

Comparing Layer-1 and Layer-2 Blockchain Protocols in Reputation-Based Networks

07-400 Milestone 2 Report

February 18, 2022

1 Major Changes

There are no major changes to the current plan.

2 What I Have Accomplished Since My Last Meeting

I have performed a code review of my initial ledger prototype with my research group and have integrated the feedback from that review into my prototype. These changes include implementing interest rate calculations for the minting and transferring bolt functions, adding signers for transactions, and refactoring common functions, such as creating program-derived accounts.

3 Meeting Milestones

My milestone for this week was to design the architecture of the client interface, but I did not reach that milestone since my research group is developing a common client interface for all of the various ledgers. In the meantime, I will be working on an independent testing framework for my ledger, parts of which may eventually be repurposed as the client interface.

4 Surprises

One surprise has been the lack of documentation for many of the basic ledger operations, such as adding signers to transactions. I have had to reference the codebase for Solana's native token program in order to implement these operations.

5 Looking Ahead

In the next two weeks, I hope to implement a testing framework for the smart contract. I will need to learn how to use Solana's unit testing libraries for on-chain programs, or consider alternative testing frameworks.

6 Revisions to Future Milestones

I am revising my next milestone as follows:

- **Milestone 3 (2/28):** Implement a testing framework for the on-chain program as outlined above.

I still expect to begin testing with the ledger prototype as outlined in the fourth milestone and beyond.

7 Resources Needed

No additional resources are needed at this time.