

10th
UCAAT

**User Conference on
Advanced Automated Testing**

Prototyping Web-based Editors for TDL

Felix Alleweldt, Philip Makedonski



14/11/2023



About Myself

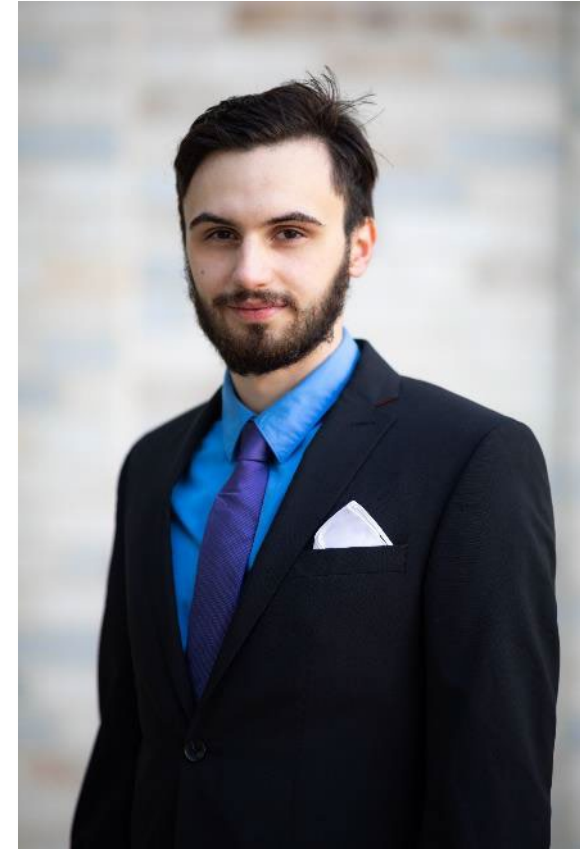
Name: Felix Alleweldt

Academic Pursuit:

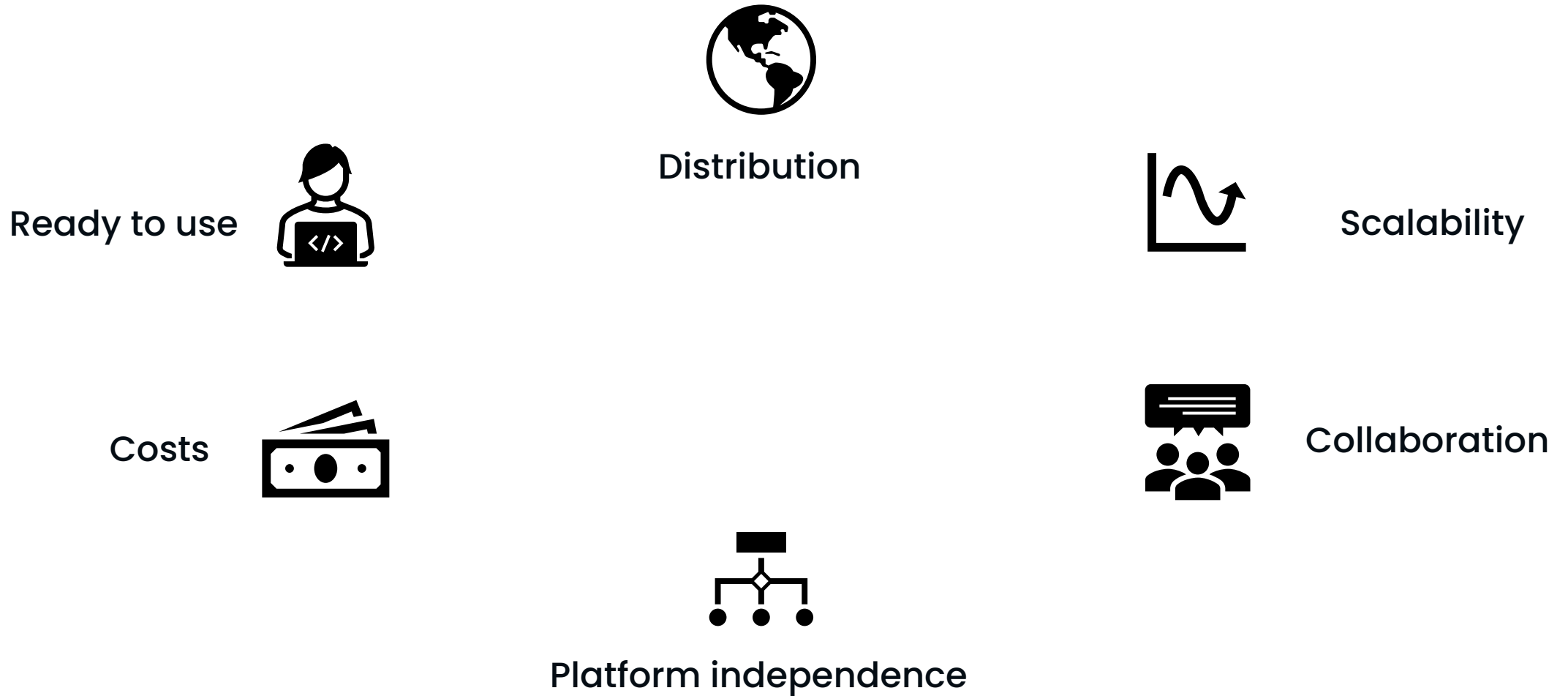
- Currently studying in Master of Education in Physics/Computer Science

Professional Roles:

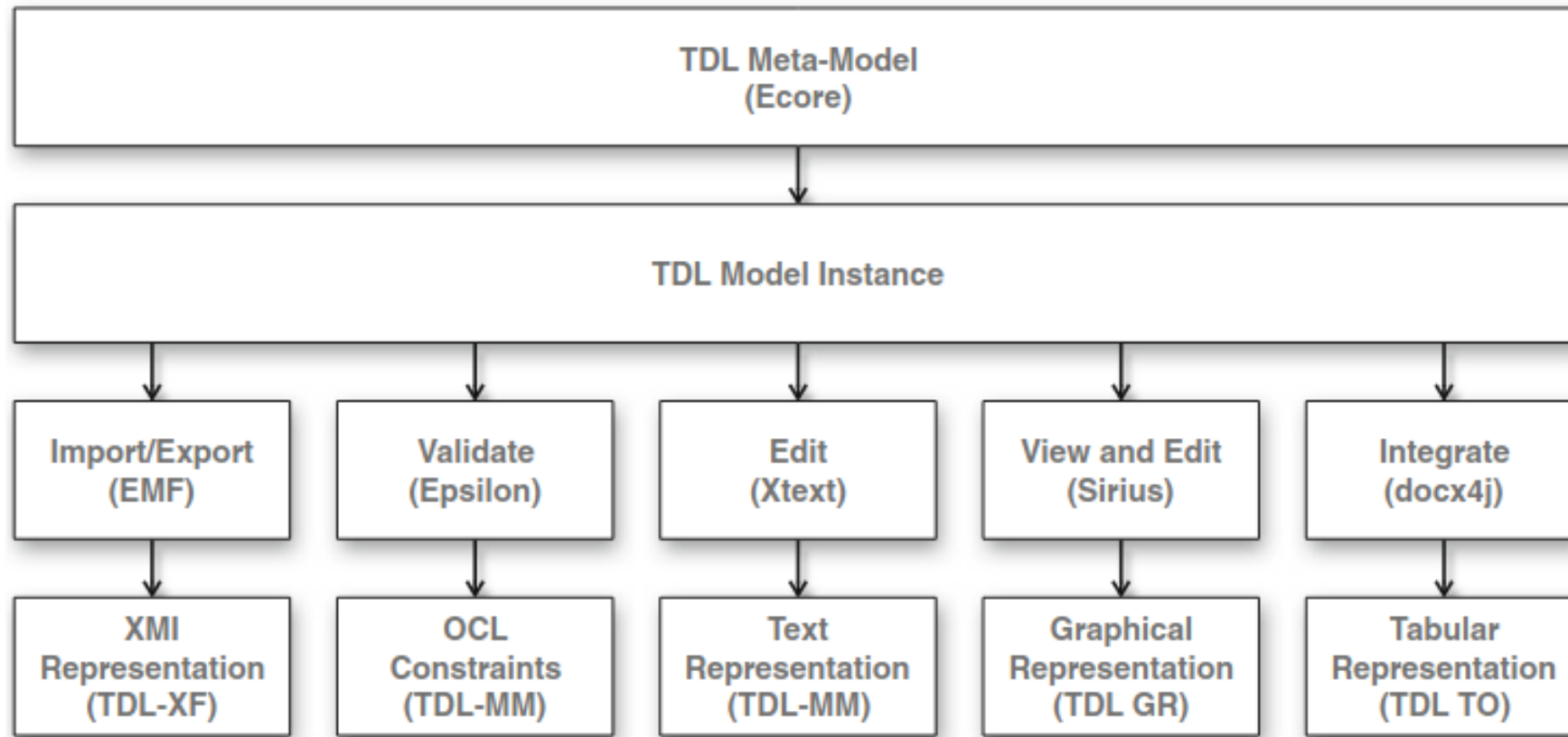
- Work as a QA Engineer in the Software Department at Hogrefe, a local publisher in Göttingen
- Lead a Robotics Course at Theodor Heuss Secondary School in Göttingen



Web-Based IDEs

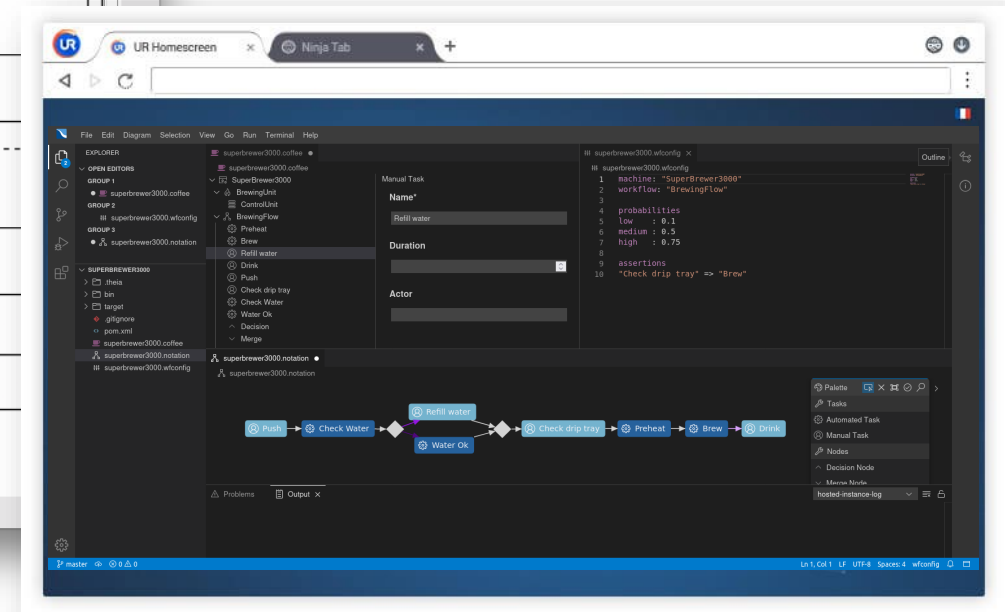
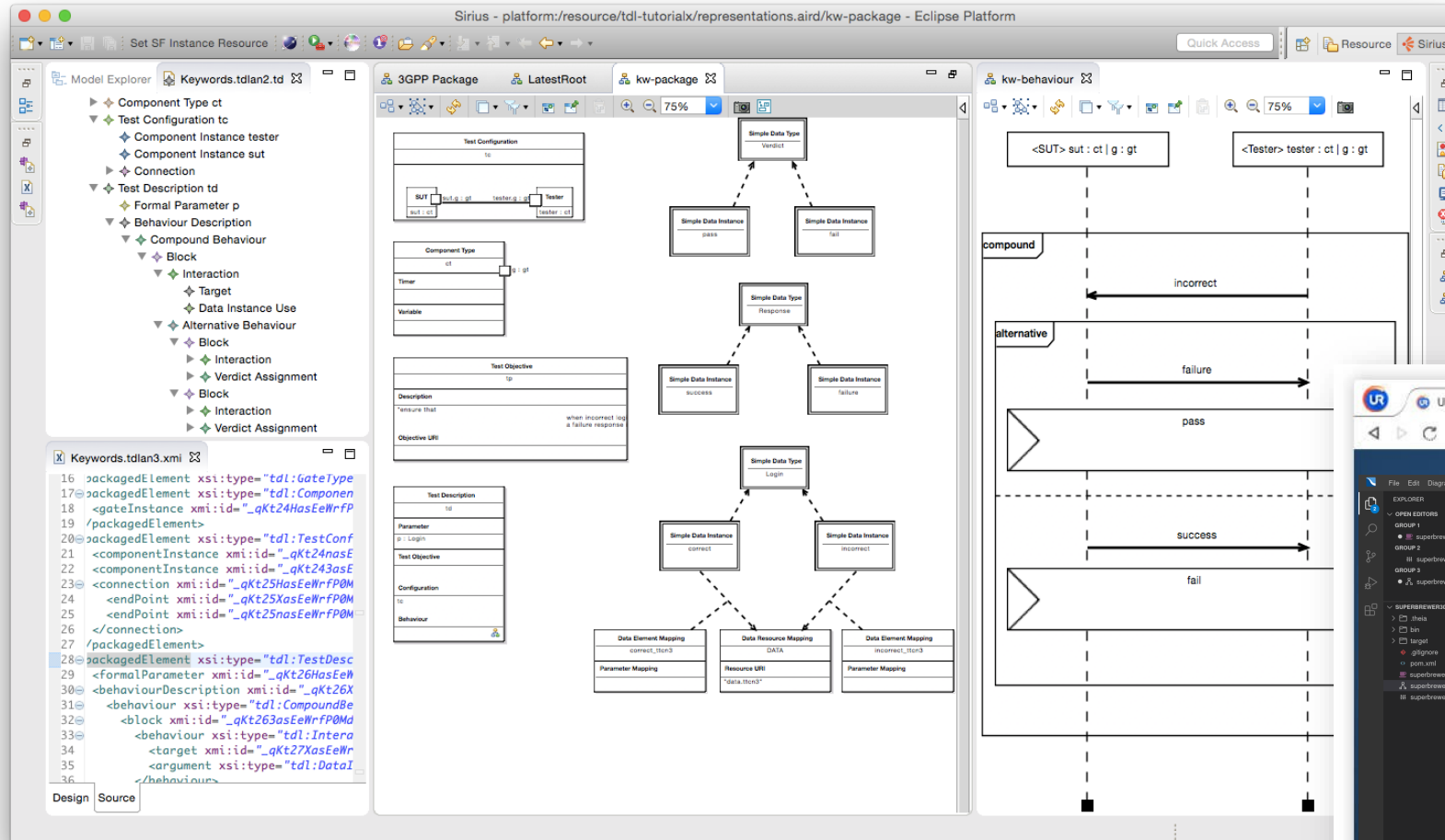


Test-Description-Language (TDL)

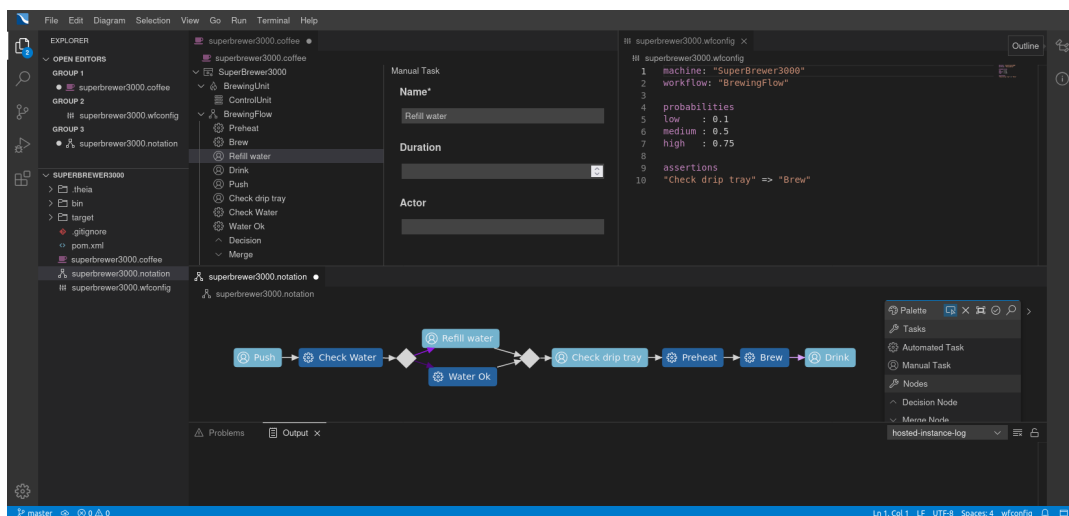


Tools included into the TDL architecture

Goal



Approaches



Eclipse Theia (IDE-Framework)

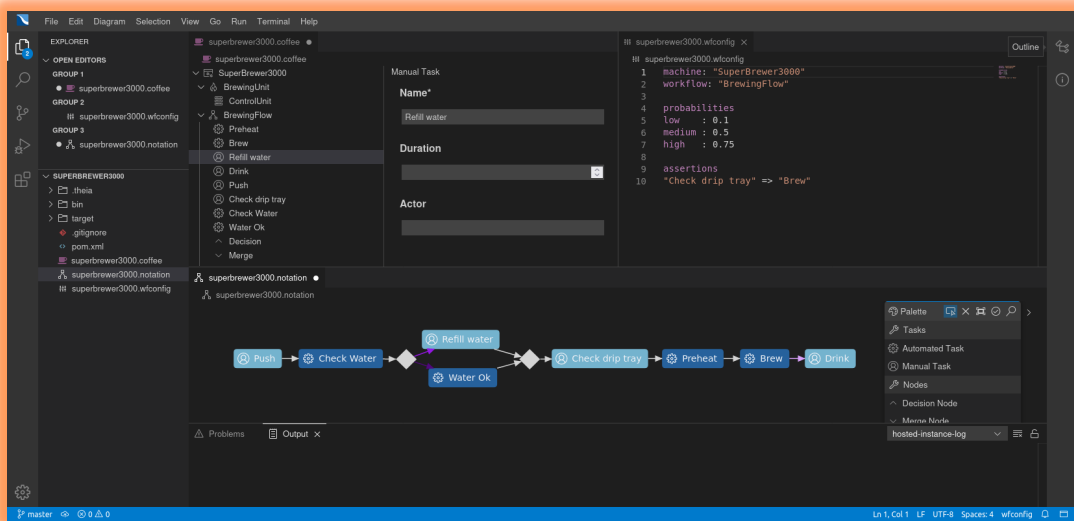
<https://theia-ide.org/>



Vue/Node-App (From scratch)

Approach from <https://nicogreve.de>

Approaches



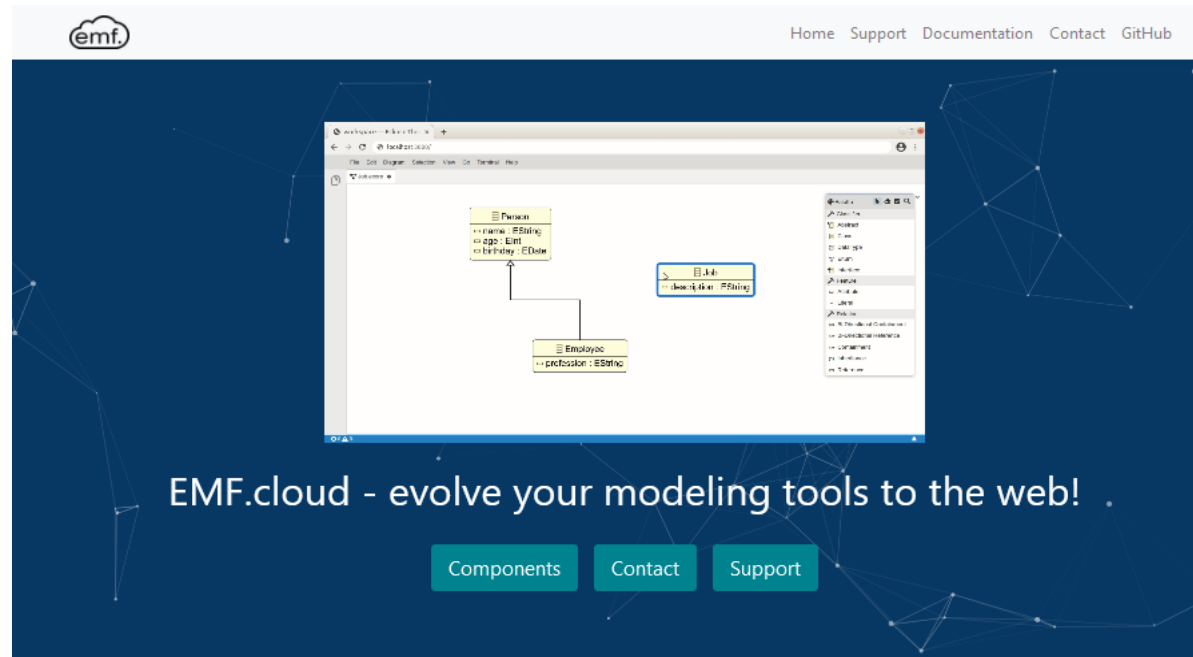
Eclipse Theia (IDE-Framework)

<https://theia-ide.org/>



Vue/Node-App (From scratch)

Approach from <https://nicogreve.de>



The Eclipse Modeling Framework in the cloud!

EMF.cloud is the umbrella project for components and technologies making the Eclipse Modeling Framework (EMF) and its benefits available in the web and cloud. This includes new web-specific frameworks, but also solutions, which allow you to reuse existing tool components based on EMF in the cloud.



Theia Ecore tools

Components

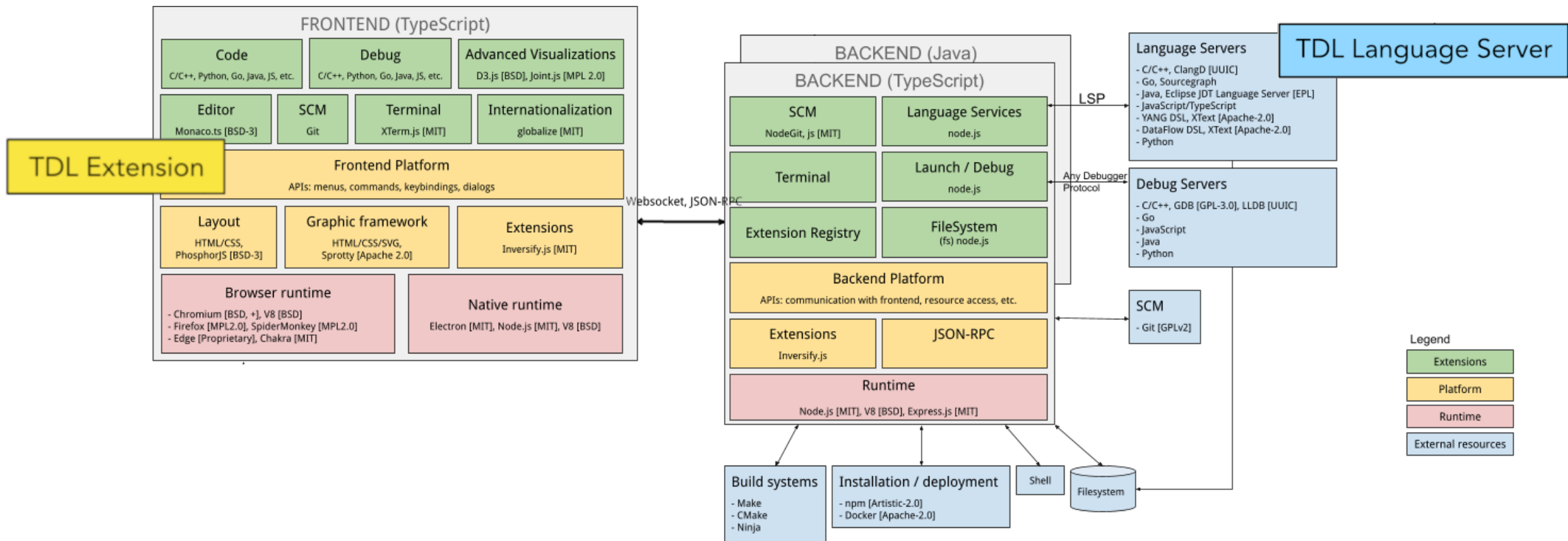


The model server

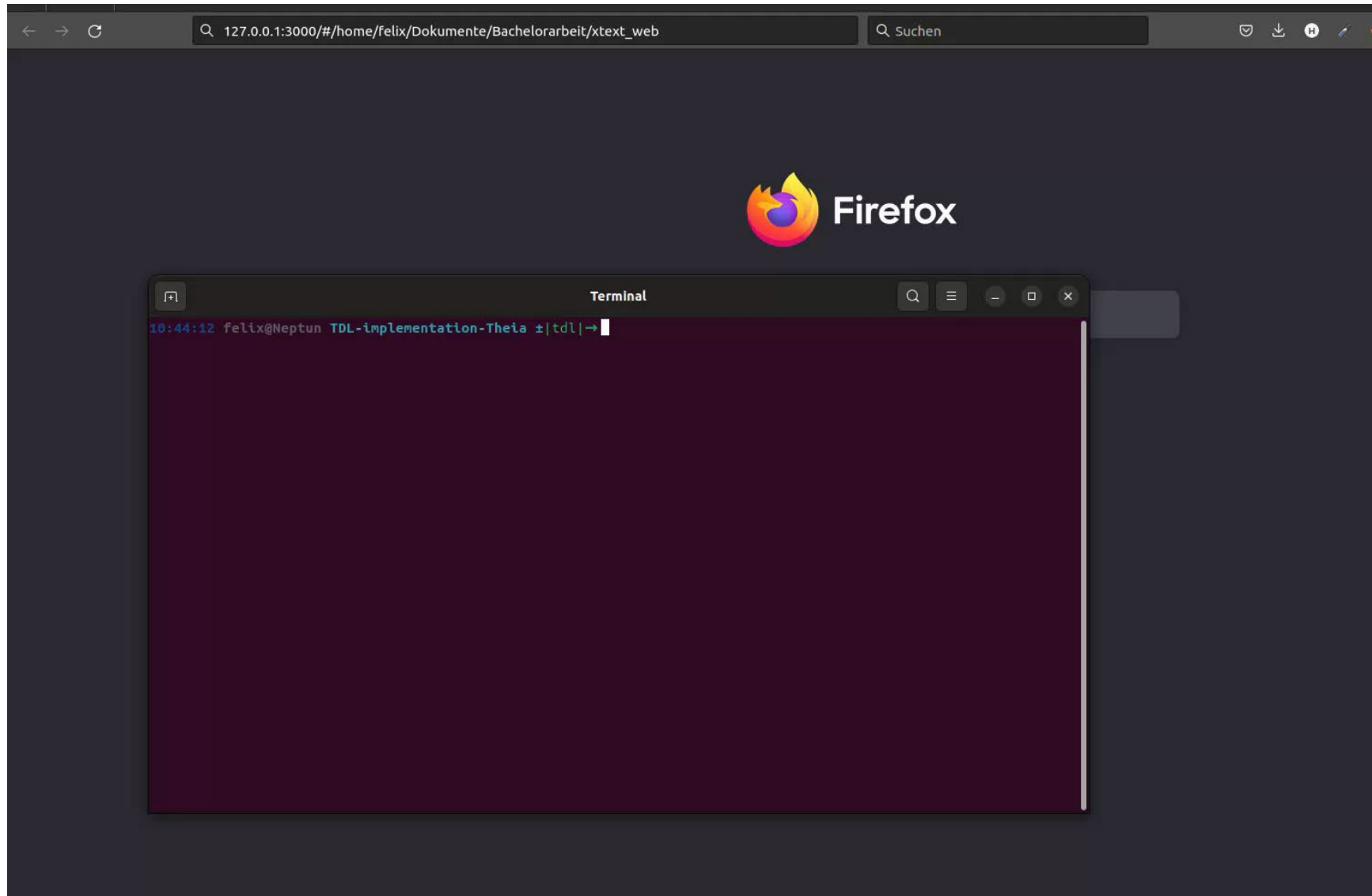


The 'coffee editor'

Design Of The Theia App



TDL In Eclipse Theia



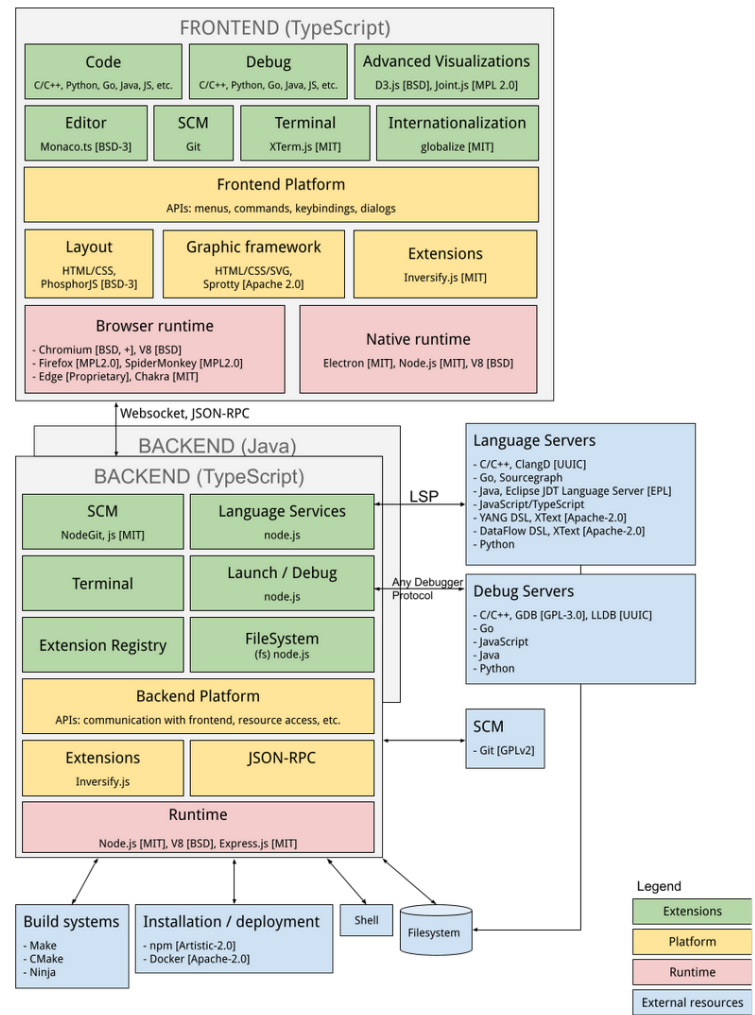
Future Development

The screenshot displays an IDE interface with three main components highlighted by red boxes:

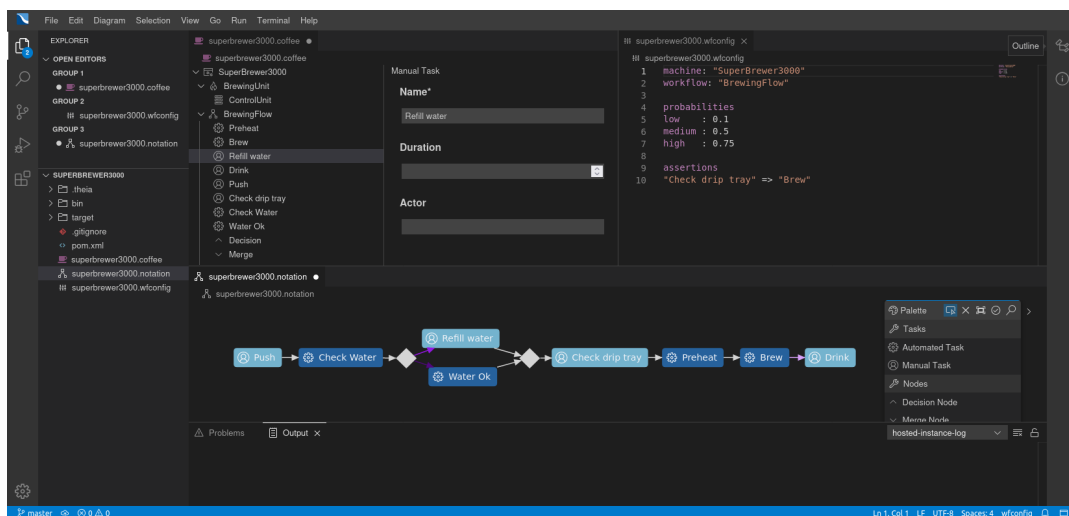
- JSON-Forms:** A form editor for the 'Refill water' task, showing fields for Name, Duration, and Actor.
- Textual Editor:** A code editor showing the configuration for 'superbrewer3000.wfconfig', including machine name, workflow, probabilities, and assertions.
- Graphical Editor:** A flowchart editor showing a sequence of tasks: Push, Check Water, a decision node, Refill water, Water Ok, another decision node, Check drip tray, Preheat, Brew, and Drink.

The IDE also shows a file explorer on the left, a task palette on the right, and a status bar at the bottom.

Lessons Learned



Approaches



Eclipse Theia (IDE-Framework)

<https://theia-ide.org/>



Vue/Node-App (From scratch)

Approach from <https://nicogreve.de>

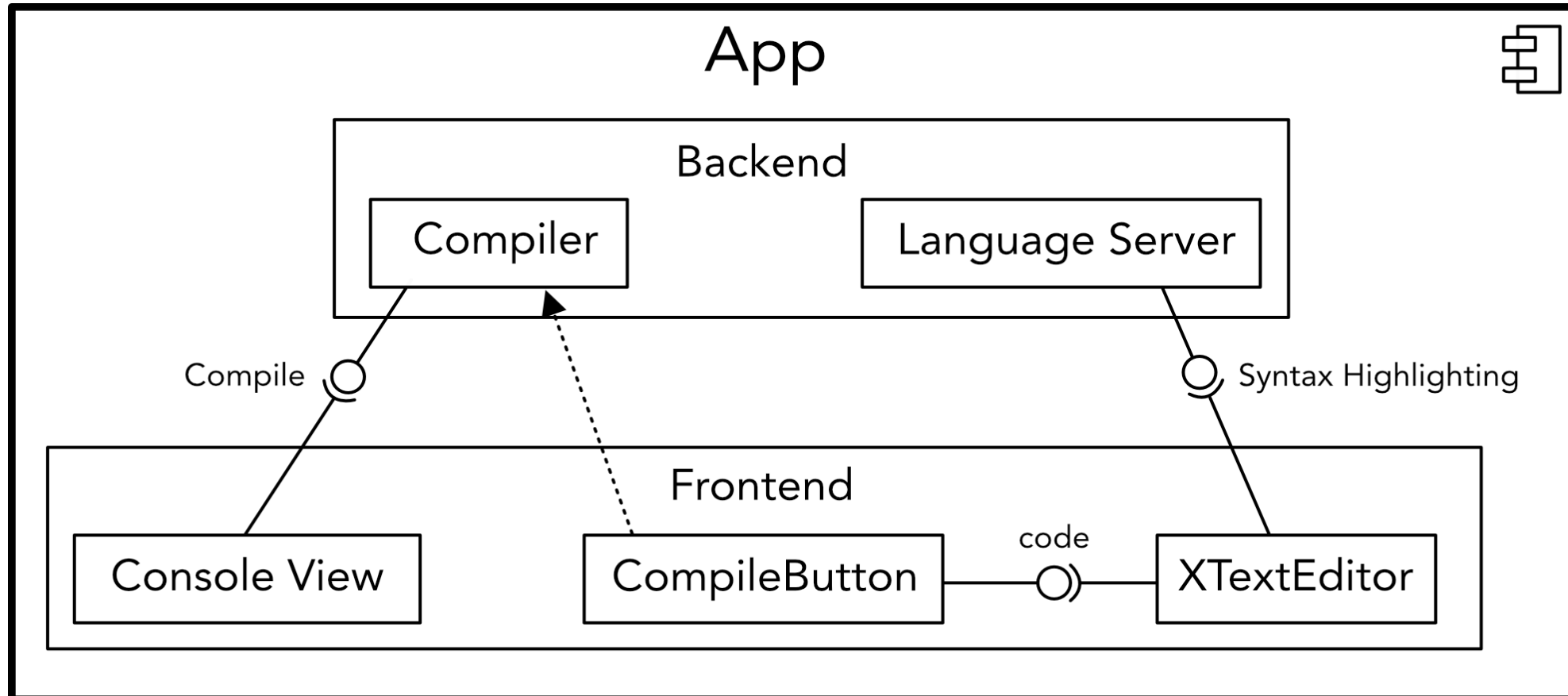
Frontend Of The Custom Web App

Run

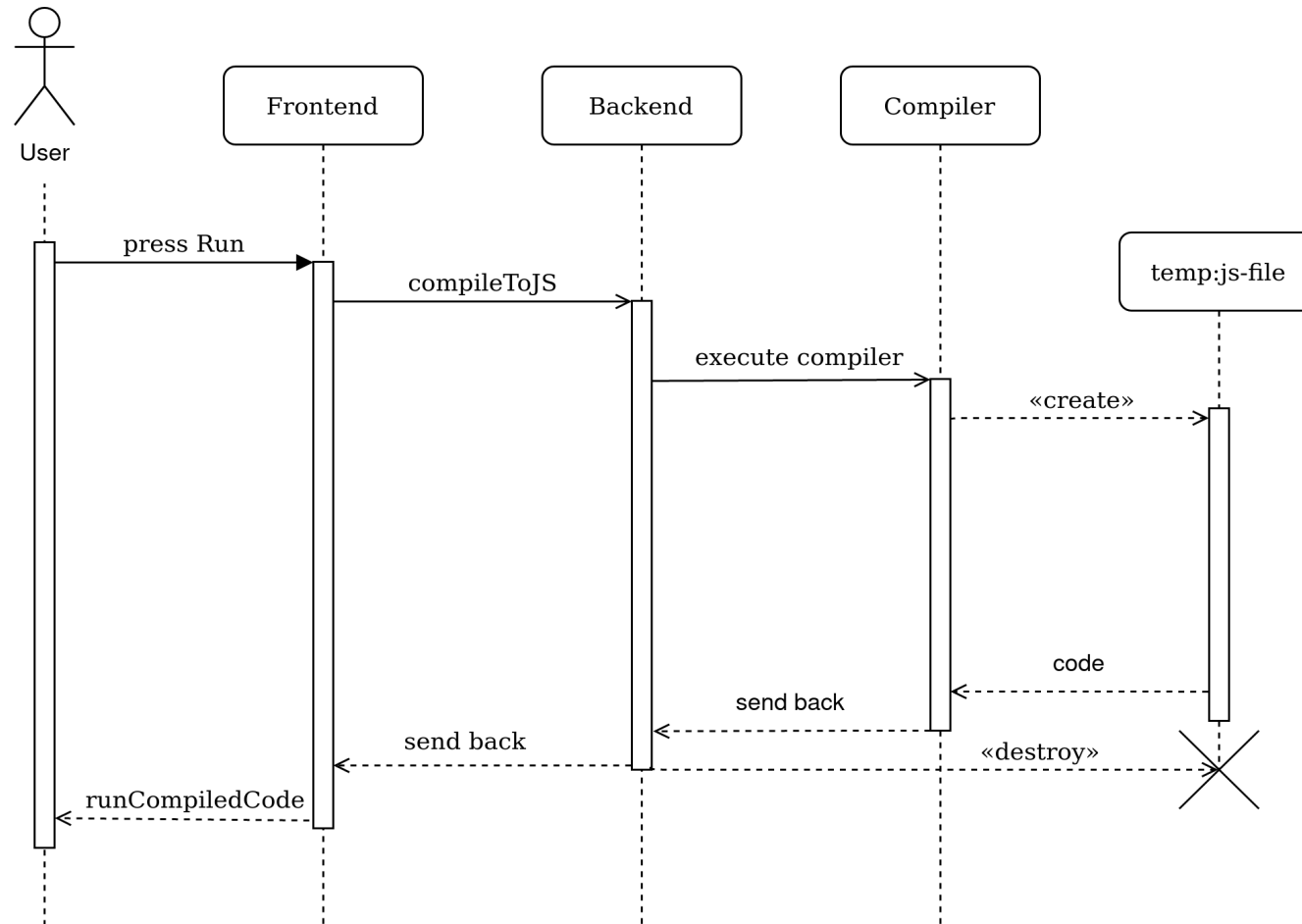
```
1 Package example {
2
3     Type string
4     Type int
5
6     AnnotationType example
7
8     Type person (
9         string address,
10        int age
11    )
12
13    @example
14    person Paul (
15        address = "Berlin, Germany",
16        age = 25
17    )
18 }
19
```

Autoscroll: Console

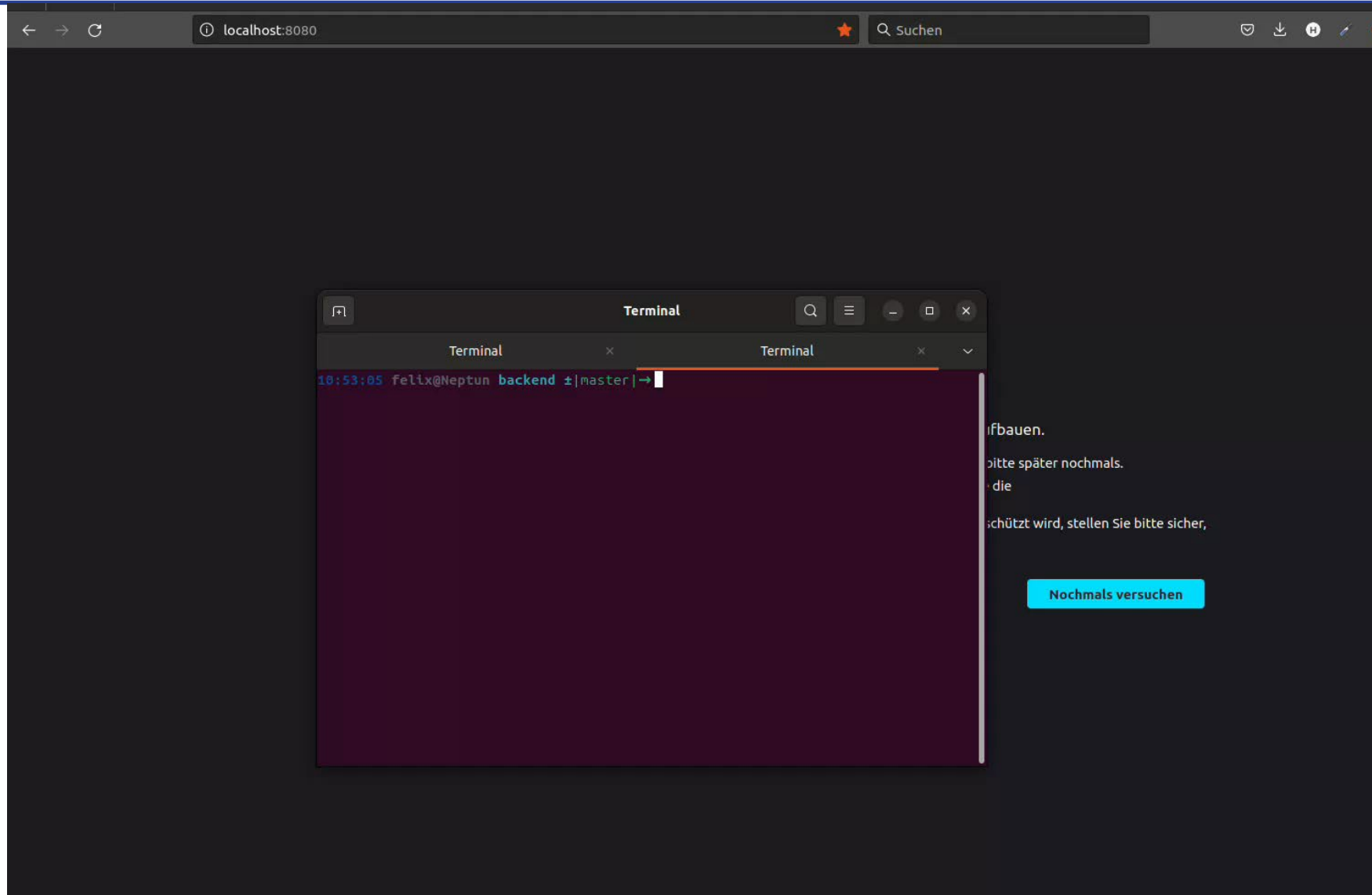
Backend Of The Custom Web App



The Compiling Process



TDL In A Standalone Vue/Node-App



Comparison

Framework	Theia (IDE-Framework)	Vue/Node-App (From scratch)
Architecture:	More complex	More control
Target Group:	Larger development teams	Smaller teams
End Product:	Full-fledged IDE	Simple editors Editors for demonstration purposes
Eco-System	Community Extensions Language Server	Language Server
Integration	VS-Code-Compatibility Existing Architecture	Complete flexibility

Summary



The implementation of TDL in a web-based IDEs makes it more accessible and user-friendly.



Prototyping text-based functionality in Eclipse Theia yielded promising results for further development.



Building a custom app also seems to be promising and gives the developer more control.

Thank you for your attention!

felix.alleweldt@stud.uni-goettingen.de



Challenges

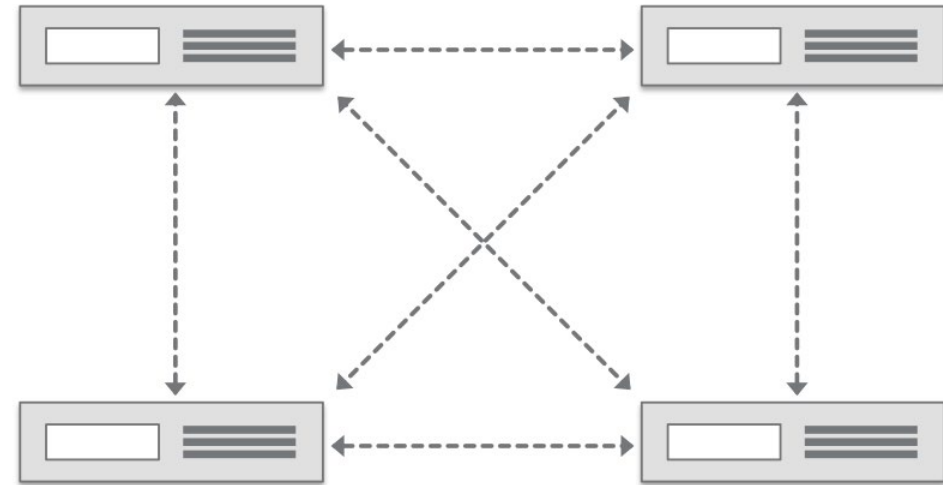


Web Apps

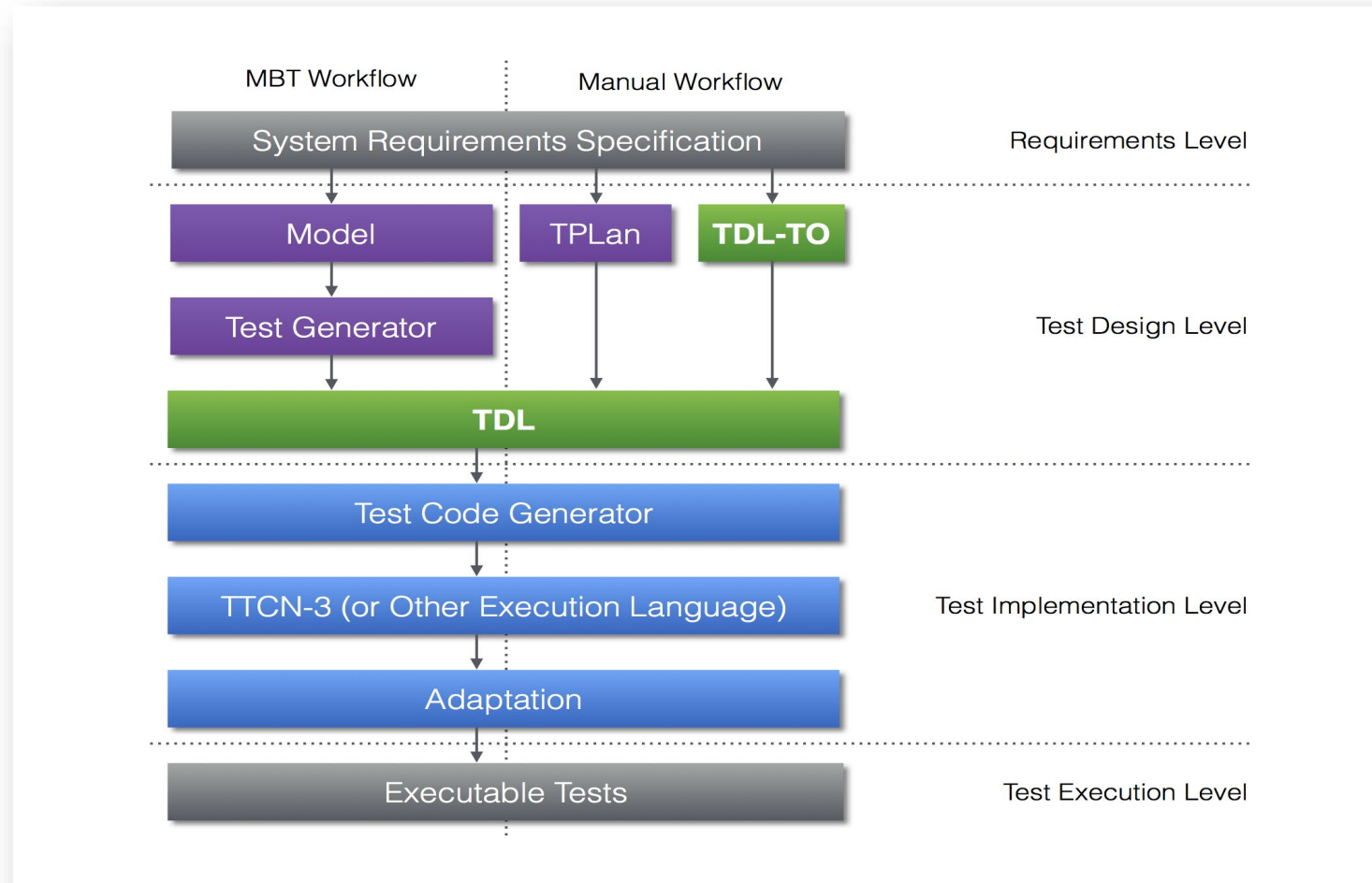
VS

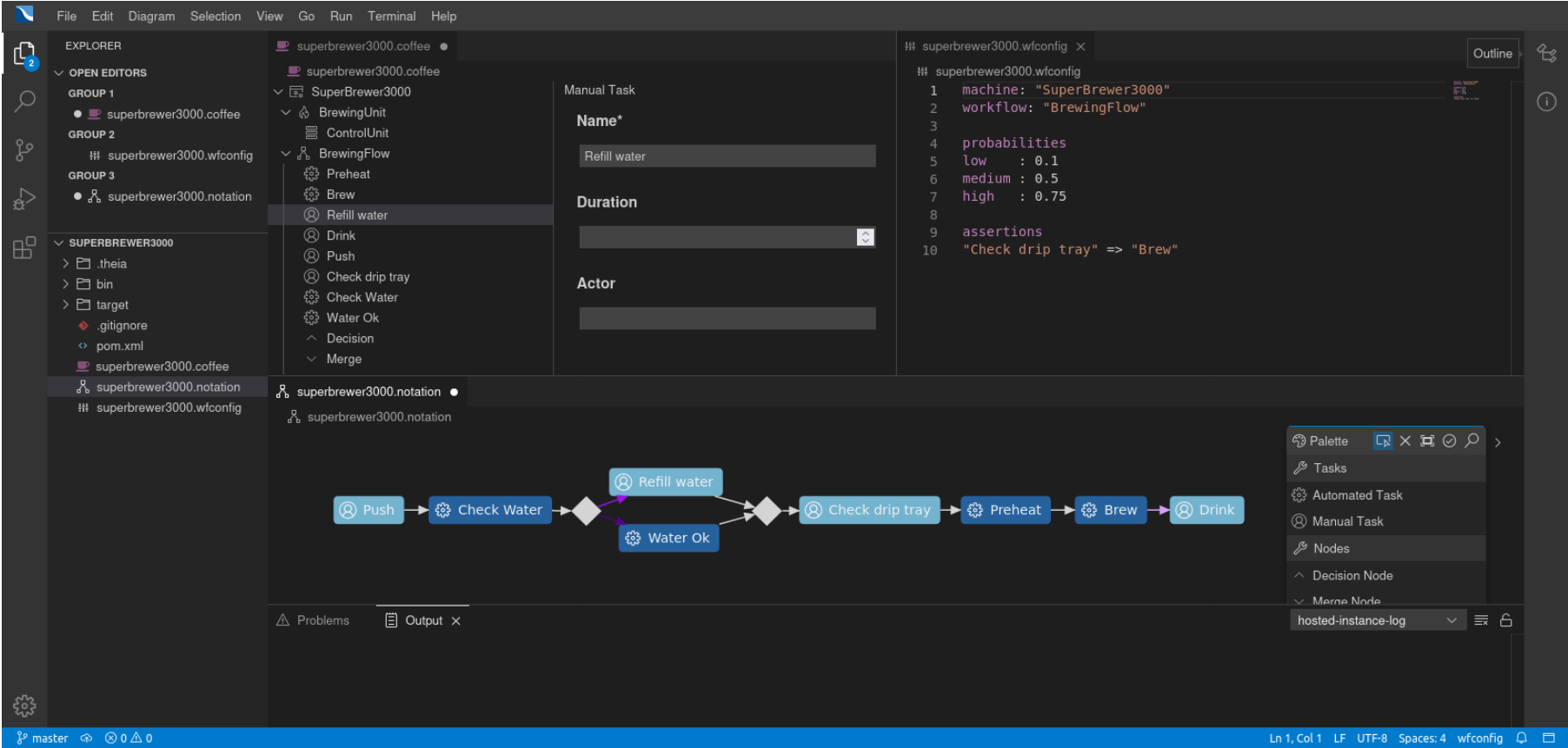


Desktop Apps



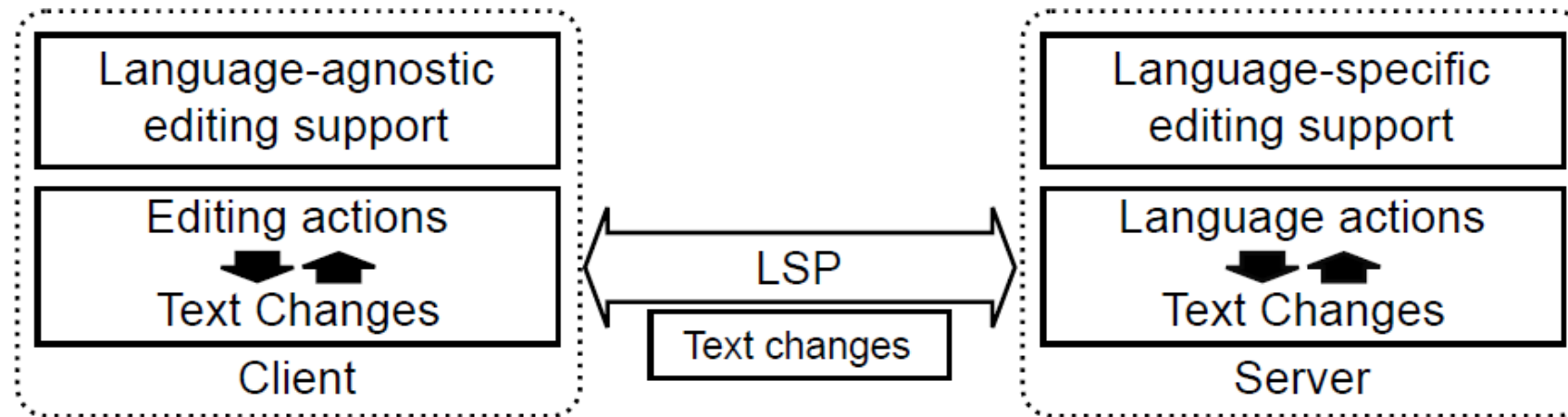
Test-Description-Language (TDL)



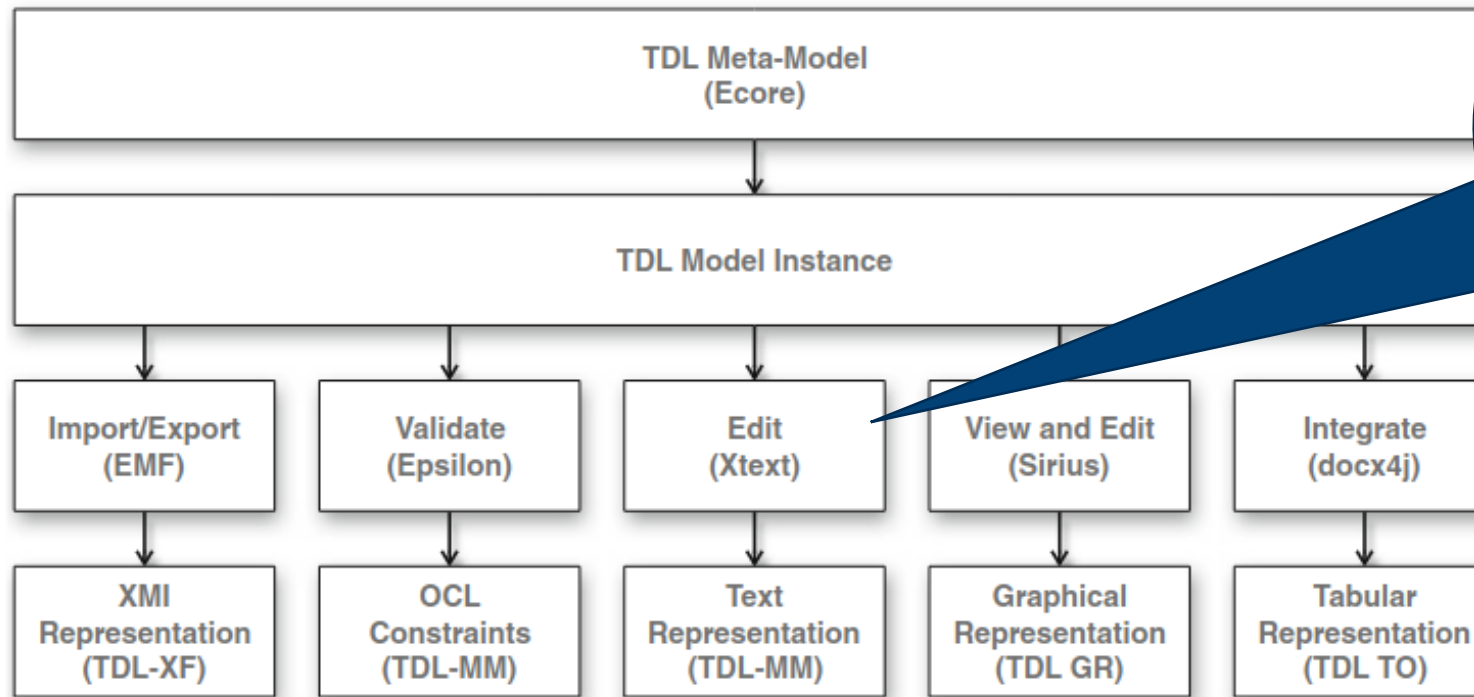


Eclipse Theia (IDE-Framework)

Language Server Protocol (LSP)



Test-Description-Language (TDL)



Xtext allows to define syntax and semantics and provides infrastructure for generating parser interpreters etc.

Tools included into the TDL architecture

Reuse Of Components

org.etsi.mts.tdl.model

org.etsi.mts.tdl.common

org.etsi.mts.tdl.tx

org.etsi.mts.tdl.tx.ide