



Institutional Adoption of Digital Assets 2021

Bitbond Research Report

July 2021





Foreword

Capital markets and financial services are currently going through an unprecedented level of change. While fintech companies have been reshaping consumer finance for several years, more recently, this force for change has also arrived in the institutional finance world.



Foreword

Corporate and investment banks, asset managers, institutional investors, family offices, and other market participants are becoming increasingly driven by technology. Either to gain a competitive advantage, fight decreasing margins, or adapt to regulatory changes.

As part of this development, financial institutions are increasingly turning to digital assets to take advantage of the vast opportunities behind distributed ledger technology (DLT), blockchain, and decentralized finance (DeFi). At the time of publication, the total market capitalization of digital assets is around USD 1.4 trillion—a fivefold increase over one year.

While the absolute value may seem insignificant compared to the total value of global public market equities and bonds (around USD 200 trillion combined), the growth of digital assets is stunning. And although cryptocurrencies drive a significant portion of this growth, digital / tokenized financial assets are playing an increasingly important role.

In order to take advantage of unseen settlement efficiency, reduced costs, and near-zero settlement risk, banks and corporates have started to issue tokenized debt and equity. There is a growing consensus in the institutional markets that in the medium to long-term, all financial assets will be tokenized. Once that happens, cryptocurrencies will remain important but will be a smaller part of the total value of digital assets.

This report provides a comprehensive overview of digital asset activities and adoption by banks and other institutional market participants.

We hope you enjoy reading it and that you will be as excited as we are when discovering that the institutional adoption of digital assets is not a future promise but a reality that is already here today.

We thank the entire Bitbond team for putting the hard work into this research piece that it takes to create a full picture of the status quo. Special thanks go to Bitbond crew members **Felix Stremmer and Henri Falque-Pierrotin**, as well as senior banking analyst **Sam Theodore** for writing the introduction. **We would equally like to thank all contributors at the numerous financial institutions who were so open to sharing their insights with us.** Without your input, this report would not have been possible.



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Introduction



SAM THEODORE

With over 35 years of experience analyzing and communicating views about and interacting with banks and other financial institutions, Sam Theodore has agreed to write this introduction on the adoption of digital assets by financial institutions.

He held managing director positions at Moody's (seventeen years), at Scope (seven years), and worked for three years at DBRS as analytical head of financial institutions ratings for Europe. Sam also worked six years as a senior bank regulator (EBA, UK FSA).



Introduction

Banks will continue to dominate the European financial sector ...

It is not looming somewhere in the distance: transformational advances in digital technology have been moving faster than many banks' capacity to cope with them. In the digital age, the image of a bank mostly conjures up an icon on a phone screen or a website. Not a temple-like high-street branch.

The European banking industry has made significant efforts to adjust to the digital age to cope with higher transaction speeds, meet changing customer expectations, and optimize operations by using cloud technology, big data management, open platforms, artificial intelligence, and, increasingly, distributed ledger technologies. Many say that, in the race between incumbent banks and fintech, the former is gradually losing ground, which will be increasingly difficult to regain.

This, however, would be the wrong conclusion. The European financial sector is not the fintech or the big tech's to win; it is the banks' to lose, which may differ from the dynamics in other parts of the world. The fintech/neobank challenge remains more marginal for most European incumbent banks, many of which view it as a new opportunity.

Under the right conditions, of course, banks can speedily adjust their business models, cultures, systems, and cost structures. Which is something not all banks will be able to do.

Against the backdrop of fast digital advances opening new avenues for finance, the key two drivers for fintech growth have been related to (i) payments and (ii) financial inclusion. These have been present primarily in emerging markets, where traditional banks have not played the same central role in the economy as developed markets.

This has been the case in China, where the fintech giants Alipay and WeChatPay (each with ca. one billion active users, mostly in large cities) have been offering savings, wealth management, loans, and insurance to households and SMEs. It has also been the case in parts of Africa, where large fintechs like Kenya-based M-Pesa, starting with mobile payments and then adding more financial products, have been adopted by a largely unbanked population (many more people having a smartphone than a bank account). A similar situation exists in Latin America: Brazil-based Nubank is the world's largest neobank, with over 33 million customers.

This is also the case in the US, where ca. a quarter of households are either unbanked or under-banked. According to the FDIC, the two main reasons for households not having a bank account are (i) not having enough money to keep in the bank and (ii) not trusting banks.

However, in Europe, the payment system goes mainly through the banking system, unlike many developing markets. European banks also hold a far larger market share of loans and savings intermediation than their US counterparts (ca. 80 % vs. ca. 30 %). Importantly, the proportion of the banked population is very high—not far from 100 % in Western Europe. Therefore, lack of financial inclusion is less of an issue. It does remain more of a challenge in Eastern Europe, but there, also, it is the banks that are mostly in the driver's seat.

To be sure, Europe is becoming a vibrant ground for the growth of financial technology, especially in London, Berlin, Amsterdam, Paris, or Stockholm. At this time, more than a third of European neobanks and fintech are UK-based (Germany is coming second).



Introduction

But profitability for most of these players is not yet proven, which to an extent detracts from full credibility to their business model. Seeking to become profitable, larger players like Revolut or N26 aim to broaden their business beyond the confines of Europe.

This again would prove that, at present, the European market is solidly in the hands of the incumbent banking industry. Whether it will stay that way is ultimately the banks' call.

... But only those who can adopt decentralizing financial technologies

Banks remain established financial intermediaries, while the new digital world favors end users, not the intermediary.

Too many banks across Europe rationalize that technology-induced customer behavior is changing far more slowly than usually assumed. If this was more plausible before the pandemic, it is not so these days.

Individuals' and businesses' economic, financial and social needs have moved to a much larger extent in the digital space.

It is not certain that a shift back will occur after the pandemic ends in the financial space.

For banks, the pandemic's silver lining has improved their public image – a visible turnaround from the GFC – as they are being counted on to actively support the economies they operate in, rather than being blamed as troublemakers. Banks, especially the more prominent groups with a higher capacity for IT investments on a material scale, stand a better chance of going where they need to be in the digital space without being disrupted along that path by neo-players. Provided they make good progress along that path.

More to the point where banks are positioned on the road to digitalization may emerge as a central consideration in assessing their worth and viability. Massive investments in digital capacity—platforms, distribution channels, products, and processes—are needed speedily: cybersecurity systems, cloud storage, blockchain, open APIs, and artificial intelligence.

Importantly, balancing the European banking industry is still short of state-of-the-art

expertise or sufficient scale in these areas. Acquiring appropriate intellectual capital for the digital age is challenging, mostly for many second-tier banks with more old-fashioned business models. For some of them, banking in the digital age may become out of their reach soon.

Digital assets: a threat or an opportunity for banks?

When tackling the topic of digital assets, many banks and other market participants think of crypto. But not all digital assets are necessarily crypto assets, as they include tokenized non-crypto items.

To assess European banks' digital assets challenge, we need to look at cryptocurrencies and smart contracts/decentralized finance separately, although they are inherently linked.

Blockchain-distributed private cryptocurrencies – Bitcoin, Ether, Ripple, etc. – will not shake the solid foundation of fiat money – deposits, loans, and transfers through regulated financial intermediaries (which, again, in Europe are mostly banks).



At this time, they have mainly a store-of-value function (as trading, speculative, and investment products); much less a medium-of-exchange function – although more businesses in the US and elsewhere are now accepting Bitcoin as payment, from swanky purchases like Tesla cars and NFT art to booking trips through Expedia.

But as long as governments and central banks refuse to stand behind them – which for the most part is still the case – cryptocurrencies will at best play a marginal transactional role. Governments and regulators poured cold water on the attempt by a Facebook-led consortium, announced nearly two years ago, to establish Libra (recently renamed Diem), a private digital currency referenced by high-quality assets. A rumored plan of the consortium may now be for Diem to become a white-label provider of central-bank digital currencies. This suggests that the initial project may have turned increasingly elusive, although it continues to be pursued.

As much as they will become more mainstream beyond crypto enthusiasts, cryptocurrencies will not compete against, let alone push aside central-bank fiat money.



This is especially so as central banks in both developed and emerging markets are in various stages of investigating or even implementing their own digital currency initiatives.

A recent BIS survey revealed that a vast majority of the world's central banks, including those in developed markets, are looking at the feasibility of issuing central bank digital currency (CBDC). Notably, general-purpose (retail) CBDC for individuals and businesses, which would thus have a direct claim against the central bank (rather than against banks and other intermediaries). But the implementation of CBDC on a large scale

is still uncertain and some years away in many cases.

The Bank of England and the ECB are pursuing digital currency investigations, intending to see the birth of general-purpose digital pounds and euros. In the US, the Boston Fed is undertaking a research project on a digital dollar together with the MIT – with a first finding expected in a couple of months. China is in a more advanced stage, with a digital yuan already being launched in a few cities in the country; the government has secretly worked on this project for a few years.



Introduction

Banks should feel more discomfited by the development of smart contracts, processed by a permissionless distributed ledger in open digital ecosystems like Ethereum. Smart contracts are self-enforcing agreements – structured as software with built-in legal compliance and controls – between participants over the internet who do not know or trust each other.

When the pre-defined rules of the contract are met, the agreement is automatically enforced by the majority consensus of the blockchain network.

What could raise questions about the future of the banking industry as we know it is the extent to which smart contracts may take hold of peer-to-peer (P2P) financial transactions, bypassing intermediaries such as banks. And thus, in time, threatening a source of core revenues for banks. So-called decentralized finance (DeFi) – a term increasingly popular in the US – includes decentralized applications built on top of distributed ledgers and related to financial transactions using crypto tokens (payments, exchanges, sales, lending, insurance, derivatives, etc.).

However, the viability of DeFi in its current form in a European context is doubtful. First, although the DeFi environment exists and will keep improving, it is unlikely to be adopted on a large scale by businesses and individuals beyond a relatively narrow category of techno enthusiasts (merely investing in crypto assets is ipso facto not part of DeFi).

Second, to the extent that it will be carried out solely outside of the fiat-money system – which is, in fact, the *raison d'être* of the technology –, it should remain marginal compared to mainstream financial transactions. Third, and perhaps crucially, are regulatory barriers that, as shown below, make it hard to implement across Europe.

Having said that, and this is where the main challenge is for banks, smart contracts on permissionless blockchains may be increasingly used for financial agreements and transactions not based on cryptocurrencies. This is already the case in a growing number of instances. Therefore, the threat remains for P2P to bypass intermediaries such as the banks. Not necessarily by using cryptocurrencies and not classic fiat money. So, the means of exchange do not change,

but the fee-seeking intermediary is no longer needed. This threat is more virtual now, but improvements in smart-contract technology and wider acceptance become a real threat for some financial intermediaries. Not so much where they risk being taken off the map but rather as a threat to core revenues.

Larger banks, especially those reaching high levels of technical sophistication, are well aware of this, and the use of blockchain is increasing within these groups. Including debt issuance. Earlier this month, the European Investment Bank announced that it is preparing the issuance of a new bond through blockchain, using Goldman Sachs, Santander, and Société Générale as advisors. The latter two have already issued bonds using blockchain technology.

As distributed ledger technology – a by-product of crypto not uniquely applicable to it – is adopted on a broader scale, smaller and less sophisticated banks will find it difficult to compete. Especially as this is only one element of the digital transformation.



Introduction

Forthcoming EU regulations should help digital-savvy banks

The European Commission's Digital Financial Package, adopted last September, includes a proposed regulation on CAs, the Markets in Crypto Assets Regulation (MiCA), which will supersede all national regimes related to this asset class.

MiCA introduces requirements related to the issuance, offering, and marketing of crypto assets, including preventing market abuse.

Overall, crypto regulation aims at four key objectives: providing legal certainty, supporting innovation, protecting the customers, and preserving financial stability.

MiCA will apply to three categories of crypto-assets (tokens):

1. Asset-referenced tokens (including the proposed Diem)
2. E-money tokens (to be used as a means of exchange and pegged to a fiat currency)
3. Other crypto assets (a catch-all category including Bitcoin)

Existing financial market regulations would cover any crypto asset that constitutes a financial instrument or equivalent (e.g., security tokens, e-money, structured deposits, etc.), not covered by MiCA.

Importantly, across the EU, crypto assets will have to be issued and managed solely by legal entities called crypto asset service providers (CASP), to be authorized and supervised by competent national authorities. To the extent that these assets are classified as "significant" – meaning a large customer base, a high number of transactions, or a market cap exceeding € 1 billion – CASPs will be supervised directly by the EBA, with annual re-assessments.

The obligation under MiCA that CASPs be legal entities will be a significant hurdle for the European development of DeFi, in which issuance is decentralized, with no identifiable issuer. In addition, there are also requirements for CASPs on disclosure (publication of a detailed white paper before issuance) and capital size, which could keep away small players without the resources to comply with MiCA.

If the CASP is a credit institution already authorized under the Capital Requirements Directive (CRD), it will not require a separate CASP authorization. This provides an inherent advantage to banks, which through passporting, can even now issue, market, and transact crypto assets across the entire EU.

To conclude...

To conclude, both the forthcoming crypto regulations included in the ECs proposed Digital Financial Package and the likelihood of CBDC being utilized in the not-too-distant-future are strong arguments for all EU banks to get even more committed to adopting and start using new technologies like a distributed ledger. For those banks that wish to survive and do well, this is not optional.

SAM THEODORE



Commercial Bank Initiatives



1. ABN AMRO – Netherlands

OVERVIEW



ABN AMRO is a Dutch bank with headquarters in Amsterdam. It is the third-largest bank in the Netherlands.

On their website, it is stated that they: “believe that new technology will play a key role in innovations in the financial ecosystem. Whether we’re talking about developing new products and services or helping international financial markets run more efficiently, our clients are the central focus in everything we do.”

ABN AMRO among others is an investor in Digital Asset Holdings (DAH), an American technology company that develops blockchain technology.

Distributed Ledger Technology makes the settlement of digital transactions smoother and safer with lower costs, fewer errors, and less risk.

SELECTION OF DIGITAL ASSETS INITIATIVES

Linux Foundation Hyperledger Project

›FOUNDATION ›ECOSYSTEM ›EMERGING TECHNOLOGIES ›LIVE

ABN AMRO is a founding member of the Hyperledger Project, run by the Linux Foundation. The Foundation aims to promote the production and commercialization of emerging technologies by creating ecosystems. The technology will allow for the secure and efficient recording, tracking, and authorization of digital financial transactions. The Linux Foundation provides resources, training, and activities in addition to technologies.

R3

›BLOCKCHAIN & OTHER TECH INNOVATION ›LIVE

At the end of 2016, ABN AMRO joined the R3 financial innovation group. R3 is a global group of more than 75 financial institutions. This partnership aims to design and manufacture innovative blockchain and other technologies to assist the financial markets in moving forward.

TU Delft

›PARTNERSHIP ›BLOCKCHAIN DEVELOPMENT ›LIVE

ABN AMRO and Delft University of Technology (TU Delft) collaborate on advancing complex blockchain applications. Since 2007, when the discipline was known as “distributed accounting systems,” the university researched blockchain applications. The TU Delft research focuses on realistic applications, such as next-generation technology efficiently managing large amounts of (dummy) data and multiple users. ABN AMRO employees are also taking classes at the University’s Blockchain Lab.



2. BBVA – Switzerland

OVERVIEW



Banco Bilbao Vizcaya Argentaria (BBVA) is a global financial services company that was founded in 1857.

Over the past five years, BBVA has carried out numerous blockchain research projects and pilots. The launch of its digital assets transaction and custody service in Switzerland in December 2020 was a landmark achievement for BBVA.

According to Alicia Pertusa, Head of Client Solutions Strategy at BBVA, this service is just a first step in an area that will directly impact how money and any valuable asset or piece of information are exchanged.

SELECTION OF DIGITAL ASSETS INITIATIVES

First commercial solution for the trading and custody of bitcoin in Switzerland (Dec 2020)

[›CUSTODY](#) [›INSTITUTIONAL INVESTORS](#) [›LIVE](#)

Since January 2021, BBVA's Switzerland unit has been progressively launching a new service to trade and safeguard digital assets. Switzerland has many companies in blockchain technology as one of the most advanced European countries regarding regulations and adoptions of digital assets. For institutional clients, enterprises, and individual customers, several banks currently provide digital asset management services.

BBVA issues the first blockchain-supported structured green bond for MAPFRE (Feb 2019)

[›STRUCTURED GREEN BOND](#) [›BLOCKCHAIN](#) [›LIVE.](#)

The first structured green bond was issued by BBVA Group, which used blockchain technology to negotiate the terms and conditions. MAPFRE invested € 35 million in a six-year term bond tied to the five-year euro swap rate evolution as part of a private placement.

Juan Garat, BBVA's Head of Global Sales, noted: "With this deal, BBVA reasserts its firm commitment to both sustainable financing and new technologies. Using DLT – distributed ledger technology – for this transaction allowed us to simplify the processes and streamline the negotiation time frames, which is in line with our pursuit of excellence in customer service".



3. BNP Paribas — France

OVERVIEW



BNP Paribas is a French international banking group. By total assets, it is the world's seventh largest bank.

Regarding digital assets, BNP Paribas Asset Management (BNPPAM) is experimenting with new business models based on tokenization and blockchain in order to improve distribution and establish new business models, says Emmanuelle Pecenicic, newly appointed head of digital strategy and head of digital for Asia Pacific. "We see tokenization in two ways".

The first step is to build up mutual funds to invest in previously illiquid assets like infrastructure debt and other types of private credit. BNPPAM can fractionalize and make these assets more readily marketable by portraying them as tokens exchanged using blockchain technology.

SELECTION OF DIGITAL ASSETS INITIATIVES

BNP Paribas Securities Services and Digital Asset, teamed up to create DLT trade and settlement apps (Sep 2020)

›APP ›TRADING & SETTLEMENT ›DIGITAL ASSETS ›ONGOING

BNP Paribas Securities Services and Digital Asset have launched a new partnership to develop a range of real-time trade and settlement apps based on DAML smart contracts.

The new apps will give market players in Asia Pacific real-time access to the upcoming DLT-based trading and settlement systems of the Australian Securities Exchange (ASX) and Hong Kong Exchange (HKEX). Clients in markets where DLT has not yet been implemented will be able to use the apps, giving them access to real-time workflows.

Luc Renard, Head of Financial Intermediaries Client Line & Digital Transformation APAC for BNP Paribas Securities Services, said: "As a leading provider of custody and third-party clearing solutions in Asia Pacific, BNP Paribas has an important role to play in ensuring market participants can fully capitalise on the smart contract technology that underpins the latest clearing, trading and settlement innovations."

BNP Paribas and Curv announced a success in completing a PoC to transfer security tokens (Jul 2020)

›POC SECURITY TOKENS ›PARTNERSHIP ›COMPLETED

BNP Paribas Securities Services has announced the successful completion of a proof of concept to securely transfer security tokens between market players, in collaboration with Curv, a cloud-based digital asset security infrastructure for financial institutions.

To ensure the security of the private keys, BNP Paribas Securities Services and Curv transferred a security token using Curv's multi-party computation technology.

This successful proof of concept demonstrated that tokenized securities may be transferred on the blockchain swiftly, safely, and transparently.

Bruno Campenon, Global Head of Financial Intermediaries and Corporates Client Line at BNP Paribas Securities Services, said: "This proof of concept with Curv represents a significant step forward in our strategy to deliver an integrated custody solution that combines both traditional and regulated digital assets."



4. BNY Mellon — USA

OVERVIEW



Bank of New York Mellon Corporation is an American investment banking services holding company.

BNY Mellon made a firm commitment to long-term structural resiliency and digitization. In February 2021 the launch of a new enterprise Digital Assets unit was announced.

The unit is set to help clients handle rising and evolving needs connected to the emergence of digital assets, such as cryptocurrencies, by accelerating the development of solutions and capabilities.

SELECTION OF DIGITAL ASSETS INITIATIVES

BNY Mellon to treat digital currencies like any other asset (Feb 2021)

›CUSTODY ›CRYPTOCURRENCY
›ASSET-MANAGEMENT CLIENTS ›ONGOING

The custody bank said it would store, transfer, and issue bitcoin and other cryptocurrencies on behalf of its asset-management clients. BNY Mellon's asset-servicing and digital businesses led by Roman Regelman said, "Digital assets are becoming part of the mainstream." The country's oldest bank has joined the bitcoin market, indicating that the once-illegal digital currency is becoming more widely accepted.

BNY Mellon Forms New Digital Assets Unit to Build Industry's First Multi-Asset Digital Platform (Feb 2021)

›PLATFORM ›DIGITAL ASSETS ›BNY MELLON'S CLIENTS
›IN DEVELOPMENT

BNY Mellon plans to establish a new enterprise Digital Assets unit that will help clients address rising and emerging needs related to the growth of digital assets, such as cryptocurrencies, by accelerating the creation of solutions and capabilities.

"The Digital Assets unit plans to deliver a secure infrastructure for transferring, safekeeping, and issuing digital assets," said Mike Demissie, head of Advanced Solutions at BNY Mellon.

"Consistent with our open-architecture approach, the unit will leverage BNY Mellon's digital expertise and leading technologies from fintech and other collaborators to speed up product development and help our clients tap into the best available solutions in the market." By leveraging advanced solutions such as blockchain, the technology behind digital assets, BNY Mellon will improve custody and other investment services.



5. Commerzbank – Germany

OVERVIEW

COMMERZBANK

Commerzbank Aktiengesellschaft is the second largest German bank operating as a universal bank.

Manfred Knof, CEO of Commerzbank AG, said: “We see the potential to actively shape one of these digital asset ecosystems of the future. Commerzbank has many years of experience with DLT technology and is a sought-after expert in the emerging asset universe. With pilot transactions in the areas of payments, securities and trade finance, as well as strategic partnerships with technology and internet companies, and cooperation with DLT networks, Commerzbank is a reliable partner in tomorrow’s digital banking.”

SELECTION OF DIGITAL ASSETS INITIATIVES

Deutsche Börse and Commerzbank jointly invest in new digital marketplaces (Apr 2021)

›MARKETPLACE ›BLOCKCHAIN ›INVESTMENT ›ONGOING

Deutsche Börse and Commerzbank are teaming up with fintech 360X to create new blockchain-based digital marketplaces and ecosystems for established real asset groups like art and real estate. The new trading platform makes it easier to invest in previously illiquid asset classes, explains Carlo Kölzer, founder and CEO of 360X. “Our mantra is ‘Making Things Investable – Bridging the Gap between Asset Classes and Capital Markets.’ We create transparent and liquid trading venues for assets that have not yet existed in digital markets. We are therefore starting with trading venues for art and real estate. 360X is set up as a highly scalable model so that additional asset classes will follow.” Carlo Kölzer and his team founded 360T, the world’s leading electronic foreign exchange trading platform, in Frankfurt in 2000.

Commerzbank and Deutsche Börse carry out legally binding securities processing using distributed ledger technology (March 2019)

›TRANSACTION ›TOKENIZATION ›PROOF OF CONCEPT ›COMPLETED

Commerzbank and Deutsche Börse have successfully carried out a legally binding repo transaction based on distributed ledger technology for the first time.

The prototype transaction utilizing delivery-versus-payment was carried out as part of a joint feasibility study (proof-of-concept), which examines the possibilities of blockchain technology in the area of securities processing.

“We are pleased to have accompanied the transaction as a platform operator and to have reached such an important milestone for the adaptation of this future technology for the capital market together with Deutsche Börse,” says Michael F. Spitz CEO of primary incubators, the R&D unit of Commerzbank Group.

Commerzbank, Continental, and Siemens are testing blockchain technology (Feb 2019)

›TRANSACTION ›BLOCKCHAIN ›PROOF OF CONCEPT ›COMPLETED

For the first time, they have processed money market security between companies based on blockchain technology as part of a test transaction. It comprised a volume of € 100,000 over three days.

“While markets and technologies are constantly changing, the partnership with the customer remains an important asset. We are happy that we can support our customers on their way to digital transformation through transactions like these. Blockchain technology has great potential to make capital market transactions easier, faster, and more efficient for our customers,” reports Roman Schmidt, Head of Capital Markets at Commerzbank.



6. Credit Suisse – Switzerland

OVERVIEW



Credit Suisse is a Swiss global financial services company headquartered in Zurich.

Credit Suisse is considered one of the most influential financial institutions, with total assets of \$ 800 billion, and maintains offices in every financial center.

Credit Suisse provides private banking, asset management, and shared services. Over the past three years, the bank has participated in several pilot transactions and supported innovative DLT initiatives as an investor but is yet to announce its entry into digital assets on an operational level.

SELECTION OF DIGITAL ASSETS INITIATIVES

Credit Suisse and Instinet use blockchain to settle US equities trades on the same day with Paxos (Apr. 2021)

›EQUITIES ›BLOCKCHAIN ›COMPLETED

The broker-dealer businesses of Credit Suisse and Nomura have settled US-listed equities trades on the same-day settlement cycle on blockchain-based securities settlement platform Paxos.

“Innovation in blockchain technology is incremental. We’re excited to make progress in forging a path to faster settlement times at lower costs in public equities,” said Emmanuel Aidoo, head of digital assets markets at Credit Suisse.

Partnership to develop FundsDLT, a groundbreaking blockchain-based platform for the investment fund industry (Mar 2020)

›PARTNERSHIP ›BLOCKCHAIN ›INVESTMENT FUNDS ›ONGOING

FundsDLT raised a Series A investment from Clearstream, Credit Suisse Asset Management, the Luxembourg Stock Exchange, and Natixis Investment Managers to create a novel decentralized technology platform to facilitate funds distribution on distributed ledger technology (DLT). FundsDLT, based on Ethereum’s permissioned blockchain technology, guaranteeing privacy and high efficiency, allows the fund distribution value chain’s reengineering from front to back, spanning the entire fund lifecycle.

The platform enables asset managers, dealers, asset servicers, and the whole supply chain to cut costs by eliminating duplicate operations while also offering end investors the ability to gain transparency and lay the groundwork for digital fund distribution.

Michel Degen, Head of Credit Suisse Asset Management Switzerland and EMEA, said: “We continuously seek to ease the access to our products for clients. As part of our digitalization journey, we consider FundsDLT as a further powerful lever to increase efficiency but also to create new distribution channels, enabling considerable benefits for both clients and asset managers.”

New Blockchain Settlement Coin Consortia (Jun 2019)

(SEE “FNALITY” SECTION P. 51)



7. DBS — Singapore

OVERVIEW



DBS is a Singapore-based global banking and financial services company.

The bank leverages digital technologies to change the financial industry's future, it was named "World's Best Digital Bank" by Euromoney.

DBS Bank has decades of experience in capital markets and secure custodial services. During a recent earnings call, the bank stated that it had \$ 80 million in assets under custody and \$ 23–\$ 30 million in trading volume among its 120 clients in a newly started crypto trust.

While these figures may appear modest, the bank claims that: "it's very selective on whom it brings on, and the product offering is targeted towards professional investors and wealth managers."

SELECTION OF DIGITAL ASSETS INITIATIVES

Singapore Bank DBS Issues \$ 11.3 million in Blockchain Bonds (May 2021)

›BOND ›BLOCKCHAIN ›LIVE

DBS announced that it had priced the blockchain bonds that will power its upcoming security token offering at \$ 11.3 million. DBS's head of capital markets, Eng-Kwok Seat Moey, explained that the bank's. Digital bond is a bet on blockchain's widespread adoption. "We expect asset tokenization to increasingly become more mainstream as more of our clients start to embrace security token issuance as part of their capital fundraising exercise," she said in a statement.

In a first for Asia, DBS has launched a cryptocurrency trust (May 2021)

›CRYPTOCURRENCY ›DBS'S CLIENTS ›LIVE

DBS Bank announced the establishment of a crypto trust offering, allowing clients of its digital asset exchange to store their cryptocurrency with the bank. "Our trust structure allows clients to conveniently hold these assets, with a peace of mind that they will be safely managed and passed on to their intended beneficiaries," said Joseph Poon, group head of DBS Private Bank, in a statement. "In recent years, more clients have expressed interest or are already invested in digital assets, and we expect this trend to accelerate as cryptocurrencies turn more mainstream."

Its trust and exchange business is limited to four crypto assets — bitcoin, ether, bitcoin cash, and XRP — and four fiat trading pairs: Singapore dollar, Hong Kong dollar, US dollar, and Japanese yen.

Later this year, the bank plans to launch a security token offering and extend its trading hours to coincide with the US business day.

Launch full-service digital exchange (Dec 2020)

›TOKENIZATION ›TRADING ›CUSTODY
›INSTITUTIONAL AND ACCREDITED INVESTORS ›ONGOING

Creating a digital exchange for Institutional and Accredited Investors to participate in a fully integrated digital asset tokenization, trading, and custody ecosystem.

Piyush Gupta, Group CEO, DBS, said, "The exponential pace of asset digitalization provides immense opportunities to reshape capital markets. For Singapore to become even more competitive as a global financial hub, we have to prepare ourselves to welcome the mainstream adoption of digital assets and currency trading. DBS is committed to accelerating the development of a fully integrated ecosystem to facilitate this. We believe that this is the first of its kind integrated offering, which is differentiated in many ways."



8. DekaBank – Germany

OVERVIEW



DekaBank is the securities house of Germany's "Sparkassen" (savings banks). Together with its subsidiaries, it forms the Deka Group.

Andreas Albrecht, head of DekaBank's innovation laboratory Open Digital Factory, answering the question about what role the bank is planning to play in the digital assets sector said: "DekaBank is one of Germany's most significant securities service providers and real estate asset managers. It provides access to a wide variety of investment products and services to both private and institutional investors. We are the central asset manager in the Savings Banks Finance Group and will do everything necessary to fill this position in the future. We want to shape the future blockchain-based infrastructure in our group and provide comprehensive services for savings banks and their customers."

SELECTION OF DIGITAL ASSETS INITIATIVES

DekaBank-led Digital Collateral Protocol completes first securities lending transactions on blockchain (Q4 2020)

›TRANSACTION ›DIGITAL COLLATERAL PROTOCOL
›BLOCKCHAIN ›COMPLETED

In Q4 2020, DekaBank, Deka Investment, Hauck & Aufhäuser, and Comyno, the partnering software and consulting firm, completed the first securities lending transactions using a blockchain-based securities settlement system. DekaBank, client Funds, and Hauck & Aufhäuser have settled approximately € 300 million in transactions using the Digital Collateral Protocol (DCP).

While traditional securities were used to accomplish the first transactions, digital securities and digital financial instruments are the way of the future. In the next step, the organization plans to add digital securities to the DCP.

Successfully processing borrower's note loan transactions via blockchain (Sept 2020)

›TRANSACTION ›NOTE LOAN ›BLOCKCHAIN ›COMPLETED

For the first time, a cross-institutional team including DekaBank, DZ BANK, dwpbank, and Helaba completed end-to-end processing of a promissory note loan processing process using only digital means.

This issuance, realized using the blockchain platform Finledger, was unique in that the platform entirely digitized the underlying handling processes. Individual process steps were cut in half while guaranteeing lower process risks and costs thanks to the platform's blockchain technology.

Martin K. Müller, a board member of DekaBank, described this successful cooperation saying: "All project banks have worked intensively on the further development of finledger. Now we are at a point where we can map all processes relating to the bank borrower's note loan fully digitally in the blockchain, and productive use is possible."





Andreas Albrecht, head of the Open Digital Factory, DekaBank's innovation laboratory, has agreed to share his thoughts on the digital asset market. Since 2014 he has been concentrating on the blockchain and its possible applications in the bank. He was jointly responsible for the development and commissioning of Finledger.

In your view, what role will digital assets play in the capital markets of tomorrow?

I think almost all assets will be digital in the future. I don't know when, maybe in 10, 15, 20 years, I have no crystal ball, but I'm sure it will happen. The advantages of a simplified infrastructure and thus lower costs and faster processing are apparent. However, this will require significant changes to the market infrastructure, which will delay it.

Which role/position is your institution aiming to achieve in the digital assets market?

We are the central asset manager in the Savings Banks Finance Group and will do everything necessary to fill this position in the future. We want to shape the future blockchain-based infrastructure in our group and provide comprehensive services for savings banks and their customers.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

In the first step, more and more well-known financial products will be made available as digital assets. This will require extensive changes to processes and regulations. New products and services will emerge; the various DeFi projects already give us a foretaste for this.



9. Deutsche Bank – Germany

OVERVIEW



The largest bank in Germany and one of the largest financial institutions in Europe and the world. “Cryptocurrencies are all the rage at the moment and are as much about blockchain as anything else, but there could be an increasing desire for alternative medians of exchange in the years to come if we are correct,” explained Jim Reid, an economist at Deutsche Bank.

Jeslyn Tan, Global Head of Product Management, Securities Services at Deutsche Bank, said when asked about STACS and Deutsche Bank collaboration: “As the sponsor of the project, we are proud to partner with STACS on the MAS FSTI funding scheme. Investors will increasingly need to custodize their digital assets, ensure settlement finality, and have confidence in their safekeeping and security with the support of a bank’s institutional infrastructure. As a result, we see a clear place for an integrated platform that can service cross-border issuer-investor needs in Singapore and around the world.”

SELECTION OF DIGITAL ASSETS INITIATIVES

Deutsche Bank and STACS Complete PoC for Digital Assets and ESG Bonds (May 2021)

›PROOF-OF-CONCEPT ›DIGITALS ASSETS & ESG BONDS ›COMPLETED

Deutsche Bank’s Securities Services in Singapore and Hashstacs (STACS) announced the completion of their proof-of-concept (POC) referred to as Project Benja on the use of distributed ledger technology (DLT) for digital assets and sustainability-linked digital bonds.

Kamran Khan, APAC Head of ESG at Deutsche Bank, said: “Data transparency, reliability, and security are cornerstones of the emerging ESG capital market. This cutting-edge ‘bond in a box’ POC successfully explored the synergies between Fintech and ESG, using distributed ledger and smart contracts capabilities with cross-platform interoperability for ESG-compliant digital securities.”

Deutsche Bank Plans to Offer Crypto Custody, Prime Brokerage (Feb 2021)

›CUSTODY ›CRYPTOCURRENCIES ›PLATFORM ›INSTITUTIONAL INVESTORS ›PROOF OF CONCEPT

The Deutsche Bank Digital Asset Custody prototype intends to create a fully integrated custody infrastructure for institutional clients and their digital assets, with seamless access to the wider cryptocurrency ecosystem.

- Create a secure link between a customer’s digital assets and their traditional banking services.
- Manage a wide range of digital assets and fiat holdings in a straightforward platform, and open the door to value-added services provided by the custodian or third-party suppliers.
- Provide an institutional-grade hot/cold storage solution with insurance-grade protection to ensure the safety and accessibility of assets for clients.

The bank has finished its proof of concept and plans to launch a minimum viable product in 2021 while also gauging worldwide client demand for a pilot program.



10. European Investment Bank (EIB) – Luxembourg

OVERVIEW



The European Investment Bank (EIB) is the European Union's investment bank, with member states owning it. It's one of the world's most powerful supranational lenders.

Following their first digital bond issuance on a public blockchain, EIB announced that they believe that in the future, digitalization of capital markets will benefit market participants by reducing intermediaries and fixed costs, improving market transparency through enhanced capacity to view trading flows and asset owners' identities, and speeding up settlement.

SELECTION OF DIGITAL ASSETS INITIATIVES

EIB issued its first digital bond on a public blockchain (April 2021)

[›BOND](#) [›BLOCKCHAIN](#) [›LIVE](#)

In conjunction with Goldman Sachs, Santander, and Societe Generale, the EIB issued a € 100 million digital bond on a blockchain platform, utilizing distributed ledger technology to register and settle digital bonds.

This transaction entails the EIB issuing a series of bond tokens on a blockchain, which investors can purchase and pay for using regular fiat currency. The Joint Lead Managers will then settle the underwriting against the issuer using the Central Bank Digital Currency, representing central money (CBDC). At maturity, the principal is expected to be repaid in commercial fiat. Ethereum, a public blockchain protocol, was used for the transaction.

Bertrand de Mazières, Director General Finance at the EIB, said: "In another testimony of EIB's leading position in capital markets' innovation, this transaction marks the EIB's first step as a pioneer in the use of blockchain technology for the issuance of financial securities. By helping to create a framework for a new market ecosystem, the EIB believes this will bring value added for both issuers and investors, while contributing to an innovative, efficient and secure market infrastructure."



11. HSBC – UK

OVERVIEW



HSBC is a multinational investment bank and financial services holding corporation based in the UK.

It is the largest bank in Europe. Through various initiatives, HSBC is developing solid expertise in blockchain and tokenization. Through collaborative projects with the ecosystem, HSBC continues to gain the knowledge, skill sets, and capabilities required to offer tokenization as a service and digital asset servicing.

This gain in expertise fits into the digital asset product proposition that the bank is working to establish and their broader goals in this space. HSBC is also engaging with regulators to seek greater clarity on risk and review their internal policies to match their objectives in the digital assets market

SELECTION OF DIGITAL ASSETS INITIATIVES

SGX, HSBC, and Temasek collaborated on a digital bond pilot for Olam International (Sep 2020)

›PLATFORM ›DIGITAL BONDS ›CORPORATE ›COMPLETED

The Singapore Exchange (SGX), in collaboration with HSBC Singapore and Temasek, replicated a \$ 400 million 5.5-year public bond issue and a follow-on \$ 100 million taps of the same issue by Olam International on SGX's digital asset issuance, depository, and servicing platform.

HSBC swaps paper records for blockchain to track \$ 20 billion worth of assets (Nov 2019)

›BLOCKCHAIN ›CUSTODY ›GLOBAL CUSTODY CLIENTS ›COMPLETED

HSBC plans to move \$ 20 billion in assets to a new blockchain-based custody platform. The Digital Vault service platform digitizes the transaction history of private placement assets such as equity, debt, and real estate. Instead of requesting a scan of paper-based documents, global custody clients can now access information of their private assets directly and in real-time. As a result, they can conveniently keep track of when they'll get the coupon on a private debt transaction or facilitate a transaction record audit.

Launches Tokenization-Based Receivables System for India (Jun 2019)

›TOKENIZATION ›CORPORATE CLIENTS ›COMPLETED

In India, HSBC integrated tokenization technology into its receivables infrastructure for corporate clients. The instrument automates the accounts receivable (AR) process for HSBC's corporate customers and their buyers' network, allowing for a stable communication layer between network members and minimizing manual work such as invoice payment documentation. The bank reported that blockchain tech's implementation in its forex trade settlement reduced operations costs by 25 %.

HSBC and ING execute groundbreaking live trade finance transaction on R3's Corda Blockchain platform (May 2018)

›TRANSACTION ›BLOCKCHAIN ›COMPLETED

Using R3's Corda scalable blockchain network, HSBC and ING Bank completed a live trade finance transaction for international food and agriculture conglomerate Cargill. The transaction proved that blockchain as a trade digitization solution is both commercially and operationally viable. Paper-based paperwork exchanges for letters of credit usually take 5-10 days. This transaction took just 24 hours to complete.





The Securities Services Team of HSBC (a working group across the UK, Germany, and Singapore/Hong Kong) has agreed to share their thoughts on the digital asset market.

In your view, what role will digital assets play in the capital markets of tomorrow?

We see tokenized or digital assets as a critical strategic opportunity. Besides optimizing existing trade value chains, tokenization unlocks new asset classes, improves the liquidity of currently illiquid private assets, and enables access to a broader investor base. We believe DLT based market infrastructure modernization led by infrastructure providers such as exchanges and depositories benefits all market participants in the ecosystem by simplifying existing multi-party workflows.

Which role/position is your institution aiming to achieve in the digital assets market?

Through collaborative projects with the ecosystem, HSBC continues to gain the knowledge, skill sets, and capabilities required to offer tokenization as a service and digital asset servicing to clients. This fits into the digital asset product proposition we are working to establish and our broader goals. We are also engaging with regulators to seek greater clarity on risk and review our internal policies in line with this.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

New tokenized product innovation opportunities – Possibility of creating and distributing new types of structured products efficiently, e.g., net-zero products where tokenized commodities are layered with carbon offset/credit tokens.



12. JP Morgan – USA

OVERVIEW

J.P.Morgan

JPMorgan Chase is a multinational investment bank and financial services holding company based in the United States.

Innovation and digitalization is a crucial objective for the bank, it invests \$ 12 billion annually in technology, lately focussing mainly on blockchain technology.

Umar Farooq, Head of Digital and Wholesale Payments and Head of Blockchain at J.P. Morgan: “Blockchain is increasingly important in the payments area and also in the movement of assets and securities. We do have the biggest blockchain engineering and product team in banking, and we plan to continue to lead in this area.”

SELECTION OF DIGITAL ASSETS INITIATIVES

| JPMorgan to let clients invest in bitcoin (Apr 2021)

›BITCOIN ›INVESTMENT ›JPM CLIENTS ›EXPECTED

JPMorgan Chase plans to sell a bitcoin (BTC) actively managed fund to a select group of clients. JPMorgan’s bitcoin fund could launch as early as this summer. Multiple sources informed CoinDesk that JPMorgan’s bitcoin fund would be actively operated. That marks a significant departure from the passive offerings of crypto industry heavyweights such as Pantera Capital and Galaxy Digital, which enable wealthy clients to buy and keep bitcoin through funds without ever touching it.

| JP Morgan coin go live (Oct 2020)

›COIN ›CRYPTOCURRENCY ›JP MORGAN’S CLIENTS ›ONGOING

JPM Coin is a permissioned, shared ledger system that acts as both a payment rail and a deposit account ledger, allowing J.P. Morgan clients to move US Dollars kept on deposit with the bank. JPM Coin allows for real-time value transfer, which helps overcome some of the challenges conventional cross-border payments face.

J.P. Morgan and its clients use the JPM coin as a settlement layer: After a client initiates the process by sending funds to a predetermined account, they receive the respective sum in the JPM coin, which they can use to transact on the Quorum blockchain. Recipients of JPM coins can then redeem them for US dollars via the bank to complete the process. Since these transactions take place on a blockchain network, they have considerable cost savings and much quicker settlement times than conventional transactions.

| The Blockchain Center of Excellence

›RESEARCH CENTER ›BLOCKCHAIN ›INTERNAL ›ONGOING

The Blockchain Center of Excellence leads J.P. Morgan’s efforts in Distributed Ledger Technology implementations, aggressively exploring blockchain use cases to implement in-house technology and pilot solutions across its lines business. The program aims to actualize enterprise-grade blockchain tools, such as JPM Coin, Interbank Information Network® (IIN), and Quorum®, to push industry standards and deliver value to clients by bringing together leading technologists.



13. Landesbank Baden-Württemberg (LBBW) – Germany

OVERVIEW



LBBW is a medium-sized universal bank that serves as the central bank for Baden-Württemberg, Saxony, and Rhineland-savings Palatinate's banks.

Already in 2017, Joachim Erdle, head of corporate finance at LBBW said: "Blockchain technology will change the role of banks as intermediaries in the economic process. [...] We don't want to merely observe this development; we want to proactively shape this field."

SELECTION OF DIGITAL ASSETS INITIATIVES

First fully digital blockchain promissory note processed (Apr 2020)

›BLOCKCHAIN ›LOAN ›CORPORATE ›COMPLETED

For the first time, Daimler completed a borrower's note loan worth € 25 million entirely digitally. Electronic marketing, processing, and legally protected signatures were all done electronically. They used the Debtvision platform to market the borrower's note loan. They connected LBBW's DLT (Distributed Ledger Technology) implementation to Debtvision. This, in turn, was dependent on R3's Corda blockchain protocol.

"Blockchain technology offers the potential to make existing financial processes more efficient and transparent. Processing time and transaction costs can be significantly reduced. At the same time, the technology allows to increase the security of transactions and to minimize risks. Especially in the area of payment transactions, but also in securities transactions, bond issues and trade finance, blockchain technology can bring major efficiency gains in a scalable ecosystem in the medium term," said Kurt Schäfer, Head of Daimler Treasury.

Sale and redemption of a money market paper valued at € 1 million with MEAG and Weinberg Capital DAC (Feb 2019)

›TRANSACTION ›DIGITAL SECURITY ›COMPLETED

Together with MEAG as an investor, the bank as a platform provider allowed the issuing company "Weinberg Capital DAC" to conduct a legally successful digital securities transaction using blockchain for the first time without a paper-based, parallel process.

The selling and redemption of a € 1 million money market paper with a five-day maturity were completed entirely on the Corda R3 distributed ledger technology (DLT). Joachim Erdle, LBBW's Head of Corporate Finance, says, "Now we have proved the power of distributed ledger technology with no strings attached." LBBW was advised and supported in the technical implementation by its subsidiary targets, a Corda-R3 partner.

Daimler and LBBW successfully utilize blockchain technology for launch of corporate promissory note (Jun 2017)

›LOAN ›BLOCKCHAIN ›COMPLETED

Daimler and LBBW launched a 1 year corporate promissory note with a volume of € 100 million as a pilot project for capital market transactions and financial processes.



14. Raiffeisen Bank International (RBI) – Austria

OVERVIEW



Raiffeisen Bank International is an Austrian banking group and the Raiffeisen Banking Group Austria's principal institution.

According to RBI's blockchain hub lead by Stefan Andjelic, a CBDC "wouldn't be enough" for the Austrian bank's tokenization plans, which is why it partnered with fintech Billon last October 2020 to establish its own tokenization platform.

SELECTION OF DIGITAL ASSETS INITIATIVES

Cooperation between Raiffeisen Bank International and Bitpanda on the RBI coin (Oct 2020)

›COOPERATION ›COIN ›DEVELOPMENT STAGE

Pantos, Bitpanda blockchain interoperability project, will be implemented as part of Bitpanda's tech research project on RBI Coin, an e-money pilot solution for inter-bank and intercompany payments.

- Bitpanda's Pantos (PAN) technology has reached a critical milestone by partnering with Raiffeisen Bank International after 2.5 years of research and development.
- As the first Proof of Concept, Pantos technology will be implemented on RBI Coin.
- Allowing financial apps based on different underlying blockchain protocols to interact with each other is a critical use case for blockchain interoperability and the banking industry.

Billon and Raiffeisen Bank International (RBI) to Pilot Digitized National Currency (May 2020)

›TOKENIZATION ›CORPORATE & INSTITUTIONAL CLIENTS
›ONGOING

Billon and Raiffeisen Bank International (RBI) have chosen to turn a successful proof-of-concept of a national currency Tokenization Platform into a pilot project with a select group of RBI corporate and institutional clients. Billon's distributed ledger technology, which was successfully tested during RBI's Elevator Lab acceleration program earlier this year, will be used in this pilot to implement a new form of national currency tokenization. The goal is to develop "an architecture that can become the backbone for many enterprise applications."

Stefan Andjelic, Blockchain Hub Lead at Raiffeisen Bank International, comments: "Billon is a great example of a fintech company that understands how to adapt blockchain to serve the needs of banks and their clients. Specifically during the COVID-19 situation, banks need to partner with fintechs to innovate faster and help clients with payments processing and liquidity needs."





Gernot Prettenthaler, Senior Partnerships & Ecosystem Manager of RBI, has agreed to share his thoughts on the digital asset market. Before this position, Mr. Prettenthaler worked at RBI as a Senior Process & Project Manager.

In your view, what role will digital assets play in the capital markets of tomorrow?

I believe that digital assets will play a significant role in the capital markets. I would even say that the rise of digital assets will have a truly disruptive impact on traditional business behavior. If experts' predictions turn true, digital assets will have significant advantages in process efficiency and processing speed over traditional product offerings. Furthermore, digital assets could show utterly new product designs, e.g., fractionalized shares, leading to entirely new business models.

Despite this optimism, there is still some way to get things right. Especially from an Austrian perspective, there are concerns about the regulations in place. The upcoming MiCA regulation will hopefully support the introduction of new products in digital assets. It also must be seen how fast market ecosystems can be established in which new offerings can flourish.

Which role/position is your institution aiming to achieve in the digital assets market?

We in RBI group offer a wide range of security products, including specialized companies for funds and certificate businesses. Of course, it is our natural aim to preserve this business and make it a future fit. For this reason, RBI has already founded in 2017 a group-wide competence center on blockchain technology called RBI Blockchain Center.

From the very beginning, tokenization of assets and security tokens are on our agenda. We are preparing strategy papers and exchanges with experts throughout the industry. Still, we are also actively running proof of concepts on tokenization of funds and stimulating innovation within the RBI group of network banks active in 14 countries with different legal frameworks.

Our ultimate goal is to find the correct answers in technologies and compliant processes to provide existing and new clients in our markets with state-of-the-art solutions in digital assets in the near future.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

From our market observations, I would say that institutional and corporate clients offering digital bonds are the hottest topic currently. We can see the first projects in Switzerland and Germany leaving the PoC phase and entering the stage of real product offering. From a technology perspective, we also see an interesting development as Ethereum is very important for these product offerings and the ongoing question of the volatile gas price due to Defi hype.

In product offerings for the private customer, we would assume that the announced offering of fractionalized shares by an Austrian crypto exchange provider will stimulate and test the market and ultimately boost the development of digital assets.



15. Santander — Spain

OVERVIEW



Banco Santander is a major retail and commercial bank based in Spain that was formed in 1857. It is one of the world's largest banks by market value, with a significant presence in ten core markets in Europe and the Americas.

The head of Banco Santander's blockchain lab in Madrid, John Whelan, hyped the potential for increased decentralized ledger technology adoption in mainstream finance, saying: "I could imagine a future where there is a global settlement network for an asset class of securities that operates in a fully controlled, private, permissioned layer-two on top of a public blockchain network."

SELECTION OF DIGITAL ASSETS INITIATIVES

Santander was one of the three participants in EIB's first digital bond on a public blockchain (April 2021)

›BOND ›BLOCKCHAIN ›LIVE

EIB launched a digital bond (€ 100 million) issuance on a blockchain platform, deploying this distributed ledger technology to register and settle digital bonds in collaboration with Goldman Sachs, Santander, and Societe Generale.

José M. Linares, SEVP and Global Head of Santander Corporate & Investment Banking (Santander CIB): "We are pushing to be at the forefront of capital markets innovation and look forward to working with the EIB on its next innovative issuances."

Launch of the first end to end blockchain bond (Sept 2019)

›BLOCKCHAIN ›TOKEN ›TRANSACTION ›COMPLETED

Banco Santander is the \$ 20 million bond issuer, while one of the Group's units purchased the bond at market price. The bond carries a 1.98 % quarterly coupon. Santander Securities Services is the tokenization agent and cryptographic key custodian. The public Ethereum blockchain, one of the more advanced open-source blockchain technologies, was used by Santander. This helps Santander complete the milestone of securely tokenizing the bond and recording it on the blockchain in a permissioned manner. The cash used to complete the investment (on-chain delivery-versus-payment), and the quarterly coupons have been tokenized

(digitally represented on the blockchain). The one-year maturity bond has reduced the number of intermediaries required in the process due to this automation, making the transaction faster, more efficient, and more straightforward.

New Blockchain Settlement Coin Consortia (Jun 2019)

(SEE "FNALITY" SECTION P. 51)



16. Société Générale – France

OVERVIEW



Société Générale is a French multinational investment bank and financial services company headquartered in Paris.

For several years, the Group has been participating in several initiatives based on blockchain and distributed ledger technologies, which can automate and shorten payment procedures while also simplifying market infrastructures and improving security.

SELECTION OF DIGITAL ASSETS INITIATIVES

Societe Generale was nominated as one of three participants in EIB's first digital bond on a public blockchain (April 2021)

›BOND ›BLOCKCHAIN ›LIVE

In conjunction with Goldman Sachs, Santander, and Societe Generale, the EIB issued a € 100 million digital bond on a blockchain platform, utilizing distributed ledger technology to register and settle digital bonds.

Frédéric Oudéa, Chief Executive Officer at Societe Generale: “This pioneer bond issuance on a public blockchain settled with a central bank digital currency involved Societe Generale – FORGE, three international banks and two major institutions: the EIB and Banque de France. It demonstrates the appeal of Distributed Ledger Technology-based projects in the developing EU digital capital markets. This is a new milestone for Societe Generale – FORGE which completes Societe Generale recognized expertise in Capital Markets with a full Digital Asset offer.”

Societe Generale issued a € 5 million structured product as a security token on the Tezos public blockchain (April 2021)

›STRUCTURED PRODUCT ›TOKEN ›BLOCKCHAIN ›LIVE

The first structured product was released as a Security Token directly registered on the Tezos public blockchain by Societe Generale. Societe Generale Assurances fully subscribed to the securities.

This operation follows in the footsteps of May 2020 and April 2019 transactions.

Societe Generale follow-up issuance of € 40 million of covered bonds (May 2020)

›BOND ›TOKEN ›LIVE

Covered bonds worth € 40 million were issued as security tokens directly registered on a public blockchain by Societe Generale SFH. Societe Generale fully subscribed to these OFH Tokens, and the issuer was paid in a digital form of euros issued by Banque de France via a blockchain platform. This transaction marks the beginning of a new phase in developing the Societe Generale Forge platform, which aims to encourage recent blockchain-based market activity.

Societe Generale issued € 100 million of covered bonds as a security token on the Ethereum blockchain (April 2019)

›COVERED BOND ›SECURITY TOKEN ›BLOCKCHAIN ›LIVE

Societe Generale SFH, a subsidiary of the Societe Generale Group, issued € 100 million in covered bonds (also known as “obligations de financement de l’habitat” or “OFH”) as a security token that was registered directly on the Ethereum blockchain.

This is the first pilot project that Societe Generale and Societe Generale FORGE have worked on together.



17. Standard Chartered — UK

OVERVIEW



Standard Chartered is a London-based international banking and financial services corporation. The bank has been very active in the digital asset market.

Alex Manson of SC Ventures said following their partnership with BC Group: “We have a strong conviction that digital assets are here to stay and will be adopted by the institutional market as a highly relevant asset class. We are constructing the building blocks for a safe and reliable investment infrastructure”.

BC Group being, is an Asian digital assets company and parent of the Hong Kong Securities and Futures Commission (SFC)-licensed digital asset platform OSL.

SELECTION OF DIGITAL ASSETS INITIATIVES

Standard Chartered and the BC Group have teamed up to launch an institutional digital asset trading venture in Europe (Jun 2021)

›DIGITAL-ASSETS ›TRADING ›INSTITUTIONAL & CORPORATE CLIENTS ›IN DEVELOPMENT

SC Ventures, Standard Chartered’s innovation and ventures unit, and BC Technology Group (BC Group), have announced a collaboration to build a digital asset brokerage and exchange platform for institutional and corporate clients in the United Kingdom and Europe. Subject to regulatory permissions, the JV plans to launch in the fourth quarter of 2021.

Zodia, a cryptocurrency custodian for institutional investors (Dec 2020)

›CUSTODY ›INSTITUTIONAL INVESTORS ›UNDER DEVELOPMENT

Zodia, a cryptocurrency custodian for institutional investors, was launched by Standard Chartered in partnership with Northern Trust. Zodia allows financial institutions to invest in blockchain assets by facilitating transaction and settlement activities. In 2021, Zodia plans to start operations in London. Zodia, who is pending regulatory approval, will provide custody services for the most traded cryptocurrency assets – Bitcoin, Ethereum at launch, followed by XRP, Litecoin, and Bitcoin Cash –. These assets constitute most client demand and operation, accounting for approximately 80 % of the total assets [equivalent to \$ 395 billion] traded on the top cryptocurrency exchanges.

Blockchain-enabled bond issuance in the Philippines (Dec 2020)

›TOKENIZATION ›RETAIL-CLIENTS ›PROOF OF CONCEPT ›COMPLETED

In December 2020, Union Bank of the Philippines (UnionBank), in collaboration with Standard Chartered Bank (SCB), completed a proof of concept for the issuance of a retail bond (\$ 187 million) on a digital platform using Stellar as the underlying protocol. Clients of UnionBank will profit from an entirely digital end-to-end process, starting with account verification, client suitability evaluation, and the completion of the application to purchase form, all the way through to allocation to the investor. Investing in bonds becomes completely paperless and more efficient, as the processing time for customers is reduced from many days to only a few minutes. Standard Chartered mentioned in its press release that: “The success of this proof of concept will open up a host of possibilities around solving for liquidity and transparency in the retail bond markets.”



18. State Street — USA

OVERVIEW



State Street Corporation is a global financial service and bank holding firm based in Boston. It is the second-oldest bank in the United States.

State Street has been engaged in the digital asset space for a number of years; Nadine Chakar, head of State Street Global Markets, says: “We see the implementation of digital assets as one of the most transformational forces affecting our industry over the next 5 years, and we are already very actively engaged with clients and partners in delivering solutions.”

They announced this June 2021 the creation of a new division; State Street Digital. Nadine Chakar, who was appointed as leader of this new division said: “As digital currencies and tokenizations not only gain momentum, but transform financial infrastructure and operating models, we can help our clients bridge the gap between the industry of today and the one of tomorrow.”

SELECTION OF DIGITAL ASSETS INITIATIVES

VanEck’s first bitcoin trust ETF will benefit from State Street services (Mar. 2021)

›BITCOIN ›EXCHANGE-TRADED FUND ›PLANNED

The VanEck Bitcoin Trust, a new bitcoin exchange-traded fund (ETF) currently awaiting approval by the US Securities and Exchange Commission (SEC), has appointed State Street as its fund administrator and transfer agent.

Nadine Chakar, head of State Street Global Markets, says: “We see the implementation of digital assets as one of the most transformational forces affecting our industry over the next five years, and we are already very actively engaged with clients and partners. In delivering solutions.”

Chakar states: “The work we have underway with VanEck is another example of State Street continuing to deliver on our broader strategy of building out the crypto and digital assets ecosystem, which is focused on creating digital cash; custody and post-trade services; trading; and token issuance for these new asset-types.”

Launches digital asset pilot with Gemini Trust (Dec. 2019)

›DIGITAL ASSET ›PILOT ›CUSTODY, REPORTING

Gemini Trust Company, LLC (Gemini), a cryptocurrency exchange and custodian, and State Street Corporation have announced a new digital asset pilot. The pilot combines Gemini Custody™ with State Street’s back-office reporting, building ongoing research and development in the digital asset space. Within Gemini Custody, this pilot runs reporting scenarios on a user’s holdings. The pilot initially reports holdings of two cryptocurrencies chosen for their liquidity. It may, however, be modified to report on other digital assets, such as security tokens. It enables users to combine reporting for digital assets managed by Gemini, an independent digital asset custodian, and their traditional assets managed by State Street.

New Blockchain Settlement Coin Consortia (Jun 2019)

(SEE “FNALITY” SECTION P. 51)



19. UBS – Switzerland

OVERVIEW



UBS Group AG is a financial services and investment bank based in Switzerland.

UBS has already begun positioning itself in the digital asset market, estimating that by 2027, blockchain will produce annual economic value worth USD 300– 400 billion across six major industries, with financials leading the way.

Ralph Hamers, UBS Group AG CEO, said: “We have not even scratched the surface of what we could do with digital assets and tokenization. The technology has virtually unlimited potential.”

SELECTION OF DIGITAL ASSETS INITIATIVES

UBS is exploring crypto offering in wealth management (May 2021)

›DIGITAL ASSETS ›OFFERING ›PLANNED

UBS Group AG is in the early stages of planning to provide digital currency investments to wealthy customers, joining a growing number of US corporations looking to expand access in response to client demand.

UBS first transactions on Deutsche Boerse and HQLAX’s DLT-enabled security lending platform (Dec 2019)

›TRANSACTION ›BLOCKCHAIN ›COMPLETED

Commerzbank, Credit Suisse, and UBS completed the first transactions on Deutsche Boerse and HQLAX’s DLT-enabled security lending platform. The platform was created in collaboration with fintech firm HQLAX, established by R3, and provided liquidity and collateral management services using Corda DLT technology.

Using Clearstream Banking as a custodian, the platform was able to swap ownership of a basket of German government bonds and a basket of corporate bonds between UBS and Commerzbank.

It also carried out a cross-custodian swap between UBS and Credit Suisse. They exchanged the ownership of a basket of corporate bonds at Clearstream Banking for the ownership of a basket of German government bonds at Euroclear Bank.

UBS Goes Live on We.Trade Blockchain for Trade Finance (Oct 2019)

›PLATFORM ›BLOCKCHAIN ›SMES ›ONGOING

UBS announced that it went live on we.trade at the beginning of October, allowing small and mid-sized (SMEs) businesses to access their services. We.trade focuses on building a trustworthy network among European banks’ SME clients. Bank payment guarantees and invoice funding are two services provided.

New Blockchain Settlement Coin Consortia (Jun 2019)

(SEE “FNALITY” SECTION P. 51)



20. Wells Fargo — USA

OVERVIEW



Wells Fargo & Company is a multinational financial services corporation based in the United States.

Despite prior reluctance to bring forth an opinion on the cryptocurrency market, Wells Fargo, in a special report on the investment rationale for cryptocurrencies, said, “We believe that cryptocurrencies have evolved into a viable investment asset. There are over 9,000 cryptocurrencies, with \$ 2.4 trillion in capitalization (as of May 7, 2021), and this depth and breadth allow additional analysis of their trends. Short-term factors suggest further deepening of the market. We believe long-term supply and demand trends support further industry growth, the potential for further compression in price volatility, and a possible role as portfolio diversifiers.”

SELECTION OF DIGITAL ASSETS INITIATIVES

Wells Fargo to onboard active cryptocurrency strategy for wealthy clients (May 2021)

›CRYPTO ›INVESTMENT ›WEALTHY CLIENTS ›PLANNED

Wells Fargo & Co announced that its investment institute plans to evaluate and onboard an actively managed cryptocurrency strategy for its wealthy clients, the latest move by a major U.S. bank toward accepting digital currencies.

The Wells Fargo Investment Institute (WFII) said in a study titled “The investment justification for cryptocurrencies” that it sees digital assets as an alternative investment for qualified investors in a professionally run fund.

“WFII believes that cryptocurrencies have gained stability and viability as assets, but the risks lead us to favor investment exposure only for qualified investors, and even then through professionally managed funds,” the bank stated.

Investment in Elliptic (Feb 2020)

›CRYPTO RISK MANAGEMENT ›STARTUP INVESTMENT ›COMPLETED

Wells Fargo has invested \$ 5 million into Elliptic, a U.K. start-up that helps banks handle the risks of being exposed to cryptocurrencies. The London-based company is known for its analysis software. It provides some of the world’s most extensive cryptocurrency networks, such as Binance and Circle, to help them detect and block illegal digital currency transactions.

Launch of a stable-coin, Wells Fargo Digital Cash

The pilot program for Wells Fargo’s stablecoin, which is pegged to the US dollar, was set for 2020. Internal transfers were to be tested to expand to multi-currency transfers in the future. “When we move money across the world, and we need to exchange currencies, we have to go through third parties such as SWIFT and other banks,” said Lisa Frazier, head of the Innovation Group at Wells Fargo. “That’s a long process, and every time there’s a connection with external parties, it takes time and energy and effort.”

Using the digital cash would allow the bank to move funds 20 hours a day, up from only six to nine hours, five days a week when it relies on wire transfers and systems like SWIFT, Frazier said.



Private Bank Initiatives



21. Bankhaus Scheich – Germany

OVERVIEW



Bankhaus Scheich was founded in 1985 and is today a leading securities trading bank on the Frankfurt Stock Exchange (FWB).

The owner-run bank operates in market-making, capital markets, OTC bond trading for institutional customers, sales and trading, and consulting.

Under its brand tradias - digital trading assets, Bankhaus Scheich, offers cryptocurrency trading to institutional investors, thereby underlining the claim to increase digitalization through innovations and organic, continuous growth.

SELECTION OF DIGITAL ASSETS INITIATIVES

Bankhaus Scheich becomes liquidity provider of BSDEX (Oct 2020)

›LIQUIDITY PROVIDER ›ECOSYSTEM ›CRYPTO ›LIVE

Joining the BSDEX ecosystem as the first external institutional participant, Bankhaus Scheich provides buying and selling prices as a liquidity provider, initially launching with the trading of Bitcoin against Euro. Soon, other cryptocurrencies tradable on the crypto exchange are to follow, i.e., Ethereum, Litecoin, and XRP. For the custody of cryptocurrencies, Bankhaus Scheich uses the service of blocknox GmbH, a subsidiary of Boerse Stuttgart Digital Ventures GmbH.

Fully regulated trading of crypto assets for institutional investors (Aug 2020)

›TRADING ›CRYPTO ›INSTITUTIONAL INVESTORS ›LIVE

As the first provider in Germany, Bankhaus Scheich launched a fully compliant trading solution for crypto assets targeting institutional investors. While initially covering cryptocurrencies such as Bitcoin, the bank aims to expand its offering into security tokens soon. The service enables in-custody trading between participants. Offering crypto-asset trading brings Bankhaus Scheich closer to its vision of providing clients with a trusted “all-in-one” platform for all investor needs related to digital assets.

Issuance of asset-linked token based on DAX-stock (Feb 2020)

›ISSUANCE ›TOKEN ›COMPLETED

In a first pilot transaction of its kind, Bankhaus Scheich issued security tokens representing a DAX title in a private placement with select institutional investors. The tokens have characteristics similar to a tracker certificate, meaning their value is pegged to the underlying traditional security. According to the bank, the innovative approach enables instant settlement of trades and enhances transparency. Additionally, stocks can be fractionalized, reducing entrance barriers for investors.

“Our pilot project shows that the technology can already be used in practice and brings many advantages. In the long term, digital securities offer many more possibilities than today, such as the mapping of assets that could not previously be securitized as a security,” explains Boris Ziganke, CEO of Bankhaus Scheich.



22. Bankhaus von der Heydt – Germany

OVERVIEW



Bankhaus von der Heydt is one of Europe's oldest banks and has been in operation since 1754.

Today, von der Heydt is one of the pioneers in the German digital assets market, offering a full-service suite based on blockchain technology and thereby breaking new ground in the financial world.

"We are convinced that digital assets will become increasingly important in the future. Many market participants are already dealing intensively with the topic today but are often still reluctant due to regulatory or even technical concerns," says Philipp Doppelhammer, member of the Executive Board at Bankhaus von der Heydt.

SELECTION OF DIGITAL ASSETS INITIATIVES

Crypto trading with integrated custody as a plug and play solution for asset manager (Apr 2021)

›TRADING ›CUSTODY ›PARTNERSHIP

Investments in crypto assets are becoming increasingly popular. However, investors are always faced with the question of how best to invest in this new asset class. In this regard, von der Heydt Asset Servicing SA and Immutable Insight Capital Management GmbH have developed an innovative investment opportunity.

Immutable Insight Capital Management GmbH has many years of expertise in the blockchain sector and has set up one of the first two blockchain funds registered by BaFin. As a BaFin-registered alternative investment fund manager, the company is already launching its second blockchain fund, with which it aims to achieve a superior risk-return profile in the entire field of crypto assets on the basis of its in-house analyses. The asset management approach of this fund is based on real-time analytics of blockchain usage. Bankhaus von der Heydt is providing the trading and custody infrastructure as a plug and play solution.

Fully regulated custody of security assets for institutional clients (Jan 2021)

›CUSTODY ›M.M. WARBURG & CO ›ONGOING

Bankhaus von der Heydt provides custody of security tokens for private bank M.M. Warburg & CO as part of Vononia's € 20 million tokenized bond issuance. For the first time, the jointly designed solution connects the IT systems of the two credit institutions with assets purely stored on the blockchain. The collaboration between the two banks aims to provide institutional investors a single point of contact for digital asset investments.

Tokenization services for corporate issuers (Feb 2020)

›PLATFORM ›TOKENIZATION ›COMPLETED

Building on its legacy in traditional securitization, Bankhaus von der Heydt launched a tokenization platform enabling corporate issuers to offer security tokens to institutional and retail investors. The solution is based on Bitbond's established issuance technology and enables the tokenization of various asset classes on Stellar. Via a modular whitelabeling approach, issuers can connect tokenization, custody and settlement solutions to create an end-to-end investment experience for their target investors.





Philipp Doppelhammer, COO of BvdH, has agreed to share with us his thoughts on the market. He is an experienced Managing Director with a demonstrated track record in the banking, fund, and securitization industry.

In your view, what role will digital assets play in the capital markets of tomorrow?

In my opinion, the boundaries will become increasingly blurred, and the distinction between traditional and new forms of investment will disappear. Digital assets will then basically no longer be an asset class in their own right but will simply map every existing and future asset class onto a better and more efficient technological system. I am very glad that this has been recognized by German legislators already and that more and more possibilities are being created to act in a legally secure way on this new system. In the end, this creates trust, and trust is the prerequisite for mass adoption, which is clearly where we are heading.

Which role/position is Von der Heydt aiming to achieve in the digital assets market?

Bankhaus von der Heydt positions itself as a tech-driven, one-stop-shop infrastructure provider for digital and traditional securities. In addition to the issuance and structuring of bonds, certificates, and security tokens we already offer, the corresponding cash accounts are complemented by our custody and brokerage solution. In the future, the range of services will be expanded to include investment brokerage and custodian services for electronic securities and staking and crypto-based lending products.

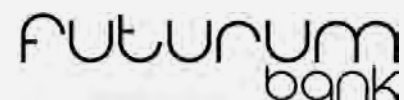
From your perspective, what is currently the hottest topic in digital assets in relation to banking?

The traditional distribution of assets and financial investments has already changed significantly and will change much more in the future. This is simply because new, younger generations of investors are coming along who no longer buy everything from their principal bank. Many players have recognized this and are offering these new generations of investors streamlined, mobile, and more cost-efficient services. In our opinion, however, there is still enormous potential here if you look at how traditional sales structures are still set up to a large extent today. This ranges from banks and broker pools to fund issuing houses. These providers will have to digitize themselves as soon as possible, and we are here to help them.



23. futurum bank — Germany

OVERVIEW



fururum bank is an investment bank with a focus on capital markets-oriented companies in the small and mid-cap segment. To accompany its clients long term, futurum bank's service portfolio is tailored to all phases of a company's life cycle and includes, among other things, advice on financing issues, the development and structuring of capital market strategies for both equity and debt products, including the implementation of transactions, placement and the promotion of liquidity of securities through market making.

Following its merger with bitcoin.de, futurum has expanded its services into digital assets, providing brokerage for cryptocurrencies and advisory on security token offerings.

SELECTION OF DIGITAL ASSETS INITIATIVES

| Closing of the merger with Bitcoin.de (Oct 2020)

Bitcoin Group successfully conducted a merger of Bitcoin Deutschland and futurum bank. The merging of the crypto business division of bitcoin.de and the entire investment banking services of futurum bank AG has resulted in the formation of Germany's first crypto bank.

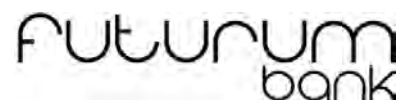
Following the merger, futurum bank now combines all regulatory licensed assets held by the Group into a single business already regulated. This move further enhances Bitcoin Group SE's capabilities as a bitcoin trading platform and depository. From a single source, futurum bank AG can provide clients a broad range of services.

Bitcoin Network SE takes advantage of this opportunity and offers crypto custody services to a large group of firms. Institutional customers will access one of Europe's largest crypto trading platform via futurum bank AG going forward. The expanding customer base provides Bitcoin Group SE with additional opportunities for value-added expansion.

"Market participants, both private and institutional, are looking for profitable investment opportunities outside the Euro and US Dollar & Co. Cryptocurrencies are much appreciated for their high returns and safety features. Our reliable and attractive service portfolio, which more than 884,000 private customers already use, will in the future also be open to institutional investors via the newly formed futurum bank AG. We expect that this will result in significant growth impulses for Bitcoin Group SE," says Marco Bodewein, Managing Director of Bitcoin Group SE.

Moreover, answering to the question about Futurum's goal in the digital asset markets he said: "By bringing together the brand bitcoin.de with the traditional investment banking services of futurum bank, we position ourselves as the first real crypto bank, including all necessary licenses. Unlike other providers who buy all required components, we offer an established, proprietary tech stack. With bitcoin.de, we already own one of the largest customer groups in Europe, while futurum bank currently serves 250-300 institutional clients from the areas of family offices and mid-market. There we see a growth of our brokerage desk for crypto assets, which has been serving institutional clients and HNWIs for over a year."





Marco Bodewein, Executive Officer of futurum bank AG, shared his perspective on the digital asset banking landscape in Europe and his plans for enhancing the secondary market for tokenized securities.

In your view, what role will digital assets play in the capital markets of tomorrow?

From our perspective a very significant role, fueled by regulation. With regulatory clarity, the innovative force of digital assets is expanding into the traditional world of finance, which is why we are positioning ourselves directly – via bitcoin.de as leading retail crypto marketplace, via futurum as preferred institutional broker of crypto assets. Due to bitcoin.de's track record we are currently the largest digital asset custodian in Germany. Since Futurum bank comes from investment banking, we are a strong partner for structuring and advisory, hence the topic of STOs is a strategic field for us. The next key driver will be our proprietary trading marketplace, which can be used for secondary trading of security tokens. The lack of a secondary market infrastructure currently represents the main bottleneck for STOs – with up to 1 million potential customers, we can offer an answer with access to the mass market.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

DeFi is here to stay. Here we have to see what the regulator does and what is still to come. We are already on the right track with current legislation, now the regulator has to make sure that he doesn't overshoot – if the guard rails are strapped too tightly, no reasonable market will develop here beyond the crypto niche. We will continue to position ourselves as a contact partner for digital assets and expert in corporate finance, now also via DeFi, to meet the demand of our clients. Our goal: continue our legacy as one stop shop for capital markets, whether in traditional finance or digital assets.



24. Hauck & Aufhäuser – Germany

OVERVIEW



Hauck & Aufhäuser Privatbankiers AG is a private bank based in Frankfurt. They founded Hauck & Aufhäuser Innovative Capital (HAIC), an investment company for Germany's digital assets. In September 2020, the firm obtained the mandatory BaFin license as a registered capital management company (KVG). This is a significant step forward in the Asset Servicing division's expansion of offerings to include the cutting-edge and forward-thinking aspect of digital assets.

SELECTION OF DIGITAL ASSETS INITIATIVES

Launch of a crypto fund in collaboration with Kapilendo (Dec 2020)

›CUSTODY ›CRYPTOCURRENCIES
›INSTITUTIONAL AND SEMI-INSTITUTIONAL INVESTORS ›ONGOING

Hauck & Aufhäuser's Digital Asset Fund I aims to cover 85 % of the cryptocurrency market. The fund follows a passive investment approach. Crypto values are allocated based on current market capitalization and other parameters and are aimed at The fund targets institutional and semi-institutional investors.

Institutional interest in crypto is growing in Germany, according to board member Holger Sepp: "We are seeing that digital assets and cryptocurrencies are becoming increasingly attractive among institutional investors. With the launch of our first crypto fund, Kapilendo and we have created an innovative investment vehicle that gives our customers inexpensive and secure access to the new crypto asset class, including the established one that Meets the high-quality standards and high demands of Hauck & Aufhäuser. "

25. Julius Baer – Switzerland

OVERVIEW

Julius Bär

Julius Bär Group AG, known alternatively as Julius Baer Group Ltd a generalist private banking corporation. "At Julius Baer, we are convinced that digital assets will become a legitimate, sustainable asset class of an investor's portfolio," said Peter Gerlach, Head Markets at Julius Baer. "The investment into SEBA as well as our strong partnership are proof of Julius Baer's engagement in the area of digital assets and our dedication to making pioneering innovation available to the benefit of our clients."

SELECTION OF DIGITAL ASSETS INITIATIVES

Digital assets services in collaboration with SEBA (Jan 2020)

›DIGITAL ASSETS SERVICES ›CUSTODY
›SWISS CLIENTS ›LIVE

In February 2019, Julius Baer announced cooperation with SEBA Bank AG in digital assets to give its clients access to a range of new services. In August last year, SEBA received a license from FINMA as one of the first crypto banks in Switzerland. Julius Baer now offers its clients booked in Switzerland to select digital assets services using SEBA's

innovative and cutting-edge platform and capabilities.

Julius Baer has broadened its service offering to include digital asset services such as secure storage and transaction solutions, as well as consolidated portfolio overviews for both traditional and digital assets. The Bank can provide access to a limited number of cryptocurrencies that have been chosen for their tradeability, security, and technical reliability.



26. Maerki Baumann & Co – Switzerland

OVERVIEW



Maerki Baumann & Co. AG, a Zurich-based private bank, focuses on its core capabilities of investment advisory services and asset management and offering services to independent asset managers since 1932. The traditional bank, which is open to modern technologies, is a privately held family business with a long-term outlook and solely operates in Switzerland. The bank's outstanding capital basis and transparent performance reflect its investment strategy of independence, security, and transparency. It emphasizes its goal of merging the traditional and the new with its modular investment approach and crypto offering.

SELECTION OF DIGITAL ASSETS INITIATIVES

Launch of a cryptocurrency trading desk and custody services (Jun 2020)

›TRADING ›CUSTODY ›ONGOING

Maerki Baumann announced that it had secured a FINMA license for its dedicated crypto desk. "to offer the trading and custody of cryptocurrencies as well as other digital assets (tokens)."

With this new license, the bank will begin offering cryptocurrency trading and custody to its clients. It's worth noting that the company's trading platform will also support ERC20 tokens; the bank explained: "Maerki Baum will initially offer to trade in the principal cryptocurrencies, namely Bitcoin (BTC), Bitcoin cash (BCH), Ethereum (ETH), Litecoin (LTC) and Ripple (XRP).

27. M.M. Warburg & Co – Germany

OVERVIEW



M.M. Warburg & Co KGaA is a German independent private bank based in Hamburg. Following Vonovia's tokenized bond issuance in early 2021, Joachim Olearius, spokesman for the Warburg Bank partners said: "Tokenization will significantly expand and structurally change the range of financial products and services." J. Sascha Schmidt, Head of FX and Fixed Income at MMWarburg & CO, adds: "With the Stellar blockchain technology, the asset can be transferred within seconds. This minimizes operational risk and increases efficiency. "These advantages would make it particularly attractive and interesting for investors to invest in blockchain-based transactions. Schmidt says: "We expect a significant increase in the number of similar issues from well-known companies soon."

SELECTION OF DIGITAL ASSETS INITIATIVES

Investment in Vonovia digital bond (Jan 2021)

›BOND ›INSTITUTIONAL AND SEMI-INSTITUTIONAL INVESTORS ›ONGOING

MMWarburg & CO has realized a digital bond investment. It was distributed via the digital marketplace firstwire by the German DAX company Vonovia. The total contract value is € 20 million, with a three-year term. According to MMWarburg, the digital implementation through the Stellar blockchain enables quick, effective, and safe real-time processing.

This transaction is seen as a win-win situation, with Helene von Roeder, CFO of Vonovia, saying: "There are also decisive advantages for companies that want to raise liquidity. [...] with such innovative transactions, we can finance ourselves faster, easier, and cheaper."



28. Solarisbank — Germany

OVERVIEW



Solarisbank operates a “Banking-as-a-Service” platform with white-label tech enabling fintech companies to build their own banking products.

Via its subsidiary Solaris Digital Assets, the bank offers API-based crypto services, including custody, brokerage and banking. The Berlin-based venture holds a full German banking license.

Julian Grigo, managing director of digital assets of Solarisbank said about the bank’s positioning: “We commit ourselves to become the leading infrastructure provider for the European digital asset ecosystem. We see that more and more global brands are trying to ease access to crypto with convenient and user-friendly offerings that appeal to ordinary consumers. PayPal, Square, and Facebook are just a few examples.”

SELECTION OF DIGITAL ASSETS INITIATIVES

Solarisbank launches licensed crypto brokerage (Feb 2021)

›CUSTODY ›TRADING ›CRYPTO ›LIVE

After establishing its digital asset custody solution, Solarisbank further broadens its service offering by adding a brokerage and trading API. This will enable clients to offer fiat-to-crypto trading and instant settlement via a white-label approach. Julian Grigo, managing director at Solarisbank Digital Assets: “Our B2B customers will be able to get a bank account, store crypto and with the brokerage API, they can swap or exchange their fiat money to bitcoin or other cryptocurrencies.”

Solarisbank provides white-label digital asset custody services for NURI (formerly Bitwala) (Nov 2020)

›CUSTODY ›NURI ›COMPLETED

Solarisbank expands its partnership with Berlin-based consumer fintech NURI by providing its white-label custody solution for the storage of Bitcoin and Ether. Benjamin Jones, CEO and co-founder of Bitwala, sees the benefits of the deepened partnership especially for customers who have had little experience with cryptocurrencies: “By integrating the custody solution, we can make it easier for new customers to get started.” In addition, the collaboration increases the speed of transactions and transfers. Under the hood, Solaris Digital Assets is working with Israeli technology company Curv to ensure secure key management.





Julian Grigo, managing director of digital assets of Solarisbank, has agreed to share his thoughts on the digital asset market. Prior to Solarisbank, Mr. Grigo worked at Bitkom as the digital bank & financial services head.

In your view, what role will digital assets play in the capital markets of tomorrow?

Digital assets are establishing themselves as an asset class of their own and are on their way to replacing traditional assets altogether. While we may not yet be able to tokenize our flats and the ability to trade shares on the blockchain is still in its early days, the rise of Bitcoin gives us a taste of what is to come.

Often described as digital gold, Bitcoin shares many similarities with precious metal. Like gold, it is not used as currency but as a reserve asset that hedges against inflation and economic uncertainty, particularly in times of crisis. Akin to finite resources like gold, Bitcoin also acquires part of its economic value through a scarcity effect – and the value of scarce assets cannot be diluted as easily as that of fiat money, which can be printed at will by central banks.

However, Bitcoin has multiple advantages over gold. Divisible by eight decimal places, Bitcoin is far more liquid and can be transacted infinitely faster than gold - at a fraction of the cost. The same advantages can also be reaped from the tokenization of other traditional assets like equity, debt, and real estate. It is not a question of if, but when this will happen. All you need is the proper regulatory framework and technology provider to tokenize and safely store such assets.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

One fascinating development is the race of the European neobanks and neobrokers for the best crypto banking experience. A boost in customer touchpoints increased customer stickiness, and new revenue streams are just a few of the bounties gleaming at the horizon for crypto adopters. A user-friendly crypto offering can become a key differentiator in an increasingly competitive mobile banking market to win market share. Early adopters like Revolut have made a headstart, but younger challengers such as Germany's flagship crypto banking brand Bitwala are turning the tables. The winner of this race will ultimately be the one that best manages to square a seamless user experience with maximum security.



Exchanges, Platforms and Collaborations



29. Börse Stuttgart Digital Exchange – Germany

OVERVIEW



It is a platform to trade cryptocurrencies (Bitcoin, Litecoin, Ethereum, XRP) operated by the Baden-Württembergische Wertpapierbörse GmbH (BWWB GmbH), which also acts as a holding company of the (public-law) stock exchange.

BWWB GmbH regulates trading with its own market organization and monitors its regularity. The technical operator is the Boerse Stuttgart Digital Exchange GmbH. This joint venture and the shareholders of this joint venture are Börse Stuttgart Group, Axel Springer, finanzen.net, and SBI Holdings.

In February 2020, they announced that their asset custody subsidiary Blocknox would be offering crypto custody services to institutional customers.

INTERVIEW

Jan Kühne, B2B sales and Partnership at BSDEX, has agreed to share his thoughts on the digital asset market. Prior to joining BSDEX, Mr. Kühne worked 12 years at M.M Warburg & Co as head of digital strategies and offers. He was responsible for the development of the digital business at M.M Warburg.

In your view, what role will digital assets play in the capital markets of tomorrow?

I personally believe that digital assets and the usage of distributed ledger technology will have a massive impact on the financial market. Firstly, what we already see happening is the adoption of Bitcoin as a reserve currency and inflation hedge similar to gold by both private and institutional investors. Just like the internet, cryptocurrencies are not going away. Secondly, there will be the digitalization of assets, both with regard to traditional financial products as well as alternative investments. With the draft of the electronic securities act last year, which hopefully will come into law this year, a wide adoption may take longer than some may hope. But over the long term, the efficiency gains of

digital assets are too compelling to hinder that transformation. Thirdly, and this is where maybe the highest potential for disruption lies, is the emergence of decentralized finance, or in short, DeFi.

Which role/position is BSDEX aiming to achieve in the digital assets market?

As a pioneer in Germany, Börse Stuttgart Group and with it BSDEX are building an end-to-end ecosystem for digital assets. Services for trading and custody of digital assets are already in place, reliable, and built to scale.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

In 2020 everybody was enthused about STOs. I still am, but it will take time. Currently, cryptocurrencies are the topic that drives institutional investors and banks. You can virtually feel the Fear Of Missing Out on the opportunity. And rightly so. Customer interest is immense. Offers within an established customer relationship are destined to tap demand. It is the most promising vehicle for the acquisition of new customers. And it paves the way to new business models such as staking, precisely where the financial market currently offers very little.



30. firstwire — Germany

OVERVIEW



firstwire is a web-based marketplace for debt financing.

The Cologne-based fintech company provides the international private-placement market with an independent platform that brings large mid-sized companies and corporations together with institutional investors.

Transactions on the platform are conducted in a purely digital, streamlined process that can be settled either traditionally or via blockchain.

DEFINING TRANSACTIONS

Vonovia issues € 20 million tokenized bond via firstwire's debt marketplace (Sep 2020)

›BLOCKCHAIN ›BOND ›CORPORATE ›COMPLETED

German DAX 30 company Vonovia used the online marketplace firstwire to issue its first fully tokenized corporate bond on the Stellar blockchain. German private bank MMWarburg fully subscribed to the issuance, Bankhaus von der Heydt served as custodian of the security tokens.

“Digitalization provides us with the opportunity to finance ourselves faster, more easily and more cost efficiently,” says Helene von Roeder, Chief Financial Officer of Vonovia. “We want to test out the new technology to gain experience with it. It’s easy to imagine that it will play a significant role in the capital market in the future. Issuances are transparent and traceable in real time, which guarantees a professional transaction standard.” Vonovia had already used the firstwire marketplace to self-arrange a promissory note of € 50 million in September 2019.





Michael Dreiner, founder, and CEO of firstwire has agreed to share with us his thoughts on the market.

In your view, what role will digital assets play in the capital markets of tomorrow?

I strongly believe that digital assets will be pivotal to capital markets. It allows the creation of new assets that without digitalization would not exist – truly digital assets are natively digital. But digital assets will also transform traditional capital markets that we know as of today, digital currencies will evolve further supported by central banks and traditional assets will be made accessible and transferable through digital carrier such as tokens. Since the marginal costs for producing and transferring digital assets are small, it means that transaction costs are becoming less relevant and the technology can be applied to on a large scale.

Which role/position is firstwire aiming to achieve in the digital assets market?

firstwire decentralizes debt capital markets and offers a fully digital marketplace for institutional debt transactions. Digital assets are playing a central role in facilitating this.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

On the one hand it is Central Bank Digital Currency and which protocol is being applied - standardization allows for scaling technology and efficiency, but this is somewhat down the road. Most recently, it certainly is the electronic security law in Germany which is a major milestone facilitating the legal framework to apply new technologies streamlining issuance processes with high efficiencies.



31. Finledger – Germany

OVERVIEW



Finledger is a joint project by DZ BANK, dwpbank, Helaba, and DekaBank.

All steps of a promissory note processing process, including business confirmation and creation of certificates, can be carried out entirely digitally via the platform.

DEFINING TRANSACTIONS

NRW.BANK issuance of its promissory note loan on using Finledger (Sep 2020)

›BLOCKCHAIN ›LOAN ›CORPORATE ›COMPLETED

NRW.BANK was the first development bank to issue its promissory note loan (SSD) in a wholly digital and legally secure manner using the blockchain-based finledger platform.

“Blockchain is the secure technology of the future. The handling of the first own issue of a promissory note loan via finledger is another logical step for us to keep abreast of technological developments in the banking sector,” says Michael Stölting, member of the Board of Management at NRW.BANK. “We can now fall back on our own finledger components in our IT landscape. This opens up the opportunity to familiarise ourselves further with blockchain technology and to find out how we can use it even more intensively in the future.”

Finledger, a blockchain platform, enables fully digital processing of promissory note loans for the first time (May 2019)

›BLOCKCHAIN ›LOAN ›CORPORATE ›COMPLETED

For the first time, a cross-institutional team of DekaBank, dwpbank, DZ BANK, and Helaba has successfully processed the issue of promissory note loans using only digital methods. The four banks successfully completed the issuance of a promissory note loan through the newly developed Blockchain platform finledger in a trial project. The platform will be made available to other banks after the pilot phase is completed. For the first time, the four banks have established a market standard for the digital processing of promissory note loans and an inter-institutional platform that allows them to reach a wide range of counterparties.





Thorsten Hirsch from DZ Bank has agreed to share with us his thoughts on the market.

In your view, what role will digital assets play in the capital markets of tomorrow?

First of all, I have to point out that I have a mostly technical background, and my knowledge about capital markets is limited. However, I guess that the advantages of digital assets regarding system complexity and transparency are obvious. So for me, the only question is “when” instead of “if” digital assets will replace traditional assets. Here in Germany, we don’t have much pressure to migrate away from our current systems, yet, because they’ve been optimized over decades, and yes, they do a pretty good job. But there are so many developers working on the digital asset generation of financial systems worldwide; they will inevitably surpass the current systems. Some people already call them “legacy” systems. It’s kind of hard for me to say this because I’ve worked on them for so many years as a developer myself: I was building message systems with data validations

and transformations, putting much effort in “exactly-once delivery” as well as auditable data tracking systems and reconciliation services. But most of these things have grown to over-complicated systems, and as a result, they are hard to maintain and inherently buggy. It’s a good thing that most of them are obsolete in the world of digital assets. But there’s more: we’re only at the beginning to see the possibilities of digital assets in distributed systems like extending or composing existing projects or assets with new smart contracts - think of PunkBodies, which is based on CryptoPunks. The technological foundations of digital assets have so many advantages compared to the old financial systems, their triumph is inevitable.

Which role/position is BSDEX aiming to achieve in the digital assets market?

DZ BANK’s most important job is to provide services in the cooperative banking sector for the Volksbanken and Raiffeisenbanken. This has traditionally been a rather conservative role with the strategy of being a late adopter for new technology. However, the situation has changed significantly over the last years due to younger executives, stable profits, and demand from Volksbanken and Raiffeisenbanken to jump in boots and all regarding digitalization.

Some of them are already partnering with financial startups in their particular region, and I think this is an excellent opportunity for DZ BANK, as well, to become an early adopter in selected technologies.

Recently we have created many new jobs in the IT department to keep up with our new role.

From your perspective, what is currently the hottest topic in digital assets in relation to banking?

Definitely UMA’s idea of oracle-less derivatives. We’ve started a project to implement derivatives on DLT here at DZ BANK as well, but we’ve chosen a rather traditional approach with an oracle for market data and another oracle for the valuation. We’ve also developed a legal framework with effective terms and conditions on paper, thus degrading the DLT software to the automatism of said paper contract. My personal opinion is that the current state of this project is rather a compromise in-between the old and the new world. Especially relying on multiple off-chain components is like working against the decentralized architecture instead of profiting from it. Thus I was overwhelmed when I learned that UMA only needs to know market data in case of a dispute. It’s a very efficient solution, and I’d love to see it being successful in the long term.



32. Fnality – UK



New blockchain settlement consortium (Jun 2019)

›CONSORTIUM ›BLOCKCHAIN
›SETTLEMENT ›LIVE

Fnality International started out as a pure research initiative to better understand how distributed ledger technology (DLT) could affect financial markets. With time, the initiative grew to include a group of financial institutions interested in seeing how Blockchain and Distributed Ledger Technology (DLT) may be used to settle securities trades using tokenized monetary assets. It hoped to solve many of the IMF's challenges in the process.

The project was dubbed the Utility Settlement Coin (USC) project, and its main goal was to create a peer-to-peer digital cash asset that could be used to settle tokenized transactions with finality.

The payment method had to be:

- Available in a variety of currencies to help manage fragmented liquidity more efficiently.
- Capable of collaborating across numerous business systems, whether for PVP or DVP financial transaction settlement.

A digital representation of money maintained in a central bank account assures that banks could rely on its worth in the same way they can with fiat currency.

After proving that these goals were theoretically and technically feasible, the consortium members invested in the formation of Fnality International to help construct the infrastructure that would enable 'on-chain payment (Fnality).

Fnality now boasts 15 major institutions as shareholders: Banco Santander, BNY Mellon, Barclays, CIBC, Commerzbank, Credit Suisse, ING, KBC Group, Lloyds Banking Group, Mizuho Financial Group, MUFG Bank, Nasdaq, Sumitomo Mitsui Banking Corporation, State Street Corporation, and UBS.

33. Spunta – Italy



Italian banks go live on Spunta Banca DLT platform (Apr 2020)

›PLATFORM ›BLOCKCHAIN
›RECONCILIATION PROCESS ›LIVE

Spunta Banca DLT system built on Corda Enterprise by SIA, NTT Data, and is managed by ABI Italian Banking Association. Over 100 Italian banks, representing 91 percent of the country's banks are using the system. They processed 204 million transactions in the first six months, with an automated match rate of 97.6 %, revolutionizing the interbank reconciliation process.

Spunta focuses on the reconciliation of bilateral accounts by back offices to resolve any discrepancies in double-entry bookkeeping. Following the automatic matching, the operators handle the failed transactions or those that need to be validated before being recorded in the correspondent account. The installation of a blockchain-based interbank reconciliation procedure utilizing DLT in Italy allows for the automatic detection of non-matching transactions using a shared algorithm.

Furthermore, it results in the standardization of both the process and the single communication channel and a comprehensive view of the transactions between the parties involved. As a result, the new Spunta project's principles call for full visibility of all transactions, including the counterparty's; rapid management of flows with daily rather than monthly reconciliation; shared rules for symmetrical reconciliation of transactions between counterparty banks; and integrated management of communications and processes in the event of an imbalance.



34. Universal-Investment / Enlyte – Germany

OVERVIEW



Frankfurt-based Universal-Investment Group is one of the leading investment firms and providers of private label funds in Germany. The firm is also one of the largest independent fund administration platforms for institutional investors. With Enlyte the Universal-Investment group is tapping into digital assets markets. The group's subsidiary provides a proprietary investment platform for digital assets catering to institutional clients.

SELECTION OF DIGITAL ASSETS INITIATIVES

Launch of an investment platform for digital assets (Enlyte) (Feb 2020)

›PLATFORM ›DIGITAL ASSETS ›COMPLETED

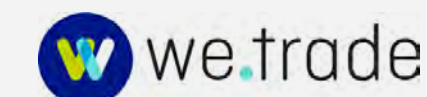
Enlyte provides a complete white-label solution. For the first time, it digitally maps all of the significant stages of the investment process, from customer onboarding to issuing token-based structures (STOs) and administering them to reporting, all on one platform. Asset managers and fund initiators can use this platform to issue, manage and sell tokens. "The team around our blockchain experts Daniel Andemeskel and

Khai Uy Pham developed the technology in a proprietary manner. Enlyte is the logical continuation of our innovation success story", says Michael Reinhard, CEO of the Universal Investment Group.

In 2021, Reinhard announced that the platform is planning to expand into fund tokenization and to offer related fund servicing: "We will thus be able to offer digital funds in the future, as soon as the regulatory framework allows. We are also looking at acquisitions to complement our services".

35. We.Trade – Germany

OVERVIEW



We.trade is a digital platform that makes it easier for buyers and sellers to trade globally. We.trade enables businesses, particularly those in the SME sector, to find trustworthy counterparties to form new commercial relationships while also providing complete visibility into transaction and shipment status and digitizing the entire process from order creation to payment execution.

Companies can also access financial services provided by their banks through the platform, such as Bank Payment Undertaking (BPU), in which the buyer's bank gives the seller an irrevocable undertaking to pay the invoice by the maturity date, and BPU financing, in which the seller's bank provides financing by discounting the BPU of which they are a beneficiary.

List of members:

CaixaBank, Deutsche Bank, Erste Group, HSBC, KBC, Natixis, Nordea, Rabobank, Santander, Société Générale, UBS and UniCredit



About Bitbond

Bitbond's whitelable Software-as-a-Service (SaaS) platform is in use by partner banks and financial institutions globally.

Founded in 2013, the Berlin-based company has 8 years of experience in building blockchain applications in finance. Bitbond successfully conducted Germany's first Security Token Offering (STO) in 2019 with a BaFin approved prospectus.

Bitbond provides bank-grade blockchain technology for tokenization and digital asset custody to financial institutions dramatically improving the issuance, settlement and custody of securities.

OUR SOFTWARE IS TAILORED FOR REGULATED CLIENTS

- Tokenization, custody and post-trade tech for financial assets
- Compliant with IT compliance regulations
- White-label SaaS solution
- Trusted by banks

TOTAL
ISSUANCE
VOLUME

€ 180 M

DIGITAL ASSETS UNDER
CUSTODY
AT OUR CLIENTS

€ 300 M

END USERS
OF
BITBOND TECH

4,000+



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