CAPCO

THE PATH TO THE DIGITAL ASSET ECOSYSTEM

PART II: THE STARTING POINT FOR CRYPTO ASSET TRADING

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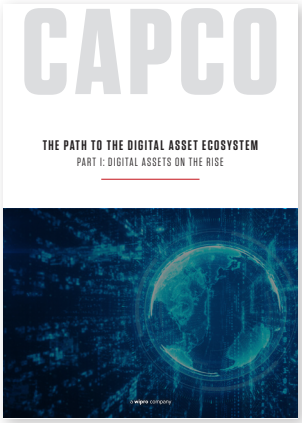
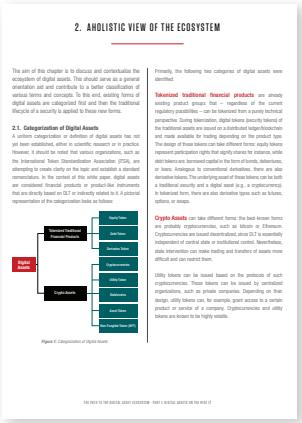
PART II: THE STARTING POINT FOR CRYPTO ASSET TRADING

In the first part of this white paper series, we provided guidance on the categorization of different digital assets and the specifics of the asset lifecycle. Due to the complexity of the challenge, two questions arise: How can investments in the new DLT-based market infrastructures be justified? Which business models can already be operated profitably today?





Banks are currently confronted with a strong rise in demand from institutional and private investors alike for these new assets, for example, as a portfolio addition. We believe that trading in crypto assets offers multiple opportunities to find the right entry point into this ecosystem.

High volumes and lower price sensitivity for innovative services in this environment promise interesting entry points for banks. Fintechs and specialized institutions have been successfully showing the way for several years and serve the needs of a steadily growing market. Banks can use this positive momentum to address the needs of their customers, to overcome the technical challenges of the new instruments, and to complete the transformation of their architecture. In this part of a two-part whitepaper series, we show four options for crypto-asset trading that can help banks to succeed in this transformation. The embedding of crypto-asset projects and offerings in a comprehensive digital asset strategy remains decisive for the future viability and success of the financial service provider.

1. HARNESSING THE MOMENTUM OF CRYPTO-ASSET TRADING

In the first part of this white paper, we discussed the growing importance of digital assets for capital market participants. Because of the billion EUR market that already exists, crypto assets play a special role. Along the value chain, the introduction of a trading offering for crypto assets offers an interesting starting point for a bank's own activities. High 24-hour trading volumes with simultaneously large spreads already offer profitable business cases for financial institutions. For banks, trading in crypto assets alone opens a wide range of use cases. Internal know-how from the trading and settlement functions of traditional financial instruments, as well as experience with a complex regulatory environment, can serve as a competitive advantage. In the following, we outline four possible use cases. A successive ramp-up and expansion of these use cases allows the gradual transformation of the bank's infrastructure based on DLT components.

The four use cases differ primarily in terms of customer segments, complexity of implementation, and risk-return profile, and will be examined in more detail in the following sections. The chart below illustrates the possible positioning of a financial institution (in red) along these crypto-asset trading use cases:

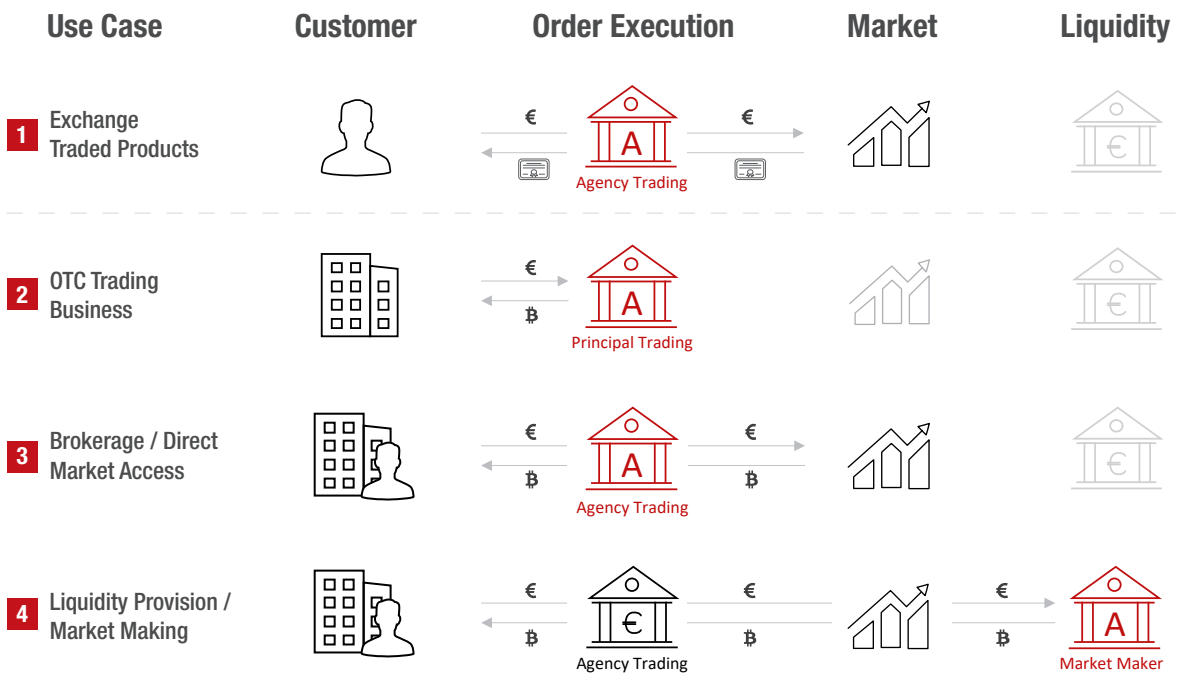


Figure 1: *Position of a financial institution (in red) along four possible crypto-trading use cases (highly simplified)*

1.1. Exchange Traded Products

A possible first step for financial service providers to start trading with crypto assets, and to meet the increasing customer demand in a timely manner, is to offer exchange-traded products (ETPs). These are exchange-traded securities that track the price development of the underlying asset. Due to the comparatively simple implementation of these products, they are becoming increasingly popular in the financial sector. The security shell enables retail investors in particular to buy and indirectly participate in digital assets without the need for special DLT know-how or, for instance, a wallet. Since ETPs can be traded via a traditional securities exchange and central clearing, these instruments are particularly suitable for investors who are not familiar with the handling of crypto assets or who shy away from the resulting risks. ETPs can be divided into the following product categories:

Exchange Traded Notes (ETNs)

ETNs are a relatively new type of debt securities. In contrast to bonds, there is usually no coupon payment. In principle, ETNs do not have to be collateralized, which can represent a major issuer risk for investors, as ETNs do not constitute special assets. However, due to the sometimes high volatility of crypto assets, some issuers offer physical collateralization of their crypto ETNs. The exact collateralization in terms of quantity (predefined claim to deposited assets per ETN share) and type (e.g., by a regulated depositary as well as a trustee) must be checked on a case-by-case basis. Banks can curate suitable products for their client groups and add value through their securities expertise. On the German trading venue Xetra, 95 such instruments are already available (as of 11/2022).[1] ETNs that track individual crypto assets, such as bitcoin, Ethereum or Polkadot, and crypto-asset baskets are tradable. Clearing takes place via Eurex Clearing.

Exchange Traded Commodities (ETCs)

ETCs are also exchange-traded debt securities that do not constitute special assets by law. As the name suggests, ETCs, in their original use, track the performance of one or more commodities. Crypto ETCs can also track one or more crypto assets.

Since ETNs and ETCs differ little in legal terms and in processing, the terms are often used synonymously in connection with crypto assets. A look at the corresponding basic information sheets (KIDs) provides information about individual differences. The ETC Group currently offers the largest crypto-asset ETC for German investors with the BTCetc - ETC Group Physical Bitcoin (ISIN: DE000A27Z304), which manages assets of approximately 676 million USD (as of 03/2022).[2]

Exchange Traded Funds (ETFs)

The most popular form of ETPs among retail investors are ETFs. These are exchange-traded investment funds that, in contrast to ETCs and ETNs, constitute special assets. ETFs replicate an index in physical or synthetic form. Canada in particular is positioning itself as a pioneer in the crypto ETF market. In Spring 2021, the Ontario Securities Commission (OSC) gave the green light for the world's first bitcoin ETF issues by the provider Purpose Investment Inc.[3] Currently, the ETF manages assets of over 1 billion EURs and holds the equivalent value directly in bitcoin via the sub-custodian Gemini Trust Company LLC.[4] The US regulator SEC approved the ProShares Bitcoin Strategy ETF (BITO) for trading at the end of 2021.[5] The BITO ETF invests indirectly in bitcoin via futures, which was presumably decisive for regulatory approval. Applications for ETFs that invest directly in crypto assets have always been rejected in the past (e.g., VanEck or Wisdom Tree).[6] In Germany, crypto ETFs will probably only play a minor role in the medium term, as the legal framework at the European level (see UCITS Directive) makes their introduction difficult.

Financial institutions in Germany and Europe already have access to a steadily growing range of ETNs and ETCs. Thanks to the securities shell and corresponding securities identification numbers, existing settlement routes can be used. In this way, banks can provide their clients with access to these regulated products at short notice. The issuance of own ETPs could also be interesting for some institutions with currently achievable management fees of 1-2 percent. For the time being, the complexity of the new assets can be avoided by cooperating with specialized custodians.

1.2. OTC Trading

Over-the-counter (OTC) trading, i.e., transactions directly between two parties (counterparties), are an essential part of traditional capital markets. OTC transactions still play a dominant role, especially in the derivatives market, and exceed the exchange-traded volume by many times. Moreover, it is now possible to trade almost any type of financial instrument over the counter. It is, therefore, one of the most familiar business fields for financial institutions around the globe.

Crypto assets are also predominantly traded OTC – estimates assume up to 70 percent of the total market liquidity. Crypto assets can be traded from crypto to crypto (e.g., bitcoin to Ethereum) or fiat to crypto (e.g., EUR to bitcoin) and vice versa. First derivative products are also available for trading. In the context of crypto assets, OTC desks act as providers of an OTC trading service and a distinction can be made between agency desks (e.g., itBit) and principal desks (e.g., Galaxy Digital).

A crypto agency OTC desk acts as a kind of intermediary and provides access to liquidity outside of exchanges. Once the client deposits fiat currencies (e.g., EURs) or crypto assets, the agency's OTC desk searches for a suitable counterparty on behalf of the customer. In this case, the client bears the risk of interim market price fluctuations. In the case of a principal OTC desk, the principal, i.e., the OTC desk itself, bears the risk, as it enters the trade as a counterparty.

In simplified terms, this works as follows: when a client requests a quote, the principal responds with a price proposal based on the current market prices and conditions, as well as a markup for the service and the risk assumed. The client can negotiate, accept, or reject part of the price and the terms. If the client accepts the offer, the principal commits to delivering the assets at the agreed price and terms and will attempt to purchase the assets or deliver them from its own books. The risk of a short-term increase in the price of the assets is borne by the principal. Therefore, a wider bid-ask spread is required for the assumption of such risks. Since the principal function is closer to the well-known OTC trading business of traditional financial markets, the focus in this section is on the role and advantages of the principal desk. In the following, the terms "OTC desk" and "principal desk" are used interchangeably.

The advantages of a dedicated OTC desk over a crypto exchange can be explained with a simple example: an investor wants to purchase a large number of crypto assets, for example, 500 bitcoins. If they do this on a single crypto exchange, they will encounter a problem with the still young market – the lack of order book depth. Due to the comparatively low liquidity on the crypto exchanges, it is difficult to execute a buy order in a narrow price range. If the trade is to be executed anyway, a lower price must be accepted for at least part of the order. This is called "slippage". Alternatively, the investor could split their order and place it in smaller tranches on different exchanges. This complexity can be avoided by using an OTC desk. In addition, a larger transaction on a crypto exchange can send the market into significant fluctuations; this can also be avoided through over-the-counter trading. Depending on the trading pair, some crypto exchanges still have quite complex trading limits, which makes it difficult to implement larger transactions. Other advantages of an OTC desk are flexibility and a higher degree of anonymity. The risk of front-running, e.g., due to delayed funding of assets on the exchange and actual trade execution, can be minimized.

Obviously, the use of an OTC desk is particularly suitable for high volumes. Therefore, this service is mainly aimed at institutional clients (e.g., hedge funds, miners, venture capitalists) and "high net worth individuals" (HNWIs), such as "crypto whales". Much of the OTC business in crypto assets currently takes place in Asia and North America. It is, therefore, not surprising that a US bank is now the first regulated financial institution to take a step in this direction: in March 2022, Goldman Sachs reported the first OTC crypto-derivatives trade in which they acted as principal.[7]

Despite this hopeful news, the current hurdles and risks should not be ignored. OTC liquidity is still often located in countries with insufficient regulatory requirements. Increased anti-money laundering (AML) and fraud prevention efforts are needed. There is also a lack of minimal standardization, as has been achieved in traditional OTC derivatives trading over the past decades. However, traditional financial institutions might be able to close these gaps with their expertise and experience.

Through the OTC trading of crypto assets, banks could address a new target group of customers and win them over. As international banks often have their own OTC desks, the best starting conditions are given. The in-house expertise can be used to set up an OTC trading desk. A first step could be to offer derivative products, such as non-deliverable forwards (NDFs). They enable banks to offer their institutional clients participation in the trade of crypto assets without being exposed to the technical complexity of these assets themselves. However, risk functions in the bank should be involved at an early stage to gain experience with crypto assets in terms of pre-trade risks and limit management. Developments on regulatory capital requirements should be closely followed. The capacity for custody as well as for the forensic analysis of crypto assets must be gradually built up or developed through cooperation. The prospective expansion of the range of services to include prime services, such as lending, leverage trading, research, reporting, and custody, offers great potential for the expansion of an already very exciting business case.

1.3. Brokerage / Direct Market Access

Many financial institutions are currently reluctant to take on risk during OTC or principal trading. One possibility of risk mitigation, therefore, often seems to be the integration of trading functionalities in the form of agency trading or direct market access (DMA), where trading orders are forwarded to an exchange or a third broker for execution. The financial institution thereby only acts within the framework of the financial commission business. The placement of buy and sell orders on a crypto exchange offers attractive conditions and low spreads for customers, as well as risk-free commission income for financial institutions through order fees. This commission business is particularly common in the retail segment of traditional securities trading. Clients are used to being able to select different trading venues, such as Xetra or the Stuttgart Stock Exchange, to buy a share. For private customers, the overall overview of their own assets plays an important role. The integration of crypto assets into existing depot overviews and learned trading processes is obvious. The new assets should fit seamlessly into the existing banking experience. Designing a simple and trustworthy customer experience is of high importance. The focus can initially be on an advisory-free self-service to circumvent additional complexity in the advisory business (as stipulated by MiFID II) in a trial phase. The focus on a specific client segment, such as wealth management clients, can make it easier to get started, depending on the individual starting position of an institution. Additional processes, e.g., for documenting the origin of funds in the context of transactions with crypto assets, can be learned and calibrated more economically with such a customer group if necessary.

As a start, it is advisable for financial institutions to analyze whether they should limit customers' disposal of their crypto assets to trading on connected marketplaces. The direct transfer of crypto assets with a change of the beneficial owner (peer-to-peer) can entail high compliance efforts, especially in mass retail business. Neobanks, such as Revolut, show that a closed-shop offer (buy and sell without transfer) also creates an attractive customer experience.[8] Similar services in Germany are currently offered, mainly by neobanks such as Nuri (formerly Bitwala), N26 (announced for 2022[9]) and neo-brokers (e.g., Trade Republic, eToro, and Justtrade). While the first European banks, such as BBVA in Switzerland, already offer crypto-brokerage in private banking, millions of private customers of major German banks still must wait for such an offer.[10]

Although offering pure brokerage or DMA services can avoid specific risks in dealing with crypto assets, the implementation remains complex. At the core of the service offering is usually the connection via the trading venues, which requires a robust trading infrastructure. Especially in the retail bulk business, fully integrated and fully automated processing from pre- to post-trading is necessary to serve customer needs economically. Order and execution management systems must also be able to guarantee best execution as in the traditional securities world, e.g., via smart order routers and algorithms. In addition, the pricing of transactions on crypto exchanges based on order volumes can be optimized by skillfully shifting trade flows.

As most trading venues, such as Coinbase, Binance, Bitfinex, or Kraken, require pre-funding, liquidity and execution management have a special role to play. Before an order can be executed, crypto assets or fiat currencies must be made available on the trading venue directly or indirectly (through so-called off-exchange settlement systems) in the appropriate quantity and quality. Some crypto custodian providers, such as Fireblocks or Copper, offer initial approaches that work with asset delegation and intraday clearing to minimize counterparty risk.[11] Without appropriate solutions, pre-funding in fiat currencies may take wire transfer times. Therefore, the design of the target architecture and order processes is of paramount importance. Ultimately, it is about nothing less than the orchestration of the entire trading lifecycle and the necessary infrastructure components. The interaction of the components from the client front end via the trading venues to the settlement in custody must be skillfully linked (more on this in the second section).

Established financial institutions can also make use of their expertise in, for example, FX trading and the development of securities processes. However, the specific hurdles of the young crypto-asset market mentioned above should not be ignored.

Due to the comparatively lower price sensitivity of customers trading crypto assets and the possibility of cleverly exploiting price differences across trading venues, attractive business cases can be designed in brokerage or DMA, as the currently very attractive company valuations of the exchanges, neobanks, and brokers active in this area make clear.

1.4. Liquidity Provision / Market Making

A traditionally important role of financial institutions in functioning capital markets is that of market makers. The provision of liquidity, i.e., the provision of a bid and ask price, is of particular importance in a trading venue for securities and ultimately enables investors to invest in these assets. Issuers, in turn, benefit from increasing demand, which is a prerequisite for further growth and adoption, especially in the crypto-asset market with its dispersed liquidity and low order book depth. Primarily, it is not about the simple assumption of risks but about the clever monetization of price differences across, for example, trading venues, liquidity pools, and time zones. Banks and securities service providers can draw on the experience they have built up over decades and position themselves as liquidity providers. Similar to the set-up of an OTC desk, market making offers lucrative spreads, e.g., on an exchange.

The trading venue Xetra alone currently lists over 35 regulated market makers or designated sponsors.[12] Increasingly, crypto exchanges, such as Coinbase or Binance, are also offering market maker or liquidity provider programs.[13] Young crypto-trading firms, such as B2C2, GSR, and Wintermute Trading, all of which are domiciled in London, have positioned themselves publicly in this growing market.[14] Many of their employees come from FX market divisions of major banks. On BSDEX, the crypto exchange of Börse Stuttgart Group, the Frankfurt securities specialist Bankhaus Scheich and the in-house EUWAX AG are active as liquidity providers.[15] In addition to spot markets on centralized crypto exchanges, decentralized exchanges (DEX) and lending protocols in the growing decentralized finance market (DeFi) may also offer new business areas for liquidity providers in the future.

There are similar challenges for established financial institutions in tapping into this business model as there are for the principal trading/OTC desk model. The BCBS Capital Requirements (cf. paper BCBS 519) proposals under consultation should be taken into account since at least a certain level of liquidity must be held in the corresponding crypto assets in order to execute the trades.[16]

In some cases, market makers are compensated in addition to the spread in a token issued by the exchange, which can lead to additional complexity. In-house custody of crypto assets outside of the exchange's own trading hours may be advisable to mitigate the risk of losses from, for example, a cyberattack on the exchange. The prerequisite for this would be an in-house crypto-custody offering.

Crypto exchanges are mostly young companies that are in an enormous growth phase. The entry of established banks as market makers can help to further professionalize these trading venues and expand the crypto-asset ecosystem. Existing bank infrastructures and systems can possibly be parameterized and reused for this purpose, assuming a connection to the corresponding exchanges. The necessary know-how already lies dormant in many banks, as prominent changes from major banks to the crypto sector show and this know-how needs to be activated. In view of the currently far more illiquid market for security tokens, an early entry could develop into a decisive competitive advantage in the future.

2. OVERVIEW OF THE REQUIRED DLT COMPONENTS

In principle, it can be assumed that the introduction of digital assets – whether crypto assets or tokenized assets – will not completely replace the already existing securities settlement routes in the short to medium term. Rather, a coexistent mapping of the traditional as well as digital routes for the settlement of the respective asset classes is required. Through appropriate orchestration, trade flows can be gradually redirected as adaptation progresses.

The crypto trading use cases described in the first chapter require the integration of new DLT components. Essentially, this involves four components that are required in different forms depending on the use case:

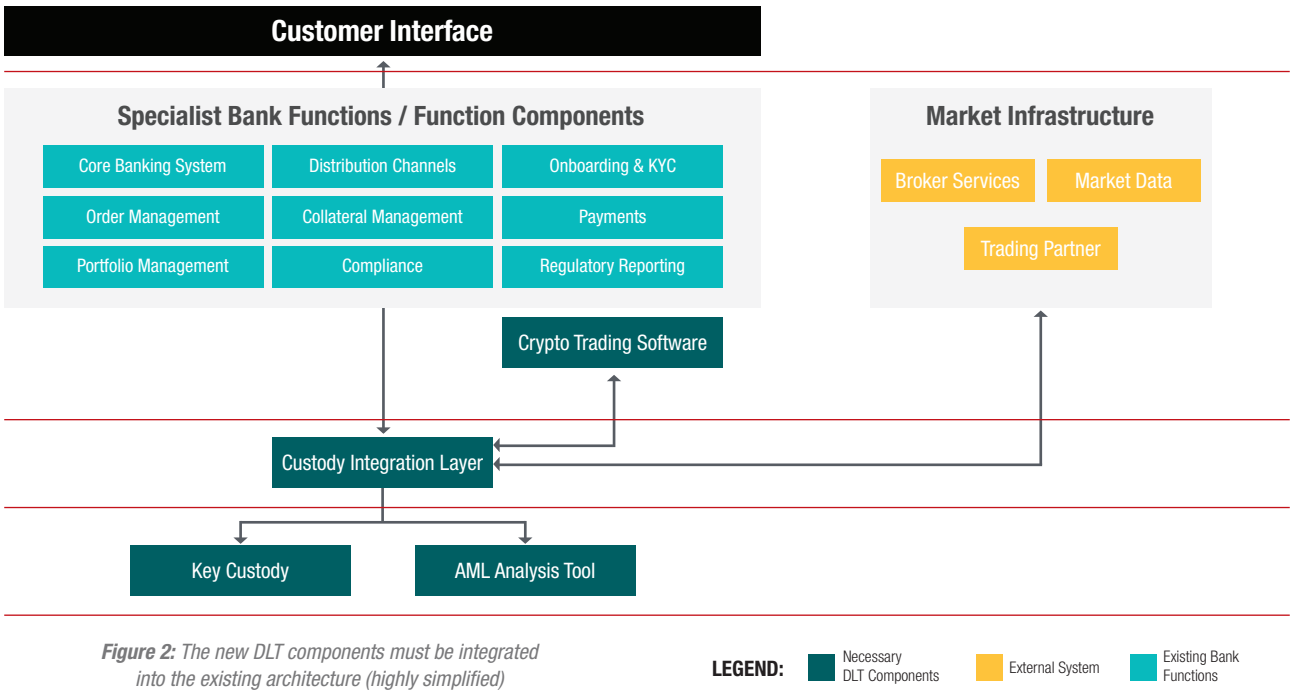


Figure 2: The new DLT components must be integrated into the existing architecture (highly simplified)

2.1. Key Custody

Some use cases require a custodian function for crypto assets. In order to operate as a custodian, an adequate technical system for the custody of cryptographic keys ("key custody software") is required as well as its integration into the system landscape and release processes of the financial institution. With the help of the key custody software, wallets are created for customers on the defined target protocols and the associated cryptographic keys are securely protected against attacks and loss. In certain contexts, it makes sense to use a single wallet for multiple customers ("omnibus wallet"). The use of omnibus wallets is very common in the context of large-scale retail applications. In other cases, there should be a strict separation so that only one wallet is created per client or organization. The software is also used to sign outgoing transactions according to defined authorization and release concepts. For the latter, high-performance and scalable systems are required, especially regarding the connection of crypto trading software and trading venues.

Other criteria for structuring the custody solution are:

- **Security / Governance:** protection against data and loss of assets; a risk-adequate authorization system; and an approval concept for outgoing transactions that can be configured for different customer groups and bank-internal users
- **Compliance:** fulfilment of the bank's internal and regulatory requirements for IT security, data integrity and business continuity, as well as the auditability and traceability of transactions and holdings (in Germany: BAIT, GwG, KryptoWTransferV, etc.[17])
- **Process efficiency:** complexity of implementation and regular operation, sufficient speed, and appropriate level of automation in creating new wallets and using them
- **Scalability:** a structure that can cope with rapidly increasing user and transaction numbers
- **Transaction costs and operating costs:** Network fees on the individual blockchains are kept low and operating the custody solution does not require unreasonably high staff capacities
- **Flexibility:** the structure can be adapted for new or changing requirements and processes, ensuring optimal usability for clients.

Established providers of key custody software include Metaco, Fireblocks, Taurus, HEX Trust, GK8, and Copper.

2.2. Custody Integration Layer

Financial institutions should consider the custom development of the custody integration layer to integrate the new components into the banking functions. As a central switching point, the Integration Layer enables orchestration of the individual components across assets and use cases. If the financial institution already operates an Enterprise Application Interface (EAI), the integration between the individual components and the existing banking infrastructure can take place via the EAI layer.

2.3. Crypto Trading Software and Trading Connections

For trading in crypto assets, a trading connection to one or more crypto exchanges/liquidity pools is required. For instance, before a sell order can be forwarded to a trading venue, the trade request must first be validated by the custody services. A connection between the two components is therefore imperative. The crypto trading software fulfills the tasks of the order management system (OMS) or execution management system (EMS). Ideally, such software should, therefore, offer integration via SWIFT, FIX, and APIs. Challenges mainly exist because FIX connections are often not offered by trading platforms and APIs do not fulfill all the requirements that are necessary for resilient crypto trading.

The crypto trading connection also triggers downstream processes such as settlement, reporting, and cash booking or payment transactions after successful order execution. Until the implementation of on-chain payments, cash bookings or payments must be ensured via the payment transaction system in connection with the fiat currency account of the customers. Once settlement, payment and booking have been completed, the final reconciliation with the counterparty or crypto exchange takes place, depending on the trading model, by booking the crypto- asset pieces to the client wallet or, in the case of a sale, debiting them from the client wallet. The final reconciliation between the financial institution and the crypto exchange also requires the transfer of funds between these parties.

If the money transfer is to be arranged via a pre-funding procedure, the financial institution must maintain an account with the crypto exchange or with the crypto exchange's bank. Cash inflows and outflows must then be settled with this (Loro/ Nostro) account.

The data collected in the crypto trading software is also used to calculate internal bank risk KPIs for mapping open trading positions as well as counterparty risks, for example. Some solutions also include logic and interfaces for the calculation and positioning of collateral positions. The strategic selection of crypto-trading software against the background of current and future use cases is crucial. One example is the crypto-trading software Wireswarm from Swiss technology provider AlgoTrader. Other offerings come from Blocksize Capital, Custodigit, and Trading Technologies. In addition, established trading systems are increasingly tapping into this market with their own features.

2.4. AML Analysis Tool

When the Act Implementing the Amending Directive to the Fourth EU Money Laundering Directive came into force on January 1, 2020, the crypto custody business was included in the German Banking Act (KWG) as a new financial service requiring a license. According to § 1 para. 1a in the KWG, companies that operate a crypto custody business in Germany require prior permission from BaFin and thus automatically become obligated parties within the meaning of the Money Laundering Act (GwG), with the requirements for money laundering prevention described therein.[18] The central guiding principle of money laundering prevention is a risk-oriented approach, which must also be applied to the operation of the crypto custody business. The use of an AML analysis tool is necessary for the function of depositing cryptocurrencies from third-party wallets by customers and the associated transaction monitoring requirements in accordance with the AMLA. In addition, the tool can also be used for withdrawals of cryptocurrencies from third-party wallets. This software component thus monitors incoming and outgoing cryptocurrency transactions and the associated blockchain addresses in order to detect suspicious activities, sanctioned addresses, transactions with darknet markets, etc.

Suppliers of AML analysis tools include Chainalysis, Coinfirm, Ciphertrace, and Elliptic.

2.5. Deployment of the DLT Components along the Use Cases

The DLT components described in this section are used differently in the four use cases from the first section.

Exchange Traded Products (ETPs)

Financial institutions that want to offer ETPs to their clients do not need specific DLT components, as ETPs are **exchange-traded securities**. These products allow for **indirect digital asset exposure**. Consequently, a bank does not need to acquire, implement, or operate their own DLT components.

OTC Trading

In this case, customer wallets can be held at the financial institution or managed by customers themselves. The basis of the transaction is the **procurement of own holdings** unless the starting point is chosen via derivatives. For this purpose, further DLT components are required in addition to the **key custody**: the custody integration layer, crypto-trading software, and AML analysis tools. If the financial institution purchases the crypto assets from selected, white-listed crypto exchanges or liquidity providers and does not allow the transfer of these assets to external unknown wallets or from external unknown wallets, an AML analysis tool may be dispensed with or applied to a limited extent.

Brokerage / Direct Market Access

The name of this use case indicates that the financial institution acts as a **broker/agency trader** and enables **digital asset trading** for the customer. As with the establishment of the OTC trading business, this use case also requires all of the DLT components listed.

Liquidity Provision / Market Making

To fulfill the role of **liquidity provider/market maker** for digital assets, a financial institution first needs a connection to a large number of liquidity pools. The use of crypto-trading software seems advisable here. If the crypto assets are held by the institution outside trading hours, **key custody** is also necessary. In the beginning, a custody integration layer may not be necessary. The use of an AML analysis tool depends on the specific design.

A strategic make-or-buy decision must be made for all four components. Particularly, in key custody and the application of cryptographic procedures, special know-how is necessary, because in-house development often does not appear to make sense. The development of a separate "intermediate layer" (custody integration layer), which lies between the standardized DLT applications and legacy systems, can be realized under certain circumstances.

In general, the use of functions of current legacy systems is recommended, if this is possible (integration into the legacy). Know-how and capacities for the operation of the DLT components and the custody services should be built up internally in order to create independence and future security.

3. IMPLEMENTING CRYPTO-ASSET TRADING SUCCESSFULLY

In this second part of the white paper, four entry scenarios for trading with crypto assets have been shown as possible starting points for banks, embedded in an architectural target image. The selection of the individually required DLT components and their integration into the banking architecture play a significant role. The successful implementation of these use cases can serve as a profitable foundation for further developing the digital asset ecosystem.

As a leading global business and technology consultancy with a focus on the financial services industry, Capco has accompanied national as well as international financial services providers on their path into the digital asset ecosystem in several key projects in the fields of DLT / blockchain and digital assets. The following approach has been proven successful in the introduction of services related to crypto-asset trading:

Step 1:

Establishing a holistic digital asset strategy or embedding crypto trading in the existing strategy, considering regulatory changes, target group, and segment-specific as well as competition-relevant factors. This includes, among other things, a business unit-related analysis and evaluation of the regulatory environment with a direct influence on the product and service offering. Furthermore, it includes a target group and segment analysis to develop a suitable product-market fit with a needs-oriented tailoring to the target market and target customers.

Step 2:

Selection of a suitable trading model, considering individual risk appetite, implementation complexity, and business case attractiveness. In addition, the scope of services (e.g., best execution) and pricing models should be defined. Based on this, a customized trading partner setup is designed. This includes the selection of appropriate partners and liquidity venues, considering crypto-asset-specific requirements, such as decentralized liquidity and pre-funding.

Step 3:

Integration of new functions and processes into the existing bank structures. The selection of suitable crypto trading software as well as key custody solutions is of particular importance here. DLT-specific components must be integrated into the bank structure. Depending on the prioritized use case, the optimal implementation path within the existing infrastructure must be found. Where possible, existing systems should be parameterized and integrated into the target image.

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

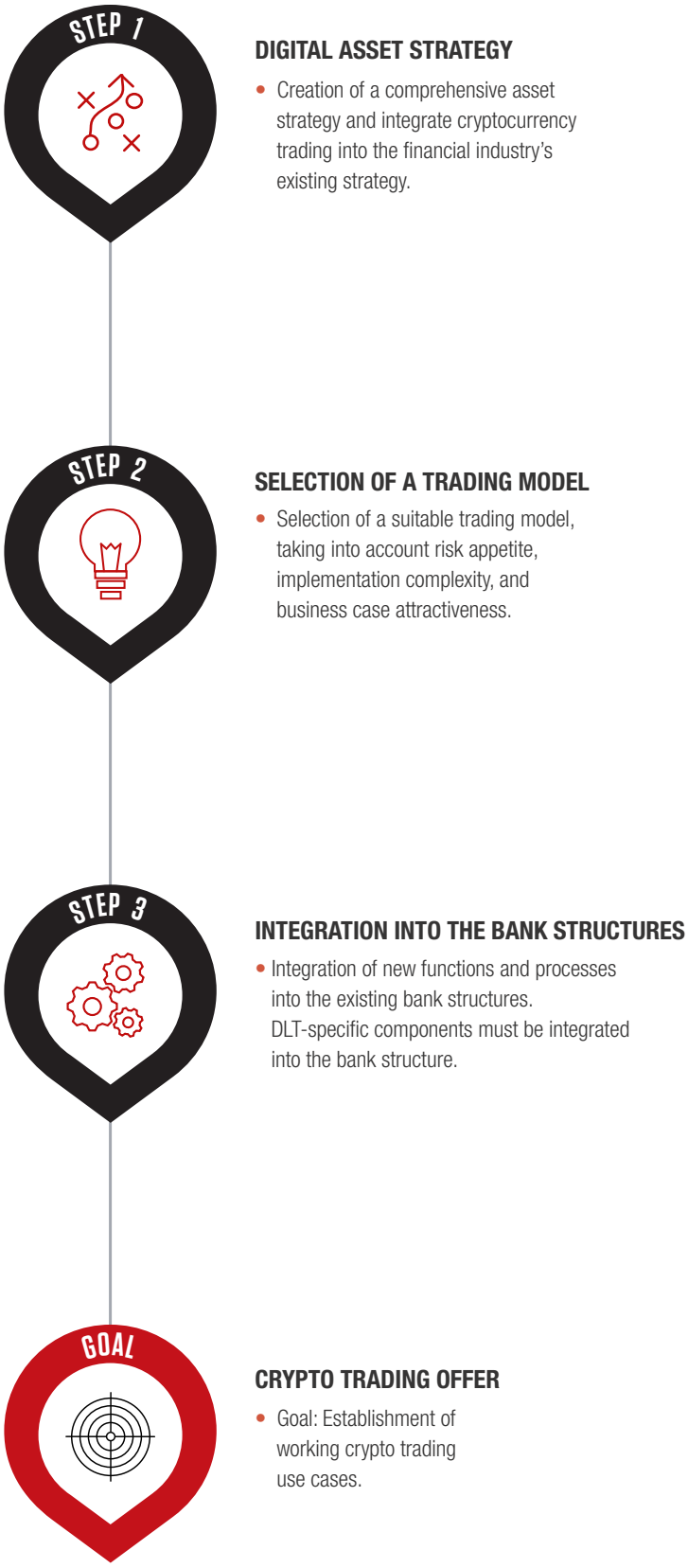


***Figure 3:** : Implementing crypto-asset trading successfully*

LIST OF SOURCES

1. https://www.xetra.com/xetra-de/newsroom/pressemitteilungen/liste-pressemitteilungen/Neuer-Krypto-ETN-von-Hashdex-auf-Xetra-Zugang-zu-einem-Korb-aus-Kryptowerten-unter-Ber-cksichtigung-von-Risikoparit-t-und-Momentum-3314196
2. https://etc-group.com/de/products/btcetc/
3. https://www.coindesk.com/markets/2021/02/12/first-north-american-bitcoin-etf-approved-by-canadian-securities-regulator/
4. https://www.purposeinvest.com/funds/purpose-bitcoin-etf
5. https://www.proshares.com/our-etfs/strategic/bito/
6. https://de.cointelegraph.com/news/sec-rejects-vaneck-s-spot-bitcoin-etf-as-btc-price-falls-below-63k
7. https://www.cnbc.com/2022/03/21/bitcoin-options-goldman-sachs-announces-otc-crypto-trade-with-galaxy-digital.html
8. https://brutkasten.com/revolut-krypto-wallets/
9. https://www.ft.com/content/0a7e2255-1a8e-4019-9ddc-d8763a713006
10. https://www.bbva.com/en/bbva-switzerland-opens-bitcoin-trading-service-to-all-private-banking-clients/
11. https://copper.co/clear-loop
12. https://www.xetra.com/xetra-de/handel/handelsmodelle/liquiditaet-durch-designated-sponsors/liste-der-designated-sponsors/3360!search?state=H4sIAAAAAAAAADWKsQoCMRAFf0W2TqFtPsDKluBhH5lXDawJ7m6Q47h_9xDSzTCzUY6Gq_Q3-TaY3d-XPq3EBFPy235wFbUbzCAzv6ppgIT4BPnL2VFtiUfGvRp0Tr3xGnlhXyIrHH0GZCVP5Eigg-1R8Z2zdrGj6VKNcYqaaP8BsKzzjqQAAAA&sort=sTitle+asc&hitsPerPage=50
13. https://blog.coinbase.com/coinbase-december-2020-market-maker-program-ed60c128850a
14. https://www.wintermute.com/
15. https://www.bsdex.de/de/
16. https://www.bis.org/bcbs/publ/d519.pdf
17. https://www.gesetze-im-internet.de/kryptowtransferv/
18. https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Auslegungsentscheidung/A/ae_200512_krypto_gw.html

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Capco, a Wipro company, is a global technology and management consulting firm specializing in shaping digital transformation in the financial industry. With a growing client portfolio of more than 100 global organizations, Capco operates at the intersection of business and technology. By combining forward-thinking with deep industry expertise, Capco delivers data-driven end-to-end solutions. Capco also drives digital applications for the banking and payments, capital markets, wealth and asset management, insurance, and energy sectors. Capco's innovation is brought to life through its Innovation Labs, award-winning Be Yourself At Work culture and employee diversity.

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