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The Inevitable Future of Digital Asset Custody and Opportunities and Challenges for Hong Kong



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To establish Hong Kong as a global Web3 hub, it is essential to develop, support and strengthen the city's blockchain infrastructure. This encompasses establishing secure and reliable blockchain network, cultivating a vibrant builder community, crafting enabling regulatory structures, offering secure and accessible custody solutions, and launching education initiatives. Among all, digital asset custody plays an essential role as the gateway for the impending institutional adoption of digital assets.

I. Custody as the Gateway

Digital asset custody is key to the safekeeping of a customer's digital assets. It sets a foundation for the creation, management, and exchange of digital assets, which enables services like trading, banking services and prime brokerage, to name a few.

Custody addresses two of the biggest concerns that institutions have when it comes to safekeeping and growing their digital assets: security and accessibility.

Custodians are constantly evolving to meet the needs of investors and users through new technologies and innovations such as multiple-party computation (MPC) enabled private key management, hybrid solutions for access to both CeFi and DeFi, off-exchange settlement services, real-time exchange reserve monitoring, etc.

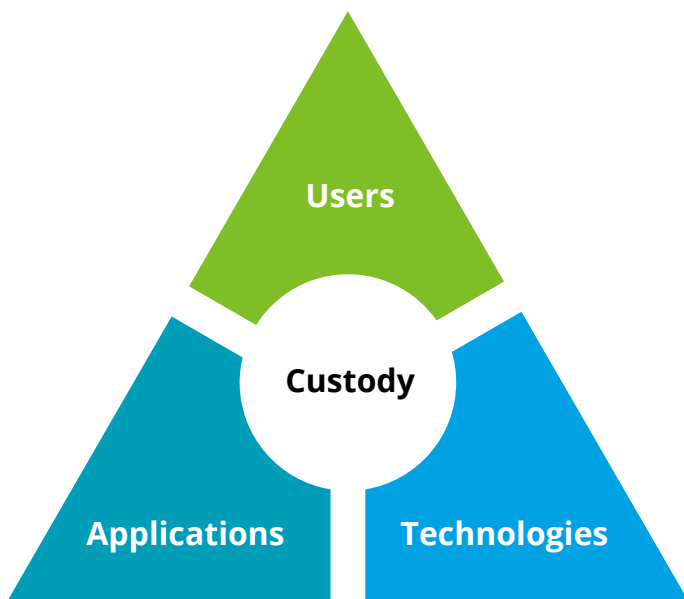
Since the beginning of 2019, total assets under custody (AUC) is estimated to have grown an impressive 600% to cross US\$200 billion[1]. This has caught the attention of investors globally, who pumped in over US\$4.5 billion of funding into the space in 2021 from just US\$850 million the year before[1].



II. The Trinity Model

To understand the evolving role of custody in the blockchain ecosystem, a trinity model needs to be introduced where custody is at the center of the trinity of users, applications and technologies. In the past few years, it became gradually evident these three factors are the main driving forces behind the development of the digital asset custody industry.

The Trinity of Digital Asset Custody



a. User Growth - Quantity and Diversity

Currently, it is estimated that there are over 420 million[2] digital asset owners. As the number of owners grows, there is also a significant shift in their composition. In the early days, it was mostly cyberpunks and geeky programmers, but now we have DAOs, crypto funds and a growing number of large corporations and financial institutions. These institutional big players have distinctly different needs when accessing and interacting with blockchain applications compared to individual users.

b. Fast Evolving Blockchain Technologies

The blockchain ecosystem is constantly evolving with new technologies emerging rapidly, from Bitcoin in 2009 to the introduction of smart contracts on Ethereum in 2015, to alternative Layer 1 blockchains like Avalanche

and Cosmos, and the rising Layer 2 chains like Arbitrum and Optimism. Going forward, we will see more and more Layer-1s, application-specific blockchains, and even modular blockchains with layered rollups. This multi-chain, multi-layer environment will inevitably lead to asset, user and application fragmentation.

c. Blockchain Application Explosion

Before 2020, the top blockchain applications were mainly crypto exchanges and wallets and some payment services. Since then, smart contracts have fuelled an explosion of new blockchain applications. In just a short span of 1-3 years, DeFi, NFT and DAOs have become massive multi-billion dollar sectors in their own right. On top of all that, we have GameFi, SocialFi, and the list goes on. With over 4,000 DApps[3] now, the concept of Web3.0 is undeniably going mainstream.

III. The Inevitable Future of Digital Asset Custody

Given the fast changing landscape of users, applications and technologies, custodians have to evolve beyond a simple safety box. We have 4 key predictions on the inevitable future of digital asset custody.

a. Secure Key Storage → Full Stack Solution

Blockchain applications are built on a four-layered stack, consisting of the blockchain, smart contract, protocol, and application layers. Custodians are expected to understand the workings of each layer and integrate them seamlessly. They will need to develop full stack solutions to enable users to securely and efficiently connect to the underlying blockchains, access any smart contract and protocol, and interact with various applications.

b. Fragmented User Experience → Unified User Experience

It is evident that the future of the blockchain world will involve multiple chains and layers. This implies that users will have to access each blockchain and its applications through different entry/access points, leading to poor user experiences and inefficiencies. Custodians must find a way to facilitate the transfer of data and assets while also enabling interoperable and composable operations across currently siloed blockchains. Most importantly, all of this must be accomplished with a unified and easy user experience.

c. Retail User-Oriented → Enterprise-grade Programmability

The demand for customizable custody solutions will continue to rise as more and more professional teams enter the crypto space. Their participation in different protocols and applications will lead to more specialized requirements.

d. Centralized Infrastructure → Distributed Key Management

Centralized key management has several advantages. First, it is easier to achieve compliance. Also, it is considered a more institution-friendly solution since it integrates easily with legacy systems and workflows. However, its chief disadvantage is that it represents a single point of failure. This has been demonstrated by many successful attacks on centralized custodians and exchanges, throughout crypto history. Additionally, it lacks transparency without constant audits.

We believe that distributed key management is the foundation for more powerful blockchain applications, such as universal keyless wallets, social recovery, on-chain trust, segregation of duties/rights, and even new breeds of blockchain applications never before considered. Many efforts have been made in this space, including but not limited to custody solutions based on MPC, and hybrid key management that combines account abstraction and smart contract custody.

IV. Opportunities and Challenges in Hong Kong

Hong Kong, as an international financial center, has the potential to become a global hub for digital assets, but it faces both challenges and opportunities. Hong Kong has a strong traditional finance industry and deep capital market, which provides a solid foundation for the development of digital assets, as it can offer access to liquidity, expertise, and infrastructure. Moreover, Hong Kong has a large pool of investors and customers who are interested in digital assets, especially from Asian markets.

Consequently, digital asset development in Hong Kong has been closely tied to the financial sector since its inception. This environment makes it relatively straightforward for Hong Kong to generate use cases that bridge the gap between blockchain technology and the real economy,

providing Hong Kong with a considerable advantage in pursuing its Web3 ambitions. For instance, in February 2023 Hong Kong offered the first tokenized green bond issued by a government globally, offering HK\$800 million of Tokenized Green Bond under the Government Green Bond Programme (GGBP)[4].

Custody holds the key to institutional adoption of digital assets and ultimately, the mainstream adoption of crypto in the real world economy. For Hong Kong, it is essential to stay in the frontier of the evolving custody industry and remain up-to-date in order to maintain a competitive edge.

a. Regulatory Framework

Hong Kong has one of the most sophisticated financial market regulatory frameworks in the world. This framework can be leveraged and referenced for digital asset regulation. Hong Kong's approach to blockchain regulation currently adheres to the same high standards as traditional finance. This is reflected in the city's crypto policy motto, "same business, same risks, same rules."

The regulatory framework in Hong Kong is currently implemented through a top-down approach that favours incumbents. While this approach effectively facilitates collaboration among the government, financial institutions, large Web2 internet companies, and blockchain-native businesses, it also limits opportunities for grassroots developers and entrepreneurs. To ensure that blockchain technology continues to thrive on creativity and energy from the bottom-up, it is essential to strike a balance between top-down regulation and bottom-up innovation.

The traditional financial regulatory framework may not fully account for the unique dynamics of the blockchain industry. The digital assets ecosystem is constantly and rapidly evolving. As a result, regulators may struggle to keep pace with technological advancements to avoid over-regulations or under-regulation that could stifle growth or create risks.

Hong Kong can be a global leader in providing clear and consistent guidance and supervision for digital asset businesses, and ensure start-ups, institutions and investors feel secure and confident in operating in its jurisdiction.

b. Technology Ecosystem

To build an ecosystem for innovation and entrepreneurship, Hong Kong needs to attract and support world-class infrastructure builders technology. Only a robust and scalable infrastructure, which includes cloud computing, blockchain, digital asset custody, cyber security, and even AI, can enable the security, interoperability, and evolution of digital assets.

Custody is a core component of this infrastructure. A strong custody industry can help to mitigate the risks associated with digital assets ownership and increase investor confidence in digital assets, which in turn drive mainstream adoption of digital assets. For Hong Kong, having a robust and trusted custody industry can be a competitive edge in the global digital asset landscape.

Since digital asset custody is a new and developing field, Hong Kong has a unique opportunity to shape and establish best practices and standards for the industry. This can be achieved by setting high standards for security and transparency, and incorporating the latest technology solutions.

2023 presents an ideal opportunity for Hong Kong to reclaim its status as a global leader in digital assets and a Web3.0 hub. With trust in the blockchain industry at an all-time low, there is ample room for reinvention. Hong Kong can leverage its strengths in traditional finance, embrace innovation and diverse talents, and craft a sound and sensible regulatory framework to restore confidence and shape the industry's narrative and development trajectory.

