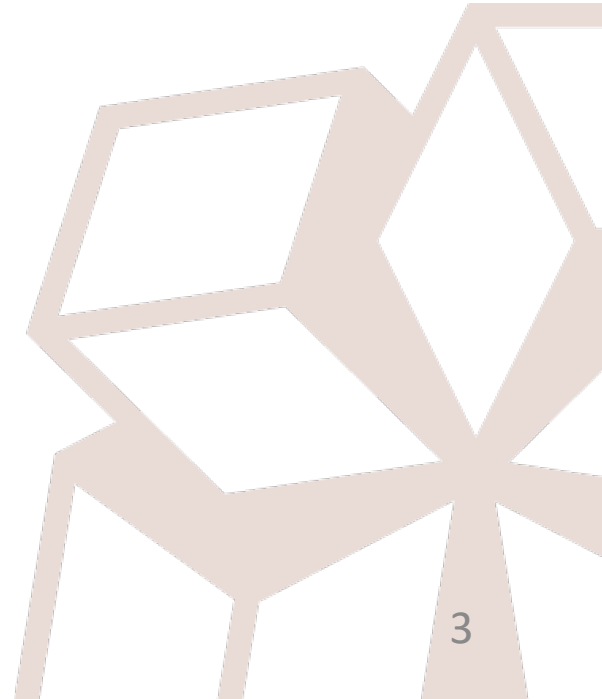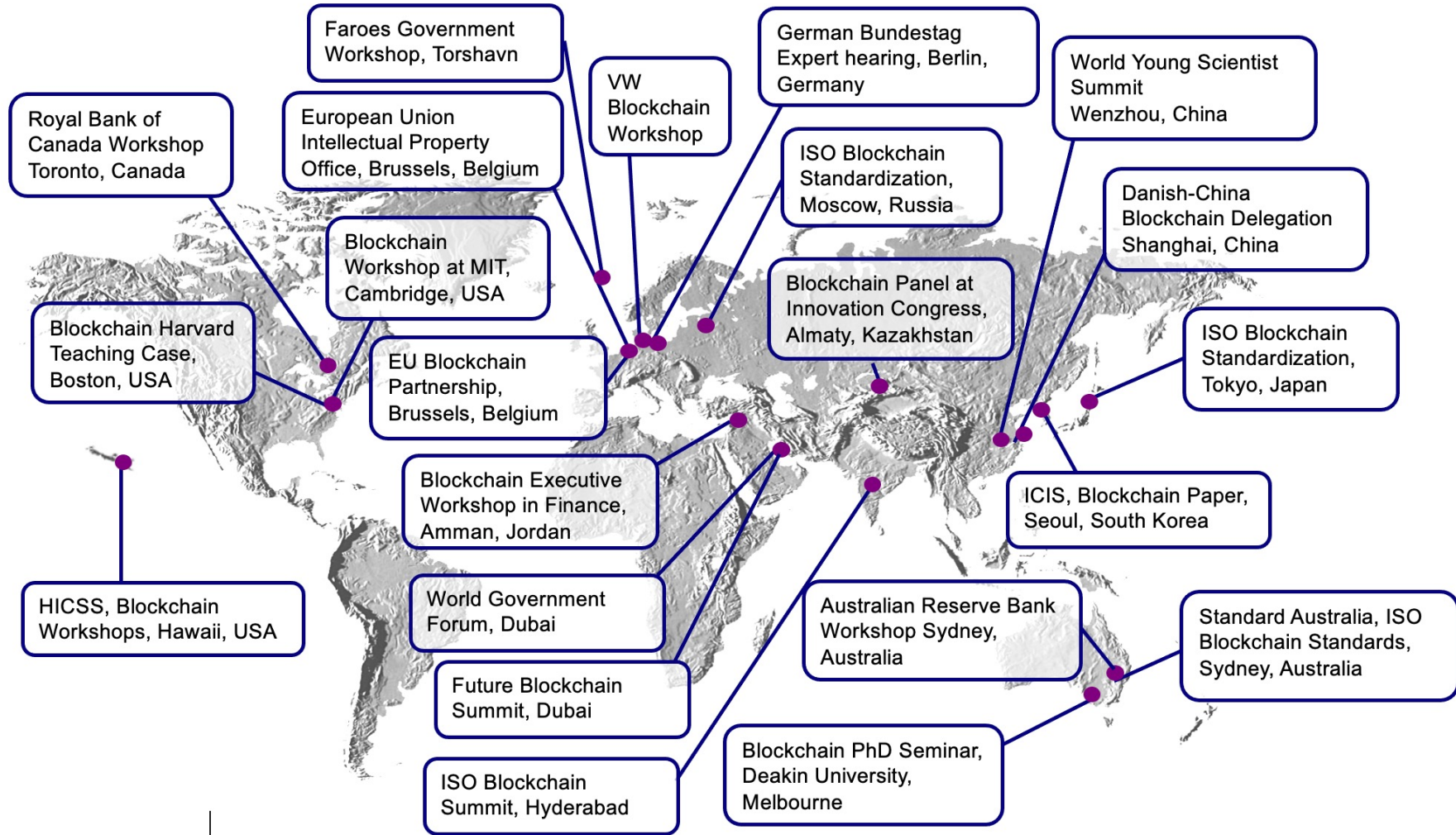# European Blockchain Center

Dialogue University of Urbino 4. July 2022

Certain blockchain based emergent phenomena with particular focus on Universal Wallets

- Lifelong international management career in digital transformation in global organisations

- Business and IT Systems architect

- Now phd project in blockchain economics on Universal Wallets the user interface to blockchains for handling digital assets

- This is my fifth career

- Mail: kjrg@itu.dk

- Twitter: @kimpeiter

European Blockchain center selected activities

Royal Bank of Canada Workshop Toronto, Canada

Faroes Government Workshop, Torshavn

European Union Intellectual Property Office, Brussels, Belgium

VW Blockchain Workshop

German Bundestag Expert hearing, Berlin, Germany

World Young Scientist Summit Wenzhou, China

ISO Blockchain Standardization, Moscow, Russia

Blockchain Workshop at MIT, Cambridge, USA

Danish-China Blockchain Delegation Shanghai, China

Blockchain Harvard Teaching Case, Boston, USA

EU Blockchain Partnership, Brussels, Belgium

Blockchain Panel at Innovation Congress, Almaty, Kazakhstan

ISO Blockchain Standardization, Tokyo, Japan

Blockchain Executive Workshop in Finance, Amman, Jordan

ICIS, Blockchain Paper, Seoul, South Korea

HICSS, Blockchain Workshops, Hawaii, USA

World Government Forum, Dubai

Australian Reserve Bank Workshop Sydney, Australia

Standard Australia, ISO Blockchain Standards, Sydney, Australia

Future Blockchain Summit, Dubai

Blockchain PhD Seminar, Deakin University, Melbourne

ISO Blockchain Summit, Hyderabad

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3

European Blockchain Center

Roman Beck

Jonas Valbjørn Andersen

Nico Wunderlich

Patrick Bahr

Peter Sestoft

Jan Schwiderowski

Signe Agerskov Madsen

Kim Peiter Jørgensen

Markus Haugaard

Asger Balle Pedersen

Erol Kazan

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Go see ➔ https://www.ebcc.eu/ ⬅ Go see

European Blockchain Center

- Opening, Agenda

- What is IS?

- What – if anything - is so special about blockchain solutions?

- Papers I & II: Universal Wallets

- Paper III: Central Bank Digital Currencies CBDCs

- Paper IV: Innovating with Blockchain Business Models

- Synthesis: *How is the specific DLT functionality/affordance expressed in selected examples?*

- Answer(s): We find a spectrum from quite obvious single function 'abilities' /'services' to far more compund that are new in 'feeling'

- Q&A

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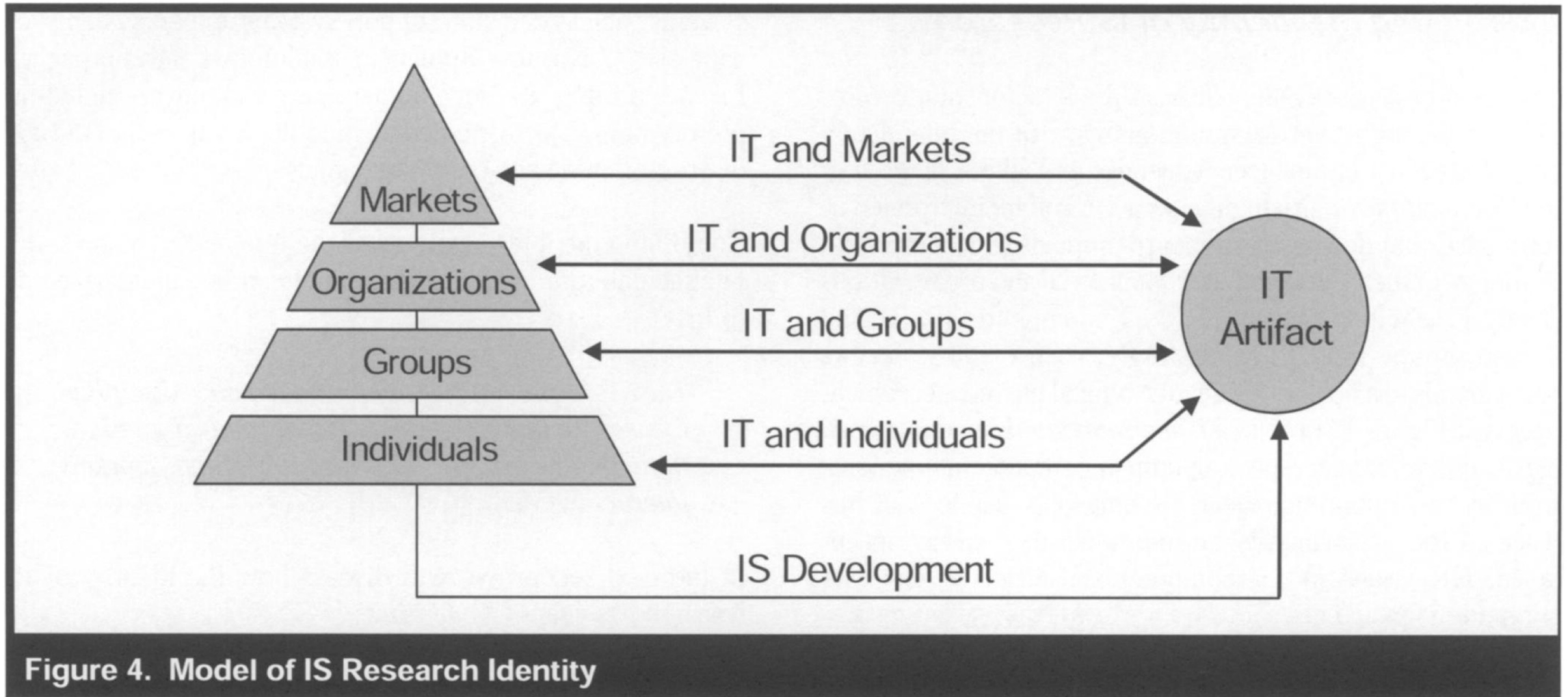
Figure 4. Model of IS Research Identity

Anna Sidorova et al. (2008). Uncovering the Intellectual Core of the Information Systems Discipline. MIS Quarterly , Sep., 2008, Vol. 32, No. 3 pp. 467-482
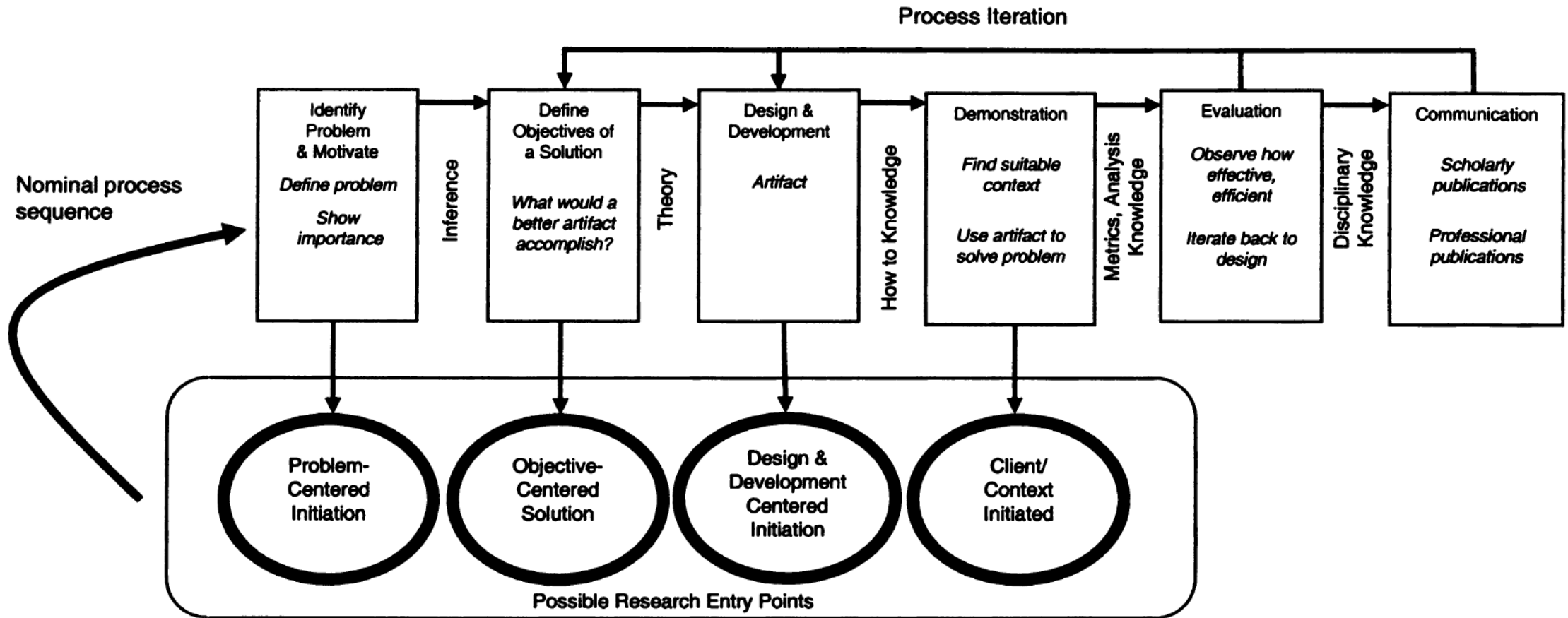
Figure 1. DSRM Process Model

- First of all: You often hear that nothing you see in blockchain solutions could not be achieved in 'normal' e.g. serial, centralised solutions. That is obviously correct. But: It would be severely un-economical to achieve same performance and: If so easy to do why has it not been done regularly?

- We see benefits, value in three groups:
- Classicial digitization/digital transformation benefits: faster access to information, improved customer experience, increased productivity, lower operational costs, improved decision making, improved information security, higher mobility, automation of business processes, agility, and disaster recovery.
- First Order direct benefits from blockchain solutions: Safety, Security, Transparency, Auditability and Immutability to name some of the well established ones and increasingly: Connectivity. A number of societal opportunities can be derived from these: Trust. Privacy. Inclusion.
- Higher order benefits from blockchain solutions : Tokenization - Decentralization reduced transactional time and cost - multi-party data sharing and processing and associated societal opportunities: Inclusion - Each person's control of own data – true collaboration, networked decentral economic models, decentral eco-systems.
- Conclusion: There are a number of particular blockchain abilities emerging from these solutions.

Here we will not distinguish between the DLT, Distinguished Ledger Technologies and blockchain solutions.

These benefits are increasingly getting on the agendas of decision makers. We repeatedly see blockchain among the top required skills in IS and IT, here measured on linkedin requests:

- Blockchain.

- Video design.

- Cloud Computing.

- Web analytics.

- AI (Artificial Intelligence).

- UX Design.

- Business development.

- Affiliate marketing.

- Online sales.

https://blog.waalaxy.com/en/linkedin-skills/

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- What is a wallet ?

- Wallet in blockchain context.

- Developments

- Digital assets

- AI

- Procura.

- Digital Twin

- IoT
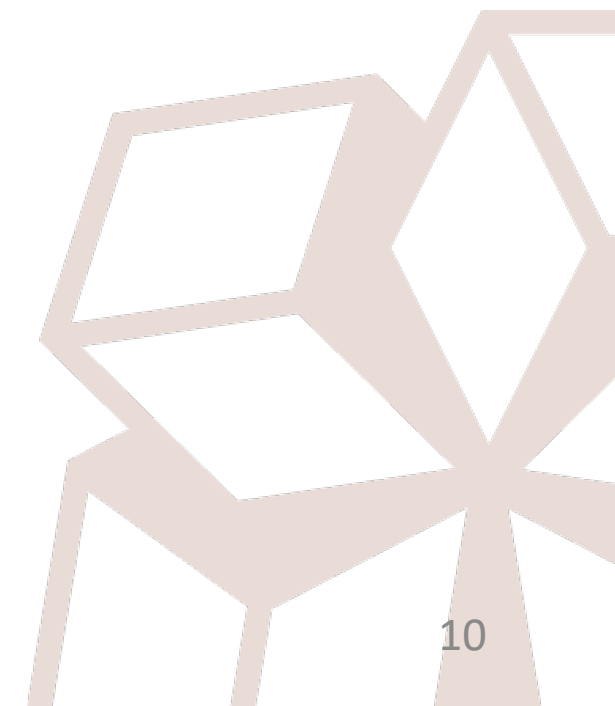
We all know e-wallets:

- a 'wallet' in blockchain systems is used to access and administrate digital assets through use of Private Keys.

- Wallets are widely considered as being as important for access to blockchain based systems as the browser is for the internet. The term 'wallet' increasingly looks as a mis-nomer.

- We have looked into functionalities of these and their expansion for establishing a taxonomy for improved understanding among researchers.

- Both EU and the large tech companies regard such wallets as of key strategic interest.

- These functionalities enable Universal Wallets to be an element in developing services in connection with ubiquitous computing, e.g. smart devices everywhere.

Jørgensen, Kim Peiter, and Roman Beck. "Universal Wallets."
Business & information systems engineering 64.1 (2022): 115–125.

Kim Peiter Jørgensen and Roman Beck (2021)
"An Introduction into Service-Potentials of Universal Wallets in Blockchain Systems" pp. 85-89
in Rikken, O.K et al. "Blockchain in Service Management and Service Research:
Developing a Research Agenda and Managerial Implications."
Journal of service management research 5.2 (2021): 71–102.

In digital assets: From one/few cryptocurrencies to any cryptocurrency or token. Hence 'Universal' wallet.
A character string is a character string is a character string. The identity of anything can be represented by a character string. Hence the interest in tokens and personal identities

AI. With increasing levels of intelligence in wallets they can take on far more advanced functionalities. One example is access management. They get the authority, the procura of the owner to act on their own as agents. They can develop into the owner's Digital Twin. For a potential of 4 billion human users.

We move from current reactive systems to proactive autonomous systems.

Image what happens when each of the current 20 billion intelligent devices need their own wallet. Robots with wallets dealing with robots with wallets.

Jørgensen, Kim Peiter, and Roman Beck. "Universal Wallets."
Business & information systems engineering 64.1 (2022): 115–125.

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Journal of service management research 5.2 (2021): 71–102.

Functionality of a classical crypto wallets showing the blockchain economic taxonomic features

Functionality	Service	Comment
Affordance as a key design criterion	Ease of use with high security	Prerequisite for a high degree of automation in society
Access Management	Facilitating the task of legal access to services and documenting this process for the user's convenience	Both enabling 'easy' access for the user, managing what we access and who accesses 'us', the user
Security	A selection of personas matching each user's profile requirements with very high security	Increasing security and off-loading responsibility from individual
Identification and Authentication	Sub-services for access management	Automated or manual according to situation
Credentials	Managing the user's claims and proofs by presenting credentials as needed	Different series of credentials can be linked to the user's different personas
Reputation Management	Access to services based upon history	Wallet managed access based on previous performance
Privacy	Protection managed by the user against intrusion	Subject to legal requirements from authorities

Kim Peiter Jørgensen and Roman Beck (2021)
"An Introduction into Service-Potentials of Universal Wallets in "Blockchain Systems pp. 85-89
in Rikken, O.K et al. "Blockchain in Service Management and Service Research:
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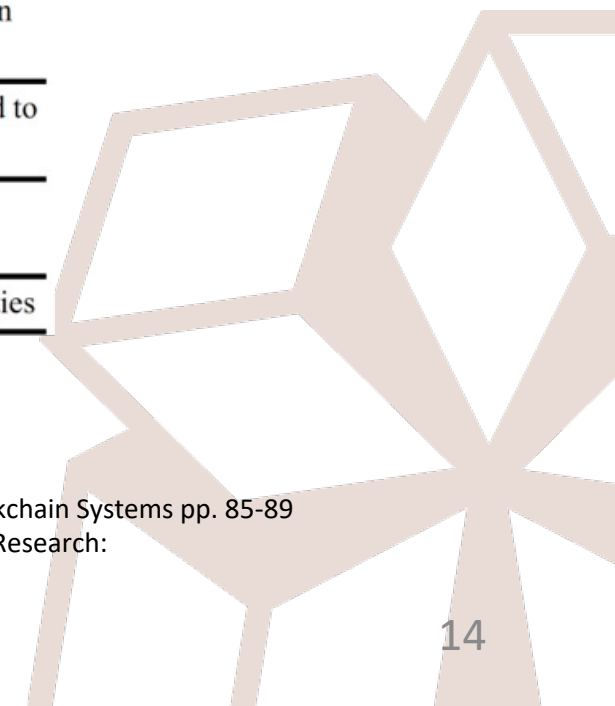
The Universal Wallet as access mechanism and asset management mechanism is clearly a unique solution-type with properties not existing prior to its development in the blockchain world.

Jørgensen, Kim Peiter, and Roman Beck. "Universal Wallets."
Business & information systems engineering 64.1 (2022): 115–125.

Kim Peiter Jørgensen and Roman Beck (2021)
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Journal of service management research 5.2 (2021): 71–102.

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Paper III: OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES
Background on Central Banks, Fiat currencies and Stablecoins

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- In 2009-2010 the first cryptocurrency Bitcoin was launched. There is a huge debate on the relevance, legality and usability of these.

- In their backwater, discussions of Central Bank Digital Currencies have been far more discreet. Current reports state that 80-90 % of the central banks are actively working with the concept. The target group of such currencies would be other central banks and retail and merchant banks.

- An early analysis from Bank of England indicates that countries using CBDCs might expect a growth of 7-8 % of GDP. That is significant around 7,5 trillion €. Per year. The GDP of Italy for comparison is estimated 1,8 trillion € for 2021.

- To develop an understanding among decision makers for which criteria are important for development of such CBDCs we developed at taxonomy for the crucial factors for these. We found that there were no difference for the factors between so-called stablecoins and CBDCs.

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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Bitcoin vs US $

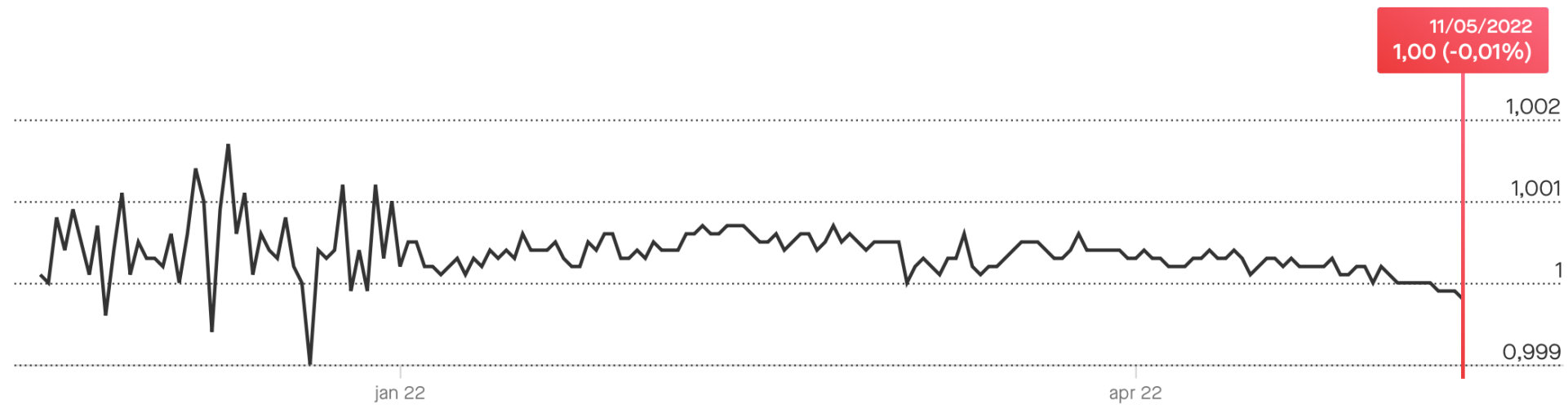2009   2022

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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'FIAT ' ? Currencies ?

GBP fluctuations November 9, 1992

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Tether vs. US $

11/05/2022
1,00 (-0,01%)

1,002

1,001

1

0,999

jan 22

apr 22

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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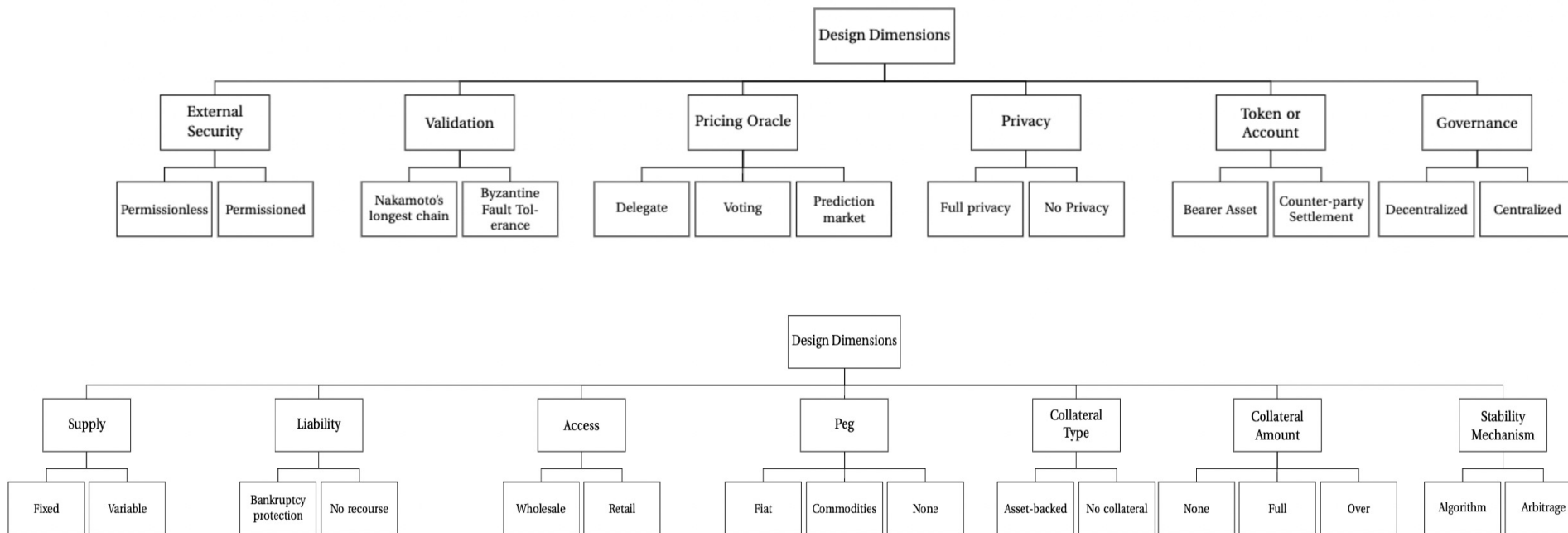Center

Tether vs. US $ - hourly fluctuations

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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1. Access
2. Collateral type
3. Collateral amount
4. External security
5. Governance
6. Liability
7. Peg
8. Pricing oracle
9. Privacy
10. Stability mechanism
11. Supply
12. Token or account
13. Validation

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
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Stablecoin and CBDC Design Dimensions

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- External security - Protection from an adversary's ability to damage a monetary system from outside of the system

- Validation

- Pricing oracle - a continuous stream of off-chain data regarding the outside world that is used by smart contracts with a distributed ledger monetary system.

- Privacy -The amount of information that is needed to be known about the sender and receiver of a transaction in order for the transaction to be valid and settled.

- Token or account - Token-based monies is that no reconciliation of accounts is required and accountbase monies require counterparties for clearance and settlement of transactions.

- Governance - How decisions concerning changes to the protocol are made.

- Supply - Whether a money has a hard cap on total supply or a variable supply.

- Liability - Whether holders of the monetary units receive legal rights that give them recourse in the case of a bankruptcy of the issuer.

- Access - Whether the holders of the money have wallet accounts directly with a central bank or with a commercial bank.
- Peg – An external anchor for the value of the monetary unit used to achieve a target exchange rate.

- Collateral type - The reserve assets that back the value of each monetary unit in circulation.

- Collateral amount - The amount of reserve assets that backs the value of each circulating monetary unit.

- Stability mechanism – How a monetary unit's exchange rate is kept in a target range with a peg.

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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Cryptocurrency Collateral Categories

Category	Subcategory	Backing	Coin Example
Asset-Backed	Fiat	Fiat	Diem, E-Krona, Tether
	Commodity	Gold	Pax Gold
	Crypto	Ethereum	MakerDAO Dai
No-collateral		No Backing	Basis, Bitcoin
Hybrid		Partial Fiat-Backing	Saga

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

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The Central Bank Digital Currency as a monetary mechanism is clearly a unique solution-type with properties not existing prior to its development in the blockchain world.

Jorgensen, Kim Peiter and Hays, Demelza (2022).
OPTIONS FOR DESIGNING STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES.
ECIS 2022 Research Papers. 157. https://aisel.aisnet.org/ecis2022_rp/157.

- By using a quite large dataset from across the corporations of a nation we take an empirical approach and develop a model examining the question: how do organisations process the cognitively complex properties of blockchain for value creation in decentralised networks?

- We present a research model for how organisations dynamically redesign business models to incorporate complex network technologies such as blockchain.

- We shed light on how the dynamic capability of organisational innovativeness (OI) initiates organisations 'steps towards blockchain adoption and sets the path for creating business value from decentralised blockchain networks.

- We highlight the pivotal role of top management and their agency to master the cognitive challenge of appreciating blockchain and mitigating related uncertainties and potential risks.

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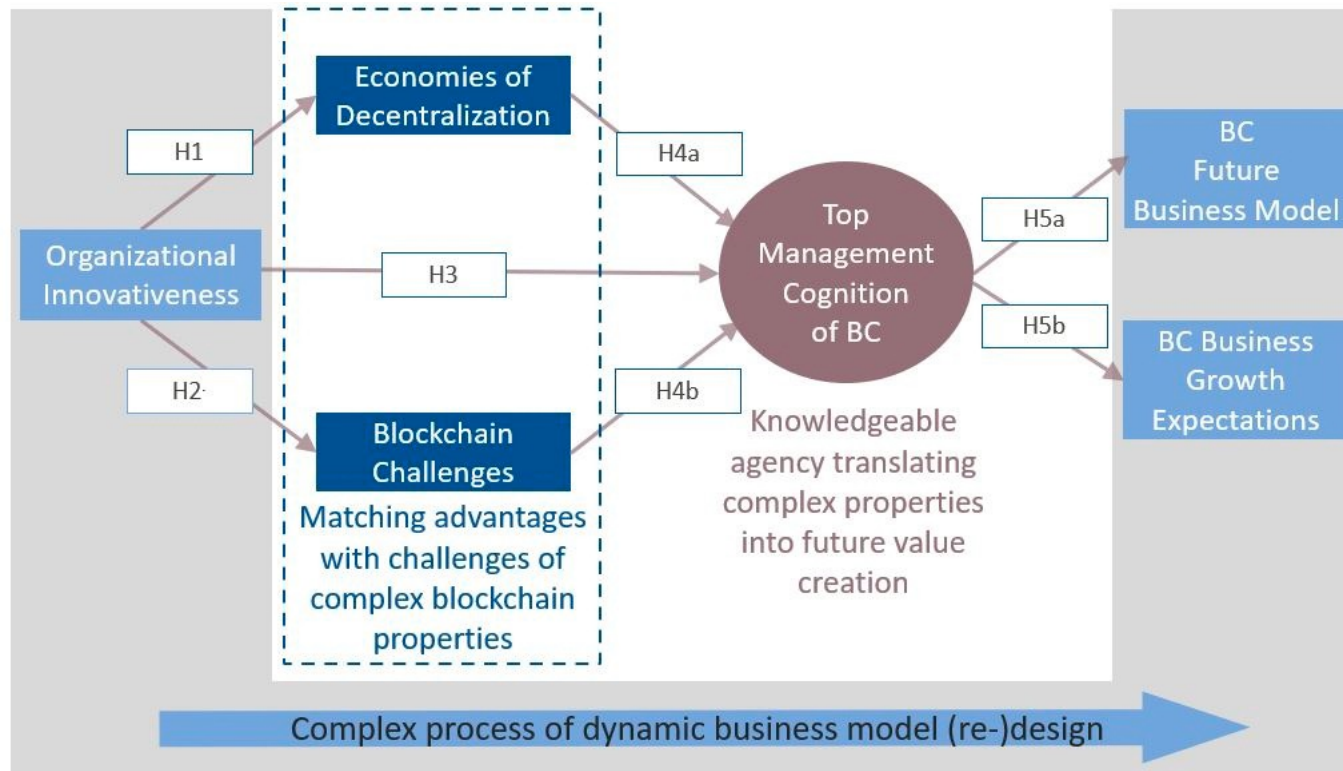
Research model on the dynamic capabilities and innovation diffusion perspectives

Nico Wunderlich, Kim Peiter Jorgensen, Roman Beck, Geetika Jain
"Innovating with Blockchain Business Models"
submitted to the JIT.

The Decentral Business Model as a mechanism is clearly a unique solution-type with properties, functions and affordances not existing prior to its development in the blockchain world.

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In blockchain solutions we find a spectrum 'abilities' /'services' from quite direct single function solutions to far more compund ones not directly predictable, e.g. emergent that seem new in touch and feel.

- These four contributions present specific instances to reflect and generate elements for improving illumination of the Distributed Ledger Technology universe necessary for creating an understanding on how to utilize and benefit from these inherent complexities.

- Further to the research questions raised in the individual four papers I therefore ask: *How can the specific functionality/affordance expressed in the selected examples contribute to a larger picture of DLT?*

- The presented papers are each among the first peer reviewed papers in their categories. The findings fit well into similar findings in other areas of the DLT universe. There are major opportunities and a number of challenges that need to be considered so that these solutions can bring immediate as well as later societal and individual benefits as the transformative potential of DLT systems can be realised.
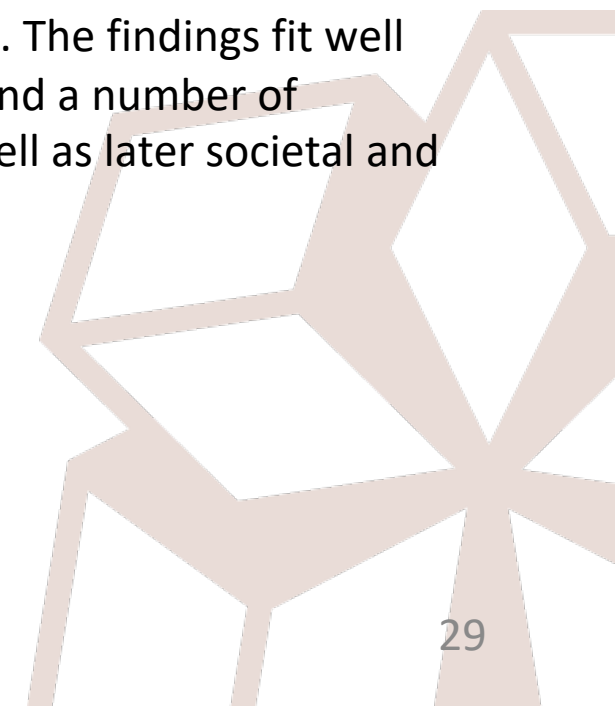
- The Universal Wallet, the CBDC, The Decentral Business Model are new, unique solution types with properties not existing prior to their development and implemementation the blockchain world.

- This is what we set out to investigate.

- Blockchain (DLT) is not really interesting itself from a business/societal perspective

- The power from decentral solutions is

- The values possible from this are immense

- The loosers are the current middlemen in all sectors. Today banking, IT and public services. But that is only because they are hit early and hard.

- New services and new middlemen "trusted parties" will emerge: think of user support

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- Please shoot !

- Is this relevant for you ?

- Is it of interest ?

- Do you see the same tsunami like number of requests from the globe, not least from the EU ?

- Do you see same interest and search for opportunities locally ?

For further information please contact me!

Kim Peiter Jørgensen

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Thank you for your attention!

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