

Goal-Oriented Requirements Engineering for Business Processes

Ken Decreus

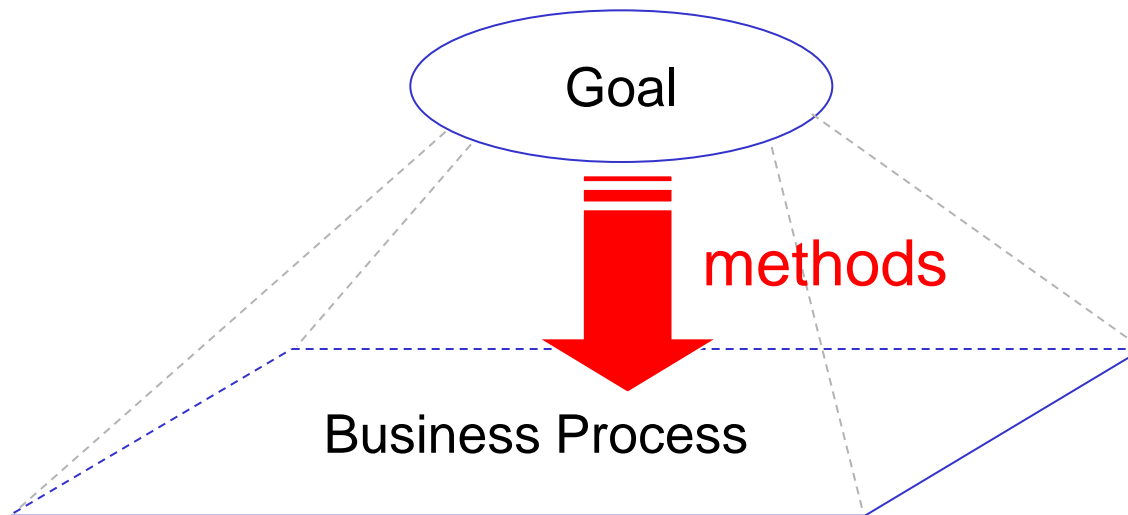
Department of Economics and Business Administration,
Research Unit Management Information,
Ghent University, Belgium

Agenda

1. Context
2. Current Solutions
3. Problem Statement
4. Contribution
 - ▶ First contribution
 - ▶ Second contribution

Research Context

A business process is a collection of activities that takes one or more kinds of inputs and creates an output that is of value to the customer (Hammer & Champy, 1993)



Specific Applications

(1) Semantic Business Process Management System (BPMS)



(2) Non-Semantic Business Process Management System (BPMS)



Current Solutions

- Requirement Engineering
 - A lot of academic work, but low industry adoption
- Business Process Management
 - Informal modelling methods (e.g. Post-It)
- Artificial Intelligence
 - Formal reasoning on goals and processes

Problem Statement

- In the context of BPMS
- There is a convergence of RE and BPM
 - with SOFTWARE requirements
 - with BUSINESS process models
- Current solutions do not meet this need

Contribution

- We offer a business user (middle manager)
- A tool-supported method
- To express this strategic requirements
- To generate business process design skeletons from these requirements

Goal-Oriented Requirements Engineering for Business Process Management Systems

Context

Semantic

Non-Semantic

Method

Metamodel

Method

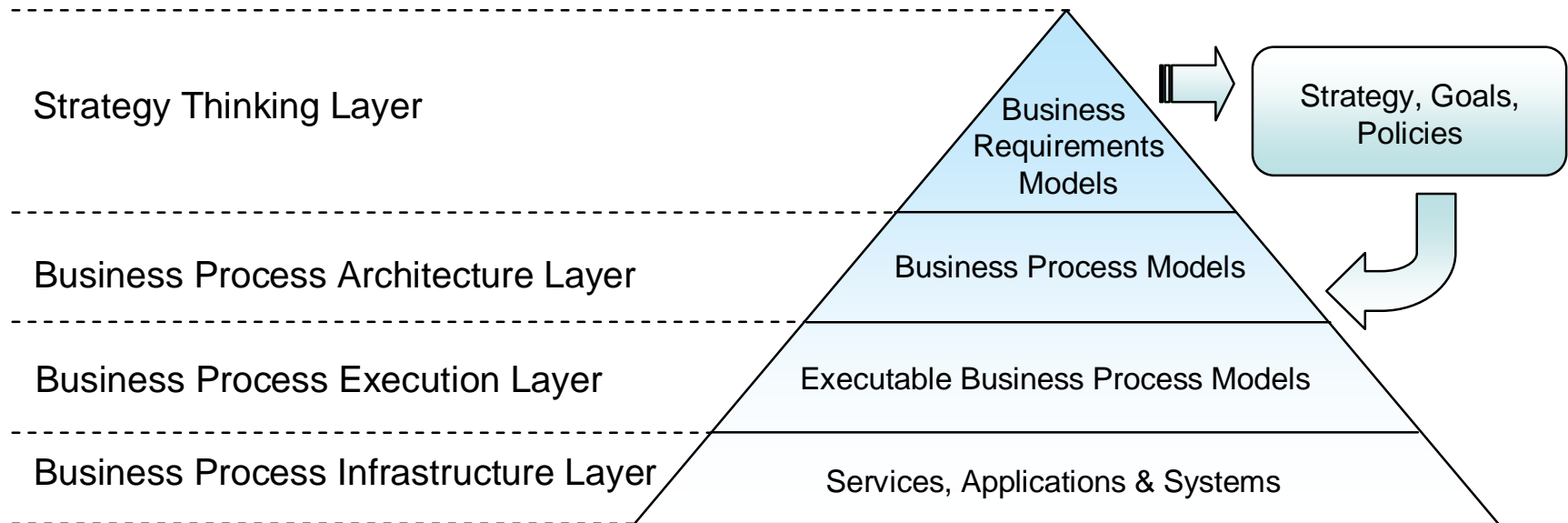
Metamodel

Policy-Enabled Goal-Oriented Requirements Engineering for Semantic Business Process Management

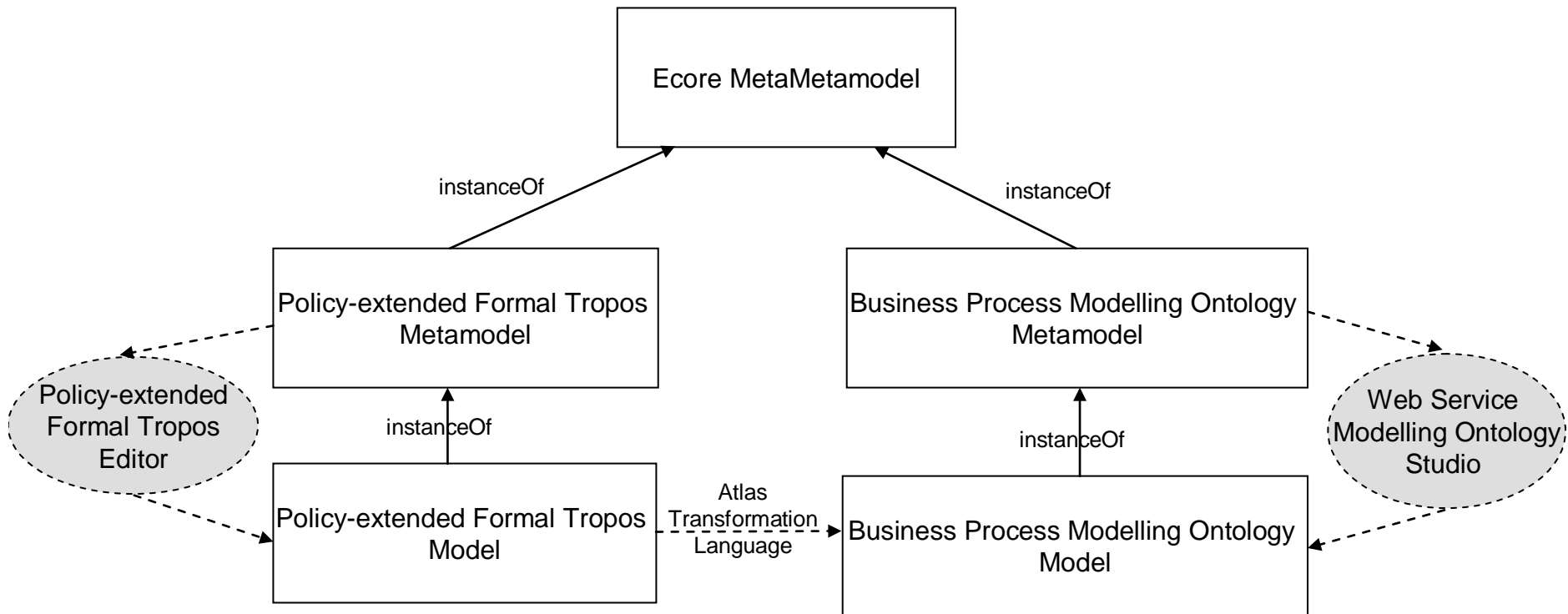


Overview of First Contribution

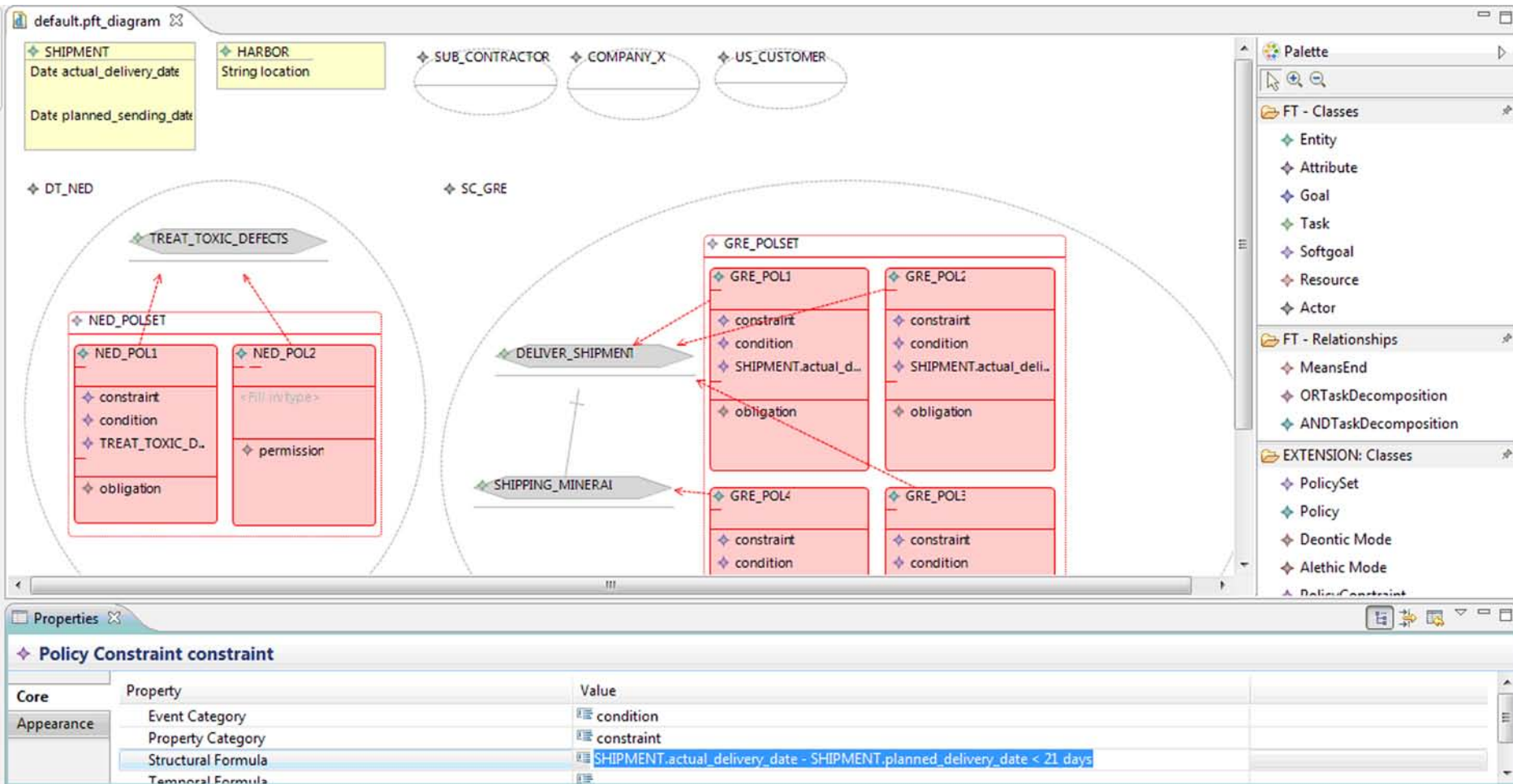
Policy-Enabled Goal-Oriented Requirements Engineering for Semantic Business Process Management



Implementation Architecture



Screenshot of tool support



Example output

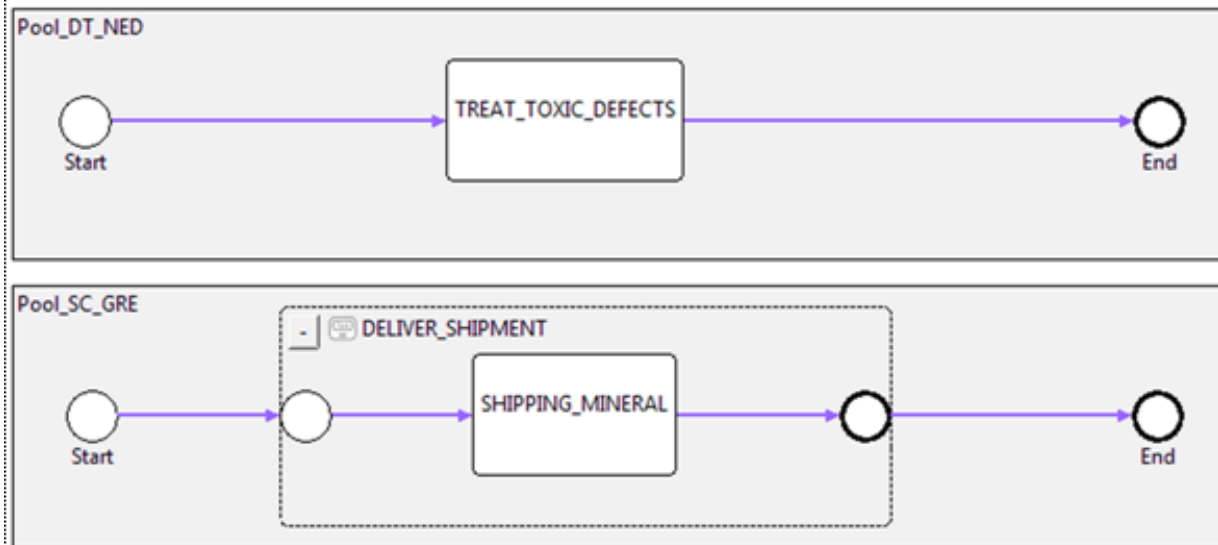


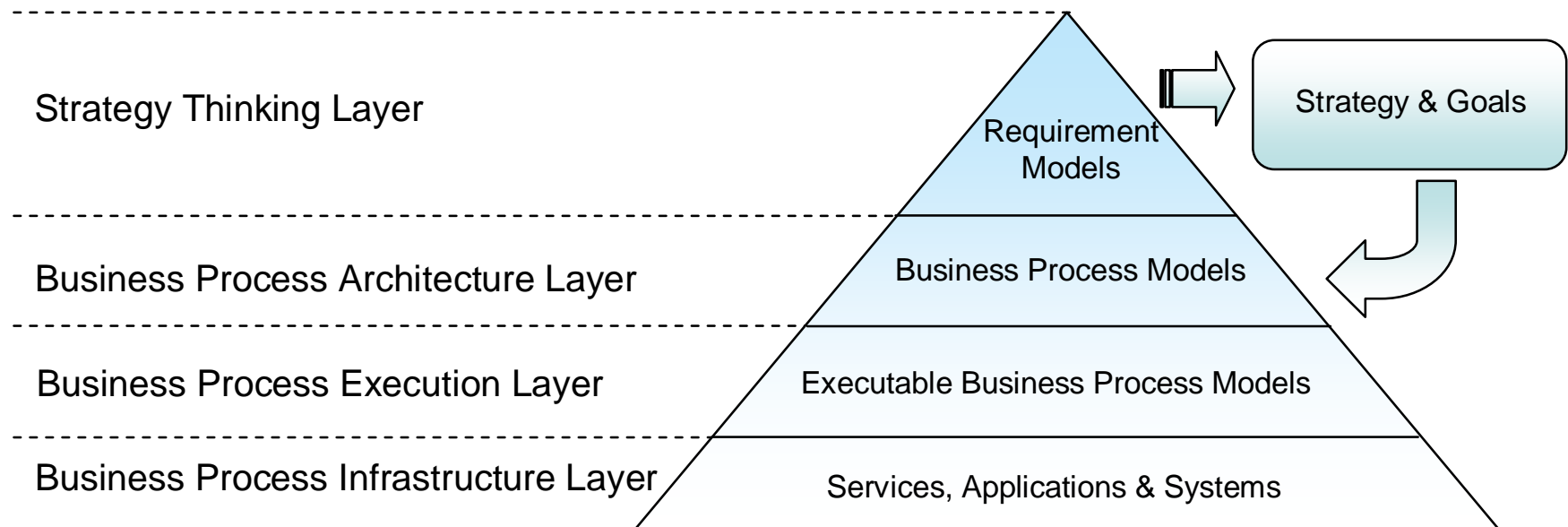
Figure 12a: Graphical Output for Company X

```
instance NED_POL1 memberOf BusinessPolicy
  hasName hasValue "NED_POL1"
  hasPolicyType hasValue "ConstraintPolicy"
  policyActsOn hasValue DT_NED
  hasModality hasValue "http://www.ip-super.org/ontologies/BPRO/20070831#Obligation"
  structuralConstraint hasValue "TREAT_TOXIC_DEFECTS.finalization_date -
                                TREAT_TOXIC_DEFECTS.reception_date ≤ 90 days"
  isImplemented hasValue TRUE
```

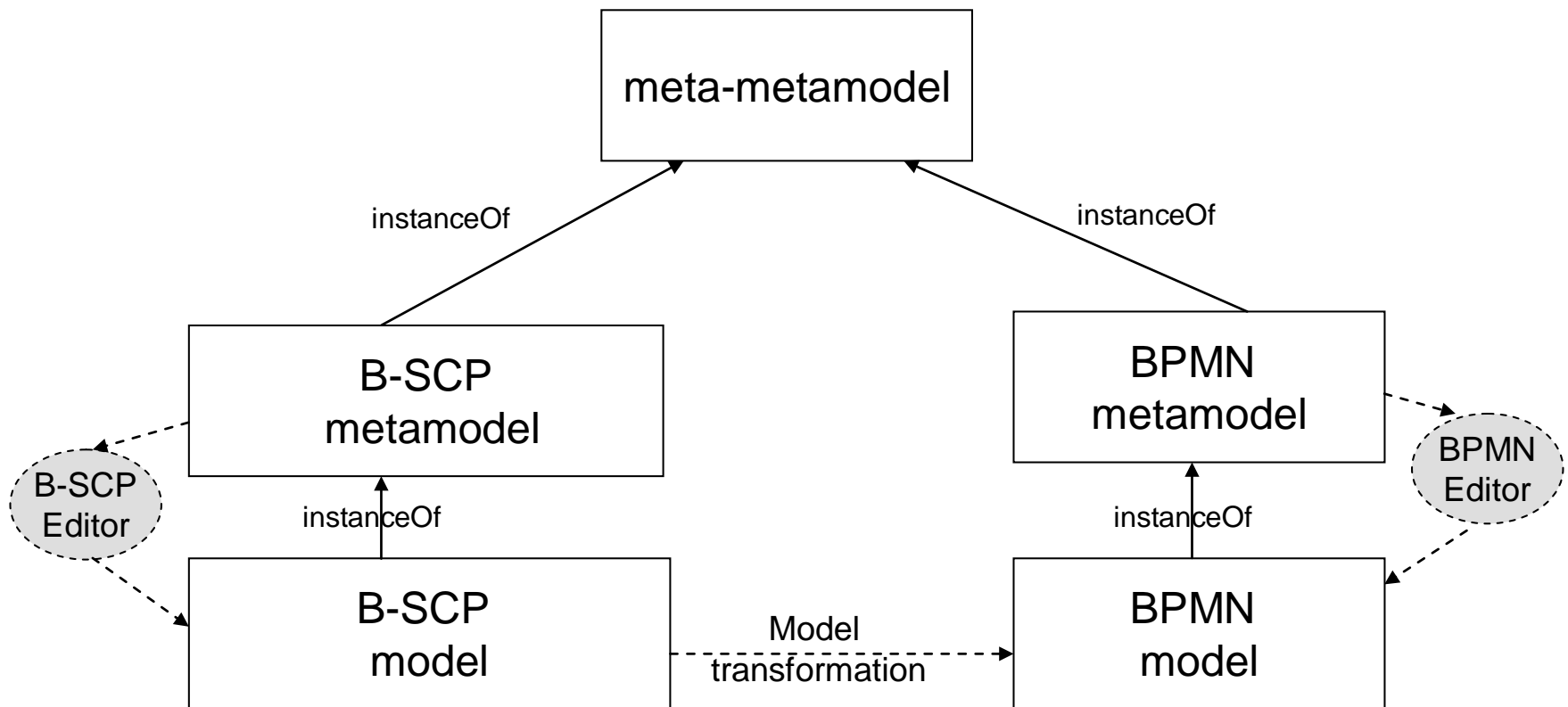
Figure 12b: Part of Textual Output for Company X (Appendix E)

Overview of Second Contribution

Goal-Oriented Requirements Engineering for Business Process Management Systems

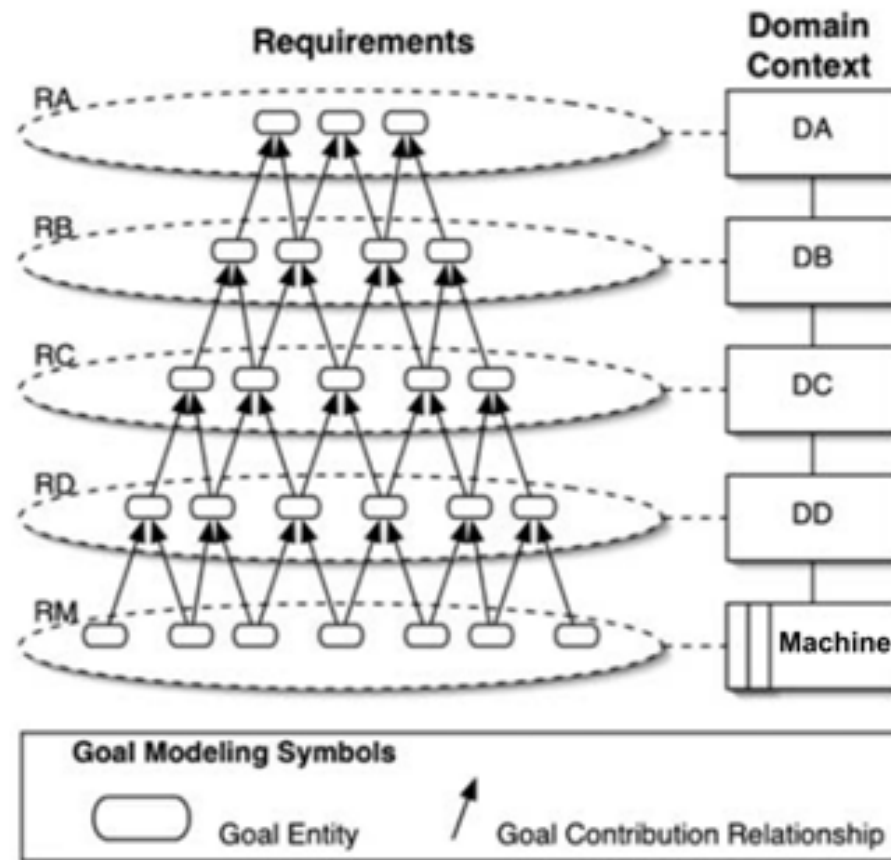


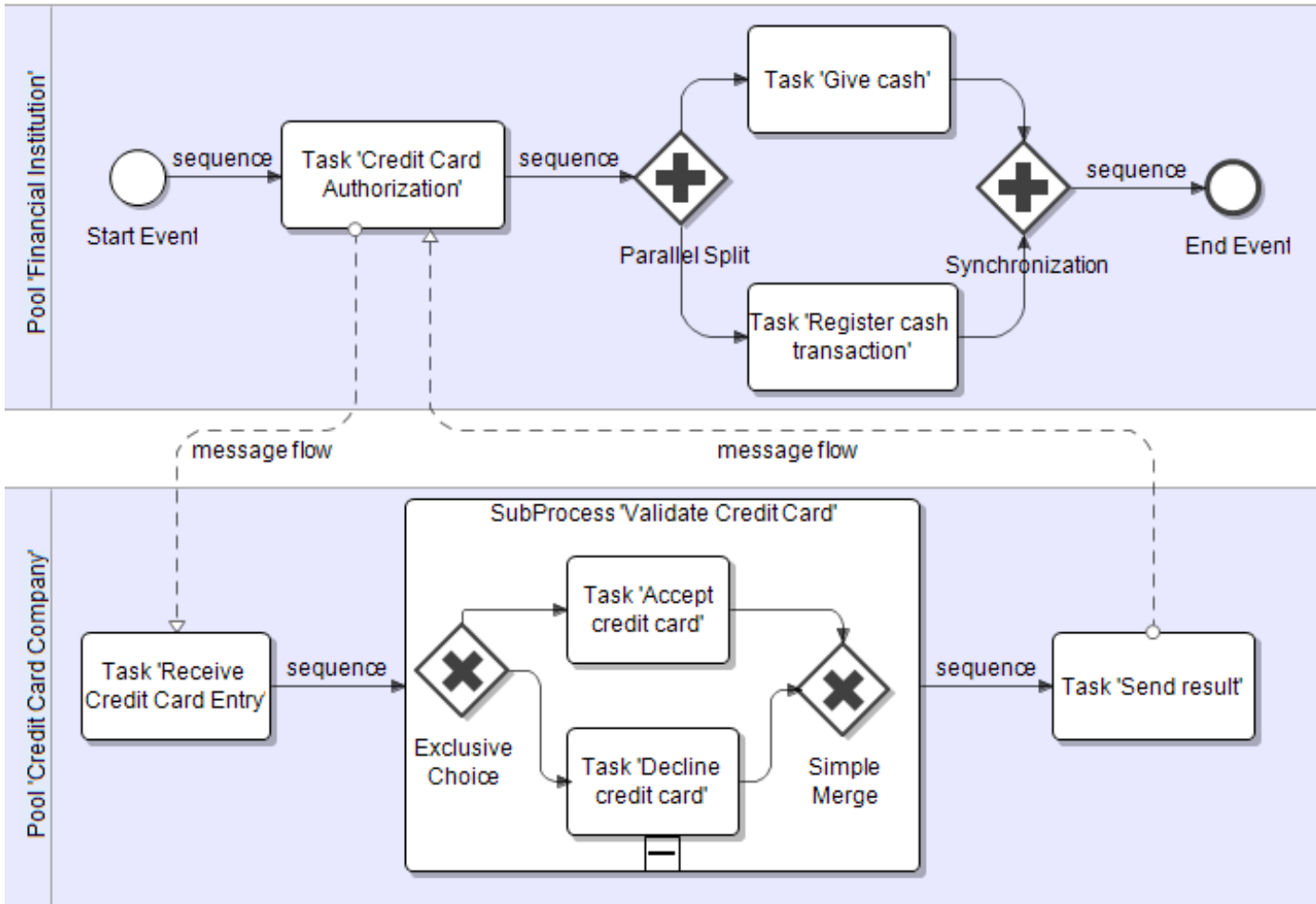
Implementation Architecture



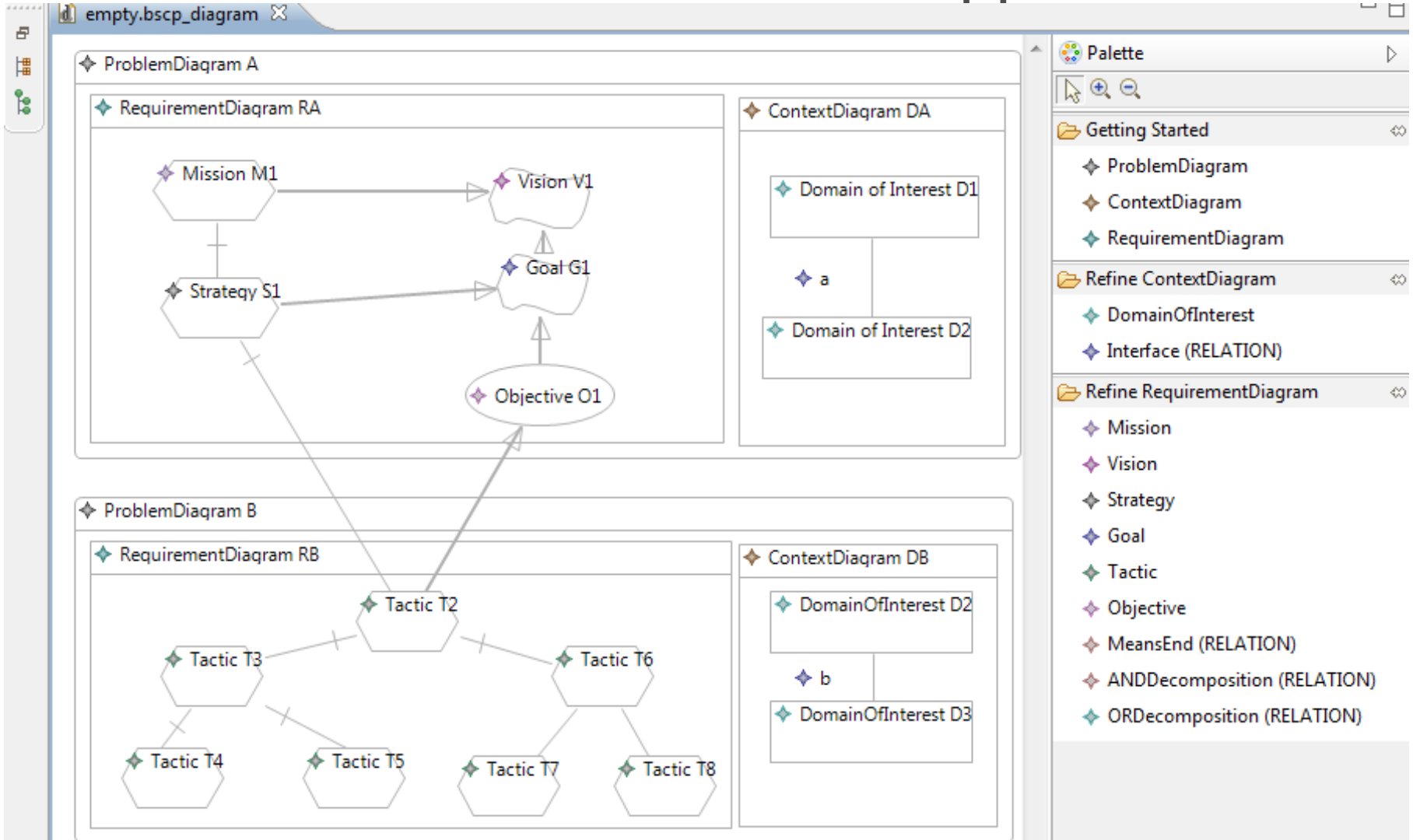
B-SCP

(Bleistein et al, 2006)

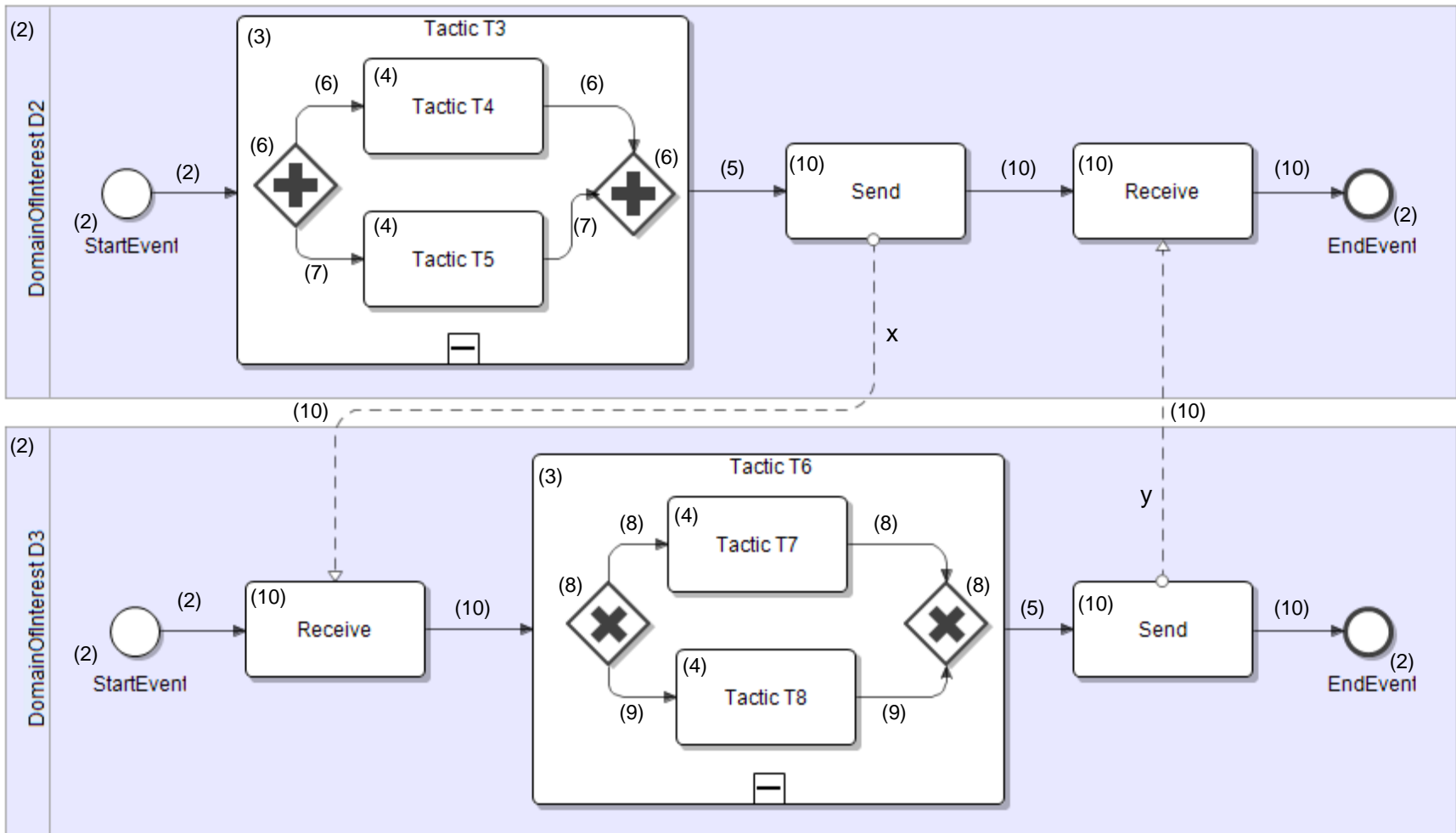




Screenshot of Tool Support



Resulting BPMN model



Case Study Protocol

- Theory Development
- Conceptual Framework
- Research Question
- Unit of Analysis
- Data Collection
- Data Analysis

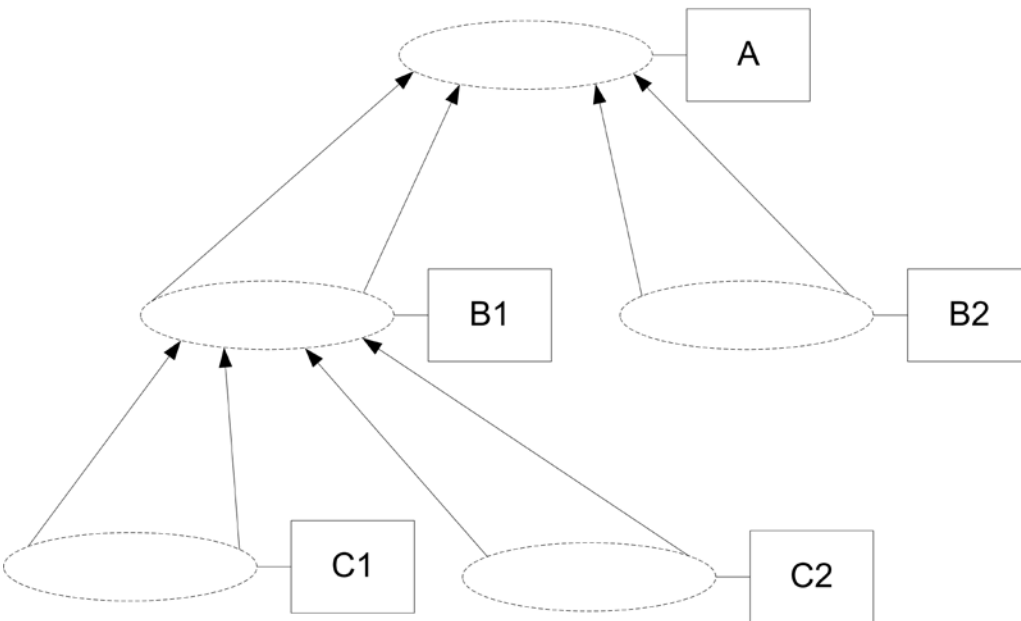
Theory Development

- Principle of Complexity Management

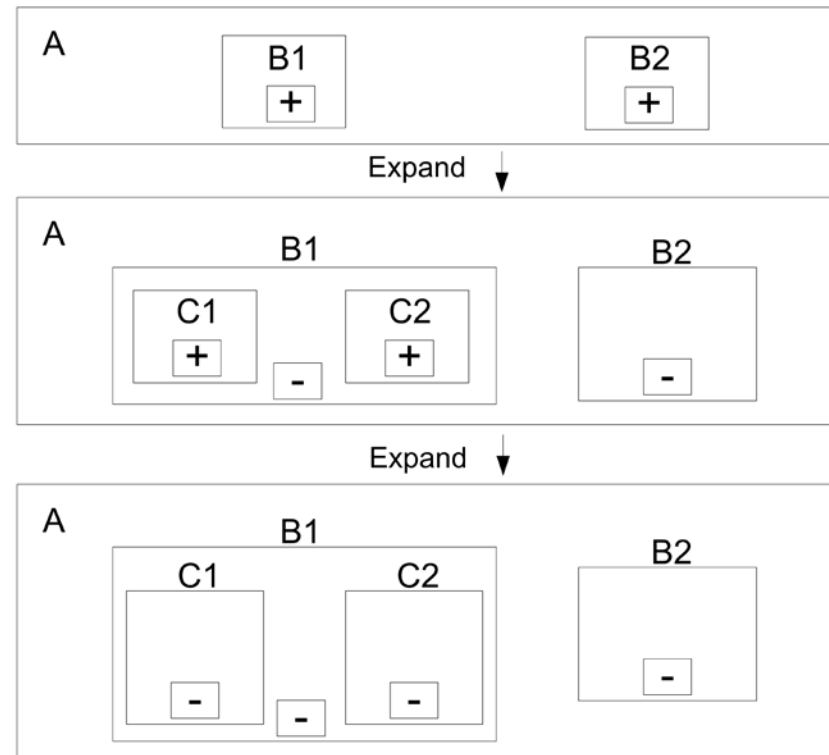
(Daniel Moody, 2009)

- ▶ Visual notations must provide mechanisms for modularization and hierarchical structuring to effectively represent complex situations

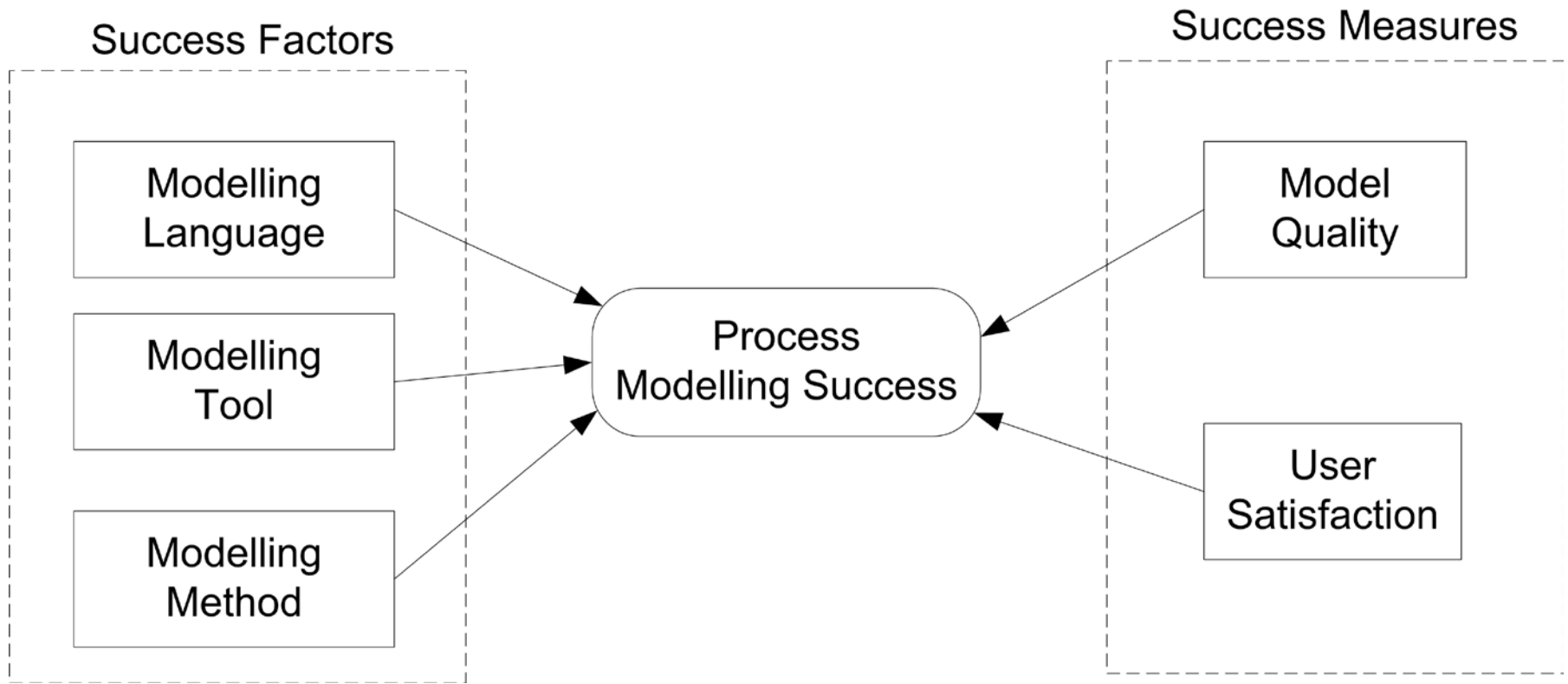
(a) B-SCP



(b) BPMN



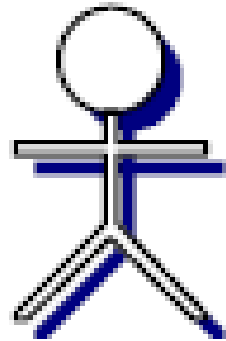
Conceptual Framework (Bandara et al., 2006)



Research Question

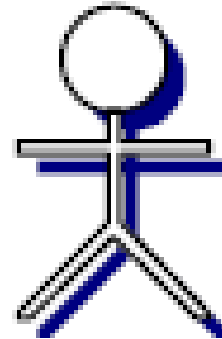
“Why should, in a real-world setting, modelling aids, that have explicit support for complexity management (such as B-SCP), lead to higher process modelling success as compared to modelling aids, without such complexity management mechanisms (such as BPMN)?”

Unit of Analysis



Business User

&



Business Analyst

Data Collection

- Direct observation
- Participant observation (during transformation)
- Structured Interview

Data Analysis: within-case

Measures for Model Quality	Business User	Business Analyst
<p><u>Semantic Connectness</u> how well the models describe the structure and behavior of the real world</p>		
1. How closely do the models replicate the business process?		
2. How closely do the models replicate the functional structure?		
3. How closely do the models replicate the data structure?		
<p><u>Syntactic Correctness:</u> how consistent and complete the models are against the meta model</p>		
4. How consistent are the models against the naming conventions?		
5. How consistent are the models against the layout conventions?		
6. How complete are the models against the modeling rules?		
<u>Economic Efficiency</u>		

Cell entries: “Very High”, “High”, “Medium”, “Low”, “Very Low”
 (plus optional quotes or remarks)

Data Analysis: cross-case

Case Nr	Modelling Aid	Company	Model Quality	User Satisfaction
1	B-SCP	Company 1		
2	B-SCP	Company 2		
3	BPMN	Company 1		
4	BPMN	Company 2		

Cell entries: "Very High", "High", "Medium", "Low", "Very Low"
(plus optional quotes or remarks)

Conclusion

- We offer a business user
- A tool-supported method
- To express this strategic requirements
- To generate business process design skeletons from these requirements





Any Questions?