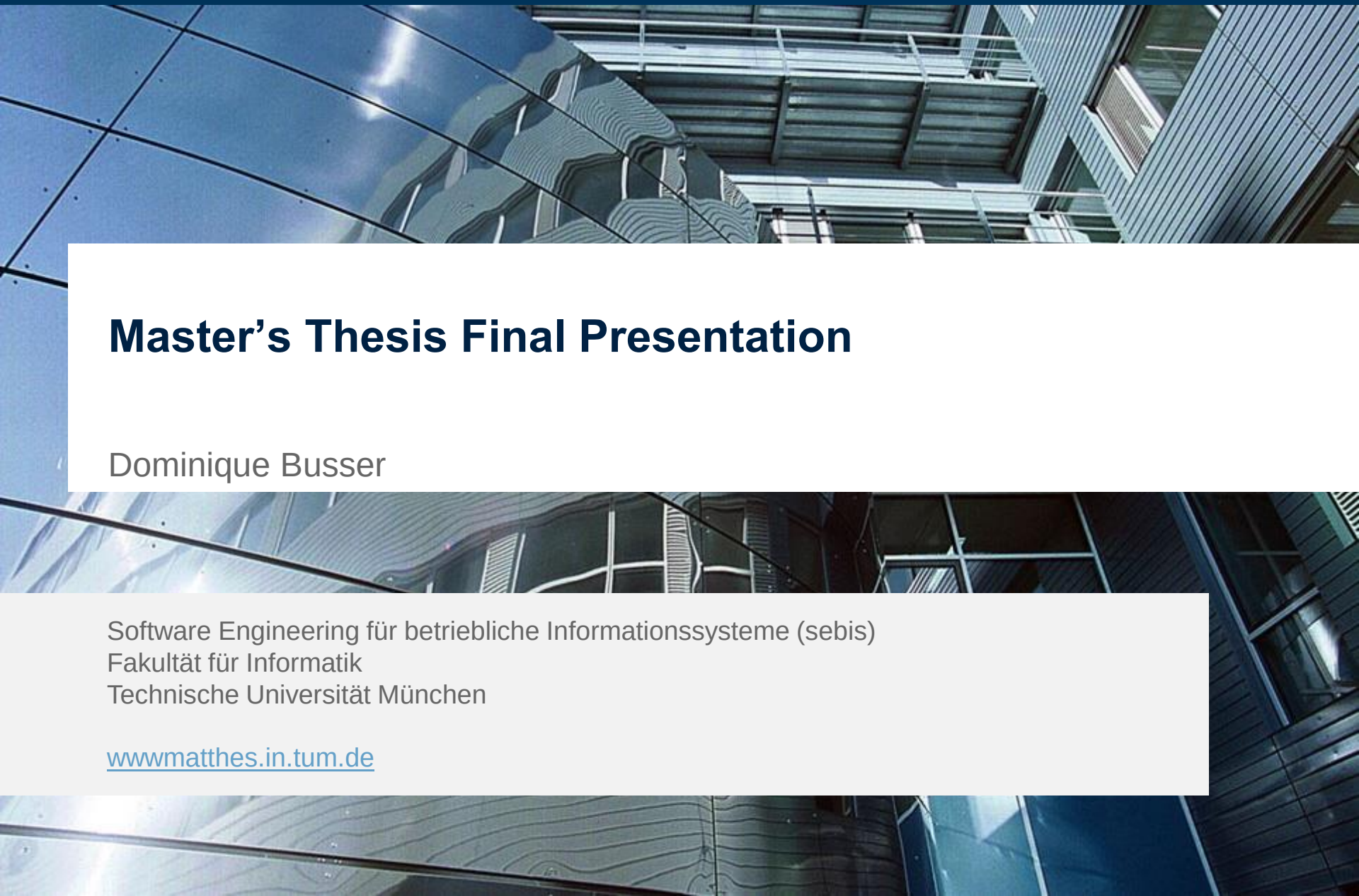

Master's Thesis Final Presentation

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Agenda

“Design and Prototypical Implementation of the General Morphological Analysis as a Collaborative Web Application for Modelling and Solving Wicked Problems”

1. **Wicked Problems and Business Modelling**
2. **General Morphological Analysis**
3. **Demo**
4. **Findings and Conclusion**

Wicked Problems and Business Modelling

- **What is a *„wicked problem“*?** *(Rittel, 1972)*
  - No single problem formulation
  - The actual problem is impossible to define
  - No right or wrong answers, just better or worse

- **How does this apply to Business Modelling?**
  - ✓ Problem definition heavily influences solution
  - ✓ Unique problem character
  - ✓ Missing exit condition
  - ✓ No right or wrong solution
  - ✓ Infinite solutions

→ Business Modelling can be considered a Wicked Problem

General Morphological Analysis – 1/3

Let‘s plan our next holiday!

Step 1:

Break down the problem into **parameters** and **attributes**

Destination	Distance	Cost
Mountains	0-200 km	0-100 EUR
City	200-500 km	100-500 EUR
Beach	500+ km	500+ EUR

General Morphological Analysis – 2/3

Step 2:

Rate all attribute combinations using a compatibility matrix

		Cost: **0-100 EUR**	Cost: **100-500 EUR**	Cost: **500+ EUR**	Distance: **0-200 km**	Distance: **200-500 km**	Distance: **500+ km**
Distance	0-200 km						
	200-500 km						
	500+ km						
Destination	Mountains						
	City						
	Beach						

General Morphological Analysis – 2/3

Step 2:

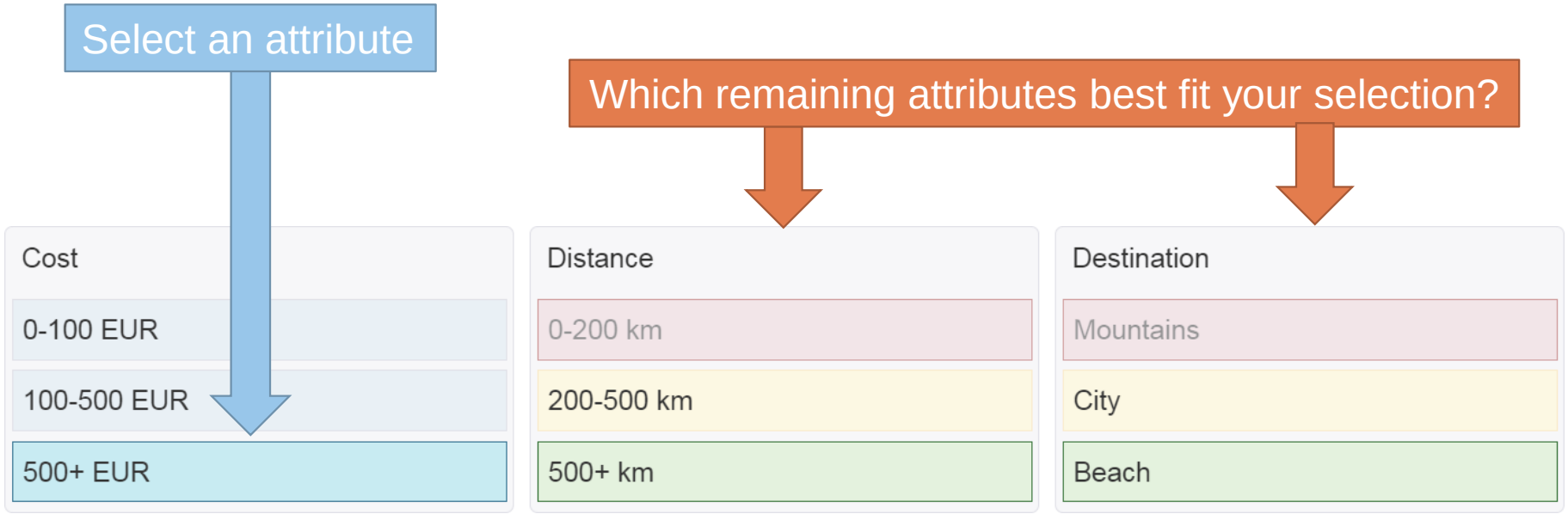
Rate all attribute combinations using a compatibility matrix

		Cost: 0-100 EUR	Cost: 100-500 EUR	**Cost: 500+ EUR**	Distance: 0-200 km	Distance: 200-500 km	Distance: 500+ km
Distance	0-200 km	Good	OK	Bad			
	200-500 km	Good	OK	OK			
	500+ km	Good	OK	Good			
Destination	Mountains	Good	OK	Bad	Good	OK	Bad
	City	Good	OK	OK	Good	Good	Bad
	Beach	Good	Good	Good	OK	OK	Good

General Morphological Analysis – 3/3

Step 3:

Explore possible **solutions** step-by-step

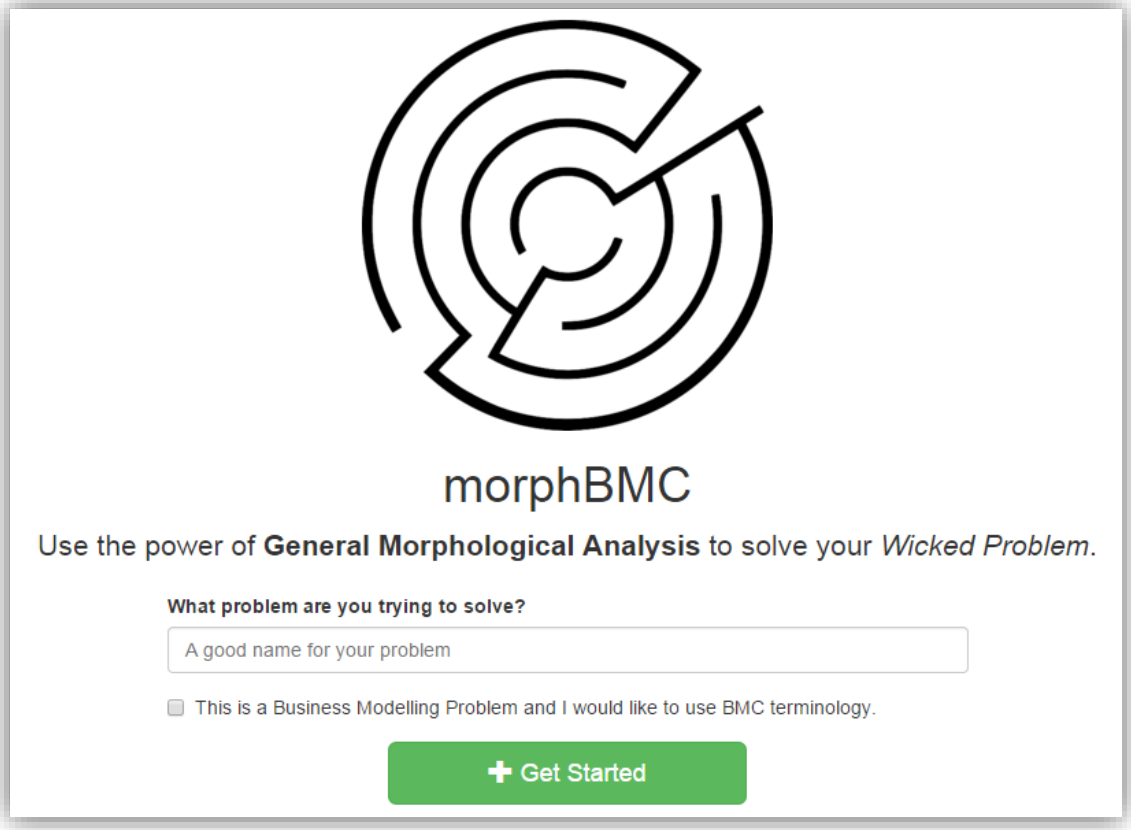


General Morphological Analysis – 3/3

Step 3:

Explore possible **solutions** step-by-step

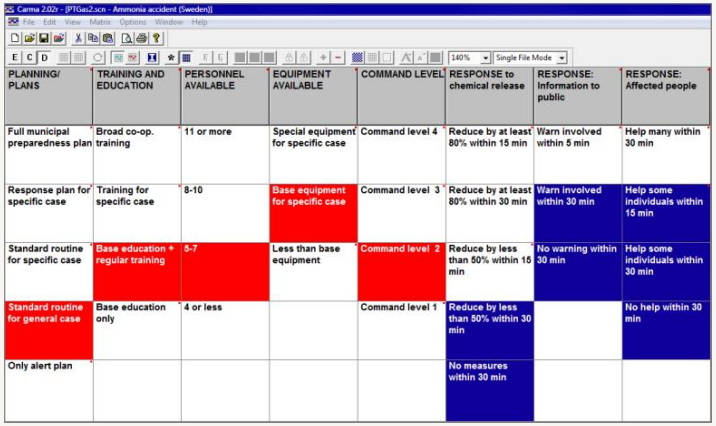
Demonstration



Research Questions and Findings 1/3

1. **What is the current state of software supporting collaboration for the General Morphological Analysis?**

MA/Carma (Ritchey, 2004)

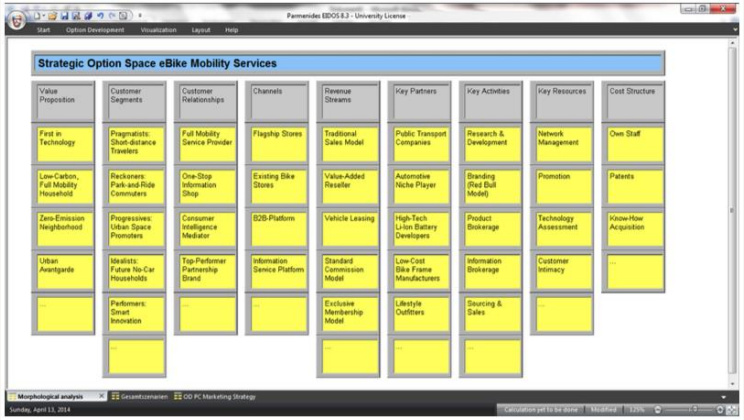


PLANNING/ PLANS	TRAINING AND EDUCATION	PERSONNEL AVAILABLE	EQUIPMENT AVAILABLE	COMMAND LEVEL	RESPONSE to chemical release	RESPONSE: Information to public	RESPONSE: Affected people
Full municipal preparedness plan	Broad co-op. training	11 or more	Special equipment for specific case	Command level 4	Reduce by at least 80% within 15 min	Warn involved within 5 min	Help many within 30 min
Response plan for specific case	Training for specific case	8-10	Base equipment for specific case	Command level 3	Reduce by at least 80% within 30 min	Warn involved within 30 min	Help some individuals within 15 min
Standard routine for specific case	Base education + regular training	5-7	Less than base equipment	Command level 2	Reduce by less than 50% within 15 min	No warning within 30 min	Help some individuals within 30 min
Standard routine for general case	Base education only	4 or less		Command level 1	Reduce by less than 50% within 30 min		No help within 30 min
Only alert plan					No measures within 30 min		

× Physical collaboration necessary

× Not web-based

Parmenides Eidos (Parmenides, 2009)



× Main focus on visualization

× Not web-based

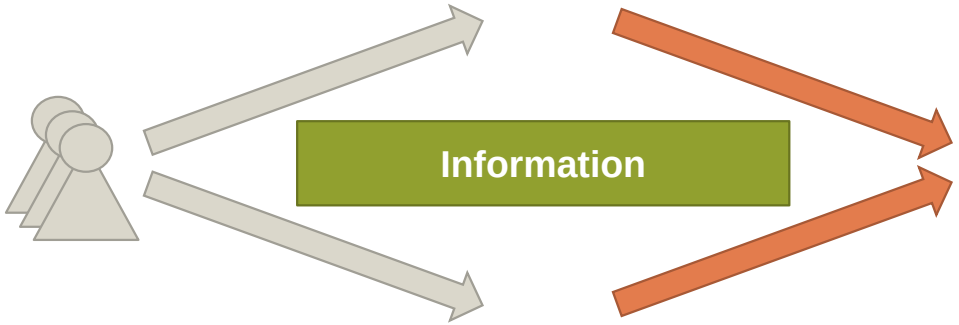
→ No support of time/location independent collaboration

Research Questions and Findings 2/3

2. Which parts of the GMA process can be facilitated by a web application?

Divergent

- ✓ *Definition*
- ✓ *Compatibility*

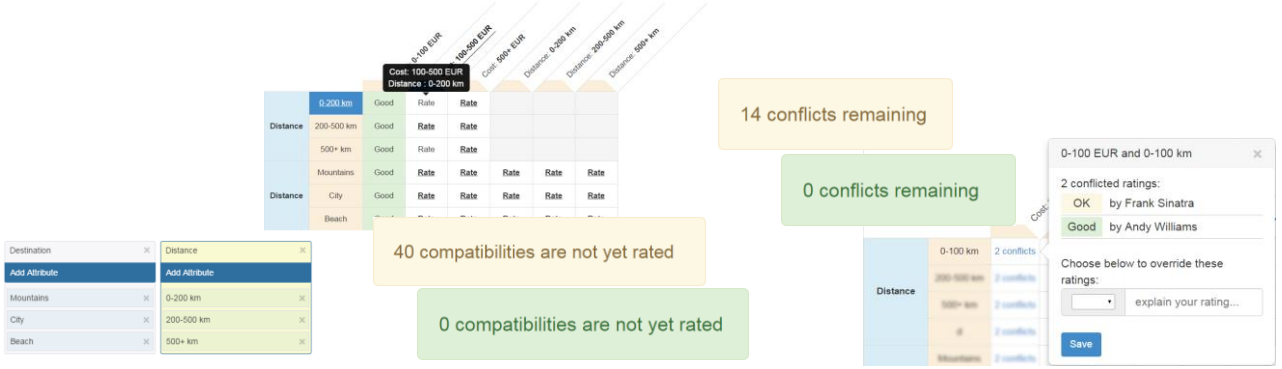


Convergent

- ✓ *Refinement*
- ✓ *Resolution*

Facilitation of:

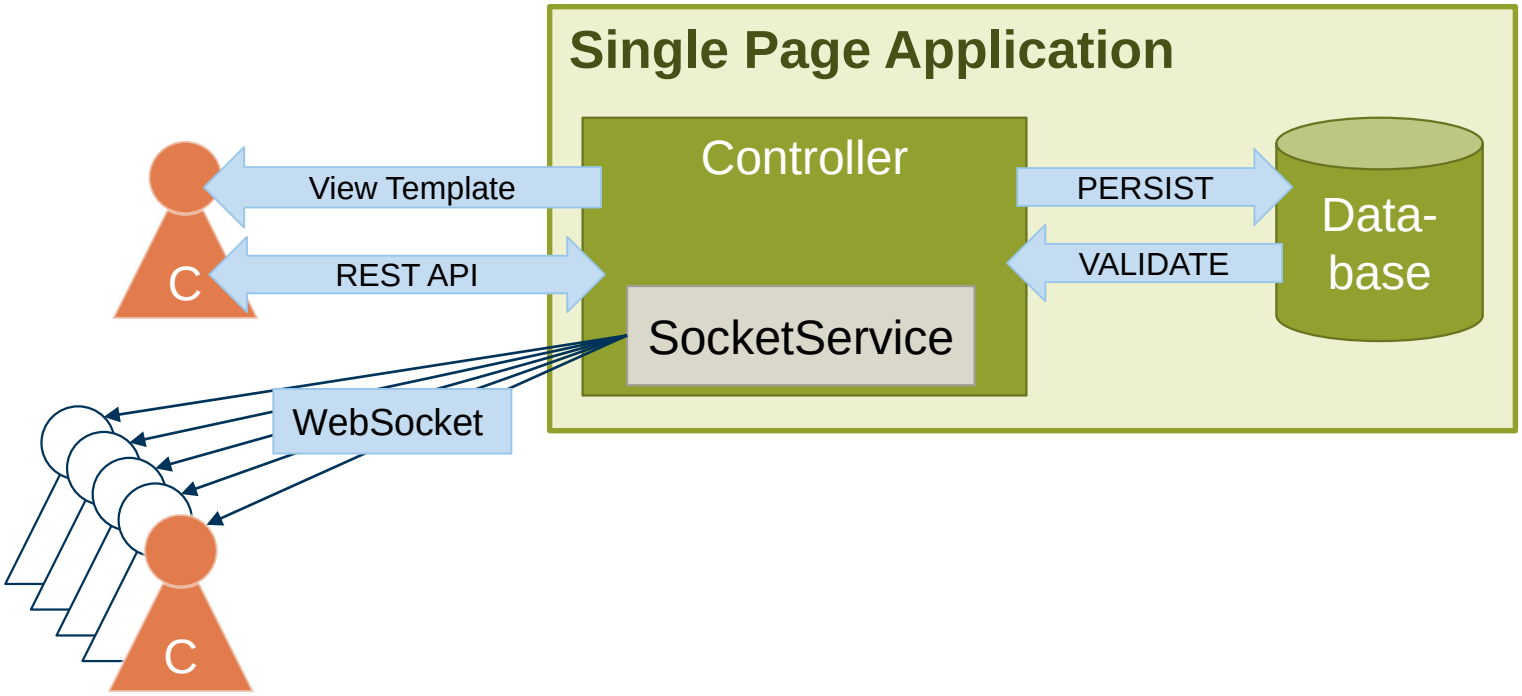
- ✓ *Refinement*
- ✓ *Compatibility*
- ✓ *Resolution*



→ **Support of divergent and convergent creativity processes**
→ **Process facilitation for collaborative phases**

Research Questions and Findings 3/3

3. What does a proof-of-concept implementation for a collaborative GMA web application look like?



→ Leverage Single Page Application and WebSockets
→ Synchronize collaborative process state across all users

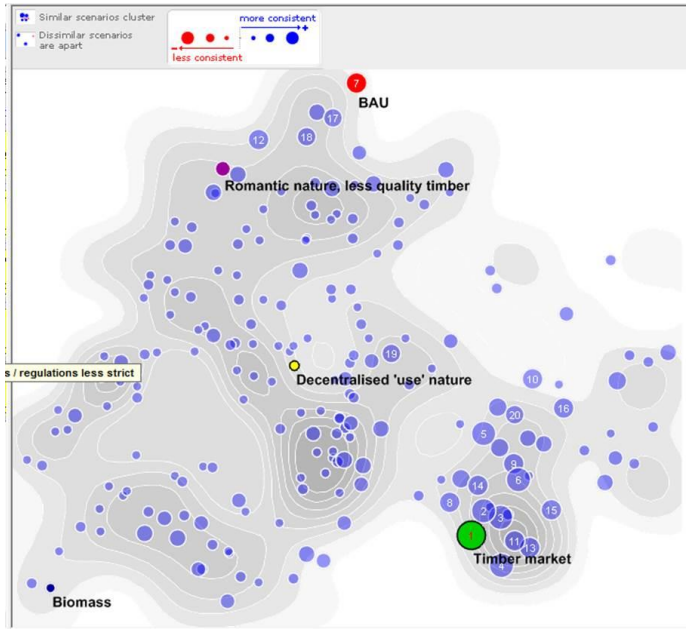
Future Research

1. Enhance collaborative features
   - *Voting*
   - *Role concept*

2. Visualize solution space
   - *Multi-Dimensional Scaling*
   - *Heatmaps*

3. Extend rating possibilities
   - *Define probabilities for combinations*
   - *User-defined scales*

4. Evaluation of the implemented application



(Parmenides, 2009)

Thank you for your attention

Any questions?

Thank you for your attention

sebis

Backup

Sources

Rittel, Horst (1972): On the Planning Crisis: Systems Analysis of the 'First and Second Generations'. In *Bedriftsøkonomen* (8), pp. 390–396.

Parmenides Foundation (2009): Parmenides EIDOS. Available online at https://www.parmenides-foundation.org/fileadmin/redakteure/PDFs/1106_EIDOS_Folder_dt.pdf, checked on 11/5/2014.

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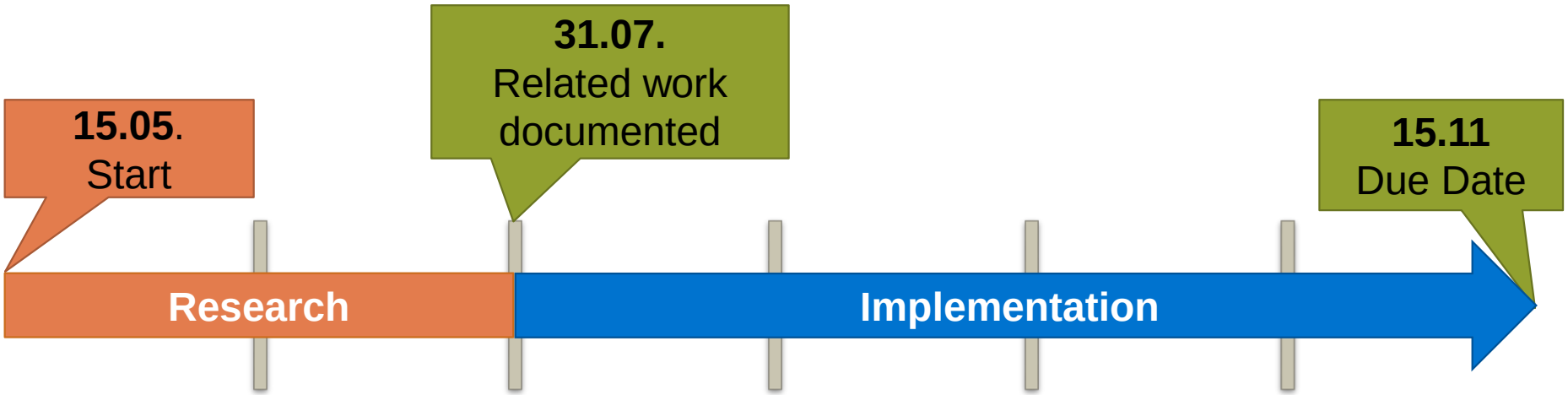
Timeline


15.05.
Start
31.07.
Related work documented
15.11
Due Date
Research
Implementation