

University Meets Industry: Calling in Real Stakeholders



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Motivation



Theory → Practice

Motivation: Case study based learning

- Formal education in RE provides knowledge
- How about the skills?
 - Application of knowledge
 - Communication
 - Team skills
 - Affective attributes



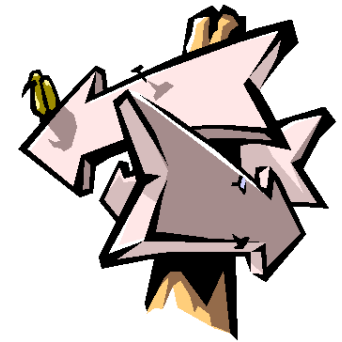
Motivation: Case study based learning & research

- Recruiters look more for soft skills [Hermann2013]
- Practicing in a “safe” learning environment
- Chance to perform research



Outline

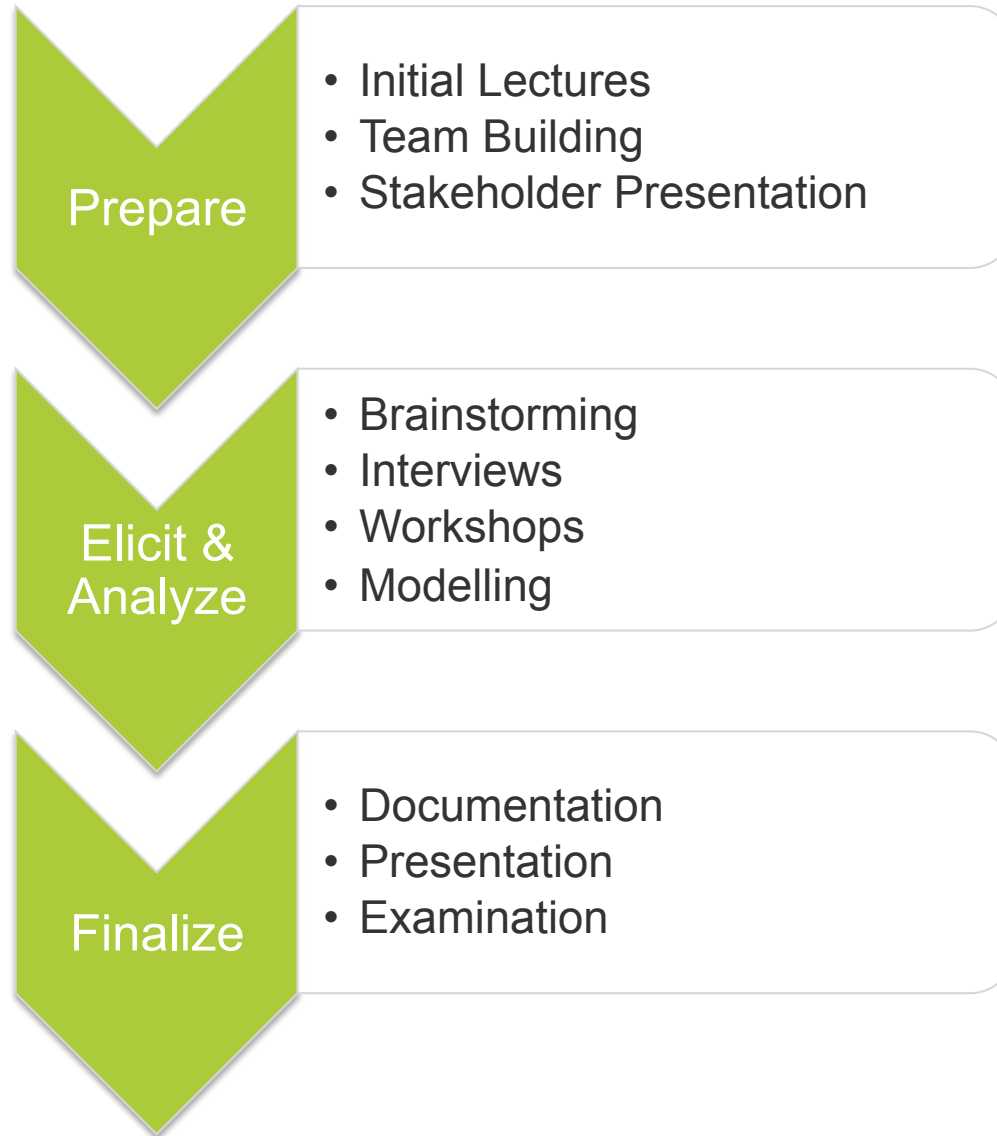
- Study Design
- Study Implementation & Results
- Discussion
- Conclusion & Future Work



Learning Goals



Study Design



Study Implementation

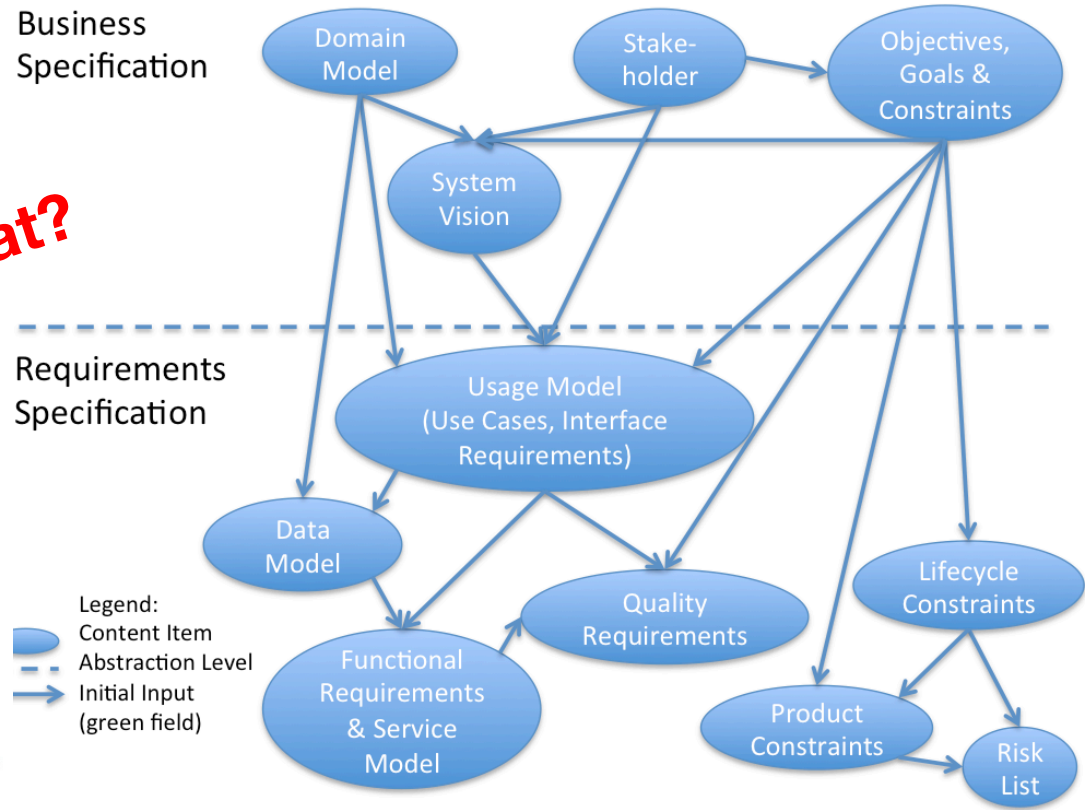
| University | TU München | Univ. of Namur |
|-------------|--|--|
| Responsible | Manfred Broy | Patrick Heymans |
| Designer | Birgit Penzenstadler | Martin Mahaux |
| Trainees | 22 MSc students Software Engineering | 18 MSc students, 50% Info Systems 50% Mngmt Science |
| Time frame | 28 lecture + 32 case study | 4 lecture + 46 case study |
| Stakeholder | Project manager „DriveNow“ BMW | HR director UN, experts in mobility & application design |
| Project | Case study for system already implemented | System possibly intended to be built |



Implementation - Artefact Model for Requirements

How do you document requirements?

Have you ever done that?



Implementation - Tooling for Artefact Model

Use Case Diagram Diagram: "Usage Model" created: 08.03.2012 13:04:48 modified: 09.03.2012 12:03:55 100% 827x 1169

UseCase : Maintain safe distance while driving

Properties

- General
- ARAMIS
- Tagged Values
- Rules
- Requirements
- Constraints
- Scenarios
- Related
- Files
- Links

ARAMIS::Use Case (Maintain safe distance while driving)

| | |
|------------------------------------|--|
| 01. Use Case # | Maintain safe distance while driving |
| 02. Context of Use | Safe driving |
| 03. Scope | System |
| 04. Level | Primary Task |
| 05. Primary Actor | «Actor»Driver |
| 06. Secondary Actor | «Actor»Other Vehicle |
| 07a. Stakeholder #1 | «Stakeholder»Driver |
| 07b. Stakeholder #1 Interest | Arrive at destination |
| 08a. Stakeholder #2 | «Stakeholder»Police |
| 08b. Stakeholder #2 Interest | Drivers must drive within speed limit |
| 09a. Stakeholder #3 | |
| 09b. Stakeholder #3 Interest | |
| 10a. Stakeholder #4 | |
| 10b. Stakeholder #4 Interest | |
| 11a. Stakeholder #5 | |
| 11b. Stakeholder #5 Interest | |
| 12. Preconditions | System is up and running |
| 13. Minimal Guarantees | System issues a warning in case of failure |
| 14. Success Guarantees | Safe distance is maintained while driving |
| 15. Trigger | Driver enables the system |
| 16. Description | See scenario |
| 17. Technology and Data Variations | Display warning or cruise control |

17. Technology and Data Variations
technology and data variations

OK Abbrechen Überehmen Hilfe

Project Browser

- Model
- Requirement Engineering
- Context
- System/Product Requirements
- Data Model
- Functional Requirements and Functional Hierarchy
- Lifecycle Constraints
- Product Constraints
- Quality Requirements
- Risks List
- Usage Model
- Usage Model
- «Actor» Driver
- «Actor» Other Vehicle
- «Use Case» Maintain safe distance while driving

Scenarios

Cockburn-Template

Element Description

Result – Requirements Deliverable & Project Diary


REQUIREMENTS ENGINEERING IN MOTION

REQUIREMENTS ENGINEERING IN MOTION

REQUIREMENTS ENGINEERING IN MOTION
Industrial Case Study in cooperation with BMW

REQUIREMENTS ENGINEERING IN MOTION
Industrial Case Study in cooperation with BMW

DriveNow
Easy Car Rental



"Requirements Engineering in Motion"
Industrial Case Study with BMW

"Requirements Engineering in Motion"
Industrial Case Study with BMW

"Requirements Engineering in Motion"
Industrial Case Study with BMW

"Requirements Engineering in Motion"
Industrial Case Study with BMW

Project Diary
Version 0.5

| | |
|--------------|--|
| Project Name | "Requirements Engineering in Motion" Industrial Case Study with BMW |
| Responsible | --- |
| Created on | 12/08/2011 |
| Last changed | 12/22/2011 |
| State | X In Progress |
| | Submitted |
| | Completed |

Change Listing

| Changes | | | Changed Chapters | Change | Author | State |
|---------|-----------|---------|-------------------|-------------------------------|---|-------------|
| No. | Date | Version | | | | |
| 1 | | 0.1 | All | Initial work product creation | | |
| 2 | 12/8/2011 | 0.2 | Separate document | Deliverable 1 | Patrick Bernhard, Thomas Bley, Oliver Feldmann, Benedikt Hirmer, Tobias Weigl | finished |
| 3 | 12/8/2011 | 0.3 | 2.1 2.2 | Diary | Patrick Bernhard, Thomas Bley, Oliver Feldmann, Benedikt Hirmer, Tobias Weigl | In Progress |

Allowing for creativity and autonomy means we need to allow mistakes.
We need to give feedback so they learn from those mistakes.

Assessment & Lessons Learned

- Students
 - Feedback: good
 - Artifact quality: decent
 - Success rate: high
 - Competencies: improved
- Stakeholders
- Research
- Responsibility
- Effort & Costs



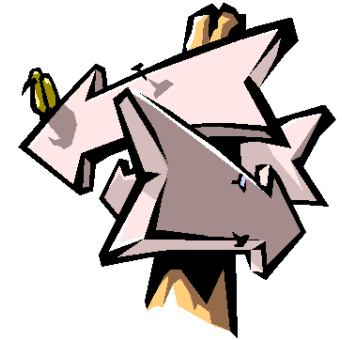
Assessment & Lessons Learned

- Students: successful
- Stakeholders
 - Positive feedback
 - Different objectives
- Research
 - Creativity: improv techniques
 - Sustainability requirements
- Responsibility: high motivation
- Effort & Costs: planning



Outline

- Study Design
- Study Implementation & Results
- Discussion
- Conclusion & Future Work



Discussion



www.toonsup.com/hsbcartoon

- Benefits
 - Improved skills
 - Research
- Drawbacks
 - Close-to industrial setting
 - Availability of stakeholders
 - Different learning goals
- Success Factors:
 - Freedom
 - Feedback
 - Real problem
 - Teams
 - Fun
- Validity: no formal analysis

Conclusion & Future Work

- Repeat
- Copy
- Improve
- Report

