BLOCKCHAINS

ARCHITECTURE, DESIGN AND USE CASES

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BLOCKCHAIN USE CASES

Sample Use Cases by Industry

Financial Services	Public Sector	Retail	Insurance	Supply Chain & Logistics
• Trade Finance • Cross currency payments • Mortgages • KYC • Cross border tax	• Asset Registration • Citizen Identity • Medical records • Medicine supply chain	• Supply chain • Loyalty programs • Information sharing (supplier – retailer)	• Claims processing • Risk provenance • Asset usage history • Claims file	• Supply chain finance • Maintenance tracking • Provenance • Supply chain compliance

What makes a good blockchain use case?

- Identifying a good blockchain use-case is not always easy!
  - However there should always be:

1. A business problem to be solved
   - That cannot be more efficiently solved with other technologies
2. An identifiable business network
   - With Participants, Assets and Transactions
3. A need for trust
   - Consensus, Immutability, Finality or Provenance

What makes a good *first* blockchain use case

– First use-cases are even more difficult to identify!

1. A limited scope, but still solves a real business problem
   - Minimum Viable Product in a few weeks of effort
2. A smaller business network
   - Usually without requiring regulators and consortia
3. Allows for scaling with more participants and scenarios
   - Consider shadow chains to mitigate risks

Start small, succeed and grow fast!

Understanding the Business Problem

1. What is the specific business problem / challenge that the first project will address?

   - Scope the business challenge up front

2. What is the current way of solving this business problem?

   - Understand current systems and areas for improvement

3. Assuming the business problem is large, what specific aspects of this business problem will be addressed?

4. Who are the business network participants (organizations) involved and what are their roles?

   - If there is no business network involved, then this is not a good use case

5. Who are the specific people within the organization and what are their job roles?

   - Understand the key users in a business network.

Understanding the Participants

- Who are the participants? How many types of participants?

- How will they access and interact with the blockchain?

- Will they be peer nodes?

- Do you need web or mobile apps?

- Are gateways (such as exchanges or data providers) needed?

- Do you need to integrate to external data sources?

- Who will operate the blockchain? Who will govern/regulate the blockchain?

- What is the value/incentive for each participant to join the network?

Identities

- Do you need to know your users?

- Pseudo-anonymous blockchain like bitcoin does not require user identities to be verified

- In most business use-cases, some form of identity is required
  - In public blockchains, an identity oracle (linked to a trusted database) could provide such information sources
    - Sources can come from governments, financial institutions or utility providers
  - In private blockchains, a gateway or controller ensures identity is verified before credentials are issued to the user

Understanding the Assets and Transactions

6. What assets are involved and what is the key information associated with the assets?

7. What are the transactions involved, between whom, and what assets are associated with transactions?

   - Understand under what business or contractual conditions assets are under as they transfer from one owner to another.

Defining Transactions

- What types of processes need to take place in your blockchain network?

    - Invoke actions – add, delete, change, transfer

    - Query

    - Do you need to control access to these functions based on participant types or roles?

Additional Points of Understanding

8. What are the main steps in the current workflow and how are these executed by the business network participants?

9. What is the expected benefit of applying blockchain technology to the business problem for each of the network participants?

10. What legacy systems are involved? What degree of integration with the legacy systems is needed?

Assessing Business Value

- It can be difficult to accurately quantify investment case for blockchain

- Things to consider:
  - Existing Pain Points
  - Scope – participants, assets, transactions
  - Benefits: baseline, minimum viable ecosystem (MVE) & mature network
  - Blockchain Design Points
  - References

- Cost-Benefit analysis

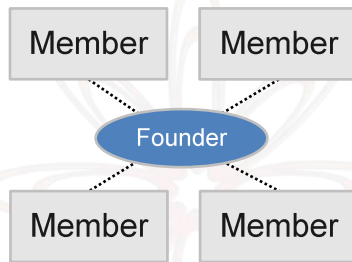# Building Communities in Blockchain Networks

Consortium Based Network
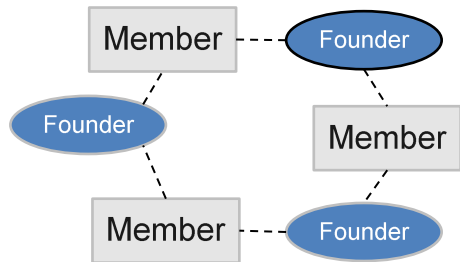
Founders are equal among other participants, may include a joint legal entity among the founders (e.g. – Joint Venture)
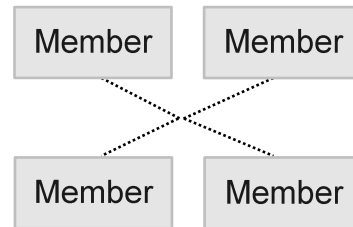
Examples:

Founder Directed Network

Individual founder in a position to provide strong direction

Examples:

Community Based Network

Driven by industry standards bodies or existing non-blockchain network owners

Examples:

Fun Reading

- Do You Need a Blockchain, Karl Wüst, Arthur Gervais, ETH Zurich: https://eprint.iacr.org/2017/375.pdf
- The Truth about Blockchain, Harvard Business Review Article: https://hbr.org/2017/01/the-truth-about-blockchain