NPTEL ONLINE CERTIFICATION COURSES

Blockchain and its applications

Prof. Sandip Chakraborty

Department of Computer Science & Engineering
Indian Institute of Technology Kharagpur

Lecture 55: Use Cases

CONCEPTS COVERED

- Blockchain use cases
- What makes a good blockchain use case?

KEYWORDS

- Use cases for enterprises

- Requirements for defining a blockchain
  - Network
  - People
  - Assets
  - Transactions

Simple 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

Understanding the Business Problem

1. What is the specific business problem / challenge that the 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?

Understanding the Participants

1. 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

2. 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

Identities

- 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
    - Decentralized identity management is also possible – we have seen that – may be the preferred way for a blockchain application

Understanding the Assets and Transactions

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

2. 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

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

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

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

Conclusion

- We need to think carefully before applying blockchain directly on a problem
  - Do we really need to use blockchain?
    - What are the pros and cons of using blockchain to solve the problem?
  - Can there be a better technology?
  - Can we define the entities?
    - The business network
    - The participants, assets, and transactions


Thank
you