

Self-Sovereignty Identity Masters Proposal

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Context

Can you please show some identification? Somehow, we are all faced with this situation for one reason or another. In fact, proving our identity is a common task that we are faced within the workplace, finance, and society in general. In this context, this MSc Dissertation proposal is dedicated to digital identity management challenges. Many initiatives have been launched, however, many issues are still unresolved about identity management. Blockchain technology can be used to create a distributed architecture that protects individuals' identities from theft and (unauthorized) alterations. In this proposal, a comparative study of existing identity solutions will be conducted with a focus on how Blockchain can solve some of the current issues. This aim of this proposal is to develop a Dapp that provides a self-sovereignty identity that allows each individual to be able to be recognized everywhere and every time, a trusted identity that can be used by all society stakeholders, and to explore how such digital identity can improve digital citizenship. In addition, such a Dapp should give a citizen control over their data and the way that it is shared with others.

Objectives: The goal is to explore the use of Blockchain and existing Biometric technologies in self-sovereign identity management. The first task is to analyze the currently existing solutions (based on blockchain and other technologies) and identify their weaknesses and strengths. The second task is to determine how technologies such as blockchain can be leveraged to add value in the portuguese context such as in local government and the educational sector, and how we can cloudify the business model and business logic to be adapted to blockchain.

Work plan and expected timeline

- T1** September - November: Technological review and state of the art.
- T2** December - January: Architectural design for the proposed solution.
- T3** February - March: Implementation of a Dapp.
- T4** April - Mid-May: Proof-of-concept, Validation, and Verification.
- T5** May - June: Dissertation and paper writing (ongoing throughout the project with the final two months fully dedicated to report writing) .

Expected Output

1. Masters Dissertation
2. Project design
3. Working prototype
4. Conference/Journal paper

References

- [1] Introduction to Self-Sovereign Identity and Its 10 Guiding Principles. [Click here.](#)
- [2] Blockchain Identity Management: Enabling control over Identity. [Click here.](#)
- [3] Self-sovereign Identity A position paper on blockchain enabled identity and road ahead. [Click here.](#)
- [4] List of Portuguese e-gov applications. [Click here.](#)
- [5] Baars, Djuri (2016). 'Towards self-sovereign identity using blockchain technology', Masters Thesis, University of Twente. [Click here.](#)
- [6] P. Dunphy, F. A. Petitcolas, "A first look at identity management schemes on the blockchain", IEEE Secur. Privacy., vol. 16, no. 4, pp. 20-29, Jul./Aug. 2018. [Click here.](#)
- [7] A. Mühle, A. Grüner, T. Gayvoronskaya, C. Meinel, "A survey on essential components of a self-sovereign identity", Comput. Sci. Rev., vol. 30, pp. 80-86, Nov. 2018. [Click here.](#)