HEKKA WHITEPAPER

A NEW DATA NETWORK TO TRANSFORM INDIA'S HEALTHCARE MARKET

hekka

- ABSTRACT -

One of the most significant and disruptive technologies of our generation is Distributed Ledger Technology (DLT) which is now being used by a variety of industries in order to improve their processes and create new powerful business models.

Whilst the healthcare industry has fallen behind other sectors, the development and usage of blockchain technology offers significant new opportunities, solving multiple pain points and thereby leading to superior new generation systems for the 21st century.

Multimodal disease-centric data, specifically high-quality machine-readable data from many global geographic areas, is one of the primary methods of advancing healthcare, including prevention, treatment, diagnostics and drug development.

Southeast Asia (including India), represents over 2 billion citizens and is thus positioned as a potential gold mine for the global pharmaceutical industry. However, the fragmented and incorrect structure of its healthcare data stands in the way of global collaboration, the development of new breakthroughs and discoveries.

Consequently, the entity that implements new innovative data management and digitalization solutions will become a significant and fundamentally prized healthcare technology asset.

To solve these problems, HEKKA Labs was formed by bringing together a group of talented innovators and a significant Indian healthcare network. Further established partner networks from other countries will follow, with Indonesia as a priority. These components are seen as key precursors needed to build a new decentralized healthcare network that can deliver significant digital data and alleviate many of the bottlenecks in the Southeast Asian healthcare system.

The culmination of these efforts will amount to the establishment of a fully decentralized healthcare data ecosystem. This will eventually be accessed internationally so global pharmaceutical, biotech, research and insurance companies, as well as other key actors, can access the data.

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- INTRODUCTION -

HEKKA Labs (HEKKA) is a start-up dedicated to developing the largest and only blockchain driven chronic disease data ecosystem in Southeast Asia. Enabling both augmented individualized medical support for 2 billion citizens and vastly improved data management for healthcare practitioners.

HEKKA's strategy will benefit all stakeholders, including ICO investors, patients, physicians and the healthcare community. Many of the current bottlenecks in this industry will be addressed in phases using DLT.

- VISION -

HEKKA's vision is to make a quantum leap in digitizing valuable healthcare data in Southeast Asia, combatting chronic disease, enabling superior healthcare management and discovering new treatments that will benefit millions of lives.

- MISSION -

HEKKA sets out three stages in its venture towards the liberation of the region's medical sector:

1. **Healthcare's largest DLT based network for the world's most important future market -** A plan to use DLT technology and existing networks to create Southeast Asia's leading decentralized chronic illness and immunology ecosystem.

2. **Trusted Data and Security –** HEKKA will provide a platform to safeguard patient data/identity, validate data authenticity, and enable data to be shared or viewed anywhere around the globe. This will address Southeast Asia's dismal track record in maintaining healthcare data.

3. **Give power to the community –** Allowing patients to control their own health records and identities whilst monetizing their efforts by providing data and referrals on a regular basis.

Over the long term, HEKKA plans to develop an ecosystem consisting of a decentralized global network for medical and associated healthcare providers, culminating in a targeted community of over 500 million patients. In turn, it will deliver billions of chronic disease biomarkers for Deep Learning, accelerating new healthcare breakthroughs.

- THE HEKKA TEAM -

The HEKKA team consists of innovators and industry professionals who straddle a wide range of disciplines including healthcare, data science, blockchain and finance. Consequently, it is well placed to execute its plans.

The team's principal role is to facilitate the establishment of the HEKKA ecosystem, comprising distributed and decentralized medical and healthcare-related participants in Southeast Asia.

The HEKKA ecosystem will enable information to flow across a highly dispersed and heterogeneous system.

The team's principal tasks are:

1. To generate an improved trust in Southeast Asian healthcare data, opening up a significant opportunity for both domestic and global healthcare markets. This, in turn, will set new levels of ethical standards and excellence.

2. To transform healthcare data management by introducing new technologies that will help users and physicians manage their data/identity in a safer, more efficient and lucrative manner.

- KEY FOUNDING PARTNERS -

HEKKA is partnering with the following companies to form the founding participants of the HEKKA ecosystem.

CURISIN is a new healthcare company that has acquired an accredited Indian healthcare network platform with 30 million patients and 40,000 partnered doctors. CURISIN will use its significant nationwide network and its chronic disease applications to drive scalable adoption of the HEKKA network, including onboarding millions of new users and their data.

IMMUNIDEX is a start-up offering blood tests, DNA tests and biomarker focused applications, driven by proprietary AI, which can identify early immune related risks, help prevent disease and assist in slowing biological aging.

TELEMEDCINE INDIAN CO (Pending) is a start-up offering multiple telemedicine services, blood tests and health screenings, including COVID-19 testing. They capture all of their patients' medical records and are providing key biomarker data for the HEKKA ecosystem.

- PROBLEMS LINGERING IN INDIAN HEALTHCARE -

According to Arvind Kasthuri [1] from Department of Community Health, St John's Medical College, Bengaluru, Karnataka, India:

"The Indian healthcare scenario presents a spectrum of contrasting landscapes. At one end of the spectrum are the glitzy steel and glass structures delivering high tech Medicare to the well-heeled, mostly urban Indian. At the other end are the ramshackle outposts in the remote reaches of the "other India" trying desperately to live up to their identity as health subcenters, waiting to be transformed to shrines of health and wellness, a story which we will wait to see unfold. With the rapid pace of change currently being witnessed, this spectrum is likely to widen further, presenting even more complexity in the future".

Access to healthcare services is hindered by barriers to access healthcare centers, financial services and medical information [2].

In the specific case of chronic disease, Vikram Patel et al [3] noted that:

"Sufficient evidence exists to warrant immediate action to scale up interventions for chronic diseases and injuries through private and public sectors; improved public health and primary health-care systems are essential for the implementation of cost-effective interventions".

To meet this challenge of resolving chronic diseases, Biomarkers are features that are tested and analyzed as indications of normal biological processes or pharmacologic reactions to treatment. These are necessary for the treatment of chronic illness [4]-[5].

BIOMARKER MANAGEMENT IN INDIA AND INDONESIA

To accurately identify chronic diseases, many biomarkers must be used throughout time. It is critical for both science and healthcare to have access to superior digital biomarker data that is needed for superior healthcare management, including diagnostics. This is not yet available in a streamlined digital format in these countries, presenting an unparalleled opportunity.

DOCUMENT HOGGING

Access to patient medical records in India and Indonesia are restricted to organizations such as hospitals and doctors' offices. Medical records are kept strictly by the doctor and/or the organization. If a patient wants to share their medical records with someone else, they must first get permission from their doctor. Only then can they divulge any records to a third party.

FRICTIONAL TRANSACTION OF DOCUMENTS

In the event of chronic disease, a doctor may need to examine MRI scans from one institution, an ECG from another, and so on, in order to obtain the biomarkers needed for an appropriate diagnosis. As a result, accurate and prompt diagnosis is difficult, and often the medical records are not all in the same format. Some are in the form of handwritten notes, whilst others are in digital format, both organized and unstructured.

- HEKKA'S PROPOSED SOLUTION -

HEKKA is proposing a two-pronged strategy to build its ecosystem.

1. Deploy an Initial Coin Offering (ICO) through a crypto token known as the HEKKA Token.

2. Build a pluggable solution that enables participants to engage with the HEKKA ecosystem without major disruption to their existing systems.

HEKKA Token

The biomarkers from vast numbers of Southeast Asian patients have value that cannot easily be accounted for by their existing respective healthcare systems. These are currently untapped and if used productively could drive the value of the ecosystem significantly. A key element of DLT is the Token Economy, which is the basis for enabling participants to account for a means of value [6].

HEKKA will deploy a crypto asset token and position it for an ICO, under the symbol HEK. This will enable users of the HEKKA ecosystem to reap the benefits of the network as both an investor and user.

HEK will be an ERC-20 standard token complimented by an ATOM token (Points) system responsible for all of the HEKKA platform's primary sources. This will be a key component in letting all prospective users interact with the platform's different levels of service.

Token Name	**HEK**
Total No. Of Tokens	**10B**
Token Network	**ETHEREUM**
Token Standard	**ETH-20**
Target Fund Pre-ICO private sale	**Up to $2 million**
Target Funding ICO	**$20 Million +**
Tech Development and Management	**20%**
Founders and Key Employees	**25%**
Advisors and Early Investors	**10%**
Operational and Community Reward	**35%**
Consortium Network Partners	**10%**

Demand for the token will arise through an ongoing network effect driven by its significant partner networks. Their users will acquire HEKKA Coins in order to access the network services, including:

1. Data search, data analytics and data acquisition by businesses in healthcare, pharmaceutical, insurance and science-based institutions.

2. Subscription fees to join business networks from multiple industries.

3. The purchasing of goods and services by users such as partner diagnostics, involving multiple tests to obtain discounts and earn loyalty points.

4. Third party products and service offerings from consumer healthcare companies to insurers.

5. Intrinsic value of the ecosystem as it adopts a true network effect by adding multiple new parties.

HEK's different aspects:

1. It enables communication amongst HEKKA users including those outside the network. HEK can be used to pay for the cost of transferring data and information, as well as any platform related services, therefore sustaining the HEKKA ecosystem. HEK will have an internal pool that will take care of all platform-related issues.

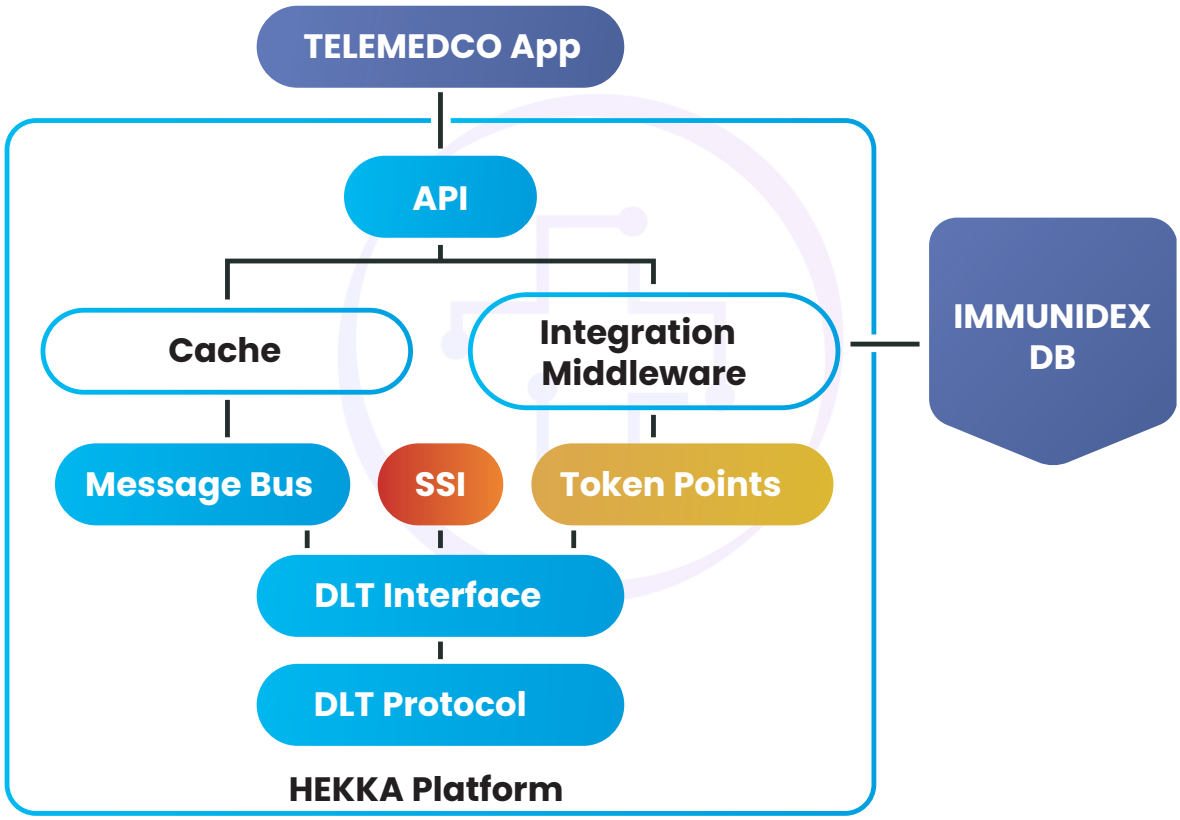
2. HEK will be issued with a 2.5% percent inflation rate in the first year and a rate adjustment each year following that. The site is free to use, but data trade will incur a 10% transaction charge, which will be added to the pool. Every user will receive a complimentary 1GB of data storage as well as 1GB of bandwidth per month, which may be adjusted based on usage. Any HEK used to buy HEKKA Atoms will be burnt in order to increase the token price.

3. The Network, promotional utilization, free storage space and the creation of apps and smart contracts will receive 20% of the entire HEK pool. In the conversion of HEK for Atom points and vice versa, 20% will be utilized. Finally, 20% will go to operations and tech development.

HEKKA PLATFORM

The HEKKA platform will provide the basis to create the HEKKA ecosystem.

The HEKKA platform is an integrating subsystem that is an adapter or stand-alone system, allowing institutions and people to keep track of and cryptographically verify the movement of medical records. It allows an existing system to make use of DLT, cryptographically secure communication channels, partaking in crypto economics using the HEKKA Atom and a Self-Sovereign Identifier (SSI), without requiring too many adjustments.



The DLT layer provides a cryptographically secure and immutable ledger of transactions amongst participants in the HEKKA ecosystem.

The integration layer provides cryptographically secure messaging channels between an existing system and a consuming application. Movement of data in this layer is recorded immutably in the DLT.

The Token/Points will provide a mechanism to interact with the HEKKA Atom later in development.

The SSI layer provides a mechanism to enable users to independently manage access and cryptographically verify their own medical records.

- HEKKA'S PLATFORM DESIGN PHILOSOPHY -

The HEKKA platform is a modular system comprising several layers. The principal subsystems are the DLT layer, the integration layer, the Token/Point layer and the SSI layer.

The DLT Layer

DLTs are implemented typically with a class of technology known as blockchain or other non-blockchain-based technology. HEKKA will focus principally on using blockchain-based technology.

There are two types of blockchains, private and public [7].

Private blockchains include Hyperledger Fabric [8] and other customized solutions based on a framework such as Tendermint [9], which are also options. This type of blockchain is useful for private or highly regulated communications between participants and in a situation where the speed of transactions is paramount.

Public blockchains include Ethereum [10] and many others are also options for the HEKKA platform. This type of blockchain gives the HEKKA ecosystem global reach.

The HEKKA platform is designed to use a combination of public and private DLTs on a fit-for-purpose basis.

The Integration Layer

The integration layer serves as a proxy between an existing IT system and the user of that system, either a mobile, desktop or web client. It is comprised of an Application Programming Interface (API), integration middleware, cache store and messaging bus.

The API and integration middleware are interfaces to enable client applications to talk to an existing IT system.

The Message bus and cache components serve as a buffer and/or interface to the cryptographic wallet.

The movement of data in the integration layer will be:

Cryptographically secure.

Tracked and recorded in the DLT layer to serve as an audit trail.

HEKKA Atom - The Token/Point layer

The HEKKA platform will also utilize a separate token called the HEKKA Atom, which is a points-based system that evaluates platform engagement and assigns a reputational score to the HEKKA ecosystem participants' services.

The HEKKA Token/Points layer will provide the mechanism to interact with the HEKKA Atom.

Some useful facts about the HEKKA Atom:

1. These atoms are not transferable between users. They also can't transact with them outside of the platform. They are a necessary component of an Objective Scaling System in order to maximize data transfers. These points essentially indicate whether or not a contribution is made on the participant's behalf.

2. The HEKKA Atoms represent a level playing field, so each participant is rewarded by effort and effective actions rather than skill. HEK tokens can be used to purchase Atoms. On the other hand, in order to get a higher number of points, one must actively participate in data trading or production, and sharing data with specialists can help earn large amounts of Atoms.

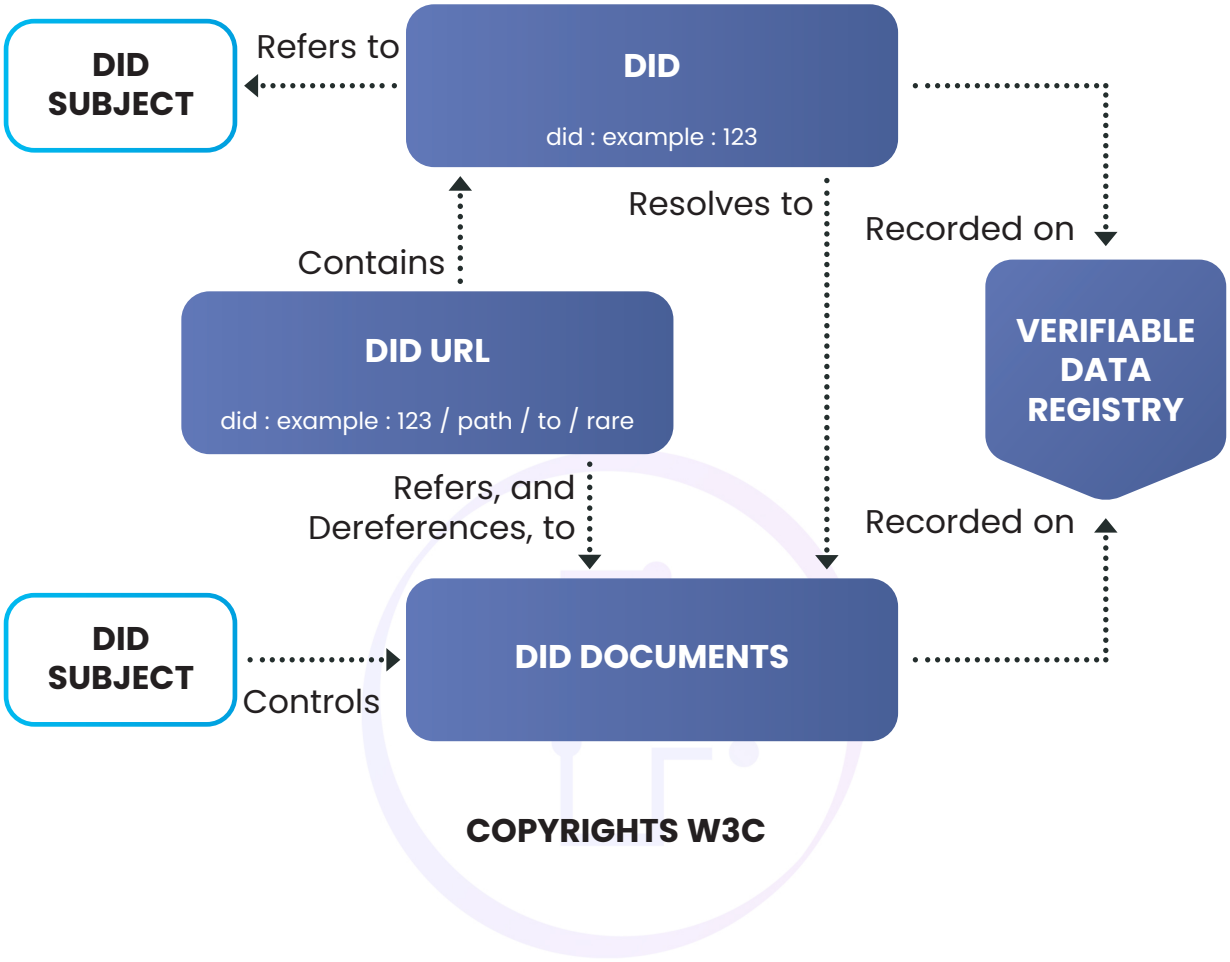
3. Based on the projected reported value of HEK, 5000 Points should be worth $10, making it a reasonably acceptable entrance criterion. In addition, all activities inside the platform will be awarded with a limited number of points to promote continuing participation. After six months of possession, points can be converted back to HEK.

4. HEKKA will give a real-time conversion rate because the conversion rate will continually adjust. To circulate fresh points and preserve their worth, any points converted back to HEK will be destroyed. Every month, the settlement of points will be performed, and leftover points will be burnt in a 12-month cycle.

5. Finally, Atoms can be utilized for peer-to-peer (P2P) verification. Points must be staked in order to be confirmed on the platform, and the verification process will be carried out anonymously by voting. Unverified individuals will lose Atoms, while verified individuals will gain them.

The SSI Layer

The SSI module of the HEKKA platform employs an architecture-based World Wide Web Consortium (W3C) specification[11].



The key element of HEKKA SSI modules is a DID (Decentralized Identifier), a DID subject, a DID controller, a DID document and a verifiable data registry.

DID. HEKKA's SSI module will enable any user (known as the DID Controller), to independently generate web style cryptographic identifiers, DID, to both globally and uniquely identify themselves.

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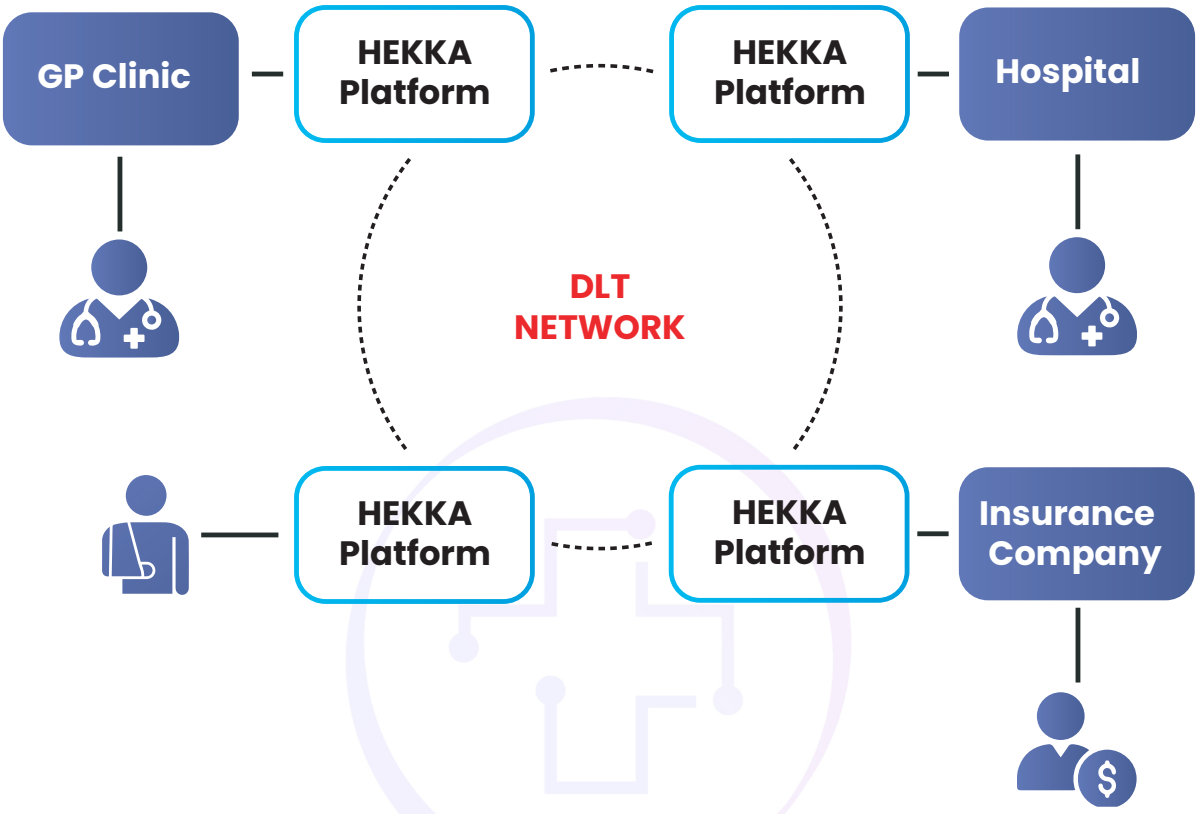
DID Subject. The DID can be used to identify anything the DID controller assigns as a DID subject. A DID subject could be a patent medical record or any digital asset.

DID Document. The DID is resolvable through a standardized document known as a DID document. The DID document provides information about the relationship between the cryptographic keys and the source of the DID subject, as well as anything else the DID controller specifies.

The verified data registry. This is the database for the DID Document that will be implemented on the HEKKA platform utilizing a combination of DLT and secure data storage. The DLT will enable the user of the platform to verify its source of action to modify the document. The secure data storage will then keep the DID document safe.

- BUSINESS AND USER BENEFITS -

The HEKKA platform will serve as the glue to tie participants into the system whilst enabling any participants to transact with each other securely within the HEKKA ecosystem.



The goal is for HEKKA Labs to simply distribute the HEKKA platform to participants within the ecosystem so they can independently plug into their existing IT systems and reap the benefits of DLT.

The user and business benefits from this type of ecosystem are:

1. User Benefit - Access through SSI will give users the right to control their healthcare data management securely and use our partner's disease risk score diagnostics through the input of key biomarker data. This can help millions of users generate superior health outcomes throughout Southeast Asia.

2. User Benefit - Monetize patients' medical data through HEKKA's points-driven system whilst maintaining data integrity and privacy.

3. User Benefit - Due to the decentralized nature of DLT, sharing medical data will play a very crucial role in managing identity in multiple healthcare settings. User/doctor benefit - Having all the required information continually accessible from multiple locations across Southeast Asia enables an efficient patient-doctor relationship.

4. User and Business benefit - the most important aspect related to any medical record is to keep it tamper-proof. This benefits users and the healthcare industry to safeguard the data, its validity, and usefulness.

5. Business Benefit – the digitizing and structuring of medical records eliminates piles of hectic paperwork. This enables a paradigm shift in healthcare management for the multiple actors in the space.

6. Business and User Benefit - Compiling the medical results directly from the doctor's clinic to blockchain to the next connected person will establish a chain link of reliability and peace of mind. All of this will be in reach once HEKKA is adopted.

- HEKKA USE CASES - INDIA -

HEKKA has identified the following use cases for its first targeted market, India:

TRUST IS KEY

Due to its fragmented and disorganized approach, India is a significant piece of the missing puzzle in the global healthcare industry. One of the big keys for the advancement of healthcare prevention and breakthroughs is real, relevant and accredited Indian healthcare data that can be safely shared.

INCENTIVIZING PARTICIPANTS

Incentivizing distributed and decentralized participants in the healthcare system in India is challenging as there is no uniform way of accounting for services rendered by participant. Using a third party to manage accounts can be costly. The use of crypto tokens is less costly, even more so for the users that contribute to the system.

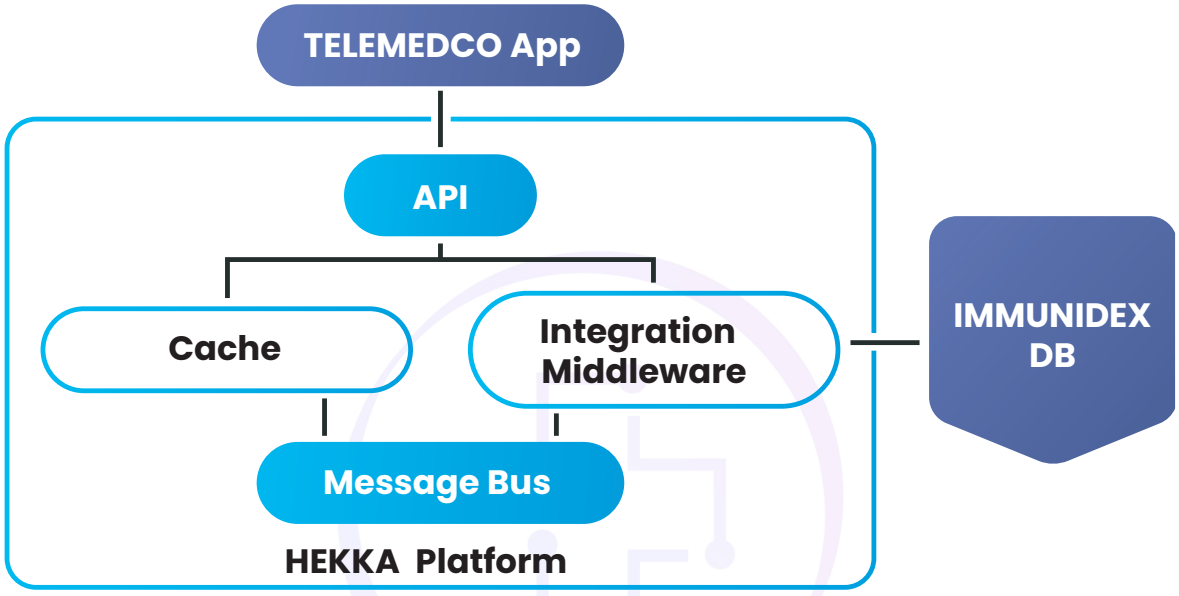
FROM CENTRALIZED CHAOS TO DECENTRALIZATION

To achieve the trust of patients and the industry, DLT is required to make a paradigm shift from the fragmented centralized database approach to a more trustworthy and secure environment where patients' identities and data are safe and secure. HEKKA aims to return control to the consumer and improve the efficiency of the industry.

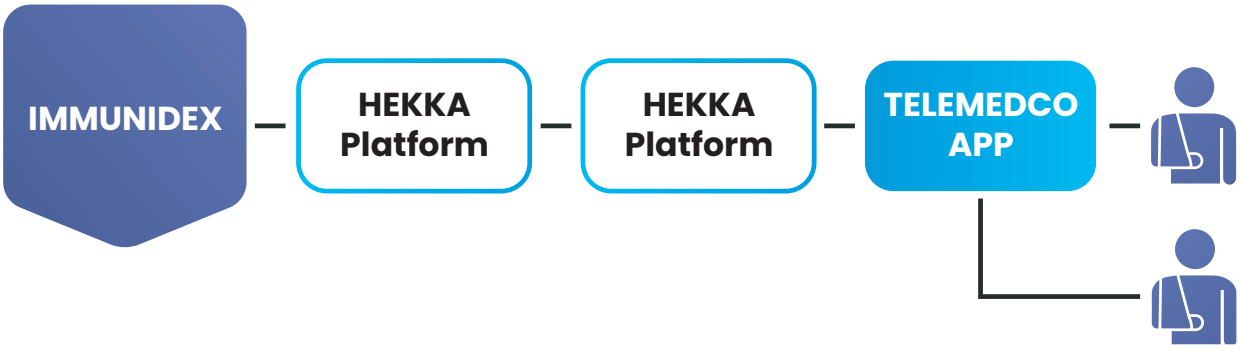
- ROADMAP -

Phase 0: Integration layer Implementation

Goal: A functioning HEKKA platform integration layer with relevant cryptographic features.



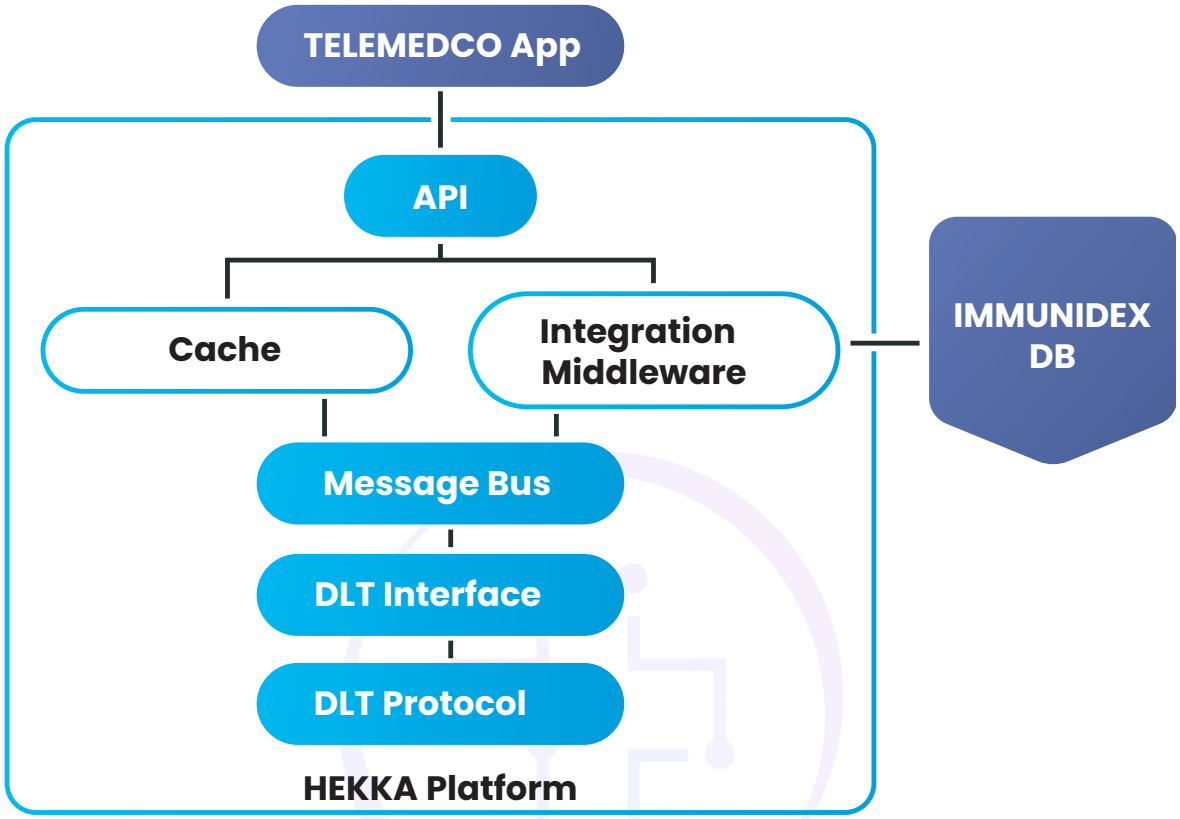
Test Case: Enable HEKKA platform to secure movement of biomarkers from its users via TELEMEDCO app to IMMUNIDEX.



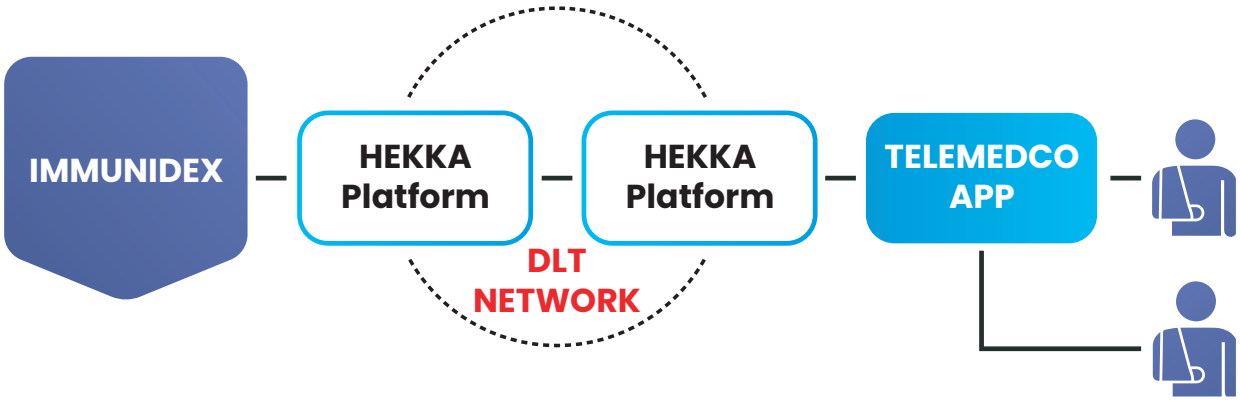
Partners: IMMUNIDEX and TELEMEDCO.

Phase 1: DLT Layer Implementation – Part 1

Goal: A functioning HEKKA platform with DLT.



Test Case: Users of TELEMEDCO app to upload biomarkers to IMMUNIDEX and have the transactions recorded in the DLT.

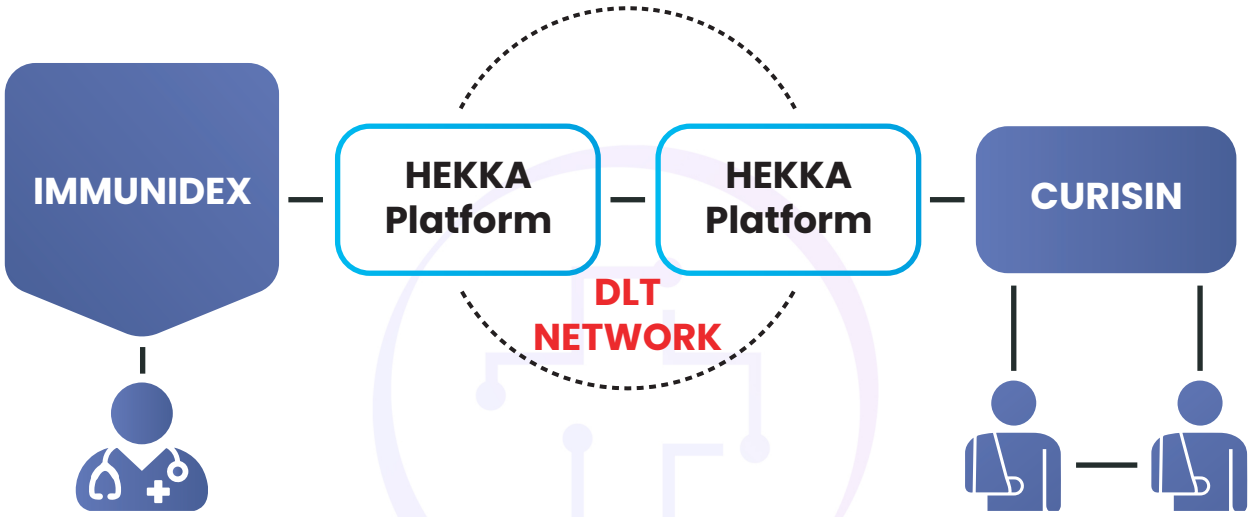


Partners: IMMUNIDEX and TELEMEDCO.

Phase 2: DLT Layer Implementation – Part 2

Goal: Enable HEKKA platform to transact between two organizations via DLT.

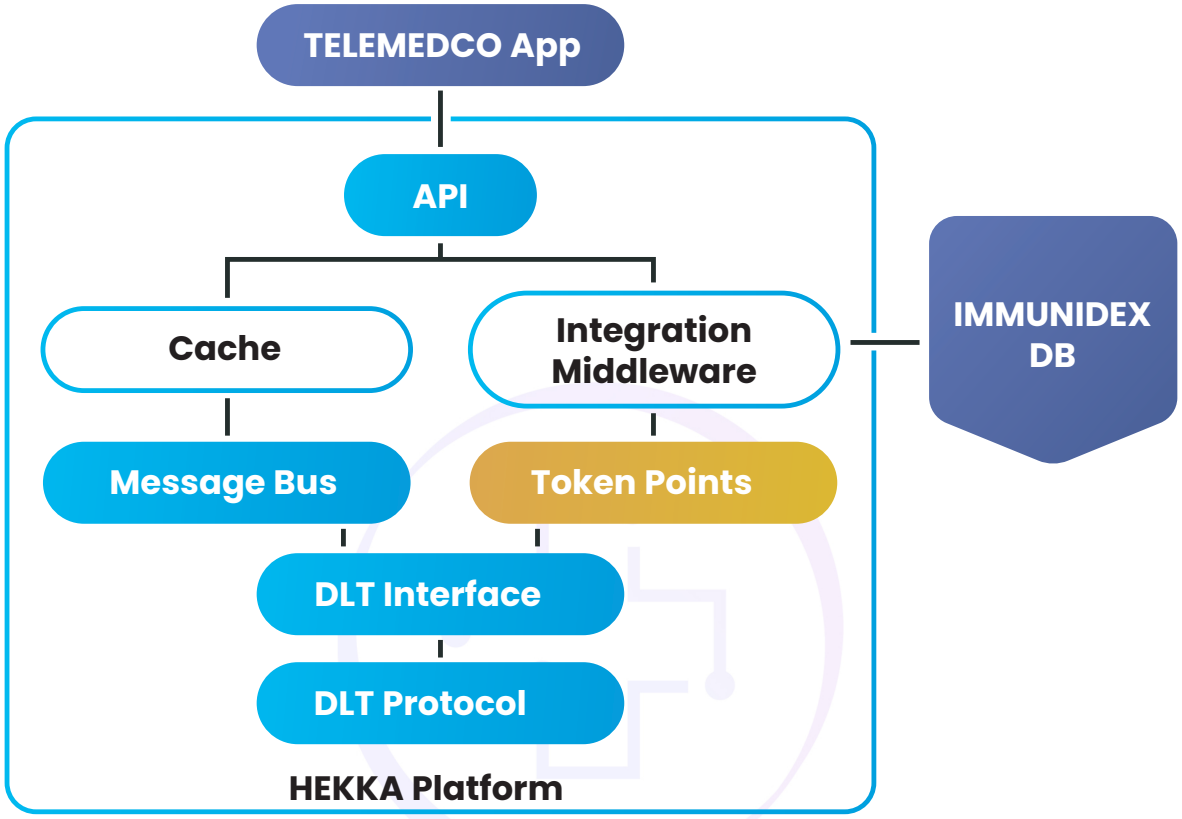
Test Case: HEKKA platform to operate as DLT proxy between IMMUNIDEX and CURISIN.



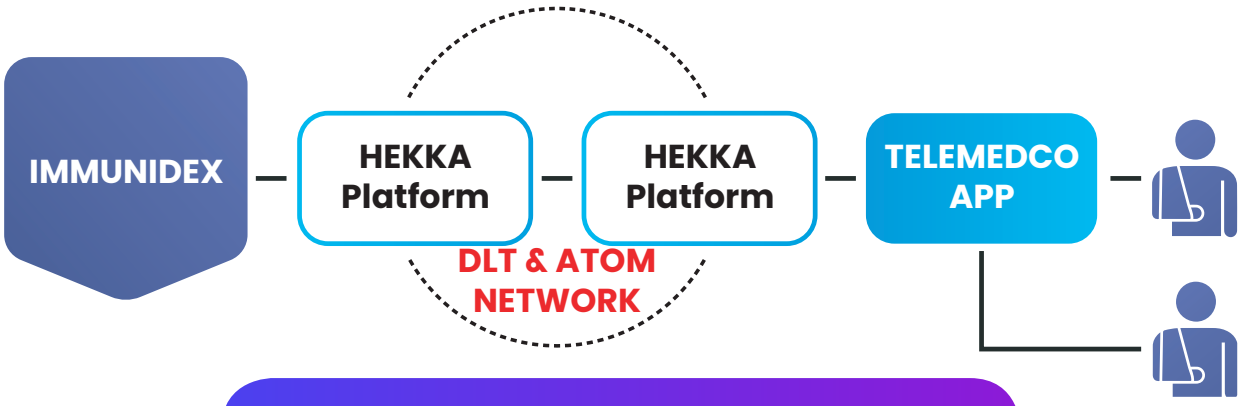
Partners: IMMUNIDEX and CURISIN as test participants

Phase 3: Token Layer Implementation – Part 1

Goal: A functioning HEKKA platform to enable a user to transact with an organization underpinned by HEKKA Atom.



Test case: A user of the TELEMEDCO app uploads biomarkers to IMMUNIDEX where the user is presented a HEKKA Atom.

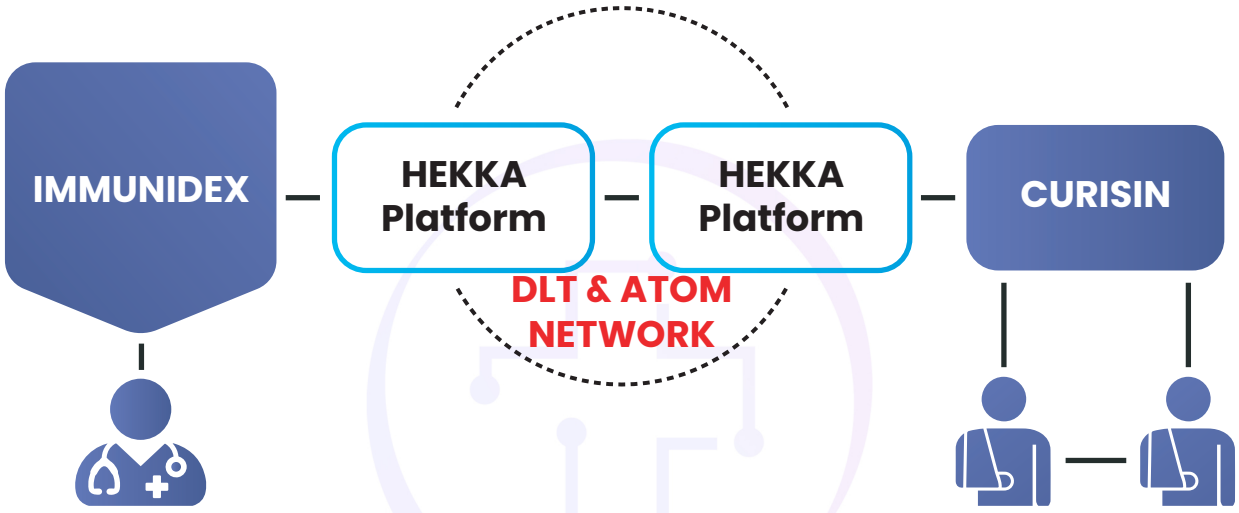


Partners: IMMUNIDEX and TELEMEDCO.

Phase 4: Token Layer Implementation – Part 2

Goal: A functioning HEKKA platform enabling two organizations to transact with each other underpinned by a HEKKA Atom.

Test Case: An ecosystem involving IMMUNIDEX and CURISIN.

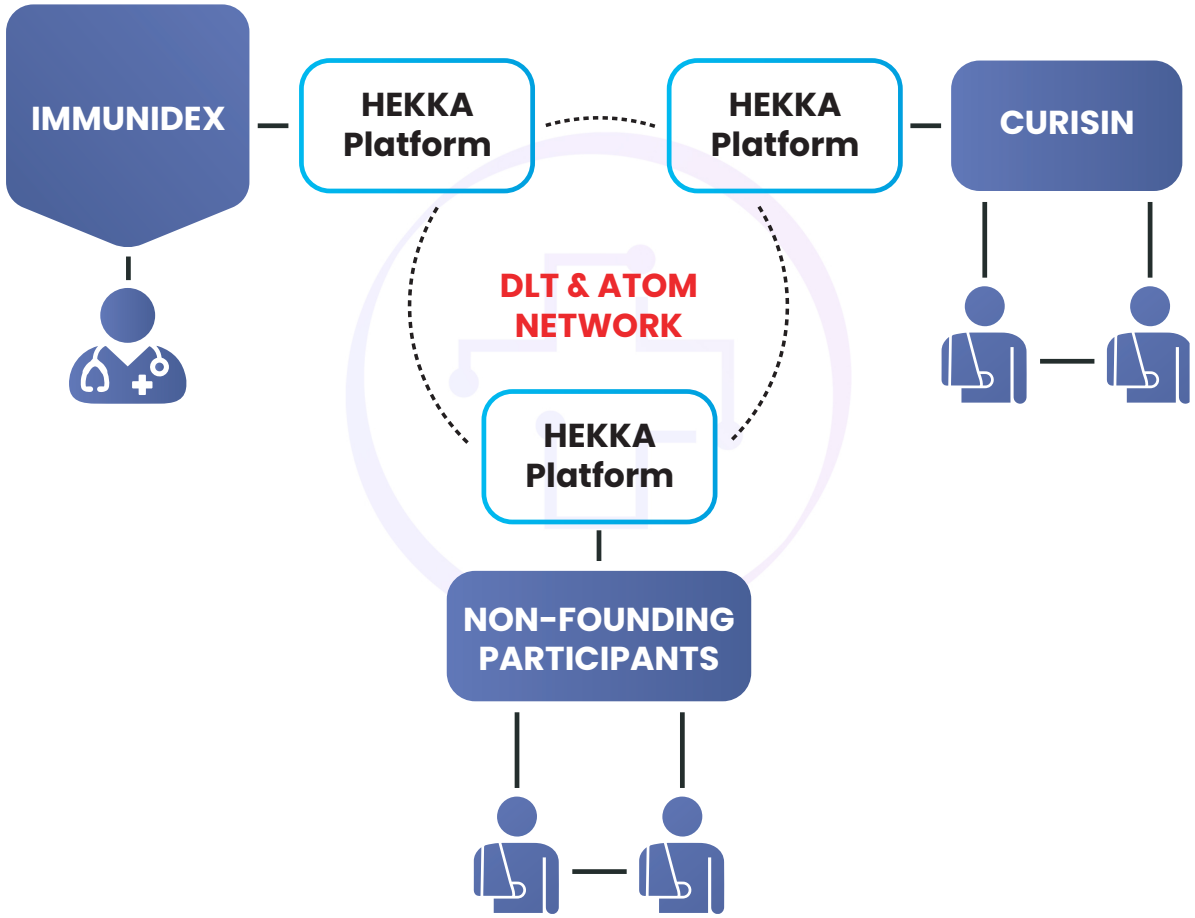


Partners: IMMUNIDEX and CURISIN

Phase 5: A Minimum Viable Ecosystem for India

Goal: A functioning HEKKA ecosystem beyond founding partners within India.

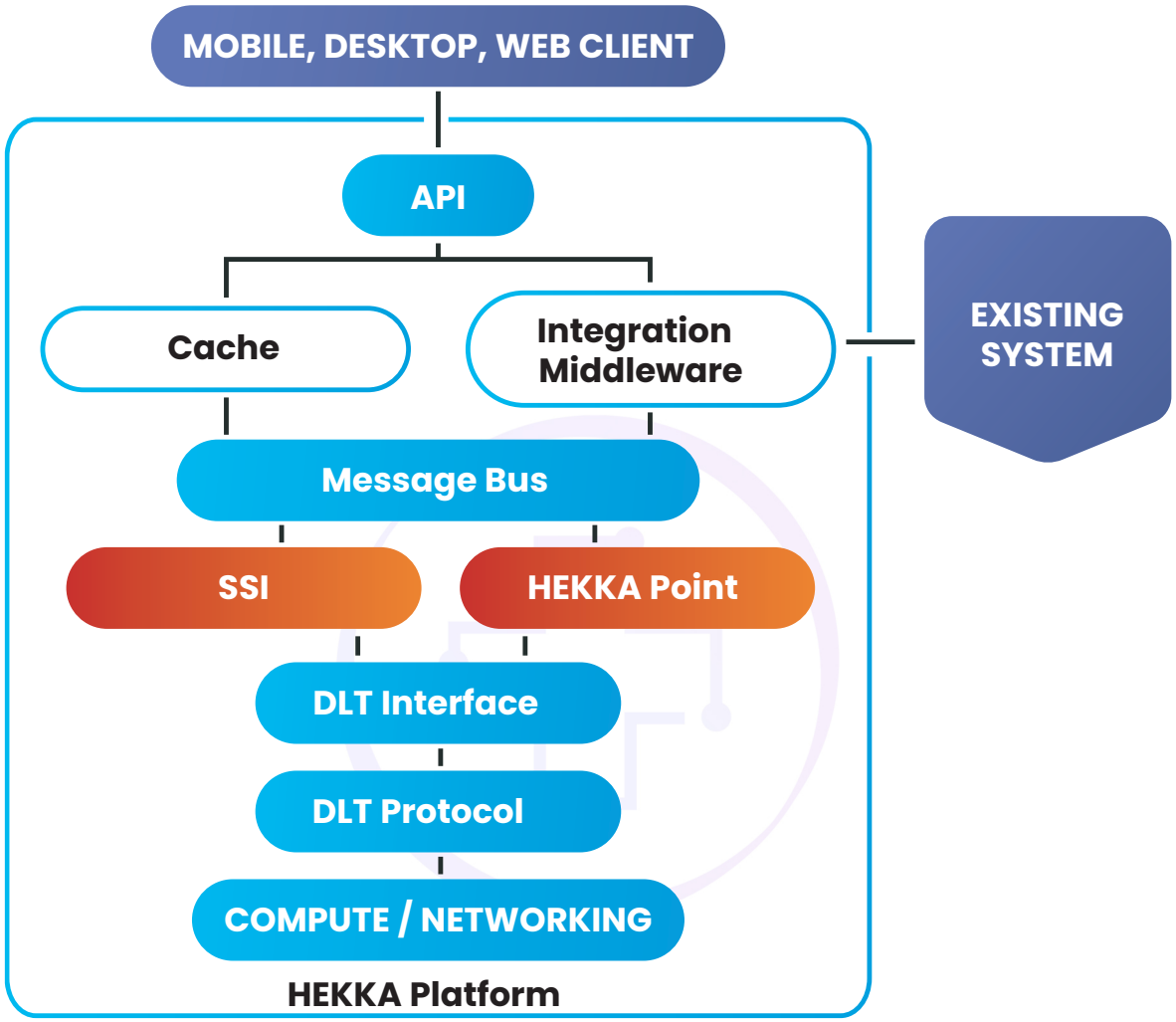
Test Case: Founding and non-founding partners to exchange data.



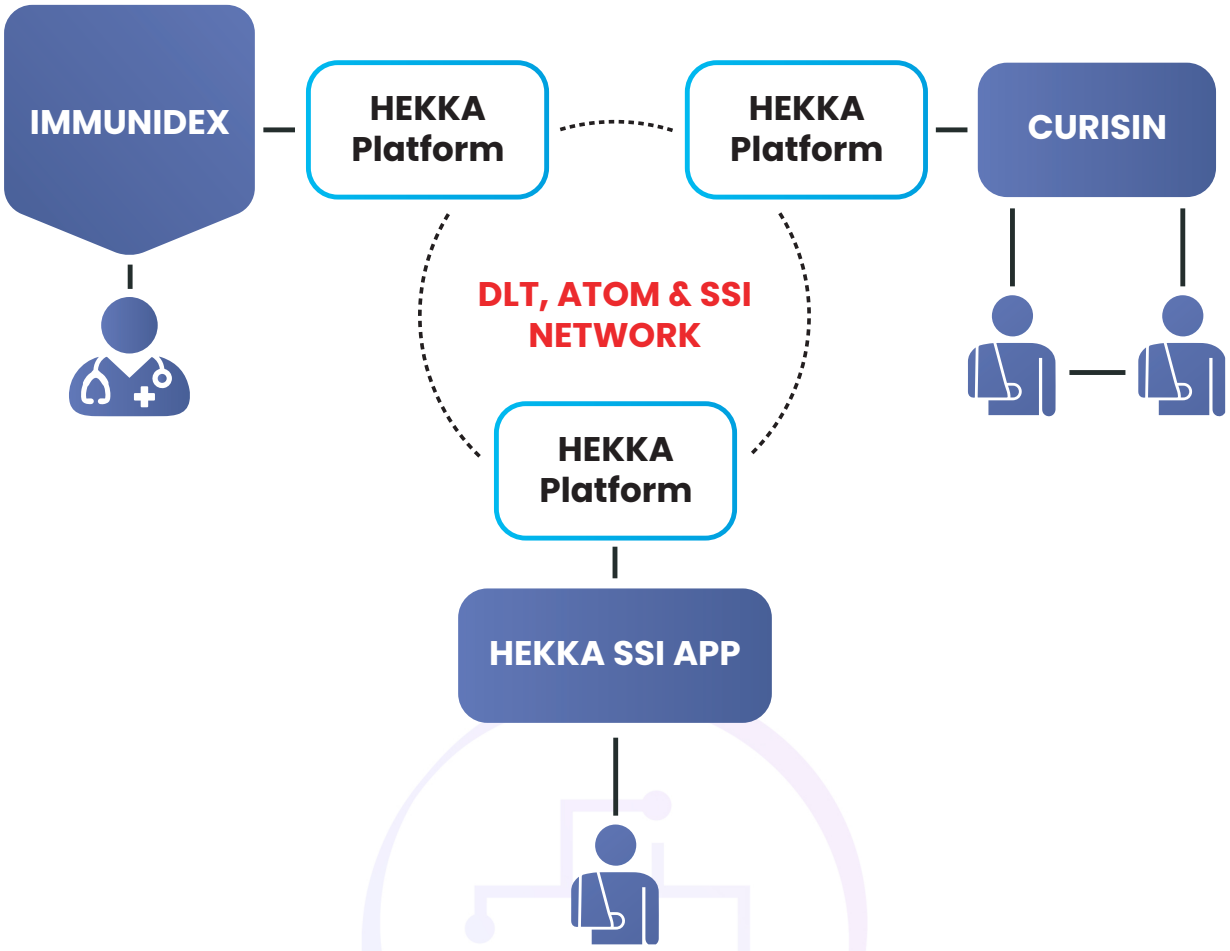
Partners: To be determined.

Phase 6: Initial SSI Layer Implementation

Goal: A functioning HEKKA platform with an SSI feature.



Test Case: Enable users to directly join the network and transactions with IMMUNIDEX and CURISIN via SSI



Partners: IMMUNIDEX and CURISIN

Future Phases

Goal: An ecosystem to include participants outside India

Test Case: Expand the ecosystem to include non-Indian participants in Indonesia

Partners: To be determined.

- ROUTE MAP -

H1 2022

Trial Network enabling secure transactions between 2 founding members of the HEKKA Ecosystem

H2 2022

Trial Network enabling auditing of the transactions between two founding members of the HEKKA Ecossytem

H3 2022

Deploy minimum production based HEKKA Ecosystem involving two founding members and one non founding member

H4 2022

Trial network for token for the ecosystem

End 2022 minimum viable secure DLT based network for healthcare institutions.

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