

UNIVERSITEIT VAN AMSTERDAM

MASTERS PROJECT

Representation Mismatch Reduction for Development in Rules-Based Business Engines

Author:
Paul SPENCER

Supervisor:
Dr. Clemens GRELCK

*A thesis submitted in fulfillment of the requirements
for the degree of Master of Software Engineering*

in the

Graduate School of Informatics
Faculty of Science

May 31, 2021



UNIVERSITY OF AMSTERDAM

Declaration of Authorship

I, Paul SPENCER, declare that this thesis titled, “Representation Mismatch Reduction for Development in Rules-Based Business Engines” and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. Except for such quotations, this thesis is entirely my work.
- I have acknowledged all of the main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:

UNIVERSITEIT VAN AMSTERDAM

Abstract

Graduate School of Informatics
Faculty of Science

Master of Software Engineering

Representation Mismatch Reduction for Development in Rules-Based Business Engines

by Paul SPENCER

Context: Declarative rules engine languages, such as Drools, can become difficult to reason about when there are many rules.

Objective: This project investigates how different projections of the code can ease the comprehensibility of the code

Method: We created an implementation of the Drools language using the MPS language workbench and made innovative projections of large ASTs

Results:

Keywords:

Paper type: Research paper

Acknowledgements

We would like to acknowledge the School of The Graduate school of Informatics in the Faculty of Science at The University of Amsterdam for their guidance, specifically Dr. Clemens Grelck, who has been a supportive, understanding, and available academic adviser.

My greatest thanks go out to Toine Khonraad, an alum of this course, who provided me with moral and monetary support, as well as wisdom and friendship that aided in the completion of this, my fourth attempt at getting this project behind me.

...

Contents

| | |
|--|------------|
| Declaration of Authorship | iii |
| Abstract | v |
| Acknowledgements | vii |
| 1 Introduction | 1 |
| 2 Method | 3 |
| 3 Results | 5 |
| 4 Discussion | 7 |
| 4.1 Threats to Validity | 7 |
| 4.1.1 Construct Validity | 7 |
| 4.1.2 Internal Validity | 7 |
| 4.1.3 External Validity | 7 |
| 4.1.4 Reliability | 7 |
| 4.1.5 Repeatability vs Reproducibility | 7 |
| 4.1.6 Method improvement | 7 |
| 5 Implications to research and practice | 9 |
| 5.1 Implications to research | 9 |
| 5.2 Future research directions | 9 |
| 5.3 Implications to practice | 9 |
| 6 Conclusion | 11 |
| A Interview Transcripts | 13 |

List of Figures

List of Tables

Chapter 1

Introduction

The limits of my language mean the
limits of my world.

Logico-Tractatus Philosophicus
Ludwig Wittgenstein

In Chapter 2 we present the research questions. Further, the chapter describes the protocol that we use for search strategy, selecting our studies, extracting data from them, and synthesizing the results. Chapter 3 presents the results of our synthesis of data from the primary studies. This is followed, in chapter 4, by a discussion of both the validity of the work and the implications of the findings. We discuss the implications of this study in chapter 5. Finally, the conclusions are presented in chapter 6.

Chapter 2

Method

Chapter 3

Results

Chapter 4

Discussion

4.1 Threats to Validity

4.1.1 Construct Validity

4.1.2 Internal Validity

4.1.3 External Validity

4.1.4 Reliability

4.1.5 Repeatability vs Reproducibility

4.1.6 Method improvement

Chapter 5

Implications to research and practice

5.1 Implications to research

5.2 Future research directions

5.3 Implications to practice

Chapter 6

Conclusion

Appendix A

Interview Transcripts

Write your appendix content here.