Blockchain and the Future of Transportation

Randeep Sudan
Adviser Digital Strategy and Government Analytics
World Bank
The Internet

Major Milestones

Internet of Data
Vint Cerf and Robert Kahn
TCP/IP protocol allowing data to be sent from one computer to another

Internet of Content
Tim Berners Lee
The World Wide Web allowed for content to be shared between computers on a network

Internet of Value
Satoshi Nakamoto
Blockchain allows value to be shared in a Trustless environment
The Great Convergence
Technologies that span the physical and virtual worlds

1. Virtual Reality
2. Digital Twins
3. Blockchain and Distributed Ledgers
A Digital Record

At its heart, a blockchain is a record of transactions, like a traditional ledger. These transactions can be any movement of money, goods or secure data—a purchase at a supermarket, for example, or the assignment of a government ID number.

Source: Goldman Sachs
Recent Applications of Blockchain
Supply chains (beyond Bitcoin)

Examples

- IBM-Maersk: tracking containers
- Rotterdam Port: Logistics
- Walmart: tracking pork in China
- Insurance: IBM, AIG, Standard Chartered
- Trade Finance: Deutsche Bank, HSBC, KBC, Natixis, Rabobank, Société Générale and UniCredit
- Dubai all government transactions by 2020
Future of Mobility

In an era of rising urbanization and ageing populations

Number One
Rapid urbanization and the growth of megacities

Number Two
Median age of population increasing

Number Three
Autonomous and semi-autonomous vehicles will become more important

Number Four
More vehicles will be electrical (e.g. India’s decision to have all cars as electric cars by 2030)

Number Five
Boundaries between private, shared and public transportation will be increasingly blurred.
Rent better cars
Choose from thousands of unique cars for rent by local hosts
Sharing Economy

Blockchain/Distributed Ledger Technology

Ownership and exchange of smart assets using Blockchain

• Smart assets represent entities of value (smart property)
• Ownership and exchange can be managed via distributed ledger technology
• Smart assets in conjunction with smart contracts are relevant to urban transportation
• Smart contracts: formalized rules of ownership and exchange implemented by a distributed ledger platform
Toyota’s Blockchain Initiative

Toyota Research Institute

MIT

BigChainDB

Oaken Innovations
Car eWallet

UBS + Innogy SE (Innovation Hub) + ZF
India aiming for all cars to be electric by 2030: Piyush Goyal, Power Minister (addressing the CII Annual Session 2017).
Community Microgrids

Brooklyn Microgrid uses Blockchain
Policy Initiatives

Problem Solving Approach

- Mobility as a service
- Multi-stakeholder initiative
- Proof of concept
- State of Illinois’ month long hackathon on Blockchain
- Digital Identity
- Privacy of citizen data
Blockchain Platforms
Some credible players

- Bitcoin Technology Stack
- Ethereum Platform
- IBM-led-Hyperledger Fabric
- R3 Corda
- Digital Asset
Late Entrants Might Win

Example of Search Engines

Search Engines: Major Players in 1995
- Altavista
- Yahoo
- Excite
- Magellan
- Lycos
- Terra
- Eventual winner: Google

Social networks in 2003: Friendster, Bebo, hi5, Myspace, Orkut vs Facebook

Mobile operating systems in 2006: Blackberry, Windows Mobile, Nokia and Symbian vs iOS and Android
Blockchain Evolution

Opportunity for new players.

Growth of Bitcoin (2009-2016): 1 Platform

Proliferation of Platforms (2015-2016): 40+ Platforms

Further Proliferation (2017-2018): Expected stabilization of around 75 platforms

Maturity and Consolidation (2019): Eventual consolidation to less than 5 platforms

Opportunity

Source: Gartner, The Evolving Landscape of Blockchain Technology Platforms, March 2, 2017