

# Cooperating with a Non-governmental Organization to Teach Gathering and Implementation of Requirements

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# Motivation: Real vs. virtual stakeholders in teaching RE

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- Usual approach: virtual stakeholders
  - Faculty staff
  - IT students
  - Non-IT students [GGSN10]
  
- Real stakeholders:
  - Domain gap (simulated in [GGSN10])
  - Motivation
  - Interview location

# Motivation: Real vs. virtual stakeholders in teaching RE

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Students need to learn to

- Bridge barriers (e.g., in terminology)
- Identify and manage inconsistencies
- Guide and focus interview
- Distinguish between a good and a bad interview situations
- Required situations are difficult to simulate with virtual stakeholders

# Motivation: Problem

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- Precondition for authenticity:
  - A real stake (need)
  - Real impact of interview to be expected
- For most organizations holds:
  - Real stake
  - Time constraints & useable system required

Industry: need for a product

time constraints

economic pressure

University: desire to teach

semester timing of university

need for free space to make mistakes

**Contradiction?**

# Structure

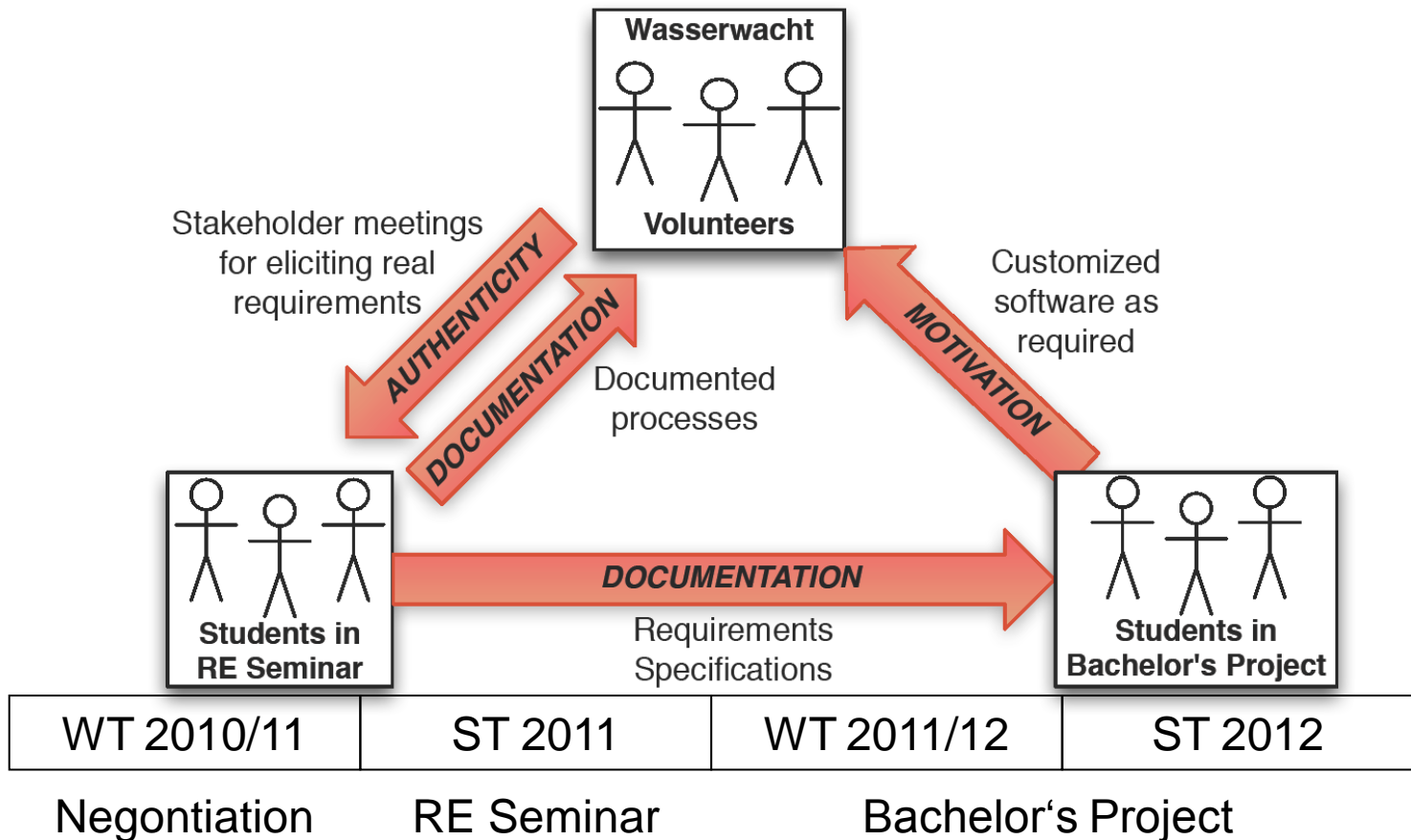
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- Motivation
- Resolution approach
  1. Seminar
  2. Bachelor's Project
- Lessons learned
- Discussion

# Resolution approach

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- Cooperating with a Non-Governmental Organization (NGO)
- Wasserwacht: life guard service for waters



# Resolution approach

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## Question 1:

- **Authenticity:** Can this setting be used to engage real stakeholders for teaching?

## Question 2:

- **Feasibility:** Is this setting feasible (and repeatable)?
  - Satisfaction of industry partner
  - Continuous investment of industry partner
    - 3 semesters running courses!

WT 2010/11	ST 2011	WT 2011/12	ST 2012
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Negotiation

RE Seminar

Bachelor's Project

# Structure

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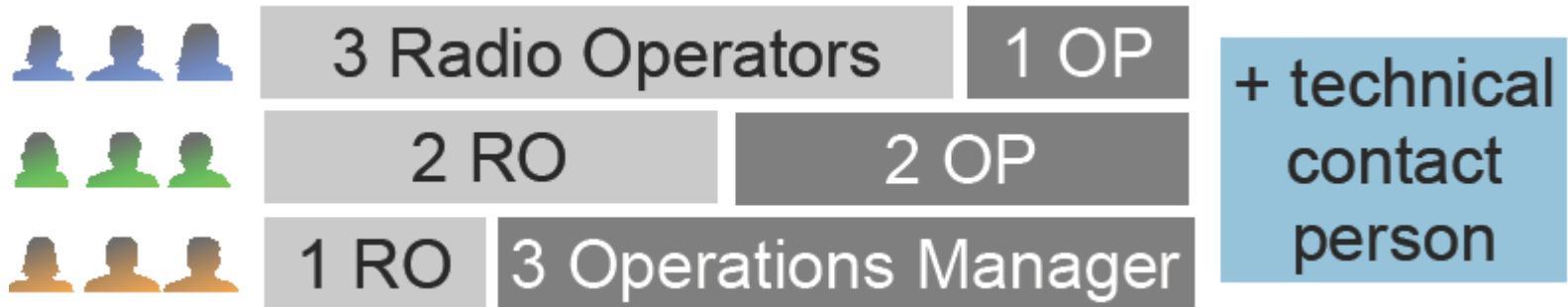
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# 1. Seminar Run

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## ■ Setting:



1. Representative of Wasserwacht presented vision of required software during 1st session
2. 6 sessions theoretical preparation
3. Per stakeholder: 2 interviews (elicitation and validation) within 2 weeks
4. Specification: common template for requirements specification

➤ Result: 3 specifications, 330 pages

# 1. Seminar

## Authenticity in Stakeholder Interactions

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- We formulated 8 expectations on authenticity
  
- Evaluation:
  - Anecdotal evidences
  - Questionnaire
    - ◇ Filled out by 8 of 9 students from seminar
    - ◇ 7-point Likert scales to agree or disagree statements
    - ◇ (1 for strong disagreement – 7 for strong agreement)

# 1. Seminar

## Authenticity in Stakeholder Interactions

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Real stakeholders	Expectations
Domain gap	<b>E2</b> Students experience inconsistencies between terminology used by different stakeholders



- Stakeholders use different terms for the same concept
  - E.g., “Matrix” vs. “Alarmplan”

# 1. Seminar

## Authenticity in Stakeholder Interactions

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Real stakeholders	Expectations
Domain gap	<b>E3</b> Students experience a difference between the expectation of different stakeholders



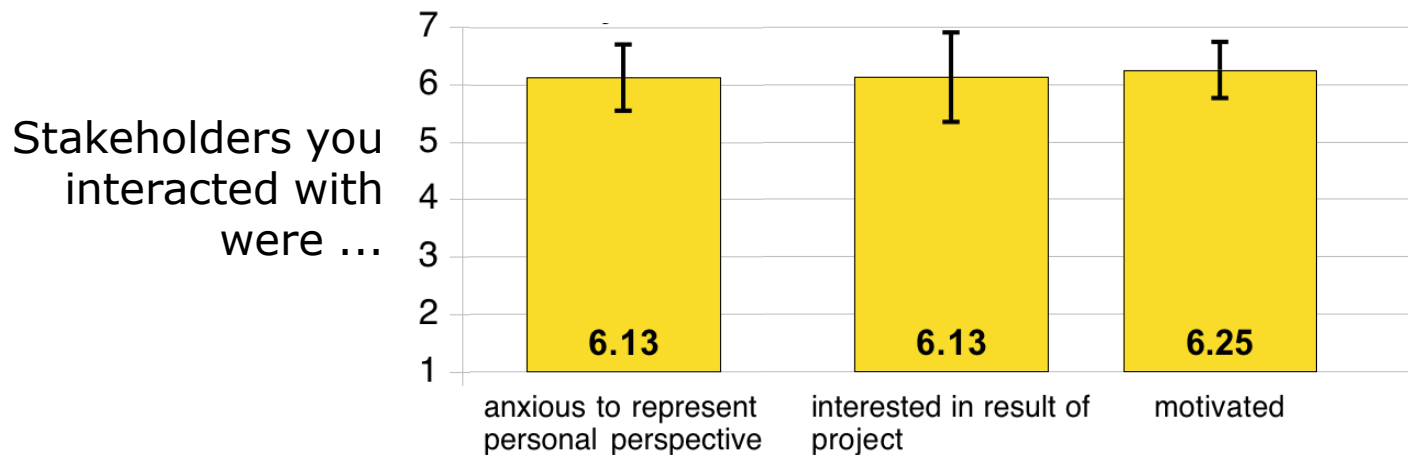
- Anecdotal evidence:
  - a manager requested a statistic component for fuel consumption
  - Boatmen opposed
- In general: 5 of 7 students disagreed with statement that “all stakeholders have the same expectations on the system”

# 1. Seminar

## Authenticity in Stakeholder Interactions

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Real stakeholders	Expectations
Motivation	<b>E6</b> Engaged stakeholders are anxious to represent their personal perspective 



# 1. Seminar

## Authenticity in Stakeholder Interactions

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Real stakeholders	Expectations
Motivation	<b>E7</b> Engaged stakeholders are likely to interrupt each other, to discuss or argue facts 

- Anecdotal evidence: spontaneous discussion about usage and intention of a form
- In general: many small comments

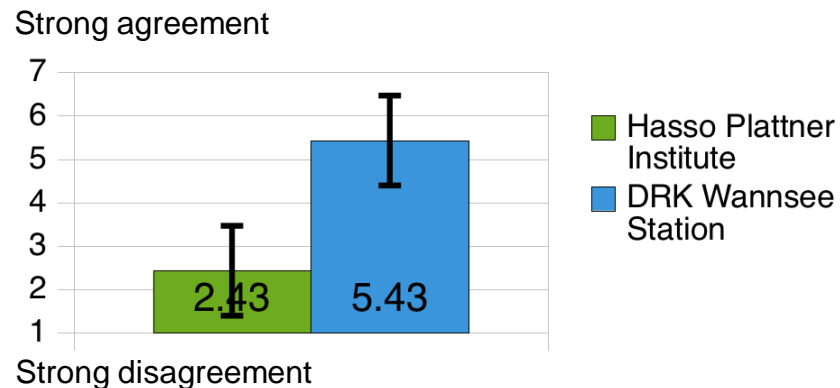
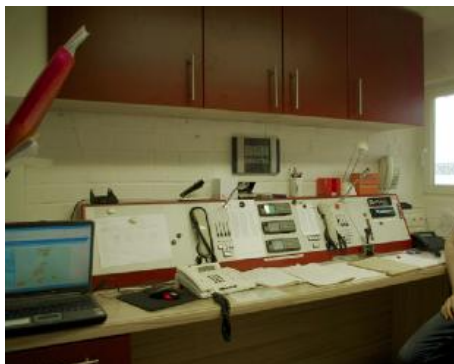
# 1. Seminar

## Authenticity in Stakeholder Interactions

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Real stakeholders	Expectations
Interview location	<b>E8</b> Environmental stimuli enable stakeholders to remember details they would omit otherwise [SeyffMK09]

- Students' agreement on
  - "Stimuli from the environment enabled stakeholders to remember details they would have omitted otherwise."



# Structure

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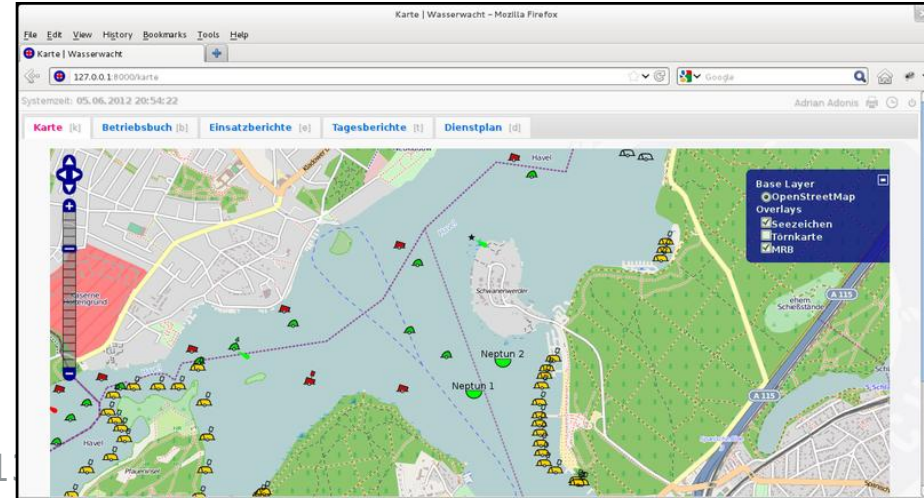


# 2. Bachelor's Project Run & Result

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- 4 students, 2 contact persons at Wasserwacht
1. 09/2011: Bachelor's project students met RE students
  2. 11/2011: Synthesis of documents
  3. 01/2012: Designs were iterated using paper prototypes
  4. 02-07/2012: Implementation and V&V
  5. 07/2012: Students presented prototype to Wasserwacht

The screenshot shows a web browser window with the title 'Einsatz 12037 bearbeiten | Wasserwacht - Mozilla Firefox'. The address bar shows '127.0.0.1:8000/einsatzberichte/bearbeiten/34e4039c12544b453af97a23dc5d95W'. The system time is '05.06.2012 20:55:36'. The page has several tabs: 'Karte', 'Betriebsbuch', 'Einsatzberichte', 'Tagesberichte', and 'Dienstplan'. The main content is a form for editing an incident report for 'Einsatz 12037'. The form includes fields for 'RUFZEICHEN' (RK 80/09/20), 'TAG ERSATZBEREICH' (05.06.2012), 'UHRZEIT ERSATZBEREICH' (11:49:12), 'TAG ERSATZZEICHEN' (05.06.2012), and 'UHRZEIT ERSATZZEICHEN' (18:54:53). There are sections for 'AUSLÖSENDE BETRIEBSBUCHBEITRAG' and 'BEFORDERER BETRIEBSBUCHBEITRAG', both with the value 'gek'. The 'AUFTRAG VOIC' section has checkboxes for 'EIGENMELDUNG', 'SEGLERBOOT', 'GK. SEGLER', 'MOTORBOOT', 'PW', 'SUFER', 'SAS', 'RUDEBOOT', 'SCHLAUCHBOOT', and 'TECHN. HILFE'. The 'LAGE' section has fields for 'Ortlichkeit' (Breitethorn), 'ABFAHRT VOIC' (Schwanenwerder), and 'ERSATZZIEL' (Segler aufrichten). There are also fields for 'SEGL-KENNZEICHEN' and 'ANZAHL PERSONEN'. A 'Speichern' button is at the bottom right.



## 2. Bachelor's Project Impact of Setting

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- Normal BPs:
  - 1 or 2 contact persons as only stakeholders
  - No heterogeneous or conflicting requirements
  
- Instead:
  - Additional heterogeneous requirements from 13 stakeholders
  - BP students experienced
    - ◇ Challenge of balancing requirements
    - ◇ Responsibility for discussing the contact persons point of view (if it was contradicting to RE documents)

# Structure

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- Motivation
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# Lessons learned

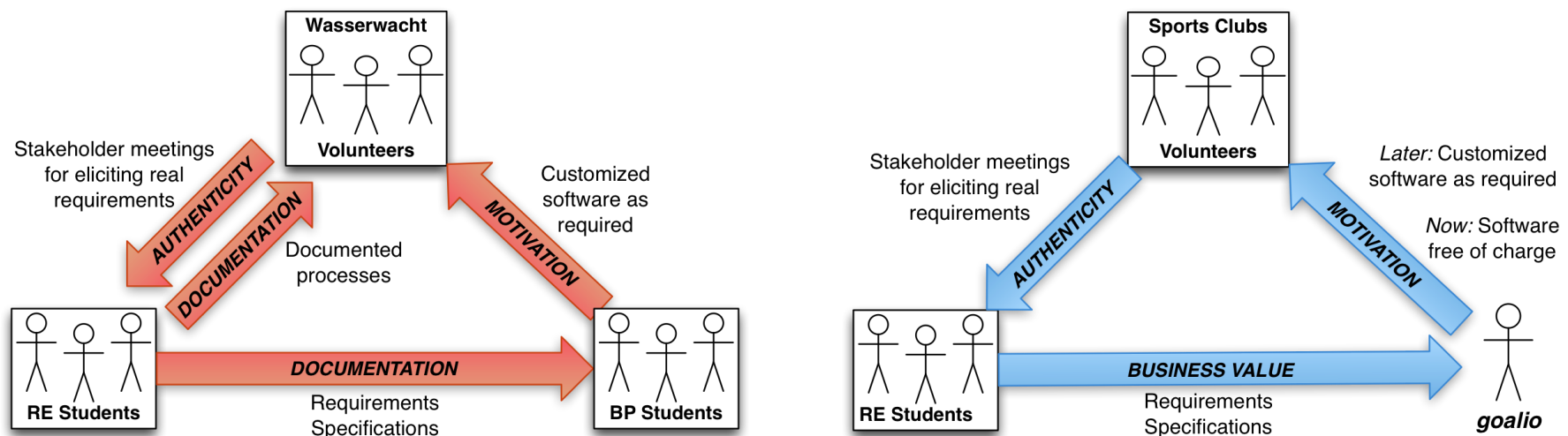
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- Replacement options:
  - Single stakeholders sometimes difficult to reach
  - Providing the students with guidance how to proceed is crucial for the timing (e.g. “ad-hoc replacements are fine”)
  
- Monitoring interviews:
  - Necessary to prevent escalations
  - But: time-consuming
  - Combined with limited stakeholder availability, the biggest scalability issues

# Outlook: Scalability

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- Alternative solution: IT-Startup [GGG11]
- Scalability:
  - NGO: relative low number of students and high effort for faculty members
  - IT-Startup: [GGHG12]
    - ◇ Better scalability (different sports clubs)
    - ◇ Software development company required



# Conclusion

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- Proposed setting is feasible
  - NGO was satisfied and even recommended us to partner NGOs
  - Contact persons stayed interested and invested during the whole time
- Students gained realistic experiences with real stakeholders
- Even students in bachelor's project could benefit

