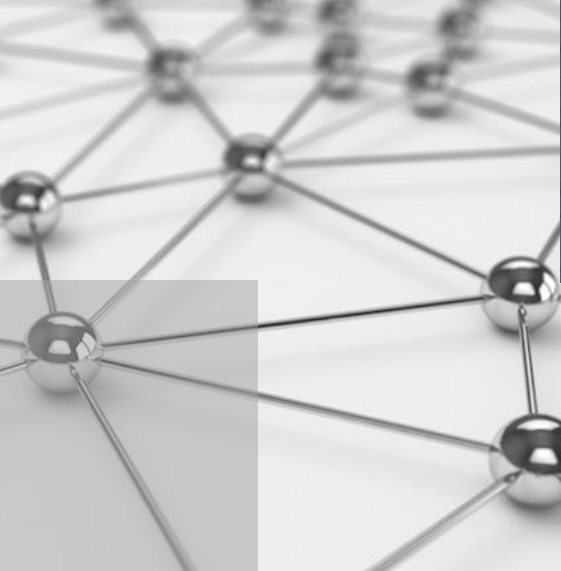


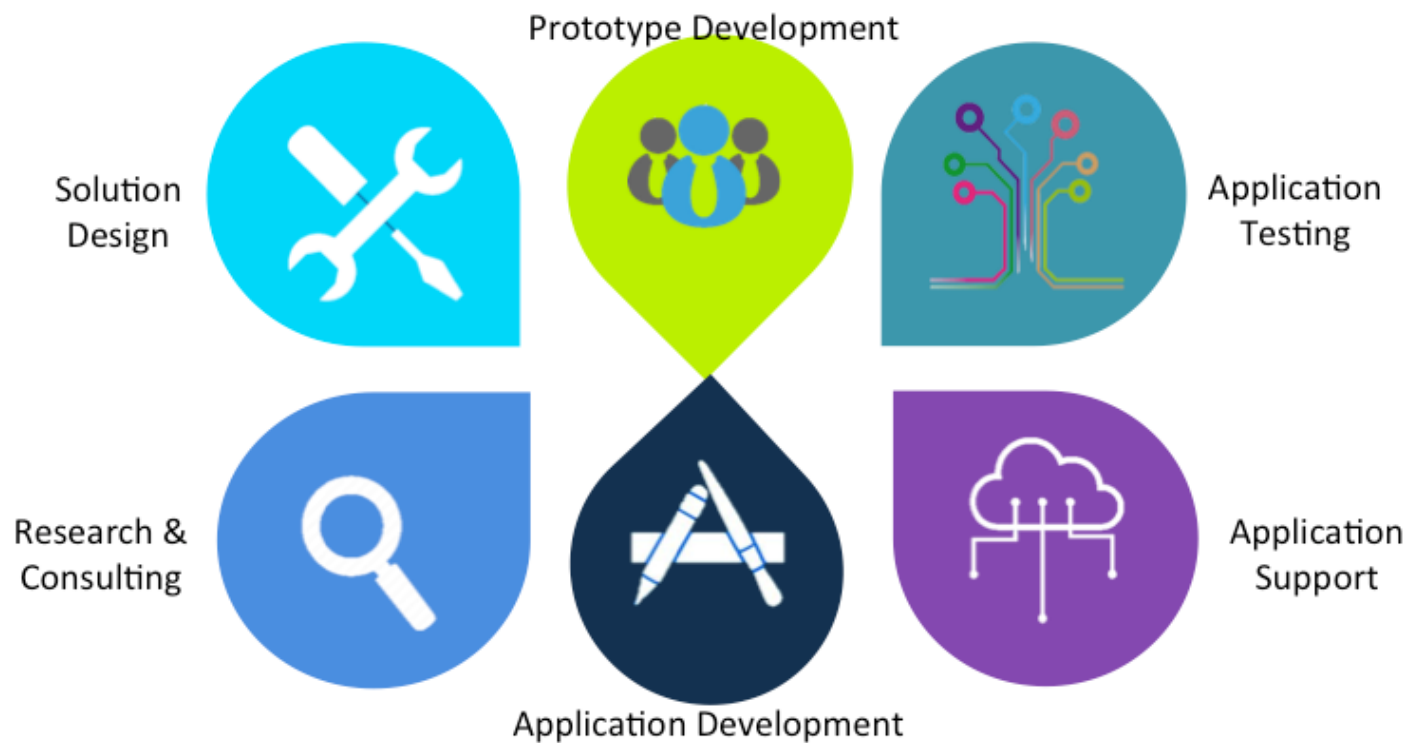
# COVID19 Testing Medical Image Analysis using AI and Blockchain

By  
IIT Alumni Association



# About Snapper

- A Blockchain Technology and Innovation company since 2016
- Blockchain Products and Platforms across Supply Chain, Healthcare and E-Governance.
- Blockchain expertise in Hyperledger Fabric and Ethereum Platforms



# SnapCert “Trust Protocol for Certificates”

SnapCert a ‘**Blockchain based Certificate Authentication and Verification Platform**’ for secured digitization, generation, authentication, sharing and verification of certificates.



Permanent and secured certificates



Online and real-time certificate verification



Efficient and automated certificate generation and authentication process



Auditability of records verification



# About IIT Alumni council

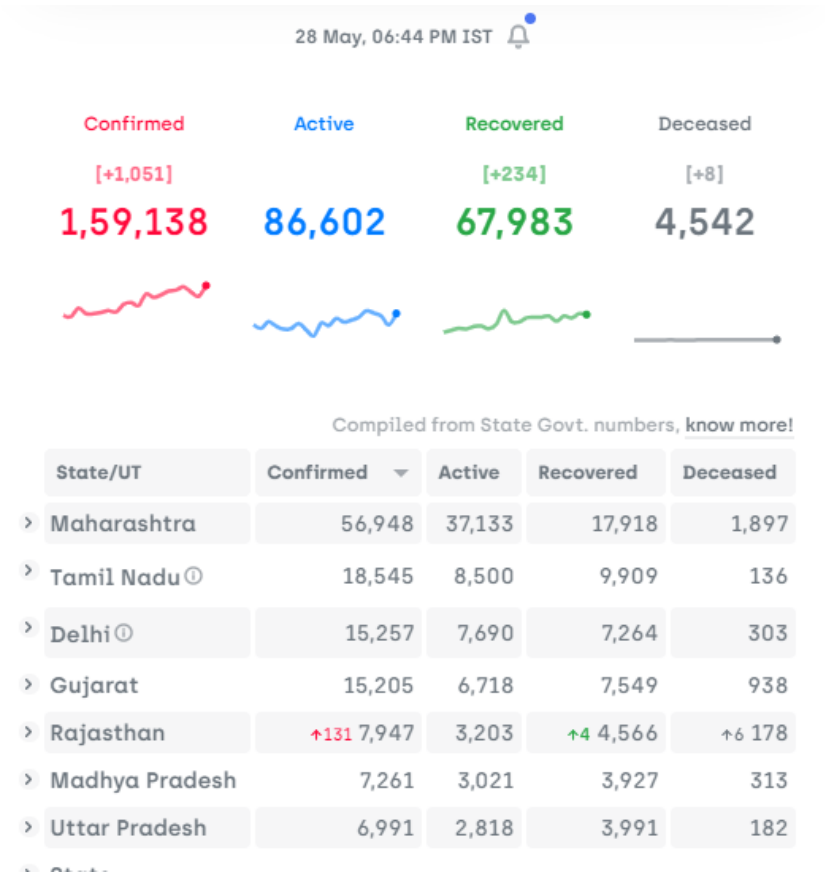
## **IIT Alumni council** (<http://iitalumnicouncil.org/>)

- IIT Alumni Council is the nodal alumni body for alumni of all the Indian Institutes of Technology.
- It facilitates interlinkages between IIT Alumni and decision makers in India, specifically with the objective of encouraging their participation in nation building.
- It maintains the global database of alumni ([www.iit.directory](http://www.iit.directory)), facilitates alumni participation in professional events and promotes Brand IIT and IIT Alumni globally.



# COVID 19 in India

## Current Status as on 28<sup>th</sup> May



- About 610 laboratories testing COVID19
- 1.1 lakh samples are tested daily
- Each COVID19 test costs Rs.4,500

Source : <https://www.covid19india.org/>



# Challenges in COVID19 Testing

- 4 to 6 days to show visible X-Ray effect, after the person is infected
- X-Ray showing negative but person is Covid positive.
- RT-PCR (Gene based test) shows Covid negative but X-Ray shows positive and vice a versa.
- Huge no. of testing data (expected 3,00,000 xray images per day across India)
- Limited no. of radiologist
- Prioritization of cases for further covid testing.

**GOAL is to have ZERO False Negatives**



# IIT Alumni Association – COVID19 Initiatives

## Infrastructure

- COVID19 Test Bus
- Special Labs setup at Poddar Hospital, Mumbai
- HPC and Cloud Infrastructure

## Testing and Diagnosis

- AI based testing of COVID19 through X-ray Image
- AI based testing of COVID19 through CT Scan
- AI based testing of COVID19 through Ultrasound
- Diagnosis of COVID19 through RTPCR





# COVID19 Test Bus

India's first Covid-19 test bus launched in Mumbai!!



The Covid-19 Test Bus is the first vehicle of its kind in the world with onboard genetic testing, AI-based teleradiology and contactless sample collection.





# Integrated Healthcare Network

**An Integrated Healthcare Network for efficient and secured data management using emerging technologies –**

- Artificial Intelligence for automatic analysis of medical images and records
- Blockchain technology for data security, privacy, authentication, provenance and trust network
- HPC and Cloud Services for storage of large volume of data and high computational power for faster processing of data

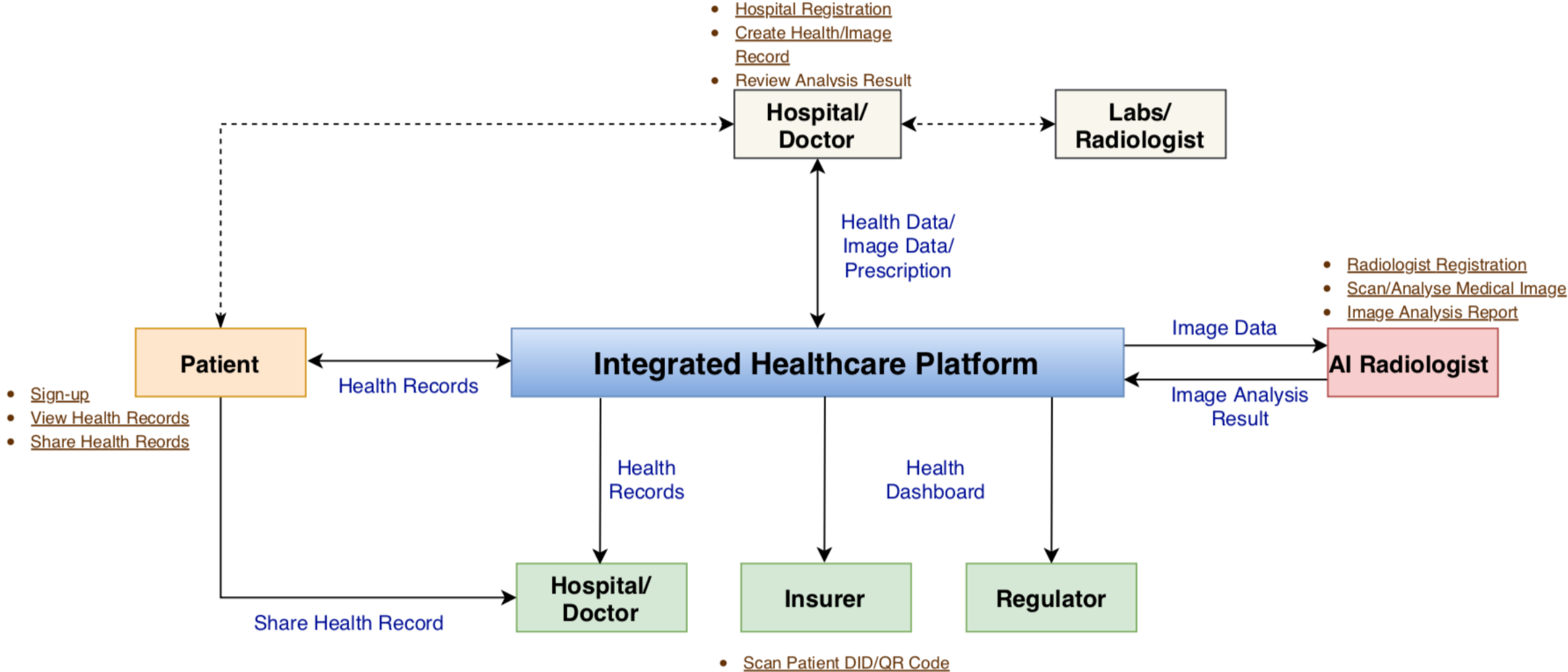


# Network Objectives

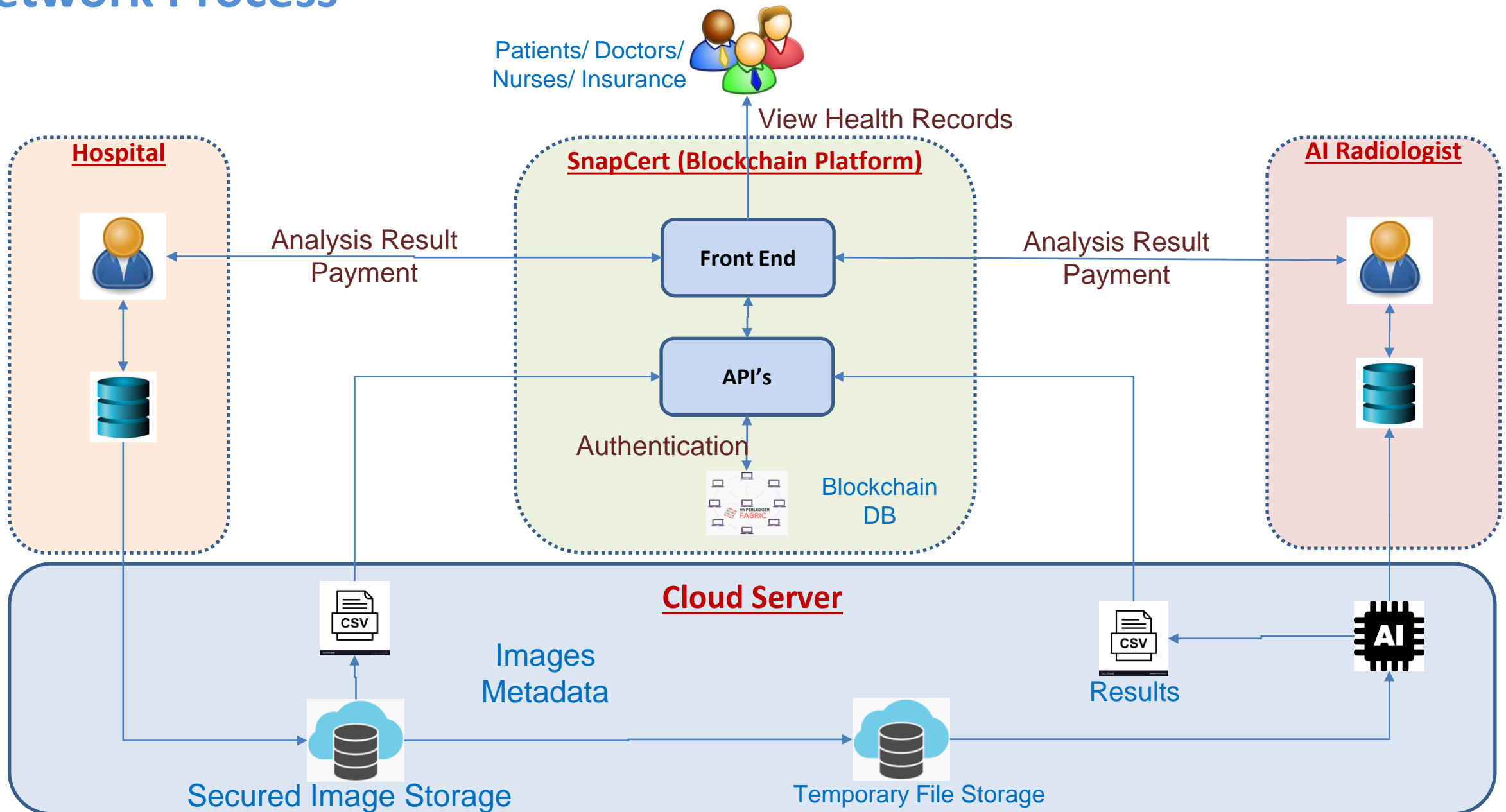
- Cost reduction of testing (e.g. COVID19)
- Faster turnaround and accuracy of test results
- Secure transportation of medical records/images
- Data protection and privacy
- Efficient and automated communication to all stakeholders
- Regulatory compliant



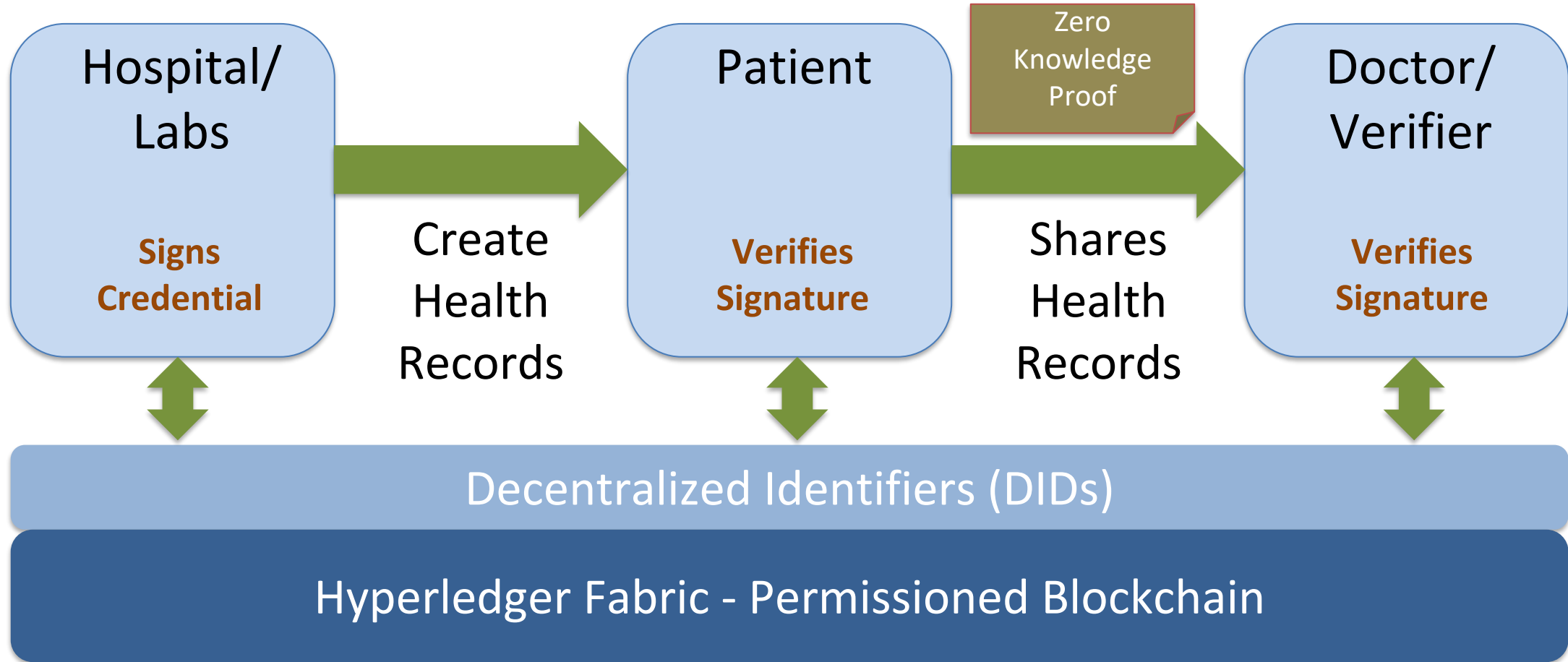
# Network Architecture



# Network Process



# Record Verification - Self Sovereign Identity



Complete ownership and control with patients of its own records.



# Compliances

## W3C

- Decentralized Identifier(DID) & Verifiable credentials  
E.g. DID Syntax “did:snap:xxxx”

## HIPAA

- Data Privacy
- Data Security
- Correct regulation specific to stakeholders (Radiologists, Doctors, Patients, Insurance etc.)

## GDPR

- Right to share
- Right to delete



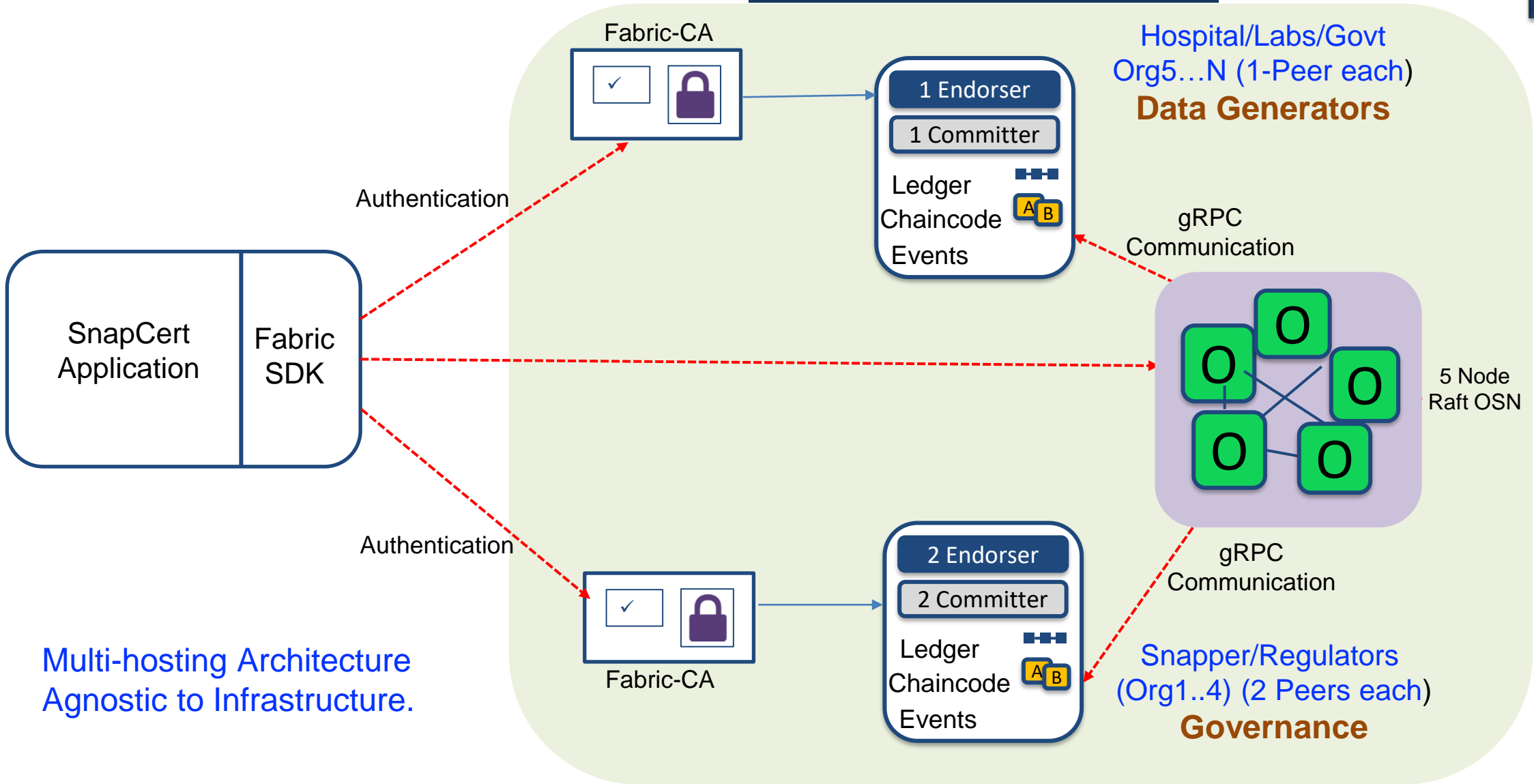


# Blockchain Architecture



Network Admin

## Hyperledger Fabric Network



Multi-hosting Architecture  
Agnostic to Infrastructure.



# Benefits of Blockchain?

<b>Data Privacy/Integrity</b>	Access of patient personal data through Decentralized Identifier (DID)
	Health records sharing by patient or through consent
	Connected ecosystem
<b>Role Based Authentication</b>	Authentication through Decentralized Identifier (DID)
<b>Data Security and Provenance</b>	Cross verification of health data through hashing on Blockchain
	Immutable ledger on DLT network
	Cryptographically secured Blockchain ledger
<b>Regulatory Compliances</b>	Auditability of data access trail on Blockchain ledger
<b>System Efficiency</b>	Real time data availability
	Transparency of data
	Secure transportation of health data



# Thank You

Websites :

<https://www.snapperfuturetech.com>

<https://www.snapperbuzz.com>

<http://www.indianblockchaininstitute.com>

Connect : [info@snapperfuturetech.com](mailto:info@snapperfuturetech.com)

