

Welcome to the webinar:

ISO/TS 23635:2022

*Blockchain and distributed ledger technologies
— Guidelines for governance*



The webinar will begin shortly – stay tuned



Roman Beck



Sylvain Cariou



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Gayan Benedict



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Practical info

- The webinar will be recorded and made available online
- The slides can be downloaded as well
- You'll receive an email with a link a few days after the webinar
- For the Q&A session: Please ask your questions in the chat

Today's agenda:

- Welcome and introduction to standards for Blockchain and DLT
- Why is Governance different in a DLT-context?
- Elaboration of key concepts:
Permissioned/permissionless, lifecycle, roles, consensus mechanisms, risk, identity and interoperability
- Introduction of the standard's 9 principles and illustrative examples of their application
- Considerations for Incentives, Decision Rights, Accountabilities & Lifecycle
- Last 15 minutes:
 - Wrap-up and key takeaways
 - Q & A session



About ISO TC 307

... meet the growing need for standardization by providing internationally agreed ways of working to improve security, privacy, scalability and interoperability and so encourage the Blockchain and Distributed Ledger Technology's widespread adoption through greater innovation, enhanced governance and sustainable development.

Learn more [here](#).

- WG 1 Foundations
- WG 3 Smart contracts and their applications
- WG 5 Governance
- WG 6 Use cases
- WG 7 Interoperability
- JWG 1 Records management
- JWG 4 Security, privacy and identity for Blockchain and DLT

Advisory Groups on:

Digital Currencies
Auditing of DLT systems
Physical assets of NFTs



Who, how, what?

Who:

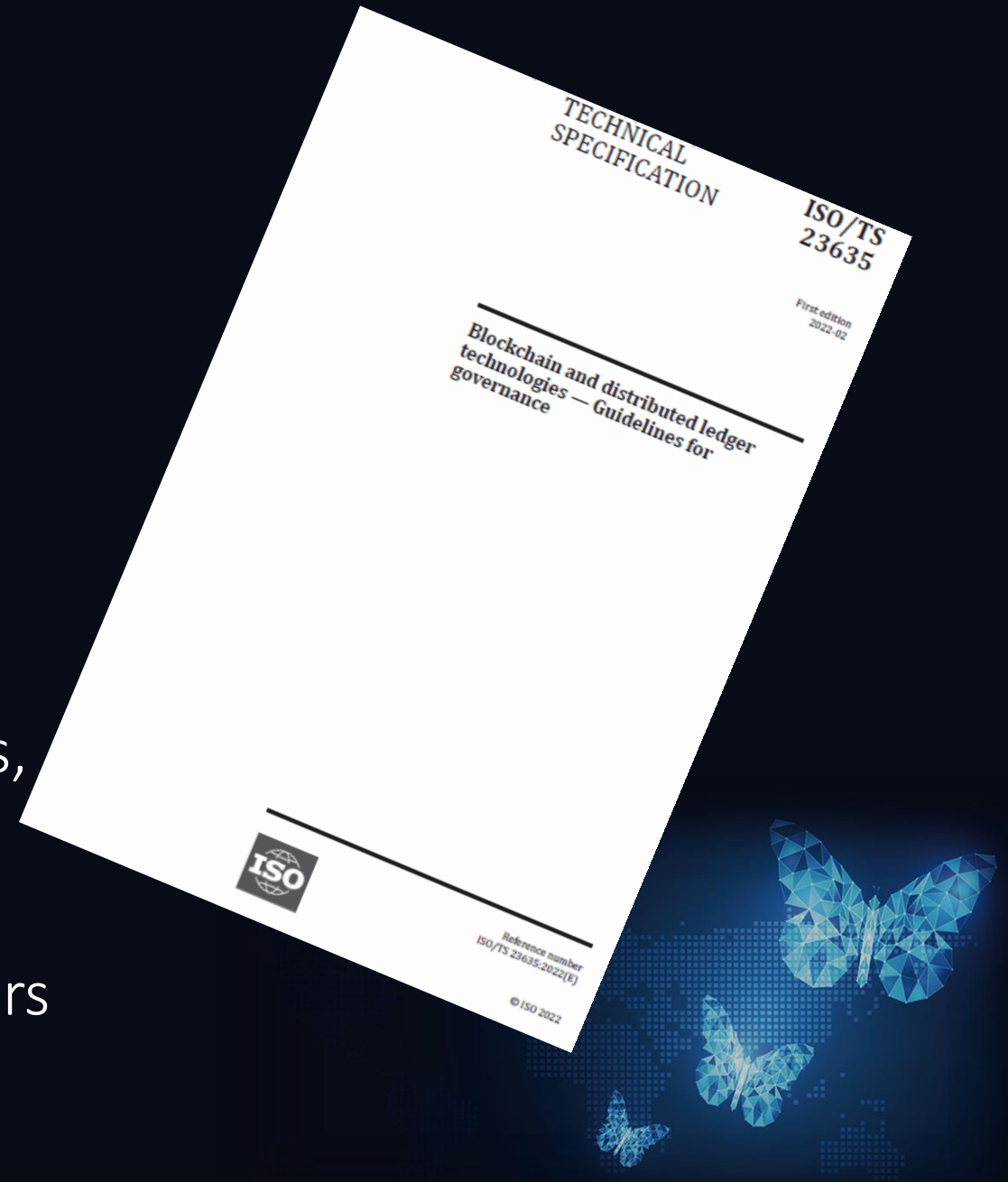
Created *for* architects, users, developers, regulators, auditors etc.

Created *by* experts in ISO TC 307/WG 5 Governance

How:

ISO development/process rules, consensus, ballots etc.

What: Content is elaborated by the speakers in a short while



Publications from ISO TC 307

Reference	Title
ISO/TR 23455:2019	Blockchain and distributed ledger technologies — Overview of and interactions between smart contracts in blockchain and distributed ledger technology systems
ISO/TR 23244:2020	Blockchain and distributed ledger technologies — Privacy and personally identifiable information protection considerations
ISO 22739:2020	Blockchain and distributed ledger technologies — Vocabulary
ISO/TR 23576:2020	Blockchain and distributed ledger technologies — Security management of digital asset custodians
ISO/TS 23258:2021	Blockchain and distributed ledger technologies — Taxonomy and Ontology
ISO 23257:2022	Blockchain and distributed ledger technologies — Reference architecture
ISO/TS 23635:2022	Blockchain and distributed ledger technologies — Guidelines for governance

<https://www.iso.org/store.html>



Work programme of ISO TC 307 1/2

Group	Projects developing international standards (IS), technical specifications (TS) or technical reports (TR)		
WG 1 Foundations	IS	Vocabulary	ISO/CD 22739
WG 3 Smart contracts and their applications	TS	Legally binding smart contract	ISO/DTS 23259
JWG 4 Security, privacy and identity for Blockchain and DLT	TR	Overview of existing DLT systems for identity management	ISO/PRF TR 23249
	TR	Overview of trust anchors for DLT-based identity management (TADIM)	ISO/DTR 23644
	TR	Overview of smart contract security good practice and issues	ISO/WD TR 23642
	TBC	Re-identification and privacy vulnerabilities and mitigation methods in blockchain and distributed ledger technologies	ISO/PWI 12833



Work programme of ISO TC 307 2/2

Group	Projects developing international standards (IS), technical specifications (TS) or technical reports (TR)		
JWG 4 Security, privacy and identity for Blockchain and DLT	IS	Decentralized identity standard for the identification of subjects and objects	ISO/AWI 7603
WG 6 Use cases	TR	Use cases	ISO/DTR 3242
	TR	Data flow model for blockchain and DLT use cases	ISO/WD TR 6277
	TR	Identifiers of subjects and objects for the design of blockchain systems	ISO/WD TR 6039
WG 7 Interoperability	TS	Interoperability Framework	ISO/AWI TS 23516
AHG 3	TBC	Representation of physical assets as non-fungible tokens (NFT) in DLT systems	ISO/PWI 13013

<https://www.iso.org/get-involved.html>





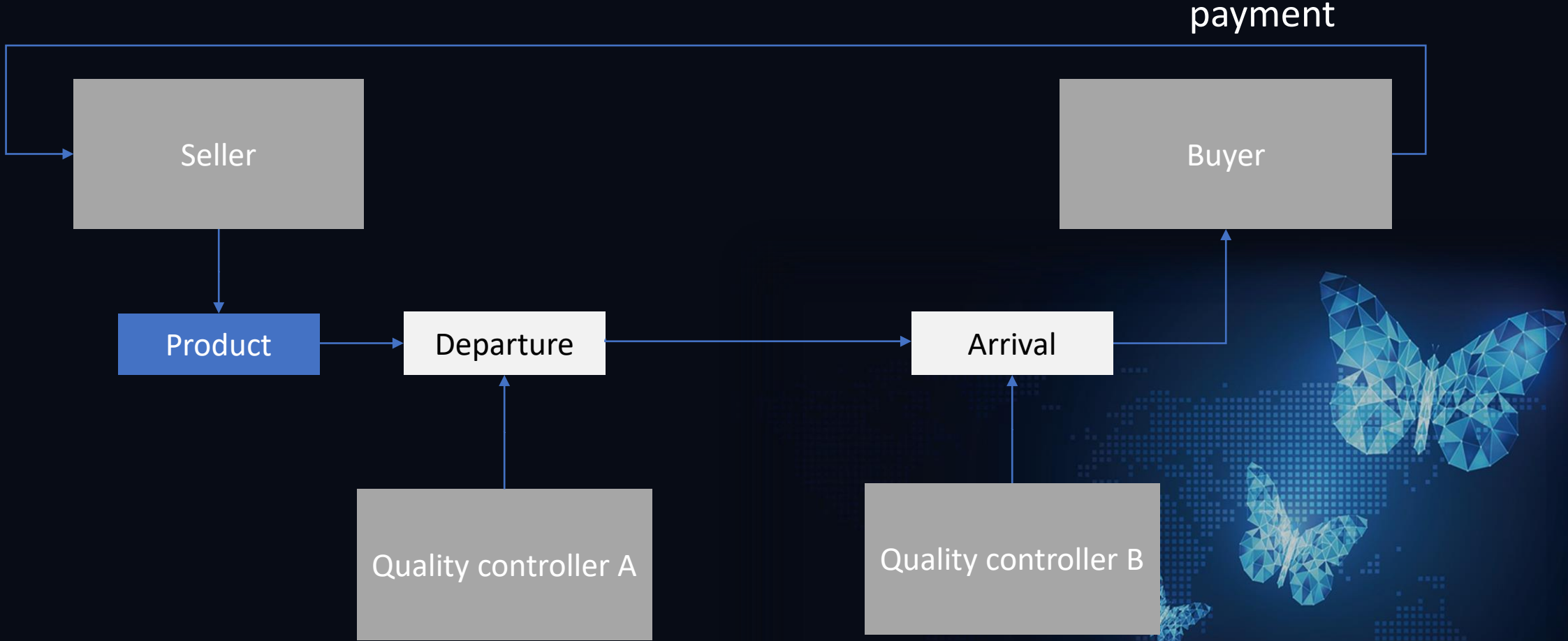
Why is Governance different in a DLT-context? - A simple case study

Sylvain Cariou

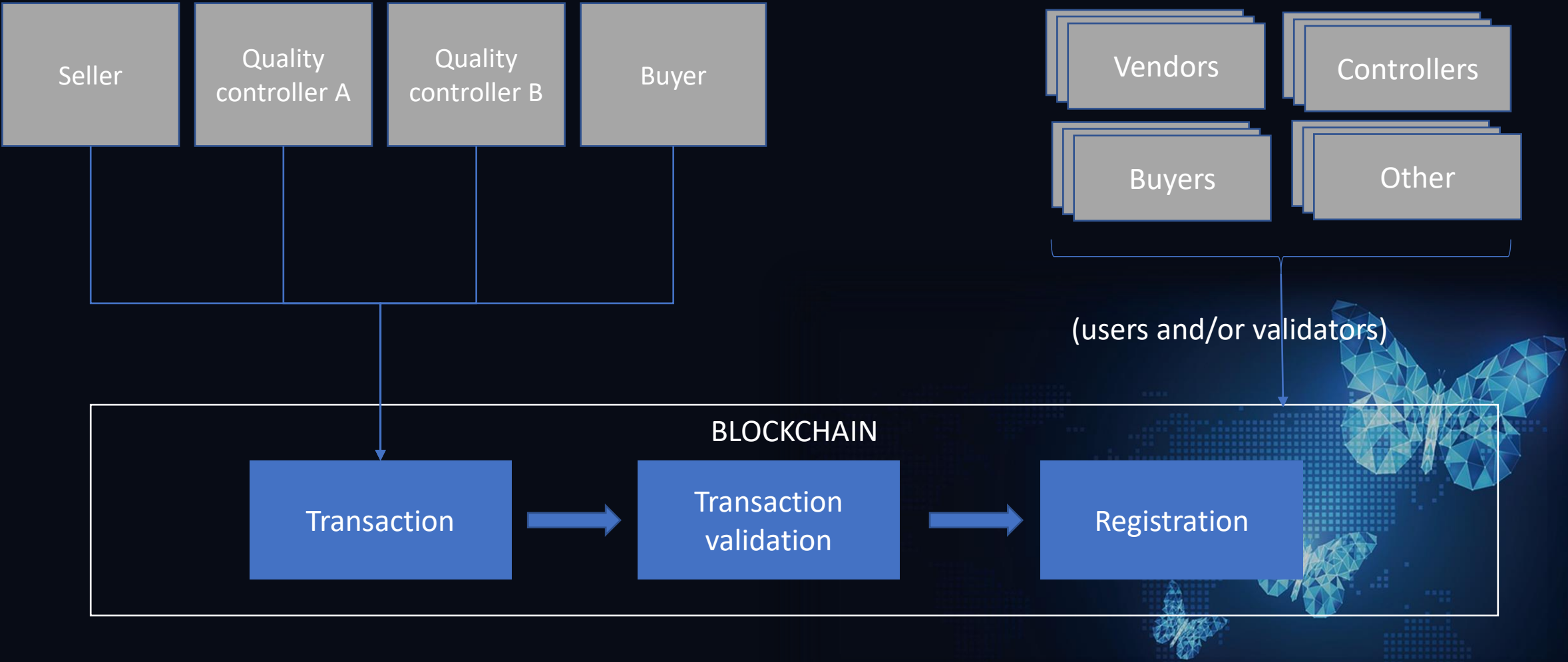
Crystalchain, CEO

Afnor, Blockchain Standardization Committee, Chairman

Recording transactions



Implementation in the blockchain



Functionally, this blockchain system meets the requirements

- Recording transactions
- Signed by stakeholders
- Validated by the community according to pre-determined rules
- Having a trust register

Is this enough?

Well... not really



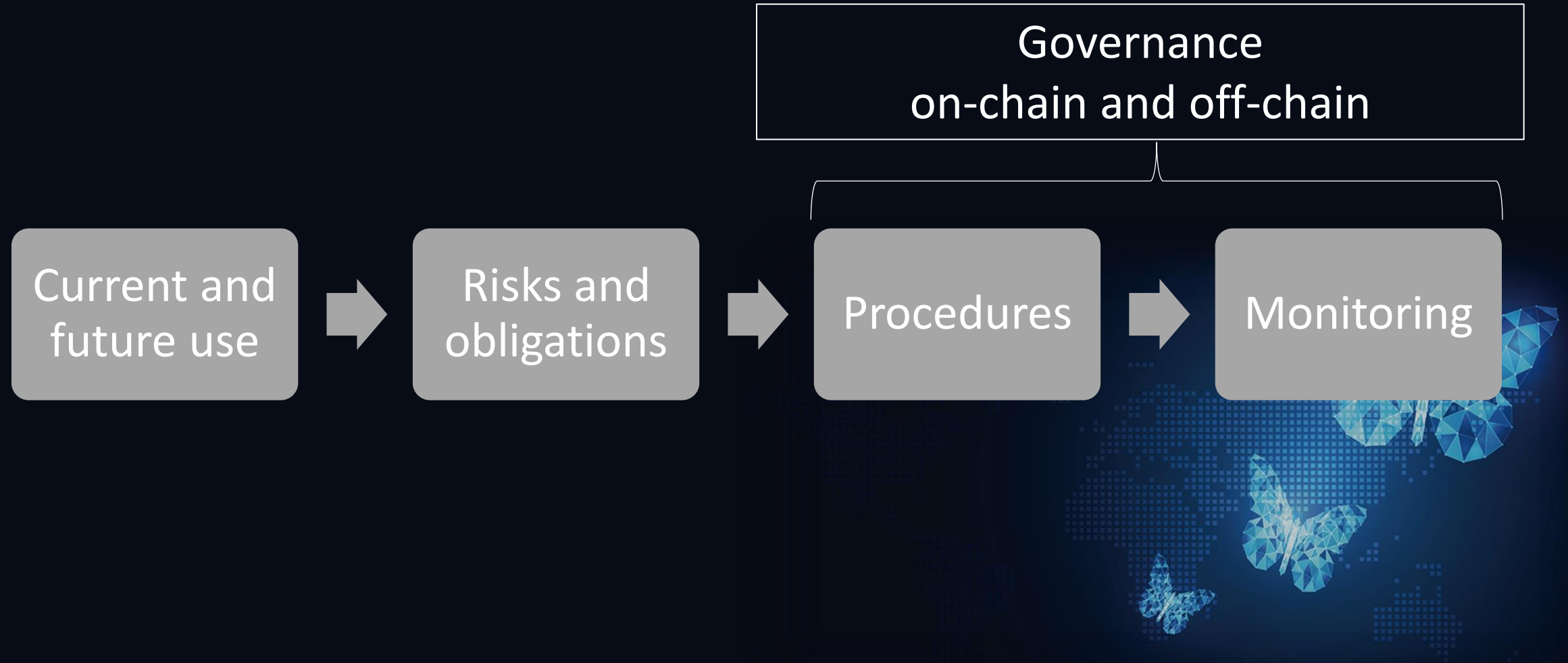
Beyond functionalities, other aspects of the application need to be addressed

- Evolutions
 - Regulation
 - Perimeter
 - Volumes
- Litigation management
- KYC
- Access rights
- Incentives
- Balance of power
- Transparency
- Security

These are
governance
questions



How to assess governance needs





Elaboration of key concepts: Permissioned/permissionless, lifecycle, roles, consensus mechanisms, risk, identity and interoperability

Roman Beck

IT University of Copenhagen | European Blockchain Center

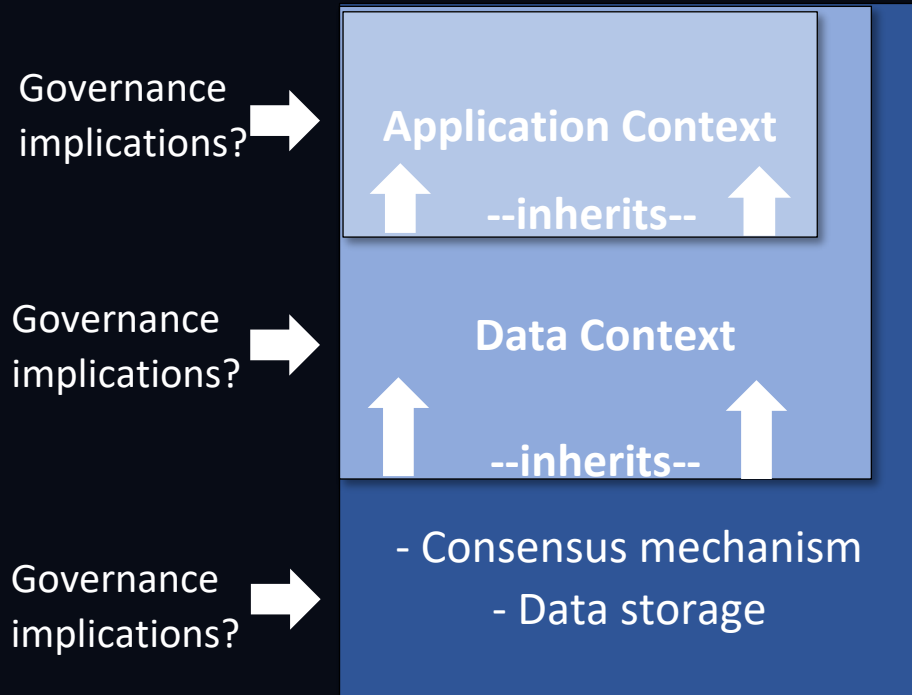
Convenor of WG 5 and project leader of ISO TS 23635

Governance Framework



Beck, R., Müller-Bloch, C., & King, J. L. (2018). Governance in the Blockchain Economy: A Framework and Research Agenda. *Journal of the Association for Information Systems*.

Consensus Mechanism



Permissionless	Permissioned
Governance implications for the data layer in permissionless	Governance implications for the data layer in permissioned
Governance implications for the application layer in permissionless	Governance implications for the application layer in permissioned
Governance implications for the infrastructure layer in permissionless	Governance implications for the infrastructure layer in permissioned

The different layers cannot be discussed individually/in isolation, as they build upon each other.



Permissioned/permissionless

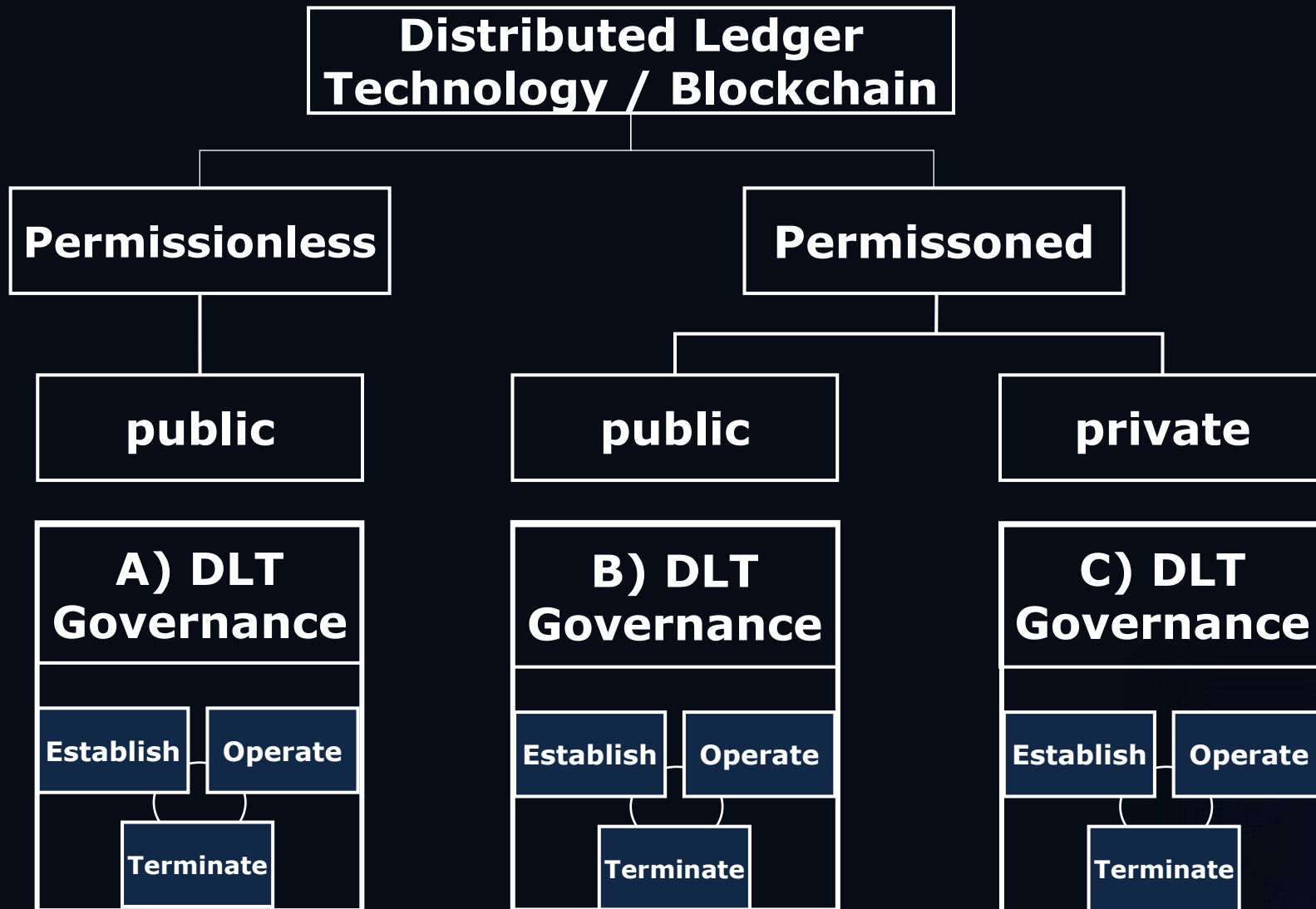
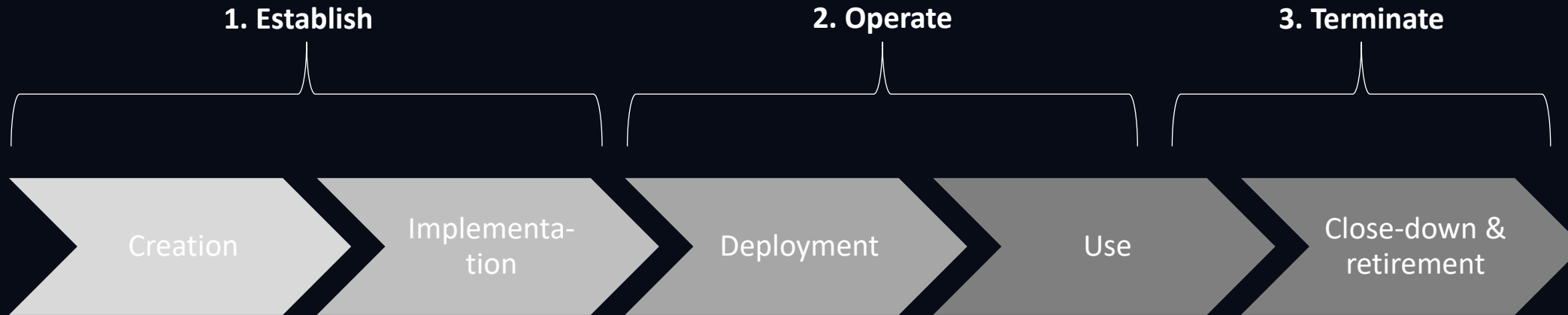


Figure 2 of ISO TS 23636 "Types of DLT systems governance"

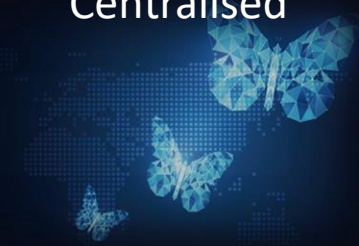


Lifecycle



Governance

Permissionless Public	Centralised	Centralised	Decentralised	Decentralised	Decentralised
Permissioned Public	Centralised	Hybrid (Centralized / Decentralized)	Hybrid (Centralized / Decentralized)	Hybrid (Centralized / Decentralized)	Centralised
Permissioned Private	Centralised	Centralised	Centralised	Centralised	Centralised



Interoperability

	Permissionless public	Permissioned public	Permissioned private
Permissionless public	Mode 1	-	-
Permissioned public	Mode 2	Mode 3	-
Permissioned private	Mode 2	Mode 3	Mode 3

Table 6 of ISO TS 23625 “Interoperability modes between different types of DLT systems”





Introduction of the standard's 9 principles and illustrative examples of their application

Ismael Arribas
CEO
Kunfud

TS 23635 approaches certainty to innovation if it is accountable

Principle 1: *Define identifiers of entities involved* (who is responsible of what)

Principle 2: *Enable decentralized decision-making* (neutral leadership)

Principle 3: *Ensure explicit accountability* (legal statements)

**UNDERLYING
ORCHESTRATION
ENTITY**

Principle 4: *Support transparency and openness* (do it right for all)

Principle 5: *Align incentive mechanisms with system objectives* (compensate efforts)

Principle 6: *Provide performance and scalability* (efficiency and sustainability)

Principle 7: *Make risk-based decisions and address compliance obligations* (anticipate dispute's resolution)

5.5 Accountability

Principle 8: *Ensure security and privacy* (continuum management)

Principle 9: *Consider interoperability requirements* (how to have relation)



Highlight Comparison*

EXPLICIT ACCOUNTABILITY

OFF CHAIN



IN CHAIN

ON CHAIN

Public Permissioned

Protocol of Gas Transparency
(REAL TIME MONITORING TOOL)
Scalability: 15 areas in production
LACChain ID

Decentralization measures:

- Anti-Rival Policy
- Validated multi-network
- Fully established governance in a multijurisdictional ECO-friendly environment.

Continuum management



*) DISCLAIMER: This comparison is made by KUNFUD as regular node of LACChain Alliance.



Considerations for Incentives, Decision Rights, Accountabilities & Lifecycle

Dr Gayan Benedict
Industry Research Fellow
University of Technology Sydney

Decision Rights

Section 5.4 TS23635:2022

1. Conventional Governance:

In conventional centrally governed systems, decision rights are vested in responsible parties such as executive management and boards of directors.

2. Decentralised DLT Governance:

In decentralised/distributed DLTs the rights to make key governance decisions may be decentrally vested across token-holders, participants, developers and other DLT stakeholders. NB. Private DLTs often still use forms of centralised governance.

3. TS23635:2022:

- Decisions can be achieved both off-ledger and on-ledger. Implicit off-ledger governance has the disadvantage of not being transparent to participants while having the advantage of better protection against risks and challenges not potentially foreseen by on-ledger governance rules.
- Forking represents an 'existential separation of a DLT system' and reflects a 'drastic governance separation', though its existence serves as a 'motivation to achieve a consensus'.
- 'DLT users and other stakeholders... will benefit from clearly specified decision-making rules'
- Developers & Providers should look to clarify decision-making, and adopters look for clarification



Accountabilities

Section 5.5 TS23635:2022

1. **Accountability:**

Represents who or what bears ownership for specific outcomes and decisions.

2. **Challenges of unspecified DLT accountabilities:**

DLT systems that don't explicitly identify accountabilities present challenges to participants and stakeholders. The lack of specified accountable parties renders participants limited recourse to oversight in the event of governance failures (abuses of power, misappropriation of system assets).

3. **TS23635:2022:**

- 'the responsibilities and accountabilities of parties within DLT systems should be declared and made explicit'.
- DLT providers make reporting available for independent auditing
- DLT providers make DLT software and documentation available to regulators or include resolvable mechanisms
- DLT systems should establish dispute resolution mechanisms



Incentives

Section 5.6 TS23635:2022

1. Why are incentives important?

A key characteristic of DLT systems is the incentive systems they incorporate to motivate behaviours that contribute to the achievement of consensus, resolution of conflicts, and the ongoing security, governance, design and operation of the DLT system.

2. What happens if incentives are misaligned?

If incentives for participants and other stakeholders are misaligned, they can lead to behaviours detrimental to the longer-term operation of the system.

3. TS23635:2022:

- DLT users and stakeholders will benefit from specified incentive structures. Developers & providers should consider specifying incentive structures. DLT adopters should look for these.
- Such incentives should take into account the type of DLT system when clarifying the incentive structures (eg. public or private).

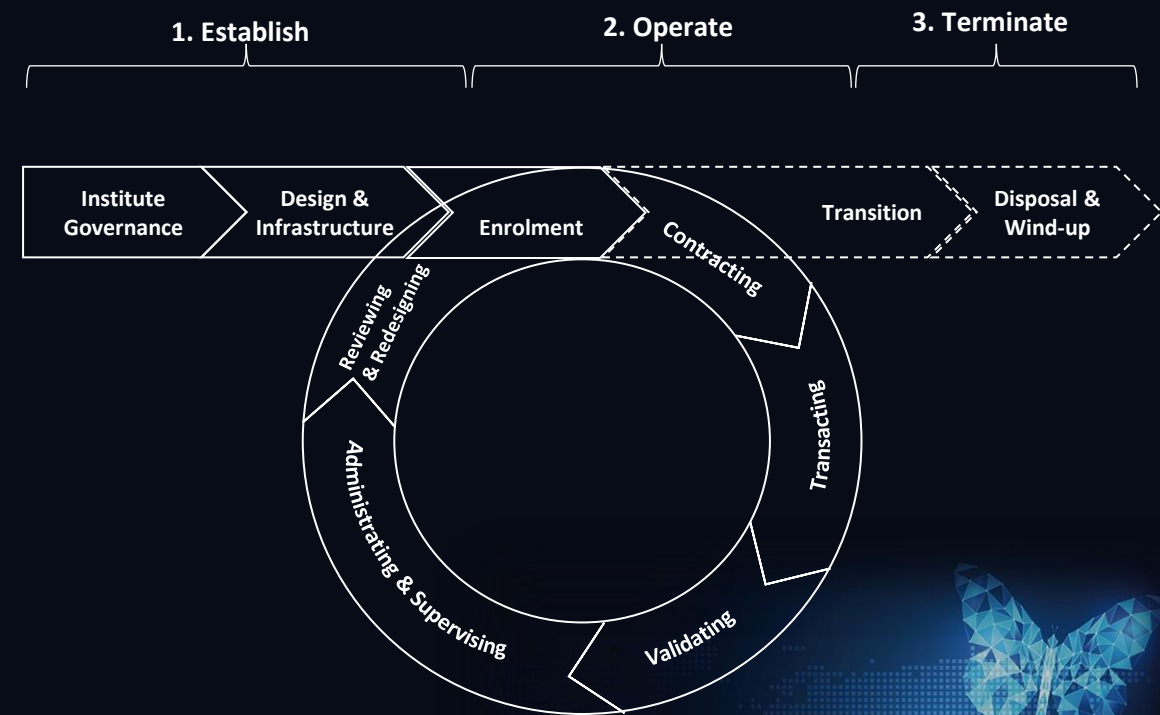


Consider Governance throughout the DLT Lifecycle

Section 7.1 TS23635:2022

Lifecycle Considerations:

1. Governance considerations are important during the DLT system's Establishment & Termination stages, not just Operate stage.
2. Developers, Providers & Adopters should consider who holds decision rights & accountabilities during non-operational stages & the incentives in play.
3. Ask when does fully operational governance commence? I.e. When do the governance rights of DLT participants fully engage and what on-ledger and off-ledger governance mechanisms operate in each lifecycle stage?
4. If an organisation adopts a DLT, what happens if it shuts down or becomes no longer fit for purpose?





Wrap-up and key takeaways



Questions ?



Thank you!



Roman Beck



Sylvain Cariou



Ismael Arribas



Gayan Benedict



Astrid Bækby Knudsen