DLT im Nachhandelsbereich

BVI Fund Operations Konferenz

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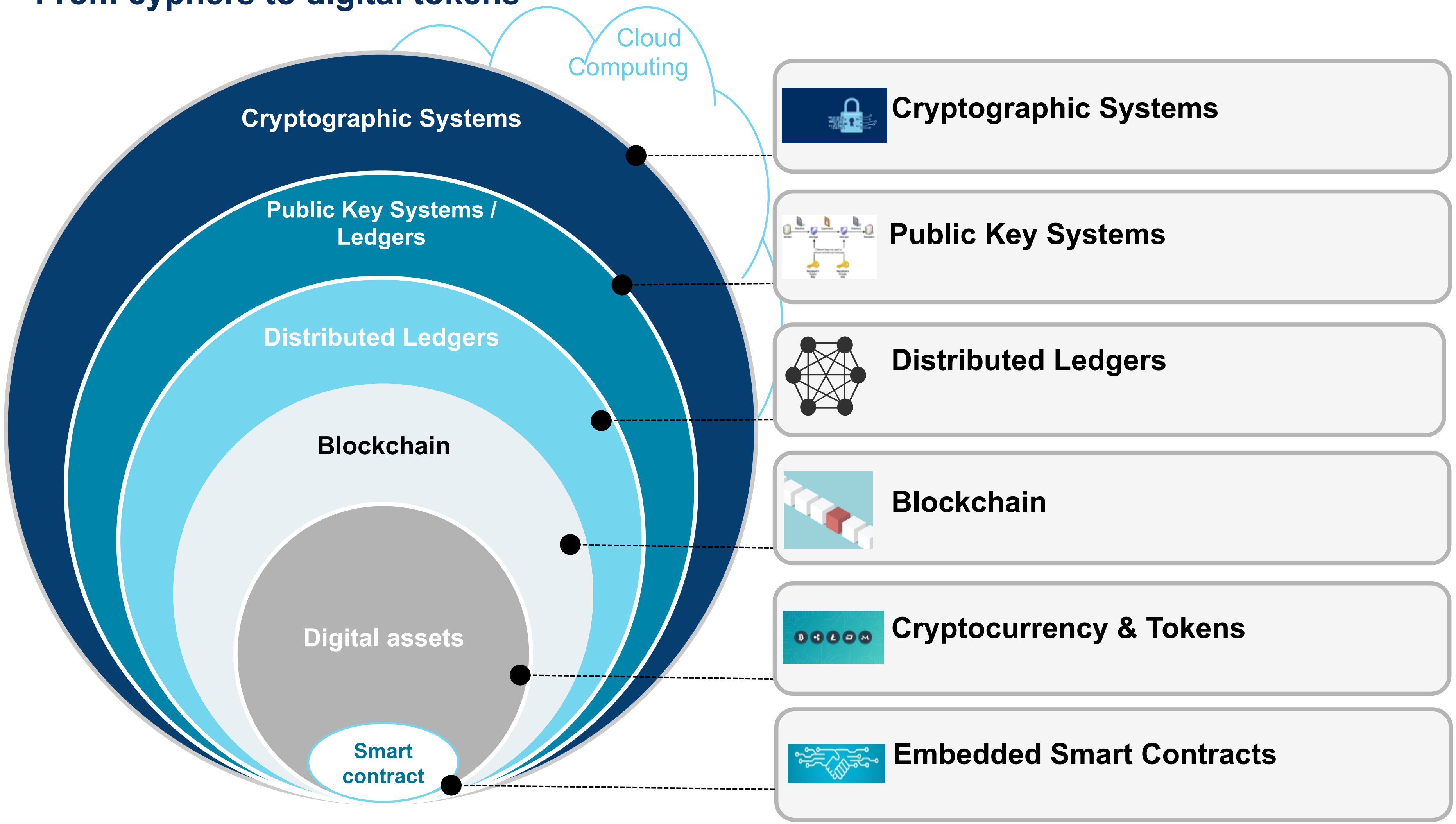
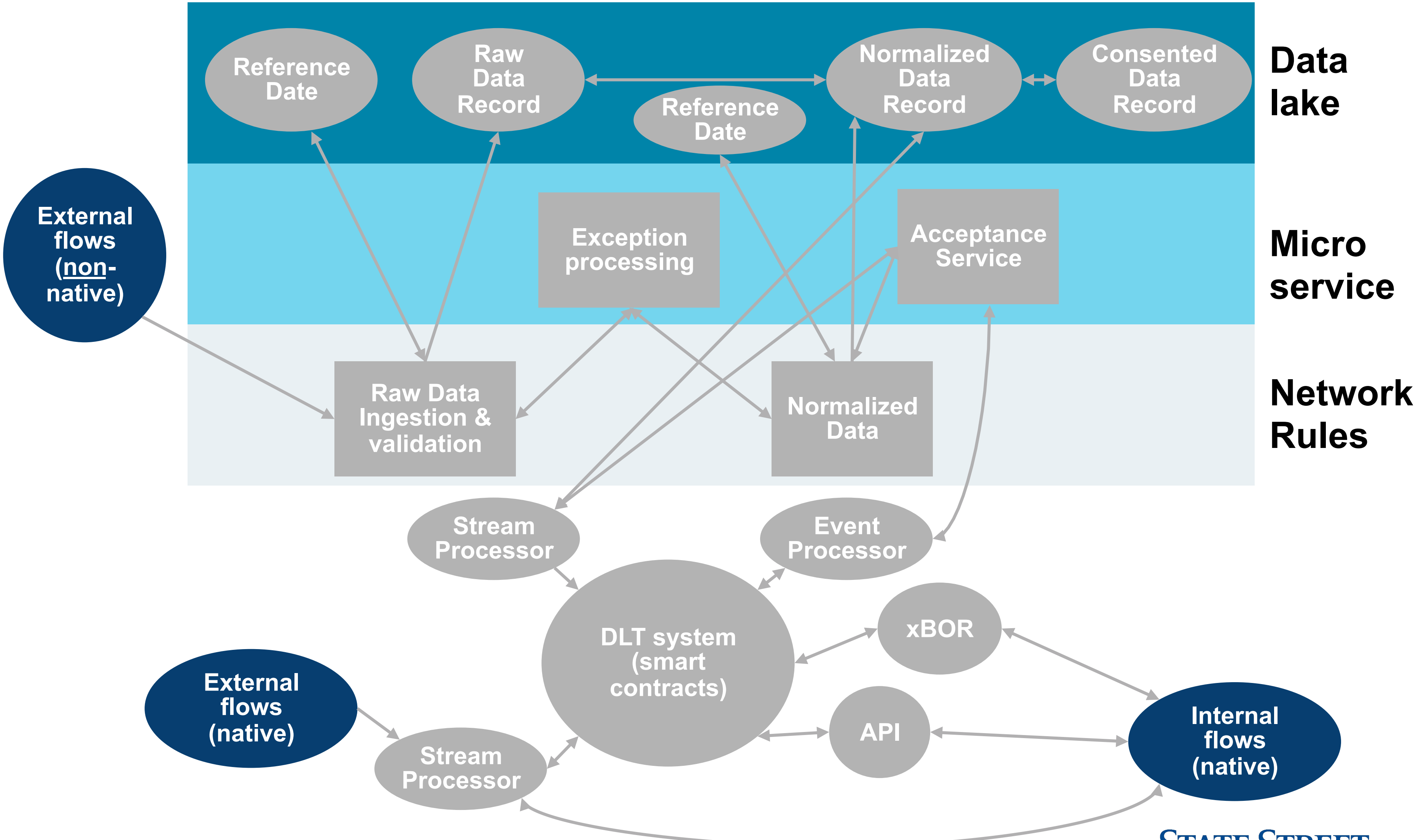
Let's put everything into context

From cyphers to digital tokens



DLT adoption for financial institutions

Protocol, network and data layer



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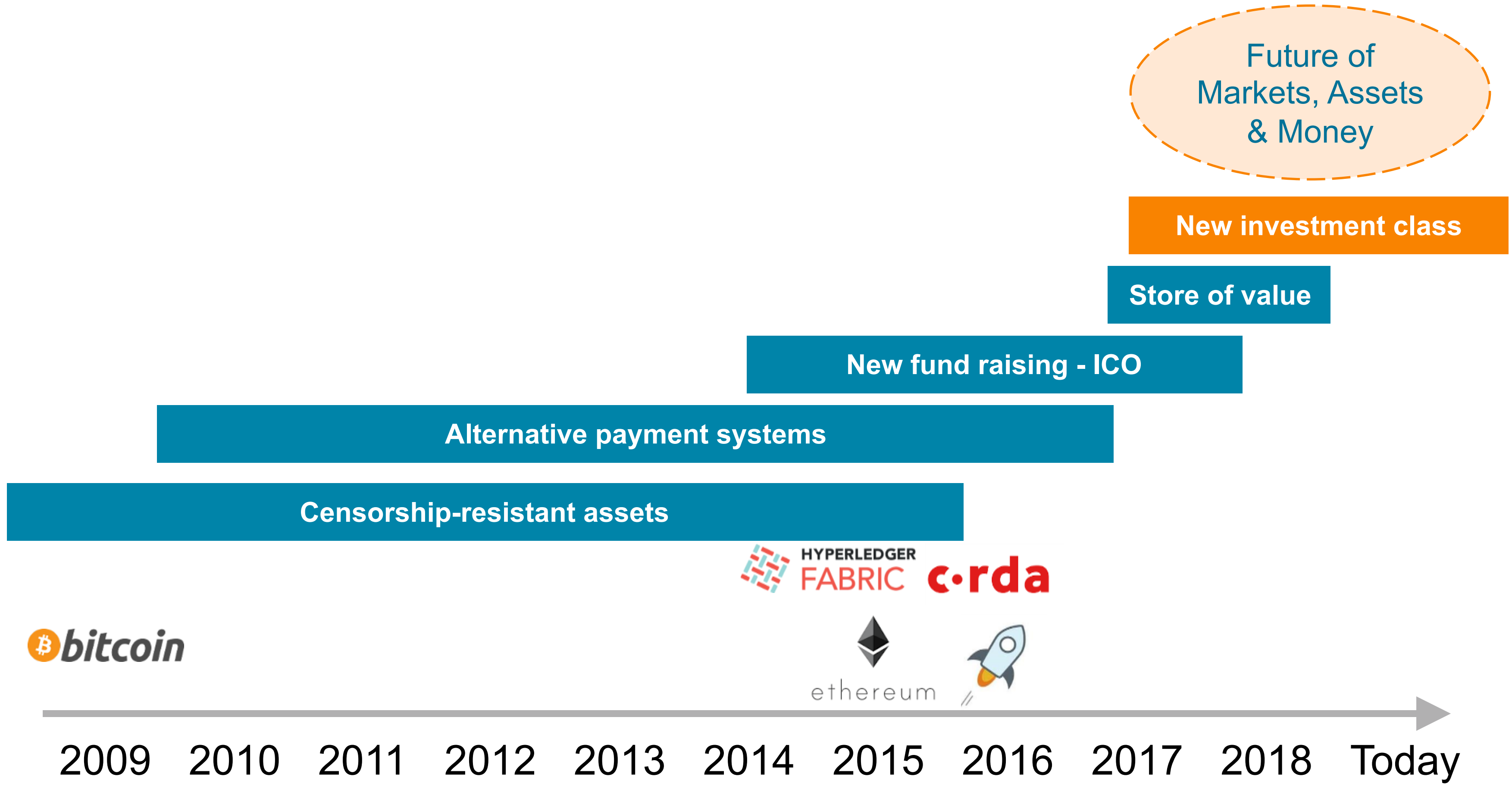
Underlying investment thesis for exchange tokens is evolving

Early indicator towards a new ecosystem



Digital assets are about a new user centric asset class

On-demand, choice rich, infinitely expandable

	Perceived issue	How digital assets address the issue	Consideration
Speed	• Financial transactions can be subject to delays or fails	• Atomic settlement • Move from T+x to T+instant	• Existing Faster payment solutions • T+0 settlement • Liquidity management
Transparency	• Account based models don't allow to track asset	• Better end-to-end control / finality / record-keeping	• Data model and data privacy / permissioning
Distribution	• Certain asset classes are less accessible given inefficient market structure	• Easy fast access and deployment through tokenization / wallet model	• Regulatory considerations e.g. ownership rights, KYC
Intermediation	• Counterparty risk and/or cost	• Peer-to-peer risk	• Segregation requirements in today's world

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Different technology choices (platforms) and standards for token creation

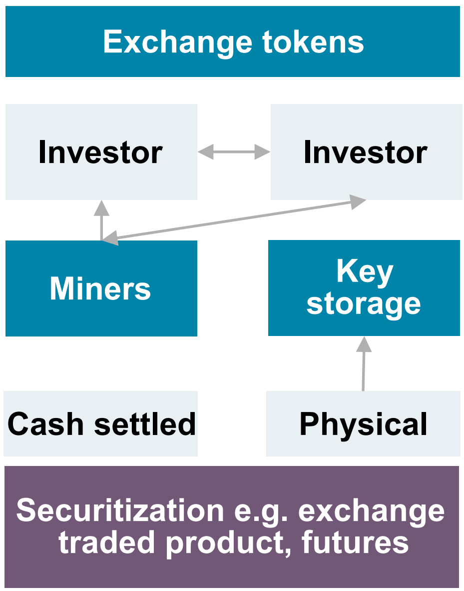
Type	Description	Considerations
Ethereum-based	• Token issued in the shape of ERC-20 'standard' • New token standards being developed to 'look like' a security • Smart contract to control token issuance / distribution • Can run on public Ethereum chain or private Ethereum version e.g. Quorum, Pantheon	• Accepted with almost every digital custody solutions • Public blockchain not suitable for institutional investors • Too many new token 'standards'
Stellar	• Tailor-made security / asset creation with base abstractions (accounts, tokens, payments, offers, atomic exchanges, etc.) • Public blockchain with private solution available (Lighting network)	• Scalable and cost effective • Still not widely utilised • Some Hyperledger integration
Hyperledger Fabric	• Generic tokenization platform available • Business processes flows + security • Private DLT under Hyperledger Project umbrella	• Good privacy solution for permissioned blockchain • No token management (yet)
Corda R3	• Enterprise level privacy non-blockchain DLT • Available digital asset capabilities	• Corda tokens • Adoption

Digital assets involve different asset classes and markets

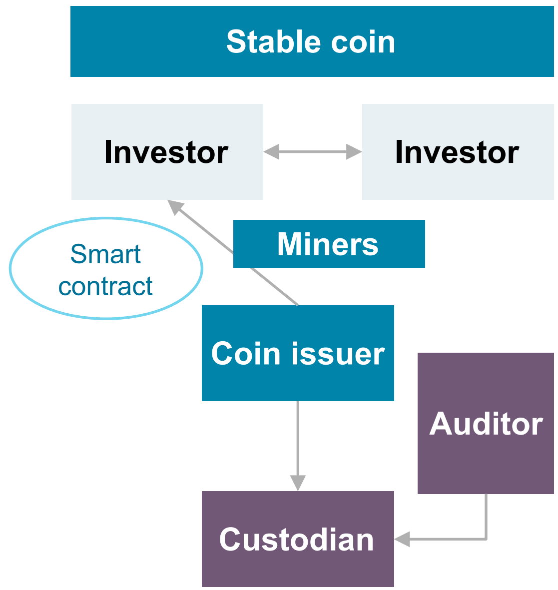
Physical assets		Digital assets							
Object	**Paper certificate**	**Immobilized asset**	**De-materialized assets**	**Digital currency (exchange token/ payment token)**	**Token**				**Digital Funds**
e.g. Gold bar	e.g. share certificate	e.g. share of German listed company	e.g. US treasury	e.g. Bitcoin	**Utility token**	**Asset Token / Security Token / Rights token**			**TBC**
					e.g. ICO	**Native**	**Non-native**		**TBC**
						e.g. “Bondi” bond	**Claim**	**Peg**	**TBC**
							e.g. USC	e.g. Stable coin	TBC

Digital assets create demand for intermediary services

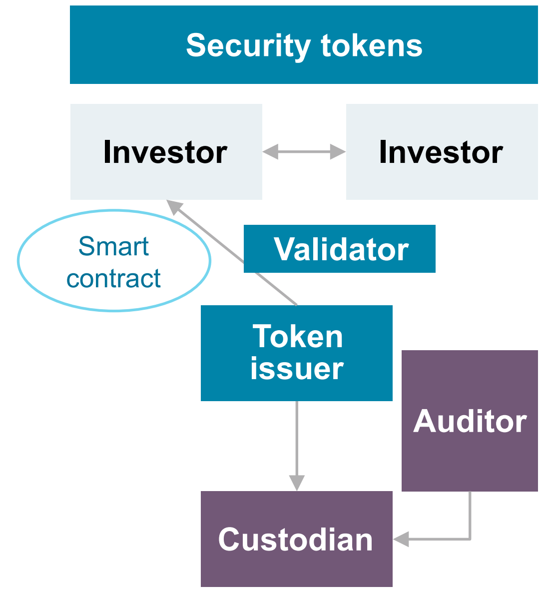
Stable coins could bridge the digital and legacy asset world



- Traditional investors have begun to create financial products in relation to exchange tokens
- At present, no traditional collective investment products have been launched (e.g. ETF/40'act)



- Investors place collateral e.g. fiat cash with coin issuer
- At present $>2.5 bn market size[1]
- 50+ live or in-development Stable Coin initiatives that have raised a combined US$350 million in investment capital up to now[2]



- Tokenization platforms create legal, compliance and technology solutions (smart contracts) to capture rights & obligations related to underlying asset
- The value of blockchain is projected to exceed $176 billion by 2025, and $3.1 trillion by 2030[3]

(1) See stableconindex.com
(2) See https://www.coininsider.com/stablecoin-research/
(3) Source: World Economic Forum (2018): Building Block(chain)s for a Better Planet, p. 11

What are the most significant barriers to institutional investors investing in digital currency?

Barriers for Institutional Investors

	Total	UK	Rest Of Europe	Americas	APAC
Too much volatility	34%	35%	31%	35%	34%
Cybersecurity concerns	34%	33%	39%	33%	29%
Lack of trusted and reliable asset servicing partners and solutions (e.g., custody, fund administration)	30%	28%	32%	31%	28%
High margins	29%	26%	28%	31%	27%
Negative response by central bank(s) to digital currency investment	27%	30%	25%	25%	34%
Lack of sufficient regulatory oversight	26%	26%	22%	28%	28%
Not enough liquidity	24%	24%	26%	18%	31%
Lack of suitable products	22%	20%	24%	21%	25%
Lack of conviction in the long-term viability of current digital currency assets	22%	22%	21%	25%	19%
Unreliable pricing	21%	26%	25%	17%	18%
24/7 market trading	21%	15%	21%	26%	16%
Lack of client interest	10%	15%	6%	10%	11%

Source: State Street (2018): Growth Readiness Study 2018

What is digital custody?

	Area	Relevance
	Digital wallet	Software program that stores private and public keys and interacts with blockchain
IT	**Public key management**	Acts as “Standard Settlement Information” for counterparties in the digital asset space
	Private key storage	Controls digital assets i.e. ability to spend asset and needed to create public key
	Signing ceremony	Identification process of clients and consequent initiation of transactions
	Miners/Validators	Process to update blockchain with new transactions
	Cash / prefunding	Provide funding in fiat cash or other digital cash to pay for assets
Ops	**Valuation**	Portfolio valuation and evidence existence of assets
	Audit	Audit software code e.g. for smart contract / release mgmt
	Other	KYC etc

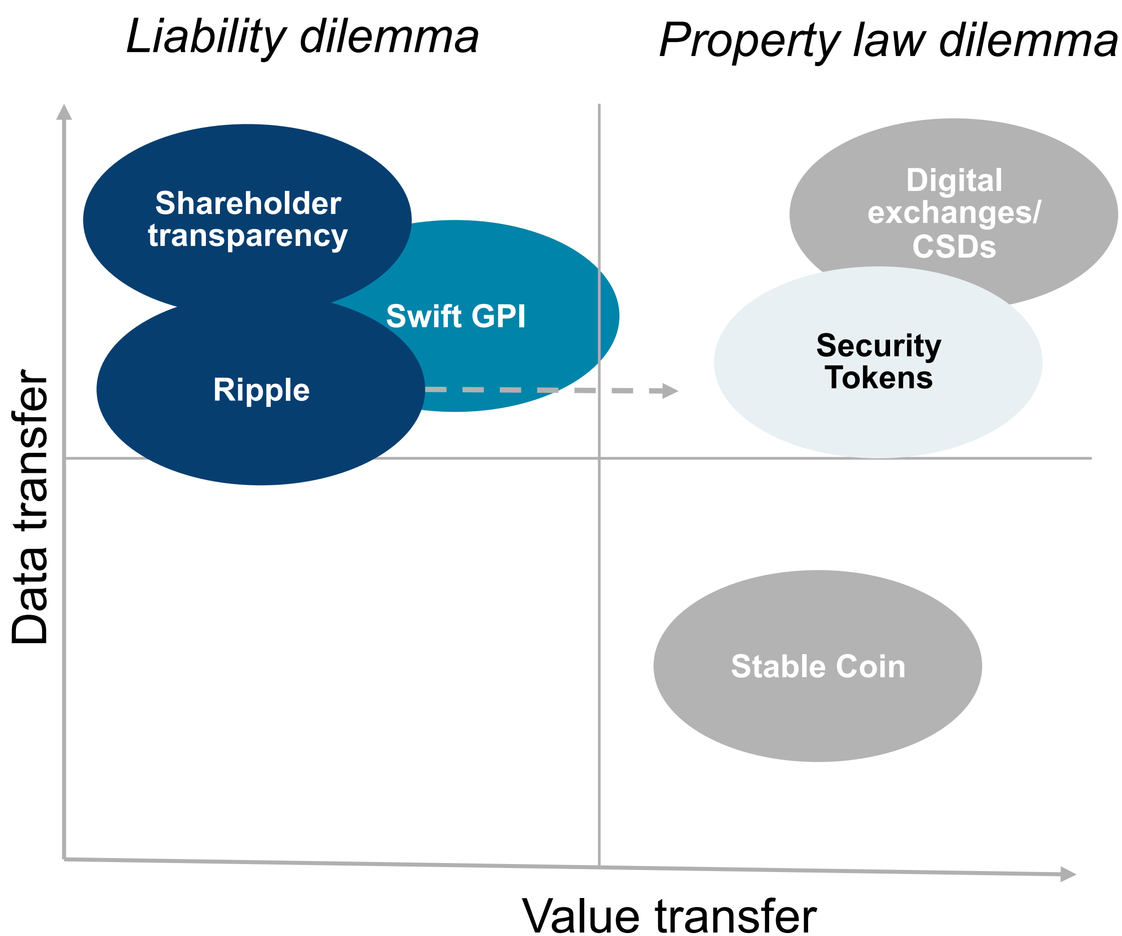
Digital custody requires to store private keys directly

- EMEA regulator ESMA (Jan 2019): “ESMA’s preliminary view is that having control of private keys on behalf of clients could be the equivalent to custody/ safekeeping services, and the existing requirements should apply to the providers of those services.” *(Advice on Initial Coin Offerings and Crypto-Assets, p. 37)*
- Technical advancements may render the concept of one party storing a key meaningless:
  - Multi-signature requirements
  - Sharding i.e. key split

Other issues

- Insurance coverage for stored digital assets
- Available SOC 1 Type 2, SOC 2 Type 2, and ISO 27001 certifications

Potential use cases for custodians



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Summary

Digital Assets have intrinsic qualities that make them different	Programmable smart contracts drive the lifecycle of an asset (creating a new asset class) There will no longer be a linear manner of processing (peer-to-peer) Multiple state changes to an asset at the same time (atomic)
Industry needs to change before Digital Assets can reach their potential	Institutional investors will require further enhancements to this nascent market, such as: • Token properties • Valuation Models • Settlement certainty • Data Distribution • Legal/Regulation • Security & storage
New business models could materialize to support this market	Monetization of decision making (e.g. “Facebookization” of asset servicing) Unbundle the earning potential of cash from its transaction capacity

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