Risk pools in a digital world

Digital Insurance Innovation
Governmental Risk Pools: Values & Benefits

Digital technology is making your world better!
Emerging technologies: Tools defining the future

**Drones & Satellite**
Automation of many tasks in claims and underwriting – with efficiency gains up to 40%

**Blockchain**
The foundation for new business models and products, plus easier data access for all parties

**Internet of Things**
New competition and partnership opportunities for insurers, with a focus on advanced risk mitigation techniques

**Telematics**
Invaluable data streams for more precise underwriting, more responsive claims management and product innovation

**Intelligent Process Automation & Intelligent Virtual Assistants**
Automation of core business processing and carrier-to-customer interactions, focusing workers on higher-value tasks

**Artificial intelligence**
New and deeper insights into customer needs, market trends, emerging risks based on advanced pattern recognition

Digital insurers combine these technologies across the value chain.
Emerging technologies: Focus on Blockchain

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Blockchain Overview
Blockchain defined

- A distributed, secure, peer-to-peer ledger
- Shared across the network
- Contains viable (proven, authenticated) transactions
- Cryptographic proof is used to validate transactions
- Transactions are grouped into blocks
- Hashes link the blocks, creating a chain
  (The chain cannot be modified or the hashes will no longer be valid)
Validity and consensus

► An agreement that transactions and blocks are valid requires consensus from multiple parties.

► In a private Blockchain this is relatively easy, as access is restricted and all parties have a vested interest in maintaining the integrity of the chain.

► In a public Blockchain this is more complex, and must be engineered into the solution.

► The aim is to ensure that agreement exists on the validity of all transactions and blocks in the chain.
Barclays with R3-CEV is exploring “Smart Contract Templates” turning legal documents into Smart Contracts

https://player.vimeo.com/video/168844103
Putting it all together

Technology for enabling shared databases... 

...which support multiple writers... 

...whose entries are verified through embedded trust models... 

...and form one unified “transaction” log.

**Structural features**

- Decentralised
- Multiple writers
- Trust through design and protocol
- Immutable

**Common characteristics**

- Multiple ownership
- “Real-time” synchronicity
- Consensus based authentication
- Chronological chain of activity
Problems addressed by blockchain

- Centralization: Solved by Decentralization
- Transparency: Solved by
- Trust issues: Solved by
- Fraud: Solved by
- Security: Theft of data: Solved by
- Cryptographic HASH code: Solved by

FINANCIAL WORLD
Implementing a blockchain solution

- Industry Solutions
  - Financial Services
  - Manufacturing
  - Retail & CPG
  - Healthcare
  - Public Sector
  - Media

- Middleware Tier
  - Distributed Ledger Gateway Services
  - Identity & Key Services
  - Crypto- Services
  - MI & BI Services

- Base Platform Tier
  - Smart Contract-based
  - Distributed Ledger Stacks
    - Virtual Machine
      - Consensus networking & database
      - 3rd Party DL stack
      - 3rd Party DL stack
  - UTXO-based or other
    - Adapters
      - 3rd Party DL stack

- SmartContract Marketplace
- SaaS Solutions
  - 1st Party
  - 3rd Party
  - 3rd Party
  - 3rd Party
  - 3rd Party

- CryptoDelegate and Cryptlet architecture (secure containers, attestation, etc.)

- Blockchain Resource Provider

- ISVs & Customers

- Blockchain Tools

- Blockchain Marketplace
A Few Leading Blockchain Platform / Tool Vendors

Microsoft Azure BaaS

IBM BlueMix Blockchain

Amazon BaaS

GuardTime
Blockchain applications in Insurance
### Where blockchain is being applied today

<table>
<thead>
<tr>
<th>Finance</th>
<th>Property</th>
<th>Contracts</th>
<th>Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade and settle securities at a fraction of the time and cost</td>
<td>Permanently record and access real-time property rights</td>
<td>Self-enforcing contracts based on predefined conditions</td>
<td>Eliminate invasive identity practices via digital identities</td>
</tr>
</tbody>
</table>

- **Finance**
  - DTCC
  - ripple
  - CIRCLE

- **Property**
  - ChromaWay
  - everledger

- **Contracts**
  - symbiont
  - DYNAMIS
  - ShoCard

- **Identity**
  - TRADLE
## Areas of impact in Insurance

### Trust

<table>
<thead>
<tr>
<th>Event-triggered smart contracts</th>
<th>Increased back-end efficiency</th>
<th>Disintermediation</th>
<th>Better pricing and risk assessment</th>
<th>New types of insurance</th>
<th>Reaching the undeserved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated claims</td>
<td>Decentralized fully digital, safer markets</td>
<td>Decentralized fully digital, safer markets</td>
<td>Real time, individualized</td>
<td>P2P, shared economy, spot-insurance, hybrids</td>
<td>Solves many microinsurance challenges</td>
</tr>
<tr>
<td>Self-executing contracts</td>
<td>Less human error, no data duplication</td>
<td>Less human error, no data duplication</td>
<td>Automatic data sharing for analytics and pricing</td>
<td>More transparency, less cost</td>
<td>Automatic construction of distributed database</td>
</tr>
<tr>
<td>Reduced fraud, improved customer experience</td>
<td>Less processing delays, transaction costs</td>
<td>Less processing delays, transaction costs</td>
<td>Connected to IoT, Big data, health tracker</td>
<td>Social media and crowdsourced oracles</td>
<td>Better prices through simplicity and efficiency</td>
</tr>
</tbody>
</table>

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Risk pools in a digital world | 16
15 reinsurers building an efficient world-wide industry platform for market participants to more easily cede, handle and trade risks

Secure, confidential and efficient transactions on a blockchain network. Currently focused on reinsurance contracts – Property XOL
Blockchain framework can facilitate scalable, secure and efficient IoT by enabling peer-to-peer (P2P) communication among devices without the need for any centralized control.

**Decentralized blockchain and IoT**

**Decentralization**

**IoT today**

- **Device management:** Connected devices with sensors communicate with a centralized collection point.
- **Trust:** Manages secure connections and data sharing; vulnerable to attacks.
- **Cost:** High infrastructure and maintenance costs of centralized cloud and large server farms.
- **Technology:** IoT devices have to be updated regularly with changing technology, leading to risk of obsolescence.
- **Business model:** Diverse use cases; use of analytics to create meaningful value.

**IoT in the future**

- **Scalability:** Enables IoT to scale to the Internet of billions of Things.
- **Secured distributed data sharing:** Transactions are confirmed using decentralized consensus.
- **P2P systems:** Computing shifts from center to edge (autonomous devices).
- **Sharing economy:** Real-time matching of supply and demand for physical assets and services.
- **Universal digital ledger**

- **Registration and authentication of new devices**
- **Execute software programs updates without third-party interference**
- **Create a verifiable record of data, business process on the blockchain**

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Risk pools in a digital world | 18
Ocean Marine Scenario

There are 6 key areas where transparency of data and traceability of processes can offer benefits to Marine markets.
Solution using IoT and Blockchain

1. Home Port: Basic Insurance level – default State
   - Initial insurance contracts in place to policy holder and assets – premise to pay
   - Permissions in place to authorise vessels, cargo and subsequent departures

2. Transition – Dangerous Water + Cargo = Large premium
   - Conveyance contract attached to original state
   - Trade finance contract
   - Tracking of vessels and cargo in conveyance

3. Home Port: Basic Insurance level – default state
   - Conveyance contract ends
   - Notifications confirm voyage is in safe harbour
   - Steady state contracts (i.e. goods in transit or other)

4. Safe Waters + Regular Cargo + Usual Premium
   - Systems and records updated based on shared data
   - Own logs available for third party reviews if needed
   - Analytics review performance data

Smart Marine Market and Distributed Ledgers - Enabled by IOT devices

1. Smart contracts agreed by brokers and insurers with different values
2. Insurable “assets” and clients held against private and public ledgers
3. “Endorsements” (i.e. conveyance round trips) attached to self-executing contracts
4. Ongoing client data updated
5. Payment instructions posted

Insurers have access to client and assets in transition, accepting or UW terms outside cover

Insurers have access to audit trail for UW or claims activities
Risk Pools on the Blockchain
Potential Benefits

- Single immutable transaction ledger
- Smart contract auto-executes payments and disbursements
- Shared with the reinsurer, always in sync, easy to reconcile
- Combined with data from telematics, sensors and other IoTs, allows for more sophisticated risk modeling
- Reinsurers are on Blockchain, B3i goes into production in 2018 – likely a game changer in way of doing business!
Advancing on the Digital Front

Innovation Platform

Idea Currency

Technology Platform

Rapid Prototyping

Processing Platform

Automation
How EY helps clients embrace digital

EY’s digital insurance offerings are designed to create immediate value, enable future innovation and instill organizational agility for the long term.

Digital enterprise strategy
Core consulting and digital strategy formulation focused on increased revenue, stronger customer engagement and lower operational costs – balanced with enhanced risk management and security

Rapid digital application development
Suite of vendor and alliance partnerships to enhance capabilities and tailor offerings, with EY Digital Studios to rapidly design, engineer and launch experiences and applications

Insurance as-a-service platform
Core P&C operations platform – EY Insurance Nexus™ – with pre-configured and pre-integrated processes and technology for high-performance claims, policy and billing functions

Digital insurance service bureau
Full business and technology operations and support for all aspects of a modern insurance enterprise

Digital insurance accelerators
30+ technology-enabled accelerators for common use cases with compelling value propositions to increase the pace of digital change
EY InsurHUB : Accelerating Innovation
What we are hearing from our clients:

“I need to understand what digital innovations to apply to my organization

“The volume of InsurTech vendors continues to grow, making the selection process of who to work with more difficult

“The time and cost to test new digital capabilities is high, and the risks associated with being ‘wrong,’ can be significant
The EY InsurHub Mission:
To help insurance carriers capitalize upon the power of emerging technology to re-visit their business models, acquire customers through new channels and create the essential user experiences.

The EY InsurHub Approach:
EY facilitates a select group of Insurance companies and InsurTech vendors to rapidly deliver a specific proof-of-concept.
Our InsurHub process

Step 1: Define the Problem/Opportunity

Step 2: Define & Assemble the Team

Step 3: Define Plan, Build & Test Solution

Step 4: Refine & Finalize

Present solution to others within Insurance Company, make necessary changes, and prepare to repeat process

Multiple Pods are running concurrently across the EY global InsurHub network

A carrier, and an InsurTech vendor, can participate in multiple pods
<table>
<thead>
<tr>
<th>POD</th>
<th>Summary</th>
<th>Value Chain Area</th>
<th>InsurTech Partners</th>
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</thead>
<tbody>
<tr>
<td>Rapid Product Architecture</td>
<td>New insurance product from scratch with rates/rules/forms</td>
<td>Product</td>
<td>RiskGenius</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Carpe Data</td>
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<tr>
<td>Supplemental Insurance</td>
<td>Automating scenarios for small businesses and individuals</td>
<td>Product</td>
<td>Ethereum (Marketplace)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Portal)</td>
</tr>
<tr>
<td>“No Touch” Homeowners</td>
<td>Create “No Touch” homeowners product sold as Pre-Approved</td>
<td>Product</td>
<td>Cape Analytics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sentiance or Carpe Data</td>
</tr>
<tr>
<td>Wearables Workers Comp</td>
<td>Create wearables and sensor enabled Workers Comp product</td>
<td>Product</td>
<td>HCS</td>
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<td>Pillar</td>
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<td>Clara Analytics</td>
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<tr>
<td>“Coverage Menu” Product</td>
<td>Customer Coverage Menu enabling selections for customized product</td>
<td>Product</td>
<td>RiskGenius</td>
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<td></td>
<td>configuration</td>
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<td>Pega Rules</td>
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<td></td>
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<td>Robo advisor</td>
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