

Proposal: Web-based Model Checking UI with GLSP

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I. INTRODUCTION

The goal of this project is to create a user interface for a model checking tool using the Graphical Language Server Platform (GLSP) framework.

II. BACKGROUND

Theoretic Background and Frameworks used.

A. Model Checking

Model checking is an automatic technique for verifying finite-state reactive systems, such as sequential circuit designs and communication protocols. [3] [1]

B. Eclipse Modeling Framework (EMF)

The EMF project is a modeling framework and code generation facility for building tools and other applications based on a structured data model. [4] [5]

C. GLSP

The GLSP is a framework that allows developers to create graphical user interfaces for web-based diagram editors. [2]

D. Henshin

Henshin is an in-place model transformation language for the Eclipse Modeling Framework (EMF). [6]

III. RELATED WORK/SOFTWARE

Similar already existing tools for model checking: Henshin, Groovy...

IV. PROJECT PLAN

Things that need to be done:

- GLSP Editor for the metamodel (.ecore)
- GLSP Rule Editor for the transformation rules (.henshin)
- GLSP Editor for creating instance models and applying rules to the instance model (.xmi)
- Option to start the model checking process
- Connect Rules and Instance Models to the metamodel

V. SCIENTIFIC CONTRIBUTION

Comparison of the existing tools and the new tool.

VI. OPEN QUESTIONS

- Was soll alles ins Proposal?
- GLSP Vorlagen?
- Henshin Sdk Dokumentation?
- How to use Henshin SDK in the GLSP application?
- Repository Gitlab oder Github?
- Welchen Umfang hat die Arbeit?

REFERENCES

- [1] Edmund M. Clarke. “Model checking”. In: *Foundations of Software Technology and Theoretical Computer Science*. Ed. by S. Ramesh and G. Sivakumar. Berlin, Heidelberg: Springer Berlin Heidelberg, 1997, pp. 54–56. ISBN: 978-3-540-69659-9.
- [2] Philip Langer and Tobias Ortmayr. *Eclipse GLSP*. <https://github.com/eclipse-glsp/glsp>. 2025.
- [3] Kenneth L. McMillan. “Model Checking”. In: *Symbolic Model Checking*. Boston, MA: Springer US, 1993, pp. 11–24. ISBN: 978-1-4615-3190-6. DOI: 10.1007/978-1-4615-3190-6_2. URL: https://doi.org/10.1007/978-1-4615-3190-6_2.
- [4] David Steinberg et al. *EMF: Eclipse Modeling Framework 2.0*. 2nd. Addison-Wesley Professional, 2009. ISBN: 0321331885.
- [5] Daniel Strueber. *Henshin*. <https://github.com/eclipse-emf/org.eclipse.em>. 2025.
- [6] Daniel Strueber. *Henshin*. <https://github.com/eclipse-henshin/henshin>. 2025.