Bachelor Thesis Description

Implementing a DApp for Research Publishing

Problem Description

Distribution of research is highly centralized at the moment. Major research publishers control access to a majority of published research [1]. This leads to high subscription fees which means that access to a lot of research articles is behind a paywall [2]. Another problem is that peer-reviewing is often done for free even though it is quiet time consuming.

The goal of this thesis is to decentralize research publishing by implementing a distributed app (DApp) based on the Ethereum blockchain. Transparency is guaranteed with smart contracts which are publicly accessible. This prevents price inflation and having the control in the hands of a centralized authority. To incentivize peer-reviewing, publishers pay the reviewers with Ether.

Project Outline

Backend:

- Implement the logic of the app with a smart contract. ★★
- Build a storage system. Data is not directly stored on the blockchain but metadata is. ★

Frontend:

- Build an app which is communicating with an Ethereum node and the storage system. The user interacts with this app over a GUI. ★★

Functional Requirements

- Publishers can upload a paper. Must pay some Ether for peer-reviewing.
- Publishers have a reputation.
- Publishers with a high enough reputation can act as peer-reviewers: They can accept or deny an uploaded paper. They will receive some Ether payed by the publisher. If enough peer-reviewers accept a paper, the paper is officially accepted.
- Publishers can be payed by donations to their public address.
Extensions

- Add self-sovereign identity system to increase credibility of a publisher.

Organization

Duration: 6 months
Professor: Prof. Dr. Roger Wattenhofer
Supervisor: Conrad Burchert

References

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127502

[2] Harvard University: Faculty Advisory Council Memorandum on Journal Pricing,
https://osc.hul.harvard.edu/about/highlights/2012/04/
faculty-advisory-council-memorandum-journal-pricing/