# Modernizing the WebDSL front-end: A case study in SDF3 and Statix

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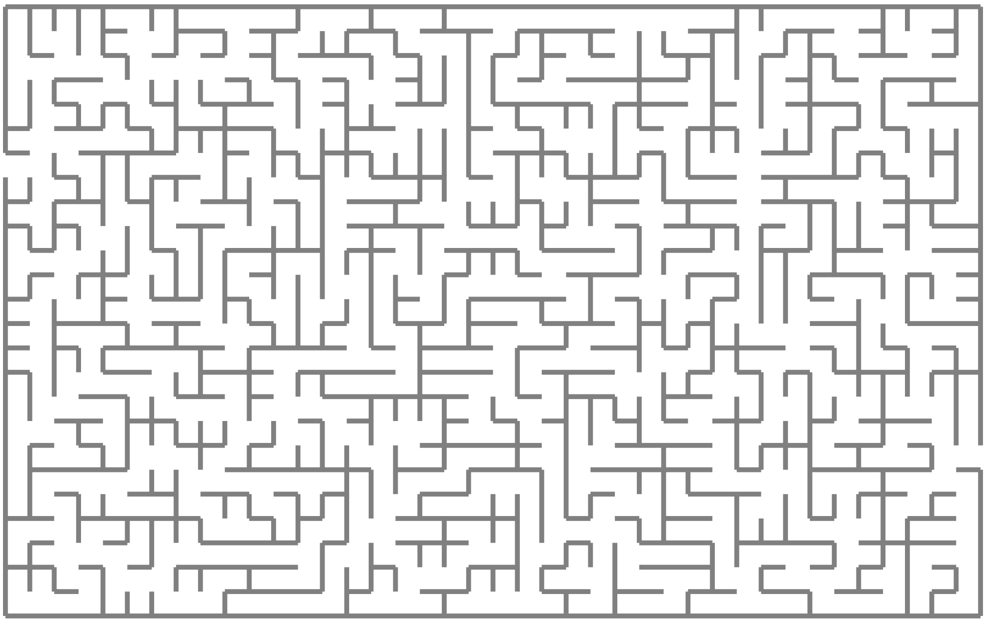

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THESIS

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Cover picture: Random maze.

# Modernizing the WebDSL front-end: A case study in SDF3 and Statix

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**Abstract**

WebDSL is a domain-specific language for web programming that is being used for over ten years. As web applications evolved over the past decade, so did WebDSL. A complete formal specification of WebDSL has been *TO-DO: check if missing or not updated* since its original development. With the introduction of Statix in the Spoofax language workbench, a declarative language that generates a typechecker, we made an elegant and practical formal semantics for WebDSL.

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# Preface

Preface here.

Max Machiel de Krieger
Delft, the Netherlands
January 19, 2021

# Contents

**Preface** **iii**

**Contents** **v**

**List of Figures** **vii**

**List of Tables** **ix**

**1 Introduction** **1**

**2 WebDSL** **3**

**3 Concept** **5**

**4 WebDSL in SDF3** **7**

**5 WebDSL in Statix** **9**

**6 Evaluation** **11**

6.1 Correctness . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 11

6.2 Validation . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 11

6.3 Performance . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 11

6.4 Evaluating Statix . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 11

**7 Related work** **13**

**8 Conclusion** **15**

**Acronyms** **17**

**A A** **19**

# List of Figures

# List of Tables

# Chapter 1

# Introduction

Research questions:

- Is it possible to capture the WebDSL static semantics with SDF3 and Statix?
- Is the implementation of the WebDSL static semantics in SDF3 and Statix performant?
- Is the WebDSL static semantics implemented in SDF3 and Statix elegant for the user?

# Chapter 2

# WebDSL

- What is WebDSL?
- How does WebDSL look like?
- How is WebDSL used?
- What non-trivial aspects does WebDSL have?
- How are the static semantics implemented now?
- Why change the implementation?

# Chapter 3

# Concept

- What does the solution look like?
- Why use SDF3?
- Why use Statix?

# Chapter 4

# WebDSL in SDF3

# Chapter 5

# WebDSL in Statix

# Chapter 6

# Evaluation

## 6.1 Correctness

- Defining correctness in absence of a formal specification
- How correct is the implementation WebDSL
- Explain correctness
- Edge cases

## 6.2 Validation

- How elegant in the Statix implementation?

## 6.3 Performance

- Explain metrics and methods
- Results
- Discuss results

## 6.4 Evaluating Statix

- Repeat reasons for using Statix
- What worked out as intended?
- What did not work as intended?
- What are the workarounds?
- Recommendations for improving Statix

# Chapter 7

# Related work

- Papers about WebDSL
- Papers about modern Spoofax
- Papers about the definition of web programming languages
- Papers about modernizing (web) programming languages

# Chapter 8

# Conclusion

# Acronyms

| | |
|---|---|
| **AST** | abstract syntax tree |
| **DSL** | domain-specific language |

# Appendix A

A