



Blockchain Platform for Insurance-related Products.

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Note: This paper presents an outline of i-chain.net, Blockchain Platform for Insurance-related Products. The contents of this Paper are presented to provide information for crowdfunding of i-chain.net for general public. The content of this Paper cannot be considered as obligation of any kind.

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Any comments relating to the material contained in this document may be submitted to The Glass Cube, by email to info@i-chain.net

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Important Disclaimer

There are risks and uncertainties associated with i-chain and its' operations, the tokens of I-CHAIN platform (further Token or Tokens), the Initial Token Sale (each as referred to in this Whitepaper). You can find a description of the risk related to the Token Sale under the section Legal, which should be read carefully. This Whitepaper, any part thereof and any copy thereof must not be taken or transmitted to any country where distribution or dissemination of Token Sale or Initial Coin Offering like the one described in this Whitepaper is prohibited or restricted. The Tokens are not intended to constitute securities in any jurisdiction. Tokens are utility token and cannot have a performance or a particular value outside the i-chain platform. Therefore this Whitepaper cannot constitute a prospectus or offer document for investment in securities. This Whitepaper does not constitute or form part of any opinion on any advice to sell, or any solicitation of any offer to purchase any Tokens or give any help in any investment decision. You are not not eligible and you are not to purchase any Tokens in the i-chain Token Sale (as referred to in this Whitepaper) if you are a citizen, resident (tax or otherwise) of the countries where those operations are prohibited at the period of sale.

Executive Summary

Blockchain ecosystem is developing very fast. General public attention is currently captured by cryptocurrencies in general and bitcoin in particular. Meanwhile blockchain ecosystem is much more than cryptocurrencies, it can and should be used in any area where transparency is needed and where public can gain from transparency. Insurance is one of those areas.

Although insurance industry is highly regulated, regulation does not bring real benefits to customers, mainly regulation is aimed to keep control over insurance companies from governments, not to improve customers experience and to limit costs. Insurance companies' decisions and rates are not transparent. Blockchain can improve this situation significantly. Open platform for insurance-related products which is proposed in this document will create new transparent ground rules for insurance industry, will enable control over services level from customer, lower barriers and enable new players to join the market and provide new, smarter insurance products.

This document explains architecture of proposed insurance platform (i-chain). It also covers market perspective of platform. It also outlines the agreement on core platform and its' API governance concepts. This document is partly intended to serve as a guide to the perspective crowdfunding participant.

This document outlines architecture and use cases of insurance platform API to help perspective partners (current insurance organizations and new players) to understand the strengths of Platform and its' API and select the most appropriate use for their needs, consistent with where they are today, and where they plan to head on their blockchain insurance journeys.

Platform will be provided for free, will be open sourced, will open new opportunities for new players on insurance market, will create new jobs and will make insurance products fair and affordable for everyone.

Also this document is aimed to facilitate collaboration between the insurance blockchain enthusiasts and current players to encourage consistency across the solutions addressing the various aspects of blockchain insurance, to reduce overlaps and gaps between related solutions.

Overview

Due to its' open, trusted and secure nature, blockchain acquires most attention currently. Its' distributed ledger, smart contracts and non-repudiation capabilities enables blockchain as infrastructure that can transform multiple processes across the insurance value chain.

Insurance industry is considering blockchain cautiously as technology, there are issues which industry is facing currently.

A common Insurance Platform which we propose will simplify insurers to implement blockchain solutions, resolve **scalability**, **expertise** and **regulation** issues. Platform would make it possible for individual insurers to compete for customers, offering a range of products and prices by virtue of the products linked with smart contracts they set up on Platform. Moreover, a blockchain could allow the industry as a whole to streamline its processing and offer a better user experience for customers. At the same time, storing claims and customer information on a blockchain would cut down fraudulent activity.

Platform will be provided for free for every business or community which would like to use it for business, will be open sourced, will open new opportunities for new players on insurance market, will create new jobs and will make insurance products fair and affordable for everyone.

Blockchain Basics

Defining and Explaining Blockchain

Blockchain is a data structure that enables the creation of a digital ledger of transactions and the ability to share them among a distributed network of computers. Using cryptography and decentralization, blockchain enables network participants to make changes to the ledger securely, in the absence of a central authority. [7]

Four vital properties of blockchain [7]:

- Distributed: databases are usually hosted centrally (a “top-down” structure). Blockchains are hosted on networks and administered by the participants.
- Permission-less: all users are treated equally, with full read and write access.
- Immutable: old records cannot be reversed. A blockchain implementation provides no way to correct errors or redact private information sent by accident to the wrong recipient.
- Trusted: blockchains are based on mathematics, not relationships. Because scripts are open to all for review, these contracts themselves are trustless.

At its core, the blockchain is a ledger of transactions and data that is stored on multiple machines. The key component of this technology is that the data is validated and confirmed in multiple “nodes.” Each computer (node) that stores the data runs an algorithm to confirm that a transaction is either valid or invalid before appending it onto the previous chain of data. This use of multiple nodes storing the data is known as a “distributed network” which can take many forms. A network can include every computer connected to the Internet, in the case of a public ledger, or a network of private computers

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that limit the access to the blockchain, in the case of a private ledger. The construction of the chain is made by “miners” that run algorithms to validate and store the latest ledger of data, the blockchain. [8]

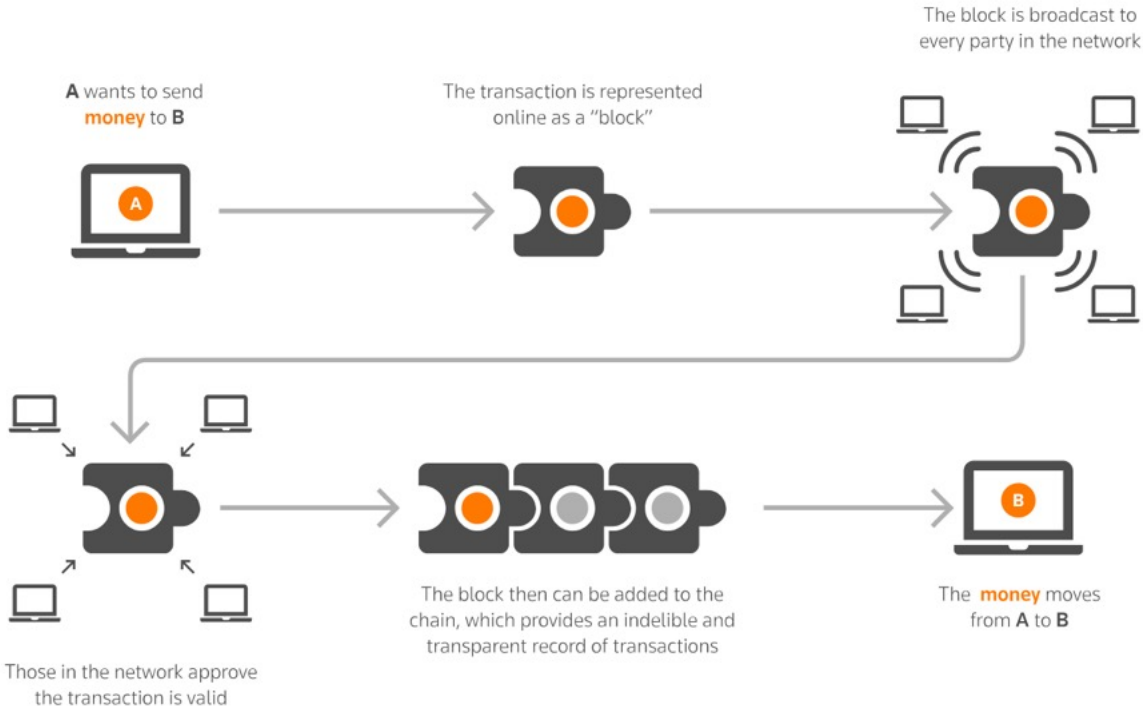


Figure 1. How blockchain works. Source: Financial Times

Blockchain’s Advantages

Blockchain offers many benefits [7], including:

- Simple and fast transactions – participants can transfer information or data without third party intervention. Banking institutions, contrarily, often involve several institutions and international money transfers systems around the globe for such a transaction, which may take up to a week.
- Fully transparent and secure – users control the transactions. When a user wants to add or change information, the request is broadcasted to all participants holding copies of the existing blockchain. Each participant’s system automatically checks if the information matches the blockchain’s history. If the majority of participants agree that the transaction is valid, the new transaction will be approved and a new block is added to the chain.

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- 24/7 accessibility/availability – data can be expediently transferred via the system 24 hours a day, seven days a week, without delay.
- Reduced cost – one ledger, controlled by secure and transparent technology, reduces mediators and costs to a minimum.
- Single point of truth – because blockchain is reliable and durable – an “unhackable” network – it can be used as a single point of truth.

The basic principles of the chain imply that, once a transaction is validated, it is “glued” on to the existing chain that includes all past valid transactions. As the data is stored on multiple machines, it cannot be changed. The “valid” blockchain is the longest chain of transactions that the majority of the nodes agree is valid. With the addition of time-stamps for the transactions and cryptology applied to the information, this makes hacking in and changing the blockchain incredibly difficult. A hacker would have to break into a majority of the nodes in order to create a fraudulent transaction. This major security innovation of the blockchain sounds like common sense when you talk about it, but has only been made possible with technological advances in the last few years. For decades, an organization’s data has been stored in a centralized data repository. With these systems, a hacker only has to infiltrate the firewall and protocols of a single entity in order to change the information and defraud the data. **If you’re running an insurance company, would you rather a hacker need to break into one system to ruin your firm or thousands?** [8]

Another positive aspect of the blockchain is pseudoanonymity. Data is encrypted at the transaction level in order to preserve anonymity. This is only pseudo-anonymous because theoretically you can gain the knowledge of the past transactions of an individual, and, as such, may be able to identify that person’s blockchain. In reality, this is extremely impractical because a hacker would have to break through the cryptographic protocols of the entire transaction history. Anonymity in transaction data is desirable to guard against data breaches that lead to fraud or identity theft. [8]

Blockchain technology comes with many inherent benefits. The main purported benefit of the blockchain is a direct result of the security discussed above, which is the ability to provide a stream of data that can be “trusted” for accuracy. It will enable users to quickly identify the movement of assets from one party to another. Let’s visit a somewhat common transaction, buying a house, in a blockchain environment. When buying a house, a mortgage lender needs to verify that the owner of a property for sale has the right to sell it and that the buyer has the right to purchase it. Currently, this process can take a day for a “clean” title and possibly weeks for a title that has had prior liens on it. With the blockchain technology, this process can be done in a few seconds and save considerable cost because all of the property data can be stored in a blockchain. The data stored in a blockchain can readily identify whether the seller still owns the property and has not already sold it, and it can identify any liens on the property. The blockchain technology does the work of the “middlemen” in the transactions. [8]

Current Insurance Industry Bottlenecks

With its potential to transform business processes and business models, blockchain and its distributed-ledger technology could provide organizations with a considerable competitive advantage.

insurers, like banks, are intermediaries and, at first glance, there is great potential for insurers to use blockchain technology to streamline payments of premiums and claims.

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In addition, blockchain technologies could support the significant digital transformation underway in the industry because much of this transformation relies on data. For example, actuaries and underwriters are using the ever-expanding universe of data to build models that more accurately estimate risk and price it accordingly. Arguably the most exciting example of this trend is in telematics: insurers are using data from sensors to price motor risk more accurately, reducing the premiums of young safe drivers, and this technology is spreading to other types of cover, such as home insurance.

However, unlike in banking, the general view among the industry is one of ‘wait and see’. “Insurers do not necessarily need a current Bitcoin strategy to remain competitive,” says one observer, “but should nonetheless continue to monitor the space and consider it as an area for potential innovation”. [1]

Early activity has tended to focus on optimizing current ways of working within organizations rather than on investigating the potential of a blockchain to address industry-wide problems and opportunities.

For customers, insurance contracts are typically complex and difficult to understand because of the legal language used. In addition, when accidents or crimes happen, customers can often be faced with a complex and drawn-out claims process.

From the insurer’s perspective, the industry is facing ever-tighter regulation and a growing threat from fraud – whether from small-claims fraud by individuals or more serious and organized fraud spanning multiple insurers in the industry. The Insurance Fraud Bureau (IFB) is a not-for-profit body set up to tackle organized crime affecting the UK general insurance industry. In a typical motor insurance scam, for example, drivers deliberately stage or cause an accident or even pretend to have had an accident, and claims are then made by the various criminals involved. These so-called ‘crash for cash’ scams cost the industry around £400 million a year.⁴ Where claims are made against multiple policies held by different insurers, it becomes difficult to detect the fraud unless cross-industry data is shared.

Market for Blockchain insurance

The use of blockchain in the insurance field is still in its infancy, but insurance industry increasingly understands the overwhelming potential. Unlike banking and money transfer applications, which have attracted much of the early focus, insurers are still pondering how to best use blockchain technology to maximize existing advantages and strength. As with other new developments, the insurance industry is largely proceeding cautiously.

As of today, there are a few promising areas that are drawing interest from insurers [9].

Table 1. Blockchain opportunities/implications for insurance industry

Opportunities/implications for insurance industry	Comments
Unique digital identity management with audit trails and transparency	Blockchain provides a transparent public ledger and can compliment digital identity verification and authentication
Decentralized infrastructure	Blockchain reduces reliance on centralized market infrastructures;

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	<p>Creates need for new regulation and controls Potentially reduces transparency and controls for governments and regulators based on the existing model</p> <p>Blockchain is globally scalable and can insurance can be provided where it was not possible before.</p> <p>Blockchain enables peer-to-peer insurance</p>
Fraud and security	<p>Blockchain technology works at the technology agnostic level</p> <p>Interactions between suppliers, entities, systems and services are transparent and verifiable at any point of time in the data life cycle (even in the past)</p> <p>Reduces fraud, resulting in faster settlement times for those involved</p> <p>Eliminates paperwork</p> <p>Provides easier, improved data access to all parties</p>
Innovation (features which can drive creation of new products and services)	<p>Blockchain technology capable of permitting time-based transactions and services</p> <p>Blockchain supports programmable transactions (smart-contracts)</p> <p>Blockchain allows introduction of new risk instruments and capital opportunities in the market</p> <p>Blockchain allows sophisticated forms of self-insurance and new tailored insurance products</p>
Data pooling opportunities	<p>When data is shared by multiple parties (placements and claims), the ability to access a single and real-time resource of data will change the ways buyers will manage and finance risk, and also enable insurers to price and govern claims recoveries</p>
Technology neutral General legal and regulatory compliance	<p>Technically blockchain can ensure compliance with any international data protection laws and regulations (but, market regulation and levels of trust needed still to be determined)</p>

Smart Contracts

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“A smart contract is a digitally signed, computable agreement between two or more parties. A virtual third party, a software agent, can execute and enforce at least some of the terms of such agreements,” according to PwC [2]. Smart contracts are of course digital and written using programming code languages. This code establishes the rules and consequences, similar to a regular contract, and can be automatically executed by a distributed ledger system.

Smart contracts powered by a blockchain technology could provide customers and insurers with the means to manage claims in a transparent, responsive and trusted manner.

“Contracts and claims could be recorded onto a blockchain and validated by the network, ensuring only valid claims are paid...smart contracts would also enforce the claims – for instance, triggering payments automatically when certain conditions are met (and validated)” [3]. In addition to being more reliable and significantly reducing fraud, smart contracts have the potential to dramatically expedite onboarding and other insurance processes, enabling insurers to provide a unique customer experience.

Table 2. Smart contracts vs Traditional contracts [2]

	Traditional Contracts	Smart contracts
Setup	Days	Minutes
Remittance	Manual	Automatic
Escrow	Mostly necessary	Not necessary (can be included in code)
Cost of service	High	Low
Presence	Physical	Virtual
Lawyer services	Mostly necessary	Mostly not necessary

Blockchain-Backed Mutual and Peer-to-Peer Insurance

The insurance industry, like most industries, is shifting towards greater transparency and trust. Mutual and peer-to-peer (P2P) insurance are gaining in popularity because they can offer these qualities.[7] Using the smart contracts described above, insurers could use blockchain to succeed in the P2P and mutual markets.

“Blockchain technology could empower people to manage (some of) their risk more directly, with peerto-peer and mutual insurance platforms based on blockchains,” according to Long Finance, as quoted by PwC [4].

An interesting article by Olivier Rikken, manager at AXVECO, a consultancy firm in Amsterdam, examines the possibilities [5].

Insurers can provide a marketplace-like platform where customers post insurance demands. These could be for traditional products, or specific demands. By using historical data and applying risk

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models and analytics, a premium calculation would be performed to post the expected return (after subtracting the insurer's margin), according to Rikken.

Once the premium calculation is available, interested consumers can subscribe via a peer-to-peer system, or via crowdfunding. Blockchain would guarantee the payment from the investor to the customer base (when necessary).

Processes Optimization

“By doing this in a blockchain, the administration and execution processes are simpler, almost fully automated, transparent and cheaper than in a traditional set up. Besides that, the investors know their maximum exposure as the amount defined in the smart contract,” writes Rikken.

Some insurers would balk at giving up control of the insurance process and their customers, for fear of turning into a mere “pipe” or conduit. This is certainly a legitimate concern and challenge, but as P2P, mutuals and blockchain technology gain wider acceptance, it is wise to begin exploring their potential now.

Internet of Things (IoT) Sinergy with Smart Contracts [7]

The Internet of Things (IoT) is the connection of devices to the Internet via software, sensors and network connectivity. This connection enables these objects to collect and exchange data. Smart homes, car telematics and wearables are hot IoT areas for insurance companies.

IoT is shifting insurers to a more proactive way of interacting with their customers. They are able to reduce costs by accurately assessing clients' risk levels and then adjusting premiums. By offering discounts and rewards for safe behavior and improved habits, insurers can help change customer behavior and offer a more personalized, tailored customer experience.

If the smart contract (from the previous sub-section) is merged with IoT smart devices and backed by blockchain, synergy will be achieved. This new combination will enable the IoT devices to communicate with the insurance smart contract automatically, with transactions and contract validations taking place in real time. Reduced insurance costs will result from this minimization of error. The following are two theoretical examples of this synergy:

Claims management driven by IoT – property and casualty (P&C) insurers could collect claims data from connected cars, smart homes and other assets and analyze it in real-time for more accurate claims management, reinsurance transactions and lower capital costs. Auto insurers could use data such as vehicle damage or accident metrics (speed, brake pressure, airbag status, etc.) to inform claims processing. For example, the IBM Watson IoT platform blockchain integration enables IoT devices to engage in transactions. Leveraging this platform, it is possible for information from devices – such as RFID-based locations, barcode-scan events, or device-reported data – to be passed on and stored on a private IBM blockchain ledger.

Devices will also be able to communicate to blockchain-based ledgers to update or validate smart contracts. For example, as an IoT-connected package moves along multiple distribution points, the package's location and temperature information could be updated on a blockchain.

This would allow all parties to share information and the status of the package as it transfers to multiple parties, to ensure the terms of the contract are met.

Instant funds disbursement [7]

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The interaction between insurers and customers will be made more direct during disbursement. In theory, insurers will transfer claim proceeds directly into customers' digital wallets when signaled to do so by smart contracts or connected devices.

Fraud Detection [7]

One of blockchain technology's best features and value propositions is the level of trust it fosters. It will practically eliminate fraud, due to the ability to validate authenticity, ownership, and provisioning of goods, as well as the authenticity of documents. By connecting to external databases, Blockchain enables scanning of police theft reports, and can detect patterns of fraudulent behavior related to a specific identity (via claims history). Blockchain can also prove date and time of policy issuance, or purchase of a product, and confirm subsequent ownership and location changes.

"Blockchain has great potential to eliminate error and detect fraud by providing a decentralized digital repository. It may independently verify the veracity of customers, claims, and policies and provide a complete transaction history. This prevents transaction duplication, displaces the roles of a trusted third party, and provides a verifiable public record of all transactions. In addition, blockchain can store encrypted personal data and a public ledger. Many insurers are already applying it for reducing fraud and liability associated with immediate payments across borders and multiple currencies," [6] according to N-iX, an outsourcing provider based in Europe.

False billings and tampered documents are less likely to "fall through the cracks" if the data is decentralized and immutable, which will reduce the amount of erroneous claims payments. Utilizing this technology will enable insurers to lower their loss adjustment expenses and pass on that savings to consumers in the form of lower rates. Furthermore, if this technology becomes widely used, it can help mitigate identity theft and other cyber liability losses. Identity theft is the fraudulent acquisition and use of a person's private identifying information. Usually this is done in order for the perpetrator to realize a financial gain. Because the data is encrypted at the financial transaction level, the technology minimizes the amount of identifying information available in the blockchain, thus minimizing the risk of identity theft.

The encryption protocol utilized by the blockchain technology has the capability to limit cyber liability as well. Cyber liability is the risk that personally identifiable information will be compromised by a third party storing an individual's data. Current practice is to store this data in a central location with software to protect against hacking. With this technology, it enables data to be run and stored based on the current blockchain without unencrypting the underlying data because the chain itself can be independently verified through separate nodes.

Improved Underwriting Process [7]

Today's underwriting process is still highly dependent upon reams of paper forms, with minimal online-enabled applications, and email communications between the underwriters, broker and client, including documentation in the form of email attachments. When claims are filed, there is often disagreement about which information was shared, by whom and when. These disagreements can ultimately lead to lengthy litigation and cause problems for underwriters and their clients.

Blockchain can resolve these difficulties by facilitating a more transparent, simplified and faster process.

Current difficulties to be resolved [8]

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As with any emerging technology, these potential benefits do not come about without a few potential limitations, in addition to the security concerns discussed above. The most problematic of the limitations is **scalability**. In order for the insurance industry to utilize blockchain technology, it would take a remarkable amount of infrastructure. Currently, blockchain technology is limited by the amount of computing power available. In order for data to be decentralized, each node must be able to process the requisite data for each transaction for a growing number of participants. While smaller blockchains are currently successful with a limited number of participants, the insurance industry has a much larger population of participants that will need to have their data validated in a timely manner. This will mean not only more storage space, but also enough computing power to quickly be able to validate each new transaction or data point.

Another stumbling block that needs to be overcome is the **expertise**. The expertise and experience needed to create the blockchains and implement the necessary systems to use this technology are still in their infancy. A few digital currencies use this technology, but it is not widespread enough to support the needs of scaling the technology to a point that can be utilized by most industries, especially insurance. The speed and stability of this technology will require a substantial investment of capital to be viable.

There may be further concerns with regard to data privacy. The most prevalent user of this technology is the bitcoin system, which operates a publicly available blockchain with open source code. Implementing this type of network into a “permissioned” or semiprivate network to protect personal information might pose significant roadblocks. This will include the implementation of standardization in the protocols used to verify each and every transaction, which is a crucial component of creating the blockchains. The total metamorphosis of the way that data is verified and stored will not come without a considerable real dollar cost. The most problematic challenge that may delay this technology being implemented in the insurance industry is **regulation**. Insurance needs to be a highly regulated industry in order to protect policyholders and the integrity of the companies that provide coverage. The use of blockchains to offer new insurance services, such as peer-to-peer insurance, will leave questions regarding who the regulatory authority is, as the transactions will be conducted over a widely diversified geographic space. Which regulatory body will ensure that policyholders will be protected in the case where a peer-to-peer contract holder does not have sufficient funds to pay a claim? Currently, regulation in the United States is on a state-by-state basis, which does not lend a great deal of flexibility when dealing with new products that may be funded by those overseas utilizing this technology. The issue of regulatory governance seems to be the largest hurdle that the insurance industry will face if it embraces this technology.

I-Chain platform proposition

We propose to create Insurance Platform based on blockchain technology. Insurers (partners) will publish their products on the Platform, customers will buy and use those products. Platform will cover common processes (i.e. sales, claim processing) and channels of communication (site, mobile application) also it will be possible to design additional products with extended processes and channels and place those products on marketplace for Insurers to acquire and use them for their business expansion. Risk pools will be created to cover insurance risks and there will be possibility to invest into Risk pools.

Common Insurance Platform we propose will resolve issues listed above in *Current difficulties to be resolved* and many other issues.

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Scalability issues will be resolved by that fact that blockchain layer will be used by portion of data when it is only needed, parts of data needed for insurance companies will be located on our platform. Also platform will lower **expertise** requirements, insurers will not need to build their solutions from the scratch, platform will provide them framework and will not require deep expertise in blockchain to start sell insurance products. Common platform will also help to resolve **regulations** issues, as it will lobby interest of all industry players and their customers.

A common Insurance Platform make it possible for individual insurers to compete for customers, offering a range of products and prices by virtue of the smart contracts they set up. Moreover, a blockchain could allow the industry as a whole to streamline its processing and offer a better user experience for customers who have to make a claim. Simultaneously, storing claims and customer information on a blockchain would cut down fraudulent activity – it would certainly make it much harder for criminals to mask their identities or attempt to claim more than once. Indeed, in many respects, with projects like the IFB now long-established, the general insurance industry faces a smaller cultural and organisational hill to climb than does banking and other sectors

With its potential to transform business processes and business models, blockchain and its distributed-ledger technology could provide organizations with a considerable competitive advantage.

Platform will be distributed to partners for free. Everyone will be able to download and start use node i-chain platform node and earn . Usage level and earnings level will depend on qualification, examples are:

- confirm insurance transactions (similar to mining);
- run call center (specific geography/language);
- support specific business process (i.e. claim management for specific product);
- run sales office;
- etc.

In sections below it is provided detailed description of the Platform.

I-Chain Platform Description

This section provides the description of **i-chain** platform architecture. It outlines architecture layers, platform use cases and roles of users. It wraps up with a summary of how platform is linked to Ethereum network.

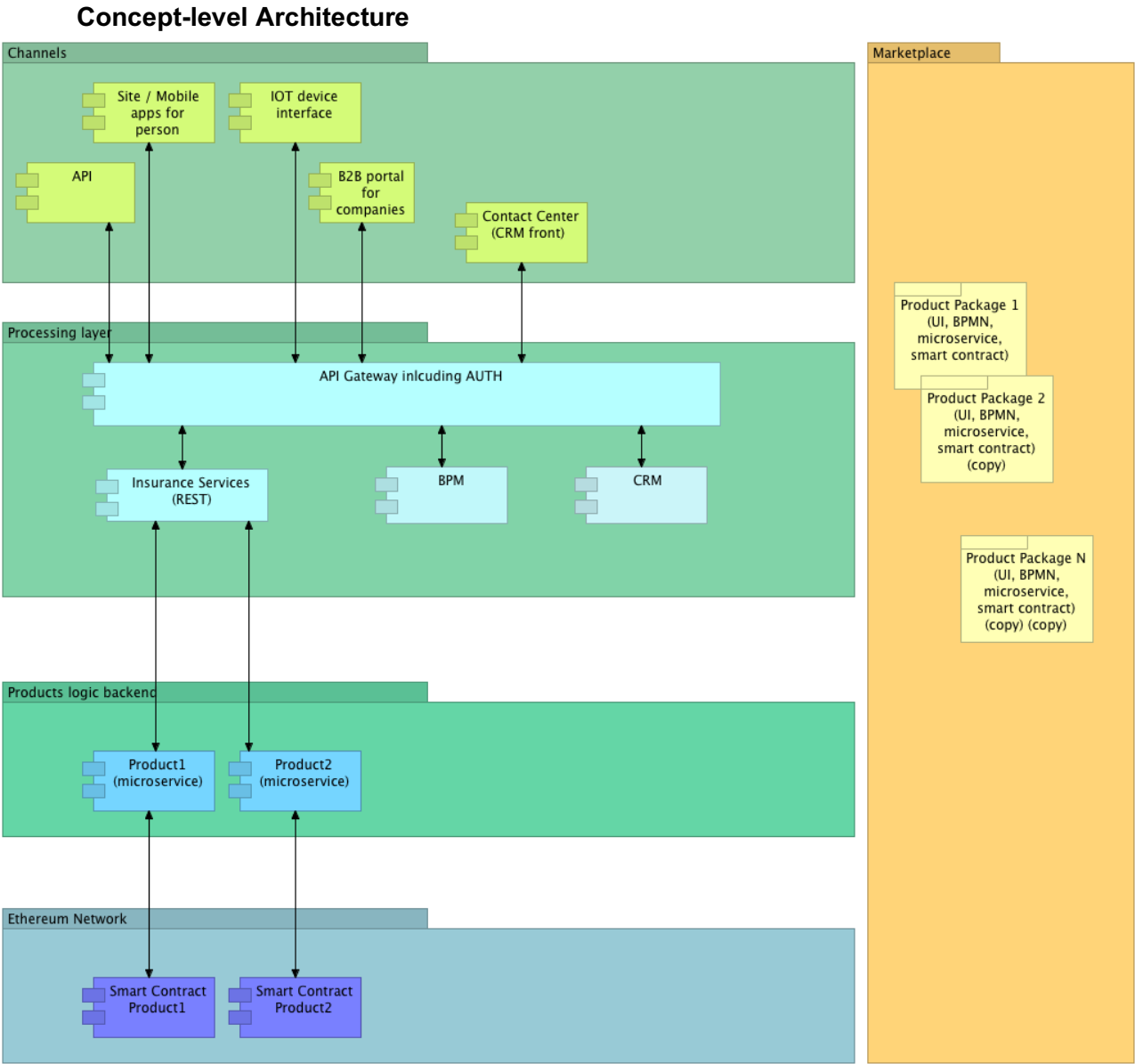


Figure 2. Insurance Platform Concept-level Architecture

Our Insurance Platform consists of 4 layers. First layer it is **Ethereum** network where insurance products are designed as smart contracts. To perform smartcontract logic and service functions the next layer exist – **Product logic backend**, where micro-services matching smart contracts reside. Ethereum and Product logic backend talk to each other via Oraclize interface. sNext layer – **Processing** ensures common functionality of all insurance products, application service Insurance Services provides set of methods which are common for all insurance products and also needed by

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CRM and BPM. At the same time CRM-backend is responsible for data storage (not shown here to simplify picture) and customers service functions. BMP holds processes within system (like products sales, claim processing etc.) and connected with CRM. Both CRM and BPM are using Insurance Services. Next layer – **Channels** – provides different channels to talk with platform, channel can have UI (web, mobile applications), or do not have it (API). Channel can be “old-school” like Contact Center or innovative like IOT device interface. List of channels is not final, it will grow. Platform Architecture is also not made in stone, it can grow and change with time.

Platform Architecture Layers

In table below Platform Architecture layers described in details.

Table 3. Architecture layers

Architecture layer	Description
Ethereum Network	Ethereum network holds smart-contracts related to insurance products.
Product logic backend	Product logic backend holds insurance products, implemented as micro-services.
Processing layer	Processing layer it is core of the platform, it consists of specialized CRM, BPM managing insurance processes and specialized services for Insurance. The key component here is Insurance Services which is used by CRM, BPM and product layer
Channels	User interface layer, where user can be person, company, IOT device, partner. Person – site/mobile apps Company – B2B portal, API IOT device – IOT device interface, API Partner - API

Platform Actors

Table below outlines platform actors (or user roles) and gives short description on each actor.

Table 4. List of platform actors

Actor	Architecture layer(s)	Description
Customer	Channels, Product logic backend	Person or institution purchased insurance product. All activity (purchase, claim etc.) is done through Channels layer, product itself is located on Product logic backend layer

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Investor	Products logic backend, Ethereum Network	Institution or individual investing into product risk pool. Investor provides financial resources to cover
i-chain Strategist	All	i-chain employee responsible for i-chain further development
i-chain Platform Developer	All	i-chain.net employee responsible for Platform extension/improvement
Claim expert	Processing layer, Products logic backend	Independent expert needs to understand the product(s) and plays key role in claim review process
Insurance Partner	Processing layer, Products logic backend, Ethereum Network, Channels	Insurance partner is entrepreneur (individual, institution) running own insurance business (i.e. set of products) on the Platform.
Product Designer	Products logic backend, Ethereum Network, Channels	Product designer is usually employee of insurance partner developing insurance product(s) and/or new Channels
Client manager	Processing layer, Products logic backend	Client manager is usually employee of insurance partner working with client, mainly in sales and claim management process. He needs to understand product(s) (Products logic backend) and works on Platform level to serve clients.
Product Business Developer	Channels	Product Business Developer is usually employee of insurance partner responsible for sales growth across Channels

Insurance Services Architecture and Link to Ethereum Network

Product logic backend architecture layer is linked to Ethereum network layer with insurance products implemented as smart-contracts on Ethereum Network. Each smart-contract is using related microservice implemented on Product logic backend layer.

Core Platform Processes

List of processes is not fixed and can be extended on BPM module of architecture. ‘Out of the box’ platform has the following processes implemented, see Table 5.

Table 5. List of processes implemented ‘out-of-the-box’

Process	Description
Customer onboarding	Classic process when new customer is acquired and registered in the system (CRM).
Product sale	Sale of insurance product
Claim processing	Processing of customer claim.
Product publishing	Publishing of new product on the Platform.
Product decommission	Decommission of product from the Platform.

Platform Use-cases

Table 6. Platform use-cases

Use-case	Description
Use insurance	Straightforward case: just be customer and buy insurance products from platform
Run insurance business	Run your insurance company on the platform. Publish products, sell them, use CRM and BPM functionality, setup call center, manage claims etc.
Invest into insurance risk pool	For company or private investor – invest your money into risk pool, enjoy higher ROI than bank deposits/treasuries together with predictable risk.
Design and sell insurance products to insurance companies on platform marketplace.	Develop insurance products as complex of related smart-contract, microservice, financial model, UI and sell it to insurance company. Platform will provide marketplace.
Provide services to insurance companies	Serve as contact center or sales team, or claim expert

Platform Financial Model

Platform tokens

Platform will be designed to use different tokens within its’ ecosystem.

First type of token, utility token will be used for access to the platform. This token will be sold during crowdfunding.

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Expected utility tokens volume in free market: 5'000'000. Token quantity will determine number of customers platform partner can serve. Customers can intersect, i.e. John can use auto-insurance from Partner A. and home insurance from Partner B.

Number of utility tokens	Access to customers base
1	1'000
10	10'000
100	100'000
Etc	Etc, proportionally

Second type of token for i-chain financials, will be used to buy and sell insurance products and invest into risk pools. And will be used for internal system transactions, development costs, transactions between partners/service providers/platform developers, experts. Most probably existing cryptocurrency (i.e. ETH will be used). But also team reserve the right to introduce specific cryptocurrency for internal platform use.

Risk pooling

In insurance, the term "risk pooling" refers to the spreading of financial risks evenly among a large number of contributors to the program. Insurance is the transference of risks from individuals or corporations who cannot bear a possible unplanned financial catastrophe to the capital markets, which can bear them. The capital markets, meanwhile, are generally happy to take on risk from individuals and corporations -- in exchange for a premium they believe is sufficient to cover the risk. [10-12]

Risk pooling is essential to the concept of insurance. The earliest known insurance policies were written some 5,000 years ago, to protect shippers against the loss of their cargo and crews at sea. Any one of them would be devastated by the loss of a ship. But by pooling their resources, these ancient businessmen were able to spread the risks more evenly among their numbers, so each paid a relatively small amount. Under the Babylonians, those receiving a loan to fund a shipment would pay an additional amount in exchange for a rider cancelling the loan if a shipment should be lost at sea. [10-12]

Our Platform supports insurance models in which geographically dispersed parties are combined into a common risk pool. Blockchain and smart contracts used to provide consensus management to manage risk pools, underwriting and claims payments. In addition, Blockchain can integrate carriers and reinsurers to provide coverage for excess layers beyond what the risk pool can cover.

Platform will use blockchain to aggregate a pool of insured individuals and corporate players. Voting consensus would establish the risk coefficient of new members and the share of premium or claims payout to be paid.

I-Chain Platform Key Principles

Insurance Platform i-chain is intended to enable customers to get better insurance product and services and by enabling business to produce better services, products and outcomes for customers, much faster and at a lower cost.

Platform will continuously support the following core principles.

Simple: The Platform delivers a real-time, radically simplified architecture for operating all core business functions of a modern, digital enterprise, without the complexity of legacy enterprise infrastructure, thereby enabling organizations to innovate faster. In short, partners have a simplified landscape and can focus on innovating versus integrating.

Agile: All Platform components are designed to be modular, having developer interests in mind, instantly accessible via the public cloud, enabling any partner to quickly respond to changing market or industry conditions.

Cloud: Platform is based on a “cloud first” and “marketplace” philosophy. Using Cloud solutions and Platform marketplace, customers automatically benefit from the innovations as soon as they’re available – no extra installation needed.

Open: Products and Processes within the Platform open and standards-based, using modern software design practices (such as RESTful architecture principles, BPM approach) as well as development support for commonly accepted and advanced application languages.

Mission critical: Operating a Digital Enterprise requires industrial-grade, highly available services that operate 24/7 with minimal support requirements. The Platform is specifically designed to run mission critical solutions for enterprises in all industries, geographies, and segments. Platform is focused on delivering world-class product quality and reliability required to operate partners’ business flawlessly.

I-Chain Platform Governance

Platform governance here is considered for its’ “post-implementation” phase. We need to insure platform vitality, further development, growth in best interest of customers, investors and partners.

Platform Governance Concepts

In frame of Platform Governance, we agree on the following.

Platform Goals & Objectives

Platform goal is to provide reliable, transparent and easily accessible insurance for customers worldwide and to provide business ecosystem to create and run insurance products smoothly for business community across the globe.

Stakeholders

We agree that Platform governance involves roles including stakeholders, where the stakeholders may include organizations, boards, and other groupings that facilitate defining and assigning the responsibilities of governance. In defining stakeholders voting the following principle will be used - most weight have stakeholders with higher customer base behind.

Services

Platform provides services to end-customers and partners. We agree that Platform services need to be measured, specific metrics need to be created and controlled. Services need to have Service Level Agreement behind them. If services are covered by Partners, Platform governance will require from Partners to support Service Levels for end-customers.

Processes

Platform processed need to be documented, have consistent outcomes, optimized. Processes can be owned by partners or by Platform. Platform governance requires from Partners developing their own processes on Platform consistently with this approach.

Continuous Improvement

Platform adopts principle of continuous improvement based on customers best interest and Shareholders decisions.

Vitality

We agree that Platform governance is an ongoing process that should have a feedback loop to keep it current and aligned with Platform goals. We agree that plan, define, implement, and monitor stages occur iteratively as part of the ongoing process of governance and to ensure vitality.

I-Chain Open API Guidance and Usage

API exists on Channel layer of the Platform architecture. API gives access to Platform functionality.

API Core Principles

There are few principles which we aim to support in our API.

1. **Backward compatibility** – when we will rollout new API versions, all solutions which were developed based on previous versions will continue to function with only exception when transition is required based on security.
2. **Isolation** – API will be isolated from specific implementation details on other Architecture layers;
3. **Completeness** – API will fully cover all platform functionality;
4. **Developer friendliness** - our API will be covered by extensive documentation, examples and tutorials.

API Use Cases

Table 7. API Use-cases

Use-case	Description
Extension of existing insurance company product to blockchain world	Current insurance companies can use platform API to provide their customers access to extended list of products and give them simple means to use cryptocurrency for transactions.
Link your sales process (i.e. flight tickets sales) with insurance (i.e. travel insurance)	Business can integrate their products sales process (i.e. tickets sales if we speak of travel agency) with insurance (i.e. travel insurance) to acquire additional commission from insurance sales.
Run financial company investing into insurance risk pools	Business can provide their customers with new investment instrument (insurance risk pool), create their own financial instruments based on risk pool.
Build your own custom solution based on platform capabilities	Any other business ideas which can arise, API has enough flexibility to enable them.

Summary

We propose platform for insurance industry based on blockchain technology. Platform allows business create and sell their insurance products and customers to buy and use those products. Also Platform creates ecosystem for other companies/individuals providing related services (i.e. call center, claim management, expertise, sales, products development). Platform can cover as regular insurance products (i.e. home insurance, health insurance) as insurance products for “new world” (IOT based insurance, internet identity insurance, cryptocurrency insurance etc.). Platform offers API for new businesses and current insurance companies to extend existing insurance products and create highly customized solutions.

Currently platform prototype is ready. Based on crowdfunding, platform will be further developed.

The I-CHAIN platform Token, Legal and Crowdsale

General information

In order to fund the development of the i-chain ecosystem, utility i-chain platform token will be sold to the public (further Token or Tokens), in exchange of cryptocurrencies. The Token is a coin, which will allow the User to access the service provided by the i-chain platform. User that intend purchase Token are subject to the acceptance of the General Terms & Conditions (not part of the whitepaper, will be published before crowdsale). The Token does not have the legal qualification of a security, since it does not give any rights to dividends or interests. The sale of Tokens is final and non-refundable. Tokens are not shares and do not give any right to participate to the general meeting of i-chain platform management company (Glass Cube Ltd, registered in British Virgin Islands, further Glass Cube Ltd). Tokens cannot have a performance or a particular value outside the i-chain Platform. Tokens shall therefore not be used or purchased for speculative or investment purposes. Tokens will not be listed on any regulated stock exchange. Neither these Whitepaper nor any other material relating to the i-chain or Tokens will be or have been filed with regard to legal standards such as the Federal Act on Stock Exchanges and Securities Trading law, the Financial Market Infrastructure Act, the Collective Investment Schemes Act, which are not applicable to this token sale Therefore laws and acts that ensure that investors are sold investments that include all the proper disclosures and are subject to regulatory scrutiny for the investors' protection, are not applicable in this case. Every purchaser of the Token should receive proper advice in order to understand whether the purchase of the Token is appropriate for him or not. Anyone purchasing Tokens expressly acknowledges and represents that she/he has carefully reviewed this white paper and fully understands the risks, costs and benefits associated with the purchase of Tokens.

Knowledge required

The purchaser of Tokens undertakes that she/he understands and has significant experience of cryptocurrencies, blockchain systems and services, and that she/he fully understands the risks associated with the crowdsale as well as the mechanism related to the use of cryptocurrencies (incl. storage). Glass Cube Ltd shall not be responsible for any loss of Tokens or situations making it impossible to access Tokens, which may result from any actions or omissions of the user or any person undertaking to acquire Tokens, as well as in case of hacker attacks.

Risks

Acquiring Tokens and storing them involves various risks, in particular the risk that Glass Cube Ltd may not be able to launch its operations and develop its blockchain and provide the services promised. Therefore, and prior to acquiring Tokens, any user should carefully consider the risks, costs and benefits of acquiring Tokens in the context of the crowdsale and, if necessary, obtain any independent advice in this regard. Any interested person who is not in the position to accept or to understand the risks associated with the activity (incl. the risks related to the non-development of the i-chain platform) or any other risks as indicated in the Terms & Conditions of the crowdsale should not acquire Tokens.

Important disclaimer

This white paper shall not and cannot be considered as an invitation to enter into an investment. It does not constitute or relate in any way nor should it be considered as an offering of securities in any jurisdiction. This white paper does not include or contain any information or indication that might be considered as a recommendation or that might be used as a basis for any investment decision. Tokens are just utility tokens which can be used only on the i-chain platform and are not intended to be used as an investment. The offering of Tokens on a trading platform is done in order to allow the use of the i-chain platform and not for speculative purposes. The offering of Tokens on a trading platform does

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not change the legal qualification of the tokens, which remain a simple means for the use of the i-chain platform and are not a security. Glass Cube Ltd is not to be considered as an advisor in any legal, tax or financial matters. Any information in the white paper is provided for general information purposes only and Glass Cube Ltd. does not provide any warranty as to the accuracy and completeness of this information. Glass Cube Ltd. is not a financial intermediary according to The British Virgin Islands (BVI) law and is not required to obtain any authorization for Anti Money Laundering purposes. Acquiring Tokens shall not grant any right or influence over Glass Cube's organization and governance to the Purchasers. Regulatory authorities are carefully scrutinizing businesses and operations associated to cryptocurrencies in the world. In that respect, regulatory measures, investigations or actions may impact Glass Cube Ltd. business and even limit or prevent it from developing its operations in the future. Any person undertaking to acquire Tokens must be aware of the I-CHAIN business model, the white paper or Terms & Conditions may change or need to be modified because of new regulatory and compliance requirements from any applicable laws in any jurisdictions. In such a case, purchasers and anyone undertaking to acquire Tokens acknowledge and understand that neither Glass Cube Ltd. nor any of its affiliates shall be held liable for any direct or indirect loss or damage caused by such changes. Glass Cube Ltd. will do its utmost to launch its operations and develop the i-chain platform. Anyone undertaking to acquire Tokens acknowledges and understands that Glass Cube Ltd. does not provide any guarantee that it will manage to achieve it. They acknowledge and understand therefore that Glass Cube Ltd. (incl. its bodies and employees) assumes no liability or responsibility for any loss or damage that would result from or relate to the incapacity to use Tokens, except in case of intentional misconduct or gross negligence.

Representation and warranties

By participating in the crowdsale, the purchaser agrees to the above and in particular, they represent and warrant that they: have read carefully the Terms & Conditions attached to the white paper; agree to their full contents and accept to be legally bound by them; · are authorized and have full power to purchase Tokens according to the laws that apply in their jurisdiction of domicile; are not a U.S. citizen, resident or entity (a "U.S. Person") nor are they purchasing Tokens or signing on behalf of a U.S. Person; · are not resident in China or South Korea and nor are they purchasing Tokens or signing on behalf of a Chinese or South Korea resident; live in a jurisdiction which allows Glass Cube Ltd. to sell Tokens through a crowdsale without requiring any local authorization; are familiar with all related regulations in the specific jurisdiction in which they are based and that purchasing cryptographic tokens in that jurisdiction is not prohibited, restricted or subject to additional conditions of any kind; · will not use the crowdsale for any illegal activity, including but not limited to money laundering and the financing of terrorism; have sufficient knowledge about the nature of the cryptographic tokens and have significant experience with, and functional understanding of, the usage and intricacies of dealing with cryptographic tokens and currencies and blockchain-based systems and services; purchase Tokens because they wish to have access to the i-chain platform in future; are not purchasing Tokens for the purpose of speculative investment or usage.

Governing law and arbitration

The Client acknowledges and accepts that the i-chain platform crowdfunding operation is taking place within a legal environment that is still under development. The Parties agree to seek an amicable settlement without bringing any legal action. All disputes arising with the with papers provided, shall be resolved by negotiations. The negotiations shall be conducted in English.

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About the Glass Cube partners

Pavel Pribilov, Strategic Investor

Pavel Pribilov is successful businessman with strong strategic view and intuition, key player on Russia pharma market (production/distribution/retail).

Yuriy Mukhin, CEO

Yuriy has Ph. D in economics, he is fellow member of Medical-Technical Science academy. Worked on top positions in business development in trans-national companies for more than 20 years, successfully launched and developed new products on pharmaceutical market, worked as general manager in different industries.

Sergey Chekriy, CTO

Sergey has vast of experience in IT and specializing in developing and applying new technologies for business, especially finance. He is working in industry since 1994, has Ph.D. in computer science. Worked in CTO role in successful fintech startups. Has experience in banking and corporate world, previous position – Chief IT Architect (Rosbank, Societe Generale).

About The Glass Cube Company

The Glass Cube is a vendor-neutral research company, with vision is to enable access to blockchain technology advancement to people, enterprises and governments. Its role is to capture, understand, and address current and emerging issues and requirements, establish approaches and provide solutions, with current focus on Insurance Blockchain Platform.