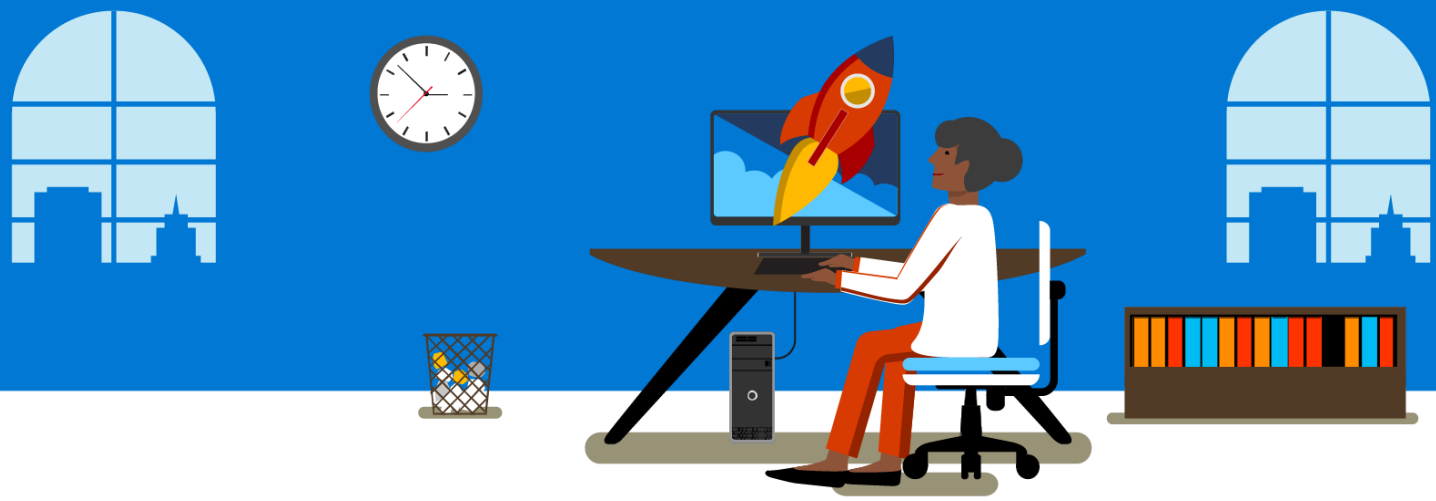
Build Innovative Solutions on Azure

Explore. Learn. Build



Microsoft

Team
SHARE TO SECURE

Microsoft Azure Hackathon

Theme : Insurance and Banking

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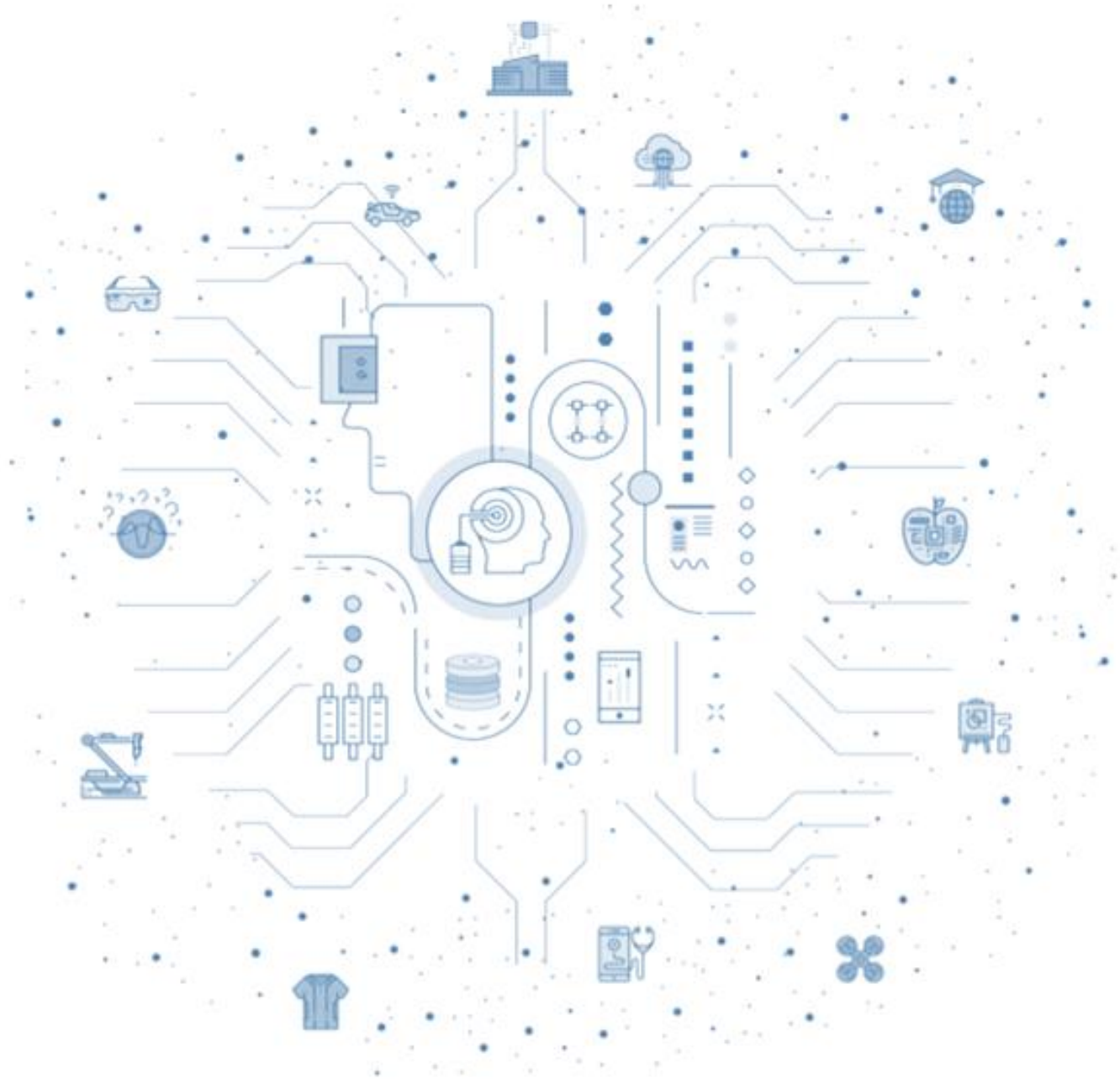
Insurance Industry

CONTEXT

Insurance is a sizable market where a surprisingly high fraction of funds is lost to fraud and inefficiency.

Globally, premiums for life and non-life insurance plans sum to over $4 Trillion USD. In the United States, where 2016 premiums exceeded $1 trillion USD, the '**Coalition Against Insurance Fraud' estimates that over $80 billion were lost to fraud**.

The Indian insurance market is over 84 billion USD in size as of 2017, and growing rapidly across all service lines driven by rising incomes, improving life expectancy, and new insurance products.



Problems In Insurance Industry

In spite of its size, growth, and importance, the market suffers from archaic systems and broken processes that are opportunistically exploited by all parties involved:

- Insurees make **multiple claims** across different insurers for a single loss
- Insurees **withhold information** from insurers that may affect their premiums
- Insurance brokers **pocket premiums** not meant for them
- Insurers request **compensation for services** never submitted or upcode services rendered into higher price tiers
- **Lack of trust between Insurers** over data monopoly and fear of security over loss of business.
- Inability of Insurers to **digitize** and leverage over data of core businesses inside industry.

The cause for the problems:

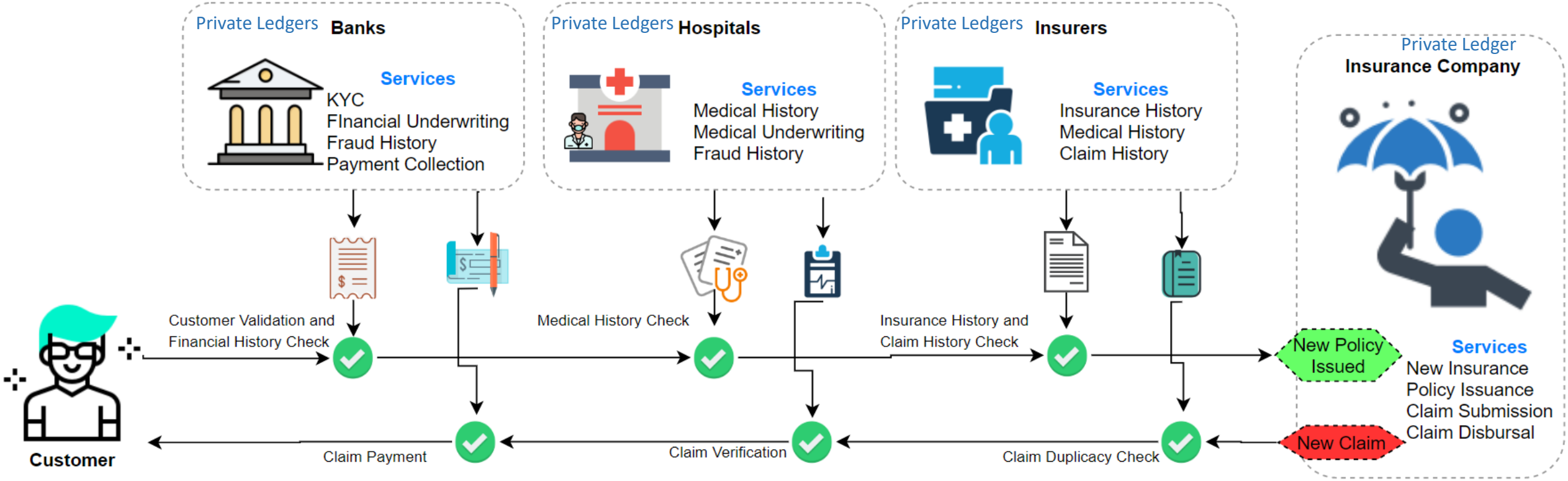
Difficulty in stakeholder coordination: Multiple parties involved (consumers, brokers, insurers, reinsurers) with complex interactions, lack of interoperability across databases, and lack of socio-political will to collaborate (fear of free-riders and unequal benefits from the collaboration)

Slow or manual processes: Even if (or after) the requisite data is shared across the parties, claims need to be settled and payments need to be made. This takes time as money changes hands using banking systems which are separate from the insurance information systems, and each party must manually update their system once funds are received.

Strong financial incentive to exploit system vulnerabilities: There is a lack of systems to discover fraud in real-time and to hold parties accountable. We are talking about billions of dollars in insurance premiums.

Ideation – Blockchain Enabled Insurance

A Blockchain based Onboarding will take less time for a customer and a claim submitted will take less time to be paid.



Note: In such a system, Customer has to first authorize an insurance company to check his/her background using available data sources.

(This work flow is for Life/Health Insurance and similar models can be used for general insurance)

Ideation –What Is In It For Private Players?

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	BANKING SECTOR	HEALTHCARE	INSURANCE
EARN	**Monetize Customer Data** With services such as KYC and financial underwriting	**Monetize Patient Data** With services such as medical history & claim.	**Monetize Customer Data** by providing value of Life data, claim history
OPTIMIZE	**Optimise Service Quality** Easy on boarding and secure payments.	**Optimise Service Quality** Medical history to serve Patients better.	**Optimise Service Quality** Reduce TAT & dependencies.
REDUCE-RISK	**Reduce Fraud** Improvements in core business fundamentals.	**Reduce Misdiagnosis** Medical history to save cost and time.	**Reduce RISK** Offer more cover with lower premiums.
DIGITIZE-DATA	**Digitize Customer Data** With monetary incentive	**Digitize Patient Data** Such as Electronic health Record and get paid for it.	**Digitize Customer Data** With monetary incentive

Solution - Share To Secure

Insurance systems need a reform. First, we need to digitize and securely share claims data and other associated data (health records for health insurance, automobile records for auto insurance, etc.) across stakeholders. Second, we need to codify business rules and automate claims processing, such that payments are automatically and quickly transferred when claims are verified.

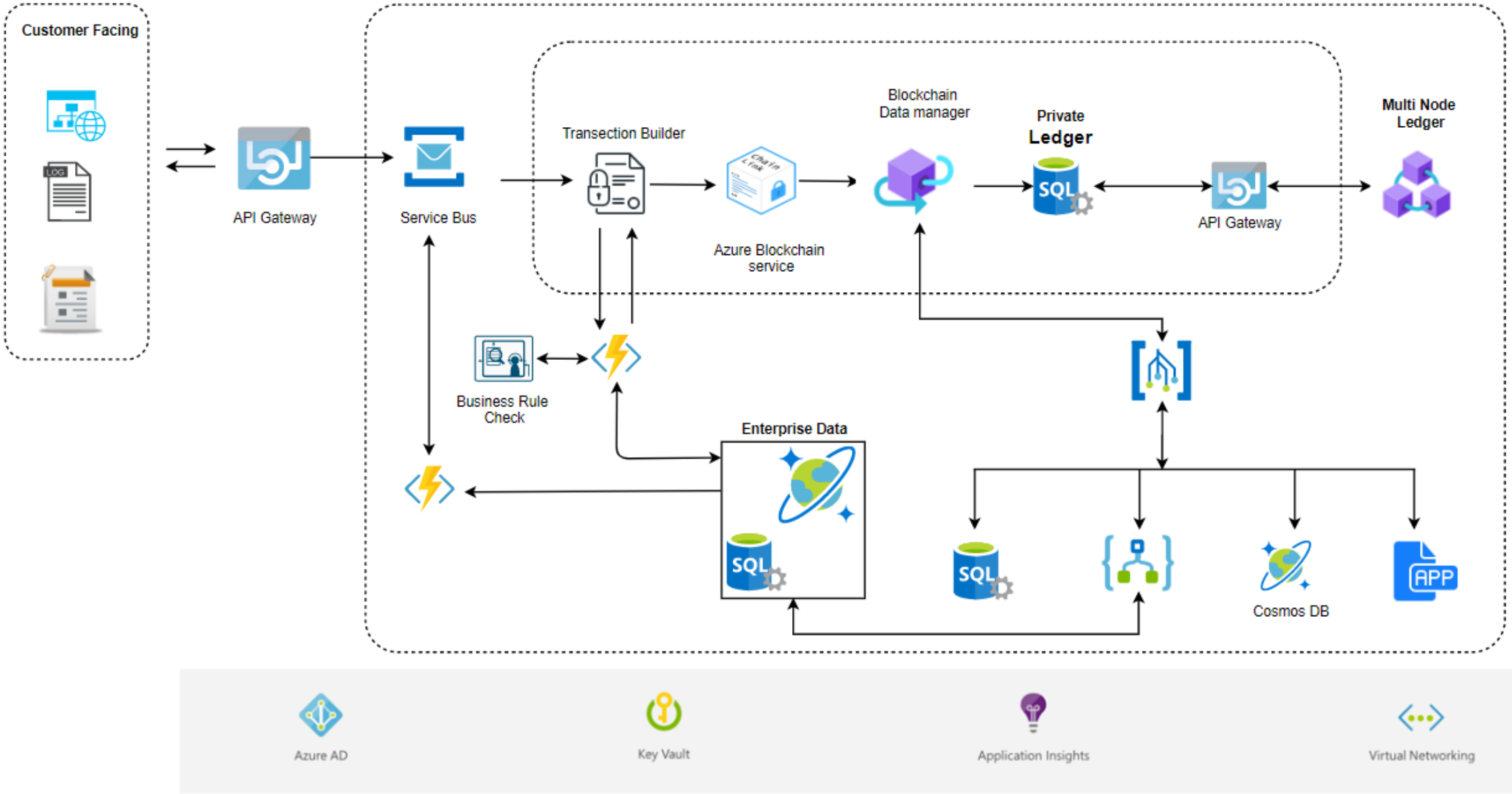
SHARE TO SECURE Blockchain solution can help by enabling secure data sharing and claims processing:

Shared view of truth: A blockchain system would allow same-time access to the shared truth on patient health (past and present), processing status of the current claim, the history of past claims, etc. This shared database should be permissioned, such that the various parties may only read or write fragments of data that pertain to them.

Programmable transfers: In a 'smart contract' enabled solution - when the encoded conditions are met (e.g. a claim is validated), funds can instantly and frictionlessly be transferred from source (insurer) to destination (consumer). Insurance is a use case requiring financial exchange, and blockchains provide the unique ability to handle financial exchange on the same platform as the information system.

Transparency for relevant institutions: A blockchain would remove the need for unnecessary middlemen and force integrity and accountability upon those that may previously have been corrupt. The insurance process would benefit from a system in which no party owns the data yet multiple stakeholders can view and modify it – where all have same-time access to the shared truth on patient health (past and present), processing status of the current claim, the history of past claims, etc.

Architecture - Share To Secure Blockchain Consortium



Workflow Details - Share To Secure Blockchain Consortium

BLOCKCHAIN ENABLED CUSTOMER ONBOARDING & CLAIMS PROCESSING

Appliation Roles

- Owner/Buyer (B)
- Insurance Provider (IP)
- Bank Underwriter (BU)
- Medical Underwriter/ Hospital (MU)

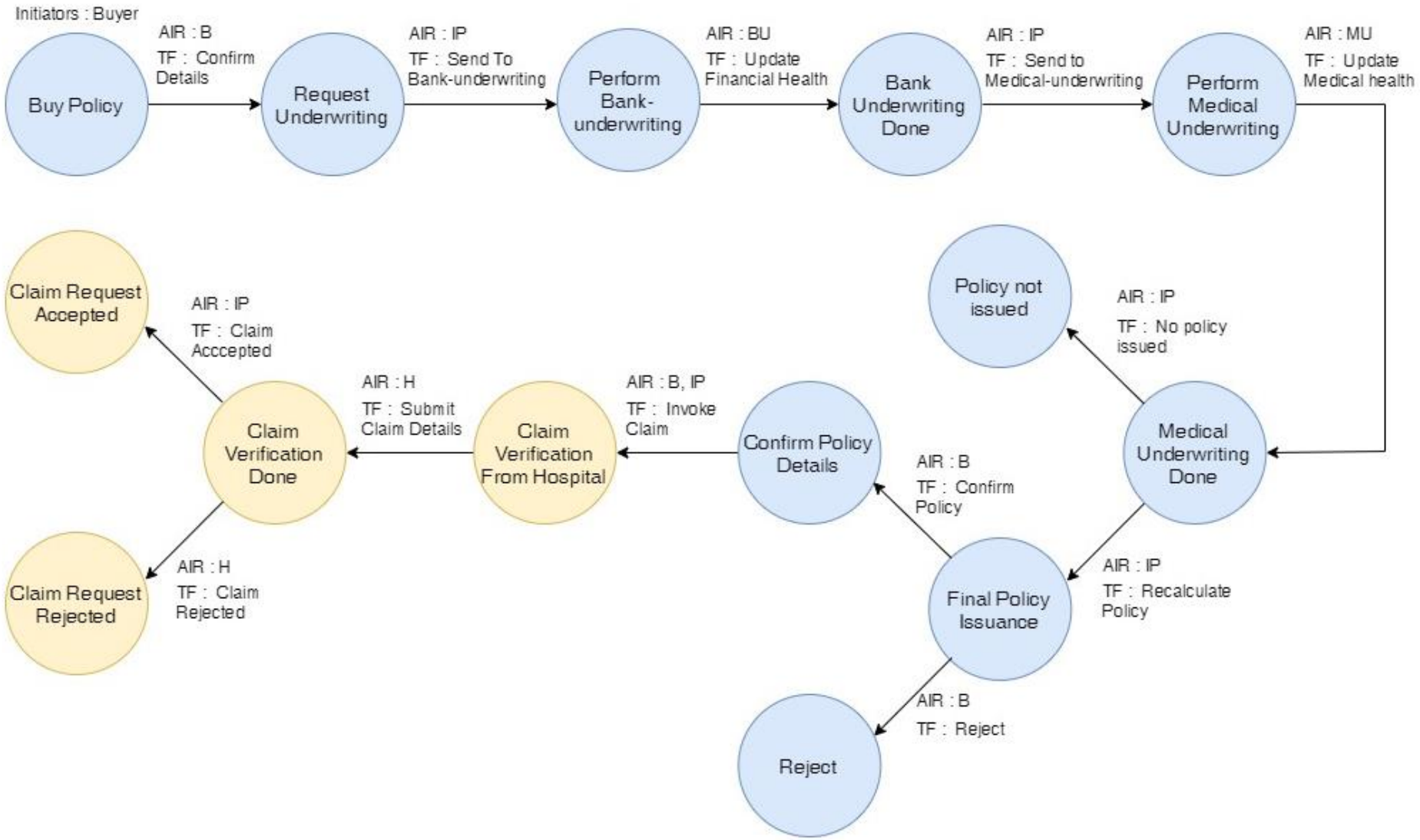
Legend

- TF : Tansition function
- AR : Allowed Role
- AIR : Allowed Instance Role

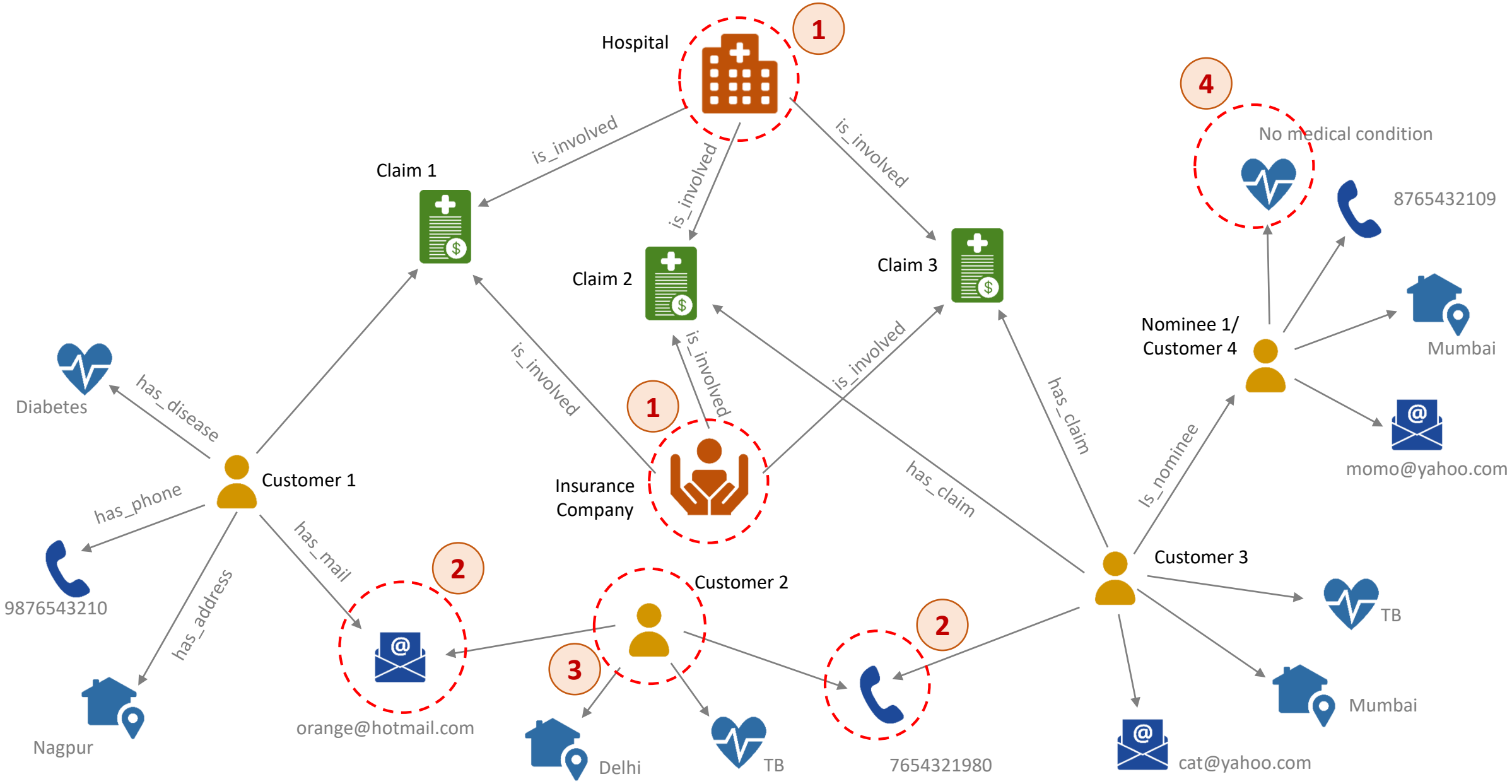
Legend - Workflow Process

Customer Onboarding Process

Claims Processing



Why Cosmos Db? Graph DB – Life Insurance & Fraud



Inferences– Detect Insurance Frauds with Cosmos DB Gremlin API

1

Institutions involved

The claims 1 & 3 are under the supervision of the same hospital and the same insurance company. Curiously the two customers (Customer 1 & 3) that instigated the three claims are both linked to a third existing customer (Customer 2).

3

Fraud claim detection

There is also a possibility of a fraud claim in near future. Also, such fraud rings could be detected and necessary actions could be taken to prevent such claim patterns in the future.

2

Abnormal shared details

Customers share the same phone number & the others share the same e-mail address. This is an abnormal situation as neither of the two share the name or the address.

4

Possibility of a medical condition

Possibility of a medical condition of a person could also be predicted with the help of the person's family medical history, in case the person choses not to disclose in the underwriting process.

Possibility of a transactional fraud

The claims 1 & 3 are under the supervision of the same hospital and the same insurance company. Curiously the two customers (Customer 1 & 3) that instigated the three claims are both linked to a third existing customer (Customer 2).

Unique Features - Share To Secure Blockchain Consortium

1. Reduction of TAT in Customer Onboarding (from months to days)
2. Easy Claim Invocation & Processing
3. Fraud claim detection
4. Smart contract for frictionless transfer of actionable at every step
5. Shared view of truth amongst all stakeholders

Microsoft Azure Stack

Component	Usage
Cosmos DB - Gremlin API	• Data Store, graph DB helps in detecting **fraud** in Insurance •Graph DB highlights relations between customer and helps in detecting **hereditary diseases**.
Azure Blockchain Service	• Built-in consortium management • Ethereum ledge • Multi Node Ledger • Individual Ledgers to be maintained by Private players
Service Bus	• To Connect across private and public cloud environments
Event Grid	• Event delivery and triggering workflows
Logic Apps	• Automate the access and use of data across clouds
Key Vault	• Access control and provisioning
Azure Functions	• Data movements, data processing with API Gateway
API Gateway	• Exposing Cosmos DB to Apps and websites
Computer Vision	• Document Digitization

Thank you !

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