

Mutual Fund Directors Forum

Digital asset and tokenization market
perspectives

July 13, 2023



Building a better
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Today's agenda

- 1 Digital asset trends for asset management industry
- 2 Tokenization trends and use cases
- 3 Considerations for developing tokenized offerings

Speaking with you today



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Digital asset trends for the asset management industry



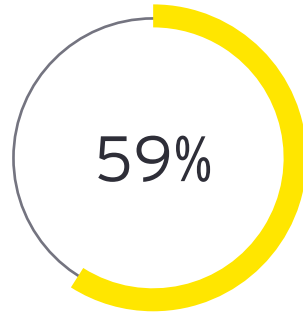
Asset managers are increasingly getting involved in digital assets through direct investment, providing services to the industry and tokenization

Providing custody, execution and fund administration	Standing up trading desks and/or allocating portfolios to crypto	Offering investment vehicles for private bank/wealth clients	Launching crypto ETFs/crypto-related funds	Separately managed accounts (SMAs)	Tokenizing funds and assets
<ul style="list-style-type: none"> ▶ A large asset manager launched bitcoin custody and execution for institutions in 2018. ▶ A large US-based bank launched digital asset custody offering with crypto-native sub-custodians. ▶ Several large banking and asset servicing institutions are launching digital asset custody offerings. ▶ A large global asset manager partnered with a crypto-native to offer clients access to crypto trading, custody, prime brokerage, etc. ▶ A majority of global custodians offering fund admin for crypto funds. 	<ul style="list-style-type: none"> ▶ A large wealth and asset manager stood up crypto trading desk and is hiring traders. ▶ A Top 10 global hedge fund allocated a portion of portfolio to bitcoin and has invested in various blockchain companies. ▶ A large investment bank re-launched BTC derivatives trading desk in May 2021 and has since expanded to ETH and over-the-counter trading. ▶ Numerous hedge funds are allocating a share of portfolios to crypto. 	<ul style="list-style-type: none"> ▶ A large US-based bank launched a passively managed bitcoin fund with NYDIG. ▶ Several large banked-affiliated asset managers are facilitating BTC and ETH futures trading for select clients. ▶ A large global asset manager launched a spot bitcoin private trust in August 2022. 	<ul style="list-style-type: none"> ▶ 15+ crypto-focused exchange-traded funds (ETFs) filed with the Securities and Exchange Commission (SEC) awaiting approval. ▶ Numerous ETFs and funds exist that have indirect exposure to cryptocurrency - either investing in firms that hold crypto, focused on blockchain tech, etc. ▶ 5 additional spot-crypto ETF submissions filed with the SEC within the last month. 	<ul style="list-style-type: none"> ▶ A large wealth and asset manager launched digital asset separately managed account (SMA) models for top 10 coins. ▶ Asset managers, registered investment advisors (RIAs) and hedge funds are using SMA providers to launch similar models. 	<ul style="list-style-type: none"> ▶ A large asset manager tokenized government money market (GMM) fund on Stellar network. ▶ A leading private equity fund manager tokenized one of its funds on Avalanche blockchain. ▶ A leading private equity fund manager tokenized mortgage loans and transfer of ownership via Provenance blockchain. ▶ A leading ETF manager tokenized Digital Short-Term Treasury Fund recorded on both book entry and blockchain.

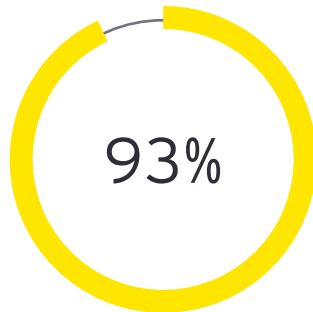
Institutional investors overwhelmingly believe in the long-term value of digital assets; allocation to crypto and interest in tokenization expected to increase

Digital asset institutional investors are ...

1 Long-term believers in the market



of institutions noted that recent market events have impacted their digital asset/digital asset-related product investment plans in the short term, but ...



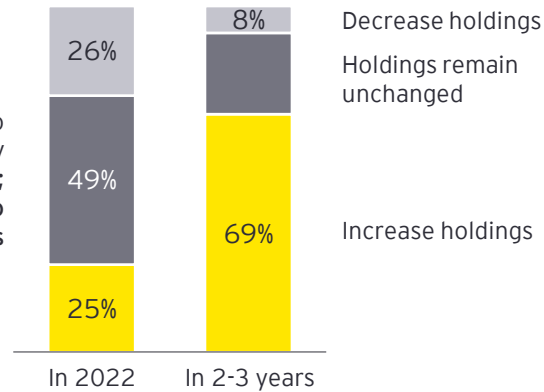
... still believe in the long-term value of blockchain technology and/or crypto/digital assets

1. E.g., bonds, stocks.

Source: EY-Parthenon Institutional Digital Assets Survey February 2023 (N=256)

2 Increasing their allocations

Allocation to crypto/crypto products is expected to tangibly increase in the next 2-3 years; 69% of respondents expect to increase allocations



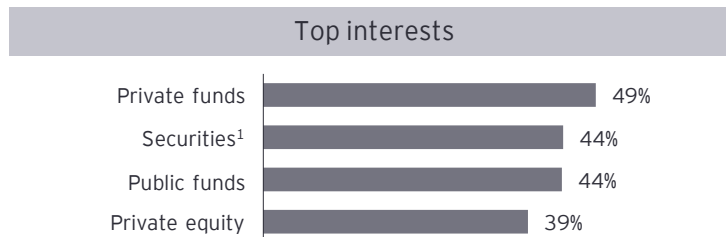
3 More trusting of TradFi institutions

90% would engage with a traditional finance (TradFi) firm to custody their crypto

50% would be likely to switch from a crypto native firm to a TradFi firm if the same capabilities were offered

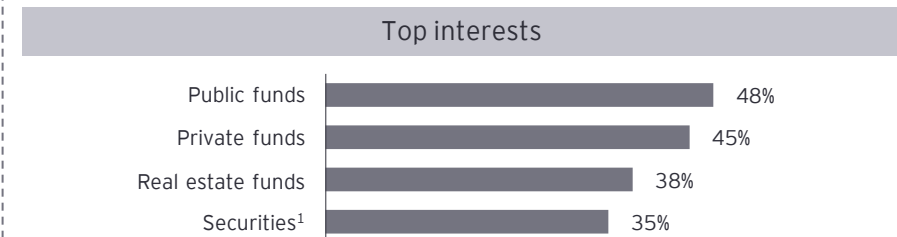
4 Interested in investing in tokenized assets

57% of institutions are interested in investing in tokenized assets (40% plan to start investing this year or next)



5 Looking to tokenize assets themselves

47% of relevant institutions (hedge funds and institutional asset managers) are interested in tokenizing their assets (45% plan to start tokenizing this year or next)



Demand for crypto exposure remains strong, and asset managers continue to prepare to structure and launch product offerings to meet demand and capture market share

Crypto product launches and pipeline

Global crypto index fund manager Bitcoin ETF (BITC) Crypto Index Fund (BITW) Crypto-Focused Companies ETF (BITQ)	Alternative asset manager Bitcoin ETF (BTF) Bitcoin Miners ETF (WGMI)	Cryptocurrency exchange Ethereum Staking ETP (AETH) Crypto Index ETP (HODL)	
Investment fund Blockchain ETF (BLOK)	ETF issuer Bitcoin ETF (BITO)	Cryptocurrency asset manager Bitcoin Trust (GBTC)	
Global asset manager Blockchain & Bitcoin Strategy ETF (BITS)	Global ETF and mutual fund manager Bitcoin ETF (XBFT) Solana ETN (VSOL)	Investment advisor Crypto-Focused Companies ETF (CRPT)	Hedge fund Crypto Index Fund & Crypto-Focused Companies ETF (SATO)

Recent submissions



Tokenization trends and use cases



Tokenization opportunities and potential benefits for asset managers

Tokenization is the **process of converting an asset or the ownership rights of an asset to a digital form using blockchain**. These tokens may represent equity, notes or other instruments with claims on one or more real or financial assets.

Example tokenization opportunities	Why tokenization matters		Strategic implications
<p>1 Tokenize a fund</p> <p>Alternatives Private equity Annuities</p>	Investor diversification	Increased liquidity	<p>Offensive play</p> <ul style="list-style-type: none"> ▶ Meaningful revenue opportunity: meet client demand for tokenized products and investments ▶ Attack new markets: expand into net new markets and bring in net new customers by providing tokenized products that aren't usually available to certain client segments ▶ Drive innovative external brand: develop momentum and drive branding
<p>2 Tokenize a financial asset</p> <p>Cash/deposits Bonds Loans</p>	New sources of capital	Real-time transactions and instant settlement	<p>Defensive play</p> <ul style="list-style-type: none"> ▶ Protect the core and future-proof: proactively capture growing demand for tokenized assets and future-proof against shift to revamped capital market infrastructure ▶ Exploit efficiencies: drive internal process efficiencies and cost reductions through process automation and smart contracts ▶ Retain clients exploring tokenization: prevent existing clients from migrating to competitors
<p>3 Tokenize a real-world asset</p> <p>Real estate Carbon credits Inventory</p>	Operational efficiency	Enhanced portfolio construction	
<p>4 Use blockchain as infrastructure</p>	Transparent and traceable	Improved investor returns	

There is increasing market acknowledgement that tokenization will be a huge driver, and those who don't capitalize on it now will be significantly behind

Market size of tokenized assets by different sources

\$24t

WEF by 2027

\$4t-5t

Citi by 2030

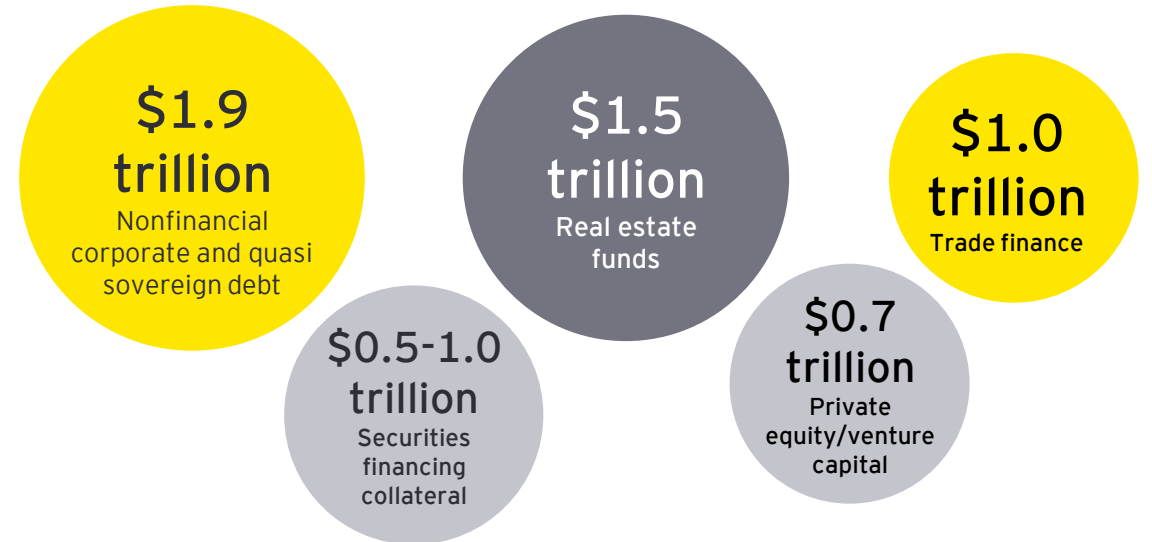
\$19.5t

NT by 2023

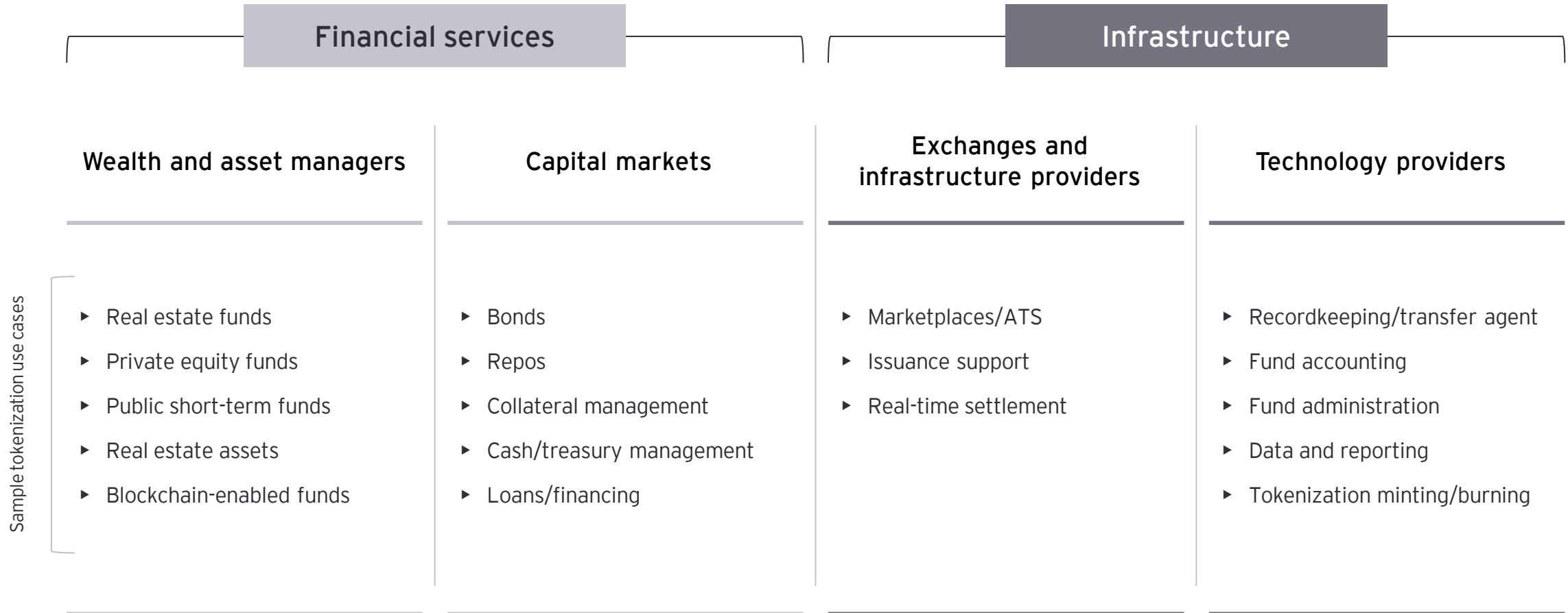
\$16.1

BCG by 2030

Tokenization market size for select asset classes (2030E)



Growing tokenization use cases across financial services



Asset managers acknowledge the clear benefits of tokenization, with ~80% actively planning to tokenize their assets in the next three years

Perceived asset manager benefits from tokenization

1

Increased client base

- ▶ Ability to raise AUM from smaller investor pools (e.g., endowments, foundations)
- ▶ Access client base without previous exposure to institutional quality alternative investments

2

Increased liquidity

- ▶ Ability to fractionalize large deals and offload to smaller investors, increasing IRR and freeing up capital
- ▶ Solves the primary pain point in alternative investment: illiquidity and long-term investment horizons

2

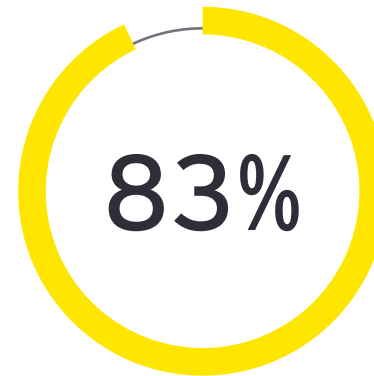
Operational efficiency

- ▶ Drive internal process efficiencies and cost reductions through process automation and smart contracts

Voice of the customer: asset manager survey

1. Private funds
2. Public funds
3. Real estate
4. Securities

Asset managers are **most interested in tokenizing** private funds (50%), public funds (48%), real estate funds (43%) and securities (38%)



83% of asset managers want to begin tokenizing their own assets in the next three years (2023-2026+)

EY-Parthenon survey shows majority of institutional investors are interested in both investing in tokenized assets and tokenizing their own assets

Institutional investors are interested in investing in tokenized assets ...

57% of institutional investors¹ are interested in investing in tokenized assets

40% plan to invest in tokenized assets this year (2023) or next (2024)

Looking to tokenize assets themselves



- ▶ The **top benefits seen in investing in tokenized assets** are:
 - ▶ Access to new asset types (64%)
 - ▶ Increased liquidity (50%)
 - ▶ Increased transparency (49%)

... and many asset managers are interested in tokenizing their own assets

51% of institutional asset managers are interested in tokenizing their own assets

45% plan to tokenize their assets this year (2023) or next (2024)

1. Private funds
2. Public funds
3. Real estate

Asset managers are most interested in tokenizing private funds (50%), public funds (48%) and real estate funds (43%)

- ▶ The **primary benefits seen include:**
 - ▶ Access to new asset types (55%)
 - ▶ Increased liquidity (45%)
 - ▶ Operational efficiencies (43%)
- ▶ **60% of respondents plan on tokenizing on a public-permissioned chain vs. 40% on private and 22% on public**
- ▶ **71% of asset managers plan on tokenizing via partnership; 21% plan to build**

¹Institutional investors surveyed include asset managers, asset owners, hedge funds and family offices.

High-net worth (HNW) investors view tokenization as enabling access to illiquid assets/alternatives and a way to diversify exposure to alternatives

Perceived HNW investor benefits from tokenization

- 1**

Access to illiquid assets

 - ▶ Enables access to a market previously reserved for institutional investors with larger investable amounts

- 2**

Transferability

 - ▶ Increased liquidity via 24/7 marketplaces
 - ▶ Decreased transaction and settlement times

- 2**

Growing interest in Alts

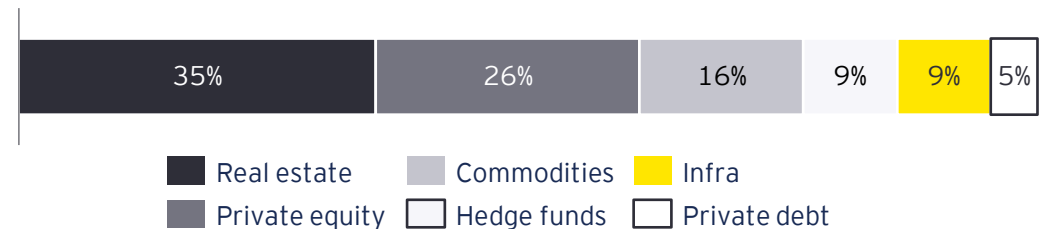
 - ▶ Increasing demand for an investment vehicle that diversifies exposure to public markets
 - ▶ Increasing demand for diversified access to alternatives to drive downside risk and volatility protection

Voice of the customer: HNW survey

71% of HNW investors (HNWIs) are planning to invest in tokenized assets in the next 1-3 years

55% HNWIs plan to allocate 9.3% of their portfolios to tokenized assets in 2027 and beyond

Please rank the tokenized alternatives in which you would be most interested in investing. (Percent chosen as #1 or #2 shown below)



Source: EY-Parthenon interviews, EY-Parthenon Tokenization Survey - Accredited and Institutional Investors (May 2023) , n=251

Tokenization of alternatives remains the primary focus use case among asset managers

Numerous emerging use cases for tokenized alternatives ...

Real estate funds

Private equity funds

Real-world assets

Private credit

Real estate assets

Hedge funds

... with a growing potential market size ...

\$750b-1.2t

Estimated total value of tokenized **real estate funds** by 2030

\$600b-860b

Estimated total value of tokenized **private equity funds** by 2030

5.5%-10%

Of **all assets** estimated to be tokenized by 2030

Key growth drivers

- ▶ Recognition of tokenization by monetary authorities
- ▶ Tokenization of non-conventional assets
- ▶ Greater access to alternatives for smaller asset owners and HNW individuals

... and few live offerings already in the market

Top 10 global private equity firm

Tokenized \$4 billion private equity fund on Avalanche focused on health care

Benefits:

- ▶ Individual access to private equity markets (\$4b health care-focused fund)
- ▶ Enables fractional ownership of assets and increases participation by decreasing investment minimums from \$5m to \$100k

Top 15 global private equity firm

Tokenized Private Equity Opportunities Fund on Polygon with \$4 billion in AUM; reduced minimum investment from \$5m to \$20k

Benefits:

- ▶ Securitized fund with ~\$4b in assets, comprising ~30 investments, and reduced the minimum required \$5m investment to \$20k for qualified investors

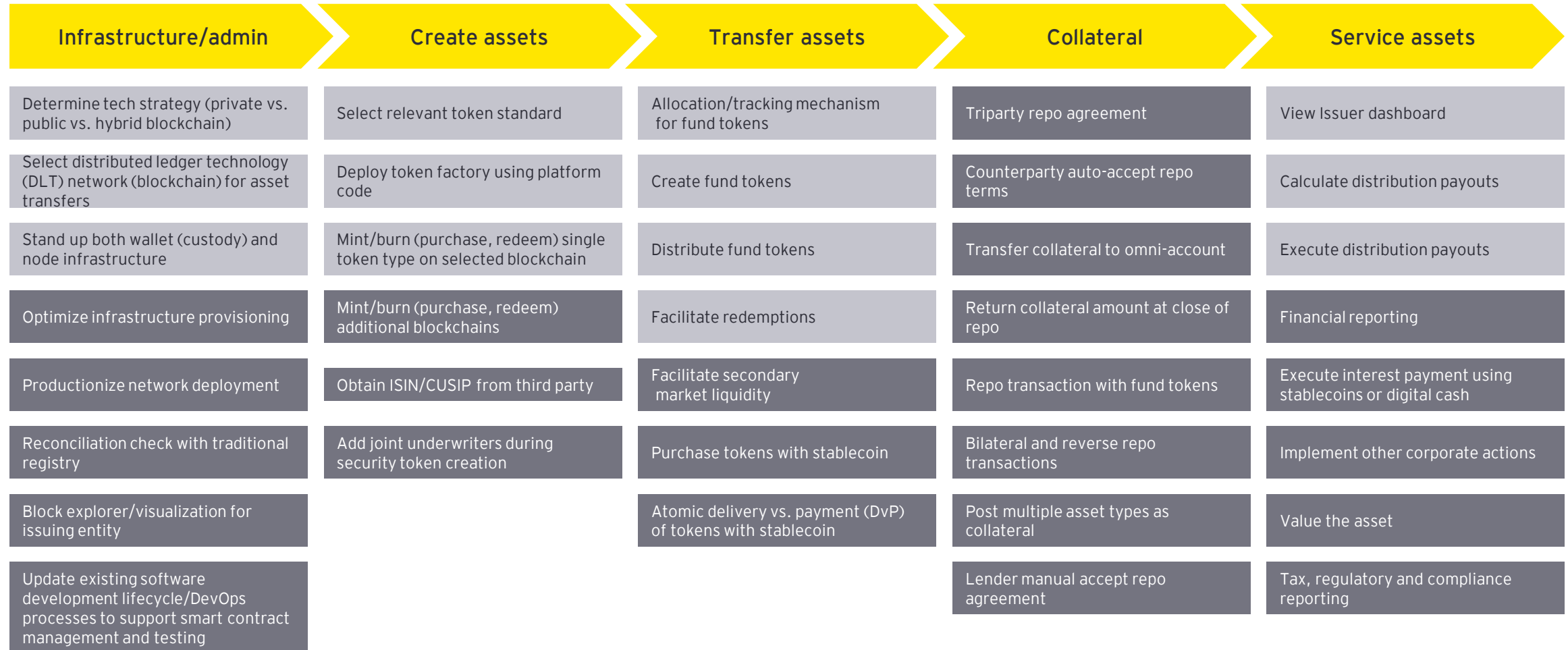
Source: EY-Parthenon Institutional Cryptocurrency Survey February 2023 (N=256), BCG, World Economic Forum, HSBC, EY-Parthenon analysis

Considerations for developing tokenized offerings



Development of a scalable tokenization offering requires several critical foundational capabilities across the tokenized fund lifecycle

A broad range of foundational capabilities must be established to successfully launch and operate a scalable tokenization solution.



Key capabilities will be needed across people, process, technology and data, and risk and compliance to support an organization's tokenization efforts

People	<ul style="list-style-type: none">▶ General training across functions, and leadership, on digital assets, blockchain tech and principles of tokenization▶ Technologists and developers with blockchain knowledge and technical skills to support a tokenized offering▶ Risk and compliance teams trained in the incremental risks of engaging in tokenized on-chain offerings▶ A growing base of current and future investor segments interested in tokenized investment offerings
Process	<ul style="list-style-type: none">▶ Fund accounting, general ledger, treasury and investment capabilities to support tokenized assets▶ Enhanced data and analytics to drive insights into asset ownership▶ Strategic partnerships with counterparties/vendors to support both token issuance and marketplace/distribution▶ Enhanced valuation capabilities
Technology and data	<ul style="list-style-type: none">▶ Tokenization engine to mint (create) and burn (redeem) regulatory-compliant tokens on-chain▶ Blockchain node access to execute on-chain transactions and query/source associated blockchain data▶ Wallet infrastructure to enable custody of minted tokens and facilitate on-chain transactions▶ Integration of net new technology components with existing technology stack
Risk and compliance	<ul style="list-style-type: none">▶ Risk and compliance controls and procedures to mitigate incremental risks associated with a tokenized offering▶ Embedded risk and anti-money laundering (AML)/know your customer (KYC) within the smart contract logic to enforce token compliance with regulatory standards▶ Enhanced client onboarding and KYC procedures▶ Protocol due diligence and specialized monitoring frameworks

Representative - for discussion

Additional key factors to consider when building tokenization infrastructure

From our experience building sustainable tokenization infrastructures for our clients, there are some essential factors to consider and foundational capabilities that MFDF will need to either build or buy.

Key considerations

Blockchain protocol selection

When you tokenize an asset, what blockchain protocol(s) will that asset be issued on? Will this token reside on one network or multiple? Private or public?

Token and smart contract standards

Tokens are represented by smart contracts and enable programmable elements for assets. These standards are also critical to supporting upgradeability and interoperability with other ecosystem technologies (e.g., wallet software and protocols) as well as on-chain controls over assets.

Legal and regulatory compliance standards

Treatment of tokens from a legal and regulatory compliance perspective will vary considerably based on asset classification and jurisdiction. Comprehensive due diligence and ongoing monitoring will be critical to mitigating potential risks.

Post-issuance, secondary markets and sustainability

Once tokens are issued, they become tradeable assets that can potentially travel across blockchain networks and may also be made available on exchanges or used as instruments in a variety of decentralized finance (DeFi) protocols. How will these tokens be managed and maintained long-term?

Tech components and capabilities

Node infrastructure, node operations, network connectivity, custody technology

Maintaining and establishing connections to reliable nodes you can trust is critical.

Key management, smart contract operations, distributed storage oracles

Traditional software development lifecycle management (SDLC) tools and DevOps pipelines will need to evolve to support smart contracts effectively.

KYC/AML screening, horizon scanning, network health monitoring, on-chain monitoring

Numerous capabilities and tools are needed to fully manage net new digital asset risks based on asset classes and the jurisdictions in which you operate.

Analytics risk modeling, audit and reconciliation

Tokens acting as digital representations of other assets will require audit and reconciliation tools.

Preview of our next discussion

November's agenda

- 1 Regulatory landscape and emerging guidance
- 2 Tax considerations with a focus on custody



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