
Blockchain in healthcare

— a blessing in disguise —



Hello!

Charan Kumar

Director for strategic initiatives and quality

- Passionate about technology
- 13 years in clinical domain
- Masters in Biotechnology and alumnus of UC Berkeley – Haas School of Business



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Technology

Disruptive vs Foundational

Attack a traditional business model with a cost-effective solution and zoom forward

Create a new foundation for our socio-economic systems gradually and steadily

Novelty & Complexity

TCP/IP

lo



TCP/IP

Telecommunications architecture –
based on “circuit switching”

TCP/IP
(transmission control protocol/internet
protocol)

ARPAnet

Internet – HTTP/URL/HTML – www

SUN – Java

Email – yahoo

Amazon, Expedia, eBay, Napster, Skype

Internet of information to Internet of Value

30 years of long journey

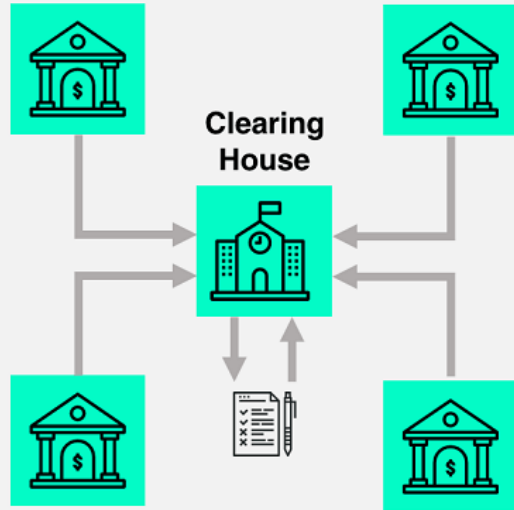
Ledger Technology

Ledger Technology

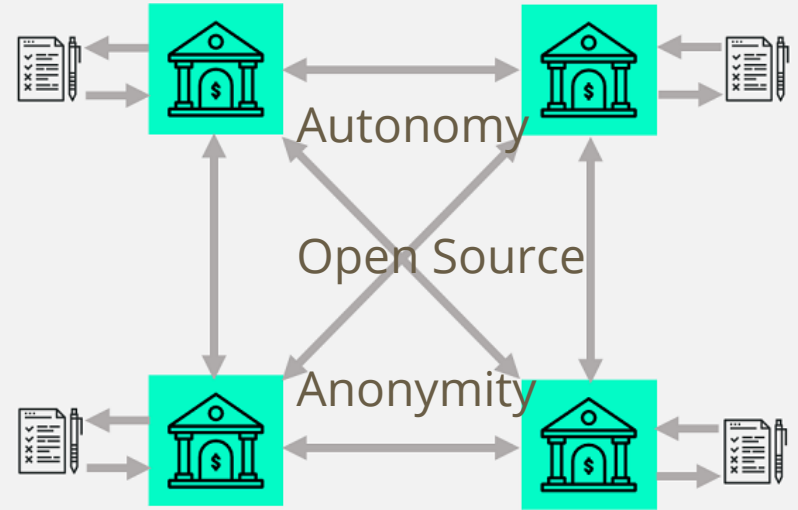
From a finance and accounting perspective, Investopedia defines the term 'general ledger' as follows:

A general ledger represents the formal ledger for a company's financial statements. The ledger provides a complete record of financial transactions over the life of the company.....

Ledger Technology

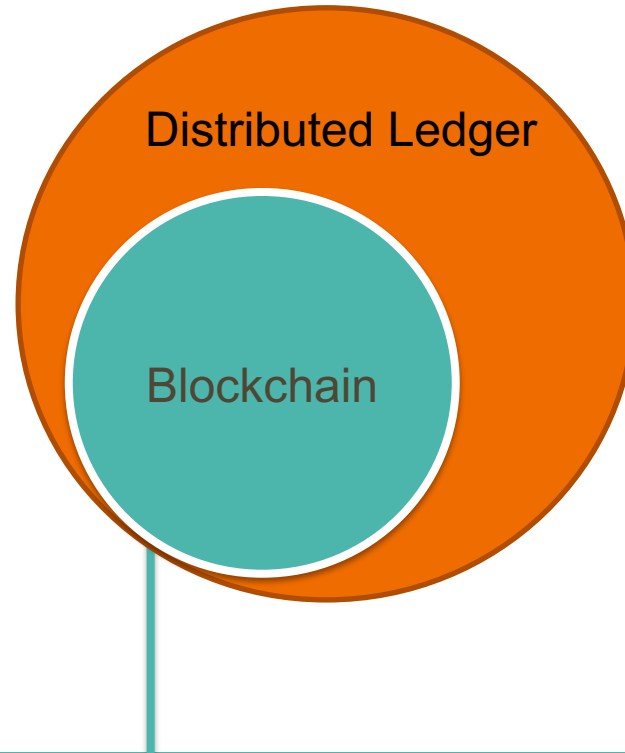


Centralized Ledger

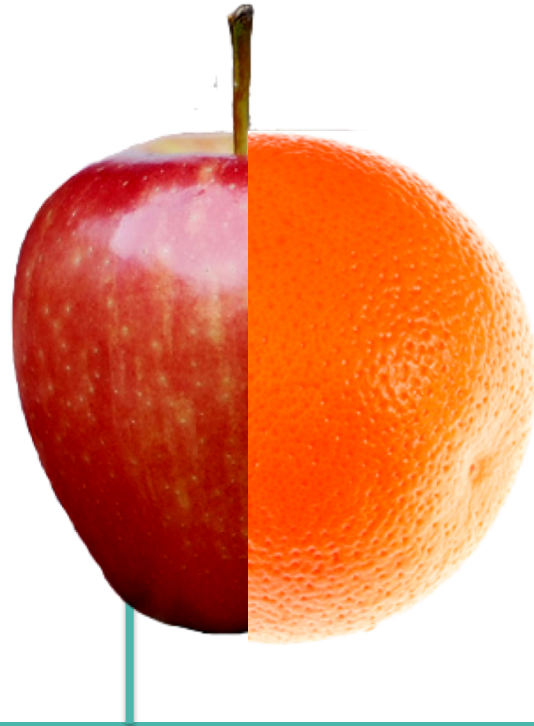


Distributed Ledger

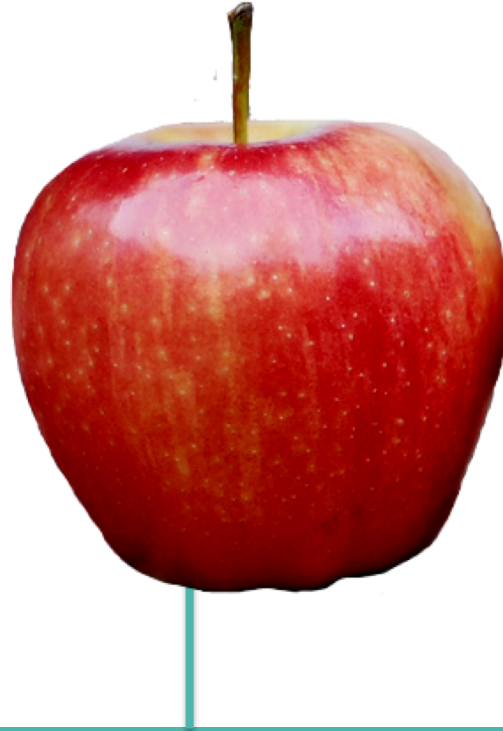
Blockchain



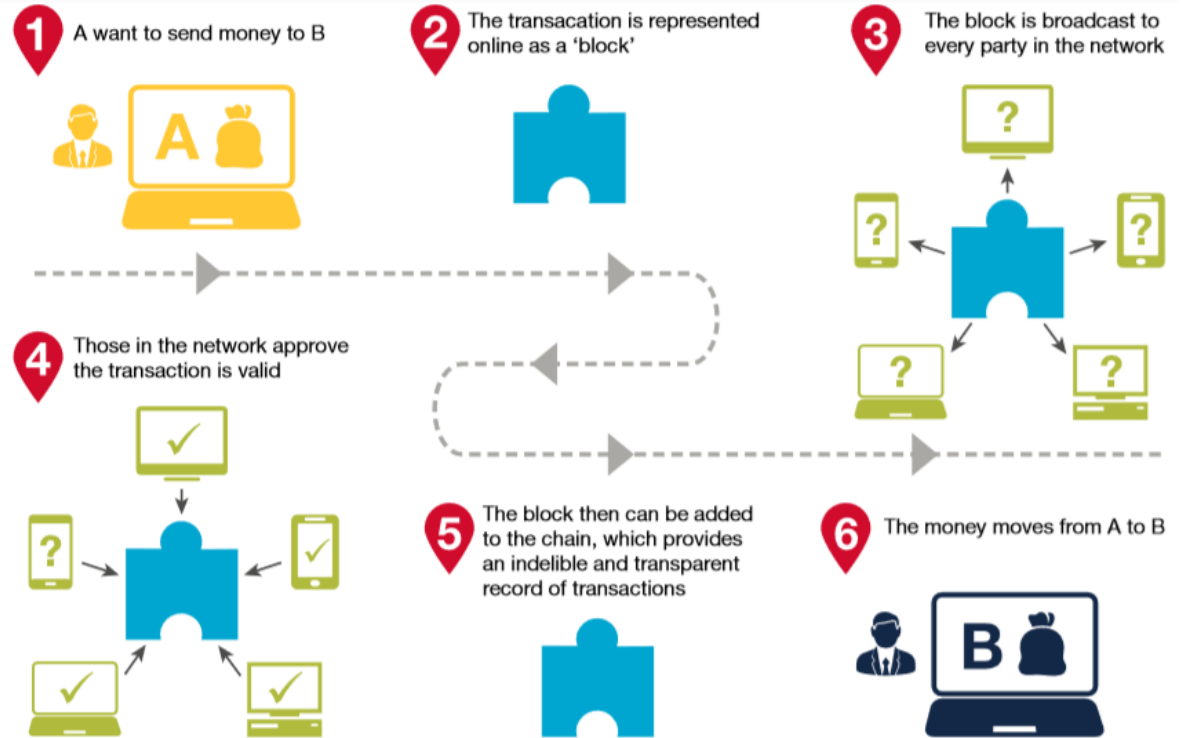
Ledger Technology



Ledger Technology



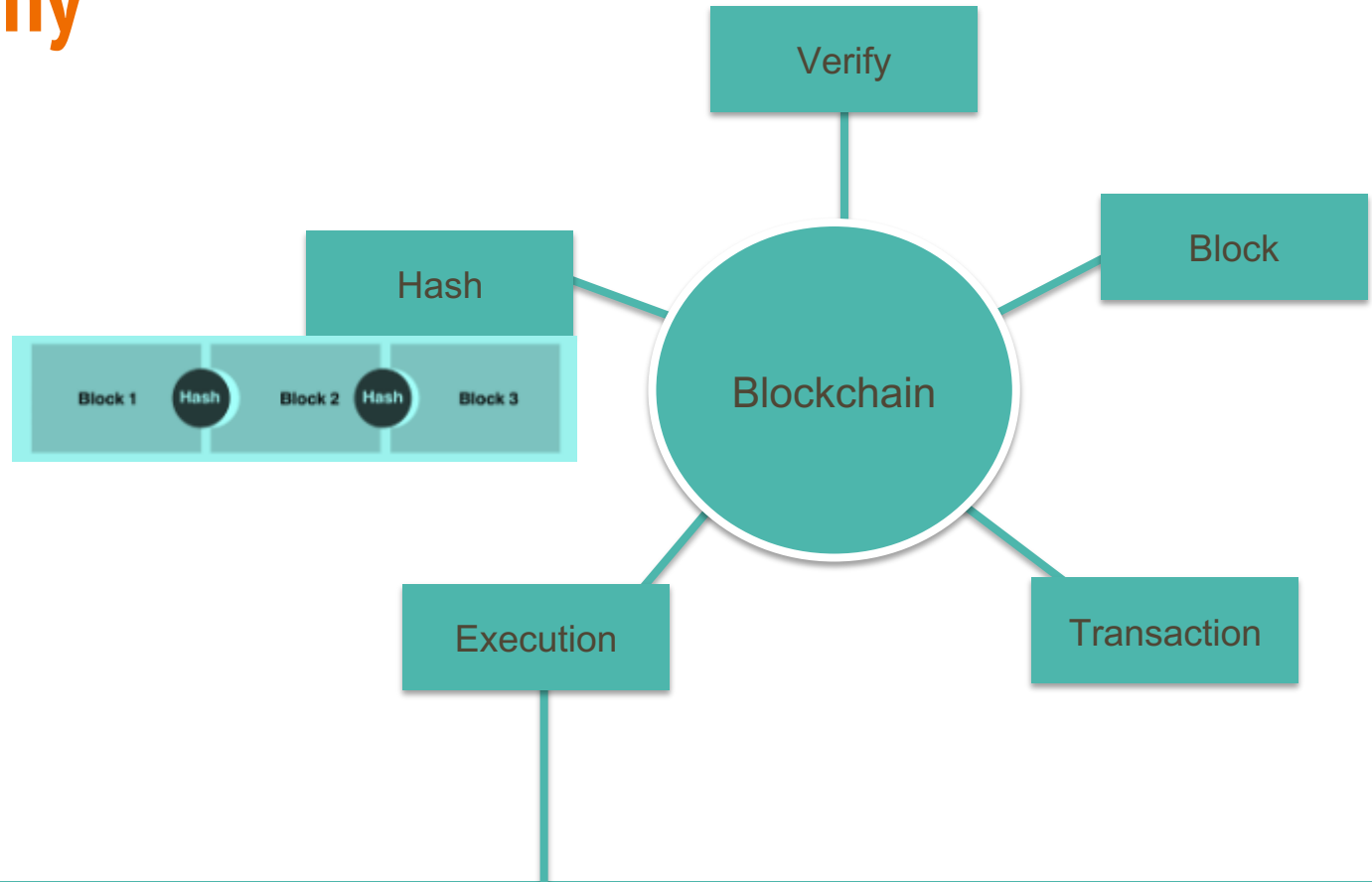
Blockchain



Source: Financial Times, In Manual and Andrews 2016

It's working...

Cryptography



Blockchain

Roles within a blockchain ecosystem

Blockchain environments can contain an expansive number of users and technology providers. Here's a breakdown of potential participants, and their roles, within a blockchain ecosystem.



Network admin

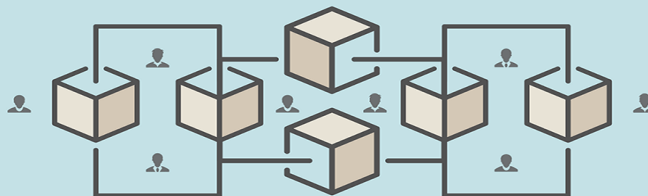
The individuals or organizations responsible for the configuration and management of the network that supports a blockchain deployment. The admin must also help ensure the deployment meets participants' performance needs.

Network participant

The individuals or organizations who perform transactions and share data with other participants on the network. Participants' computers validate new transactions in accordance with smart contracts.

Cloud providers

The cloud service providers who offer distributed compute environments that are often required for blockchain deployment. Some cloud providers also offer managed blockchain services.



Managed service provider

An optional participant in a blockchain ecosystem that acts as an intermediary for the various participants. Providers can manage business and legal relationships between participants and the blockchain technology.

Customer or business asset

A person or asset that sparks a blockchain ecosystem into action with a certain event. For example, if you apply for a new bank account, blockchain-enabled banks can interact with other relevant parties to verify and update personal information.

Distributed ledger technologies (DLTs)

The underlying systems that enable and record blockchain transactions. DLTs, which can be open source or based on collaborative projects, provide the framework for organizations to write smart contracts and verify new blocks in a chain.

Blockchain

Peer-to-Peer network
on internet

October 2008

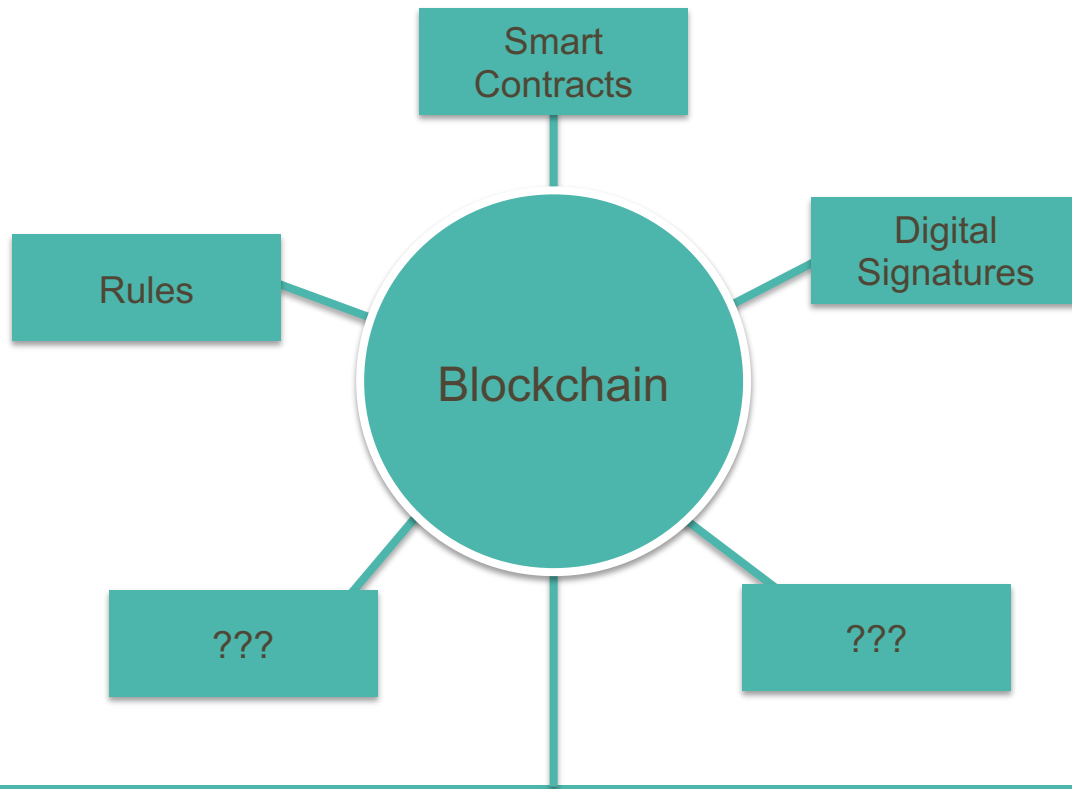
Virtual currency
system - bitcoin

Bilateral financial
transaction

Open, distributed
and shared

Cost reduction

Blockchain



Blockchain

Decentralized

Transparent

Immutable

Autonomy

Open Source

Anonymity

Blockchain

Permissioned

Permission less



Opportunities - Healthcare

Healthcare

Fragmented Data

Timely access to
Patient Data

System
Interoperability

Data Security

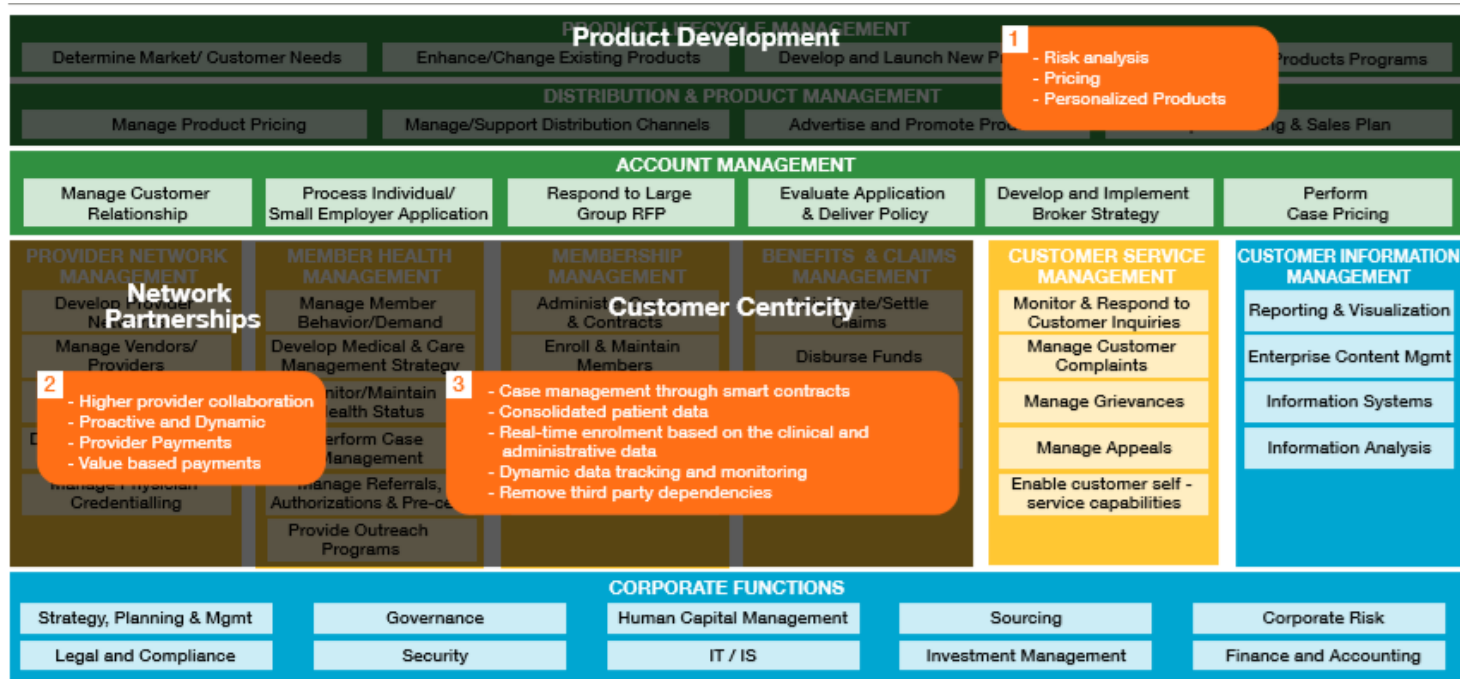
Patient Generated
data

Access and data
inconsistency

Cost effectiveness

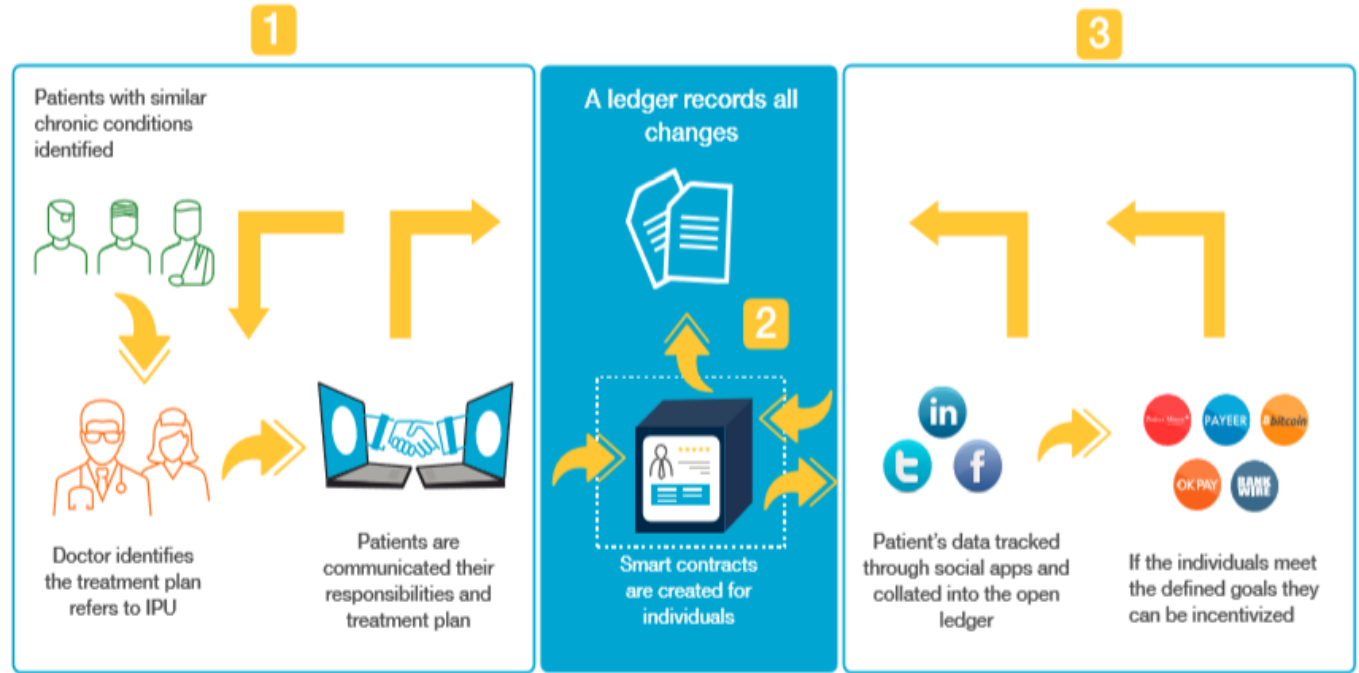
Disaster recovery

Healthcare



Source: Capgemini

Healthcare



Source: Capgemini

Healthcare

Supply Chain

Drug verification

Reimbursement

Billing

Clinical trials

Neuroscience

Medical Data

EHR/EMR security

Implementation methodology

Implementation & Challenges

Mapping & Design

Work instructions

Financials

Review and monitor

Disaster recovery

Change management

Barriers to data sharing

Interoperability

Public blockchains

Compliance to regulations

**Blockchain will
have a major impact
on healthcare
business**



“Whereas most technologies tend to automate workers on the periphery doing menial tasks, blockchains automate away the center. Instead of putting the taxi driver out of a job, blockchain puts Uber out of a job and lets the taxi drivers work with the customer directly.”

- Vitalik Buterin, co-founder Ethereum and Bitcoin Magazine



The Eureka! moment
still endures...



Thanks!

charan.kumar@ephicacy.in

charan.kumar.kj@gmail.com



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