BLOCKCHANGE

BLOCKCHAIN TECHNOLOGIES FOR SOCIAL CHANGE

CASE STUDY:

Self Sovereign Identity for Government Services in Zug, Switzerland

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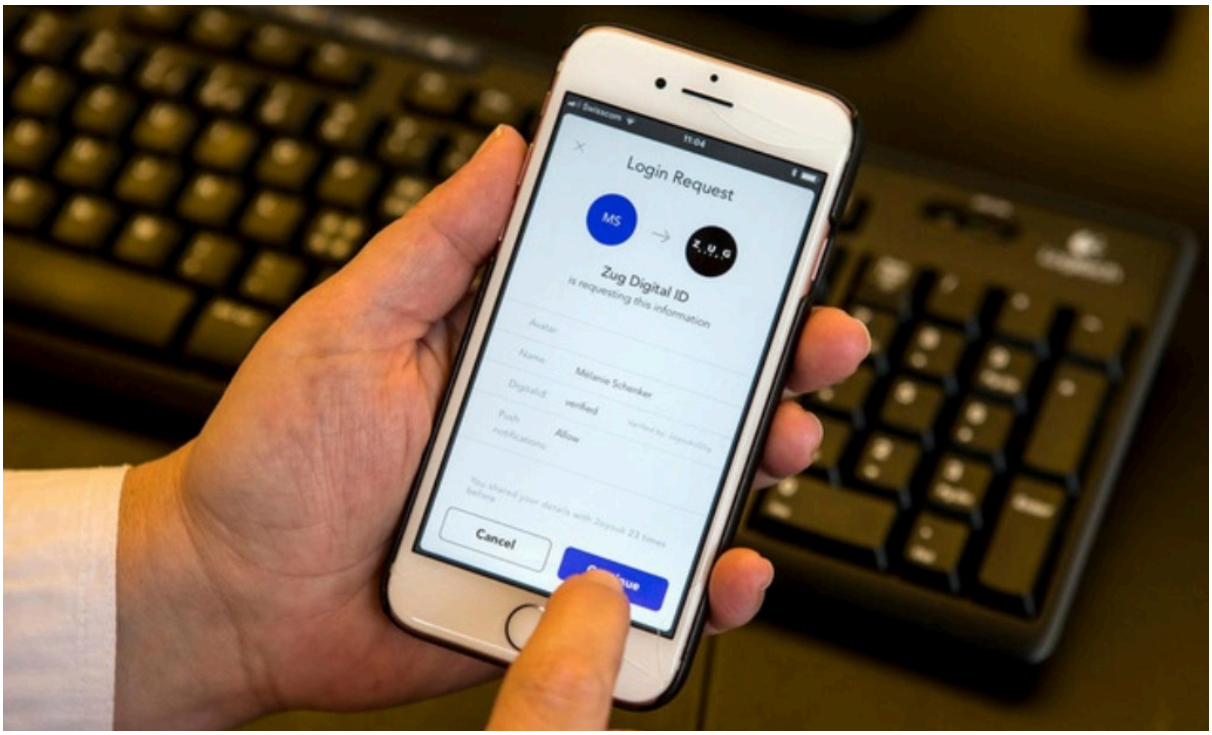
OCTOBER 2018

GOVLAB

PROJECT DESCRIPTION

Problem Definition



The city of Zug, which rests within the canton of Zug in Switzerland, faces many of the same identity challenges experienced by governments around the world. Official identities are fragmented, with different government services requiring different identifiers, and siloed databases creating administrative challenges.

Even with the move toward increasingly digital identities, challenges persist. As Martin Wuermli, Zug's city clerk notes, "There are many digital identities. They have one thing in common: the personal data is stored on central servers – and can be stolen."[1] Moreover, he argues, while "our personal data is still in the hands of major search engines and social networks that make a profit from it," individuals lack agency over the type of "self-governed, secure and authenticated" digital identity that would provide value in "an increasingly digital society."[2]

The desire to address these challenges is not new. However, previous efforts to address identity challenges in the region, such as the "Suisse ID" digital passport and signature system, have not successfully scaled. Wuermli believes this is "mainly due to the fact that they are relatively complicated to use and are technically considered obsolete today."[3]

Blockchain Use

To address these issues around administrative inefficiencies and individuals' lack of control over their personal information, a consortium came together to develop a new approach. This consortium included the Institute for Financial Services Zug (IFZ) of the Lucerne University, the Swiss IT firm ti&m, and ConsenSys, the creator of the blockchain-based uPort identity protocol.[4] These actors worked in collaboration with Zug's city government to create a new self-sovereign identity solution for city residents.

Zug, sometimes referred to as "Crypto Valley,"[5] is well known as an inviting environment for blockchain businesses and experimentation. The city, for instance, began allowing residents to pay for government services using Bitcoin in 2014. Likewise, the uPort identity system provides a "complete digital representation of a person (or app, organization, device, or bot)" and allows individuals to control how their identity interacts with different services, "without relying on centralized identity providers"[6] This type of user-controlled, decentralized identity solution is often referred to as self-sovereign identity.

As described by Paul Kaulhaus, the integrations lead for uPort at the Zug-based ConsenSys, the company was approached to help develop a blockchain-enabled identity solution to Zug's identity management challenges. Working closely with ti&m, which gathered local requirements and plotted out the Zug implementation, ConsenSys supplied the open source uPort base technology and collaborated with the other partners to help them tailor some of the features to their specific use cases."[7] ConsenSys also designed a purpose-built technical architecture that ensured compliance with local regulations and GDPR, the new European privacy law.[8]

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An article posted by uPort[9] describes the five-step process for Zug residents to obtain their blockchain-based self sovereign identity:

- First users download the uPort mobile application and create a uPort ID on the Ethereum blockchain.
- The user then logs onto Zug's web portal using their uPort ID.
- Next, the resident submits personal information and associates their existing Zug ID number with their newly generated uPort ID on the city's web portal.
- Once registered, the user must make an in-person trip to the Zug city clerk's office with an official government ID to verify the information associated with their new blockchain ID. The city clerk manages the identity system through a specialized uPort ID with additional administrative abilities.[10]
- Finally, once a Zug government official verifies and cross-checks the individual's information, the resident's new "digital citizenship credential" is added to their uPort ID. This new ID "represents a digital attestation from Zug, to the citizen, claiming their active citizenship.[11]

On November 15, 2017, a press conference was held to commemorate the first Zug citizen registered on the blockchain.[12]

Blockchain Value Proposition

At the launch of the project, Dolfi Müller, the mayor of Zug, described the project's central goal: "We want a single electronic identity — a kind of digital passport — for all possible applications. In our city, we do not want this digital ID to be centralized but on the blockchain. We only verify and confirm the identity of a person."[13] The value proposition of uPort, the technology on which the project is built, is closely aligned with the Zug implementation's objectives. uPort seeks to, "push ownership of identity away from centralized services to the edges – to individuals – so that the identities themselves are in control."[14]

More specifically, Wuermli, Zug's city clerk, notes the need for "innovative access to local services" as well as "increased security by keeping private data under complete control of individuals."[15] ConsenSys's Kohlhaas points to the 2017 Equifax hack as an example of the vulnerability of centralized identity databases.[16]

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PROJECT ANALYSIS

Risks and Challenges

Three central challenges are affecting the nascent Zug self-sovereign identity initiative: legal uncertainty, entrenched legacy systems, and relatively slow uptake.

- **Legal Uncertainty:** As of mid-2018, Zug's blockchain-enabled identity system was not legally recognized. This is due to complexities involved with city-level governance and its intersection with governance at the cantonal level. Kohlhaas notes that while the system is recognized for services provided by the city, legislative change will be necessary at the cantonal level "to actually give this identity some teeth from a legal perspective."[17]
- **Entrenched Legacy Systems:** The creation of a blockchain-enabled identity, as described above, still involves in-person identity authentication at the city clerk's office. While this step in the process is important for ensuring identities can be officially recognized, this decidedly analog element calls into question the scalability of more decentralized and digital approaches for establishing trusted identity.
- **Uptake:** Likely the result of both the friction involved in the registration process and the relative lack of clear use cases for the self-sovereign identity, uptake has been relatively slow – only around 120 inhabitants were registered in the first year. While the former issue is likely to persist for some time, Zug is working to address the need for new use cases. Some of the upcoming services the identity will provide access to include bicycle rentals, digital parking management, and public library benefits. Wuermli argues that the number of users registered to date is impressive nonetheless, especially given the project's short lifespan and "the fact that there is no concrete benefit from it at present."[18]

Next Steps and Opportunities for Scaling

In order to address the relatively slow uptake to date in Zug, the city government is planning an identity-holder consultation initiative. In addition, all city departments are considering future applications for the digital ID to spur more targeted offerings and wider adoption and use. If the identity system is able to create a critical mass of users among the population and service providers in the city government, the value of the system is likely to accelerate rapidly. It is less clear, however, if Zug will be capable of addressing the friction associated with legacy system engagement, which could act as an ongoing decelerator for scaling and impact.

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ENDNOTES

1 GovLab interview with Martin Wuermli, City Clerk, Zug, March 9, 2018.

2 GovLab interview with Martin Wuermli, City Clerk, Zug, March 9, 2018.

3 GovLab interview with Martin Wuermli, City Clerk, Zug, March 9, 2018.

4 "uPort, Gnosis Olympia & the role of identity in signing blockchain transactions," Medium, December 20, 2017, https://medium.com/uport/uport-gnosis-olympia-the-role-of-identity-in-signing-blockchain-transactions-a9ead2298414.

5 https://cryptovalley.swiss/

6 Pelle Braendgaard, "What is a uPort identity?" Medium, https://medium.com/uport/what-is-a-uport-identity-b790b065809c.

7 GovLab interview with Paul Kohlhaas, Director of Business Development, Consensys, March 20, 2018.

8 GovLab interview with Paul Kohlhaas, Director of Business Development, Consensys, March 20, 2018.

9 "First official registration of a Zug citizen on Ethereum," Medium, November 15, 2017, https://medium.com/uport/first-official-registration-of-a-zug-citizen-on-ethereum-3554b5c2c238.

10 Paul Kohlhaas, "Zug ID: Exploring the First Publicly Verified Blockchain Identity," Medium, December 6, 2017, https://medium.com/uport/zug-id-exploring-the-first-publicly-verified-blockchain-identity-38bd0ee3702.

11 "First official registration of a Zug citizen on Ethereum," Medium, November 15, 2017, https://medium.com/uport/first-official-registration-of-a-zug-citizen-on-ethereum-3554b5c2c238.

12 "First official registration of a Zug citizen on Ethereum," Medium, November 15, 2017, https://medium.com/uport/first-official-registration-of-a-zug-citizen-on-ethereum-3554b5c2c238.

13 "uPort, Gnosis Olympia & the role of identity in signing blockchain transactions," Medium, December 20, 2017, https://medium.com/uport/uport-gnosis-olympia-the-role-of-identity-in-signing-blockchain-transactions-a9ead2298414.

14 "uPort White Paper," February 21, 2017, https://whitepaper.uport.me/uPort_whitepaper_DRAFT20170221.pdf.

15 GovLab interview with Martin Wuermli, City Clerk, Zug, March 9, 2018.

16 GovLab interview with Paul Kohlhaas, Director of Business Development, Consensys, March 20, 2018.

17 GovLab interview with Paul Kohlhaas, Director of Business Development, Consensys, March 20, 2018.

18 GovLab interview with Martin Wuermli, City Clerk, Zug, March 9, 2018.

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- Braendgaard, Pelle. "What is a uPort identity?" Medium, February 27, 2017. https://medium.com/uport/what-is-a-uport-identity-b790b065809c.
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- Wuermli, Martin, City Clerk, Zug. Interviewed by the GovLab, March 9, 2018.
- Kohlhaas, Paul Director of Business Development, Consensys. Interviewed by the GovLab, March 20, 2018.
- Kohlhaas, Paul. "Zug ID: Exploring the First Publicly Verified Blockchain Identity." Medium, December 6, 2017. https://medium.com/uport/zug-id-exploring-the-first-publicly-verified-blockchain-identity-38bd0ee3702.
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