purpose?
2. Which impact does the system have on the environment?
3. Is there a stakeholder for environmental sustainability?
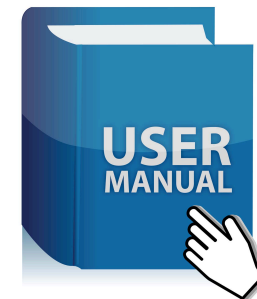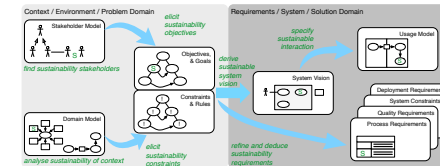4. What are the sustainability goals and constraints for the system?

Documentation

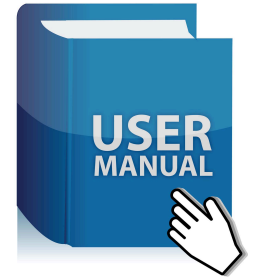1. Specifications

2. User Manual

3. Developer Guide

This time: Only 1., but I wanted
to mention the others.
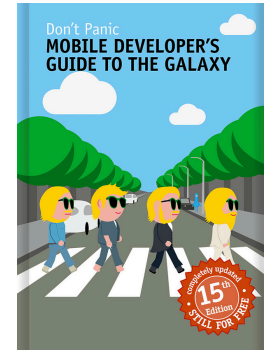
Specification

1. Make a title page with project name, course name, and your names
2. Write an abstract for the specification stating
    1. Context (of your application area)
    2. Problem (that your system solves)
    3. Contribution (your system idea)
    4. Impact (how this will improve everything)
3. Describe every diagram in at least two paragraphs of text: (F)BMC, Stakeholders, Goals, System vision, Usage model, Sustainability Analysis, Mock-ups/Prototypes
4. Make sure your diagrams have legends.
5. Write a conclusion with summary and future steps you plan to or could conduct next.

User Manual

1. http://online-learning.com/five-tips-writing-user-manual/

2. http://grammar.yourdictionary.com/grammar-rules-and-tips/tips-on-writing-user-manuals.html

3. http://www.sitepoint.com/7-tips-for-writing-an-effective-instruction-manual/

4. Good example: http://instafeedjs.com/

Developer Guide

http://write-the-docs.readthedocs.org/en/
latest/writing/beginners-guide-to-docs/

Readme.txt

```
$project
========

$project will solve your problem of where to start with documentation,
by providing a basic explanation of how to do it easily.

Look how easy it is to use:

    import project
    # Get your stuff done
    project.do_stuff()

Features
--------

- Be awesome
- Make things faster

Installation
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Install $project by running:

    install project

Contribute
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- Issue Tracker: github.com/$project/$project/issues
- Source Code: github.com/$project/$project

Support
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If you are having issues, please let us know.
We have a mailing list located at: project@google-groups.com
```

Technical Report

- Template from library

- I will put your contributions together and write an intro for the report

- Please give me the complete specification as well as the diagram sources in an editable format (online document links or files) to make that easier for me

A word on Quality Assurance

Depending on the quality criteria for a project, responsible for checking are:

Project team members with domain knowledge during elaboration of the requirements, e.g. „correctness"
→ this is called constructive QA

External/neutral quality responsibles who perform checks, e.g. „traceability" and „understandability"
→ this is called analytical QA

In your case, it's both responsibilities

QA
- Constructive
  - Process standards
    - Quality criteria
    - Linguistic rules
  - Programming guidelines
    - Naming conventions
    - Structuring conventions
- Analytical
  - Analyzing
    - Metrics
    - Anomaly analysis
    - Graphics
  - Testing
    - Dynamic tests
    - Review/ inspection
    - Autom. static analysis
  - Verifying
    - Formal verification
    - Model checking

Presentations

- Tomorrow, Friday, 12-16 in this room
- Start with system vision to remind us all of the context
- Present your sustainability analysis
- Present your mock-ups and prototypes

Todos

- Prepare your documentation / specification
  → Send me a PDF version as deliverable (1 file)

- For the Technical Report:
  → Send me all editable files (or links to them)

- Prepare your presentation for tomorrow

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