Case Study

How Gemalto's Trust ID Network is revolutionizing self-sovereign digital identities by leveraging R3's Corda blockchain platform

Traditional know-your-customer (KYC) processes are costly, complex and time-consuming, creating a significant pain-point for banks. Digital identities are currently managed in silos, which in effect results in consumers setting up multiple accounts with different websites and service providers and accumulating an expanding collection of unsafe logins and passwords. This identity management model is not only highly inconvenient in terms of user experience, but also puts people's data privacy and security at risk.

Gemalto, the world leader in digital security, has set out to tackle both set of issues. To do this it has developed a solution called the Trust ID Network – a ground-breaking platform that embraces the concept of "self-sovereign" identity, which equips end-user with full ownership of their identity and total control over who can access their personal information. This in turn simplifies identity management and streamlines banks' KYC due diligence, while reducing risk and enhancing speed and accuracy.

After evaluating potential technologies to use as the basis for the Trust ID Network, Gemalto chose R3's Corda – a cutting-edge blockchain platform that removes friction by enabling businesses to transact directly without the involvement of a central third-party. With the Trust ID Network now in pilot phase, Gemalto is promoting it to banks and bank consortiums worldwide, opening the way to a step-change in how people manage their identities, and how banks and other service providers validate who their customers are.

The Problems with Today's Identity Management Model

We all know from personal experience that keeping track of the various logins and passwords that we set up almost every day is a tough task. To be secure, every password should be different – but that makes them simply more difficult to remember. This problem for users is mirrored by corresponding challenges for the service providers who need to validate the identities of their customers. In particular, the know-your-customer (KYC) processes that regulators mandate for banks to undertake are exhausting, time-consuming, labor-intensive and costly, acting as a drag on their business.

Emilie Casteran, Head of Digital Strategy & Partnerships in Gemalto's Banking & Payment business unit, says solving this pain-point for banks was the company's primary objective in coming up with the idea for the Trust ID Network.

> "Our main target is addressing the broken user experience and complexity of KYC process for consumers and financial institutions," she explains. "Banks have to implement these processes because they have a legal obligation to do so – but complying with the regulations is a cumbersome, complex and expensive process. So, when developing the concept of Trust ID network, we envisioned to build a solution that would simplify these obligations for banks and turn them into an opportunity for a new competitive positioning, cost saving and new revenue stream."

Emilie Casteran, Head of Digital Strategy & Partnerships, Banking & Payment, Gemalto

Why Blockchain is the Best Option

Having decided on the objectives, the next step for Gemalto was to identify the most appropriate technology to achieve them. According to Emilie Casteran, blockchain was the clear choice. "The biggest factor in its favor is the very nature of blockchain, the fact that it's distributed and – even more importantly – decentralized," she says. "If you look at the identity systems that are in place today, many of them rely on one central entity which acts as the identity provider. The good thing with this type of implementation is that it helps to simplify the user experience, i.e. they can provide a service to the customers or end-users that is relatively easy-to-use and convenient, because it usually comes with one single application where users can do everything."

She continues: "However, the downside of a centralized identity system is that the banks still have to rely on an external third-party, and there is still one entity that is managing, centralizing and storing everything. The risk of threats such as a data breach or even fraud is relatively high. In contrast, with blockchain you can get rid of this central entity completely, and the trust is ensured by the technology itself, independent of any third-party. That is why we decided that blockchain would be the best technology for the Trust ID Network."

r3.

Corda's Strengths Win Out

With blockchain's decentralized model making it the technology of choice, the next question was which blockchain platform to use as the basis for Gemalto's new offering. Having reviewed all the leading blockchain solutions in the marketplace, Gemalto chose Corda over its competitors for three main reasons – the first of which was its proven robustness and the large install base of banks already using it. "The fact that R3 has a huge established network behind Corda was definitely an attractive aspect for us as we can potentially leverage those network and connections to banks," comments Emilie Casteran. "Several banks, which we'd spoken to, had stressed the strengths of the Corda technology, so the fact that the banks were already convinced meant we wouldn't have to sell them the idea of using it."

Beyond Corda's established presence, Gemalto's other two reasons for choosing Corda are related to its unique technology advantages. One was Corda's unique privacy features. Based on "privacy-by-design" concepts, Corda is different from many other blockchain platforms. It doesn't broadcast information to all parties on the network, but instead allows the owner of the data to choose who can or can't receive their data. "When you're dealing with highly regulated financial industry, that's a vital capability," says Casteran.

The other advantage was, Corda platform is built from the ground up to meet the exacting standards of the most highly-regulated and demanding users of all –financial institutions. "Scalability is especially critical when you are dealing with something like identity, where there are going to be millions of users and potentially hundreds of millions of transactions," she explains. "You need a platform that can scale. And Corda's point-to-point communications mechanism ensures that it can do that."

Working with R3: The Power of Collaboration

Having identified Corda as the ideal blockchain platform for its development of the Trust ID Network, Gemalto began to work with R3 in October 2017. Since then, the progress that the collaboration between the two firms has achieved has been dramatic. "When we started working with R3 in October, we already had a first proof of concept," recalls Casteran. "Since then the proof of concept has been completely redesigned, and we've now got to the stage of a full solution. We did all that in less than a year, which I think is pretty impressive!"

She adds that R3 has been "very easy to work with", and that the working relationship has been both excellent and wide-ranging. "We're very happy with

our relationship with them," she says. "R3 has been very helpful in guiding us on how to make the best usage of Corda and also provided valuable feedback on solution functionality. Beyond that they've helped us to engage with a lot of banks, thereby bringing higher visibility to our offer in the marketplace. While we obviously work with R3 on the technical elements – such as collaborating closely with their platform teams to develop the application – we also engage with them on the commercial and business aspects, and on promoting our solution through a joint effort making sure we have the right exposure in marketplace and ecosystem."

The Trust ID Network: Decentralized by Design

So, what does the resulting solution do? A schematic of Gemalto's Trust ID Network is shown below. In simple terms, it's a decentralized digital identity application running on Corda, which enables banks and other types of service providers to record and have access to verified identity of their customers. A key aspect of the solution's decentralized approach is that it doesn't use the blockchain to store the end-customer's actual identity information. Instead this information stays within the user's control and stored on their mobile device. What is stored and exchanged on the blockchain is the metadata about user's verified identity attributes.
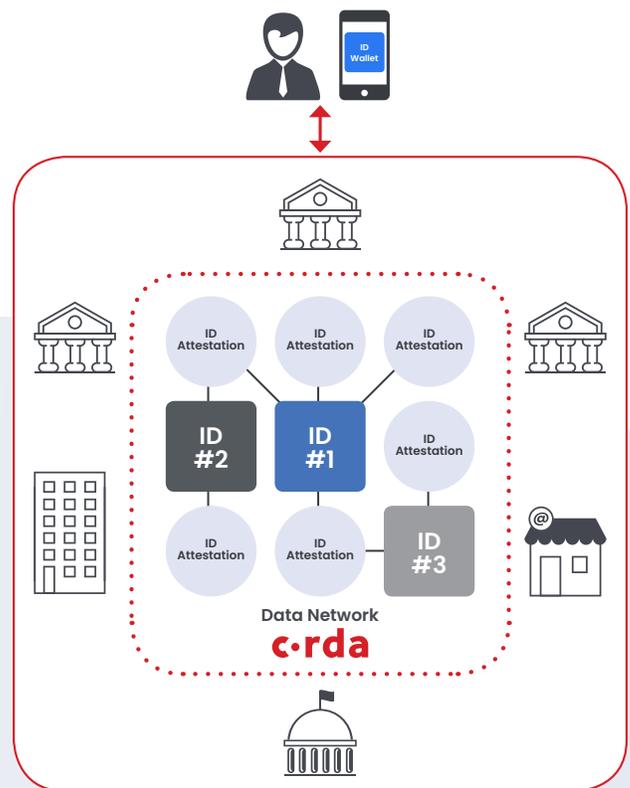
Schematic of Gemalto's Trust ID Network

This is a process known as "ID attestation" – and Gemalto's Casteran explains it like this: "ID attestation is the verification that a bank carries out about certain elements of a user's identity. By way of example, if someone's passport is being used to verify who they are, then it isn't their actual passport that will be stored on the blockchain. Instead, what will be on the blockchain is just the fact that their passport has been verified and certified and is good to go. But the actual value – such as the elements in the passport – will stay with the user and won't be shared on the blockchain."

Convenience for End-Users

Gemalto has developed all the business logic needed to run the Trust ID Network using this model. Crucially, it also provides the end-point for users in the form of a mobile ID wallet application, which it can provide to banks as a "white label" product for them to customize and re-brand for their customers. "This ID wallet application is actually where the end users can manage their identity and all their other personal information," explains Casteran. "It's very convenient and user-friendly. The user has just one interface where they add new information, decide if they want to share this information, and have this information certified as well. And while users can see

SOME BENEFITS OF THE TRUST ID NETWORK FOR BANKS:

- Streamline the on-boarding process of customers and identity mutualization.

- Auditability and transparency

- Decreased risk of ID theft and fraud

- Information accuracy and reliability

- Decreased transaction abandonment

- Opportunities for revenue growth with KYC monetization

SOME BENEFITS OF THE TRUST ID NETWORK FOR END-USERS:

- Convenient user experience

- Secure storage of users' ID attributes

- Privacy and control

- Full transparency

the application is secure through our strong authentication and mobile security – including biometrics like fingerprint and facial recognition – the complexity of the blockchain technology remains completely invisible to them."

She continues: "Another important feature is that, the end-user can control and have full visibility into who is accessing what elements of their personal information from mobile wallet interface. We think this is fundamental for ensuring the users privacy and security of their identity. With today's data privacy regulations like GDPR in Europe, it's very important for end-users to really control what is going on and be able to decide whether or not they want to share information and with whom."

A Multiplicity of Use Cases

Put together, the capabilities of the Trust ID Network opens up the potential for a vast array of applications and use cases. "I would say that the best-case scenario would be to use the Trust ID Network as the technology foundation for a national ID scheme," comments Casteran. "Imagine that banks at the level of one country, or even several countries, decided to work together to create this ID ecosystem. They could use the Trust ID Network as the platform

to build this ecosystem, and then provide a very convenient, user-friendly service enabling customers to manage their identity."

Another potential application of the Trust ID network could be by a large international bank with operations in many different countries, which could use it internally to simplify and streamline the exchanges of data about its customers.

> " Let's say you're a customer in the UK, and you've already done the KYC to open your account in London," Casteran explains. "Then you move to France and you want to open a French bank account with the same bank. Today you would probably have to provide all KYC information again. But if you have the Trust ID Network in place, the bank's UK and French entities can communicate and exchange the KYC attributes. This simplifies the whole process, improves the user experience and reduces the costs for the bank. "

Emilie Casteran, Head of Digital Strategy & Partnerships, Banking & Payment, Gemalto

Next Steps

So, what's next for Gemalto and the Trust ID Network? As Gemalto and R3 present the solution to banks and government worldwide – it is gaining very positive feedback in return – the two firms' technical teams are working on expanding the solution to support risk management use cases. "At Gemalto we have strong expertise in risk management, and we already have a solution in this area that we want to leverage on the Trust ID Network," says Casteran. Meanwhile, from a commercial and business point of view, the goal is to sign up pilot implementations in the near future, to strengthen the solution's capabilities as per real-world context.

The message is clear: powered by Gemalto's Trust ID and R3's Corda platform, the benefits of self-sovereign identity management are coming to banks and their customers across the world. Stay tuned for further developments. And, if your organization would like to be involved, don't hesitate to get in touch with R3 or Gemalto.

About Gemalto

Gemalto (Euronext NL0000400653 GTO) is the global leader in digital security, with 2017 annual revenues of €3 billion and customers in over 180 countries. We bring trust to an increasingly connected world.

From secure software to biometrics and encryption, our technologies and services enable businesses and governments to authenticate identities and protect data so they stay safe and enable services in personal devices, connected objects, the cloud and in between.

Gemalto's solutions are at the heart of modern life, from payment to enterprise security and the internet of things. We authenticate people, transactions and objects, encrypt data and create value for software – enabling our clients to deliver secure digital services for billions of individuals and things.

Our 15,000 employees operate out of 114 offices, 40 personalization and data centers, and 35 research and software development centers located in 47 countries.

For more information visit **www.gemalto.com**, or follow **@gemalto** on Twitter.

About R3

R3 is an enterprise blockchain software firm working with a broad ecosystem of more than 200 members and partners across multiple industries from both the private and public sectors to develop on Corda, its open-source blockchain platform, and Corda Enterprise, a commercial version of Corda for enterprise usage.

R3's global team of over 180 professionals in 13 countries is supported by over 2,000 technology, financial, and legal experts drawn from its global member base. R3 is backed by investment of over USD 120 million from more than 45 firms.

The Corda platform is already being used in industries from financial services to healthcare, shipping, insurance and more. It records, manages and executes institutions' financial agreements in perfect synchrony with their peers, creating a world of frictionless commerce.

Discover more at r3.com.