

# Give me some REST !

## A Controlled Experiment to Study Effects and Perception of Model-Driven Engineering with a Domain-Specific Language



27<sup>th</sup> International Conference on  
Model Driven Engineering Languages and Systems

# MODELS 24

22 - 27 September 2024  
Linz , Austria

# UQÀM

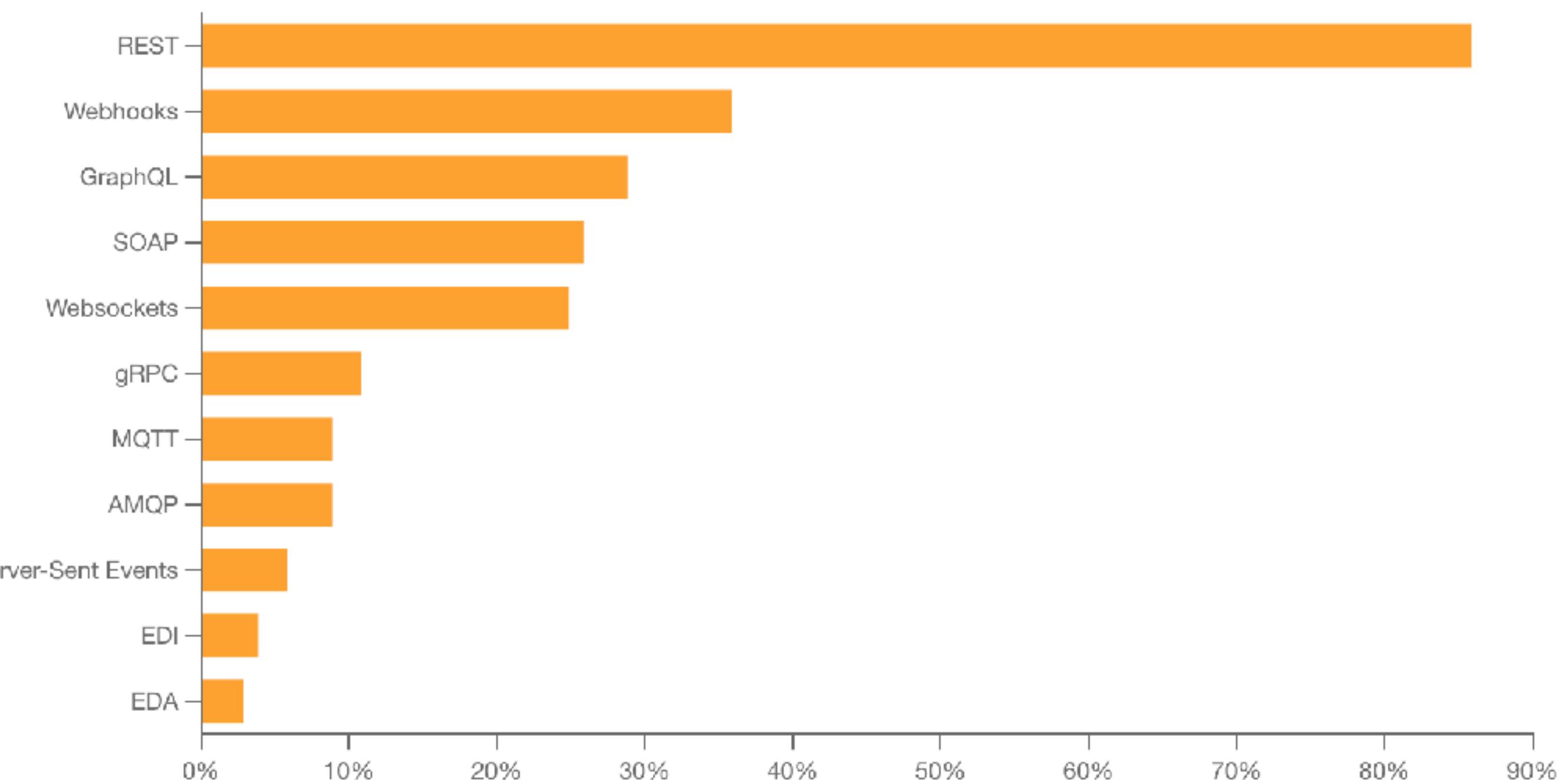
Université du Québec  
à Montréal

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 McGill  
UNIVERSITY

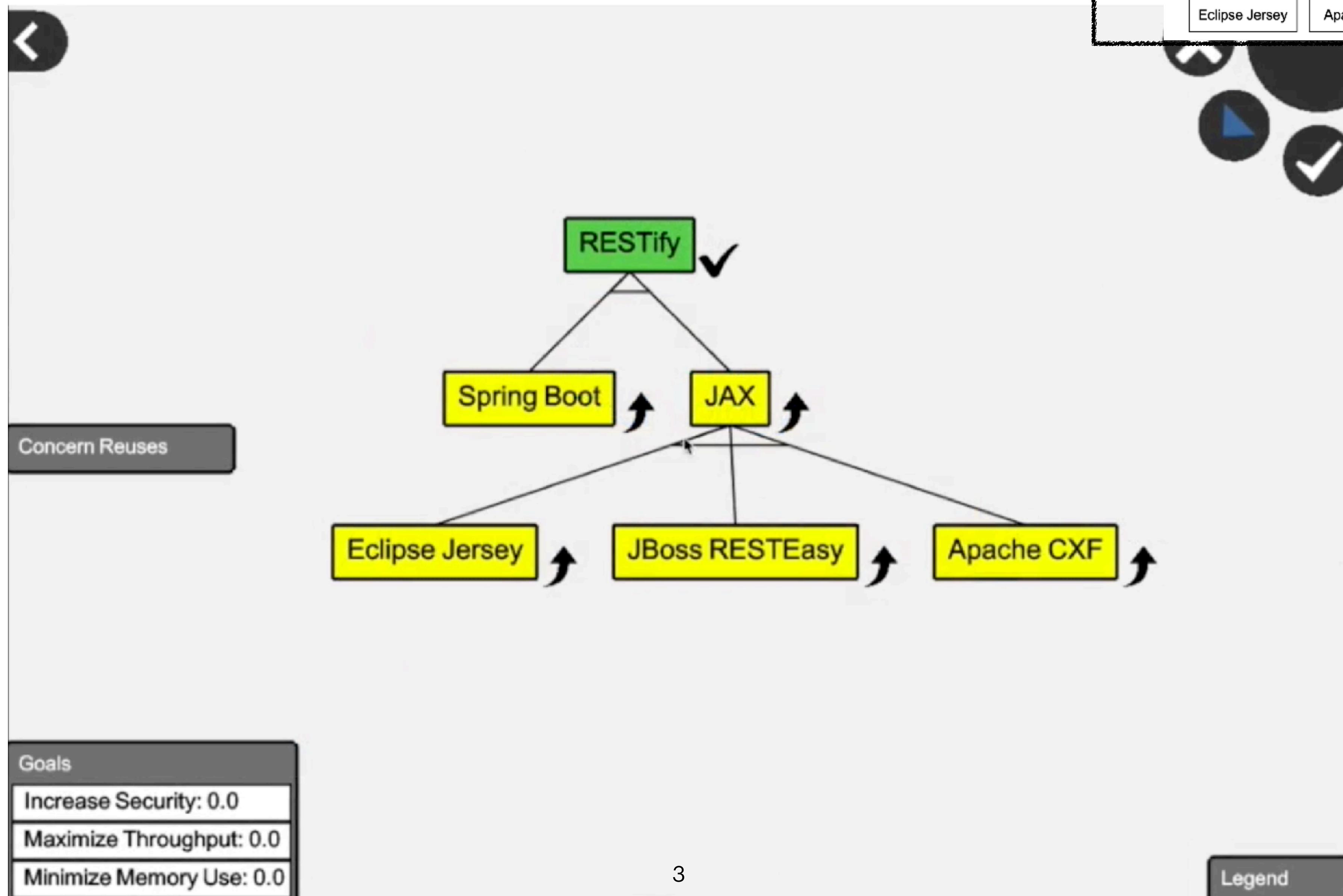
# Migration to REST

- Popular in industry
- Cloud API paradigm (abstraction)
- Annotation syntax

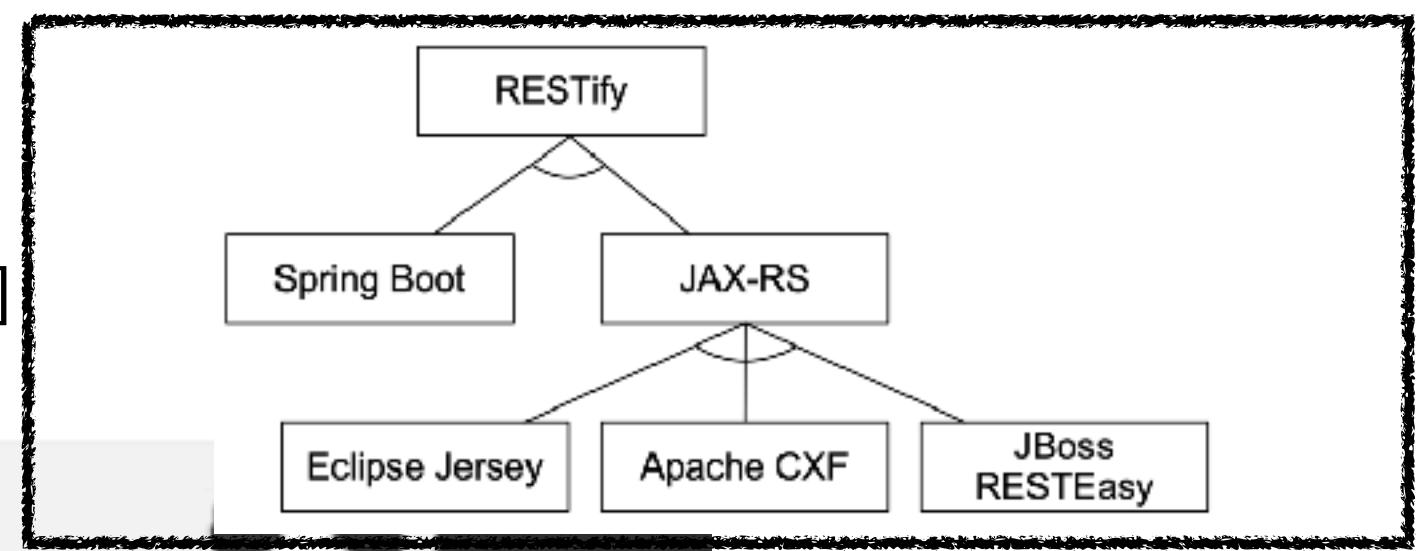


```
@PostMapping("/bookstore/stocklocations/{stocklocation}/{isbn}")  
public void setStock(  
    @PathVariable("stocklocation") String city,  
    @PathVariable("isbn") Long isbn,  
    @RequestBody Integer amount) {...}
```

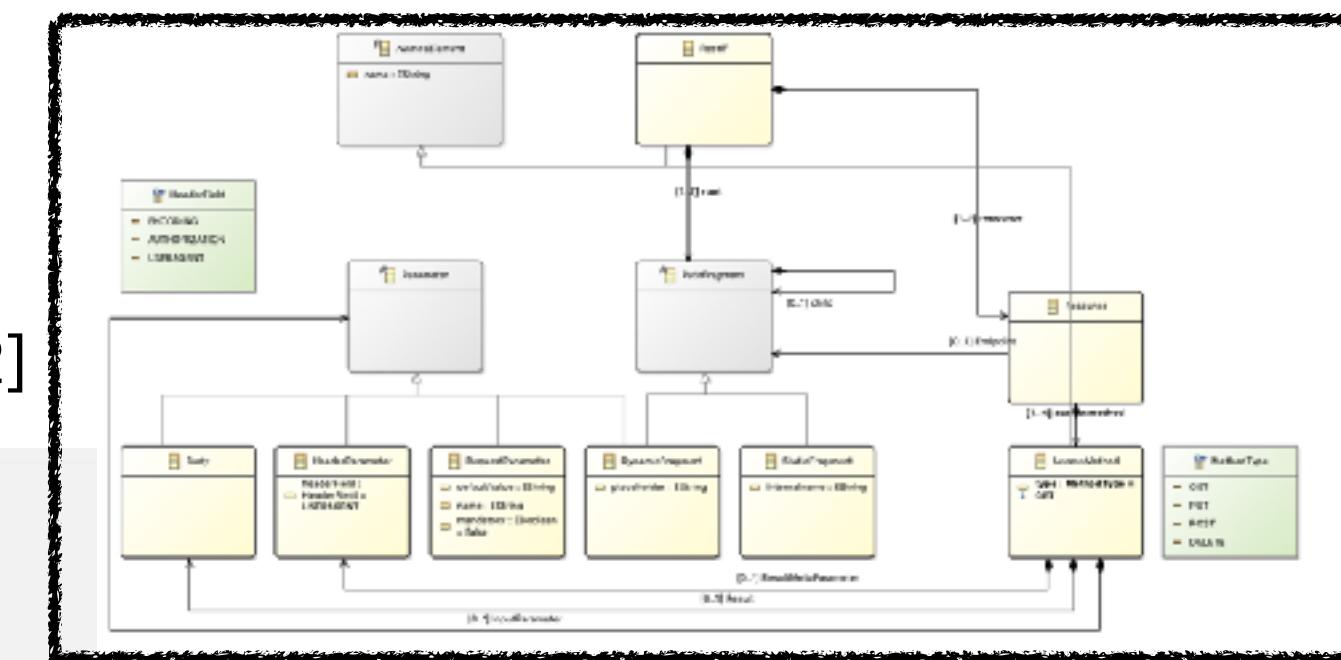
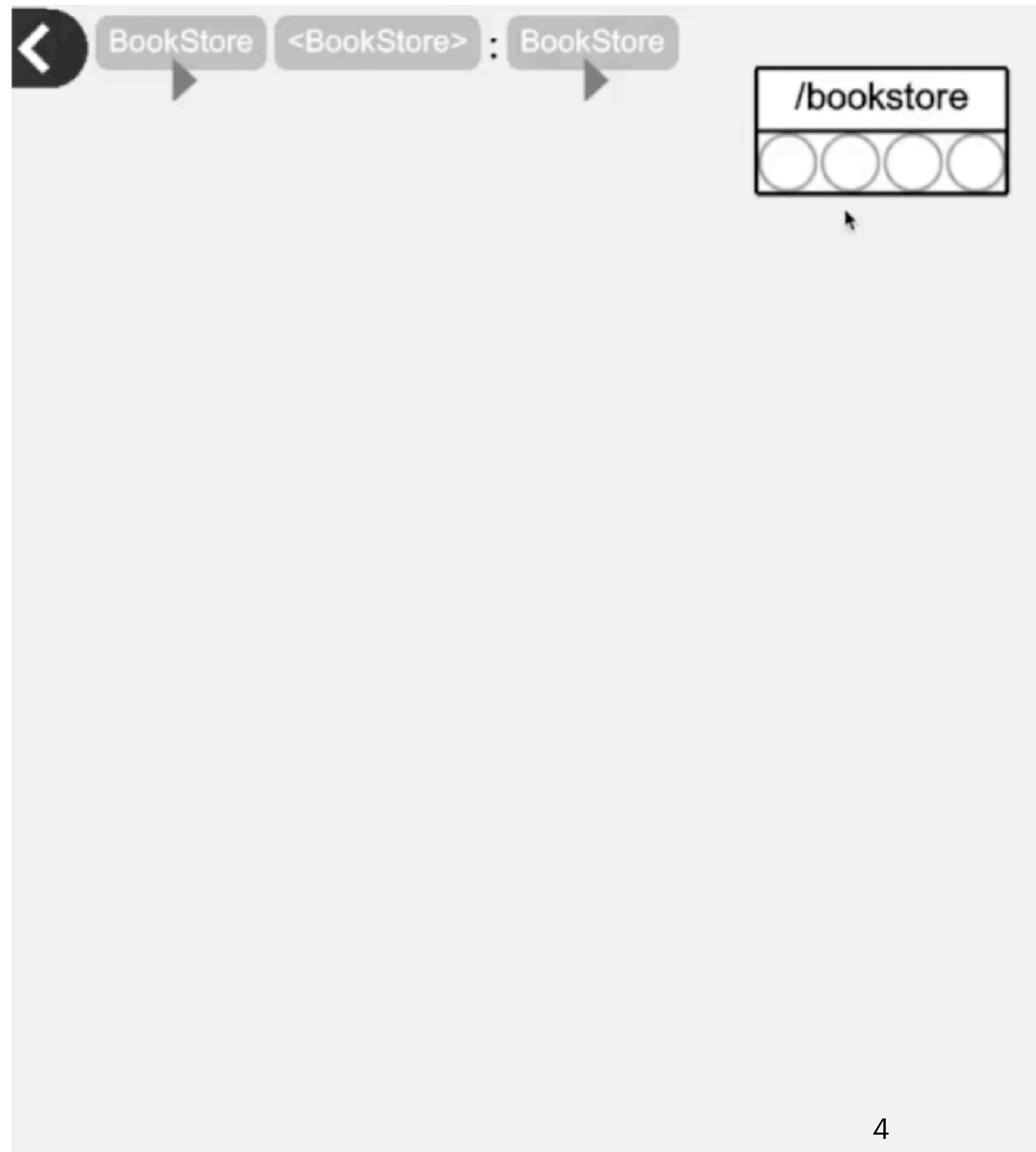
# Toolchain (1)



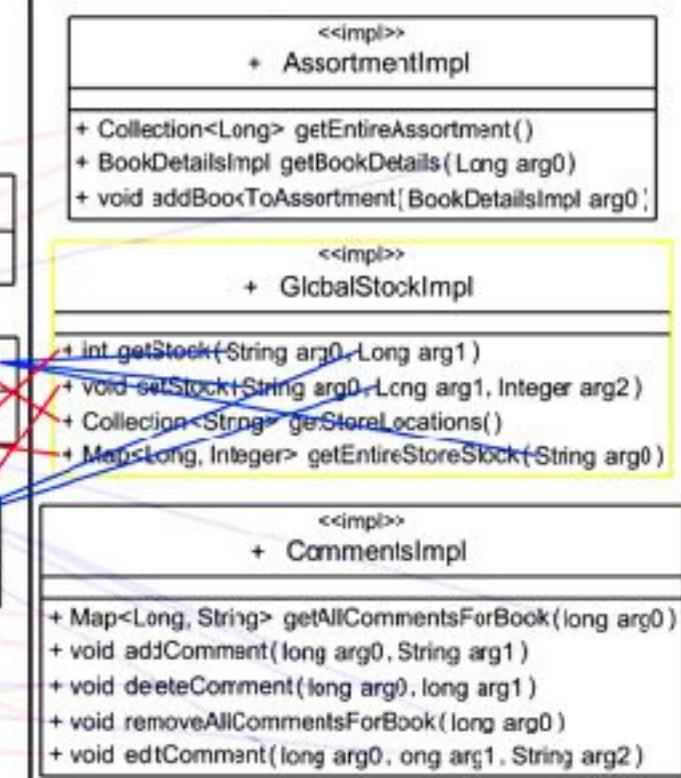
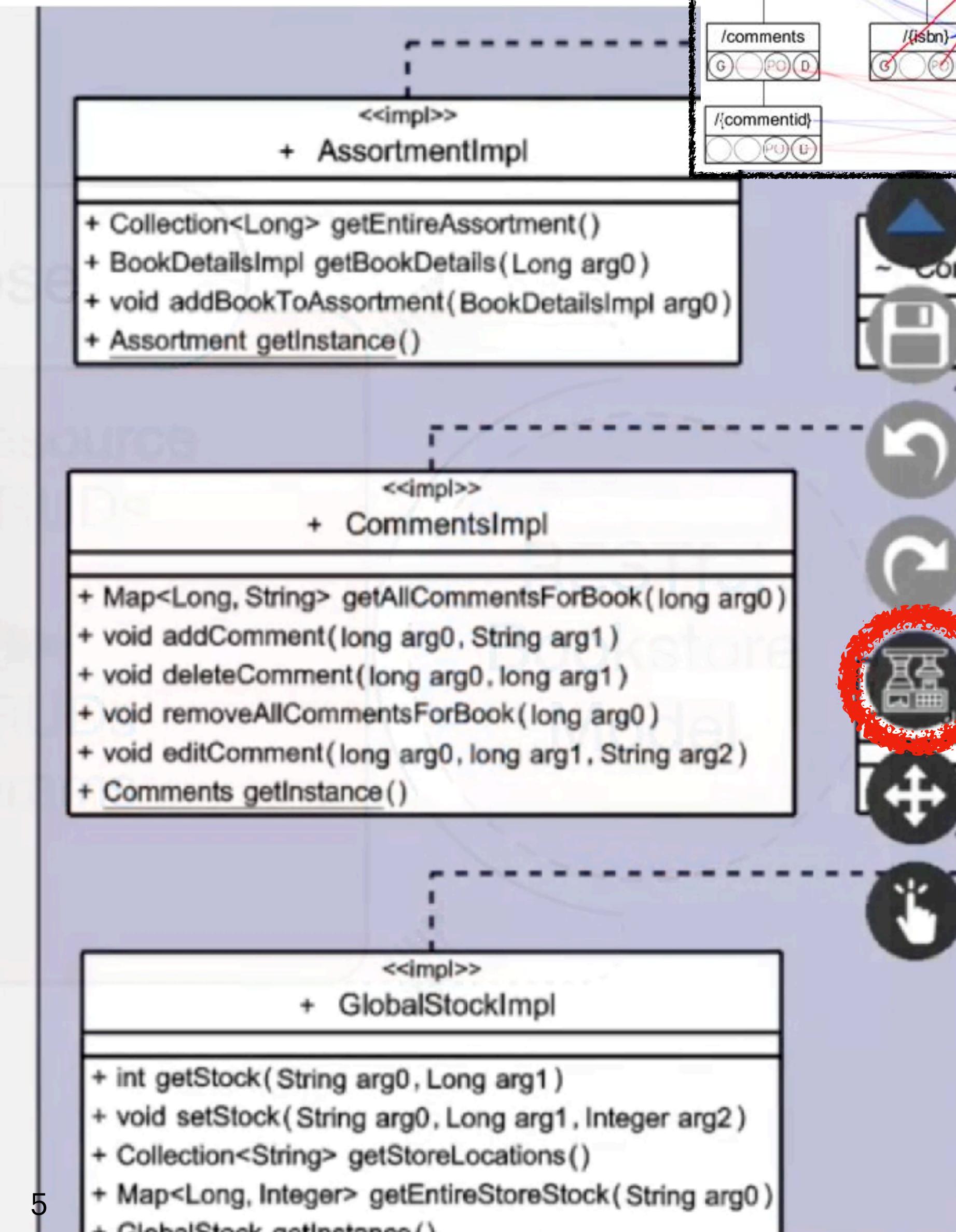
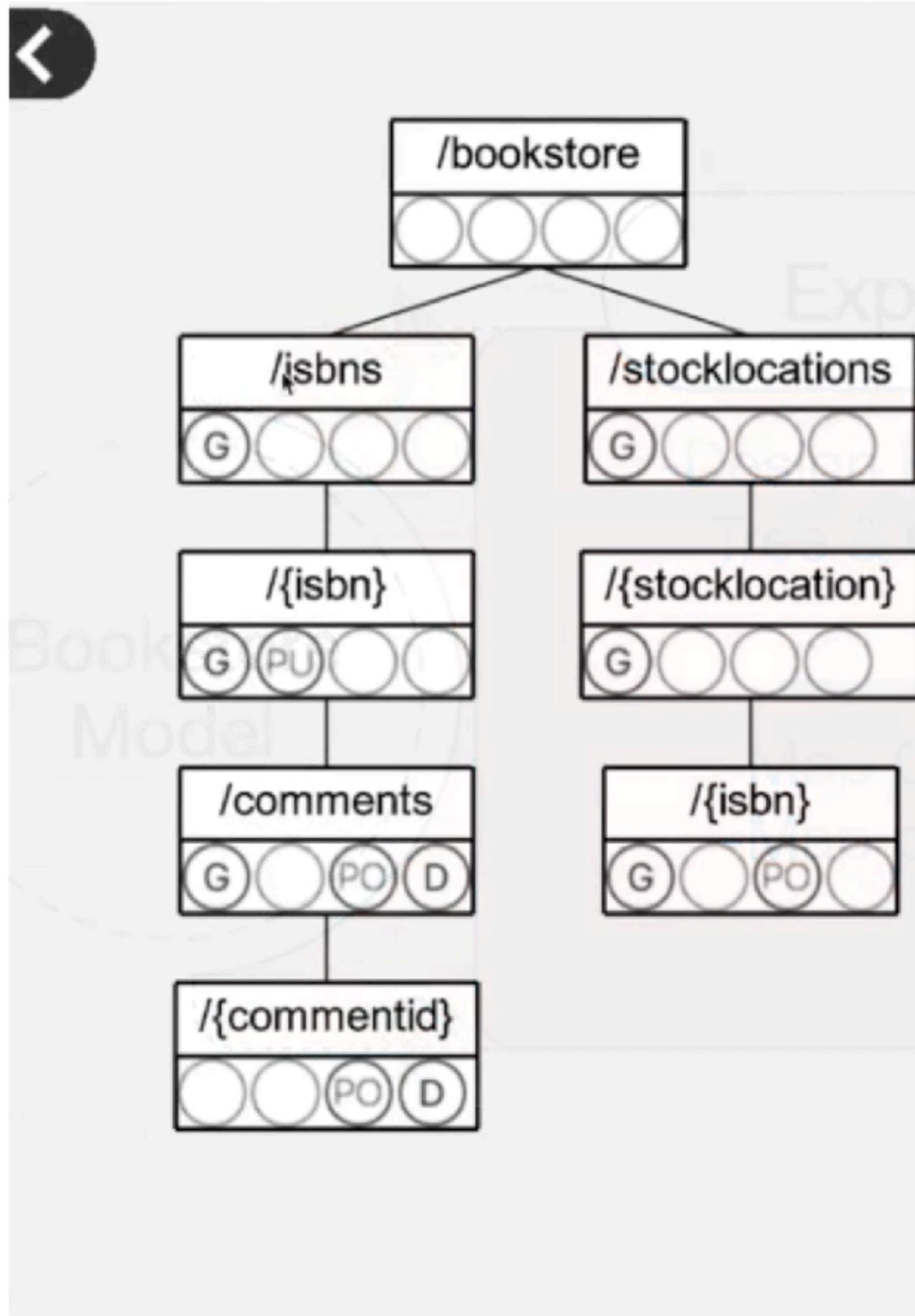
[1]



# Toolchain (2)



# Toolchain (3)

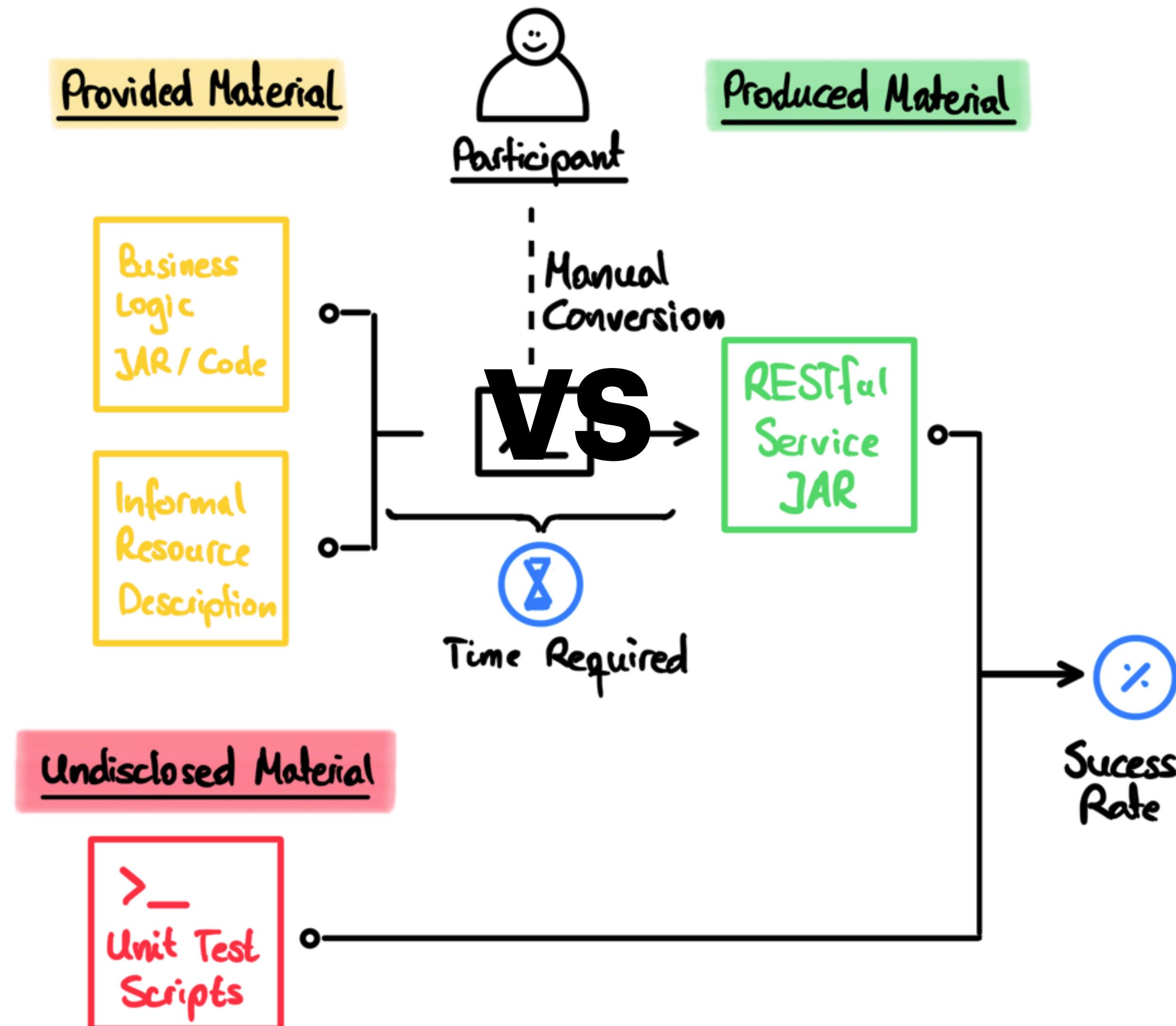


**"Using our tool, everything gets better,  
and practitioners will love it."**

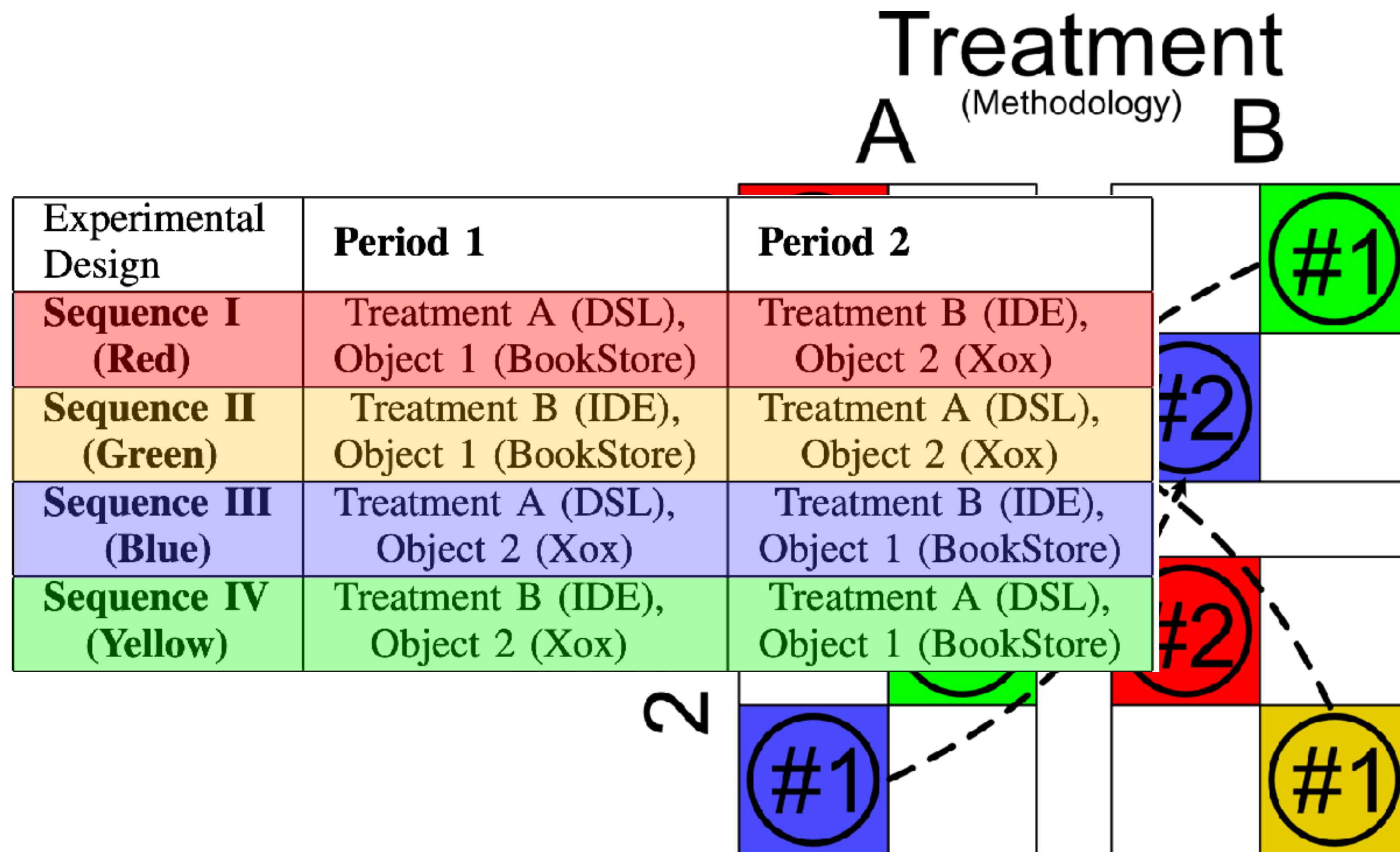
(That's a hypothesis)



# (Controlled) Experiment

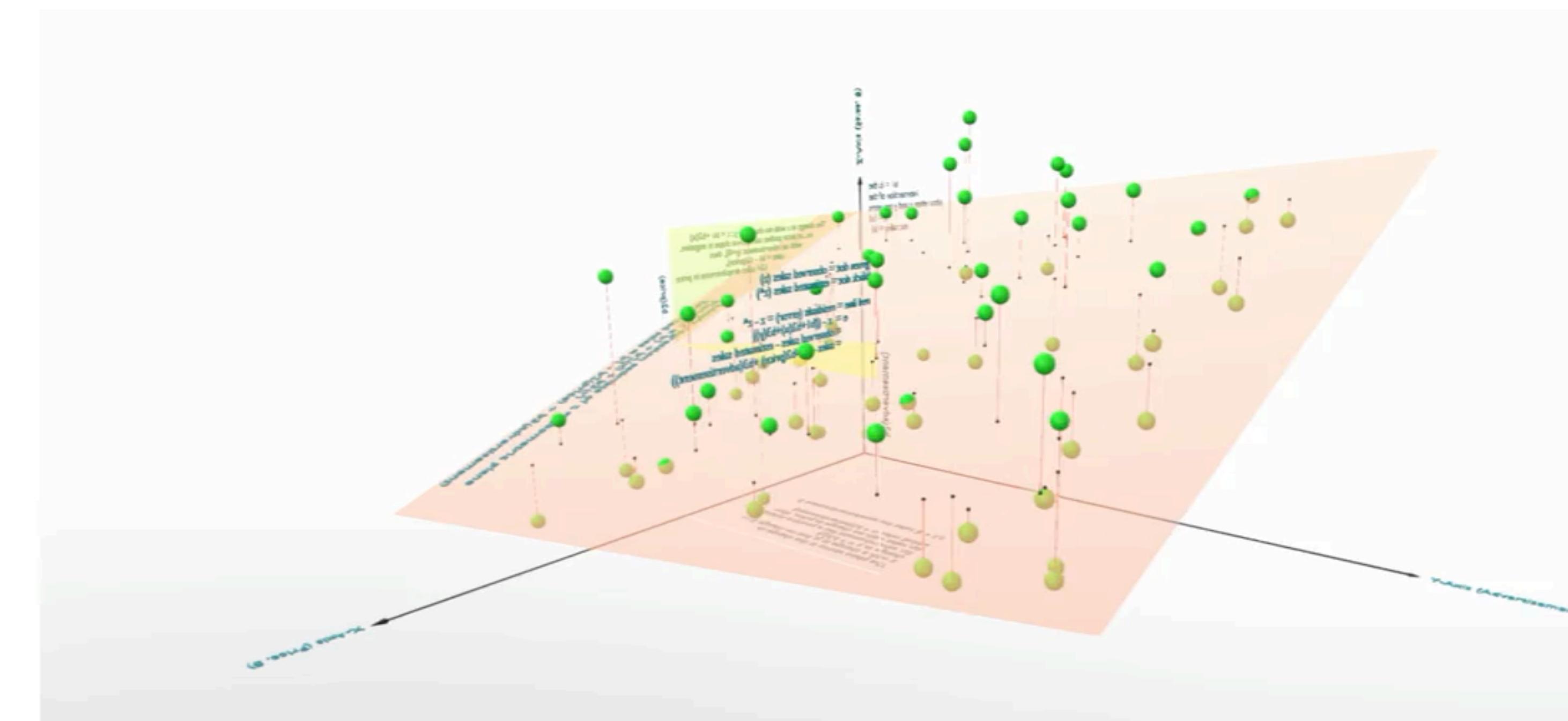


# Crossover Layout



# General Linear Model

- All samples
  - All variables (dimensions)
  - Linear regression



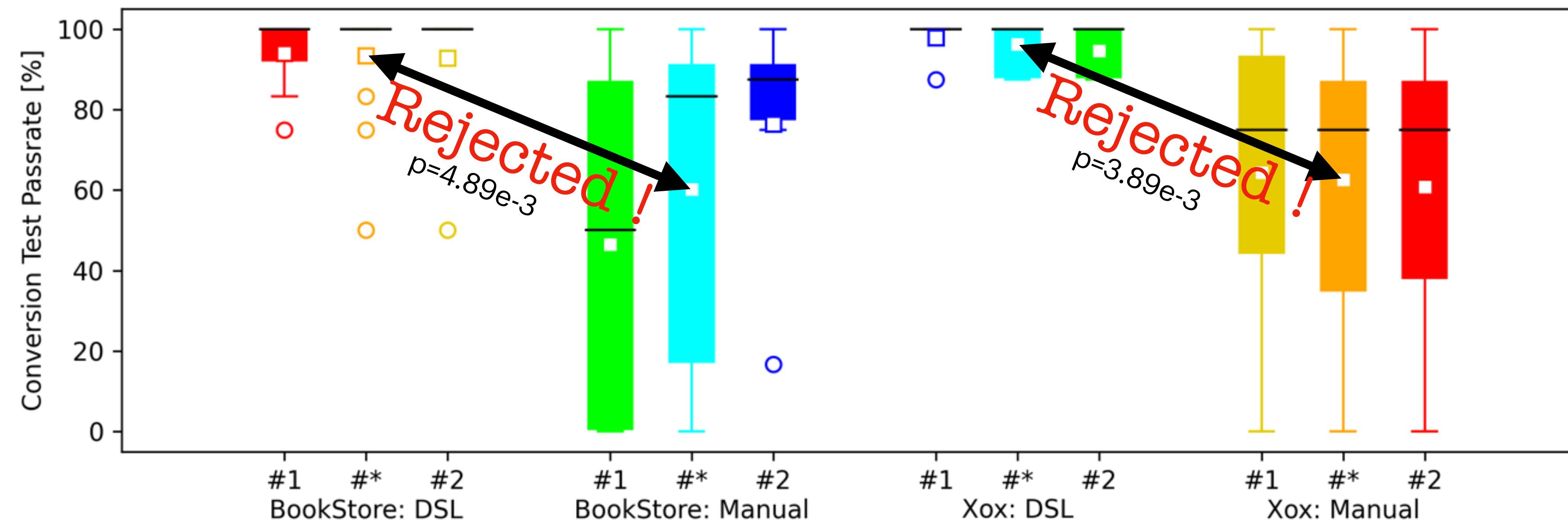
# General Linear Model Illustration

Source: <https://sketchfab.com/>

# Performance

## Test Passrates

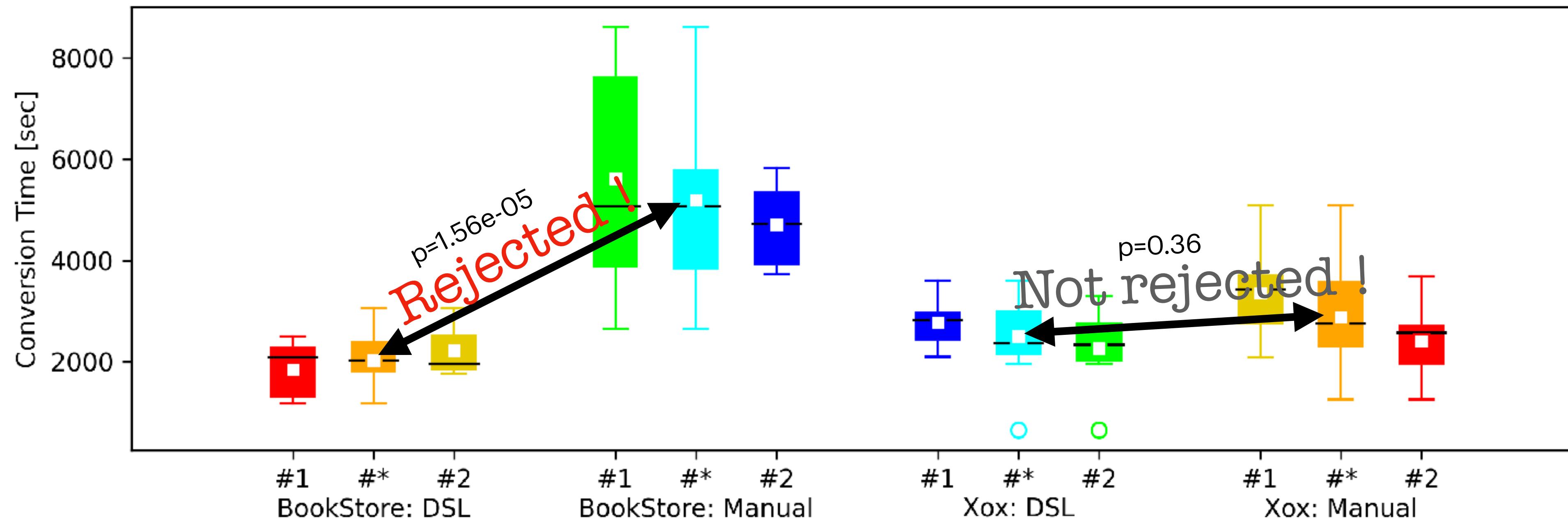
- Wilcoxon Rank Sum (Non-parametric, robust for low sample size)
  - Null Hypothesis: “*The distributions are the same (\*)*”



# Performance

## Conversion Time

- Wilcoxon Rank Sum (Non-parametric, robust for low sample size)
  - Null Hypothesis: “*The distributions are the same (\*)*”



**"Using our tool, everything gets better,  
and practitioners will love it."**

(That's a hypothesis, too)

# Feedback Forms

Participant Feedback



**Green Unicorn:** “(I prefer) the manual solution, because it gives more control over the source code.”

**Green Turtle:** “I will most likely stick with IntelliJ as I feel more comfortable coding everything manually where I have more control.”

**Yellow Turtle:** “Because the code generation process is unknown to me, I’d be more confident in the manual methodology [...], where I had total control and knew the code that would run against the tests.”



## Give me some REST: A Controlled Experiment to Study Effects and Perception of Model-Driven Engineering with a Domain-Specific Language

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### Abstract

Domain-Specific Languages (DSLs) are an efficient means to counter accidental complexity and are therefore a key technology for Model-Driven Engineering (MDE). Despite DSLs' potential, there is a lack of empirical research regarding the practical effects and developer perception of DSL-driven tools. In this paper, we present a controlled experiment with 28 participants around a previously developed DSL-based toolchain, which assists the migration of legacy software to REST. A direct comparison of developer performance

### 1 Motivation

Domain Specific Modelling language since the early days [42]. By domain in the language, DSLs and consequently, DSLs are often purpose languages (GPLs) to do. Although the integration of DSLs combining it with the remainder of the common [22, 26, 47], a systematic



## RESTify Experiment Replication Package

All you need to replicate our findings, reuse our data or tools.

The simplest way to replicate our study findings, is the prepared docker image. Within just a few minutes you can power up a Jupyter Notebook and replicate all statistics and figures of our paper. You only need docker and a browser.

### About

This webpage servers as entry point for the artifact submission of our MODELS 2024 conference contribution.

- Main purpose of this replication package is to allow fast and independent replication of all our results and interpretations.
- We carefully documented all our methodology, and automated our analysis. E.g. all paper figures are generated from raw data, and we provide you with the means to conveniently replicate them and validate correctness of our findings on your local machine.



- Replication package:  
**DOI [10.5281/zenodo.1255538](https://doi.org/10.5281/zenodo.1255538)**
- (Almost) all the data !
- All the tools !
- Easy to reuse !

