JYU REPORTS 8

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THE STATE OF SELF-SOVEREIGN IDENTITY IN SPRING 2021

Results of a survey

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UNIVERSITY OF JYVÄSKYLÄ

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Results of a survey

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Table of Contents

Executive summary 4

Key highlights 5

Survey development, data collection and analysis 6

The background of the respondents 7

The state of Self-Sovereign Identity in spring 2021 11

Perceived benefits and challenges 15

Acknowledgment 16

Table of Figures

Figure 1. The country of the respondents 7
Figure 2. Role of the respondent in their organization 8
Figure 3. Industry sector of the respondent's organizations 8
Figure 4. The number of employees in the respondents' organization 9
Figure 5. Age of the organization 9
Figure 6. Self-assessed innovativeness of the organization in general 10
Figure 7. The phase of SSI adoption for the respondents' organization 10
Figure 8. Actors in the respondents' SSI ecosystem 11
Figure 9. The role of the respondents' organization in its SSI ecosystem 12
Figure 10. Attitude towards SSI adoption 13
Figure 11. The number of VCs in production in the respondent's SSI solution 13
Figure 12. The number of years when SSI becomes mainstream in the respondents' domain 14
Figure 13. Accepted payment methods for SSI services 14

EXECUTIVE SUMMARY

We live in times when digital trust has become increasingly important. Self-Sovereign Identity (SSI) has been considered a technology, architecture, and human-centric paradigm that promises to provide trustful digital identity, and trustworthy digital interactions. Currently, SSI is under rapid development, where open-source communities, governments, private and public institutions, and individuals collaborate toward the vision of a more private, secure, and trustworthy digital world.

This report explores the state of SSI as seen through the eyes of 79 SSI experts. The data was collected in March-April 2021 via a survey distributed to active community members of the digital identity and self-sovereign identity domain. The results suggest that SSI affects the whole society: it might disrupt all industries and impact various actors. While the journey toward SSI mass adoption has just started, and the experts face many challenges on this journey, they also value the benefits of the technology and strongly support its adoption.

KEY HIGHLIGHTS

- According to the SSI experts, despite the rapid development, SSI is still beginning the journey towards mass adoption. However, almost 60% of the respondents estimate mass adoption within the next three years.
- While 55% of the respondents have just started exploring SSI, more than 7% have already issued, or are associated with more than 100.000 Verifiable Credentials.
- The variety of actors and roles in an SSI ecosystem needs more investigation as the community did not establish a common understanding of the terms.
- Most SSI experts, who answered the survey, work for small, innovative startups that might indicate the emergence of new startups and new business models.
- SSI affects the whole society: actors of SSI ecosystems consist of businesses, non-profit organizations, public institutions, governments, and individuals.
- SSI may disrupt industries: 25+ industries were mentioned as the industry of the respondents' SSI ecosystems.
- SSI experts favor universal, globally accepted payment methods, such as stablecoins and cryptocurrencies.
- SSI experts mostly agree on the benefits of SSI; however, their perception related to risks is very fragmented.
- The top three benefits for society are (1) trustful, secure and private digital interactions; (2) data owners' possibility to control their data and (3) digital transformation.
- The top three benefits for the organization are (1) innovations, (2) strategic alliances, and (3) competitive advantage.
- The top three challenges of SSI are related to (1) user experience, (2) immaturity of the technology, and (3) lack of interoperability and standards.

SURVEY DEVELOPMENT, DATA COLLECTION AND ANALYSIS

Since SSI is an emerging technology, first, we applied an exploratory qualitative method to understand the phenomenon more deeply. Primarily we gathered qualitative data by asking for insights from the TrustOverIP Foundation's members. Some members gave us interviews, some commented on the survey questions and suggested modifications by email, and we also had several detailed workshop discussions related to the survey. Thus, the survey development was a collaborative effort, an iterative process with many adjustments and modifications.

Here, the authors thank the help and input to the survey, especially for the following SSI experts: David Luchuk, Karl Kneis, Gene Dimira, Herzig Justin, Annegret Henninger, Kapil Bareja, Victor Syntez, Steven Millstein, Antti Kettunen, Markus Hautala, Matti Timonen, Drummond Reed, John Jordan, Scott Perry, and Cristina Timón López.

The survey data was collected between 24 March – and 30 April 2021. The survey link has been distributed to the members of the TrustOverIP Foundation and also to other open-source communities, such as MyData and Hyperledger. Furthermore, some authors shared the link via personal social media channels like LinkedIn. Finally, we distributed the survey link also at the Internet Identity Workshop XXXII in April 2021. Altogether, we received 79 complete responses, of which 50 respondents are members of the TrustOverIP Foundation.

THE BACKGROUND OF THE RESPONDENTS

Figure 1 presents the **respondents' countries**. The top three countries of the survey respondents are U.S., Canada, and India.

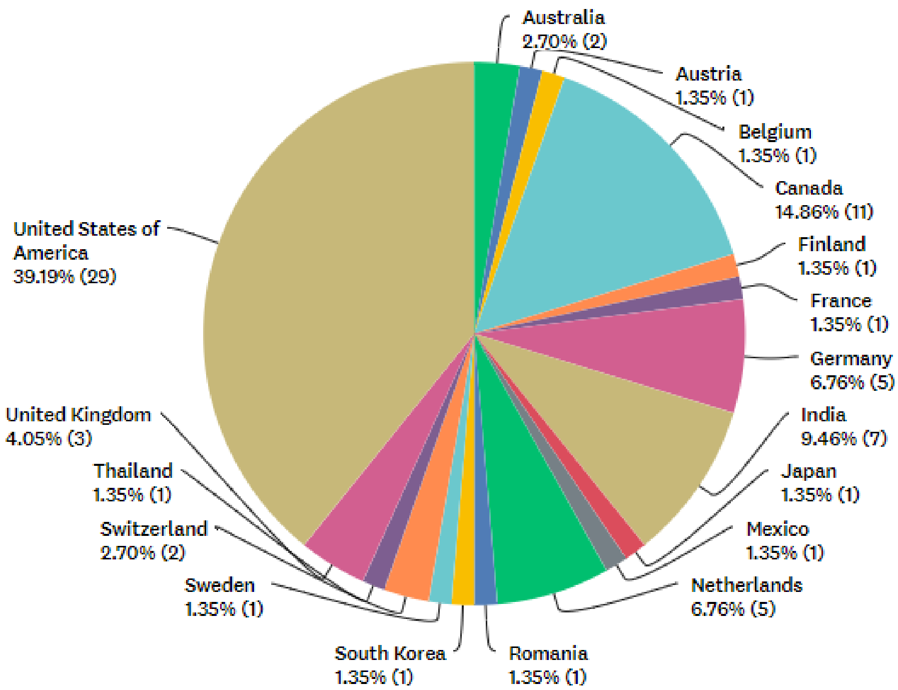

Figure 1. The country of the respondents

Most of the respondents are TrustOverIP Foundation members (63%), while many respondents are members of Sovrin, DIF, W3C, and MyData. Most respondents belong to multiple communities, and only 10,13% did not belong to any SSI-related communities.

In Figure 2, **the respondents' role in the organization** is presented. The survey respondents are mostly leaders and experts.

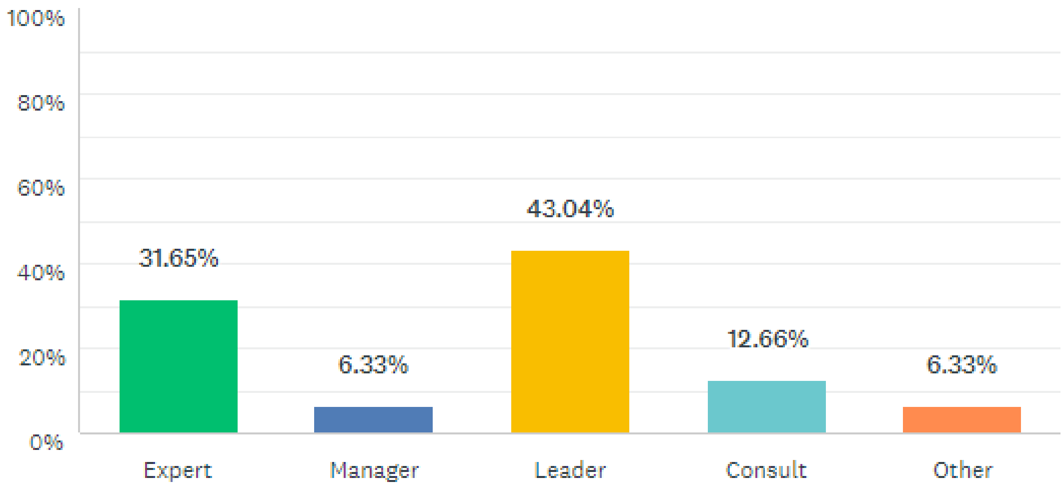

Figure 2. Role of the respondent in their organization

In Figure 3, **the industry sectors** of the respondents' organizations are presented. Software and services are the most common industry where the respondents' organizations belong.

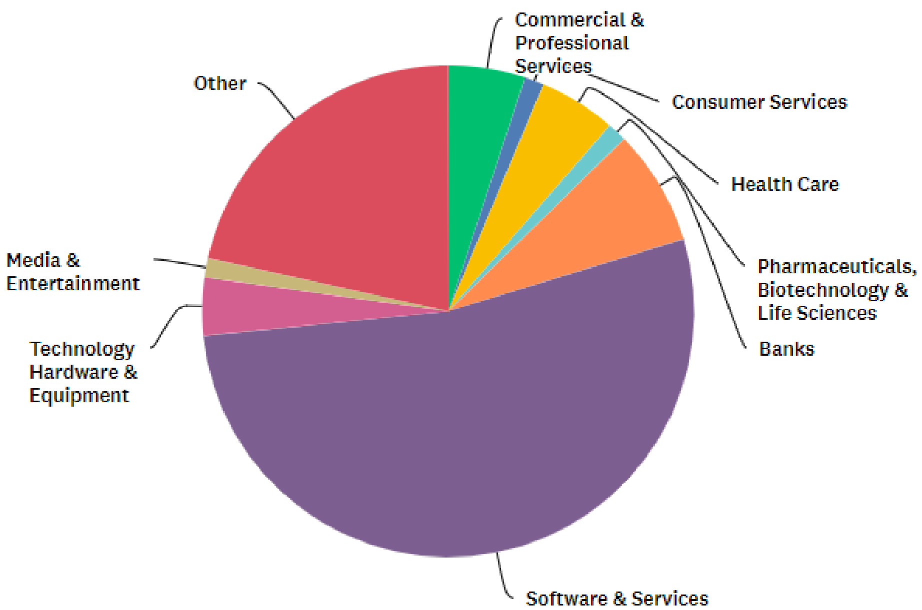

Figure 3. Industry sector of the respondent's organizations

Figure 4 presents **the number of employees** in the respondents' organizations. 50% of the organizations are small organizations (1-9 employees).

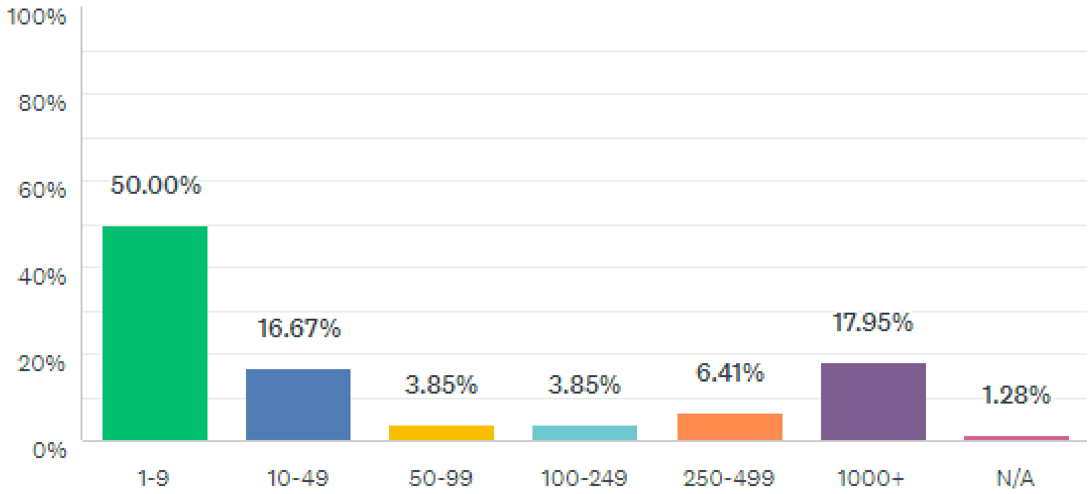

Figure 4. The number of employees in the respondents' organization

In Figure 5, **the age of the respondents' organization** is presented. More than 20% of the organizations are startups, and more than 40% have been established within the last five years.

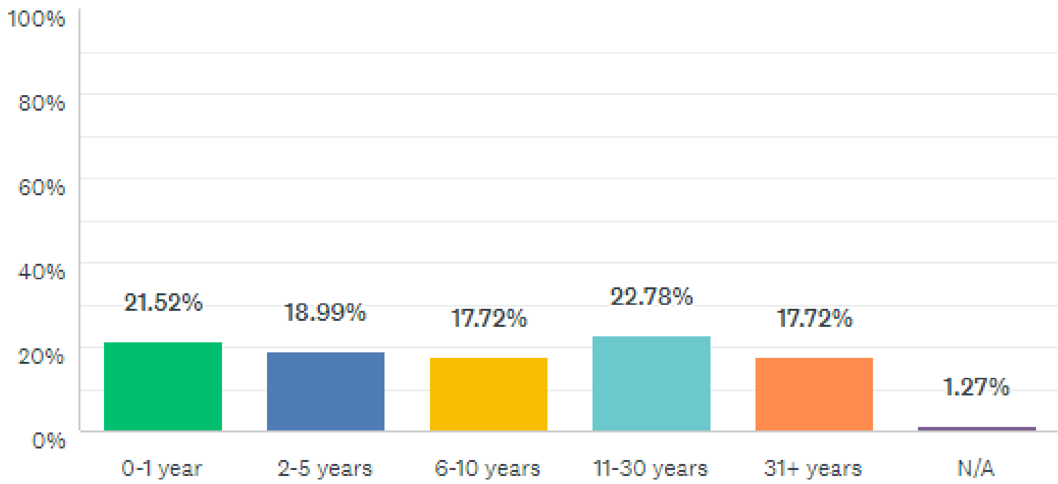

Figure 5. Age of the organization

Figure 6 presents the self-assessed **innovativeness** of the respondents' organization. Most organizations are innovators and early adopters.

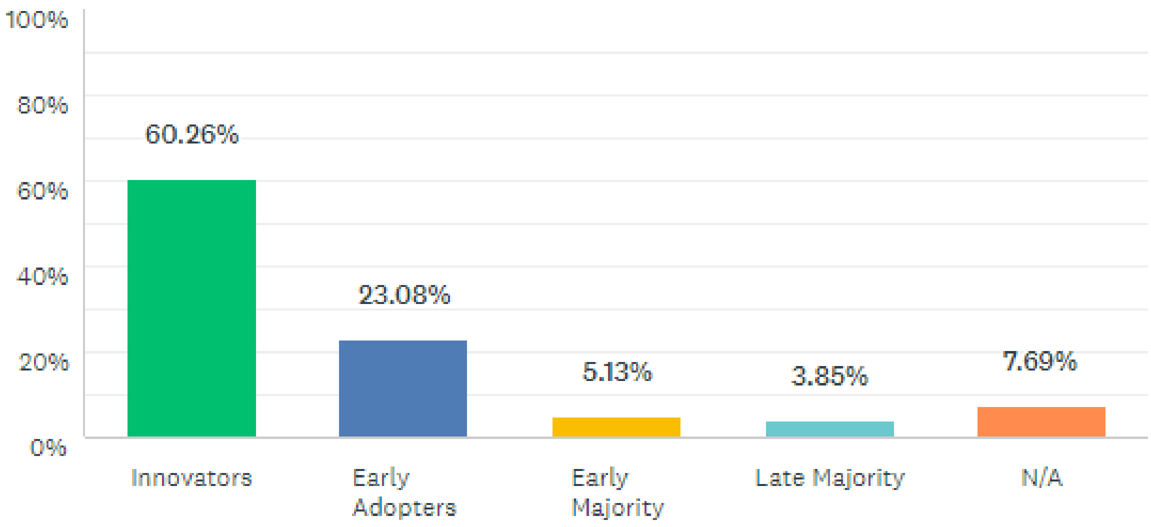

Figure 6. Self-assessed innovativeness of the organization in general

Figure 7 presents the **phase of SSI adoption** in the respondents' organizations. More than 60% of the respondents already work on an SSI solution.

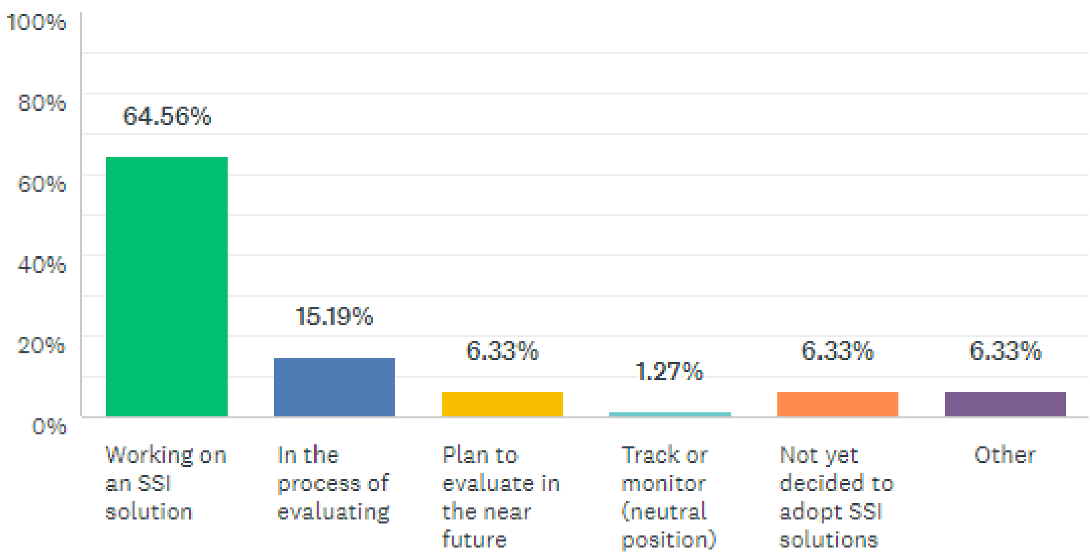

Figure 7. The phase of SSI adoption for the respondents' organization

THE STATE OF SELF-SOVEREIGN IDENTITY IN SPRING 2021

First, we investigated what industry the respondents' SSI ecosystem belongs to. The results prove the cross-industrial aspect of SSI: **SSI seems to affect most industries**: the respondents marked 25+ different industries in their answers. The top three industries are Software and Services, Banks, and Healthcare.

Second, we investigated what actors the respondents' SSI ecosystem consists of. The results show that **SSI affects everyone in society**: businesses, non-profit organizations, public institutions, governments, and individuals. In Figure 8, the actors are presented in the respondents' ecosystems.

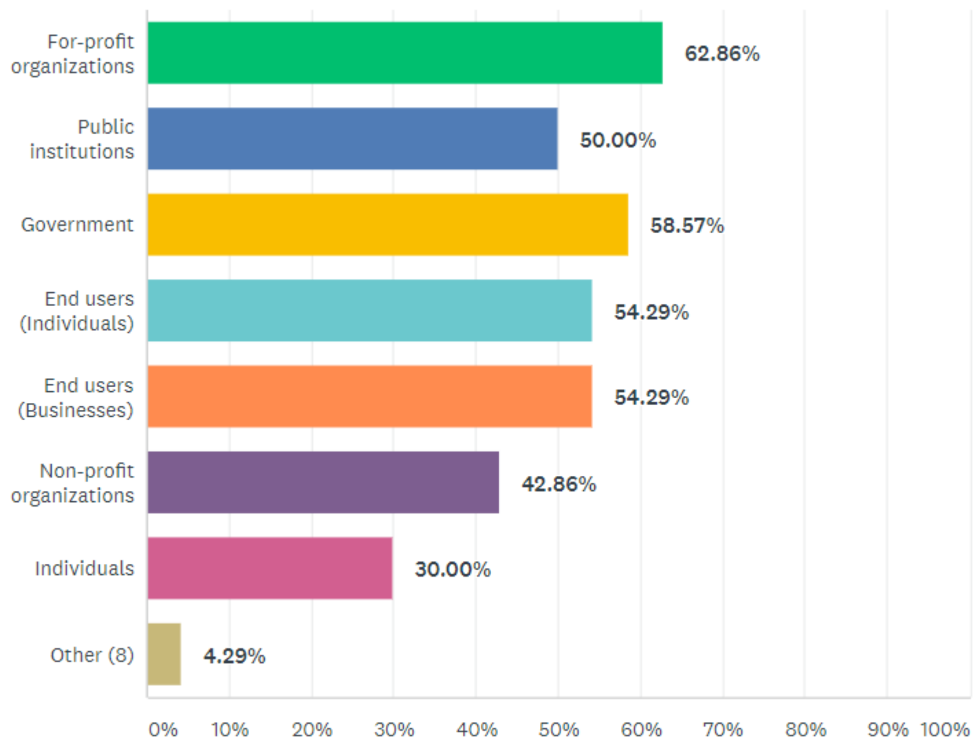

Figure 8. Actors in the respondents' SSI ecosystem

Third, we were interested in the role of the respondents' organization in their SSI ecosystem. As presented in Figure 9, the diverse answers show that **SSI ecosystems are vibrant**, with participants of all types of actors.

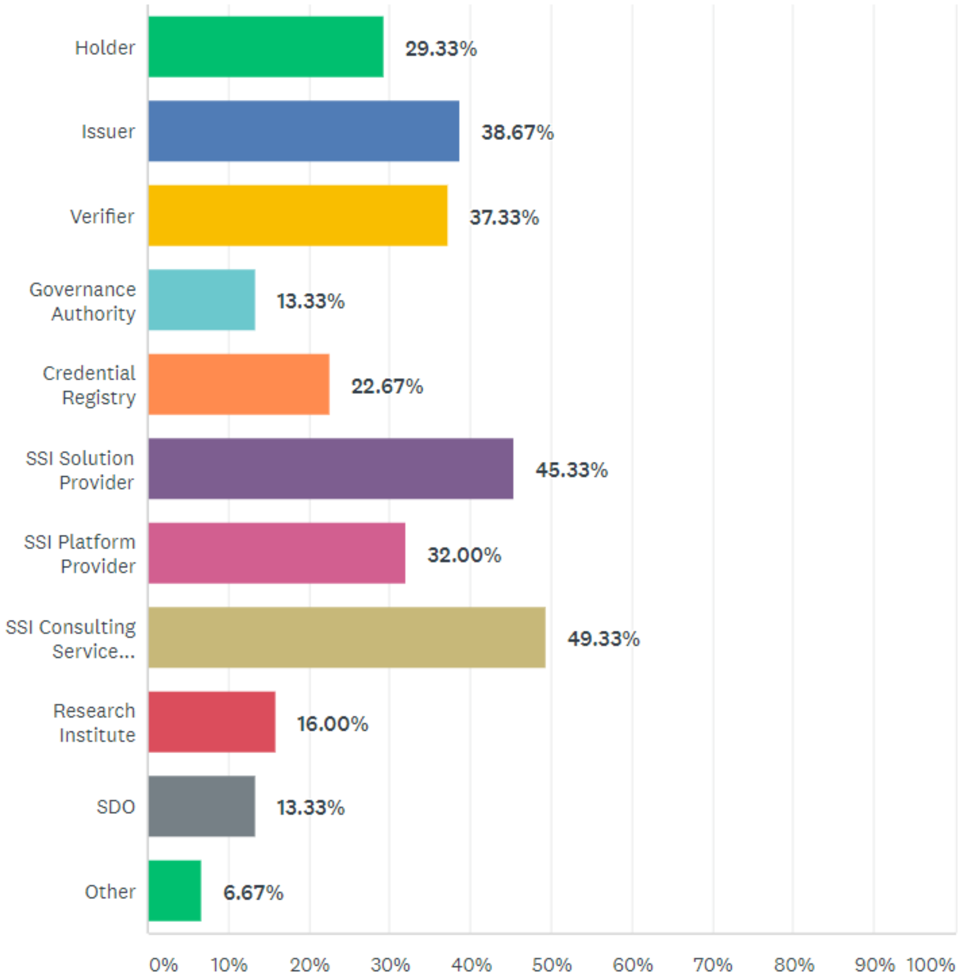

Figure 9. The role of the respondents' organization in its SSI ecosystem

Fourth, in Figure 10, the respondents' attitude toward SSI adoption is presented. Most of the respondents **support the adoption** and find it beneficial. However, responses varied related to perceived risks, and **SSI is not generally considered a high-risk technology**.

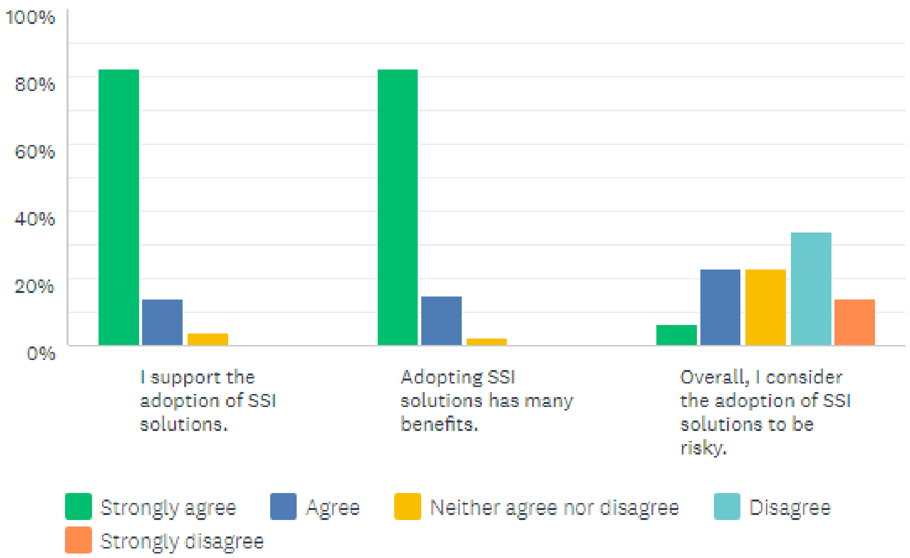

Figure 10. Attitude towards SSI adoption

Fifth, we asked for **the number of Verifiable Credentials in production** in the respondent's SSI solution. The results are presented in Figure 11. While most SSI solutions are not yet in production, more than 7% of the respondents have issued or are associated with more than 100 000 Verifiable Credentials.

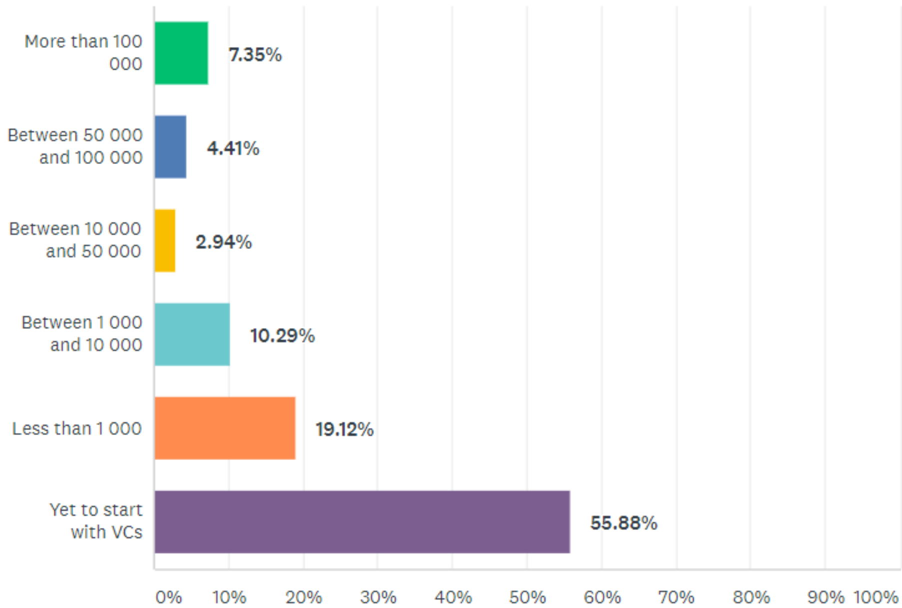

Figure 11. The number of VCs in production in the respondent's SSI solution

Sixth, we asked the respondents to estimate the number of years when SSI becomes mainstream in their domain. As shown in Figure 12, **rapid development** is expected. Almost 60% of the respondents expect SSI to reach mass adoption within three years.

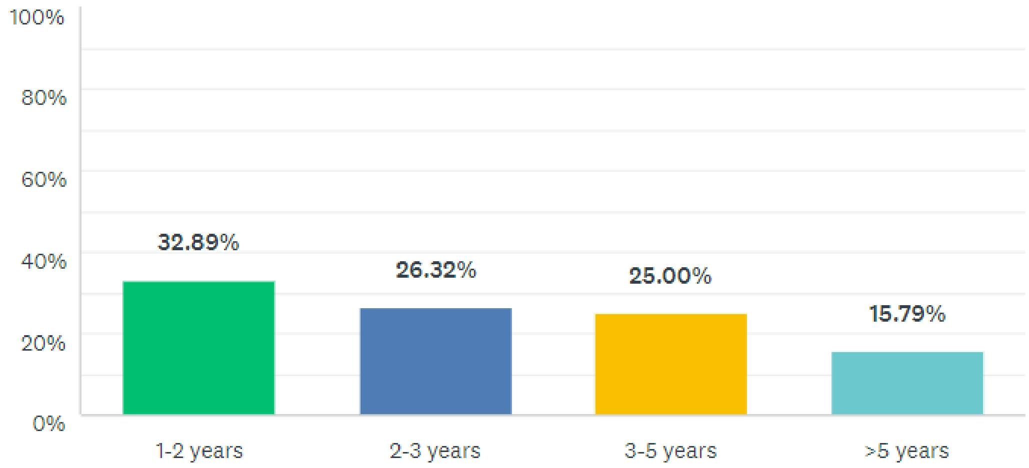

Figure 12. The number of years when SSI becomes mainstream in the respondents' domain

Finally, we asked the respondents what kind of payment methods they would use in SSI solutions. As visible in Figure 13, SSI experts favor **universal, globally accepted payment methods**.

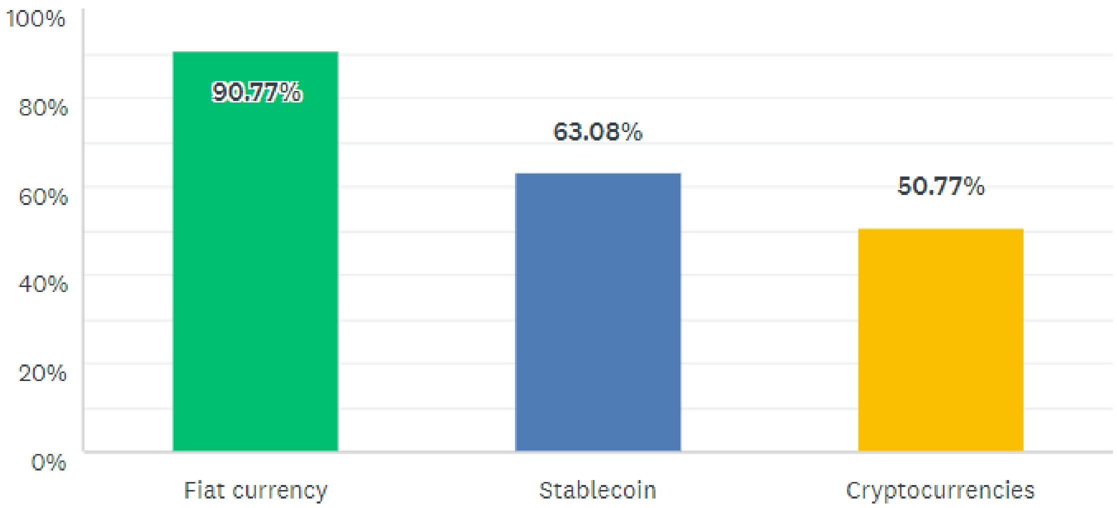

Figure 13. Accepted payment methods for SSI services

PERCEIVED BENEFITS AND CHALLENGES

In this section, we asked the respondents to give an opinion on SSI's benefits and challenges. The questions were 5-point Likert scale questions with options between Strongly agree – Strongly disagree. The results are based on the mean values of the answers. We present the results in descending order. That is, most respondents have supported the first option.

According to the respondents' answers, SSI provides the following **benefits for society**:

1. Trustful, secure, and private digital interactions
2. Data owners' possibility to control their data
3. Digital transformation
4. Global and interoperable identity
5. Financial inclusion

According to the respondents' answers, SSI provides the following **benefits for the organization**:

1. Innovations
2. Strategic alliances
3. Competitive advantage
4. Increasing our customer base
5. Simplifying processes

According to the respondents' answers, the **key challenges** in SSI are the following:

1. User experience
2. Immaturity of technology
3. Lack of interoperability and standards
4. Developing the governance rules and policies
5. Challenges of business model development

ACKNOWLEDGMENT

The authors thank the Self-Sovereign Identity expert community for answering the survey.