Decentralized Identities for Self-sovereign End-users (DISSENS)

Open Identity Summit 2021

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Objectives

- Combination of user-centric, privacy-friendly personal data sharing and payments:
  - Self-sovereign identity system **re:claimID** eliminates need for Web accounts.
  - Privacy-friendly payment system **GNU Taler** suitable for Digital Euro.[1]

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  - No gatekeepers; no vendor lock-in.
  - Support for non-interactive business processes.
  - Scalability and sustainability.

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  - Support for non-interactive business processes.
  - Scalability and sustainability.
- Integration in a popular e-commerce framework (WooCommerce) as pilot
  - Use of OpenID Connect standard for interoperability.
  - GNU Taler plugin for usable one-click account-less payments.
  - Academic institutions as credential issuers highlighting federation capabilities.

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Requirements and Blockchains

Neither **reclaimID**[2] nor **GNU Taler**[3] are built on top of a blockchain technologies.

[2] https://reclaim.gnunet.org/
[3] https://taler-systems.com/

Requirements and Blockchains

SSI systems and **privacy-friendly payments** do not require a blockchain!

Requirements and Blockchains

- SSI requirements:
  - Public/private-keys.
  - Users, issuers and verifier.
  - Decentralized directory ("verifiable data registry" – W3c DID).

[4] https://medium.com/coinmonks/storing-on-ethereum-analyzing-the-costs-922d41d6b316

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  ⇒ This is exactly what blockchains do **not** provide.

  "[Bitcoin is a]boon for surveillance" – Michael Morell, Former CIA director

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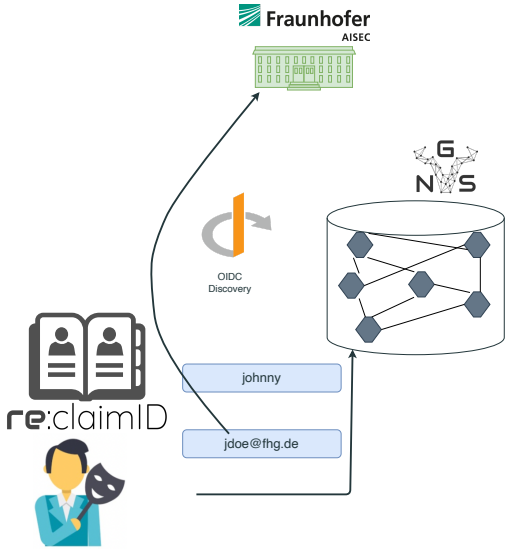
Requirements and Blockchains

Some business processes (billing, fulfillment) happen **after** user interaction.

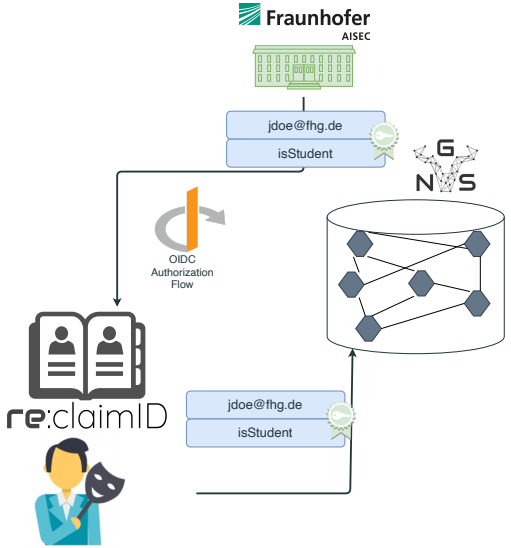
- Persisting information creates liability and requires strong protection.
- Permanent connectivity from user device to service(s) does not scale.
- Exposed endpoints on user devices for data retrieval is a security (and connectivity) nightmare.

$\Rightarrow$ Scalable and secure decentralized storage for user information.

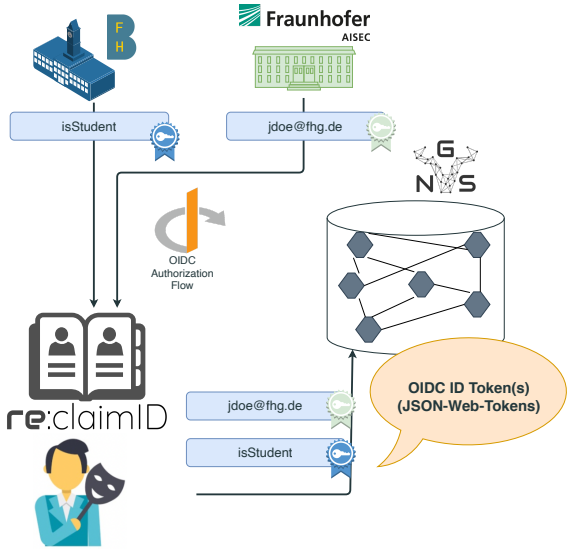
Identity and personal data management



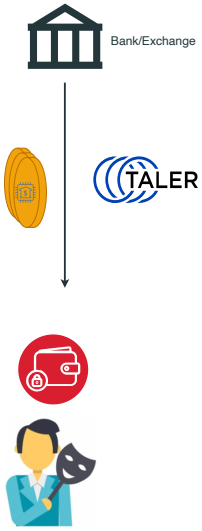
Third-party credentials I



Third-party credentials II



Coin withdrawal



Login and authorization

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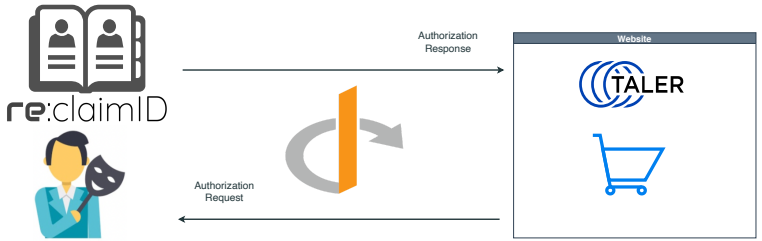
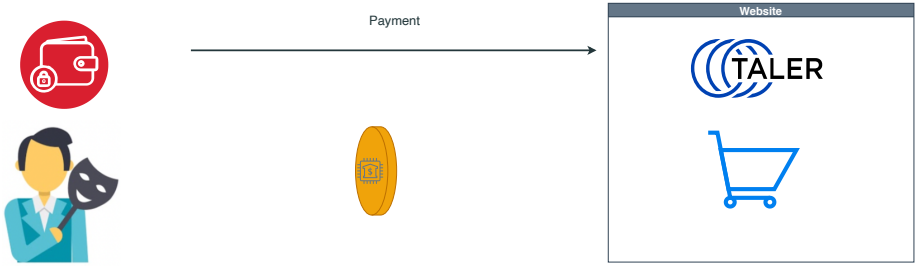
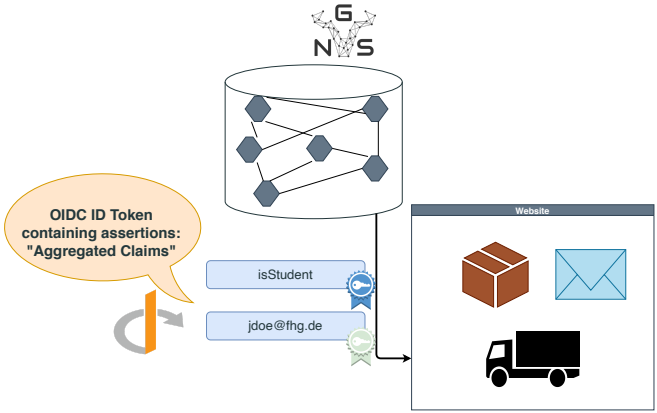


Payment

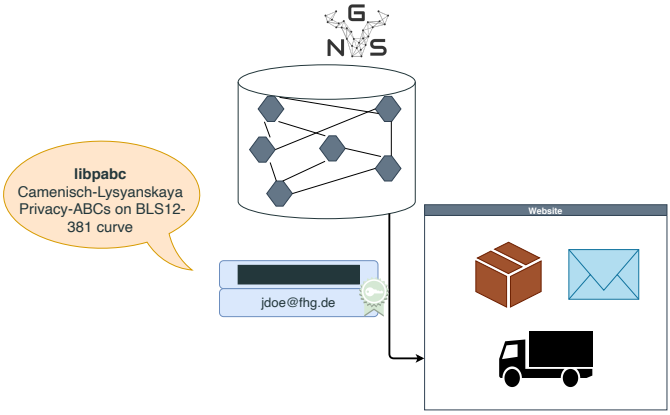
- Payer anonymity.
- Payee accountability.



“Offline” attribute retrieval



Selective disclosure of credentials



Future Work

- Continuous integration of/into emerging standards (DID/SIOP).
- Improvement of underlying P2P architecture.
- Integration of advanced trust management mechanisms.

Questions?

https://reclaim-identity.io

https://taler.net

https://gnunet.org

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3D11 063C 10F9 8D14 BD24 D147 0B09 98EF 86F5 9B6A

References

1. Martin Schanzenbach. *Towards Self-sovereign, Decentralized Personal Data Sharing and Identity Management*. **Technische Universität München (Dissertation)**, 2020
2. Martin Schanzenbach, Georg Bramm, Julian Schütte. *reclaimID: Secure, Self-Sovereign Identities Using Name Systems and Attribute-Based Encryption*. **17th IEEE International Conference On Trust, Security And Privacy In Computing And Communications (TrustCom)**, 2018
3. Matthias Wachs, Martin Schanzenbach and Christian Grothoff. *A Censorship-Resistant, Privacy-Enhancing and Fully Decentralized Name System*. **13th Intern ational Conference on Cryptology and Network Security**, 2014.