

# A Testbed for Cross-Blockchain Token Transfers



FAKULTÄT  
FÜR INFORMATIK  
Faculty of Informatics

Master thesis

## 1 Motivation

In the TAST project, we are researching various questions within blockchains and smart contracts. We have developed two protocols for transferring tokens between blockchains, a task which is so far unexplored in other research.

We have built a reference implementation using Solidity, in order to showcase how these transfers can be implemented using Ethereum. We have successfully performed transfers between private Ethereum blockchains. Additionally, we have performed several experiments to evaluate the performance of the reference implementation with regard to time and cost. However, we seek to create a fully-fledged feature-rich testbed allowing us to perform diverse, fully parameterizable experiments.

This thesis aims at the design and implementation of such a testbed. While we primarily want to evaluate the current reference implementation in this testbed, it should be generic enough to also be usable for analyzing other types of cross-blockchain token transfer protocols. The student is expected to determine interesting metrics (including time and cost), devise a design for implementing such a testbed, and provide the implementation. Special care must be taken to maintain generic suitability, and to ensure that the metrics observed match commonly used metrics in other research.

## 2 Work Description

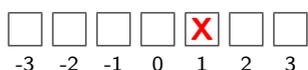
- Analysis of the current reference implementation of cross-blockchain token transfers.
- Architectural design of a testbed for running experiments with cross-blockchain token transfers.
- Implementation of this testbed.
- Evaluation of the testbed using example experiments.

## 3 Further Information

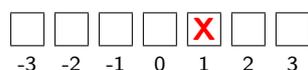
**Start:** Immediately (might also be later)

**Basic Requirements:** Knowledge in the blockchain field is required; experience with smart contracts is very helpful; eagerness to gain knowledge in new technologies

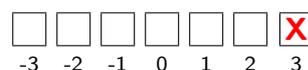
**TAST Website:** <http://www.infosys.tuwien.ac.at/tast/>



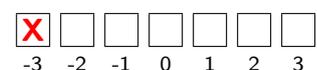
Conceptual (Analytical)



Empirical (Simulation)



Practical (Implementation)



Literature Work