NPTEL ONLINE CERTIFICATION COURSES

Blockchain and its applications

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Lecture 01: The Model of Decentralization

CONCEPTS COVERED

- The Blockchain Myths
- Decentralization – A Use-case

KEYWORDS

- Cryptocurrency
- Blockchain
- Supply Chain Management
- Decentralization

The Blockchain Myth

- Blockchain ≠ Bitcoin (or any other cryptocurrencies)
  - If you want to take this course to trade cryptocurrencies, this course is not for you !!
  - We do not want to argue on the legal issues of cryptocurrencies -- We want to learn the technology and its applications

The Blockchain Myth

- Anything and everything in the world cannot be solved using a blockchain
  - Blockchain is good but it cannot change the society in a week or a month or a year
  - *"Want to prevent fraud and corruption? Use Blockchain"* -- **Unfortunately, you are wrong! There can be a better technology to solve your problem ...**

The Blockchain Myth

- You cannot replace a database with a blockchain
  - Blockchain is **not a distributed database**
  - Blockchain is not designed to securely store ANY data

Why this course …

- To avoid all the hypes and apply Blockchain as a solution at the right place …

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So, what is the right place?

Decentralization – When Do you Need It?

Supply Chain Management -- A Use Case

Supply Chain in Petroleum Industry

Crude Purchase

Supply Chain in Petroleum Industry

Crude Purchase

Crude Transportation

Supply Chain in Petroleum Industry

Crude Purchase

Crude Transportation

Crude Storage

Supply Chain in Petroleum Industry

Crude Purchase

Crude Transportation

Crude Storage

Refining

Supply Chain in Petroleum Industry

Crude Purchase

Crude Transportation

Crude Storage

Refining

Distribution

Supply Chain in Petroleum Industry

Crude Purchase

Crude Transportation

Crude Storage

Refining

Distribution

Retail

Petroleum Supply Chain in India

Petroleum Supply Chain in India

Upstream
Exploration and Production

- ONGC
- OVL
- Oil India Ltd
- Pvt E&P Co

Petroleum Supply Chain in India

Downstream
Refining and Marketing

Indian Oil	Bharat Petr.
CPCL, BRPL	NRL
Reliance Ind. Ltd	Hindustan Petr.
	MRPL

Petroleum Supply Chain in India

Industry Bodies

- Petroleum Planning and Analysis Cell
- Center for High Technology
- PRCA
- PetroFed
- Oil industry Safety Directorate
- Petroleum India International

Requirements for a Successful Supply Chain

- Minimization of material procurement
- Maximization of manufacturing capacity and sales
- Meet demand numbers
- Respond quickly to market opportunity by purchasing the production shortfall from other players
- Objective of each production unit would be to maximize the throughput and its margin
- Procurement would purchase the feedstock with not the best yields at lowest cost

Requirements for a Successful Supply Chain

- Minimization of material procurement

Needs Strong Coordination among the Players

- Procurement would purchase the feedstock with not the best yields at lowest cost

Requirements for a Successful Supply Chain

- Minimization of material procurement

How do we obtain Real-time Information from the Stakeholders?

- Procurement would purchase the feedstock with not the best yields at lowest cost

Requirements for a Successful Supply Chain

- Minimization of material procurement

How do we obtain Real-time Information from the Stakeholders?

A web-based portal?

Requirements for a Successful Supply Chain

- Minimization of material procurement

How do we obtain Real-time Information from the Stakeholders?

What is the guarantee that the information submitted is correct?

Requirements for a Successful Supply Chain

- Minimization of material procurement

How do we obtain Real-time Information from the Stakeholders?

What is the guarantee that the information submitted is correct?

What if someone denies the information later on?

Requirements for a Successful Supply Chain

- Minimization of material procurement

How do we obtain Real-time Information from the Stakeholders?

We need a decentralized solution – Noone trust each other, but they should cooperate

Requirements for a Successful Supply Chain

- Minimization of material procurement

- Respond quickly to market opportunity by purchasing the production shortfall from other players

Blockchain is the answer !!

Conclusion – Decentralization and Blockchain

- You have a network of different players (businesses, enterprises, commercial establishments, Government or Private bodies, or even the individuals)
- Everyone has their own interest – they want to fulfill their goal
- They do not trust each other
- If they cooperate, the society gets benefited
- **Trustless Decentralization = Blockchain**

Thank you