



# INFOSYS BLOCKCHAIN IDENTITY FRAMEWORK

## Abstract

Infosys Blockchain Identity Framework leads the way to a patient centric healthcare ecosystem, which provides trust, transparency and data privacy during the pandemic.

# Addressing Unprecedented Healthcare Challenges During Pandemic

COVID-19 Pandemic has left an enormous impact on everyone's life around the globe. A key issue in managing the pandemic is the need for reliable, real time access to critical information from trusted sources. Infosys' Blockchain based Identity Framework enables decentralized exchange of verified, trusted, secured information among individuals and organizations along with protecting the privacy of users. Some unique features of this framework are use of cryptography, peer to peer networking, secured wallets and distributed ledger, which make it ideal for sharing of essential COVID-19 related information and streamlining public health data in real time.

## Blockchain – Exchange Of Data

One of the advantages of blockchain is that it can provide verifiable data using a distributed ledger and peer-to-peer networking. A blockchain is a public database, or "ledger", which is stored in multiple locations across a decentralized network. Data is added to the ledger in "blocks". Each time a new block is added, it must first be verified by participants in the network. To understand this at the most fundamental level, blockchain technology transfers ownership and the control of data from a centralized source to those contributing the data.

### Let's discuss two key use cases:

#### Absence of authentic data registry of medical workers

During COVID-19, frontline medical professional like doctors, nurses, health assistants are in high demand. Hospitals are struggling to get healthcare workers as COVID-19 cases spike across the globe. As per iloStat (ilostat.ilo.org), data shows that numerous countries affected by COVID are facing acute shortage of health workers. The problem is more serious for low income countries, where large parts of population don't have access to health services due to unavailability of healthcare workers. In Africa, the average number of healthcare workers per 10000 people is 57 which is way below WHO standard [Refer Link for country wise <https://ilostat.ilo.org/covid-19-are-there-enough-health-workers/> data]. But hospitals can't onboard

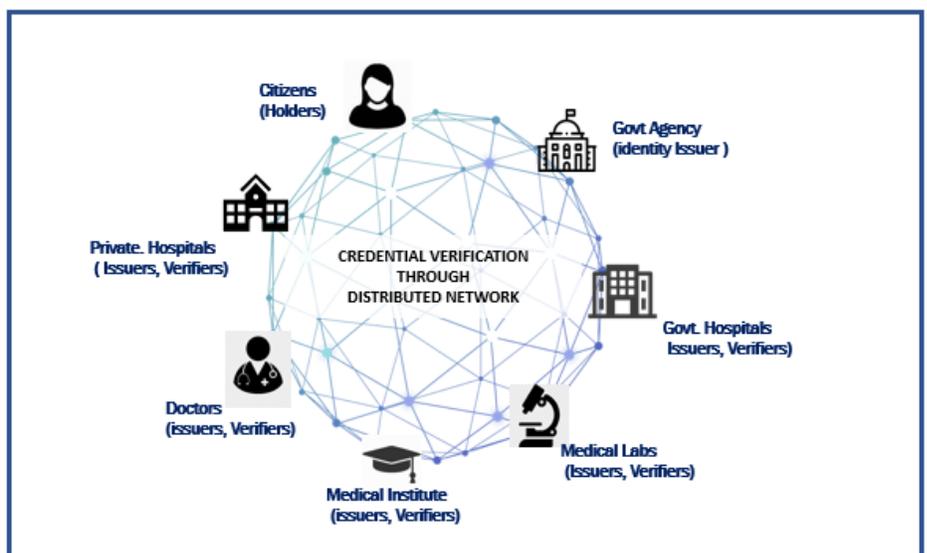
the new staff quickly. One key aspect is getting the verified medical professionals on-boarded faster. With clinicians and healthcare professionals volunteering at hospitals to alleviate workforce demands, there are challenges with verifying credentials in an expedited manner.

#### Identification of highly prone COVID -19 cases

Key electronic health records of patients sit in institutional silos in a family doctors' office or in local hospitals and can't be accessed in case of emergency or even when the patient visits a doctor in a different city. In COVID-19 pandemic, the medical history of a patient can not only help in diagnosing a correct treatment but also in proactive identification of people

who are highly prone to COVID related complications. Each medical record shall contain enough accurate information to identify the patient, support the diagnosis, justify the treatment, document the course and results, and promote continuity of care among health care providers. AI and other algorithms can help in detecting highly prone cases based on electronic health records of patients. Enabling an efficient healthcare information exchange between the network participants would yield significant benefits for patients, such as avoiding medication errors, avoiding duplicate testing, improving diagnosis. It can also help in identifying patients who need more medical care compared to the healthier patients.

#### How Infosys Blockchain Identity Solution can help who need more medical care compared to



Credential verification through Distributed Identity Network

Infosys Blockchain Identity Framework is based on the concepts of SSI (Self sovereign Identity) and can help us resolve these problems. SSI is a model for managing digital identities in which an individual or business has sole ownership and control over their accounts and personal data. With self-sovereign identity, users have complete control over how their personal information is kept and used. The Framework allows participants to dynamically validate the trustworthiness of credentials/certificates of any individual or business with whom they are about to engage. The solution allows automatic credential verification without depending on any other organization, thereby reducing time which was being spent on manual verification of data. It facilitates an environment where the data can be trusted, verified and allow for levels of anonymity, enabling organizations to protect individual privacy and collaborate without compromising data confidentiality.

How Infosys Blockchain Identity Solution works –

- Consortium of different state authorities, health institutions, medical labs and

certification bodies can be formed, to enable digital verification of academic and medical credentials in a quick and reliable manner.

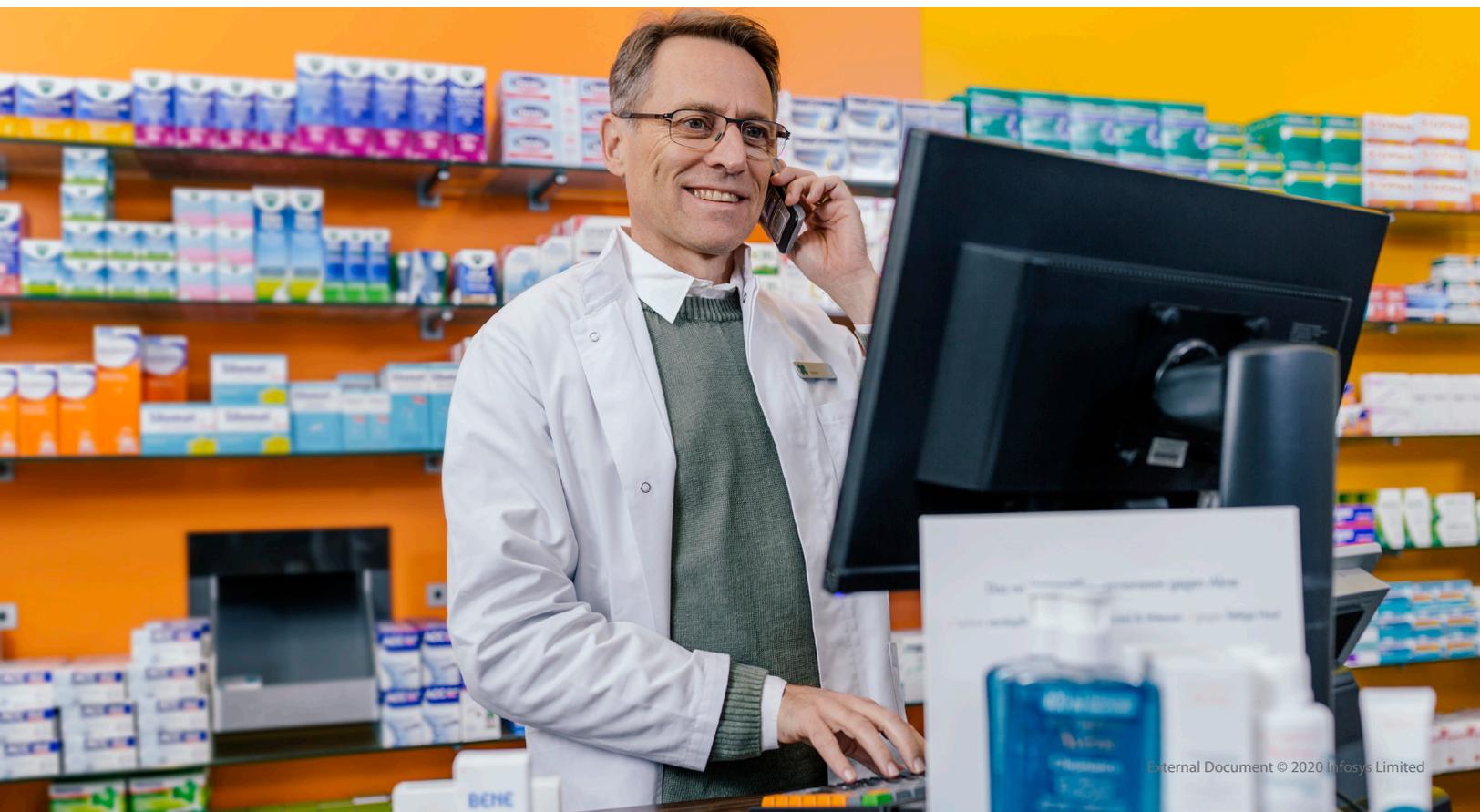
- Trusted authority like a government agency issues digital identity credential to each citizen. In case of newborns, birth registration provided would be the basis for providing digital identity (under the guardianship of parent).
- The identity attributes like name, date of birth, gender, address are cryptographically signed by trusted authority.
- Everyone can control their verifiable digital identity without depending on any centralized registry through mobile device wallet.
- Through SSI model of Blockchain, the credential holder can give access to the previous credentials issued by other participants.
- Infosys Identity Solution enables auto-verification of these credentials, when exchanged among network participants.
- Thus, patients and doctors would have complete control and charge over their records. By giving access to relevant stakeholders at any point of time,

diagnosis and treatment of patients and the onboarding of new medical staff becomes fast and reliable.

- The new system would also lead to contactless application processing.
- Infosys' decentralized identity solutions paves way for patient centered healthcare ecosystem, which promises trust, transparency, efficiency and data privacy of all the participants.

## Broader use cases

Data aggregated can be used to track infections, deaths, recovery, vaccinations, research, immunization status and more. This allows superior monitoring of healthcare trends. By monitoring trends in healthcare, providers can do better analysis in various areas like inventing new vaccines, medical research, checking immunization status of patients, tracking infections in certain category of patients, recovery rate analysis etc. Anonymized aggregated data can help healthcare providers see patient information from a completely new angle, with plethora of supplemental insights.



## Conclusion

This pandemic has presented unprecedented challenges in the healthcare and wellness ecosystem. Verified and authentic data networks are of paramount importance here. Governments must start thinking about collaborating with key stakeholders to create a digital healthcare network and onboard each individual onto the network by providing a digital identity and a digital wallet in order to store personal and sensitive health data.

Through this network the sensitive data stays with the individual and only through consent mechanism the data is exchanged with other participants of network. The technology provides a framework and a key factor which determines that success is collaboration among key stakeholders.

By providing help in COVID-19 crisis, this technology can play a pivotal role by making us future-ready to face pandemics effectively.



## About the Authors



### Gaurav Tripathi

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Gaurav has extensive industry experience across a diverse set of technologies and brings in deep expertise in blockchain technology and distributed systems. He helps clients navigate through their digital transformation journey by providing strategic guidance on business case assessment and blockchain technology adoption, along with driving solution design and system integration. He leads the technology team at Infosys Blockchain Practice. He helps the team to pace up with the rapid advancements in blockchain by continuous assessment of the technology landscape, driving technology initiatives and inculcating best practices.



### Vivek Rastogi

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Vivek has a progressive industry experience in leveraging cutting-edge technology. He is adept at designing and developing solutions to meet business imperatives. As a senior technology architect with Infosys Blockchain practice, he helps in defining and implementing technological initiatives. He works with client transformation teams to define cutting edge solutions involving blockchain technology, which forms basis of the digital transformation.



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Ashima is responsible for business solution development for Governance and Identity solutions in Blockchain practice. She has 16 + years of IT experience covering banking and blockchain domains. She works closely with clients and development teams on blockchain initiatives and enterprise business integration.

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