



# Banking blueprint for the crypto world

**Adoption of cryptoassets  
will transform banking**

Visit [kpmg.us/blueprint](https://www.kpmg.us/blueprint)



**How banks compete in the digital world has forever changed due to growing market acceptance of cryptoassets, the rapid advancement of cryptocurrency technology, and the at-scale participation of financial institutions in the crypto market.**

Case in point: Institutional cryptoasset adoption is driving innovation in core banking products and services across custody, brokerage, trade clearing, settlement, payments, lending, and more. At the same time, a new operational infrastructure for banking is emerging, which has set the foundation for resilience and growth in a fast-changing industry.

This paper aims to help business and technology leaders in the banking industry capitalize on opportunities in the growing crypto market by evolving operations and delivering new crypto services and solutions that are trusted, transparent, and auditable. We explore three high-potential, innovative crypto applications and the key technical and operational building blocks that underlie a successful crypto infrastructure for today's leading banking institutions.

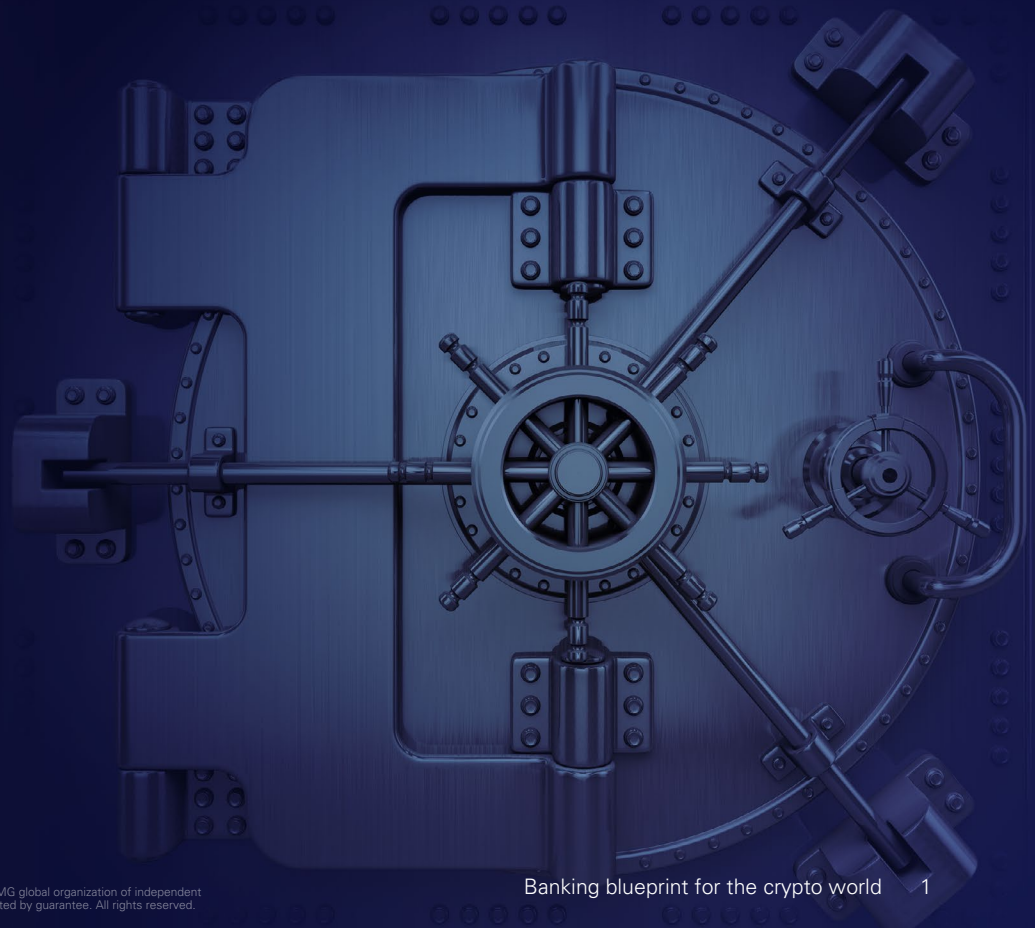
**2** It is time for banks to engage with cryptoasset customers

**8** Three promising areas of crypto innovation

**12** Banking blueprint for the crypto world

**16** Considerations for bank infrastructure transformation

**18** How KPMG can help





## ● It is time for banks to engage ● with cryptoasset customers

**Cryptoasset adoption is moving from the fringes of finance to the largest and most venerable trade centers in the world. Banks cannot afford to miss the moment.**

While the cryptoasset market remains small relative to traditional asset classes, the time is ripe to tap into the crypto phenomenon. The institutionalization of cryptoassets that KPMG has explored in prior reports has continued to accelerate, even in today's turbulent economic environment.<sup>1,2</sup> Mainstream adoption of these technologies is largely driven by: (1) increased regulatory clarity; (2) growing interest among investors; (3) increasing acceptance of stablecoins and central bank digital currencies (CBDCs); and (4) a robust ecosystem of commerce centered around cryptoassets (see [Three promising areas of crypto innovation](#)).

### **Regulatory clarity paves the way for mainstream adoption**

With increasing clarity from U.S. regulatory authorities, more and more large banks are breaking into the crypto space, launching products, services, solutions and operations designed to engage cryptoasset customers. Simultaneously, crypto-native companies are reimagining digital banking services and emulating traditional bank activities through their own prime-services offerings, while pursuing state and federal banking charters. These two trends reflect a convergence between two previously distinct market segments.

The United States Office of the Comptroller of the Currency (OCC) recently provided greater regulatory certainty for national banks and federal savings associations, which impacts hundreds of millions of Americans transacting billions of dollars of digital currencies a day. In July 2020, the OCC issued an interpretive letter stating that banks in the national system have authority to provide cryptocurrency custody services to customers. In September 2020, the OCC announced that banks may hold reserves for customers who issue stablecoins, i.e., cryptocurrencies backed by a fiat currency, such as the U.S. dollar.<sup>3</sup> Finally, the OCC continued its progress with a January 4, 2021, interpretive letter clarifying that national banks and federal savings institutions can participate within independent-node verification networks (INVN) and use stablecoins to conduct payment activities.<sup>4</sup>

The OCC's progress paved the way for many crypto-native companies—Anchorage, BitPay, Paxos and BitGo<sup>5</sup>—to file applications for national bank charters under the OCC's regulatory structure, with Anchorage becoming the first approved national crypto bank on January 13, 2021.<sup>6</sup> The momentum of these applications in late 2020 and early 2021 is likely a leading indicator that crypto companies will continue to offer a broader array of products and services to their national customer bases.

On the state level, Wyoming made history in the fall of 2020 by granting its first state Special Purpose Depository Institution (SPDI) charters to digital asset companies Kraken Financial and Avanti Bank & Trust.<sup>7,8</sup>

## The crypto advantage

Although cryptoassets have garnered a mixed reception by the press and are based on admittedly complex economics, proponents say the currencies have the potential to solve some of the stickiest problems in the broad financial ecosystem and create new levels of openness, trust, and scale.

- **Accessibility:** Cryptoassets help create a more open financial system, providing an alternative to traditional asset classes and democratizing financial access to a wider range of customers on a peer-to-peer network of exchange.
- **Efficiency:** Cryptoassets remove intermediaries, fees and other roadblocks to large transactions, creating a faster and less expensive global payment network. Open data on the blockchain allows infrastructure to automate and markets to stay open, always.
- **Transparency:** As native digital assets, cryptoassets provide increased transparency throughout the asset lifecycle. Public blockchain ledgers make it possible to independently verify and audit accounts and transactions, bringing real-time understanding and greater assurance to custody and settlements.

“Delivering benefits of trust, transparency and auditability, cryptoasset adoption continues to rise among both retail and institutional investors. As crypto goes mainstream, it is paving the way for massive innovation in the banking sector, including new products and services with significant future growth potential.”

○ **Sam Wyner**  
**Director, One Americas**  
**Blockchain & Cryptoassets**  
**KPMG**



## ● It is time for banks to engage with ● cryptoasset customers (continued)

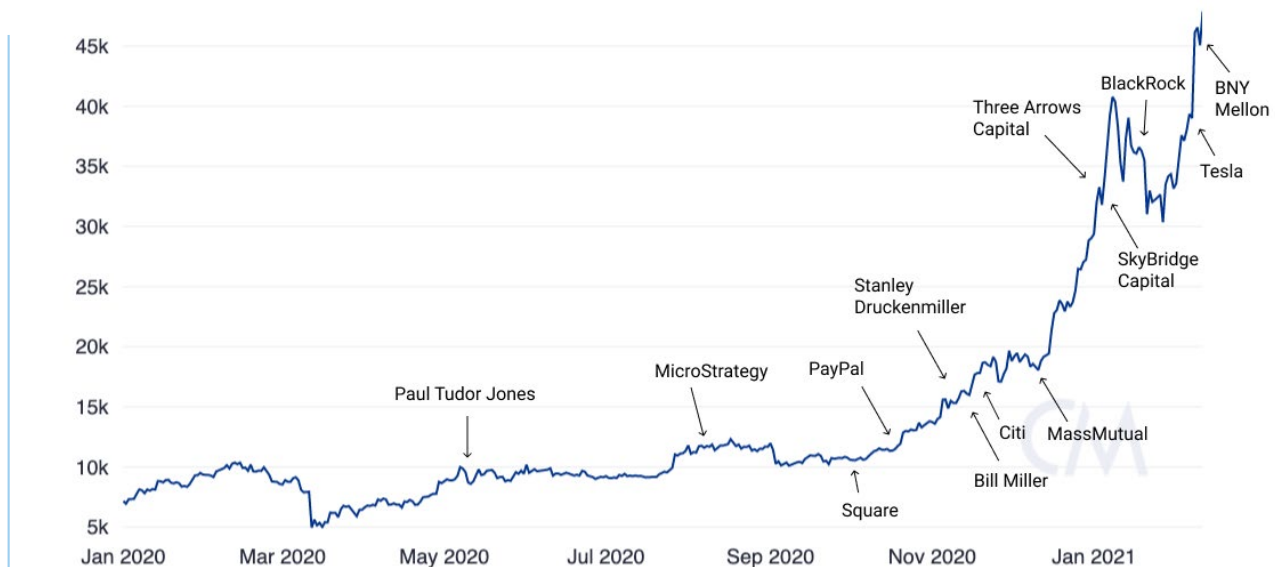
### Growing investor and institutional interest

More institutional investors are taking an interest in crypto, including well-known investment management leaders in the space. For example, BlackRock CEO Larry Fink recently took a relatively bullish view of bitcoin, saying it could potentially evolve into a global asset.<sup>9</sup> His statement followed earlier announcements by billionaire investors Paul Tudor Jones, Bill Miller, and Stanley Druckenmiller that they held and recommended bitcoin.<sup>10,11</sup> These recent positions can be viewed as an institutional milestone for cryptoassets, serving to validate certain aspects of bitcoin to the traditional investment community. In addition, activity in the institutional sphere ramped up significantly in the second half of 2020, when a growing number of publicly traded companies converted their fiat reserves into bitcoin.

Financial firms have also increased their involvement. Some of the biggest U.S. banks are said to be exploring the custody side of the crypto market, including Goldman Sachs and J.P. Morgan.<sup>12</sup> At the same time, large payment providers such as PayPal are beginning to allow customers to buy, hold, and spend certain digital currencies on their networks.<sup>13,14</sup>

Charting bitcoin price movements over time is further evidence that more institutions—particularly in the U.S.—are adopting cryptoassets. Price movements since November 2020 have strongly correlated to U.S. market hours, compared to 2017 when the market was far more retail driven.

### ○○○ BTC Price vs. Institutional Interest



**Bitcoin's rising price has been influenced and supported by many institutional investors and companies entering the space.**

Source: Coin Metrics, February 2021

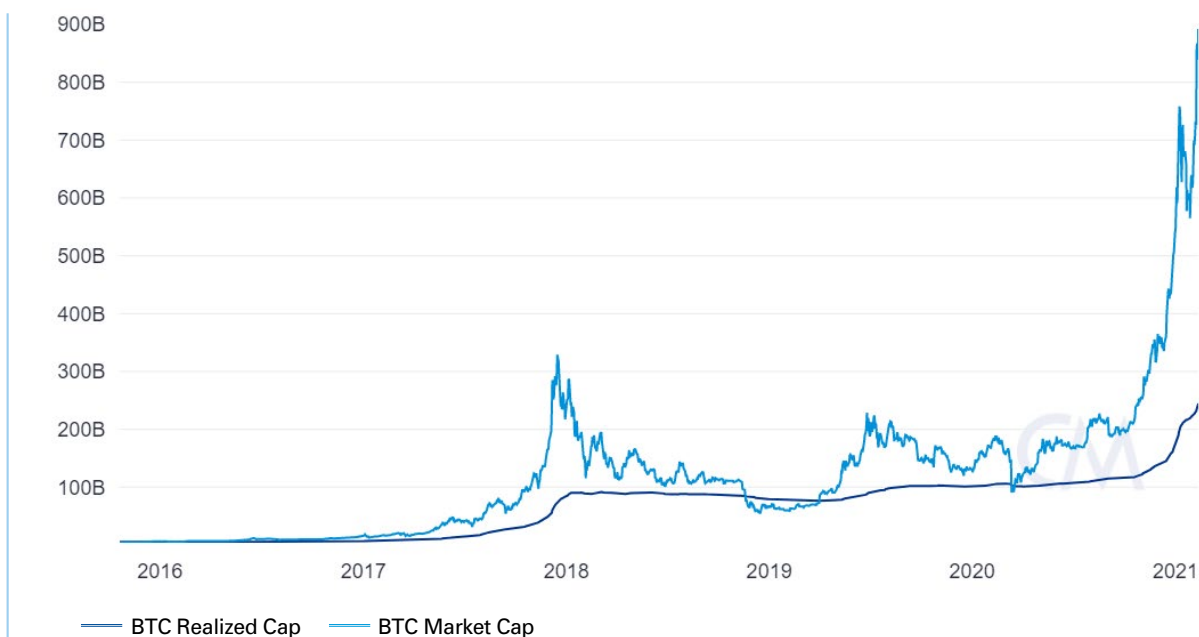
Measured by usage, adoption and value, bitcoin's surge over time is impossible to ignore. According to Coin Metrics data as of January 2021, active bitcoin addresses (wallets with activity in the past 30 days) numbered nearly 1 million per day, the highest in history and nearly doubling since a short-lived valley in 2018.<sup>15</sup> Notably, addresses holding greater numbers of bitcoin (2,000+ equating to roughly \$2M in dollar value) are still a minority, but started rising through 2020 and into 2021—a further sign of increased institutional investments and holdings.

Cryptoasset market economic activity also shows signs of growth. The adjusted transferred value of bitcoin—a measure of how much bitcoin is being transferred for payments, investments and other selling activities—is currently experiencing a spike. At the present time, approximately \$8B of bitcoin is transferred daily on the blockchain, more than three times the activity seen at the beginning of 2020.

“As cryptoassets become more liquid, trusted and accessible, ownership and trading is growing at a steady clip. Current usage of bitcoin and other cryptocurrencies by investors, companies and even central banks shows rapid, widespread adoption at both the retail and institutional level. Taken together, the amount and value of digital assets under management are growing exponentially, signaling the rise of a tokenized economy with tremendous purchasing power.”

○ **Nate Maddrey**  
Senior Research Analyst, Coin Metrics

### ○○○ BTC Market Cap and Realized Cap



**Bitcoin's popularity in late 2020 brought an increase in total value reflected in both the market cap and realized cap, a realistic measure of the total market size.**

Source: Coin Metrics, February 2021

## ● It is time for banks to engage with ● cryptoasset customers (continued)

Similarly, the bitcoin market cycle is nearing a high. Bitcoin market capitalization—the most commonly used metric to measure the total value of the cryptoasset—recently surpassed \$800B, a new record. The realized market capitalization, a metric developed by Coin Metrics to realistically determine Bitcoin’s market size, has also seen its largest increase since 2018.

Bitcoin market sizing trends also indicate institutional-level investment growth. When compared to traditional asset classes, like equities and bonds, bitcoin spot market volume is small. However, its growth rate over time is exponential, signaling that, although many institutions are not buying bitcoin directly, they are increasingly participating in the bitcoin markets by trading futures and other financial instruments.

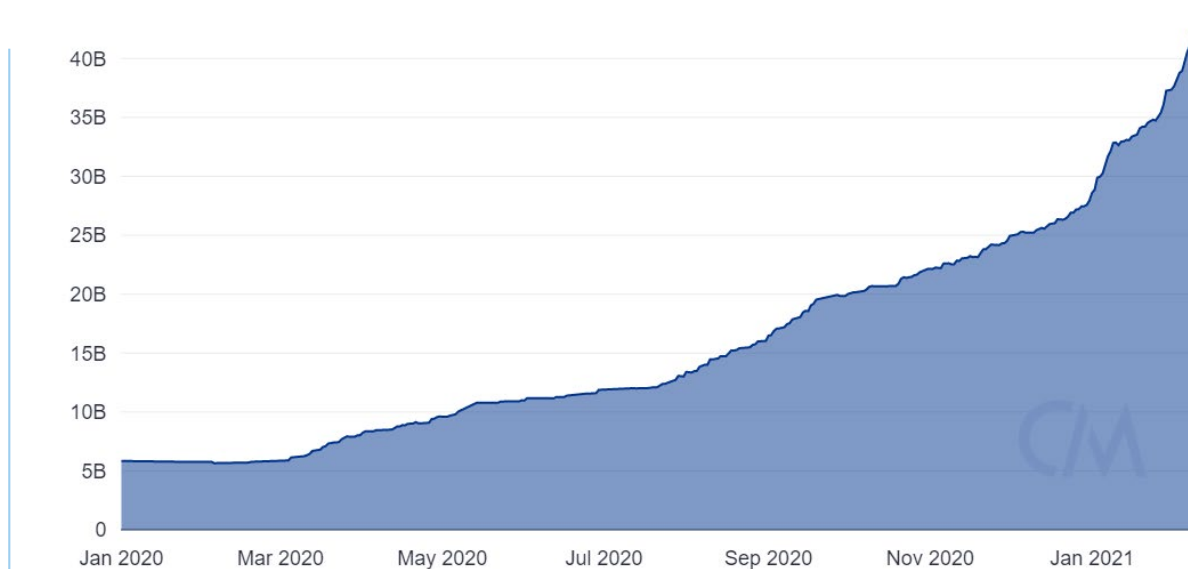
“Stablecoins draw retail and institutional investors who like the benefits of cryptoassets—for example, that you can send them instantly and custody them yourself—but don't like their volatility.”

○ **Nate Maddrey**  
Senior Research Analyst, Coin Metrics

### **Increasing acceptance of stablecoins and central bank digital currencies (CBDCs)**

Interest in and use of stablecoins and central bank digital currencies (CBDCs)—often seen as gateways to cryptoasset markets for traditional financial institutions—are growing exponentially, another sign of the major opportunity ahead for banks.

### ○○○ **Total Stablecoin Supply**



**2020 was a year of increased stablecoin supply across all available stablecoins, reaching a record high of \$40B.**

Source: Coin Metrics, February 2021



**Stablecoins** are digital assets with value pegged to a stable traditional asset, most often a currency such as the U.S. dollar. They are backed by collateral (assets and funds) that is held in traditional banks. Since their inception, stablecoins have been used extensively to limit traders' exposure to crypto price volatility, which had previously been a major point of friction in the market.

Stablecoin adoption has gone parabolic since March 2020. With more than \$40B in stablecoins issued, adjusted transfer value has skyrocketed for different stablecoins as more and more customers use them for payments, remittances, and trading.

**Central bank digital currencies (CBDCs)** provide a digital, often tokenized version of a country's or region's fiat currency. CBDCs are officially created, issued, and regulated by central banks and federal regulators.

Since 2017, multiple countries have explored CBDC proposals, and a few are piloting the technology. Now, interest is increasing at lightning speed, driven by both

geostrategic and political factors. At the start of 2020, only 20-30 governments around the world were serious about developing a CBDC. Today, more than 70 countries across both emerging and established economies are engaged in CBDC research projects or pilot programs, hoping the currencies can help increase their economic influence and expand financial inclusion.<sup>16</sup>

As more countries consider launching CBDCs, the stage is being set for banks to enter the cryptoasset markets. The banking industry is already moving to support cryptoasset customers in the payment and lending spheres, but the transformation is gaining momentum. National adoption—particularly by the U.S. Federal Reserve and European Central Bank—may provide the tipping point into broader acceptance. If banks can ready their infrastructures for their arrival, CBDCs could, ultimately, rise to an array of revenue-driving, blockchain-based bank technology solutions for custody, remittances, wire transfers, and more. ○

“Government adoption of digital assets is the signal many banks are waiting for to move full throttle forward with developing or expanding cryptoasset operations. Given widespread interest and activity at the national level, we think it will happen soon. Central bank digital currency (CBDC) projects are progressing all around the world, and when one country moves, we expect others to fast follow. To strengthen their competitive position in this emerging economic landscape, banks should be detailing strategies and plans to address and capitalize on the customer, business, technology, and operational impacts of CBDCs.”

○ **Josh Lipsky**  
**Director, Policy and Programs**  
**GeoEconomics Center at The Atlantic Council**

## • Three promising areas • of crypto innovation

**Crypto products and services have demonstrated tremendous growth potential in the banking sector. There are multiple areas of opportunity for traditional banks, fintechs, and digital native banks to deliver solutions for storing, moving, and using cryptoassets easily and securely.**

Banks that successfully service cryptoasset businesses and investors will likely have competitive advantages in the future. Three banking segments—**prime brokerage; yield generation via lending, borrowing and staking; and payments**—stand out for their profit potential.

### ***Prime brokerage services***

Custody—the management of assets and the underlying cryptographic keys that cryptoasset owners use to execute transactions—is a critical capability of the crypto economy. It allows banks to engage with the crypto ecosystem and add adjacent operations and services, including cash management, securities lending, leveraged trade execution, and other white-glove support.

Addressing issues of custody is a logical first move for banks that want to engage with crypto customers. Growing numbers of institutional clients—just like all crypto-market participants—are seeking ways to safely provide custody and use cryptoassets. Traditional banks are in a strong position to meet their

### **Emergence of crypto prime-services providers**

- **Digital asset financial services firm BitGo launched BitGo Prime, an integrated trading, lending, and custody platform for cryptoassets.<sup>17</sup>**
- **Cryptocurrency exchange Coinbase bought crypto prime brokerage Tagomi, an institutional trading platform for cryptoassets.<sup>18</sup>**
- **Digital currency trader and lender Genesis Global Trading expanded its services offerings by acquiring crypto custodian Vo1t.<sup>19</sup>**

needs: They already have deep experience safeguarding a wide variety of other assets, such as currencies like dollars and yen, investments like stocks and shares, esoteric derivative products like options and non-deliverable forwards, and even physical wealth like gold and art.

The back-office infrastructure and processes to custody digital assets diverge from typical bank custody models and pose new risks that must be assessed and managed.

Current crypto custody models take a variety of forms. Recently licensed Wyoming SPDIs such as Avanti Financial and Kraken are chartered banks that fully managed custody services to institutions that own and trade cryptoassets. Crypto exchanges, such as Coinbase, Kraken, Gemini, and Binance offer digital wallets to enable retail investors to hold, protect, and trade cryptoassets. Third-party custody providers such as BitGo and self-custody models such as Ledger and Casa are technology solutions that store and protect cryptoassets.

The business opportunities for crypto custodians are enormous and evolving. But that is only the tip of the iceberg. Custody is the basis of a prime services stack that includes everything from borrowing to lending to execution.

What sets prime brokers apart—in crypto and traditional financial markets—is how they enable investors to manage their businesses through integrated offerings for trade clearing, settlement, order routing, exchange, lending, leverage, fund administration, portfolio management, financial reporting, tax reporting, and more. The race to prime brokerage accelerated in 2020 through significant acquisitions and the launch of adjacent products and services by existing players. Institutional customers entering the market are now benefiting from a wider array of trading options and a more secure and flexible post-trade settlement processes.

“There is a race underway to provide a prime broker-like service in the crypto space. Banks may have an edge. In fact, prime services is likely to be many banks’ first entry into the crypto ecosystem. Although cryptoasset ownership is still dominated by retail investors, institutional clients such as high-net-worth individuals are participating in greater numbers. They are looking to banks they are already in a relationship with to store and safeguard their cryptoassets and also bundle in white glove services to facilitate trading and other investor activities at scale.”

○ **Mike Belshe**  
**Chief Executive Officer**  
**BitGo**



- **Three promising areas**
- **of cryptoinnovation** (continued)

For example, BitGo—a digital asset financial services firm that offers custody and other prime services for crypto investors—illustrates how banks might develop a prime services model for crypto customers. BitGo developed a system to enable cryptoasset owners to sell assets and settle trades internally, without moving assets from their custody wallets. This is representative of a risk-mitigation approach that enables cryptoasset owners to participate in the market without exposing assets to on-chain settlement risks.

### ***Yield generation: Crypto borrowing, lending, and staking***

The growth in crypto prime brokerage demonstrates strong institutional interest. However, the demand cycle for crypto borrowing and lending has risen dramatically across the full spectrum of crypto-market participants. This demand cycle is reflected in the dramatic growth of user adoption of centralized lending platform organizations like BlockFi<sup>20</sup> and Celsius,<sup>21</sup> as well as the explosion of decentralized finance (DeFi) through early 2021, with the total value of assets “locked” in DeFi exceeding \$25B.<sup>22</sup>

In both centralized and decentralized crypto-borrowing and lending models, crypto users can deposit their cryptoassets to generate yield. Yield generation has proven to be a critical value-added service layer for participants who have taken investment positions with long horizons. Centralized organizations that are developing borrowing and lending solutions are poised for significant growth as institutional adoption continues and greater numbers of retail investors pursue yield-generation opportunities.

The rise of DeFi has been driven by technology advancements enabling more effective decentralized governance. The most notable DeFi applications to date focus on decentralized peer-to-peer exchanges and lending of crypto assets. In this context, first movers including Uniswap, MakerDAO and Compound have exploded in growth and user adoption throughout 2020. While the regulatory dynamics around DeFi remain uncertain, the transformative potential of this new segment is just starting to be realized.

---

In parallel to yield generation from borrowing and lending, the rise of Proof-of-Stake (PoS) networks has created new opportunities for yield generation through “staking.” Staking is a process by which users on PoS networks “stake” their assets to participate in consensus, ultimately generating yield through block rewards issued by a given blockchain. PoS yield generation is another value-added service exchanges and custodians are offering to their clients. Similar to DeFi, there are a number of key questions around staking related to regulation and taxes that still need to be answered to provide clarity for adoption by regulated financial services businesses.


### **Payments**

Around the world, digital payments are exploding in the business-to-business and business-to-consumer arena. Across these models there has been an acute focus on cross-border payments to realize efficiencies in cost and settlement provided by stablecoins. Mobile payment apps like Square’s Cash App and PayPal’s Venmo have exploded in popularity, especially since COVID-19 social distancing has restricted the use of physical cash to some extent.

The increasing integration of cryptoassets into established fintech payment platforms has introduced new on-ramps to crypto adoption and new payment rails using crypto for on-chain transactions. Using public blockchains for cross-border payments and settlement, especially with stablecoins, is a new low-friction mechanism for transferring value outside of traditional payment systems.

Banks and payment providers are moving quickly to participate in the growing digital payments arena. In November 2020, PayPal launched services to enable customers to buy, sell and hold cryptoassets including bitcoin, bitcoin cash, litecoin and Ethereum.<sup>23</sup> PayPal’s move was followed by another large payment provider that added a stablecoin infrastructure company to its network.

Wider implementation in banking is the next step, and it appears it will soon be underway. Amex, Mastercard, PayPal, and Bank of America are among the financial firms that have filed hundreds of patents involving the use of blockchain technology for speedy payment rails, internal payments, and other forms of payments.<sup>24</sup> ○



**Staking** is a process by which users on PoS networks “stake” their assets to participate in consensus, ultimately generating yield through block rewards issued by a given blockchain.



## ● Banking blueprint for ● the crypto world

**To meet the needs of cryptoasset owners, especially at the institutional level, bank operations need to evolve.**

We have identified the seven key pieces that should constitute a bank's operational infrastructure in order to deliver innovative and competitive crypto-based services. We believe evolving capabilities and business models in the key areas where crypto activities touch current operations will help banks seize the most promising digital-services business opportunities in the expanding crypto market.

### **1. Seamless customer experience**

Successful firms will feature retail and commercial interfaces that allow for seamless engagement between crypto products and services and traditional assets. The environment is likely to be similar to web and mobile apps banking customers use today. In an all-in-one digital setting, crypto customers will be able to access funds easily and quickly, perform transfers of assets for paying bills and purchasing goods, and utilize assets for lending and borrowing activities.

The focus on customer experience has been a core driver behind the growth in institutional prime services. Institutional asset managers with little to no experience in the crypto space are able to call upon their historical focus on customer experience and white-glove treatment used in the traditional-assets arena.

### **2. Modernized custody models**

Custody is a critical capability to ensure customers' cryptoassets are protected from theft or loss and are available for use.

The custody and control of cryptoassets is significantly different from traditional financial assets due to the finality of transactions settled on public blockchains. This difference presents unique risks related to how organizations manage processes and technologies to securely manage cryptographic key material that control customers' assets.

Given this unique control model, traditional bank custody frameworks, processes and technologies must evolve for the crypto ecosystem. Back-office systems for storing, safeguarding, and accounting for digital assets are built on a new kind of technical foundation, specifically designed for cryptoassets native to public blockchains. In this context, banks must make critical "build or buy" decisions to unlock cryptoasset products and services.



### 3. Reporting and auditing capabilities

Trust is necessary to attract and retain crypto-based banking customers, especially institutional ones. To compete in this growing market, banks will need to show that their cryptoasset services are transparent, have integrity, and are aligned with best practices.

Trust in the financial services industry is traditionally managed through extensive information reporting and disclosure requirements on assets, customers, transactions and more, which are often reviewed, tested and audited by regulators and public accounting firms.

Standard setters are working to apply existing third-party attestation, assurance, and certification approaches such as SOC exams/reports and federal information security guidelines to crypto business models. Compliance with such frameworks can help banks offering cryptoasset products and services ensure they have the correct controls for identifying, managing, monitoring, and mitigating risks.

It is also important to note that audit procedures for banks serving crypto customers will require unique approaches to validating ownership, control, and existence of assets. As the audit and accounting landscape evolves to consider unique crypto risks, modern automated testing approaches will take advantage of the transparency and auditability offered by public blockchains.

### 4. Integrating public blockchain data with internal data

Public blockchains house a detailed history of every single transaction that has ever been confirmed on the network. This data is encrypted and compressed as the blockchain extends, creating challenges when it comes to normalizing and using blockchain transaction data.

Organizations must overcome the challenge of building unified views of their customers' and clients' on-chain and off-chain transactions in order to achieve business, compliance, and risk-management objectives. Compounding these challenges, data elements from public blockchains are fundamentally different from the data used and generated by traditional systems.

“Whether they build it from scratch or acquire a crypto-native custody product, implementing a new custody infrastructure fit for digital assets is one of the biggest investments banks will make to get started in the crypto space. It is also one of the most critical. Other products and services banks sell to crypto investors—solutions for trading, clearing, settlement, and more—will be built on top of it. They have to get it right to earn customer trust and recoup their investment through prime service offerings.”

○ **Mike Belshe**  
**Chief Executive Officer**  
**BitGo**

## 5. Next-level cyber security

The stakes for cyber security are higher in the crypto arena primarily because of the finality of transactions on public blockchains. Cryptoassets that erroneously change hands on public blockchains cannot be recovered by the original asset owner, since there are no central authorities responsible for confirming, clearing, settling and accounting for the transaction.

Broadly used and accepted cyber security control frameworks in the financial services industry include NIST 800-53, which is a common baseline, complemented by more discrete standards such as the U.S. Federal Information Process Standard (FIPS) 140-2, a federal security certification for cryptographic key management.

Banks competing in this space must deliver enhanced security to manage unique crypto risks. Next-generation security is required to monitor and defend against the cyber- and information-security risks of cryptoasset businesses.

## 6. Industry-standard risk management and controls

Cryptoassets present fundamentally new risks that must be analyzed, understood, and managed. While there are unique risks, blockchain infrastructure also presents new opportunities to deploy automation across risk management and controls that were not previously possible with traditional technology infrastructures.

When entering the crypto space, banks must partner across the three lines of defense to build risk management practices and control environments to integrate existing industry frameworks and regulatory requirements. In addition, banks must also identify and rationalize the key differences and gaps in these frameworks that exist due to the nature of cryptoassets. For example, cryptographic key management controls as defined in industry standards such as NIST 800-57 do not consider the use of cryptographic keys to directly manage and secure flows of funds.

Control environment optimization and rationalization can help firms meet the quickly evolving expectations of global regulators and institutions entering the space. This is becoming increasingly important as organizations such as Coinbase and Bakkt pursue public stock offerings.<sup>25</sup>

However, standards continue to emerge, evolve, and mature as adoption of crypto expands. Banks should track emerging developments in cryptoasset risk management and controls with a focus on technical and operational agility to address new frameworks and industry expectations.

## 7. Robust regulatory compliance

Banks launching crypto products and services must comply with specific regulatory requirements, which will help them develop robust risk-based compliance programs that go beyond compliance for traditional assets.

Significant crypto-relevant regulations are carryovers from the traditional financial industry, including Anti-Money Laundering (AML), Know Your Customer (KYC) Bank Secrecy Act (BSA), and the FATF Travel Rule, which requires firms to share customer information when they transfer funds between firms. One of the key focus areas of bank compliance activities will be financial crimes, a major problem in traditional financial markets. The risk of financial crimes has been heightened by the digital, less-regulated nature of the crypto markets, which unfortunately garnered an early reputation for facilitating illicit, black-market activities.

Although existing banks will typically have mature AML, KYC and BSA compliance programs in place, they will need to enhance their technology and processes to meet the novel challenges of cryptoassets. For example, transaction monitoring will require a combination of traditional techniques and inputs from blockchain analytics providers alongside cryptoasset-specific considerations.

There is no consistent global regulatory framework for cryptoassets, and there are variation and duplication in the nature and application of rules across jurisdictions. This complexity creates significant compliance challenges for banks and necessitates close monitoring of regulatory changes around the world. ○

“Security is what gives institutional investors the comfort level to engage with the crypto markets. It is of utmost importance. Banks will need best-in-class hot and cold storage for cryptoasset wallets to protect investors and win customers.”

○ **Mike Belshe**  
**Chief Executive Officer**  
**BitGo**

# ● Considerations for bank ● infrastructure transformation

**If crypto markets continue to evolve at the pace and scale currently underway, today's traditional banking infrastructure may have a limited shelf life. Growing participation in the crypto economy is making new crypto capabilities essential foundations for the bank of the future.**

How can banks get started engineering a business transformation of such magnitude and position themselves for success in the emerging digital economy?

Here we outline key actions to help banks accelerate their strategic roadmaps and develop core business and technology capabilities to serve crypto market customers.

## **Determine where to play.**

Aligning products and services with market opportunities is a key early step of all business transformation efforts. A bank should start by tracking growth trends to understand current and future customer demands for cryptoasset offerings. Then they should assess how the needs of target customers align with the bank's broader customer focus, considering the impact of planned products and services on revenue per customer, customer

acquisition and customer churn. It is also critical to take an inventory of the bank's existing product and service set. It is well known that custody capabilities will be central to a bank's overall cryptoasset strategy, but choosing other revenue streams to pursue will depend on each bank's individual strengths in prime brokerage, lending, payments, and other adjacent services.

## **Build or buy technology (or both).**

Cryptoasset products are underpinned by a complex and novel infrastructure, with blockchain at its core. Whether to build blockchain systems internally or acquire technology from crypto-native companies will depend on a variety of factors. Talent is the most important one: Does the bank have in-house talent capable of developing and implementing cryptoasset products, or is their skillset limited to simply running the technology? Where the bank operates geographically will also matter: Regulators in certain jurisdictions tend to

be more wary of homebuilt solutions, so banks located in certain locations may need to go above and beyond to demonstrate they have a defensible infrastructure that makes regulators comfortable. Finally, building or buying is a competitive choice: A bank can often get to market faster if it acquires existing technology capabilities vs. creating new ones from scratch, so understanding the level of customer demand in the market and how competitors are positioning themselves to meet it will be crucial.



### **Track and adjust to the regulatory climate.**

Existing regulatory structures for the cryptoasset ecosystem are highly complex and everchanging. A bank launching cryptoasset offerings will need to keep a finger on the pulse of regulatory trends, both in the jurisdictions where it currently operates and those it may wish to access in the future. Look across G20 countries and emerging economies to understand the approaches of different governments. What rules must the bank play by now? What guidelines for crypto market

participants are expected in the near future? What trends can be gleaned from announcements and updates from leading financial authorities, treasuries, and central banks? The bank's regulatory compliance strategy should be dynamic—able to address a variety of scenarios that may play out in the next year, three years and five years, all around the globe.

### **Stress scalability.**

We have demonstrated throughout this report that the cryptoasset industry is moving incredibly quickly in terms of market growth and diversity of product offerings. If the current pace continues, massive change is coming to the banking sector, and skyrocketing value will be there for the taking. Banks have lived through technology-driven

disruption before. The most innovative will apply lessons learned during the past 30 years to prepare for this next wave, ensuring their infrastructure can support all types of digital assets—even those that do not yet exist. ○

## How KPMG can help

### Bridging traditional and blockchain systems

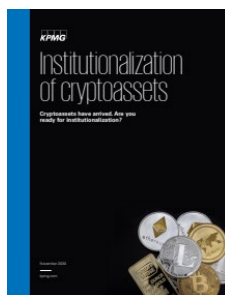
The KPMG Cryptoasset Services practice helps banks, fintechs, and other financial services institutions develop and optimize core capabilities to engage with the growing ecosystem of crypto customers. We leverage our KPMG Chain Fusion suite of accelerators to help our clients deliver institutional quality cryptoasset capabilities and services.

The nature of blockchain technology powering cryptoassets is fundamentally different from the traditional information systems that underpin existing financial market infrastructure. To successfully operate a cryptoasset business, institutions must effectively integrate blockchain data alongside traditional data to support core business functions. Leveraging leading technology and frameworks, our services are designed to help clients accelerate trusted adoption of core cryptoasset capabilities through a consistent data architecture that supports seamless business engagement across blockchain protocols.

The KPMG Cryptoasset Services practice brings a broad range of specialized business and technical skills to the table. Our team includes a variety of ecosystem participants including crypto specialists, cyber security professionals, technology architects, data scientists, capital markets specialists, regulatory compliance and financial crimes professionals, technology auditors, tax professionals, and accounting advisors.

Learn more at [read.kpmg.us/chainfusion](https://read.kpmg.us/chainfusion).

### Related reading



#### [Institutionalization of cryptoassets](#)

Cryptoassets have arrived. Are you ready for institutionalization?



#### [Cracking crypto custody](#)

Breaking down the building blocks of institutional cryptoasset custody.



## References

- 1 Cracking Crypto Custody (KPMG LLP, 2019)
- 2 Institutionalization of Cryptoassets (KPMG LLP, 2018)
- 3 Federally Chartered Banks and Thrifts May Engage in Certain Stablecoin Activities (Office of the Comptroller of the Currency, Sept. 21, 2020)
- 4 Federally Chartered Banks and Thrifts May Participate in Independent Node Verification Networks and Use Stablecoins for Payment Activities (Office of the Comptroller of the Currency, January 4, 2021)
- 5 Crypto Firms Paxos, BitPay Apply for National Bank Charters (Banking Dive, Dec. 14, 2020)
- 6 Anchorage Granted US's First National Crypto Bank Charter (CoinTelegraph, Jan. 13, 2021)
- 7 Kraken Wins Bank Charter Approval (blog.kraken.com, Sept. 16, 2020)
- 8 Avanti Financial Joins Kraken as a Wyoming-Approved Crypto Bank (Coindesk.com, Oct. 28, 2020)
- 9 BlackRock's Fink Says Bitcoin Can Possibly 'Evolve' Into Global Asset (Coindesk, Dec. 1, 2020)
- 10 Paul Tudor Jones Calls Bitcoin a 'Great Speculation,' Says He Has Almost 2% of His Assets In It (CNBC.com, May 11, 2020)
- 11 Wall Street Legend Bill Miller Reveals 'Strong' Bitcoin Recommendation Despite Massive Price Surge (Forbes, Nov. 9, 2020)
- 12 Goldman Sachs to Enter Crypto Market 'Soon' With Custody Play: Source (Coindesk, Jan. 15, 2021)
- 13 PayPal Launches New Service Enabling Users to Buy, Hold and Sell Cryptocurrency (PayPal Newsroom, Oct. 21, 2020)
- 14 PayPal Surprise Announcement Pushes Bitcoin Towards \$13k (Forbes, Oct. 21, 2020)
- 15 BitGo Prime, Combined with BitGo Trust, Only Platform to Fully Integrate Lending, Trading and Custody (BitGo Newsroom, May 27, 2020)
- 16 Coinbase Buys Tagomi as 'Foundation' of Institutional Trading Arm (Coindesk, May 27, 2020)
- 17 Genesis Trading Buys Crypto Custodian Vo1t (Coindesk.com, May 21, 2020)
- 18 Coin Metrics, December 2020
- 19 The Rise of Central Bank Digital Currencies (Atlantic Council, Sept. 8, 2020)
- 20 BlockFi Raises \$50M Series C Led by Morgan Creek Digital (BlockFi, Aug. 20, 2020)
- 21 Celsius Crosses \$5.3B in Assets, Grows Total Assets 10X during 2020 (Yahoo Finance, Jan. 20, 2021)
- 22 Defi Pulse (Jan. 2021)
- 23 PayPal Launches New Service Enabling Users to Buy, Hold and Sell Cryptocurrency (PayPal Newsroom, Oct. 21, 2020)
- 24 Bank of America Tech Chief is Skeptical on Blockchain Even Though BofA Has the Most Patents For It (CNBC.com, March 26, 2019)
- 25 Crypto Exchange Bakkt to Go Public Via a \$2.1 Billion Deal with Blank-Check Firm (CNBC.com, Jan. 11, 2021)

## About the authors



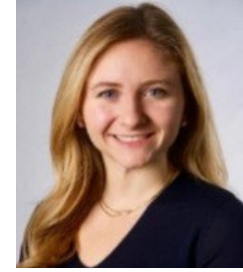
**Arun Ghosh** is the One Americas Blockchain & Cryptoassets Leader at KPMG. An industry-recognized management consultant, he has more than 20 years of experience helping organizations in a wide range of industries unlock value through technology-driven business transformation. Arun possesses deep expertise in corporate strategy, data analytics, and emerging technologies such as blockchain, automation and artificial intelligence.



**Sal Ternullo** is a director in the KPMG One Americas Blockchain & Cryptoassets practice and co-leader of KPMG Cryptoasset Services. Drawing on his deep technical background in cryptocurrencies, blockchain, robotic process automation, and public cloud computing, Sal helps companies across industry lines develop, design, implement, and manage products and services for the crypto economy.



**Sam Wyner** is a director in the KPMG One Americas Blockchain & Cryptoassets practice and co-leader of KPMG Cryptoasset Services. Sam helps traditional financial services, fintechs and crypto-native companies develop strategies and manage risks driven by the implementation of emerging technologies, including cryptoassets and blockchain. He has hands-on experience designing and building the technologies and processes that power cryptoasset businesses.



**Sydney Rice** is an associate in Cryptoasset Services within the KPMG One Americas Blockchain & Cryptoassets practice. She helps financial services clients manage technical implementations of blockchain and cryptocurrency. Sydney has deep experience in cryptography, token economic systems, risk management, compliance, security, and product management.

***KPMG Cryptoasset Services professionals Derek Becker, Kevin Bornatsch, Shay Cannon, Okiki Famutimi, Marty O'Grady, and Bianca Nargi were also instrumental in developing the insights and content for this report.***



## Acknowledgments

---

### COINMETRICS

**Coin Metrics** is the leading provider of crypto financial intelligence, providing network data, market data, index and network risk solutions to the most prestigious institutions touching cryptoassets. Coin Metrics was founded in 2017 as an open-source project to determine the economic significance of public blockchains. Today, we expand on that original purpose to empower people and institutions to make informed crypto financial decisions. We aim to usher the world's premier financial institutions into crypto with the most trusted data and insights.



### Atlantic Council

#### GEOECONOMICS CENTER

**The Atlantic Council's GeoEconomics Center** works at the nexus of economics, finance, and foreign policy with the goal of helping shape a better global economic future. The Center is organized around three pillars—Future of Capitalism, Future of Money, and the Economic Statecraft Initiative.



### BitGo

**BitGo** is a leading provider of capital markets infrastructure for cryptocurrencies. BitGo is the only digital asset company that has been focused exclusively on serving institutional clients since 2013. BitGo secures approximately 20% of all on-chain Bitcoin transactions by value and supports more than 300 assets within its platform. BitGo is the security and operational backbone for more than 400 institutional digital asset market participants in 50 countries, including many of the world's top cryptocurrency exchanges and platforms.

## Contact us

---

### **Arun Ghosh**

One Americas Blockchain  
& Cryptoassets Leader  
KPMG  
617-988-1628  
arunghosh@kpmg.com

### **Sal Ternullo**

Director, One Americas  
Blockchain & Cryptoassets  
KPMG  
617-988-1153  
sternullo@kpmg.com

### **Sam Wyner**

Director, One Americas  
Blockchain & Cryptoassets  
KPMG  
212-954-4903  
swyner@kpmg.com

### **Sydney Rice**

Associate, One Americas  
Blockchain & Cryptoassets  
KPMG  
617-988-1000  
sydneyrice@kpmg.com

[kpmg.com/us](https://kpmg.com/us)



Some or all of the services described herein may not be permissible for KPMG audit clients and their affiliates or related entities.

© 2021 KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act upon such information without appropriate professional advice after a thorough examination of the particular situation.