Blockchain Technology and Insurance
Outline for Today’s Discussion

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Part 1

The Building Blocks to the Blockchain
Blockchain Stems From Advances in Technology

- Databases
- Encryption
- Computers
- E-commerce
- Networks
Part 2

Birth of the Blockchain
Bitcoin: The Very First Blockchain

Bitcoin: A Peer-to-Peer Electronic Cash System

Originator:
Satoshi Nakamoto (pseudonym)

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

Satoshi Nakamoto
satoshin@gmx.com
www.bitcoin.org
Watching True Transactions Come in

https://blockexplorer.com/
Part 3

What Exactly is Blockchain? What Does it Do?
Blockchain Fuses Database with Network and Establishes Trust

Blockchain is a distributed database and shared ledger that maintains a continuously growing list of chronologically added records called blocks. In most blockchains new blocks and the data within (transactions, smart contracts, and so forth) are confirmed and verified through a decentralized consensus process called mining. This verification process removes intermediary validation and establishes trust without the use of a centralized authority.

Blockchain:

- Adding anything to ledger is permanent
- Solves double-spending problem
- Establishes trust and eliminates middlemen which:
  1) increases security
  2) tears down walls
  3) speeds up transactions
  4) improves privacy
How the Blockchain Process Works

1. John wants to send a bitcoin to Jane.

2. The pending transaction is broadcast to the network.

3. Every 10 minutes, miners combine pending transactions, like John and Jane's, into a block.

4. Miners race to solve a computational puzzle. Miners reach consensus and approve the block. The winning miner receives new bitcoins.

5. The block is added to the blockchain.

6. Jane receives the bitcoin from John.
Ethereum is a public blockchain-based distributed computing platform, featuring smart contract functionality. It provides a decentralized virtual machine, the Ethereum Virtual Machine (EVM), that can execute peer-to-peer contracts (smart contracts) using a cryptocurrency called Ether.
Smart contracts are just pieces of programmable code that can run in the blockchain.

The analogy of a series of “if then” statements works well to describe smart contracts.
Overview of Blockchain for Business
Everything Started with Public Blockchains. They Can’t Be Ignored.

Transactions (e-commerce)  Smart contracts (computing)

Private/Permissioned Blockchains

Business Usage

Public Blockchains
Public, Private and Hybrid Chains

**Public blockchain:** A public blockchain is a platform where anyone on the platform would be able to read or write to the platform. This is a fully decentralized blockchain.

**Private blockchain:** A private blockchain allows only the owner to have the rights on any changes that have to be done. This could be seen as a similar version to the existing infrastructure wherein the owner (a centralized authority) would have the power to change the rules, revert transactions, etc. based on the need.

**Hybrid (or consortium) blockchain:** A consortium blockchain would be a mix of both the public and private. Wherein the ability to read and write could be extended to a certain number of people/nodes. This could be used by groups of organization/firms, who get together, work on developing different models by collaborating with each other. Hence, they could gain a blockchain with restricted access, work on their solutions and maintain the intellectual property rights within the consortium.
A Few Non-insurance Use Cases Under Development

1. Automobile Sales
2. Accounting
3. Banking
4. Education
5. Energy
6. Healthcare
7. Internet of Things
8. Mass Media Entertainment
9. Social Media
10. Supply Chain
Part 5

Blockchain in Insurance
Why blockchain for Insurance?

**Pain Points**

**Insured**
- Poor Customer Experience
- High Premiums
- Slow Entry into Emerging Markets
- Weak Product Innovation

**Insurer**
- High Administrative Costs
- Costly Intermediaries
- Fragmented Data Sources
- Manual Processes
- Fraud Prone
- Stringent Regulation

**Benefits**

- Increased Automation through Smart Contracts
- Improved Record Keeping
- Lower Costs
- Increased Trust and Auditability
- Permissioned Data Sharing, Automatic Updates
- Streamlined Access to Customer Data
Blockchain Use Cases Across Entire Insurance Value Chain

- **Products, Pricing and Distribution**
  - Parametric Insurance

- **Underwriting and Risk Management**
  - Data Sharing and Risk Registries (FNOL)

- **Policyholder Acquisition and Servicing**
  - Subrogation

- **Claims Management**
  - Proof of Insurance

- **Finance, Payments and Accounting**
  - Regulatory and Compliance
Part 6

The RiskBlock Alliance
Membership – 31 Member Companies and Counting
Risk Block Accomplishments

- **February 2017**: RiskBlock Alliance press release
- **July 2017**: RiskBlock Alliance launch of four working groups, members join
- **October 2017**: RiskBlock minimum viable architecture complete. 2017 membership goal exceeded
- **December 2017**: POI minimum viable product with Nationwide
- **February 2018**: Technology and use case strategy committee meetings commence. Governance model launched
- **April 2018**: PSPs on-boarded
- **June 2018**: Framework and use case development begins
- **September 2018**: We are here

- Canopy 2.0 minimal viable architecture complete.
- POI and FNOL move to member testing.
- Cohorts on boarded.

Ongoing use case elaboration sessions with working groups.
## Four Use Cases Underway, More to Come…

<table>
<thead>
<tr>
<th>Problem Addressed</th>
<th>Solution Provided</th>
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<tr>
<td><strong>Proof of Insurance</strong></td>
<td>• Institute electronic safekeeping&lt;br&gt;• Enable real-time access to information</td>
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<tr>
<td>Insurance policy validation is performed both physically and digitally, but the</td>
<td></td>
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<tr>
<td>process can be complex and costly</td>
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<tr>
<td><strong>Parametric Insurance</strong></td>
<td>• Expand parametric insurance offerings&lt;br&gt;• Automate data collection and contract execution</td>
</tr>
<tr>
<td>Insurance product that is triggered when a low-frequency, high-severity event</td>
<td></td>
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<tr>
<td>occurs; only represents a small portion of the P&amp;C market, but has large potential</td>
<td></td>
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<td>to expand</td>
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<tr>
<td><strong>First Notice of Loss</strong></td>
<td>• Optimize information flow and notifications&lt;br&gt;• Facilitate data sharing&lt;br&gt;• Act as immutable record</td>
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<tr>
<td>Initial claim made to insurance provider following the loss, theft, or damage of</td>
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<tr>
<td>an insured asset; process can be made simpler</td>
<td></td>
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<tr>
<td><strong>Subrogation</strong></td>
<td>• Facilitate netting of payments&lt;br&gt;• Optimize costs and streamline process</td>
</tr>
<tr>
<td>Exchange between insurers to collect money from the party legally responsible for</td>
<td></td>
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<tr>
<td>a loss; opportunity for process to be streamlined</td>
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## Blockchain Use Cases Across Entire Insurance Value Chain

<table>
<thead>
<tr>
<th>Products, Pricing &amp; Distribution</th>
<th>Underwriting &amp; Risk Management</th>
<th>Policyholder Acquisition &amp; Servicing</th>
<th>Claims Management</th>
<th>Finance, Payments &amp; Accounting</th>
<th>Regulatory &amp; Compliance</th>
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<tr>
<td>Parametric Insurance</td>
<td>Provenance</td>
<td>Policyholder Acquisition</td>
<td>First Notice of Loss Data Sharing</td>
<td>Subrogation</td>
<td>Motor Vehicle Proof of Insurance</td>
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<tr>
<td>Oracle aggregation service</td>
<td>Data Sharing and Risk Registries</td>
<td>Document Reconciliation (Placement Documentation)</td>
<td>Asset Transfer (Certificate of Title–IoT)</td>
<td>Workers Comp Bill Review and Medical Claims Processing</td>
<td>Real-time Regulatory Reporting</td>
</tr>
<tr>
<td>Telematics or IoT-Based Use Cases</td>
<td>Self-sovereign IDs Linked to Insurance</td>
<td>Surety Bonds (verification/validation)</td>
<td>Worker’s Compensation (EMR)</td>
<td>Reinsurance (Premium/Loss Cessions/Execution of Treaties)</td>
<td>Agent/Broker Licensing</td>
</tr>
<tr>
<td>Insurance for transactional purchases</td>
<td>Digital Twinning</td>
<td>Certificates of Insurance</td>
<td>Fraud Registry</td>
<td>Technical Accounting (maintaining/sharing of financial records)</td>
<td>Sovereign ID (KYC/AML)</td>
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<tr>
<td>Microinsurance Mobile Insurance for Developing Countries</td>
<td>Marine Use Cases</td>
<td>Policy Cancellation and Non-Payment (use of smart contract to trigger)</td>
<td>Multi-layer claims settlement</td>
<td>New Forms of Raising Capital (Crowd Sourcing)</td>
<td>Auto Titles</td>
</tr>
<tr>
<td>Peer-to-Peer Insurance</td>
<td>Creation of a Repository of Truth for Underwriters</td>
<td>Onboarding and Policy Administration/Customer Service Requests</td>
<td>Marine Claims Management</td>
<td>Multiple Payees</td>
<td>Education Licensing</td>
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The RiskBlock Value Proposition

First true industrywide risk and insurance consortium cutting across all insurance industry sectors

- Backed by The Institutes and trusted by the Risk and P&C Insurance industries for over 100 years
- Partnering with LIMRA to bring Blockchain to the Life, Annuity, and Retirement space
- Collaborating with multiple industry associations across the Insurance space
- Non-biased, industry focused non-profit and member owned
- Certified Blockchain Professional and Certified Blockchain Engineer programs
- Certified RiskBlock Ready Designations for Solution Providers
- No science experiments! Focused on creating real world production applications that bring value to members
- Build once, use many approach to architecture, use cases and reusable tool kit components
- Platform agnostic, supporting the building of and communication between various current and future flavors of Blockchain
- Use it and lose it philosophy of not storing members important data on the Blockchain
- Multiple Use Case build approaches: Member Only, Collaborative, Solution Provider Focused, RiskBlock Only or a Hybrid of any of these options

The Institutes® RiskBlock Alliance
Questions? Comments?

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