Possibilities and Limitations of the Structured Transposition of Normative Texts in Functions on Typed Data Structures

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Problem Statement

- The interpretation of normative text is a complex task
  - Main representation form of regulations is text
  - Text contain vague information
  - Detailed analysis of grammatical and linguistic structure of the text

- Lack of tools, that support legal expert during these process
  - Effort was put in automate the law [van Engers and van Doesburg (2015)]

Solution

- Formalization of parts of normative text in models
  - Text that contains mathematical regulations, e.g. Child Benefit

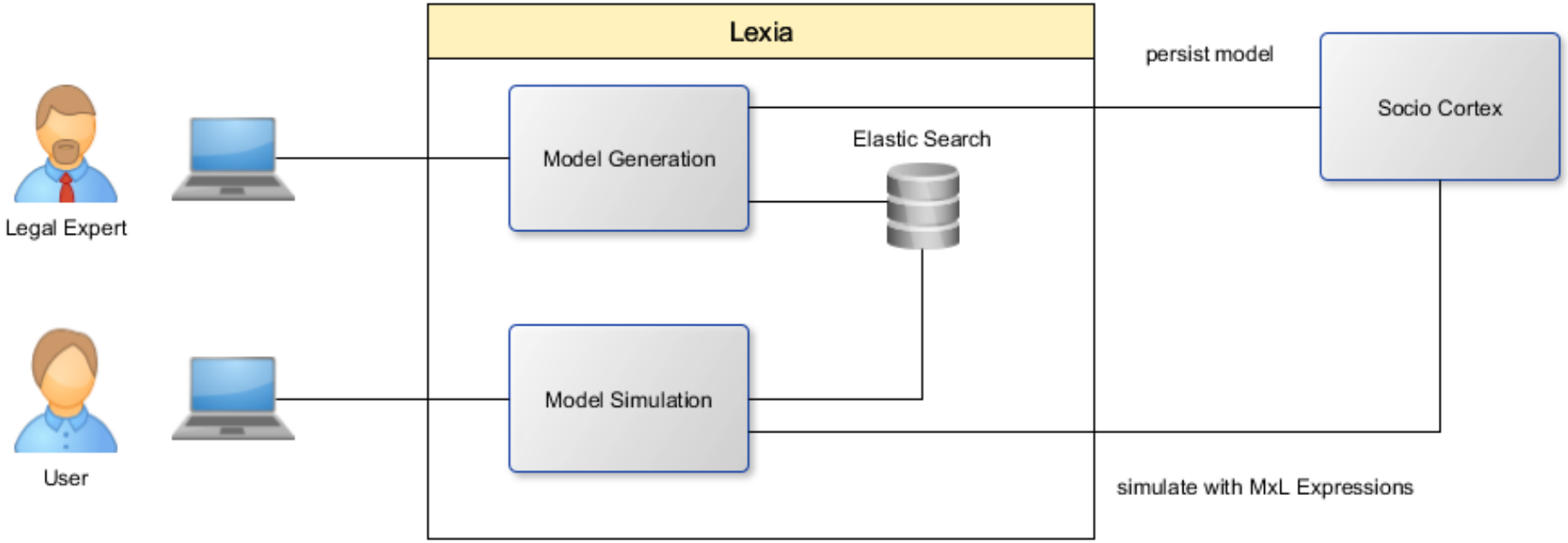
- Different types of models/formalizations
  - Rule based [Sergot et a. (1986)]
  - Case based [Rissland and Ashley (1987)]
  - Logic based [van Engers (2015)]
  - Ontology based [Scharf (2015)]

- Model as isomorphic representation of a legal text [Bench-Capon and Coenen (1992)]
  - Improves transparency of the semantic structure
  - Makes vague relations explicit

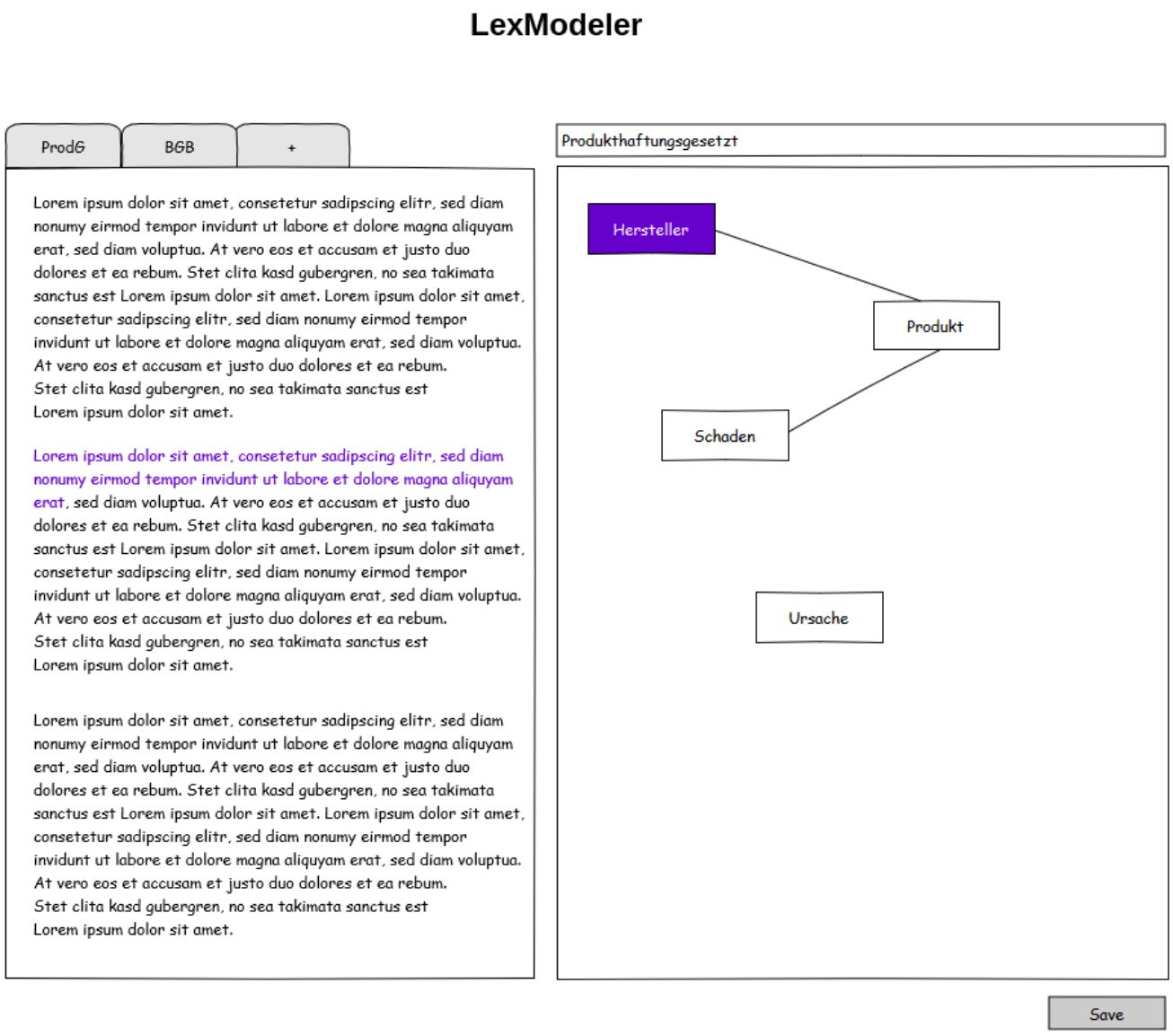
Solution (II)

- Implementation of a graphical model editor, that supports legal experts during formalization
  - Generation of classes, attributes, and relations
  - Link with original legal source
- Formalization results in two different type of models
  - Static (semantic) model
  - Dynamic (executable) model
- Different views for different stakeholders
    - Legal Experts: Creating these models (interpretation)
    - Other Users: Applying these models (subsumption)
- “Simulate” cases with several input data (What if-Questions)

System Overview



GUI Mockups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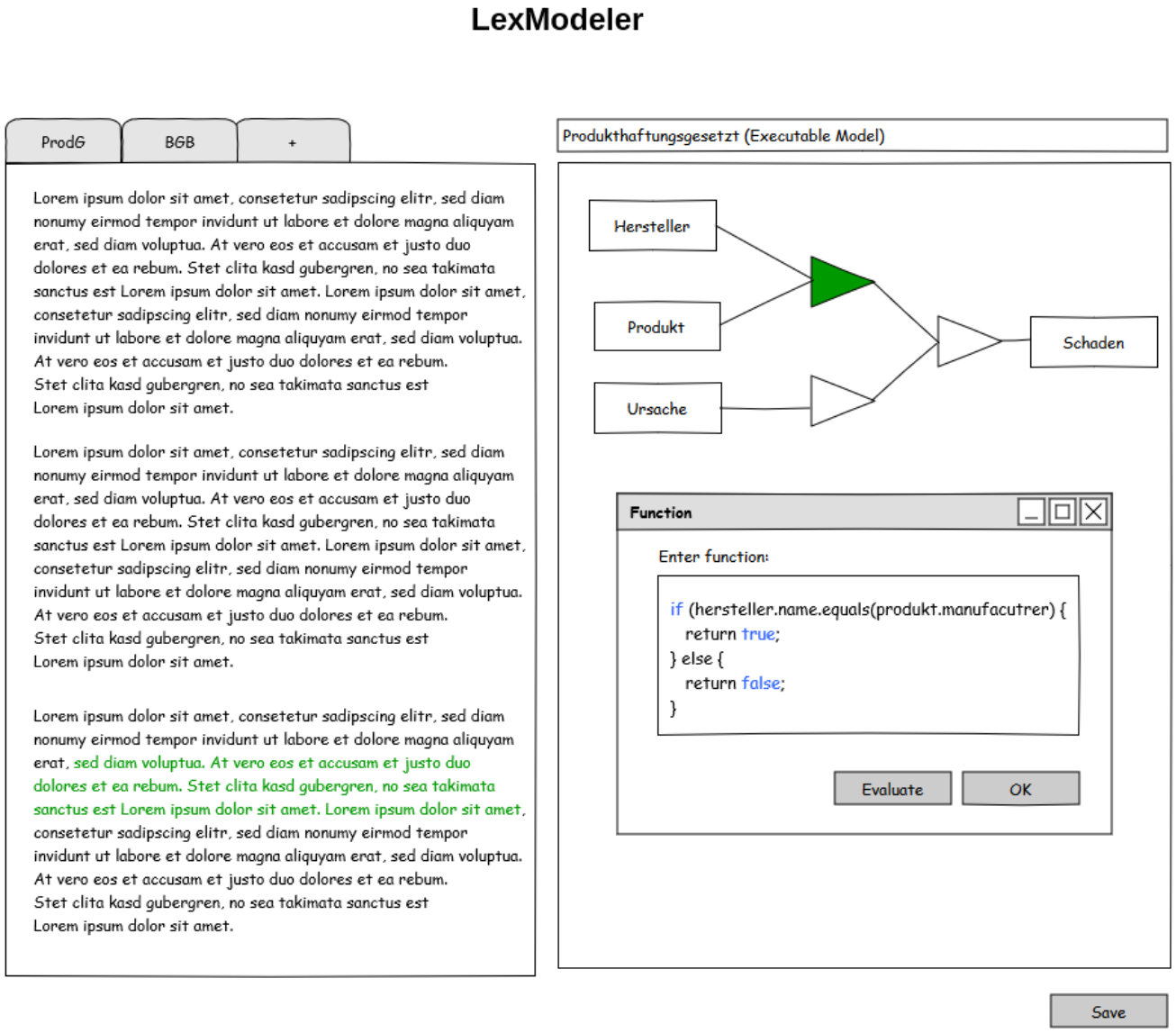
GUI Mockups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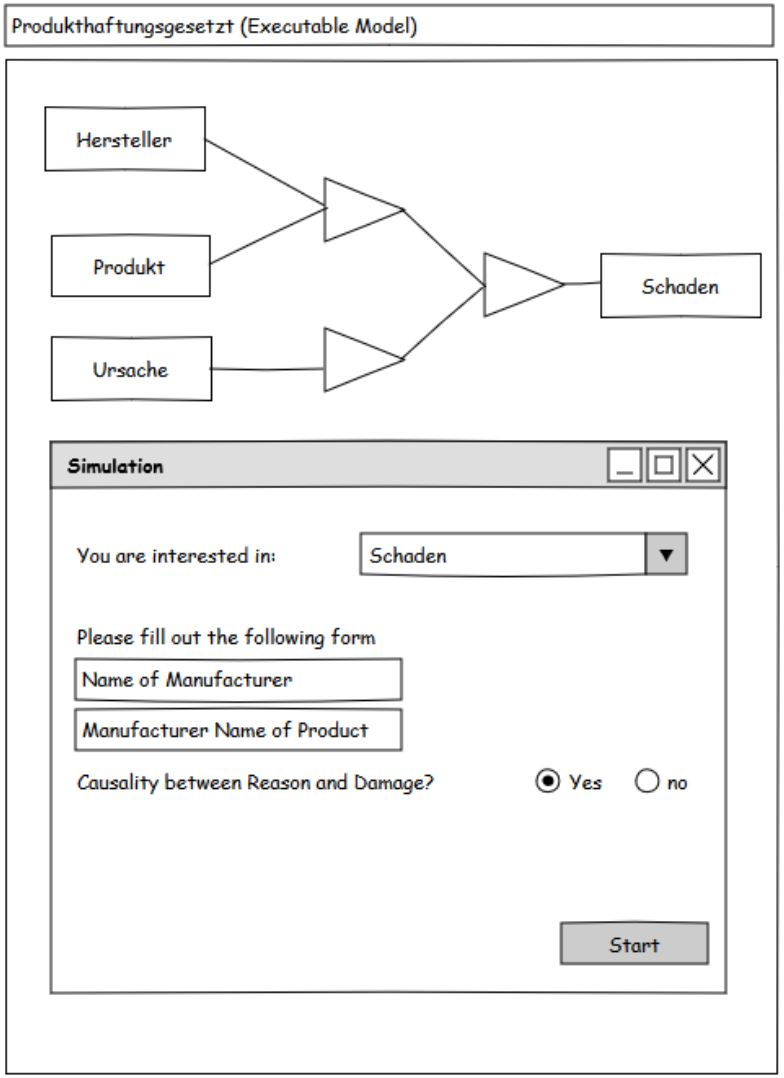
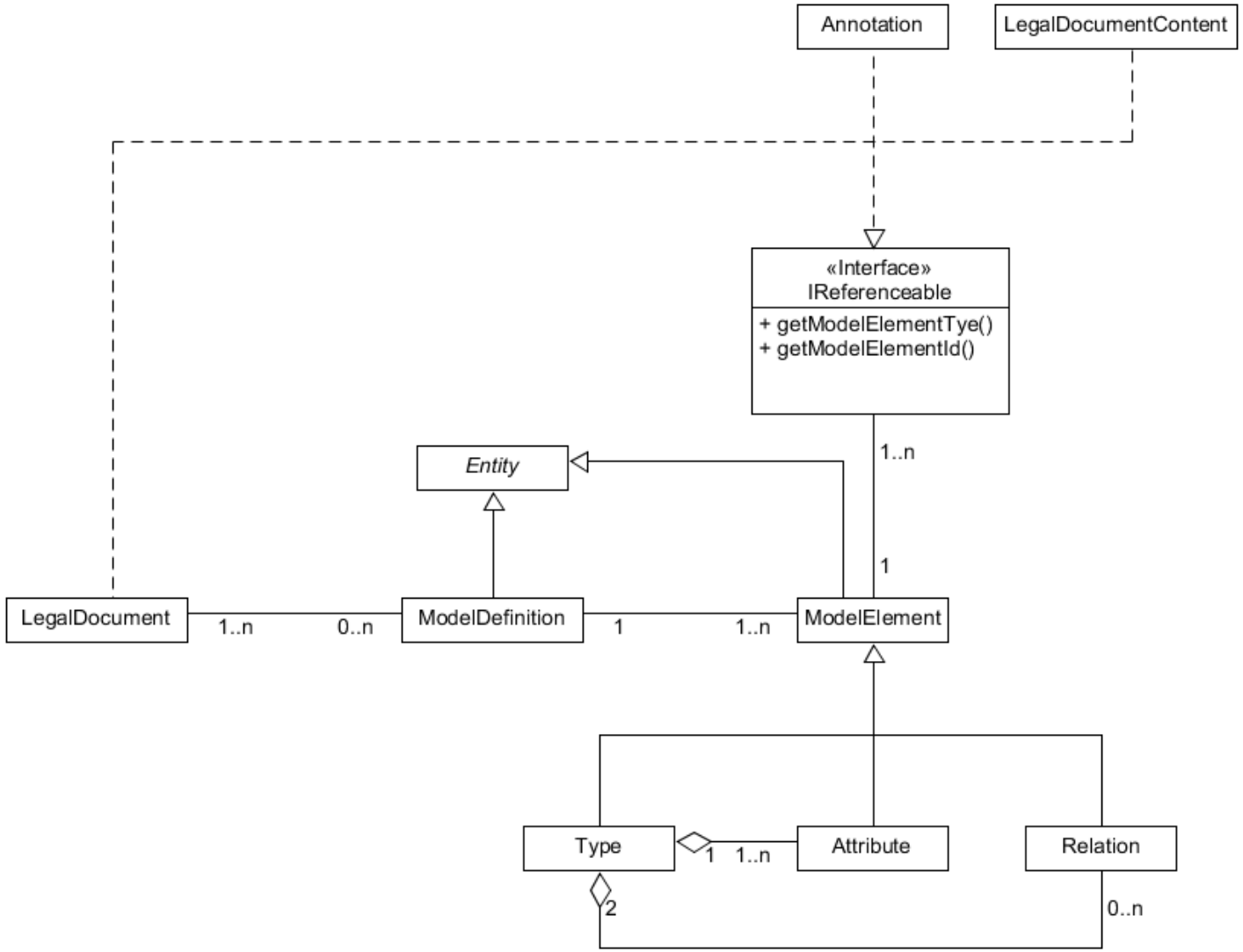
Hersteller
Produkt
Ursache
Schaden
Function
Enter function:
if (hersteller.name.equals(produkt.manufacutrer) {
return true;
} else {
return false;
}
Evaluate
OK
Save

GUI Mockups


Produkthaftungsgesetzt (Executable Model)
Hersteller
Produkt
Ursache
Schaden
Simulation
You are interested in:
Schaden
Please fill out the following form
Name of Manufacturer
Manufacturer Name of Product
Causality between Reason and Damage?
Yes
no
Start

Data model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ModelElement
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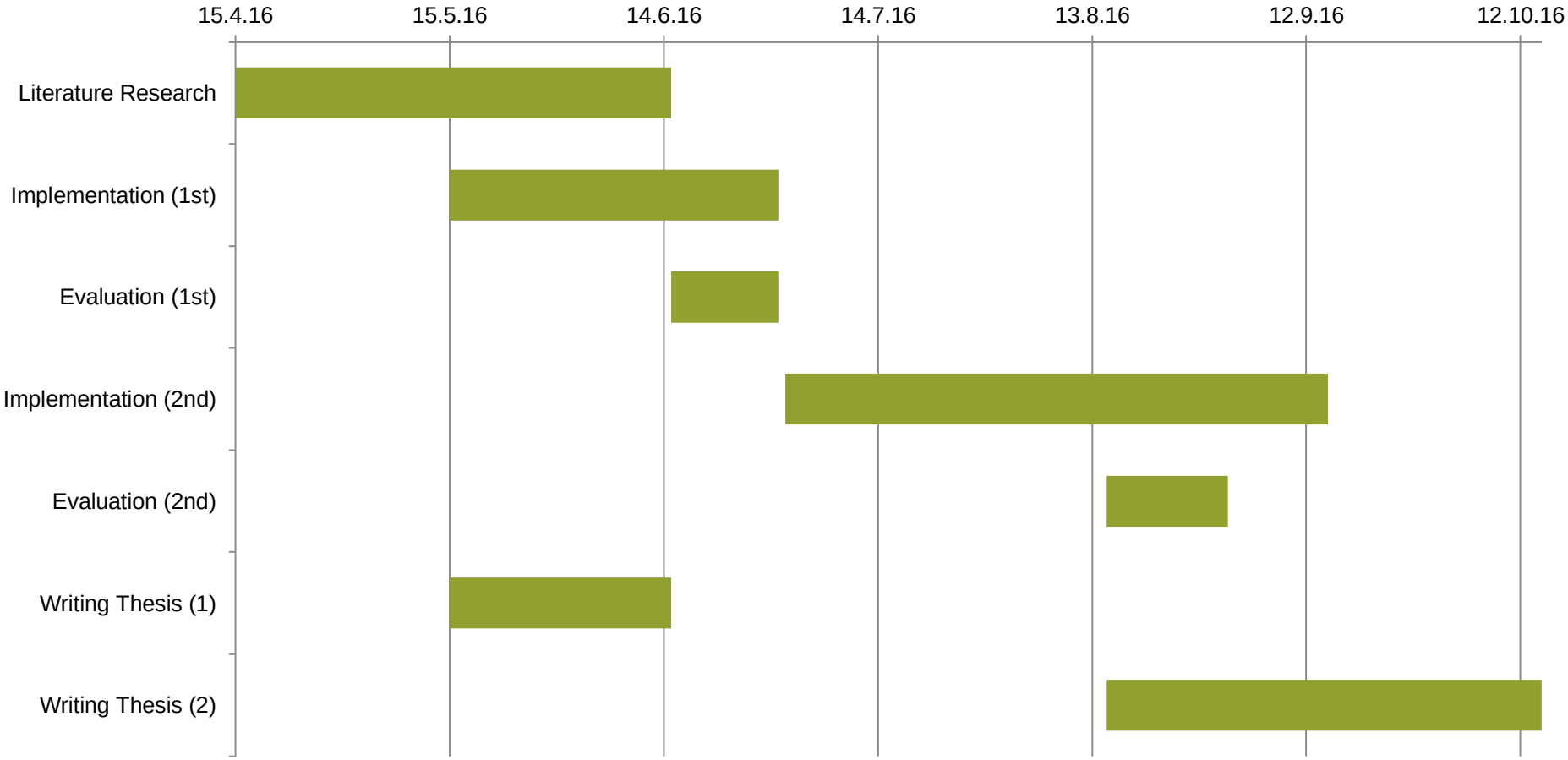
Attribute
Relation
2
0..n

“Research Questions”

1. How to ‘translate’ normative text in durable models?
2. Which datatypes are necessary to map all relevant legal concepts in normative text to corresponding model elements?
3. How can text passages/sections/whole documents linked with model elements to assess the impact of changes?
4. What is the advantage of a model of a normative text?

Time Schedule



Thank you for your attention!