

Project Proposal

Group Number : 11

Title : Person Verification Digital Platform (PID 06)

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Contributions :

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1. Title of the Project : Person Verification Digital Platform

2. Overview of the Project

In current web 2.0, person verification data is fragmented between several service providers. It reduces overall usability as users need to maintain a set of passwords for login to their accounts. So, end-users tend to maintain weak or repeated passwords as they need to keep them remembered. This creates the potential for passwords to get breached.

According to Verizon Data Breach Investigations Report 2021 [1], 81% of accounts got hacked due to this reason.

A single sign-in option has been introduced as a solution. But, it doesn't give end-users full control over their verification data and it has created a single point of failure.

This project addresses these issues using blockchain technology-based person verification. We are developing a cross-platform application and an integration library, where the application is used by the end-users, while the integration library is to be used by any 3rd party service providers.

3. Objectives of the Project

The objective of this project is to;

- ❖ Explore the potential of using digital person verification in practical scenarios
- ❖ Design and implement a system that can verify the digital identity of a person with high confidence, in a decentralized manner.
- ❖ Design a mobile/desktop application for end users to verify their identity
- ❖ Design an integration library to be used by third-party verifiers
- ❖ Implement a Demo System that integrates the library and allows people to use the mobile application.

4. The Need for the Project

Identity management is an inevitable part of the proper delivery of schemes and services to individuals by the government and private organizations. Identity management encompasses the creation and maintenance of identity. It ensures that the right entity gains access to the right resources at the right time for verification. It also involves providing high security, privacy, productivity, and enhanced user experience [2].

Already, there are some types of digital ID verification systems such as Jumio Identity Verification [3]. However, Digital identity systems that exist today are fragmented among service providers. Users need to duplicate their identity information between services, which reduces overall usability and increases the risk of data compromise [4].

With the evolution of web 3.0, centralized databases that hold the credentials of users are fading away from the internet by replacing them with more secure, transparent, controllable decentralized systems having no single point of failure. Use of blockchain technology has made these decentralized systems quite possible, hence the person verification too.

With blockchain technology, identity information is auditable, traceable, and verifiable — in just seconds [5].

5. Scope of the Project

The project will cover any instance of login required as personal verification such as verifying the user in banking transactions, opening an account online, applying for exams online, etc.

End user can use a specifically designed application that can verify his individual identity stored in a wallet by scanning the QR code provided by the verifier, and service providers need to implement the functionality after verifying the user using the integration library (eg: approving the transaction, approving the exam application).

6. Deliverables .

- ❖ A Cross-platform application (mobile application/ standalone desktop application) that connects to a digital wallet and verifies the identity of the owner.
- ❖ Integration library for third-party service providers.
- ❖ A simple demo application to demonstrate the functionality.

7. Overview of Existing Systems and Technology

Existing systems :

❖ UPort

uPort is an interoperable identity network for a secure, private, decentralized web. uPort returns ownership of identity to individuals. uPort's open identity network allows users to register their own identity on Ethereum independent from any centralized authority. On uPort, users are always in control of their data and they are free to share it with whomever they choose. The uPort project was later split into two projects, Serto and Veramo [6][7].

❖ Serto Suite

The Serto Suite helps technology and business leaders get started using decentralized identities and verifiable credentials in their everyday business operations. Our simple, easy-to-use resources decrease the cost of collaboration and enhance security [8].

- ❖ Microsoft Entra verified ID

Create, issue, and verify privacy-respecting decentralized identity credentials with an identity verification solution that helps you enable more secure interactions with anyone or anything [9][10].

- ❖ Digital-Identity using ERC 725/735 (Project on Github)

An implementation of ERC 725 and ERC 735, a proposed standard for managing Digital Identity on the Blockchain. Using ERC 725, a Smart Contract can protect function calls from being executed unless the Sender has a verified Claim from a trusted Issuer; e.g. build a mechanism into our Smart Contracts to only allow interactions from reputable people. ERC-725 allows for many more use-cases, such as multi-sig execution approvals and verification by contract call instead of key validation [11].

Existing Techniques/ Tools:

- ❖ Ethereum blockchain (a test network for demo) [12]
- ❖ Flutter framework (for cross platform application) [13]
- ❖ 'web3dart' package for flutter framework [14]
- ❖ Javascript web3.js API [15]
- ❖ QR code generate library [16]
- ❖ Solidity programming Language for smart contracts [17]

Resources:

- ❖ Blockchain: Foundations and Use Cases Course by Consensus Academy [18][19]
- ❖ Youtube [7][10]

8. References

- [1] <https://cloudnine.com/ediscoverydaily/electronic-discovery/80-percent-hacking-related-breaches-related-password-issues-cybersecurity-trends>
- [2] Thomas, A. M., Ramaguru, R., & Sethumadhavan, M. (2022). Distributed Identity and Verifiable Claims Using Ethereum Standards. In Inventive Communication and Computational Technologies (pp. 621-636). Springer, Singapore.
- [3] <https://www.jumio.com/products/identity-verification/>
- [4] <https://github.com/zachd/masters-thesis/blob/master/thesis.pdf>
- [5] <https://www.ibm.com/blockchain/identity>
- [6] <https://github.com/uport-project>
- [7] <https://www.youtube.com/watch?v=xXNZQ49II7Q>
- [8] <https://www.serto.id/>
- [9] <https://www.microsoft.com/en-ww/security/business/identity-access/microsoft-entra-verified-id>
- [10] <https://www.youtube.com/watch?v=W8sltE-COHg>
- [11] <https://github.com/o2oprotocol/digital-identity>
- [12] <https://ethereum.org/en/developers/docs/networks/>
- [13] <https://flutter.dev/>
- [14] <https://pub.dev/packages/web3dart>
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- [16] <https://www.npmjs.com/package/qrcode>
- [17] <https://soliditylang.org/>
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- [19] <https://coursera.org/share/639eededdc75e9b181a6b6ab8f2e6ca8>