Building Better Blockchains

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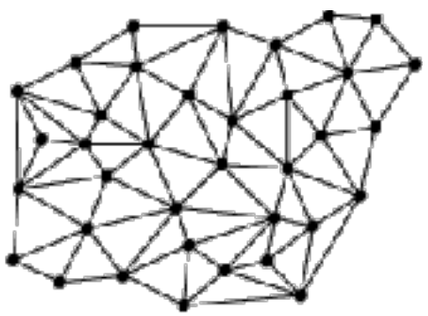
What are the Key Attributes of Blockchain?

DIGITAL



DISTRIBUTED

LEDGER

TRUSTED

IMMUTABLE

TRANSPARENT

Blockchain: A Family of Technologies

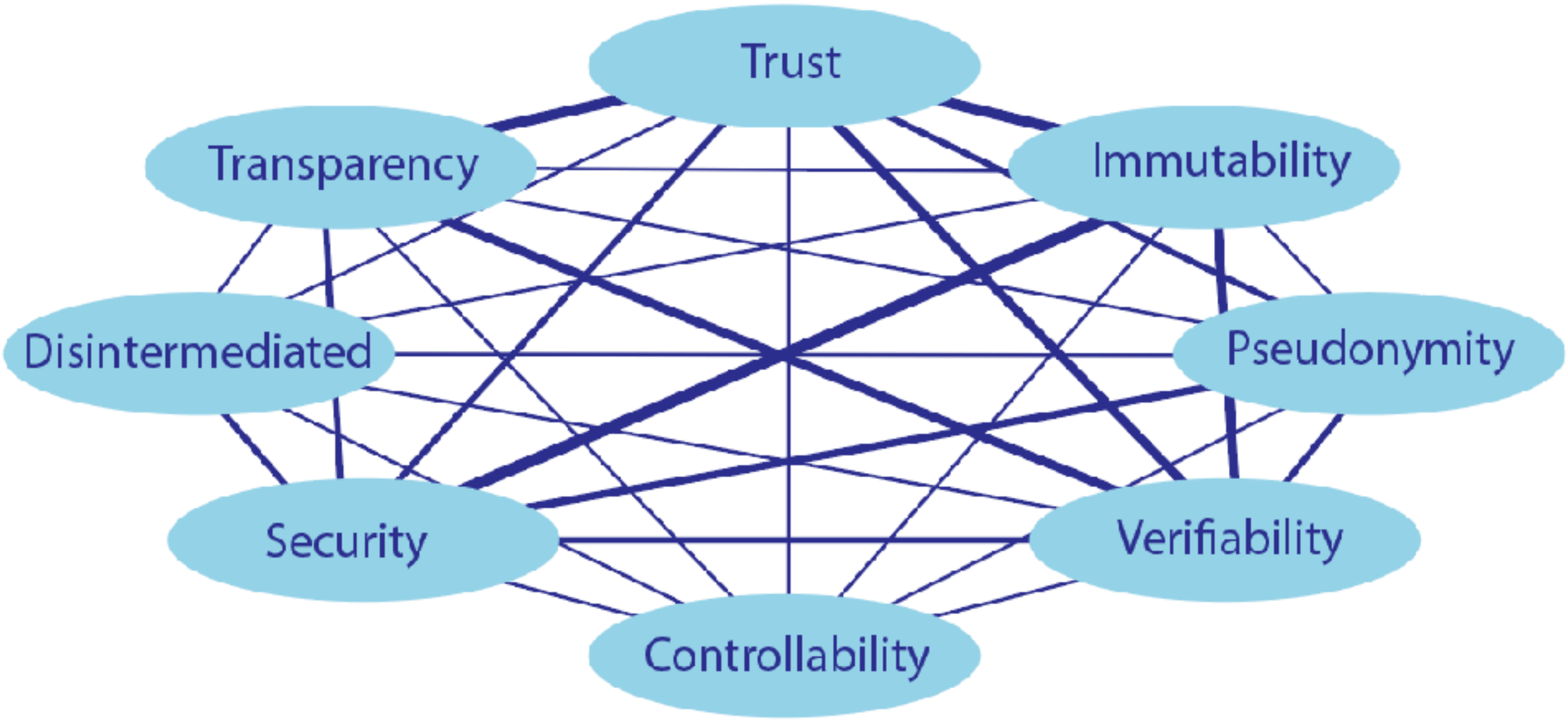
Permissioned vs. Permissionless Nodes

Private vs. Public Ledger

Choice of Consensus Algorithm

Where is Data Stored?

The Interconnected Potential Attributes of Blockchain

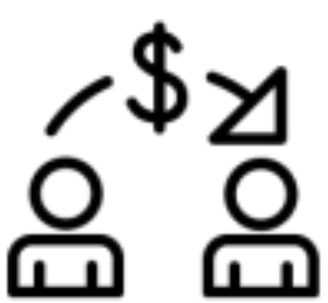


What are the applications of blockchain beyond cryptocurrenies?

The Potential of Blockchain… and the Challenges

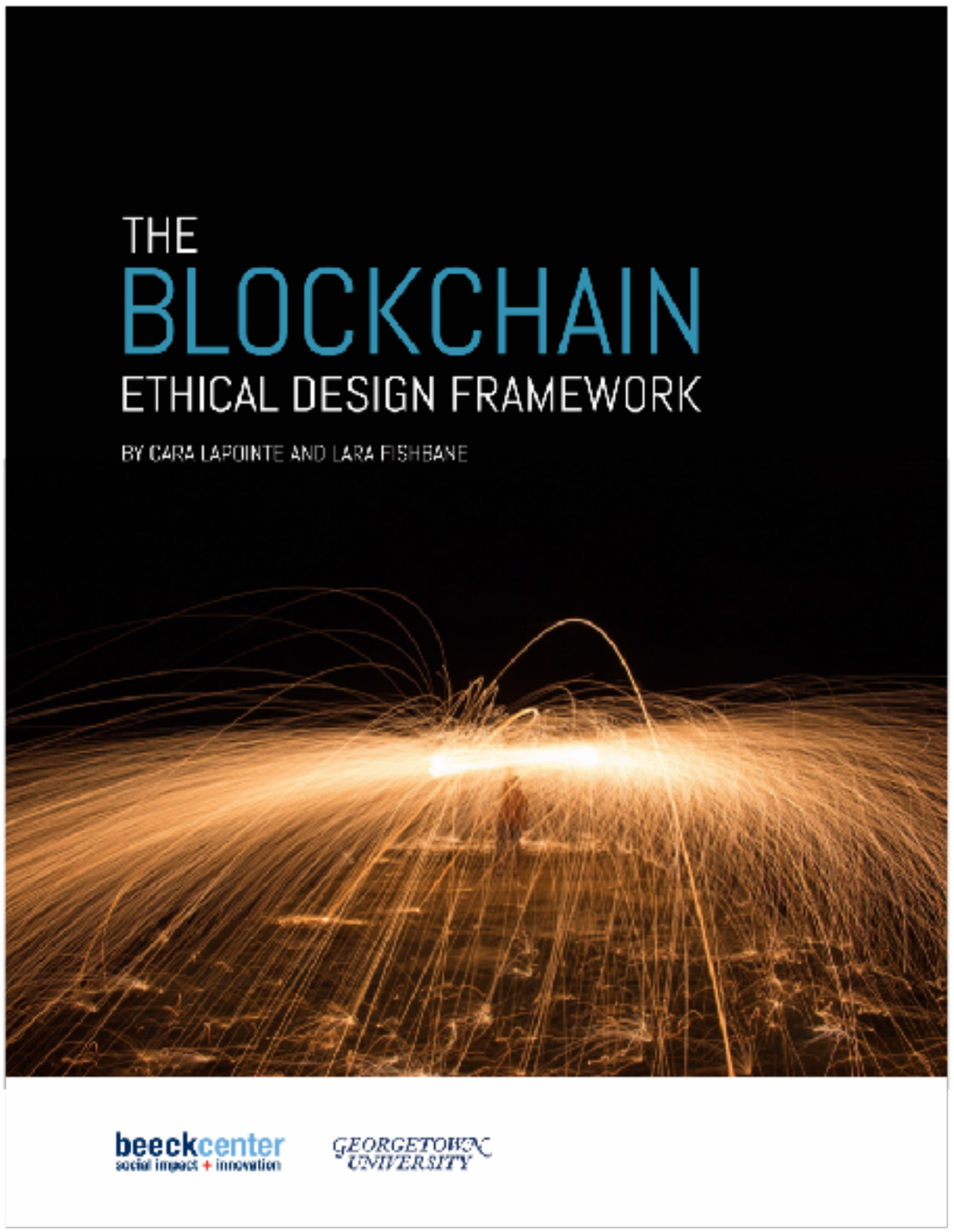
DIGITAL IDENTITY

ASSET TRACKING



ENTERPRISE EFFICIENCY

SMART CONTRACTS



The Blockchain Ethical Design Framework

Driving thoughtful design and ethical intentionality into blockchain design and implementation

User-Centric
Outcome-Focused
Action-Oriented

http://beeckcenter.georgetown.edu/wp-content/uploads/2018/06/The-Blockchain-Ethical-Design-Framework.pdf

Understanding the Context

DEFINE THE PROBLEM AND DESIRED OUTCOMES

IDENTIFY THE ETHICAL APPROACH

ASSESS THE OUTCOME ECOSYSTEM

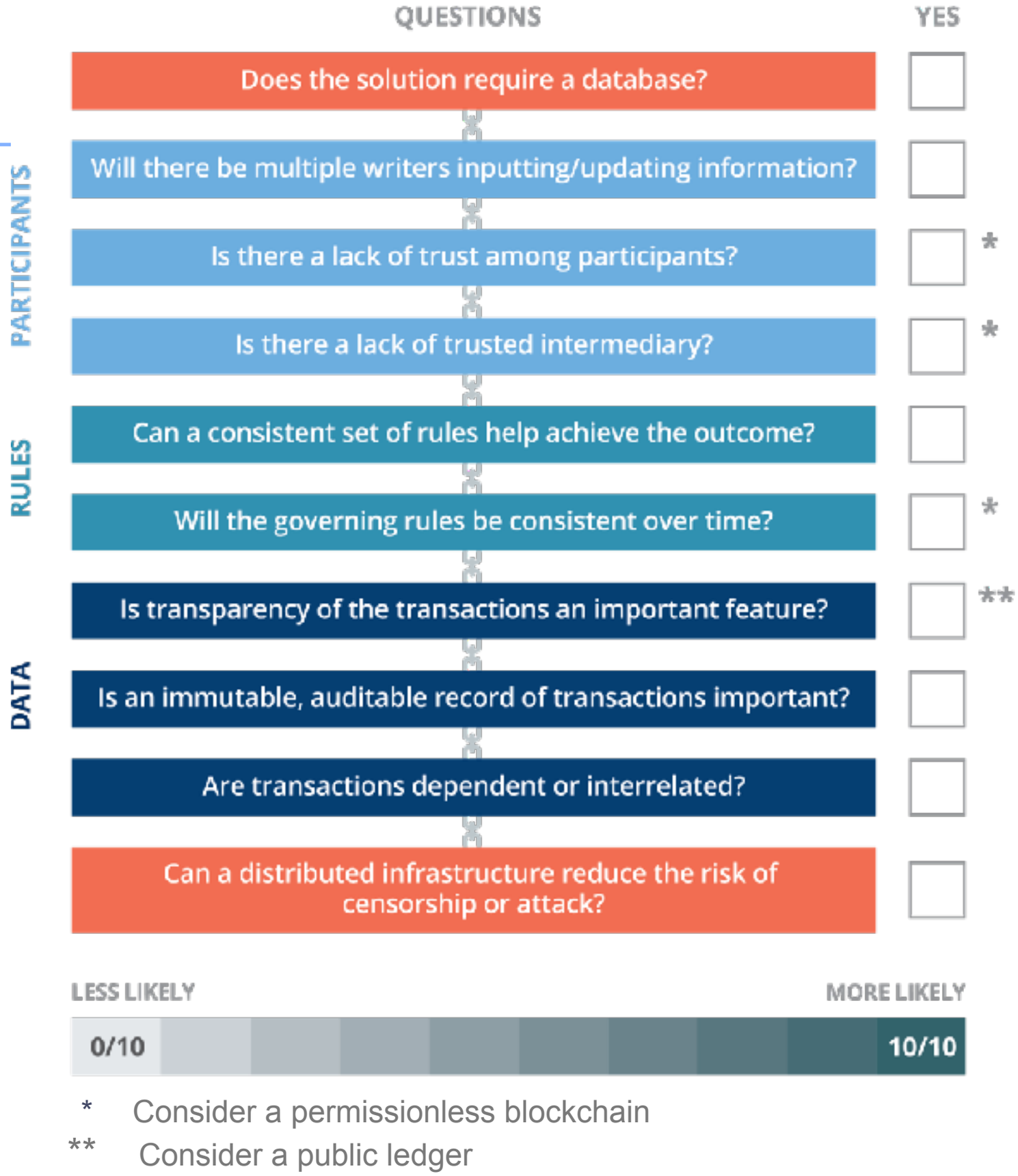
DETERMINE THE DESIGN PHILOSOPHY

Ecosystem Assessment Elements:

- Users
- Community
- Infrastructure
- Financing
- Technology

Decision Framework

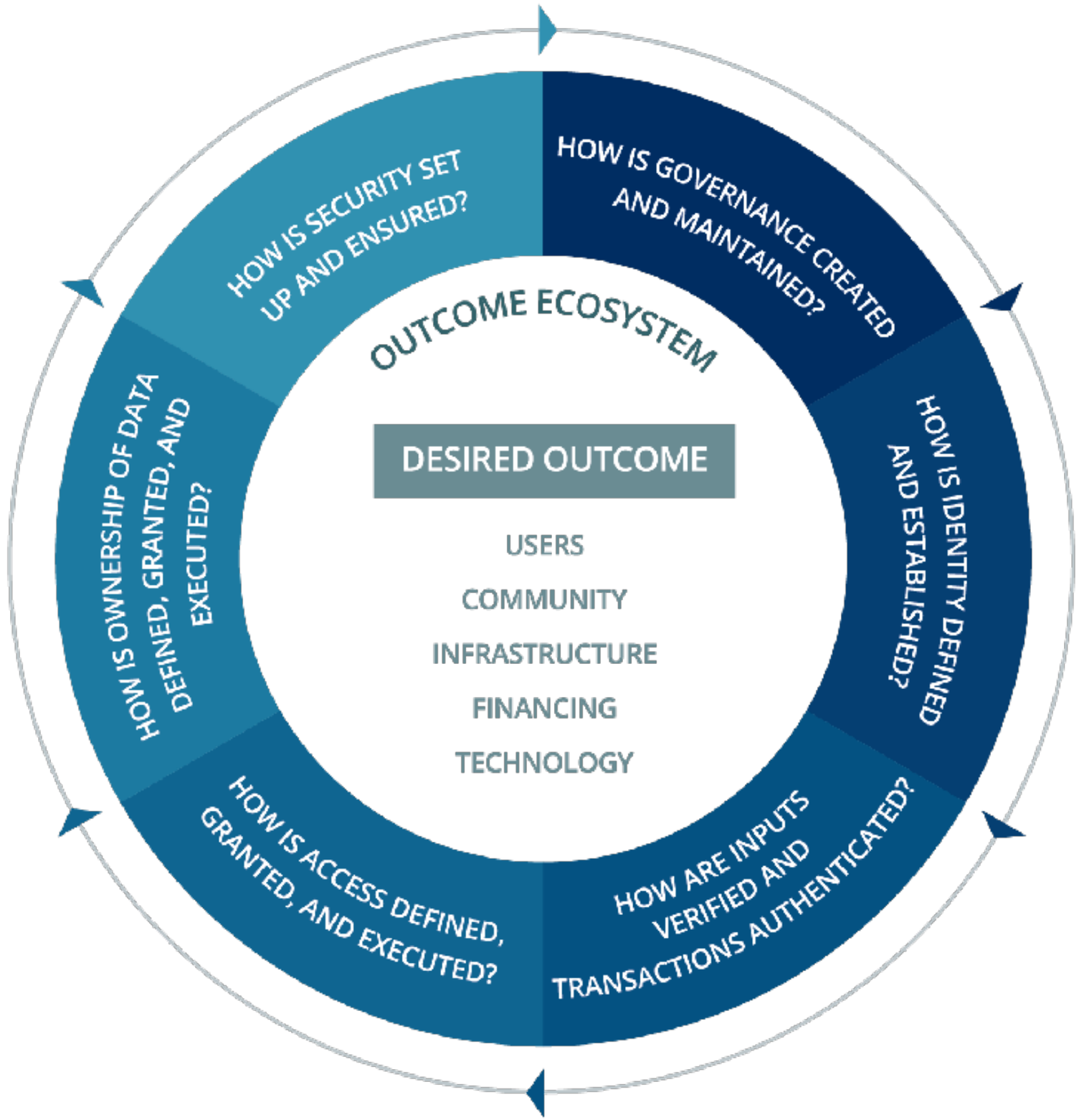
- **Decision point:** Before proceeding to design, it is important to assess whether blockchain is a viable option in a given context.
- **Adopting a flexible approach:** Rather than being overly prescriptive, this approach provides qualitative guidance as to whether blockchain is potentially appropriate.



Overarching Questions

- How is **governance** created and maintained?
- How is **identity** defined and established?
- How are inputs **verified** and transactions **authenticated**?
- How is **access** defined, granted, and executed?
- How is **ownership of data** defined, granted, and executed?
- How is **security** set up and ensured?

Key Design Considerations



Putting it All Together

DEFINE THE PROBLEM AND DESIRED OUTCOMES

IDENTIFY THE ETHICAL APPROACH

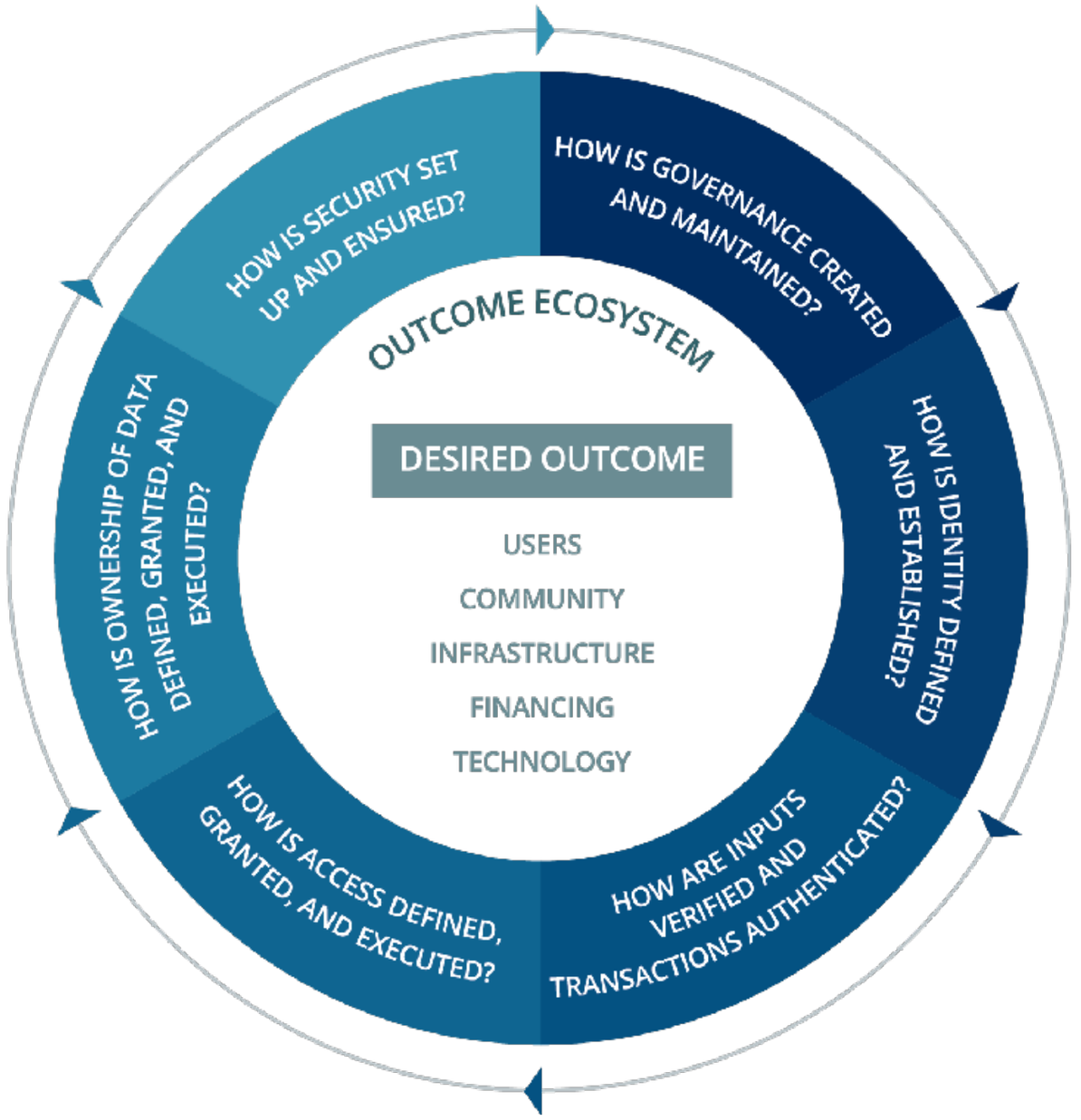
ASSESS THE OUTCOME ECOSYSTEM

DETERMINE THE DESIGN PHILOSOPHY

DECISION POINT

DETERMINE IF BLOCKCHAIN IS AN APPROPRIATE TECHNOLOGY

YES



Key Takeaways

- **Beyond cryptocurrencies:** Although originating as the underlying technology that enabled Bitcoin, blockchain itself has a wide range of applications. Now is the time to learn and experiment with blockchain in order to understand its transformational potential and its implementation challenges.
- **A tool rather than a panacea:** Blockchain is well-suited to certain types of applications, but it is always just one layer of a larger system. Small choices in the design and implementation of blockchain technologies have dramatic effects on the outcomes achieved.
- **Not an independent arbiter of truth:** Data on a blockchain is not true by default. Verification processes and governance structures are critical.
- **Infrastructure is destiny:** Blockchain is still a rapidly evolving technology, so be thoughtful and measured in approaching the design of blockchain-based infrastructure today. Blockchain interoperability will be critical.
- **Driving the future of blockchain:** In the near term, the evolution of blockchain technology will likely be driven by enterprise applications that take advantage of blockchain's efficiency, immutability, or other unique characteristics.

Questions?

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