

Delphi

Blockchain 2023

Trends and Developments

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Blockchain in Sweden: An Overview

Technical progress and innovation have become increasingly important aspects of development in Swedish society in recent years, with both established companies and start-ups contributing to this trend. Swedish investments in research and development (R&D) have remained stable, and at a high percentage of GDP in comparison to global and European peers. As blockchain technology and crypto-assets have proven to be more than just hype and buzzwords, it has become necessary for both the private and public sectors to expand on and explore the technology through new use cases and developments. This article describes some significant current trends and examples of blockchain use in Swedish society.

Current and Potential Future Use Cases in Sweden

In a world with fast-moving media coverage – and in light of recent, rapid developments in the technology field, especially related to generative artificial intelligence (AI) – it is becoming increasingly complicated to determine whether one may rely on or trust a source or a fact. As will be touched upon in this article, blockchain technology has the ability to add trust and security to information and data by providing traceability.

There is enormous potential in what blockchain technology may be used for in the future within both the private and public sectors. Subject to regulatory challenges such as those concerning the General Data

Protection Regulation (GDPR), the possible use cases are numerous within business areas such as finance (where the below-mentioned example of the e-krona is evident), retail and logistics, healthcare services and medical registers, real estate registers and voting registers.

Globally, the market for blockchain-related technology and crypto-assets has cooled during the second half of 2022 – partly as a result of the FTX bankruptcy filings and the subsequent legal proceedings and media coverage. This global trend has also affected business in Sweden related to blockchain technologies. Despite this, interest in blockchain-based companies and cryptocurrencies continues to be significant, and Sweden continues to see developments in this area through new investments and projects and the establishment of new actors and numerous start-ups. Some examples are described below, as well as some challenges in this rapidly emerging market.

Blockchain/crypto companies in Sweden

In general, Swedish entrepreneurs were quick to jump on the trend when crypto spread around the world. However, initial coin offerings (ICOs) and other crypto-specific investments did not experience a boom similar to that in the USA, the UK and other parts of Europe and Asia. Swedish banks are very active within the blockchain field and keen to take advantage of the significant upsides of using the technology while simultaneously struggling to keep up when new and innovative blockchain/crypto

companies push innovation forwards at a very fast pace. Some recent initiatives in the banking sector are projects for issuing bonds based on blockchain technology in a more climate-friendly way, the banking sector's involvement in the e-krona project described below, and collaboration in the setting up of new payment platforms based on blockchain technology.

One notable Swedish blockchain company is ChromaWay AB, which has developed a blockchain platform on which applications can be run, taking advantage of all the benefits of blockchain technology. ChromaWay was one of the Swedish companies that was a partner to the Swedish mapping, cadastral and land registration authority (Lantmäteriet) in the blockchain project regarding the Swedish land registry (see Blockchain and the Lantmäteriet, below). It is also one of the few companies in Sweden that have carried out a successful ICO and is now expanding its operations into more recent blockchain-related trends, such as the metaverse. Recently, the company has seen growing profits and additional investment capital funding. ChromaWay is in no sense alone – even though there has not been a spike in ICOs, Sweden has a lot of exciting and rapidly growing companies within the blockchain area.

During 2021, two market-leading Swedish crypto-exchanges – Goobit Group and Safello Group – were publicly listed on Nasdaq First North Growth Market. Furthermore, in the beginning of 2023, the world's largest cryptocurrency exchange, measured by trading volume, Binance, was registered for management and trading in virtual currency in Sweden by the Swedish Financial Supervisory Authority.

Blockchain and the Lantmäteriet

The Swedish mapping, cadastral and land registration authority (Lantmäteriet) has initiated an experiment using blockchain technology together with a number of other actors in the Swedish private and public sectors as partners. Blockchain has been used in a pilot project to verify the transfer of real property between parties through registration in the Swedish land registry by exploiting the built-in transparency and security of blockchain technology, with the goal of saving both time and costs from an administrative perspective.

This use case is interesting as it can have significant upsides in countries and regions with no central land registry of real property ownership, which is a critical element in developing countries and can help counteract corruption and ease administrative burdens for the state. The most significant and notable upside for the Swedish authorities, however, is the security benefit of using blockchain technology.

The project was initiated in 2015 and finalised in 2019. It remains to be seen whether a permanent solution will be built on this experiment. Still, it is a good example of collaboration between the public and private sectors in the blockchain area and is among the Swedish blockchain use cases that have received the most acknowledgement and attention.

Swedish Companies Registrations Office

In 2021, the Swedish Companies Registrations Office was instructed by the Swedish government to develop an experimental register for company information based on blockchain technology labelled “Proof of Business”. The project aims to provide accurate real-time information to the public by using the strengths of distributed ledger and blockchain technology. The agency presented the results from its case study to the Swedish government in March 2023.

The work performed by the Swedish Companies Registrations Office focused on analysing trends in the crypto/blockchain sector, and developing the proof of business concept in the form of digital wallets where entrepreneurs can verify identities and then exchange company information in a secure and reliable way. Despite the limited initial scope of the project, the Swedish Companies Registrations Office have been positive about the case study. The authority also sees significant potential for automation, efficiency gains and increased security for entrepreneurs if the case study is followed up by additional work. The authority also identifies a need to continue to work with these questions more broadly on a Scandinavian and European level. Therefore, as a part of wider European co-operation, the Swedish Companies Registrations Office will be involved in continuous developments of digital wallets at the EU level.

Regulatory Oversight

Recently, the Swedish Financial Supervisory Authority (FSA) has focused on companies acting within the crypto space, focusing primarily on compliance with AML regulations. On 21 October 2021, the FSA announced that it had launched investigations into a number of companies trading in cryptocurrencies. In its press release, the FSA states that trading in cryptocurrencies is regarded as a high-risk practice in relation to the AML regulatory framework. As of May 2023, one of the investigations has been finalised without any follow-up actions or sanctions other than observing some minor areas for improvement. The results of the other investigations remain to be seen, and thus far no general conclusions can be drawn as to whether any significant actions should be taken by registered companies in Sweden managing or trading virtual currencies in order to mitigate risks related to the AML regulation. In this regard, it is also worth noticing that it has become increasingly challenging for companies within the crypto space to meet the requirements set out by third parties such as payment providers and banks, who highlight the risks related to AML compliance.

Interestingly, the Swedish FSA's renewed focus on cryptocurrencies and the AML regulatory framework somewhat coincides with the proposed EU Markets in Crypto-assets (the "MiCA") Regulation. The industry and the supervisory authorities have stressed the need for clear regulation for the industry actors to plan and initiate the process of adjusting their operations based on the regulatory framework. With negotiations and the adaptation of the MiCA Regulation progressing and a final adoption in the near future getting more probable, it is likely that the new legislation will have significant impact on the blockchain industry in Sweden, both by introducing stricter requirements for actors in the sector, but also through benefits from a clearer playing field when developing new and innovative use cases and business models.

E-krona

One of Sweden's most significant use cases involving blockchain technology is the "e-krona" project. The Swedish Central Bank is currently investigating whether

it would be possible and appropriate to issue a digital complement to classic cash, based on blockchain technology. The digital currency, the e-krona (derived from the name of the Swedish currency, the "krona"), would be issued by the Central Bank and available to the public. The e-krona would not be considered a cryptocurrency as it would be provided by the Swedish Central Bank, which warrants the value of the currency.

Background

One of the Central Bank's responsibilities is to promote a safe and efficient payment system. In response to the rapid decline in the use of banknotes and coins in Sweden, the Central Bank started investigating the possibility of issuing a digital currency to the general public in 2017. Currently, the Central Bank only offers digital money to banks and other participants in the RIX payment system; all other digital/electronic money in Sweden is issued by commercial banks, referred to by the Central Bank as "private digital money", and regulated by the Swedish Electronic Money Act (2011:755).

The e-krona pilot

Between 2020 and 2023, the Central Bank carried out three phases of a pilot project for the e-krona, drawing the following main conclusions:

- The technology provides new possibilities but requires further investigation – the technology gives the opportunity to create uniquely identifiable e-kronor but is untried when it comes to processing retail payments in the magnitude and with the level of safety that would be required by a digital currency backed by a central bank.
- Different forms of storage for tokens and keys provide different properties – the way the money is stored should ultimately be determined by which functions are given priority in an e-krona system.
- A parallel network makes the payment system more robust – a solution based on blockchain technology and tokens means that an infrastructure will be created that, to a large extent, functions in parallel with today's payment infrastructure.
- The technical solution can enable the development

of more advanced payment services to benefit users. However, conditional payments may mean that more user data is shared within the e-krona network, requiring further investigation concerning, among other things, the personal integrity of the users.

Legal aspects considered by the Central Bank

Several legal questions must be considered in relation to the e-krona. During the second and third phases of the e-krona pilot project, the Central Bank assessed the legal aspects of the project and focused on a couple of key legal questions.

Firstly, the Central Bank has considered whether the technical aspects of using blockchain technology would cause difficulties in relation to financial secrecy legislation and data protection. Its report concludes that it cannot be ruled out that the e-krona project would entail the processing of information in violation of legislation on financial secrecy as well as data protection law. The Central Bank reasons that legislative actions and consultations with the relevant supervisory authorities in Sweden and the EU may be necessary.

Furthermore, the Central Bank has assessed in detail the status of the e-krona and what it would actually constitute from a legal/regulatory perspective, concluding that it should be regarded as equivalent to physical cash. This is a quite interesting position, as the current legislation relating to electronic money and interest-bearing assets would not be applicable. In its report, the Central Bank reiterates its previous assessment that the introduction of an e-krona would require legislative action to protect the holders of e-kronor. Possible incentives to hold/acquire the e-krona are also discussed briefly in the report.

Questions relating to the AML regulatory framework are also relevant in relation to the project. The distribution model tested during the pilot would entail the AML regulations being applicable. However, the Central Bank will be the issuer of the e-krona but will not have direct contact with the end users. Therefore, responsibility for compliance with the AML regime will likely fall on the distributors (ie, the banks and other financial institutions that offer digital wallets and similar solutions for their customers' use of the e-krona). As the requirements under the AML regulations would apply not to the

Central Bank but to the distributors, questions relating to AML compliance are not considered in detail in the reports related to the project. As such, the Central Bank emphasises a need for further legal analysis regarding who should be allowed to provide the services and how far the Central Bank's responsibility for the e-krona extends.

Technical testing and the process going forward

During phase two of the e-krona pilot project, the Central Bank conducted tests showing that it is possible to integrate a potential e-krona into the internal systems currently in place at banks, thereby enabling the bank's customers to switch between money in a bank account and e-krona. The tests have also shown that it would be possible to make offline transactions with the e-krona. However, offline payments would entail certain risks that must be addressed if a similar solution becomes reality. During phase three, the pilot also investigated the possibility of making conditional payments in e-krona. The Central Bank conducted a successful test with a fictitious customer and car dealer. The test consisted of the customer buying a specific car at an agreed price, but with the condition that the payment was only processed once the customer was registered as the car's owner. Going forward, the Central Bank will continue to evaluate the need for and effects of an e-krona while following the international development of central bank digital currencies. Phase four of the e-krona pilot project will be less focused on further technical testing of the specific pilot situation and more weighted towards investigation into the design of an e-krona prior to a decision on a possible issuance.

Other Blockchain Projects in Sweden

Sweden is also involved in the European Blockchain Partnership (EBP), with a focus on establishing a mutual, shared and open infrastructure in Europe based on blockchain technology for the provision of services in the public sector – The European Blockchain Service Infrastructure (EBSI). The development project has been ongoing since 2018 and is expected to go live in the near future.

The Swedish Central Bank has, in collaboration with the Bank of Israel, the Bank of Norway and the Bank

of International Settlements (BIS), completed Project Icebreaker, which investigated and tested how digital currency issued by central banks (known as Central Bank Digital Currency or CBDC) could improve cross-currency payments. Currently, payers have had little choice and control over the exchange rate they receive and who makes the cross-currency payment for them. Based on Project Icebreaker's model, foreign exchange providers can submit the exchange rate they are willing to offer to the hub. The hub then matches the payer with the provider offering the best exchange rate. This model promotes competition and reduces the risk of a lack of liquidity in the currencies involved in the payment, which can otherwise drive up costs and even delay transactions.

Personal Data and Blockchain

While new and innovative applications of blockchain technology are being developed on the one hand and legislators are working towards a regulatory framework for the industry on the other, compliance with the applicable data protection law poses a separate issue for companies using blockchain technology.

GDPR and blockchain – from a practical perspective

It is important to discuss ways to maintain the benefits of blockchain while still observing the mandatory legal requirements of the GDPR when considering using blockchain in applications concerning personal data. This is obviously an issue of a technical nature, but the answer may be to use blockchain to authenticate and verify operational data and logging, but have the personal data involved in a separate database where changes and deletions can be made freely. That database can be authenticated and verified by the blockchain.

However, this issue has not been fully clarified within the EU, and the Swedish Supervisory Authority for Data Protection (Integritetsskyddsmyndigheten) has not shared its view on the subject. However, as mentioned above, the Swedish FSA has stated that the use of blockchain technology within its e-krona project may lead to non-compliance with the GDPR. Therefore, the Swedish Central Bank intends to consult with the Swedish Supervisory Authority for Data Protection as well as the European Data Protection Board in order get a better understanding of the issues. The results of

such consultations are expected to be accounted for in the reports published by the Central Bank, which could provide some much-needed guidance on the relevant authorities' view of the above-mentioned issues.

Conclusion

What the future holds for blockchain integration is yet to be discovered. Still, it is reasonable to believe that enormous changes may lie ahead, with the potential of minimising the number of intermediaries required for certain transactions and processes and adding traceability and security to data and various registers. New exciting use cases are expected to emerge in Sweden, together with the current positive innovation trends.

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