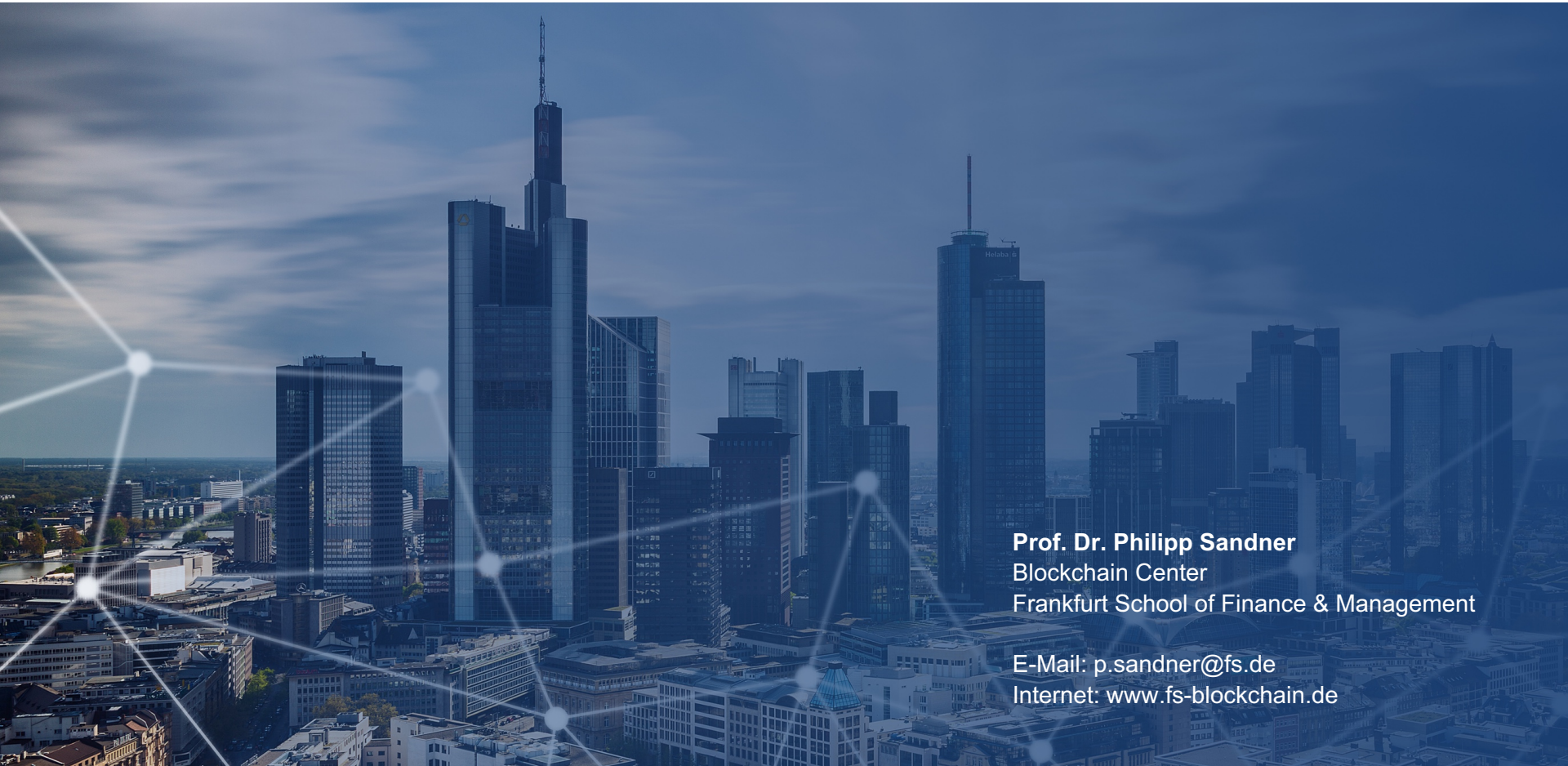


The Euro on the blockchain?



Prof. Dr. Philipp Sandner
Blockchain Center
Frankfurt School of Finance & Management

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Internet: www.fs-blockchain.de



Prof. Dr. Philipp Sandner
Head of Frankfurt School
Blockchain Center



WHAT WE DO

The Frankfurt School Blockchain Center was **founded in 2017** by Professor Philipp Sandner. We are a **think tank and research center** which investigates implications of the blockchain technology for companies and their business models.



**Consulting,
prototypes
& research**



**Education
& trainings**



**Startups advisory
& incubation**



**Community
& events**

FACTS AND FIGURES



16 employees



100+ presentations worldwide



10 seminars



15+ research papers



20+ events



3 conferences



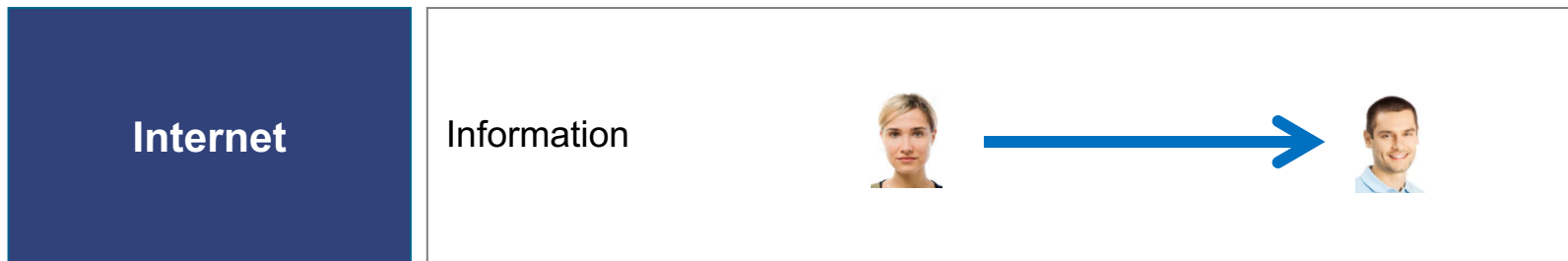
15 consulting & research projects

OUR PARTNERS



Blockchain technology provides a layer for the "Internet of Value" in addition to the existing "Internet of Information"

The **Internet** allows sending information: documents, PDFs, emails. Yet, value cannot be transferred via the internet.



Blockchain technology now allows the electronic transmission of "value": e.g. money, stocks, rights on assets. This is much more than displaying the bank account in online banking.



Payment process between two parties



A payment requires multiple stages:
this costs time and can induce errors



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The core of blockchain is that all transactions of a specific asset are recorded in one common distributed database



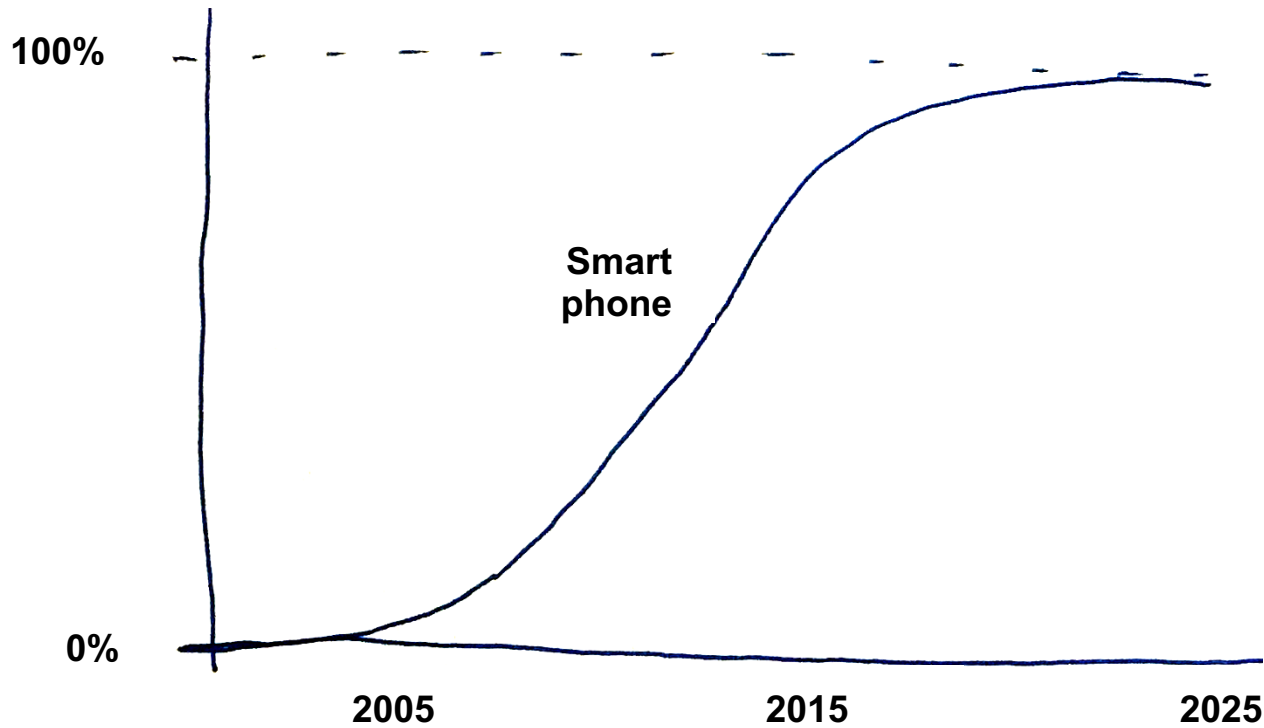
Ledger

2018-01-01				2018-01-02			
Index	Contract	EUR	USD	Index	Contract	EUR	USD
1	10	10.000	11.000	1	10	10.000	11.000
2	10	10.000	11.000	2	10	10.000	11.000
3	10	10.000	11.000	3	10	10.000	11.000
4	10	10.000	11.000	4	10	10.000	11.000
5	10	10.000	11.000	5	10	10.000	11.000
6	10	10.000	11.000	6	10	10.000	11.000
7	10	10.000	11.000	7	10	10.000	11.000
8	10	10.000	11.000	8	10	10.000	11.000
9	10	10.000	11.000	9	10	10.000	11.000
10	10	10.000	11.000	10	10	10.000	11.000

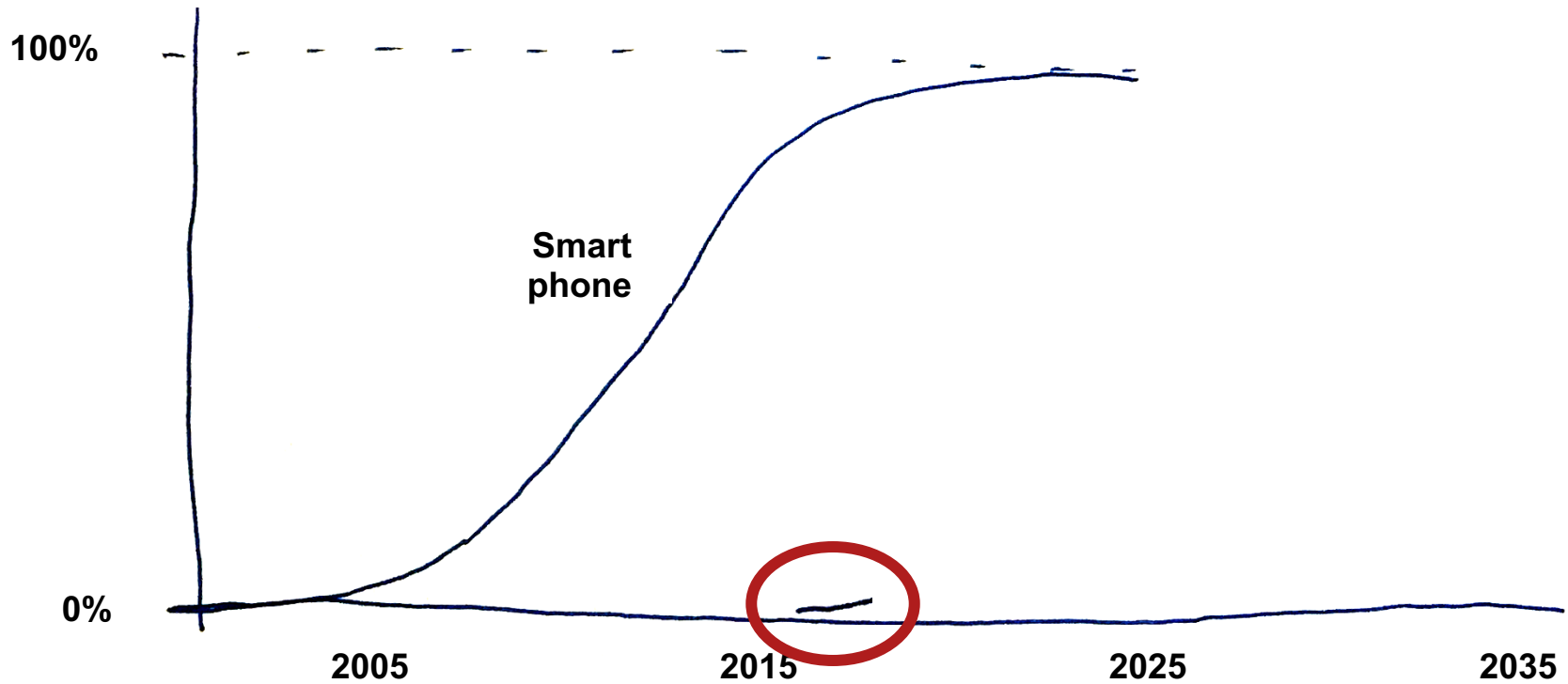


The ownership for a property will thereby be transferred from an old owner to a new owner

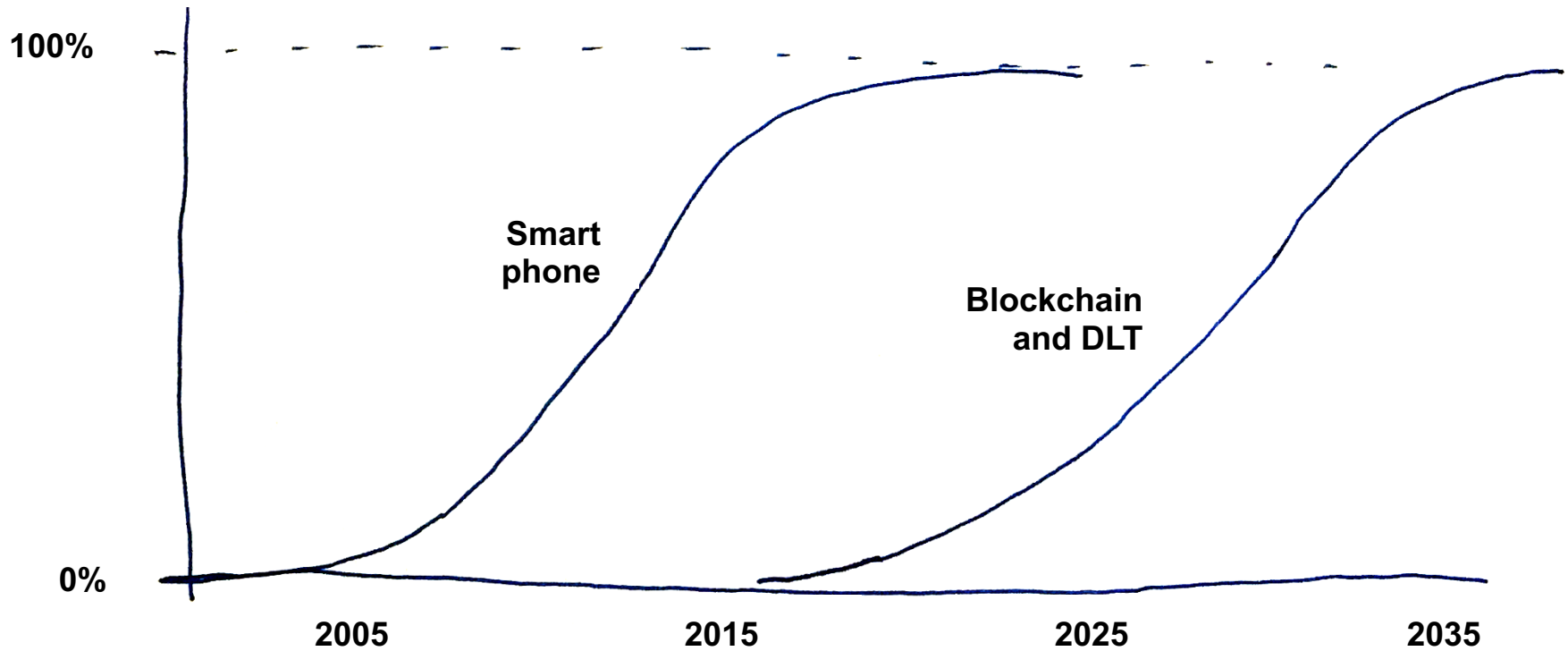
What is the current state of blockchain technology?




What is the current state of blockchain technology?



What is the current state of blockchain technology?



A white semi-truck is driving on a two-lane asphalt road that curves to the right. The truck is in the foreground, moving towards the viewer. In the background, there are snow-capped mountains under a blue sky with some clouds. A small car is visible further down the road. The overall scene is a scenic mountain highway.

Payments between vehicles in traffic – combining smart and IoT devices. This allows autonomous vehicles to pay, bill and receive Euro in an automated way.

New business models
will be possible:
e.g. a weather
service, where
sensors automatically
sell data for Euro.



Industry domains

Finance domains

Industry domains

Logistics

Machinery

Sensors

Data

Energy

Finance domains

Payment

Leasing

Securitization

Factoring

Escrow

Industry domains

Logistics

Machinery

Sensors

Data

Energy

Finance domains

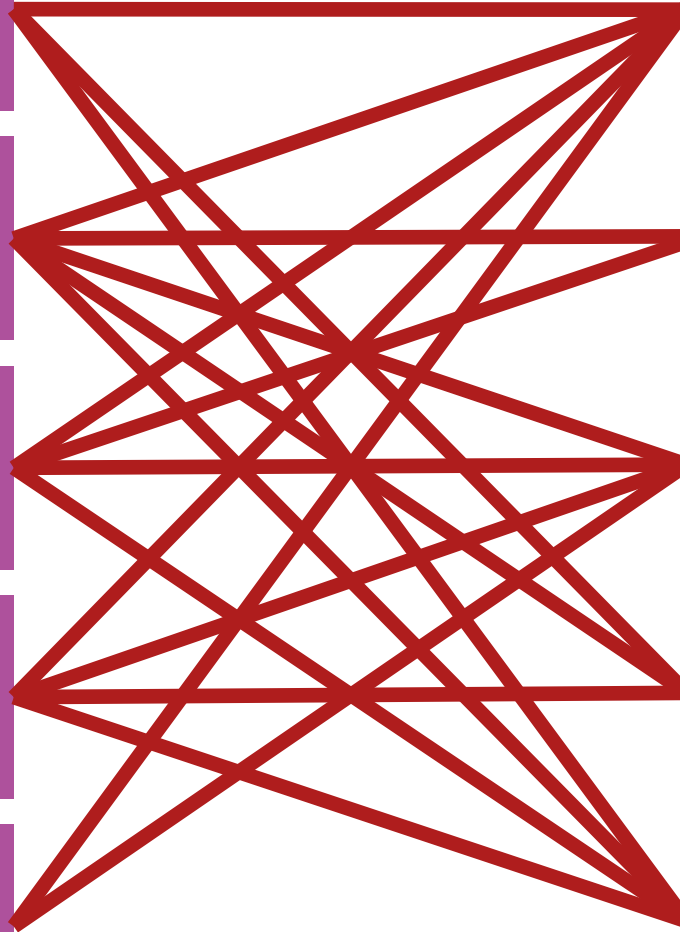
Payment

Leasing

Securitization

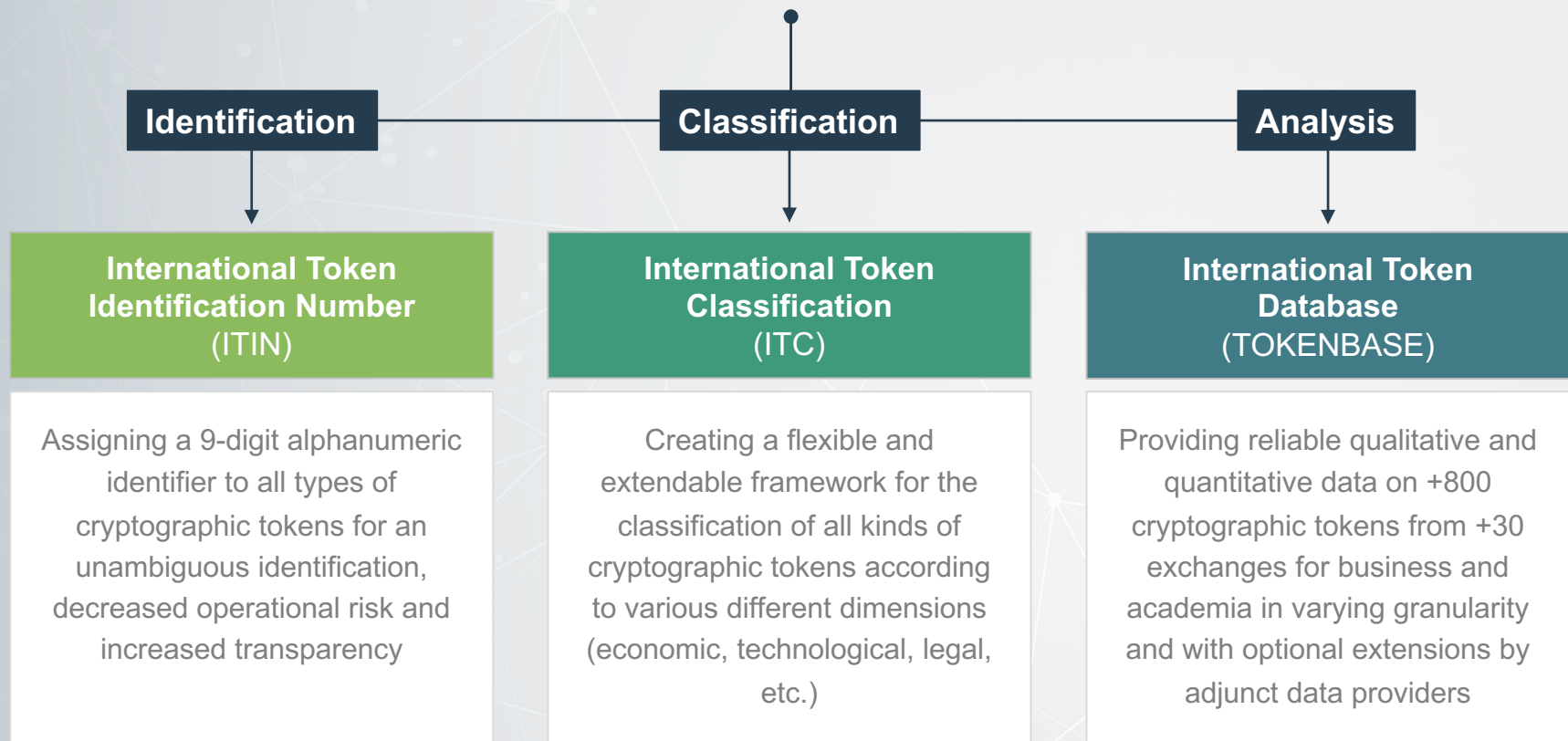
Factoring

Escrow



International Token Standardization Association (ITSA) e.V. i.Gr.

Promoting the development and implementation of a standardized approach
for the **identification**, **classification** and **analysis** of
blockchain- and DLT-based cryptographic tokens



The ITC framework provides detailed definitions for the individual categories and sub-categories of each dimension

Dimension	Level	Identifier	Label	Description
Economic Purpose What is the economic purpose of the token as defined by the issuer? [1]	1 - Category	EEP21	Payment Token	A Payment Token is designed to be used as digital currency. As such, a Payment Token fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
	2 - Sub-category	EEP21U	Unpegged Payment Token	An Unpegged Payment Token is a token whose value is determined through supply and demand on the market and thus floats freely over time.
	2 - Sub-category	EEP21P	Pegged Payment Token (Stablecoin)	A Pegged Payment Token is a token whose value is intended to be kept stable over time in order to better fulfill the classic functions of money compared to Unpegged Payment Tokens. Pegged Payment Tokens exist in various forms: there are fiat-, commodity- or crypto-backed stablecoins but also algorithm-based stablecoin models.
	2 - Sub-category	EEP21Z	Other Payment Token	
	1 - Category	EEP22	Utility Token	An Utility Token is intended to provide a certain sort of utility or right to the token holder within a clearly specified environment (e.g. decentralized network, third-party ecosystem, business relationship or jurisdiction).
	2 - Sub-category	EEP22A	Access Token	An Access Token is created to provide access to certain services, goods or resources that are offered in or through the environment that the token was created for.
	2 - Sub-category	EPP22G	Governance Token	A Governance Token is an Utility Token whose primary purpose is to provide means or rights to participate in the governance of the environment that the token was created for (e.g. providing the right to vote on decisions concerning a decentralized network).
	2 - Sub-category	EPP22S	Settlement Token	A Settlement Token is designed to serve for the settlement of transactions within the environment that the token was created for (e.g. purchase of goods or services in a third-party ecosystem). As such, a Settlement Token (at least partially) also fulfills the functions of money. In contrast to a Payment Token however, it is not intended as generic digital currency without focus on a specific use case or environment, but for the settlement of transactions within a specified environment (e.g. decentralized network, third-party ecosystem or business relationship).
	2 - Sub-category	EPP22O	Ownership Token	An Ownership Token is created for the purpose of managing and transferring the ownership of material or immaterial goods. Thus an Ownership Token could for instance represent an absolute legal right with regards to intellectual property or material objects within the environment of a certain jurisdiction, but also ownership of a unique item within the environment of a decentralized network or computer game with no legally binding relative or absolute rights attached.
	2 - Sub-category	EEP22Z	Other Utility Token	
	1 - Category	EEP23	Investment Token	An Investment Token is created as financial product or financial instrument for institutional or retail investors.
	2 - Sub-category	EPP23A	Asset-backed Token	Incl. tokens backed by commodities, loans, trade receivables, or real assets
	2 - Sub-category	EEP23B	Debt Token	Incl. tokens that mimic bonds
	2 - Sub-category	EPP23D	Derivative Token	Incl. tokens that mimic structured products, futures, or options
	2 - Sub-category	EEP23E	Equity Token	Incl. tokens that mimic stocks
	2 - Sub-category	EEP23F	Fund Token	Incl. tokens that mimic fund shares
	2 - Sub-category	EEP23Z	Other Investment Token	
1 - Category	EEP99	Token with other Economic Purpose		

Industry

Current ITC sample classification of Bitcoin as to be found in TOKENBASE (Version 1.0)

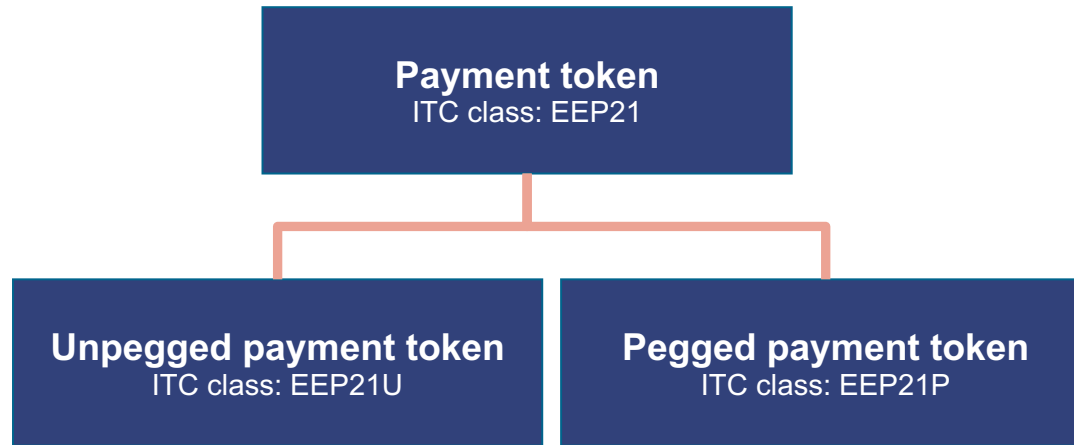
Name:	Bitcoin	Symbol:	BTC / XBT	TOKENBASE Rank:	1
ITIN:	TP3B-248N-Q	Website:	www.bitcoin.org	CMC ID:	1
		Github:	https://github.com/bitcoin	CMC slug:	bitcoin

Dimension		Classification	Rationale
EEP	Economic Purpose	Unpegged Payment Token EEP21U	Free-floating digital currency
EIN	Industry	Payment Services EIN10A	Token is intended as an universal means of payment
TTS	Technological Setup	Ledger-Native Token TTS41	Tokens are directly implemented on the blockchain
LLC	Legal Claim	No-Claim Token LLC31	Token does neither provide any claim against any counterparty nor an absolute right
	<i>Future work</i>	<i>Future work</i>	<i>Future work</i>

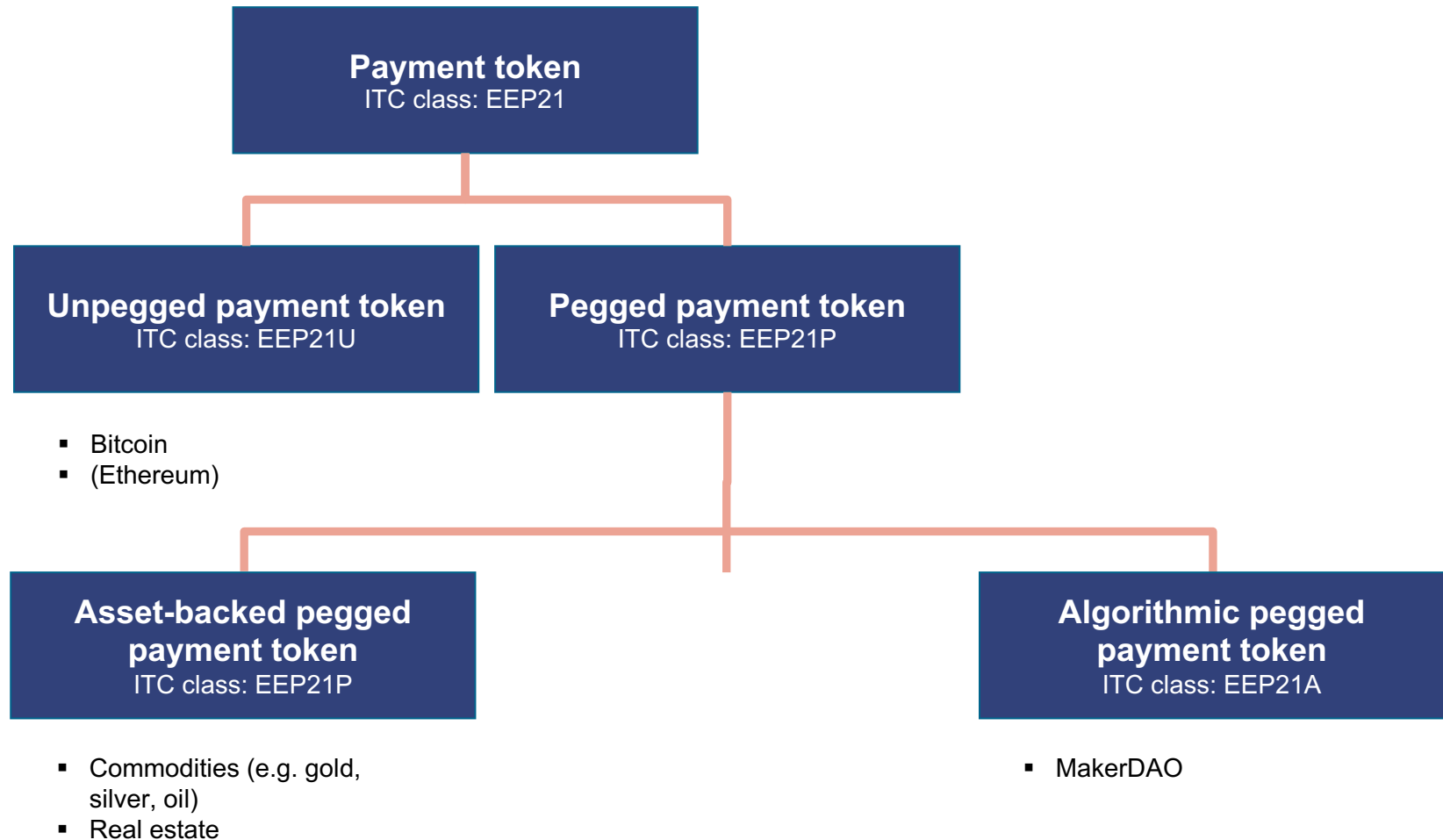
The ITC framework provides detailed definitions for the individual categories and sub-categories of each dimension

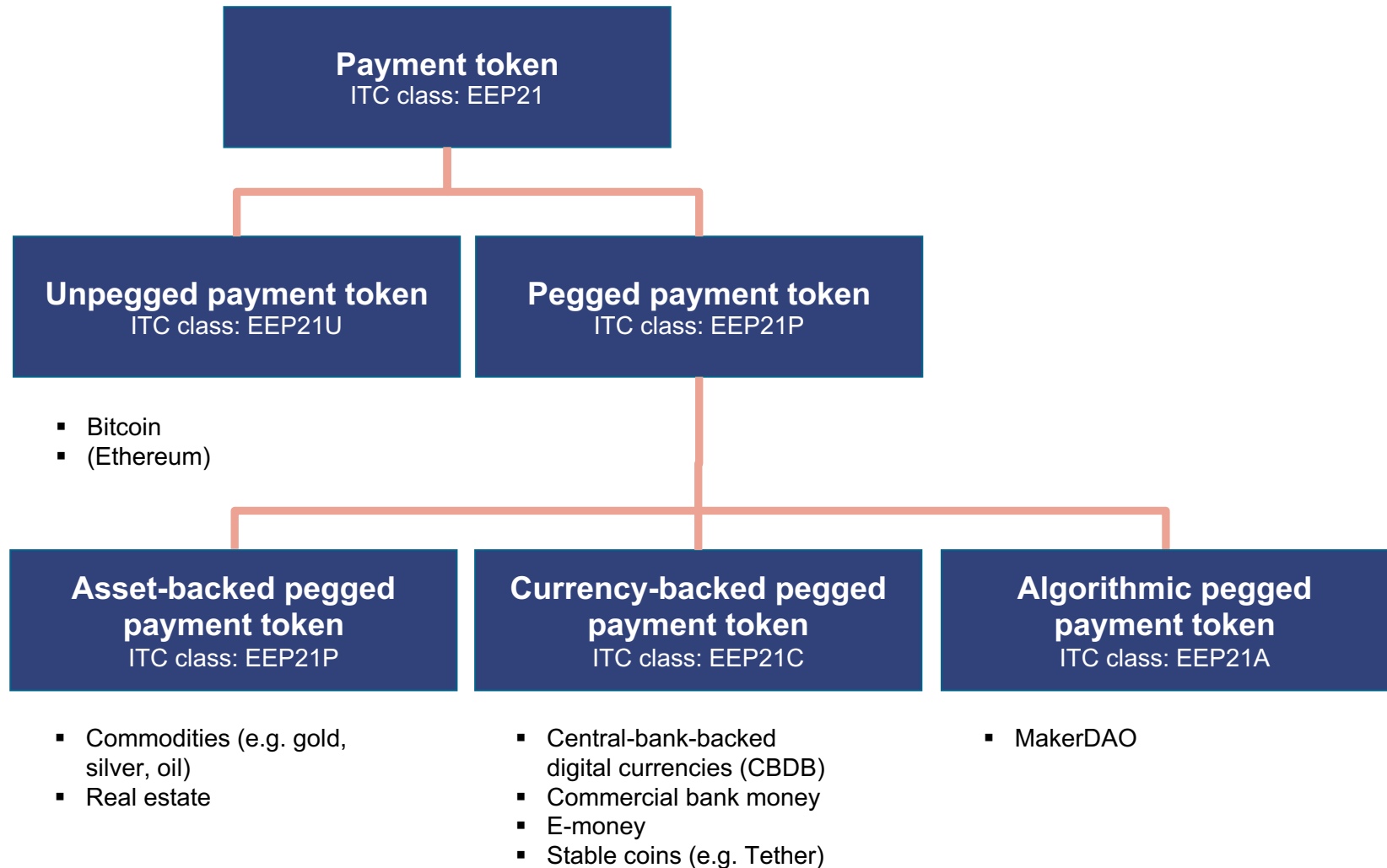
Dimension	Level	Identifier	Label	Description
Economic Purpose				
What is the economic purpose of the token as defined by the issuer?	1 - Category	EEP21	Payment Token	A Payment Token is designed to be used as digital currency. As such, a Payment Token fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
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	2 - Sub-category	EEP21U	Unpegged Payment Token	An Unpegged Payment Token is designed to be used as digital currency. As such, an Unpegged Payment Token fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
	2 - Sub-category	EEP21P	Pegged Payment Token (Stablecoin)	A Pegged Payment Token (Stablecoin) is designed to be used as digital currency. As such, a Pegged Payment Token (Stablecoin) fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
	2 - Sub-category	EEP21Z	Other Payment Token	An Other Payment Token is designed to be used as digital currency. As such, an Other Payment Token fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
	1 - Category	EEP22	Utility Token	An Utility Token is designed to be used as digital currency. As such, a Utility Token fulfills the classic functions of money [2] (at least partially): (1) medium of exchange; (2) unit of account; and (3) store of value. In general, the usage of the token as means of payment is not limited to a specific use case or environment.
	2 - Sub-category	EEP23D	Derivative Token	Incl. tokens that mimic structured products, warrants, or options
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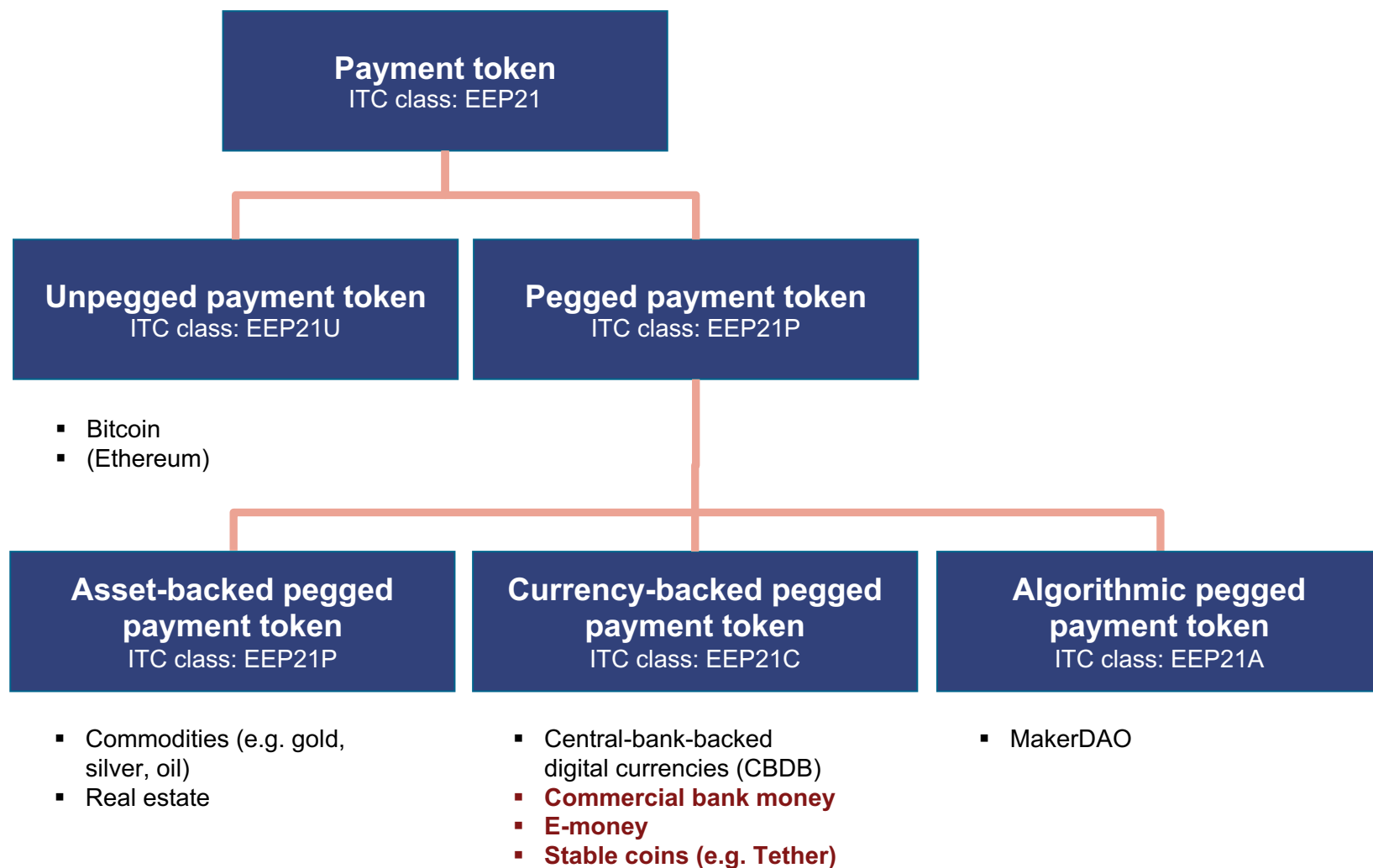
Payment token
ITC class: EEP21



- Bitcoin
- (Ethereum)







Comparing stable coins (escrow model) with model where a IBAN/wallet bridge is to map IBAN account numbers to wallet addresses

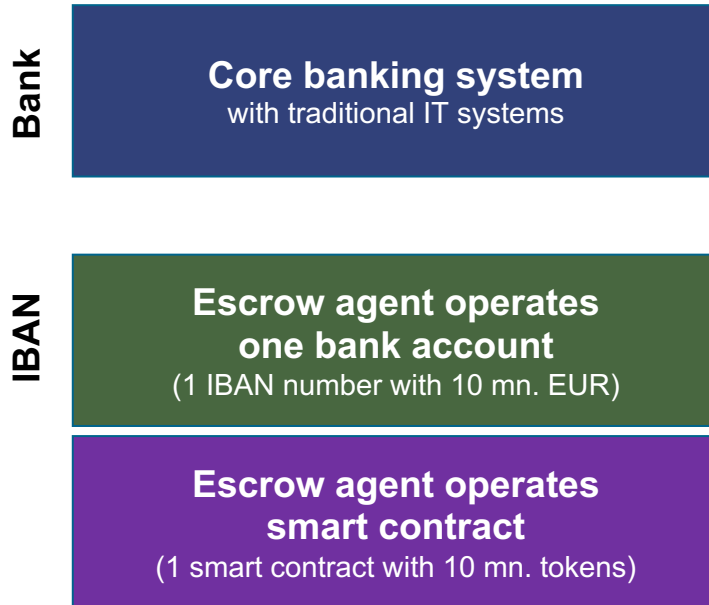
Standard model of stable coins

Bank

Core banking system
with traditional IT systems

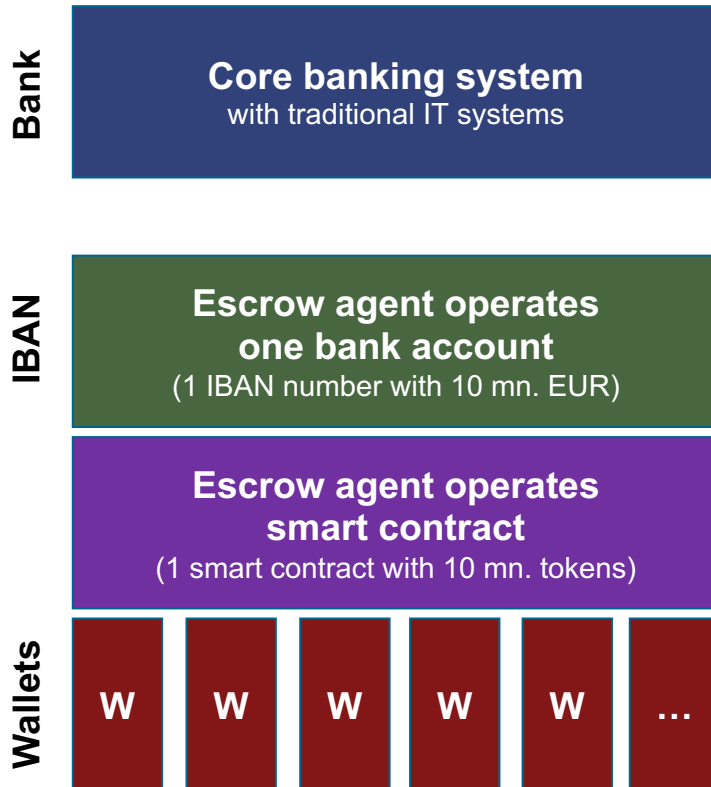
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Standard model of stable coins



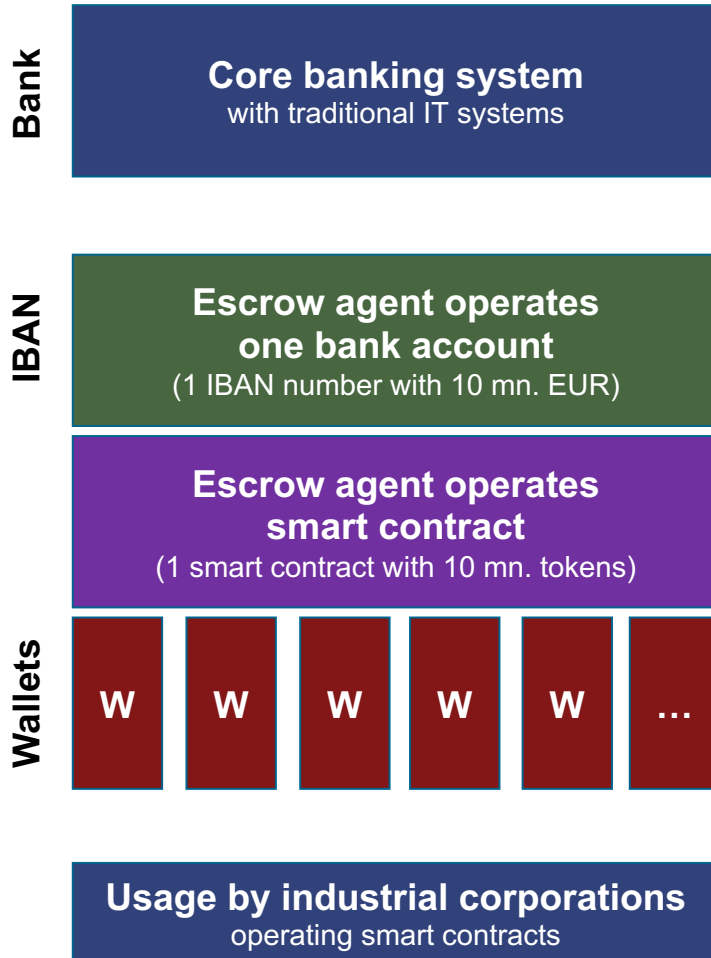
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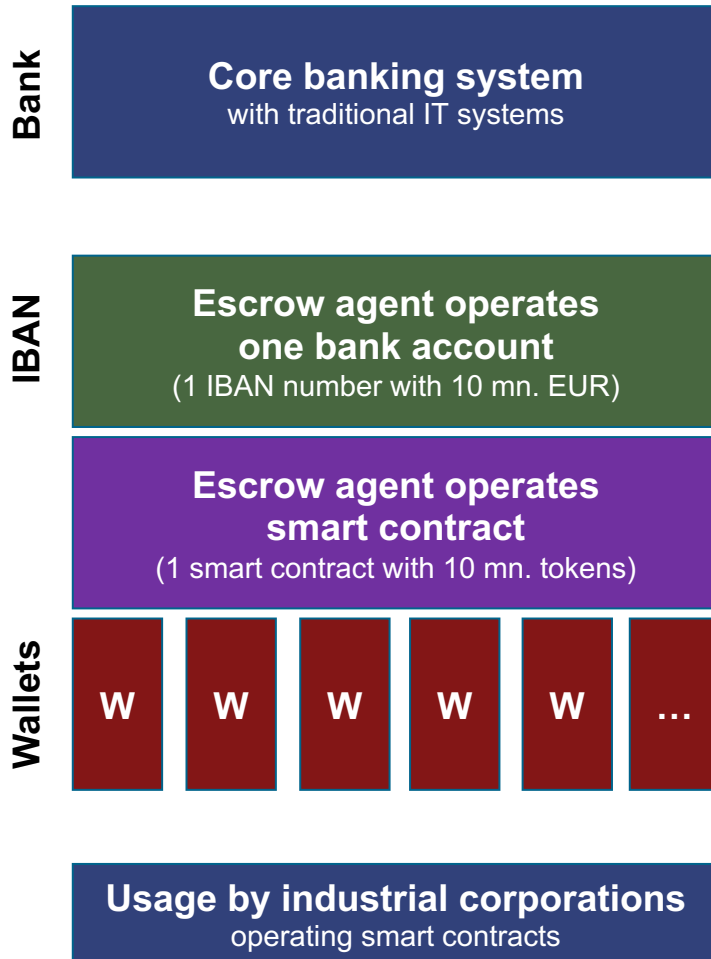
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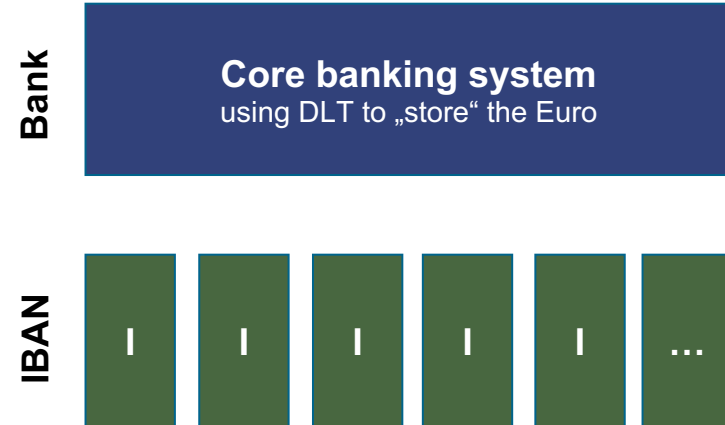


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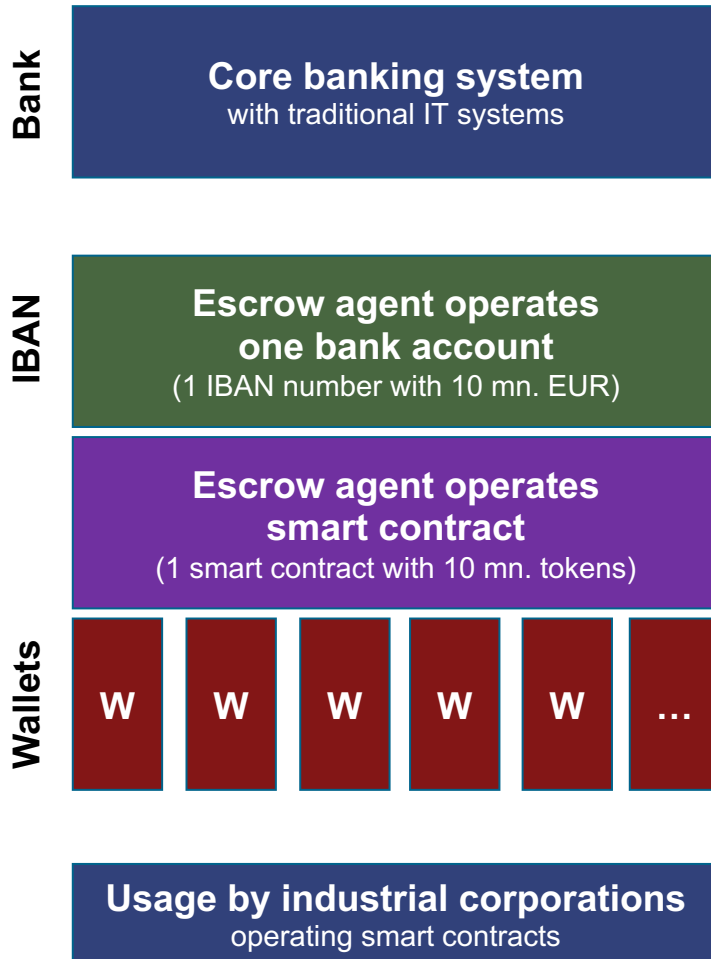


Cash-on-ledger model with E-Money licence

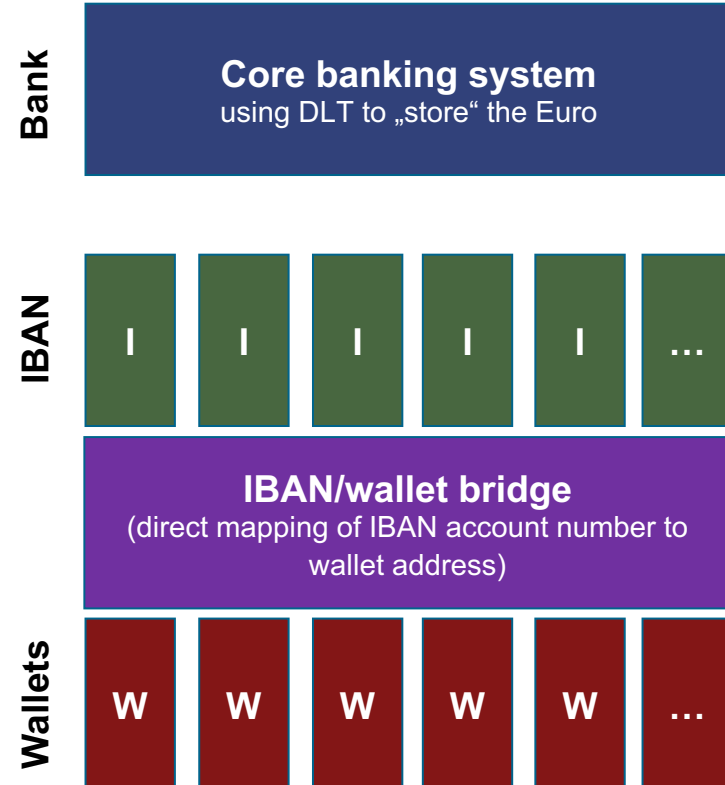


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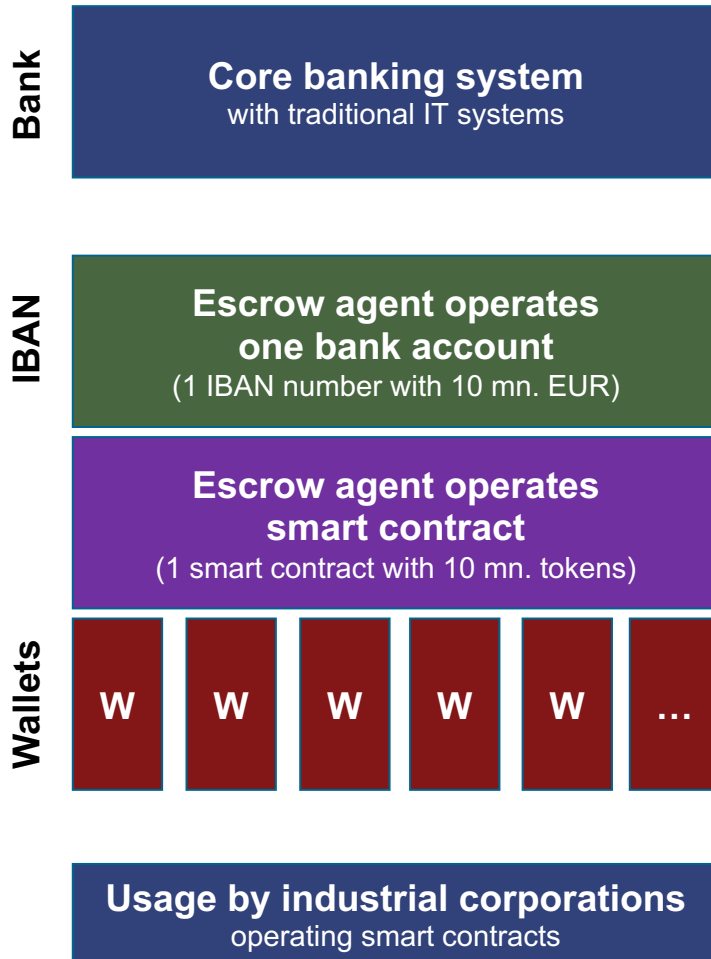


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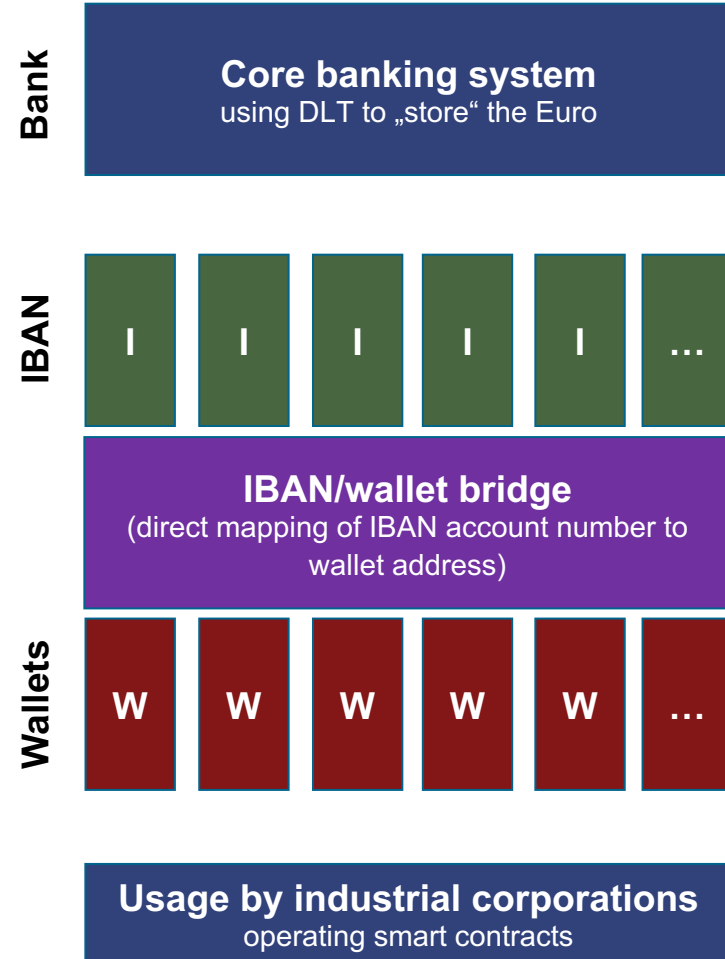


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Standard model of stable coins



Cash-on-ledger model with E-Money licence



Comparing different payment tokens

	CASH ON LEDGER (e.g. Euro)	Traditional cash (e.g. Euro)	Tether	Bitcoin
Online	●	●	●	●
Smart Contracts	●	●	●	●
Permissioned DLT Network	●	●	●	●
IBAN/Wallet gateway	●	●	●	●
Widely accessible	●	●	●	●
Licensed	●	●	●	●
Stability in prices	●	●	●	●
Stability originating form	EUR, USD, CHF	e.g EUR, USD, CHF	USD	n/a

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Geboren 1980 in Heidelberg
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- 2000-2005** Studium der BWL an der Universität Mannheim
- 2005-2011** Promotion an der Ludwig-Maximilians-Universität München
Auslandsaufenthalte an der Copenhagen Business School und an der University of California at Berkeley
Post-Doc an der Technischen Universität München
- 2010-2015** Mitgründer einer auf Innovationsstrategie und IP spezialisierte Unternehmensberatung
- 2015** Professor an der Frankfurt School of Finance & Management;
Themengebiete: Digitalisierung, Entrepreneurship und Innovation;
- seit 2017** Leiter des Frankfurt School Blockchain Centers
- Themen** Blockchain, Crypto Assets, Initial Coin Offerings (ICOs), Digitalisierung und Entrepreneurship
- Praxis** Beratung von Unternehmen hinsichtlich ihrer Blockchain-Aktivitäten, u.a. auch den ersten Crypto Fund Europas oder Startups in Consensys' Token Foundry Programm
- Engagement** FinTechRat des Bundesministerium der Finanzen, Mitgründer des Blockchain Bundesverband e.V., Multichain Asset Managers Association