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.

Building on the token transfer approaches we have previously developed, we would now like to extend the functionality to accessing data residing on one blockchain from within another blockchain, both for read and write operations. This involves several research questions, including the conceptual design of such cross-blockchain data access, data formats, concurrency, and data integrity.

This thesis topic involves the design and prototypical implementation of data access across blockchains from smart contracts. The student is expected to use concepts developed within the TAST project which are used for token transfers, and apply them to cross-blockchain data sharing. This can be either an on-demand data transfer protocol (messaging), or an inter-blockchain data storage (shared memory).

2 Work Description

- Analysis of candidate blockchains for implementing cross-blockchain data storage.
- Design of a conceptual architecture for such data storage.
- Prototypical implementation of a (set of) smart contracts for cross-blockchain data storage.
- Evaluation of the new implementation with regards to aspects including speed, cost, and security.

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/