Blockchain for Insurance Industry

Rattakorn Poonsuph, Sc.D (NIDA)
rattakorn@nida.ac.th
Blockchain
BLUEPRINT FOR A NEW ECONOMY
What’s wrong with this statistics?

**U.S. productivity and employment**

Beginning in 2000, a widening gap between productivity and private employment showed up in federal labor statistics (indexed: 1947 = 100).

- **Productivity**
- **Employment**

Smaller gaps between productivity and employment have been seen before.

Job growth suddenly slowed in 2000, while productivity remained robust.
“unicorns”—private companies valued at $1 billion or more. The billion-dollar technology startup was once the stuff of myth.
Technology startups are entering all insurance business lines

- Automotive* (107 Companies)
- Employee Benefits (40 Companies)
- Enterprise/Commercial (94 Companies)
- Health/Travel* (99 Companies)
- Data/Intelligence* (88 Companies)

- Consumer Management (51 Companies)
- Comparison/Marketplace (242 Companies)
- Education/Resources (30 Companies)
- Infrastructure/Backend (196 Companies)

- User Acquisition (61 Companies)
- Life, Home, P&C* (90 Companies)
- P2P Insurance (29 Companies)
- Product (23 Companies)
- Reinsurance (29 Companies)

974 companies across 14 categories from 53 countries with $16.5B in funding

* Category includes connected insurance technology startups
Blockchain

BLUEPRINT FOR A NEW ECONOMY

Business Section
Blockchain Startups

Top Blockchain startups disrupting non-financial markets

Cloud storage
- Filecoin
- STORJ.IO

Smart Contracts
- TRUST
- ETHERPARTY
- APPLIED BLOCKCHAIN

Social Networking
- Facebook
- synereo
- GEMS

Anti-Counterfeiting
- everledger
- BLOCKVERIFY

Digital Identity
- ONENAME
- ShoCard

Supply Chain
- thingchain

Art & Ownership
- VERISART
- Bitproof.io

Prediction Markets
- augur

Governance
- OTONOMOS
- Swarm

Internet of Things
- FILAMENT

More: https://www.ventureradar.com/
• **Blockchain** is a very special kind of distributed Database
• **Peer network node data stores** are systems allowing users to replicate and share files across a network
Update data concurrently.

What’s the right one?

Claim

Actuary

Manager

Accounting
Google Sheet

- On cloud services
- Public View
- Trusted Networks
- Overridden Content
- Unauthorized Update
- No Tracking version
- Controlled by a single entity.
- Single point of failure.
• **Blockchain** is leverage cryptography to provide a decentralized multi-version concurrency control mechanism and to maintain consensus about the existence and status of shared facts in trustless environments.
Problem ...

Inefficient, expensive, vulnerable
Solution ...

Shared, replicated, permissioned

... Consensus, provenance, immutability, finality
How blockchain work?

1. A wants to send money to B
2. The transaction is represented online as a 'block'
3. The block is broadcast to every party in the network
4. Those in the network approve the transaction is valid
5. The block then can be added to the chain, which provides an indelible and transparent record of transactions
6. The money moves from A to B
### Why is blockchain unique? Four technologies in one

<table>
<thead>
<tr>
<th>Distributed Ledger</th>
<th>Cryptography</th>
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<tbody>
<tr>
<td>• Decentralized, peer-to-peer network</td>
<td>• Ensures that transactions are secure, authenticated &amp; verifiable</td>
</tr>
<tr>
<td>• Append-only distributed database</td>
<td>• Verifies participants' privacy while the ledger is shared</td>
</tr>
<tr>
<td>• Replicated to all participant on the network</td>
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<tr>
<td>• Shows current status as well as status over time</td>
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<thead>
<tr>
<th>Consensus</th>
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<tr>
<td>• Consensus is the process by which transactions are verified</td>
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<tr>
<td>• Decentralized consensus ensures agreement on &quot;single-version-of-the-truth&quot;</td>
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<tr>
<td>(allows for consistency among distributed ledger)</td>
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<tr>
<th>Smart Contracts</th>
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<td>• Programmable contracts which contain the business logic that is automatically</td>
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<tr>
<td>executed when pre-defined conditions are met</td>
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<tr>
<td>• Ideal for arrangements that are: tailored, verifiable, signed, self-executing,</td>
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<tr>
<td>embedded in blockchain networks</td>
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</table>
CHANGE THE WORLD

Shared public database without any central authority or party responsible for its maintenance and improvement.
Interbank Payment Operations

Current payment and settlement system:
- Customer
- Remitting bank
  - Request for transfer
  - Transfer message
  - Zengin System
    - Request for settlement
    - BOJ-NET
- Receiving bank
  - Notice of fund receipt
  - Payment
  - Clearing
  - Settlement

Scope of practical experiment:
- Customer
- Remitting bank
  - Request for transfer
  - Transfer message
  - Blockchain environment
    - Transfer message
    - Block
      - Transaction
      - Transaction
      - Transaction
    - Settlement information
    - BOJ-NET
- Receiving bank
  - Notice of fund receipt
- Customer
  - Payment
  - Not covered by this experiment
Enterprise Letter of Guarantee on Blockchain

**ORIGINCERT SOLUTION**

- **Requesters**
- **Issuers**
- **Recipients**

1. **REQUEST**
2. **APPROVAL**
3. **ISSUANCE**
4. **NOTIFICATION**
5. **VERIFICATION**

**OriginCert**

Service Layer (OriginCert API): Document and Business Smart Contracts

Blockchain (Hyperledger Fabric)

- Single View
- Real-time
- Verifiable
- Transparent and Immutable
SCB invests in blockchain tech leader, Ripple
Use Cases

**Pharmaceuticals**
Solution to track pharmaceuticals throughout the supply chain and to ensure the consumers receive an authentic product.

**Luxury Items**
We work directly with luxury manufacturers to build a system of verifying luxury goods. This will provide quality assurance for all parties.

**Diamonds**
We created a system that can enhance trust in diamonds certificates and prevent fraud.

**Electronics**
We work directly with manufacturers to make sure that customers are getting original equipment.
How Blockverify Works

The process a product goes through to ensure authenticity

**Product Labelling**
Each product is labelled with Block Verify tag

**Verified Supply**
Each product is verified along the supply line. Supply chain becomes transparent to the extent we want it to be

**Consumer Verified**
When the consumer purchases a product he/she is able to verify that the product is genuine and activate it

**Anti-corruptible**
We ensure that each product is validated and recorded prevent even companies from counterfeiting their own goods

**Retail Verification**
Retail locations can use mobile devices for verification. They can be assured that the goods they receive are genuine

**Block Verified**
Each product has a recorded history permanently recorded in the blockchain. We can provide verified history for each product
Case Study

Thailand National Health Services
EMR : Solution #2 : Enterprise Service Bus
EMR : Solution #3 : Blockchain

Eliminate middle clearing hours
End-to-End Invisibility throughout the whole process
Global Insurance

With Blockchain
If Blockchain technology proves viable, it could well streamline paperwork and reconciliations for (re-) insurance contracts and accelerate information and money flows, while greatly improving auditability.

Blockchain offers huge potential for enabling digital contracts and transactions amongst multiple parties to be executed in a secure, transparent and auditable way.

Streamlining communication and transactions would subsequently improve industry processes and provide better insurance services to customers.
B3i – A true industry collaboration
Benefits B3i

- Platform Solution to exchange (re-) insurance information
- Standardize & Compliance
- Distributed ledger (Block chain)
  - Smart Contract
  - Payment
  - Cryptography (secure and private)
- Covers the major elements of the Property Cat XL reinsurance contract life cycle (i.e. smart contract setup, premium settlement and claim settlement).
In Insurance, blockchains have potential for impact across the entire value chain

<table>
<thead>
<tr>
<th>Potential use cases with smart contracts</th>
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<tbody>
<tr>
<td>Offer P2P insurance via blockchain for customer to customer promotion and sales, and automated ops with smart contracts</td>
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<tr>
<td>Use blockchain for P2P insurance underwriting, include external data, smart contracts and peers (humans) to determine tariff</td>
</tr>
<tr>
<td>Automate payments through smart contracts evaluating conditions for paying out claims</td>
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<tr>
<td>Automate claims triggering and handling with smart contracts, and e.g., with sensors (IOT)</td>
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<tr>
<td>Use smart contracts to automatically determine payouts — e.g. triggering process of catastrophe swaps and bonds</td>
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<thead>
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<tr>
<td>Use blockchain as a reliable registry for on-demand/usage-based insurance or micro-insurances</td>
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<tr>
<td>Using blockchain as payment infrastructure (especially across multiple countries)</td>
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<tr>
<td>Leverage blockchain for information about insured goods and events in order to fight fraud</td>
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<tr>
<td>Use blockchain for onboarding of new customers or verification of policyholder identity</td>
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<tr>
<td>Make data available for re-insurers or other parties in a controlled way</td>
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<tr>
<th>Key benefits</th>
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<td>Reduce cost related to commission and sales and operations</td>
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<tr>
<td>Reduce cost of operations</td>
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<tr>
<td>Decrease amount of paperwork (administrative costs)</td>
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<tr>
<td>Include external data for (semi-) automatic pricing</td>
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<tr>
<td>Reduce cost and increase speed for payments</td>
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<tr>
<td>Reduce average claims cost related to — Claims administration — Damage from fraud and fraud detection</td>
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<td>Improve identification of claim events</td>
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<tr>
<td>Reduced admin cost and speed-up process for onboarding</td>
</tr>
<tr>
<td>Reduce admin costs</td>
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<tr>
<td>Automate and increase reliability, auditability and speed for financial instruments transactions based on defined events</td>
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<th>Examples</th>
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<td>RISKebiz</td>
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<td>SafaShare</td>
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<tr>
<td>coinbase</td>
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<tr>
<td>ripple</td>
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<tr>
<td>everledger edgelogic</td>
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<tr>
<td>ONENAME</td>
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<tr>
<td>ShoCard</td>
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<td>Tradle</td>
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<tr>
<td>DNA Bits</td>
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<tr>
<td>Genecoin</td>
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<td>Allianz Risk Transfer</td>
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1 Not all insurance-specific
Incumbent insurers and insTech startups beginning to see and test the value of blockchain

AXA Strategic Ventures invested in Blockstream, a company that develops hybrid blockchain platforms that connect public and permissioned chains.

Everledger is developing a permanent ledger for diamond certification and transaction history, used by insurance companies and others to combat fraud.

PWC Whole sale Reinsurance PoC - Placement and contract life cycle documentation.

Dynamis is a peer-to-peer mutual, offering unemployment insurance, built on a blockchain and relying entirely on smart contracts for claims.

Allianz Cat bond – Natural catastrophe risk trade on the blockchain for smoother facilitation and accelerated triggering of cat swaps & bonds.

Commercial insurance placing platform - ChainThat's decentralized application platform allows brokers and carriers to place commercial and specialty risks in the insurance market.

SafeShare launched first blockchain-based insurance solution for the sharing economy.
Insurance: Digital Transformation
Insurance Policy’s Block Chain

- Regulator
- Insurer
- Insurer
- Reinsurer Cluster
- Millennial Customer
- Insurer
- Agency
- Broker
- Broker
- Regular Customer
Blockchain Insurance Policy

Regulator

Insurer

Agency

Broker

Reinsurer Cluster

Insurer

Millennial Customer

Insurer

Policy

Broker

Regular Customer
Replication of Traditional Policy
Replication of Digital Policy

- Insurer
- Broker
- Millennial Customer
- Agency
- Reinsurer Cluster
- Regulator

Digital Policy
- Policy Viewer
- Benefits FAQ
- Provider location
- Claim Status
- Renewal Alert
- Digital Payment
- Discount Point
- Reward Program
- Friend Promoter
- Shared Pool
Regulator Audits & Research
<table>
<thead>
<tr>
<th>Category</th>
<th>Services/Platforms</th>
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<tbody>
<tr>
<td><strong>Ecommerce</strong></td>
<td>Paybuy, Jeaw, PayPal, Alipay</td>
</tr>
<tr>
<td><strong>Mobile</strong></td>
<td>Apple Pay, Samsung Pay, Android Pay, LG Pay, Huawei</td>
</tr>
<tr>
<td><strong>Telecom</strong></td>
<td>MI Pay, wallet, truePAY, dash, siampay, M-PESA, Paytm, Vodafone Wallet</td>
</tr>
<tr>
<td><strong>Digital Bank</strong></td>
<td>Prompt Pay, K+, UP2ME, ME by TDB, Mymz, GS Bank, N26, Monzo, CapitalOne</td>
</tr>
<tr>
<td><strong>Digital Currency</strong></td>
<td>Satang, Coinbase, Exodus, AirBitz, Blocktrail</td>
</tr>
<tr>
<td><strong>Social/Chat</strong></td>
<td>LINE Pay, rabbit, LINE Pay, WeChat Pay, Facebook, WhatsApp</td>
</tr>
<tr>
<td><strong>Startup/Others</strong></td>
<td>AirPay, EVEREX, mana, Deep Pocket, chirpify, GrabPay, GO-JEK, eWallet</td>
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Bank of Thailand: QR Code Standard
Payment’ Block chain

#1 Credit History for Insurance Lending
Significant hype, early promises

- 24+ countries currently investing in blockchain
- 2,500+ patents filed over the last 3 years
- 90+ corporations have joined blockchain consortia
- 90+ central banks engaged in blockchain discussions worldwide
- Global Interest: 80% of banks predicted to initiate blockchain projects by 2017
- Bank experimentation
- Research
- Consortium efforts
- Blockchain activity
- Venture capital
- Central banks
- Over US$ 1.4 billion in investments over the past 3 years

Top Challenges
- Regulatory environment
- Collective standardization
- Legal Framework
- Confidentiality/Privacy
- Systems integration
- Scalability

Source: World Economic Forum
Blockchain Technology – Promising Use Cases for Healthcare Industry

Patient Generated Data
- Stores different types of health data (e.g., images, genomics, and lab reports).
- Consists structured and unstructured data
- Information is encrypted and digitally signed

Clinical Data and Health Records
- Consists a complete indexed history, patient’s unique identifier, and an encrypted link to health record.
- Each record is time stamped.
- All patient records (historical) are together and stay with the patient.
- Patient has control over the permissions on whom to share with.

Providers use mobile devices to assign access permission to data and to provide public key

Blockchain network consensus enables disintermediation to automate claim adjudication and payment processing with predefined smart contracts

Data lakes
- Encryption & Digital Sign
- Indexing
- Decryption & Authenticate Digital Sign

Health Analytics & IoMT
- Health application to access health data

Pharma/Research
- Distributed patient consent for research/clinical trials enables data sharing, audit trials, and clinical safety analyses

Source: www.healthit.gov; Frost & Sullivan