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THE PATH TO THE DIGITAL ASSET ECOSYSTEM

PART I: DIGITAL ASSETS ON THE RISE

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PART I: DIGITAL ASSETS ON THE RISE

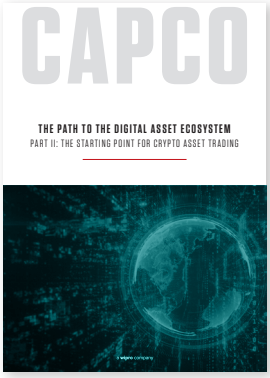
Digital assets based on distributed ledger technology (DLT) have rapidly gained importance for the financial industry in recent years. Non-fungible tokens (NFTs), decentralized finance (DeFi), and cryptocurrencies, such as bitcoin, frequently dominate the headlines in trade and industry media. The financial sector appears to be undergoing a complete restructuring of the technical representation of assets, enabling new types of business models and products as well as service offerings. The global financial industry has long recognized the strategic relevance and innovative power of DLT.

Many market participants have, therefore, embarked on their journey into the digital asset ecosystem, but at different rates and on different paths. Pioneers have already formed dedicated teams that specialize in the opportunities of DLT in capital markets. Their goal is to tap into new customer groups and revenue pools and to facilitate a faster and more efficient settlement of assets internationally. However, some financial institutions find it difficult to formulate clear strategies and identify profitable business cases in the digital assets' ecosystem due to the complexity of the challenge, including large investments in rebuilding infrastructure and uncertain cost savings, which in some cases can only be achieved in a consortium with other market participants.

In this two-part whitepaper series, we address those challenges.

In the first part, we outline the current state of development of the financial industry with regard to digital assets, including the aspects of regulation, demand, and market participants. We also provide guidance on the categorization of the different digital assets and the specifics associated with the lifecycle of each asset.

The second part considers a possible entry point into the digital asset ecosystem. Four use cases for trading crypto assets are discussed, including their technological requirements and core components. A three-step implementation path is then offered, which outlines a structured approach into the world of digital assets for national and international financial institutions.



1. DIGITAL ASSETS – AN OVERVIEW

DLT has reached the traditional banking world. The financial sector recognizes that the fledgling technology offers efficient ways to handle both traditional and new assets. While the hunt for the highest-yielding digital asset has just begun on the investor side, initiatives to prepare for the digital future had been underway behind the scenes for some time. International financial institutions have been researching strategic options in the market for digital assets for several years and the proofs of concept (PoCs) that dominated in the past are now being followed by the first market-ready products and service offerings.

The current attention and interest in DLT-based digital assets from customers and regulators offers financial institutions a unique opportunity to break new ground more quickly and to overcome resistance, some of which is in-house. More and more governments are pushing ahead with the concretization and implementation of a legal framework for digital assets. Recent regulatory developments are gradually creating clarity and making it easier for financial service providers to invest in DLT in order to embrace digital assets. Regulation, demand, and market participants are thus paving the way into the digital asset ecosystem.

Regulation

At the European level, two weighty sets of rules have been set in motion: The European Commission is currently in the final stages of the legislative process for regulating crypto assets. The Markets in Crypto Assets (MiCA) Regulation is intended to ensure uniform EU-wide rules for dealing with crypto assets.

In addition, the European Commission has submitted a proposal for a pilot regime for market infrastructures based on DLT.

Its aim is to explore how DLT affects secondary markets and how its potential advantages, such as speed, risk mitigation, and cost efficiency, are realized in a productive environment. The results of this pilot phase will subsequently form the basis for further regulatory steps at the European level. In addition to promoting a n innovative capital market infrastructure, the focus is on ensuring investor protection, market integrity, and financial stability. Initial efforts by the European Central Bank (ECB) to establish a digital euro also indicate that the necessary conditions for a digital ecosystem are emerging at the European level.

At the German level, the Electronic Securities Act (eWpG), which has been in force since the beginning of June 2021, is the counterpart to the European pilot regime. The core point of the Act is the general opening of German law for electronic securities, i.e., securities without a physical document.

With the Kryptowerte-Transferverordnung (KryptoWTransferV) published in 2021, the Federal Financial Supervisory Authority (BaFin) also takes up international recommendations on combating money-laundering risks in connection with these new assets. The ordinance serves to minimize risks that may arise from the misuse of crypto assets, e.g., for criminal or terrorist purposes.[1] It complements the previous amendment (January 2020) to the German Banking Act (KWG) by adding the financial service of crypto custody, which is subject to licensing, pursuant to KWG Section 1 (1a) Sentence 2 No. 6.

Demand

From private clients to family offices and corporate clients, the demand for digital assets continues to rise. This development is illustrated by the increasing trading volume of various crypto assets, which currently account for the lion's share of the digital assets market. For example, the 24h trading volume of the crypto-assets market increased to USD 230 billion in January 2022 and according to CoinMarketCap, the market capitalization increased approximately fivefold within the last two years (as of January 2022).[2] DLT-native crypto assets are thus the focus of today's investments in digital assets[3] and the market growth is flanked by regulatory projects. For example, the German Fund Location Act (FoStoG) has allowed special funds to allocate up to 20 percent of their investment fund volume to crypto assets since 2021.[4]

Demand for digital assets in the retail segment is increasing, especially among customers under 30 years old, according to challenger bank Nuri.[5] This movement is also reflected in the steadily increasing downloads of crypto-trading apps. For example, the crypto-trading app Bison (Börse Stuttgart Group) recorded an increase in registered customers, from ~80K (2019) to ~550K (end of 2021). Both High Net Worth Individuals (HNWIs) and family offices are also showing increasing interest in combining in these assets as part of their portfolio allocation.[6] Established financial service providers must, therefore, actively enhance their offerings in order to retain and attract existing and new investor groups.

While large financial institutions initially only observed this market development due to a lack of regulatory clarity, more agile FinTechs and highly specialized service providers, such as crypto exchanges, benefited from their restraint. In the race for market share for digital asset services and products, three main groups have emerged that differ in their speeds of adaptation. These are described below:

Market Participants

Traditional Market Players

Often, traditional market participants already have dedicated teams, incubators or innovation labs that are used for the active development of products and services in the digital assets sector. For example, the Deka Group is developing a global platform, via which securities transactions and payments can be processed more efficiently and cost-effectively, in its subsidiary, SWIAT GmbH, which was founded specifically for this purpose.[7] Commerzbank has been operating its own DLT lab since 2016 and it is one of the leading blockchain labs in a German financial institution.[8] In this context, banks around the world are looking for talents with DLT expertise.

Many major banks, such as ING, Deutsche Bank and Société Générale, have recently invested in DLT and implemented multiple projects. There is a high level of activity, especially in connection with necessary payment tokens (such as for the settlement of services or transactions on a DLT). A well-known example of this is the JP Morgan stablecoin, Onyx.[9] With Onyx, the American bank offers a blockchain-based platform for the settlement of wholesale payment transactions. Additionally, Commerzbank and Deutsche Börse entered into a strategic partnership with FinTech 360X to develop blockchain-based digital marketplaces and ecosystems for existing tangible asset classes, such as art or real estate.[10] Specialized DLT technology providers with a high level of technical maturity are increasingly enabling established banks to catch up with the competition. The aim is to benefit from efficiencies from leaner and more cost-effective DLT processes. The focus on the demand side is clearly on avoiding technical complexity, ensuring regulatory compliance, and the trust factor ("digital assets via my house bank"). The latter is a clear competitive advantage for traditional financial institutions over other market participants.

Specialized Providers

Specialized providers, such as the private bank Hauck Aufhäuser Lampe, recognized the disruptive potential of digital assets and the underlying technology at an early stage and launched the first products/services on the market. As the first fully regulated capital management company (KVG) for digital assets in Germany, Hauck Aufhäuser Innovative Capital offers asset managers, among others, the concept and implementation of investment strategies for digital assets.[11] As early as 2021, the private bank launched a crypto fund in cooperation with the Berlin-based crypto custodian Kapilendo, which has since been acquired and integrated.[12] Since April 2022, Hauck Aufhäuser Lampe has also been able to take over the register management for crypto securities and crypto fund units for its own issues and third parties under provisional BaFin authorization.[13]

Bankhaus Scheich, one of the leading securities trading banks on the Frankfurt Stock Exchange, also recognized the potential of the young but emerging market for digital assets early on. Since 2020, the bank has offered, among other things, an over-the-counter (OTC) trading venue for cryptocurrencies and tokenized assets.[14] In addition, it is possible to lend cryptocurrencies via Bankhaus Scheich, which means that revenue can be generated from them. The bank handles the distribution of its digital assets through its own brand trades. The offers are mainly aimed at semi-professional and professional investors.

Furthermore, specialized providers are also increasingly being targeted by FinTechs and crypto exchanges. For example, the crypto exchange BitMEX announced the acquisition of Bankhaus von der Heydt. With the takeover, BitMEX was aiming to be a "powerhouse for regulated crypto products". In the end, however, the deal was called off. Currently, Bankhaus von der Heydt acts as custodian for the digital assets of the private bank M. M. Warburg, among other things.[15] This example shows that early adoption and the associated pioneering role helps specialized providers to strengthen their own market position and to attract investors who want to gain a foothold in the domestic market.

New Market Participants

New market participants, such as Coinbase or Binance, are entering the market with their growth strategy, thereby increasing the speed for all established players. As early as June 2021, Coinbase Germany GmbH succeeded in becoming the first company in Germany to obtain a license for the crypto custody business, which was newly introduced as a financial service by BaFin.[16]

The crypto-native German neobank, Nuri, has been offering access to crypto assets for some time. In cooperation with Solarisbank, Nuri offer the secure safekeeping of cryptocurrencies. In addition, Nuri customers can trade selected cryptocurrencies and, since 2021, create automated savings plans for investments in bitcoin and Ethereum.[17] The Vienna-based European crypto broker Bitpanda enables trading in cryptocurrencies, shares, ETFs, and commodities. The platform also offers various crypto funds through which investors can make diversified investments in the crypto market. In addition, Bitpanda offers its customers a Visa card, with which they can use both euros and cryptocurrencies in everyday payment transactions.[18] This allows the company to occupy large parts of the customer interface. Increasingly, these providers are growing out of their profitable niches and capturing a higher share of the digital asset ecosystem.

2. A HOLISTIC VIEW OF THE ECOSYSTEM

The aim of this chapter is to discuss and contextualize the ecosystem of digital assets. This should serve as a general orientation aid and contribute to a better classification of various terms and concepts. To this end, existing forms of digital assets are categorized first and then the traditional lifecycle of a security is applied to these new forms.

2.1. Categorization of Digital Assets

A uniform categorization or definition of digital assets has not yet been established, either in scientific research or in practice. However, it should be noted that various organizations, such as the International Token Standardization Association (ITSA), are attempting to create clarity on the topic and establish a standard nomenclature. In the context of this white paper, digital assets are considered financial products or product-like instruments that are directly based on DLT or indirectly related to it. A pictorial representation of the categorization looks as follows:

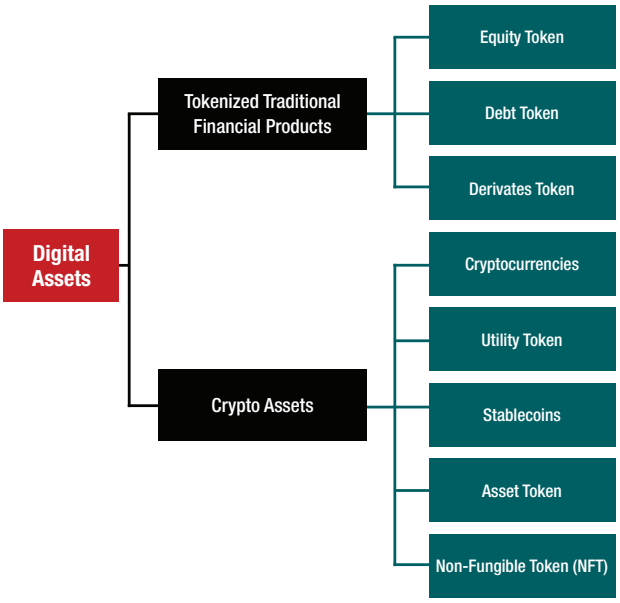


Figure 1: *Categorization of Digital Assets*

Primarily, the following two categories of digital assets were identified:

Tokenized traditional financial products are already existing product groups that – regardless of the current regulatory possibilities – can be tokenized from a purely technical perspective. During tokenization, digital tokens (security tokens) of the traditional assets are issued on a distributed ledger/blockchain and made available for trading depending on the product type. The design of these tokens can take different forms: equity tokens represent participation rights that signify shares for instance, while debt tokens are borrowed capital in the form of bonds, debentures, or loans. Analogous to conventional derivatives, there are also derivative tokens. The underlying asset of these tokens can be both a traditional security and a digital asset (e.g., a cryptocurrency). In tokenized form, there are also derivative types such as futures, options, or swaps.

Crypto Assets can take different forms: the best-known forms are probably cryptocurrencies, such as bitcoin or Ethereum. Cryptocurrencies are issued decentralized, since DLT is essentially independent of central state or institutional control. Nevertheless, state intervention can make trading and transfers of assets more difficult and can restrict them.

Utility tokens can be issued based on the protocols of such cryptocurrencies. Those tokens can be issued by centralized organizations, such as private companies. Depending on their design, utility tokens can, for example, grant access to a certain product or service of a company. Cryptocurrencies and utility tokens are known to be highly volatile.

Stablecoins, on the other hand, aim to significantly reduce this volatility. Unlike cryptocurrencies and utility tokens, most stablecoins have at least partial collateral, which allows for significant price stabilization. The underlying assets vary: stablecoins can be pegged to a fiat currency or backed by a bundle of different fiat currencies and commodities, such as gold or cryptocurrencies.

During the adoption of digital assets and DLT, further novel products have emerged. As part of the tokenization process described above, for example, the digital representation of real assets or illiquid assets, such as real estate, precious metals, etc., is possible in the form of asset tokens. This practice allows fractional ownership of these real assets by making small shares of them investable.

Tokenization of unique assets can be realized in the form of non- fungible tokens (NFTs). In principle, NFTs can be used to represent rights, such as ownership of a unique asset. This can be, among other things, a deed to an object in the digital or physical realm.

2.2. Lifecycle of digital assets

The previously mentioned categories of digital assets go through a similar lifecycle as traditional financial products, with specific differences. In this white paper, we look at a simplified version of the issuance, trading and post-trade phases for digital assets based on the traditional securities value chain. In essence, the value chain looks like this:

Figure 2: *DLT life cycle*

Emission

Starting with the first phase – issuance – differences compared to traditional securities become apparent. In contrast to the traditional issuance process, the tokenization process issues customized equity, debt, or asset tokens on a DLT that represent proof of ownership of financial instruments or other rights. Technically, this process takes place via tokenization software that is tailored to the protocol on which the new tokens are issued. The tokenization software from Bitbond, Cashlink, Polymath, Securitize, Tokensoft, Tokeny, and others can be assigned to this part of the value chain. In addition to token minting, they usually also include lifecycle management and, in some cases, the integration of key custody technology (the DLT equivalent of securities custody, see the following sections).

Trading

Due to the adoption of cryptocurrencies in large parts of society and across many investor groups, completely new participants have established themselves on the market as cryptocurrency exchanges. The Stuttgart Digital Exchange (BSDEX), Coinbase, Kraken and Binance are particularly worth mentioning as well-known cryptocurrency exchanges. They simplify the trading of cryptocurrencies, stablecoins and utility tokens for users and are nowadays characterized by good user experience (UX).

Trading of tokenized assets, on the other hand, is less mature so far – the secondary market is still in its infancy. There is also the question of integration into existing exchanges. Thus, tokenized assets could be traded via traditional exchanges. However, depending on the design of the system architecture, the advantages of DLT (e.g., reduction of intermediaries) could be lost in this case. It remains to be seen which method is the most efficient.

Clearing & Settlement

One of the biggest advantages of DLT is the automation of the clearing and settlement process with simultaneous mitigation of settlement and counterparty risk through DLT applying the concept of delivery versus payment (DvP). However, it should not be forgotten that every securities transaction, regardless of whether a digital asset or traditional security, has an asset leg and a cash leg. This means that the trade of securities cannot be finally settled without a corresponding payment flow. In traditional securities settlement, fiat currencies are used for this purpose. For crypto assets, a crypto-crypto swap would also be conceivable, which can take place without the involvement of currencies issued by central banks.

In the case of tokenized assets, settlement is based on DLT (asset leg), but there is currently no established process to integrate payment flows into this digital settlement process (cash leg). There are several approaches to solve this problem. One possibility would be to use digital currencies in the form of a central bank digital currency (CBDC) or even a stablecoin for the cash leg. Another approach would be to combine digital securities settlement with existing payments settlement by using a trigger solution to bring asset leg and cash leg together (see the BLOCKBASTER project from Bundesbank and Deutsche Börse).[19] It remains to be seen which solution(s) will ultimately prevail.

Custody

Originally, the custody of tokens was developed and implemented as a decentralized concept, in which the customer had to take care of the custody and security of the tokens (specifically the private keys to the tokens). In the meantime, however, the role of the crypto custodian, who ensures the secure and compliant custody of all digital assets, has emerged.

Crypto custody means key custody, so at its core is the storage of private cryptographic keys. Due to the risk of total loss of assets, crypto custody requires a highly secure key custody approach. Specialized providers offer different technologies for securing private keys. In addition to the security factor, the approaches differ in terms of governance, scalability, and integration capability. Three main groups of key custody providers are:

- Pure technology providers: These provide the technology for key custody. It must be implemented, configured, and operated by the users themselves.
- White-label providers: These provide key custody as a white-label solution in a compliant form. Users outsource the custody task to the white-label providers and no longer need to be concerned about the custody and security of the private keys.
- Custody service providers: These players are, for example, financial service providers or crypto exchanges that offer key custody service as an additional service under their own name.

Asset Servicing

Asset servicing is broad and includes services, such as income and principal payments, tax services, proxy voting, and corporate action management. Activities in asset servicing are predominantly repetitive, which is why there is a corresponding potential for automation and increased efficiency. This can be achieved by using smart contracts based on corresponding blockchain protocols.

Banks can create new revenue pools with crypto assets, e.g., by providing and operating nodes for different protocols. For instance, the distribution of coupon and dividend payments could be automated with stablecoins.

This is similar for tokenized assets: interest payments, distributions, redemptions, etc., can be triggered directly based on DLT, depending on the design of the tokens. Alternatively, they can be integrated into the custody service. In essence, this area is still at an early stage of development.

3. FINDING THE RIGHT STARTING POINT

In this white paper, we have formulated guidelines for the classification of digital assets. The lifecycles of crypto assets and tokenized traditional financial instruments were discussed, based on their value chains. In the second part, we will show four possible entry scenarios in trading with crypto assets. We will also present a possible architecture diagram with the necessary components. e. The selection of the individually required DLT components and their integration into the banking system plays a special role here.

Successful implementation of these use cases can serve to gradually build the ecosystem of digital assets.

Capco supports the individual implementation path end-to-end with comprehensive technical and methodological capital market and DLT expertise. We accompany clients from the digital asset strategy to the implementation of new business models.

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ABOUT CAPCO

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