# SAMT: Compiler and Tools for an Extensible API Modeling Language


Graduate

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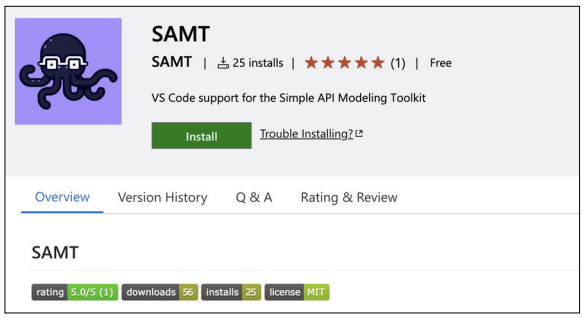
Initial Situation: Zürcher Kantonalbank maintains various services built on diverse technologies. A custom domain-specific language is used to model the interfaces between these services. Types and operations are modeled in a technology-independent way, with code generation tools providing the technology-specific endpoints.
The language is built on top of the Xtext framework, which provides the core infrastructure for language analysis and a sophisticated development environment. However, because the maintenance roadmap for Xtext is uncertain, Zürcher Kantonalbank faces a long-term maintainability risk and is looking for a sustainable solution.

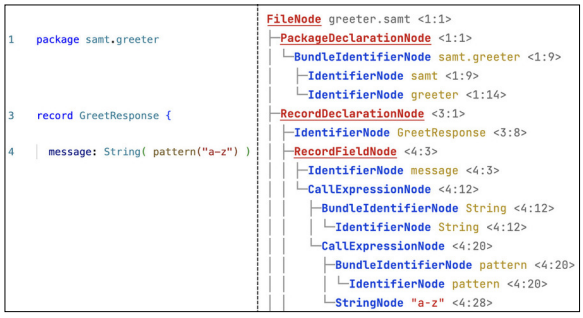
Approach: The goal of this project is to design and develop a new open source domain-specific language called Simple API Modeling Toolkit, or SAMT for short. It retains the core aspects of the existing language and improves upon it by providing a more pleasant developer experience. An extensible architecture allows API modellers to add support for new technologies. A Visual Studio Code extension provides an easy-to-use and modern development experience. The development process started with a requirements engineering and language design phase, guided by developers familiar with the existing language. The subsequent implementation was carried out iteratively, with regular progress reviews.

Result: All "must-have" requirements were met, with substantial "should-have" and "could-have" requirements also realized. The project successfully developed the core systems of the new language, including a proof-of-concept code generator for the Kotlin-based Web framework Ktor. The SAMT Visual Studio Code Extension was developed and published on the official Visual Studio Marketplace to make it as accessible as possible. Usability tests with employees of Zürcher Kantonalbank resulted in positive feedback. Future work includes implementing all remaining language features, improving upon the generator architecture, and implementing more features in the editor extension.

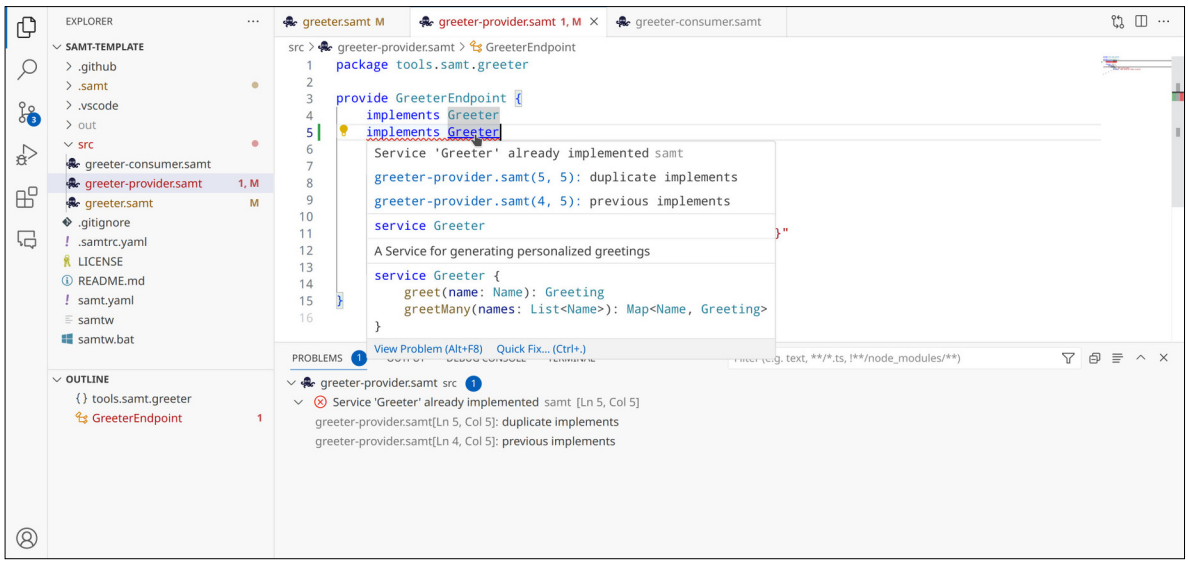
**SAMT Visual Studio Code Extension in the Visual Studio Marketplace**
Own presentment




**SAMT CLI dump next to source code**
Own presentment




**SAMT source code inside Visual Studio Code**
Own presentment





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