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Thilo Keber

Bringing DLT into Practice in the Insurance Industry

July 15th, 2020

Agenda

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01

Introduction B3i and (Re)Insurance use cases on DLR

02

Real Life Experience with different DLT platforms

03

Challenges of bringing DLT insurance applications into practice

04

Outlook

Bio

Thilo Keber

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- Consultant at metafinanz GmbH München
- Software Developer / Architect
- Various Blockchain Projects at Allianz in 2016
- 2016-2019 accompanying B3i in developing DLT platform
- DevOps enthusiast

01

Introduction

Insurance

Principle

- Combination of multiple risk entities into larger sets in order to average expected losses
- Collection of premiums to cover for expected losses

Business Model

- Accurate calculation of required premiums so that the insurance expects long time profit (underwriting)
- Investment of pooled funds for interest generation
- Efficient processes in sales and operation (e.g. claims handling, fraud detection)

- Modern insurance can be traced back to roots in the 17th century (reflected in some terminology)

Reinsurance

Reinsurance

- Insurance for Insurers (primary insurer, cedent)
- Reinsurer covers some amount of insurer's losses for a fee (share of premiums)
- *Excess of Loss*: Reinsurer covers losses that exceed an amount that the cedent is willing to bear
- Multiple layers with multiple reinsurers

Retrocession

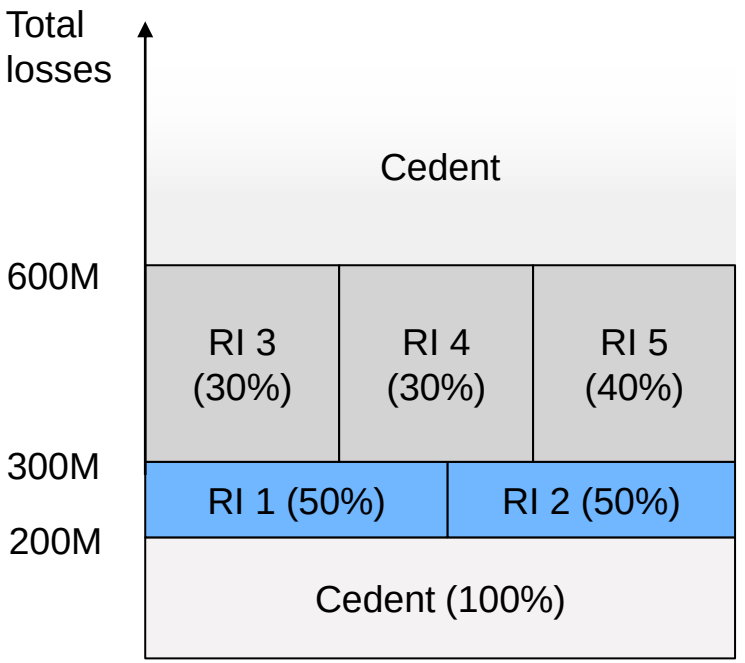
- Reinsurance for reinsurer

Insurance Linked Securities (ILS)

- Making reinsurance constructs available as financial market instruments (e.g. Catastrophe Bond)

Characteristics

- Reinsurance is capital intensive, therefor only limited number reinsurers on the market (in contrast, thousands of primary insurers on the market)
- There is a role for reinsurance brokers



Example: CatXoL layers

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Reinsurance process inefficiencies

Common practice

- Office tools (spreadsheets, databases)
- Communication by eMail, phone, fax
- Large attachments (e.g. database dump)
- Manual processing
- Unclear status in process

- Standardization Efforts (ACORD, Rüschlikon) to reduce friction in the process

DLT promise

- Shared Data Model
- Reliable communication
- Automated processing
- Common view on data and process (I see what you see)

- Standardisation implicit by API

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B3i (Blockchain Insurance Industry Initiative)

History

- 2016: started as a roundtable of representatives 5 insurers and reinsurers with an interest in exploring blockchain technologies in insurance
- Q1 2017: 10 new members and start of joint development of a reinsurance contract negotiation and execution platform on blockchain
- Q4 2017: market test of the prototype with 35 parties, feedback: parties estimated gains in efficiency of up to 30%
- Q1 2018: incorporation as B3i Services AG, Zürich, Implementation of platform on new DLT
- Q3 2019: CatXoL v1.0 released
- Q4 2019: 30+ complex reinsurance contracts on live platform
- Q2 2020: Fluidity Platform as “DLT based Operating System for Insurance” launched

Info

- https://b3i.tech/home.html

02

Real life DLT experiences

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B3i technology journey

various pocs

reinsurance app prototype

reinsurance platform product implementation

- allianz catastrophe swap POC
- B3i prototype launch
- B3i CatXoL v1.0

2016 2017 2018 2019 2020

DLT Technologies Compared

Requirement	(Enterprise) Ethereum	Hyperledger Fabric	R3 Corda
Transaction Privacy	😢 😐 quorum	😢 😐 channels	🙂 strict need to know approach
Runtime environment	😢 EVM	😐 golang runtime, docker	🙂 jvm, docker
Development Environment	😯 Solidity	🙂 golang	😀 java, kotlin
State Persistence	🤔 File system	🙂 leveldb, couchdb	😀 enterprise sql db
File persistence	😢 off chain	😢 off chain	🙂 in vault (attachments)
P2P protocol	😐 P2P/Gossip	😐 Gossip	🙂 AMQP over TLS
location of keys	Client (wallet)	Client / node	Node

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Challenges

— non-technical

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Challenges: Governance

Define and assign roles and responsibilities for

- Legal and regulatory framework
- Development & maintenance of assets
- Membership (certificate authority)
- Network operation (e.g. notary services), Monitoring
- Metering and Billing

Business Network Governor / Operator roles in Corda

- see https://solutions.corda.net/business-networks/intro.html

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Challenges: Distribution and Operation in a decentralized network

Who is running a node?

- Ideally: each party for itself
- Practically: there will always be a need for hosted nodes
  - Temporary or permanent solution?
  - Repatriation options (migrating a previously hosted node onto premise)

How are artifacts (cordapps) distributed?

- Source code
- .jar archives
- Docker container (preferred)

Software live cycle

- When new software (smart contracts, cordapps) get rolled out, not all parties will upgrade their nodes at the same time
  - Coexistence of multiple versions must be supported

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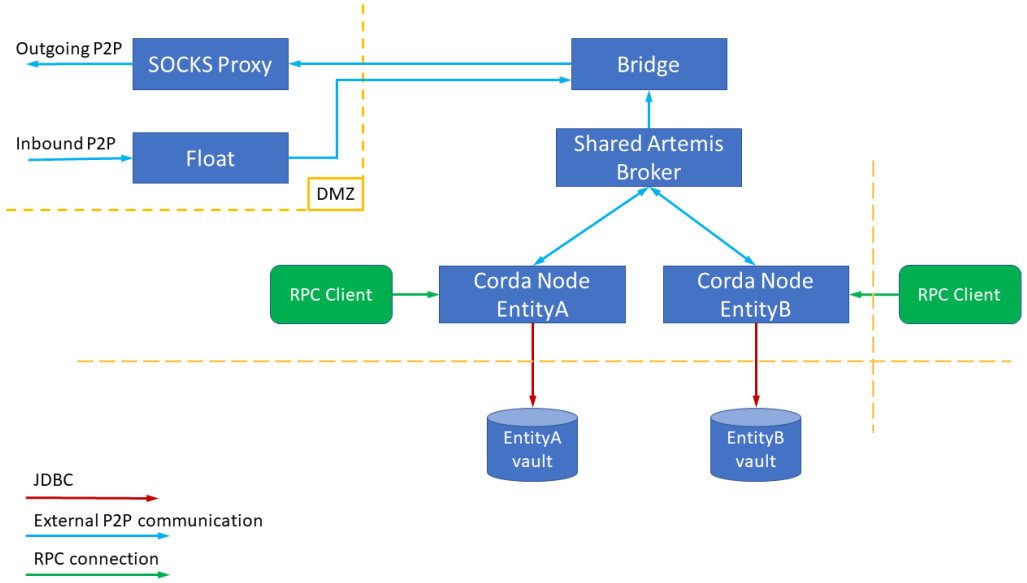
Challenges: Network Security Practices / Expectations

Traditional Expectations

- Multiple Network zones (DMZ, internal, persistence) separated by firewalls
  - All external connectivity is terminated in the DMZ
- Deep packet inspection (DPI) on transferred data
- Secrets / Keys in secure separated vaults

DLT reality

- Most DLT technologies dont support DMZ termination
  - Corda Enterprise with SOCKS proxy / float in DMZ
- End to End SSL encryption of payloads prevents DPI
- Secrets / keys on the file system
  - Corda Enterprise with HSM support



Corda Enterprise Firewall

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Opportunities

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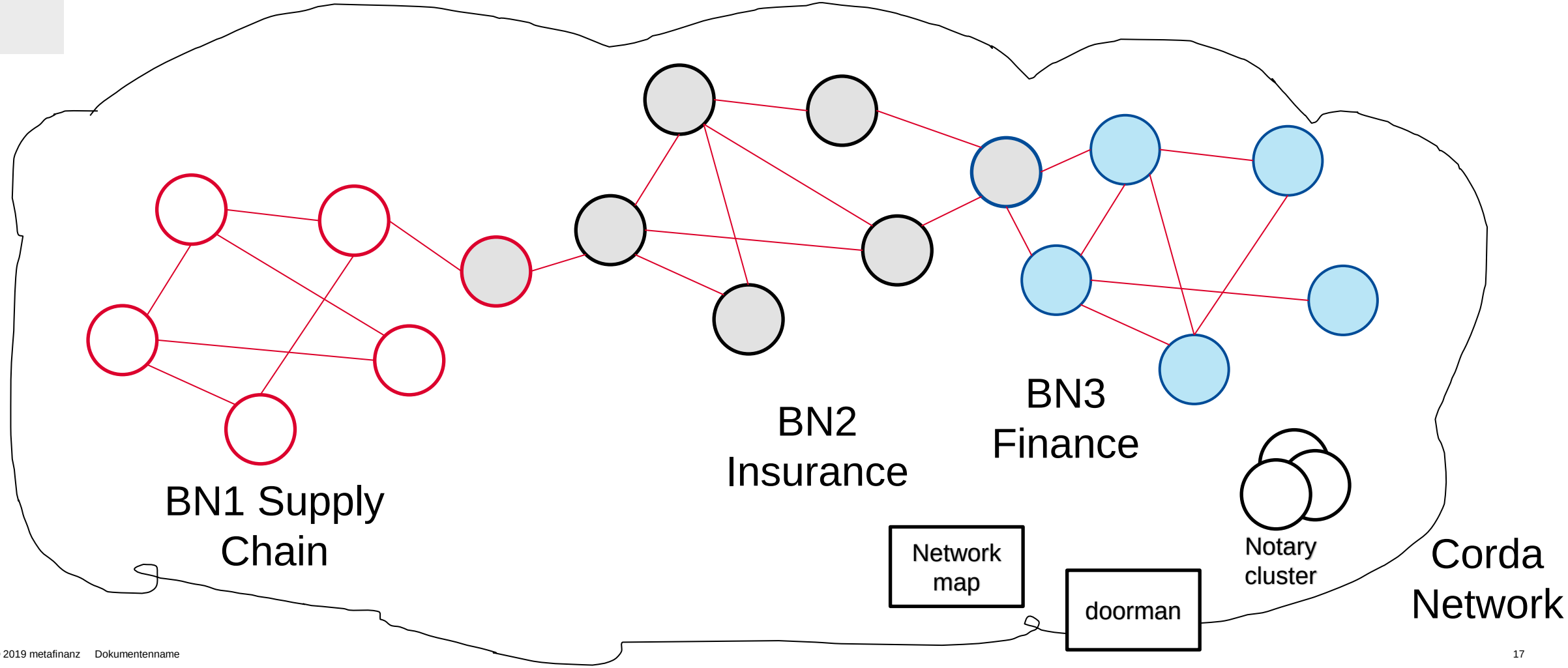
The Corda Network connects business networks



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Current state

B3i:

- 2019/2020 Year end contract renewals with CatXoL 1.0 on the DLT platform
- Adding new parties to the network for CatXoL
- Expanding the network by releasing Fluidity tools, allowing additional parties to provide solutions to the network

Corda:

- Corda network hosts multiple business networks
- Corda *Conclave* beta provides JVM support for computation in SGX CPU enclaves
- New Developer environments:
  - VSCode Corda extension: https://marketplace.visualstudio.com/items?itemName=R3.vscode-corda
  - Hosted as IDE.Corda.net: https://jigman.ide.corda.net/
  - Corda Flavored Ganache: https://www.trufflesuite.com/blog/branching-out-phase-2-of-corda-flavored-ganache

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DLT opens opportunities for new specialized players in the insurance business process

Examples:

- Oracles for testation of natural catastrophes
- New AI based risk valuation by examining satellite images
- New approaches to sales in B2C, C2C scenarios
- Underwriting as a Service
- Automated claims handling in Secure SGX enclave
- Fraud detection
- …

Enablers

- B3i *Fluidity* framework
- Corda *Conclave*

Questions?

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