Digital Voting Pass

One step towards the digitalization of the entire voting process

Project on behalf of our client Milvum under supervision of the department of Distributed Systems at Delft University of Technology, the project will be publicly presented on July 3, 2017.

Description

The challenge of this project is to design a solution, supported by modern technology, which increases the trustworthiness of the voting process and decreases the manual labor. In order to narrow the scope, the main focus lies at the digitalization of the voting pass, the document which is needed at the polling station to prove that the citizen is eligible to vote.

In order to create such a trustworthy system, the research is focused at two parts. The first part explores the possibilities with blockchain technology. In the second part, the capabilities of the biometric chip in ePassports are investigated by performing several experiments.

After this research, the process continues with an agile approach and started the development of a digital system that could make the voting pass superfluous. This digital system consists of several interconnected parts. The polling station app and the ePassportChain implementation are the most essential parts. The app is used at the polling station to redeem the suffrage. Furthermore, the ePassportChain implementation stores the voting passes in a decentralized way.

The project is first of its kind to conceptualize the direct connection between a blockchain and a travel document. This technological advancement is valuable to the client, because they are starting a new project in collaboration with five municipalities to digitalize the entire voting process, where identity is a major subject.

Team members

Wilko Meijer
> Contributions: Connecting the travel document with the app, connection of app with blockchain, unit and integration tests and implementation of general app functionality.

Daan Middendorp
> Contributions: The initial connection with the travel document proof of concept, ePassport blockchain address generation. Alternative blockchains exploration, the election management utility and wallet implementation in app with transaction builder.

Jonathan Raes
> Contributions: Scanning of MRZ code in app, downloading blockchain to application, general app functionality, testing.

Rico Tubbing
> Contributions: Modifying MultiChain to support the brainpoolP320r1 elliptic curve, building a raw ePassportChain transaction and general app functionality.

Client, coach and contact

Salim Hadri	CEO at Milvum
Johan Pouwelse	Distributed Systems at Delft University of Technology
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The final report of this project can be found at: `http://repository.tudelft.nl/`.

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