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Blockchain – an Emerging Technology with Wide Potential Application for Insurance

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22 May 2017

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1. Making Sense of Blockchain

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Blockchain in a nut shell

What is blockchain?

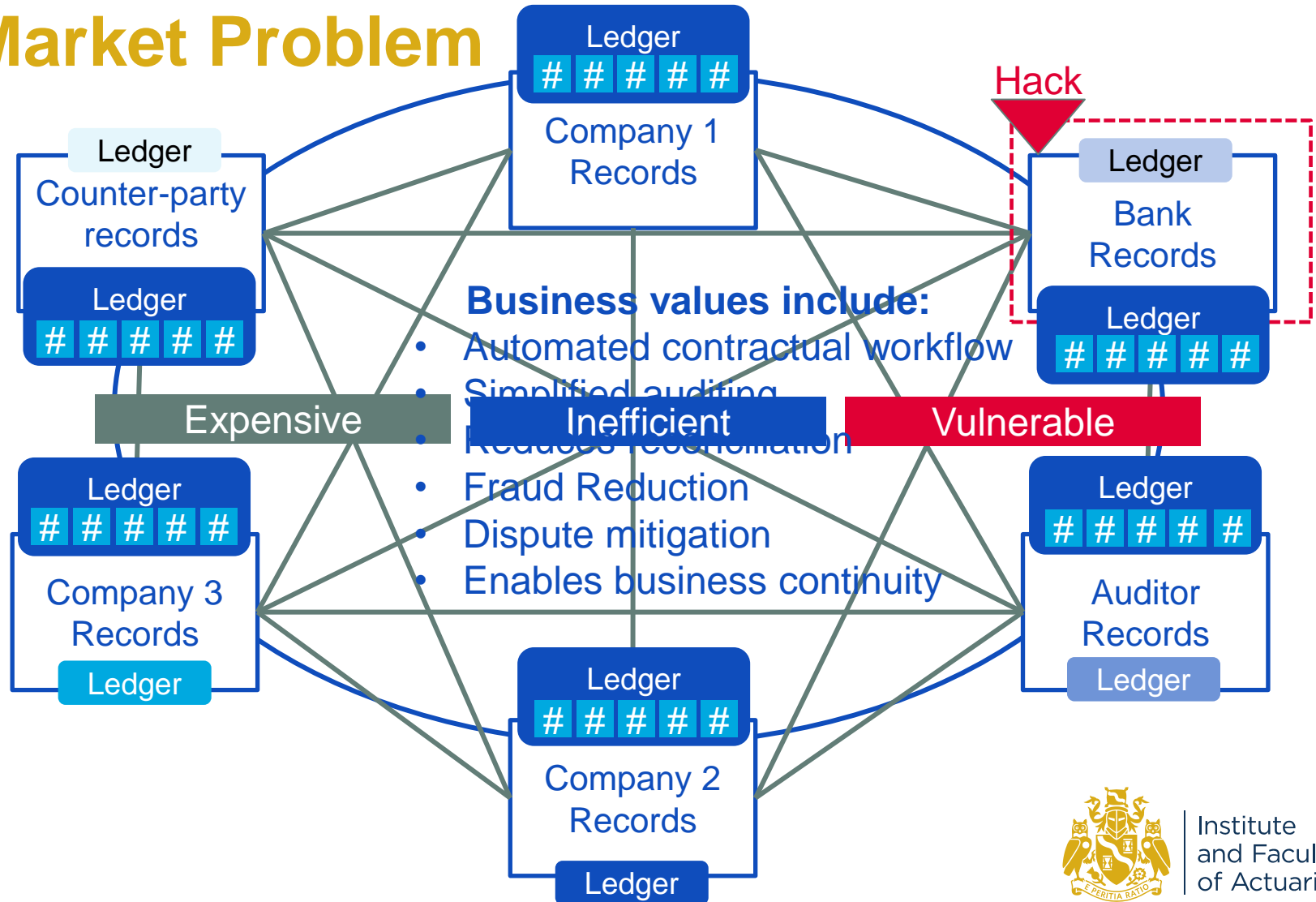
- **Back end database** - that permanently records transactions in a replicated shared ledger
- **Value exchange network** - for moving and validating transactions/assets between peers without the assistance of intermediaries
- **Transparent, updated in real-time, immediately available and selectively auditable** by all relevant stakeholders

Implications

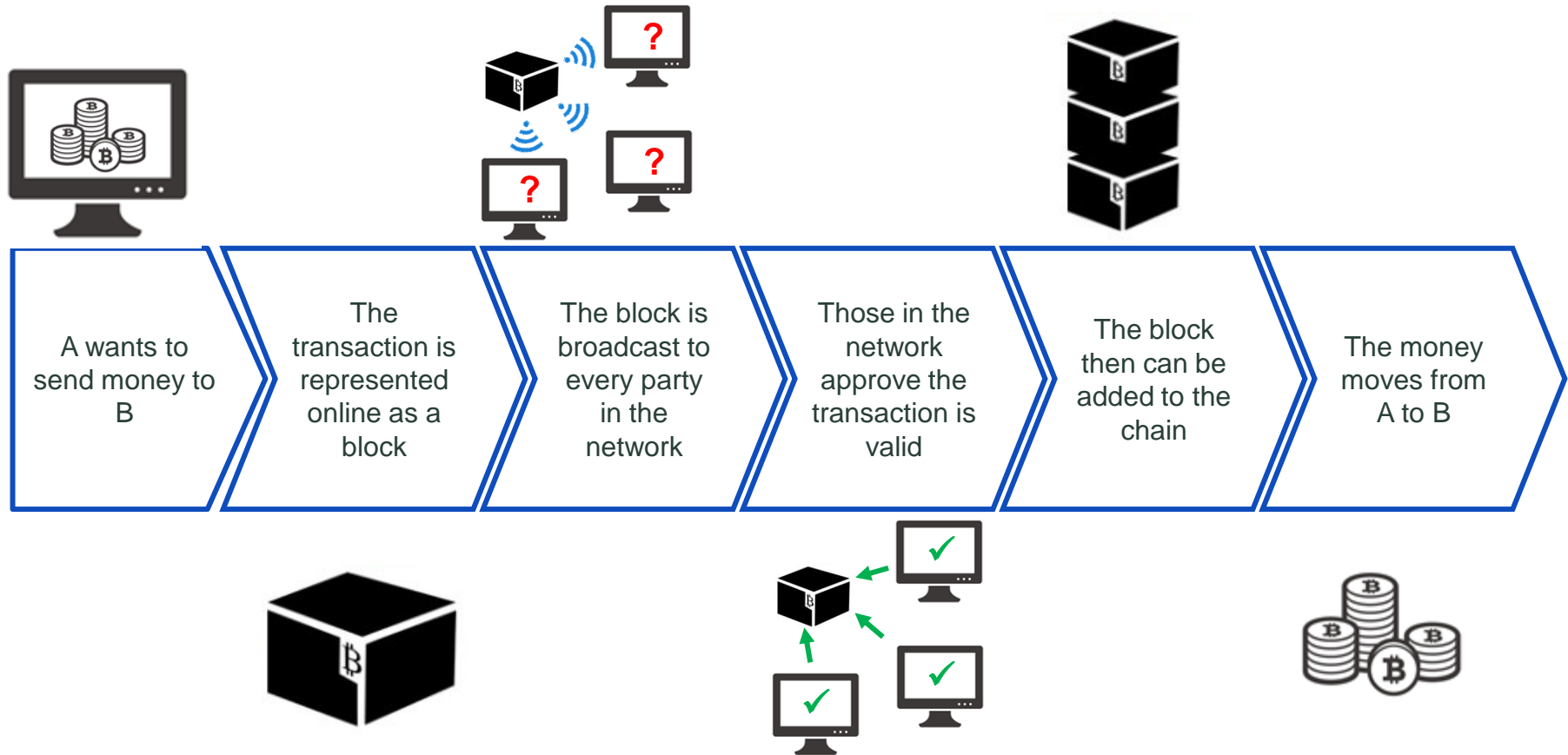
- Application of blockchain has multiplicity of effects: **Consensus, provenance, immutability, finality and resilience**
- **Trust layer over internet** - establishes trust, accountability and transparency within market participants
- Enterprise applications using blockchain range from back-office functions to parametric products to new business models
- Well known cross-border, large scale application to-date of blockchain technology is bitcoin



Blockchain Solution Market Problem



Blockchain as a trust web - Bitcoin



Blockchain keeps track of who owns what, and who owned what in the past
FULL HISTORY OF ALL PAST TRANSACTIONS ('E PERITIA RATIO')



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Why is blockchain unique? Four technologies in one

Distributed Ledger

- Decentralized, peer-to-peer network
- Append-only distributed database
- Replicated to all participant on the network
- Shows current status as well as status over time

Cryptography

- Ensures that transactions are secure, authenticated & verifiable
- Verifies participants' privacy while the ledger is shared

Consensus

- Consensus is the process by which transactions are verified
- Decentralized consensus ensures agreement on "single-version-of-the-truth" (allows for consistency among distributed ledger)

Smart Contracts

- Programmable contracts which contain the business logic that is automatically executed when pre-defined conditions are met
- Ideal for arrangements that are: tailored, verifiable, signed, self-executing, embedded in blockchain networks





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2. Financial markets and insurance applications

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Banking and exchanges have been first movers in applying blockchain

Banking



Active PoCs include areas in post-trade settlement, trade finance, international payments, corporate bonds, asset tracking

Exchanges



NASDAQ is exploring blockchain to enable peer-to-peer securities transactions to replace current transaction systems



Digital Asset Holdings

DTCC and Digital Asset partnered to develop a blockchain solution for Repo clearing

E-Finance



Santander facilitating international payments through Apple's app "Apple Pay"

Users are free to transfer amounts from £10 to £10'000 (payments in GBP to EUR & USD)



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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



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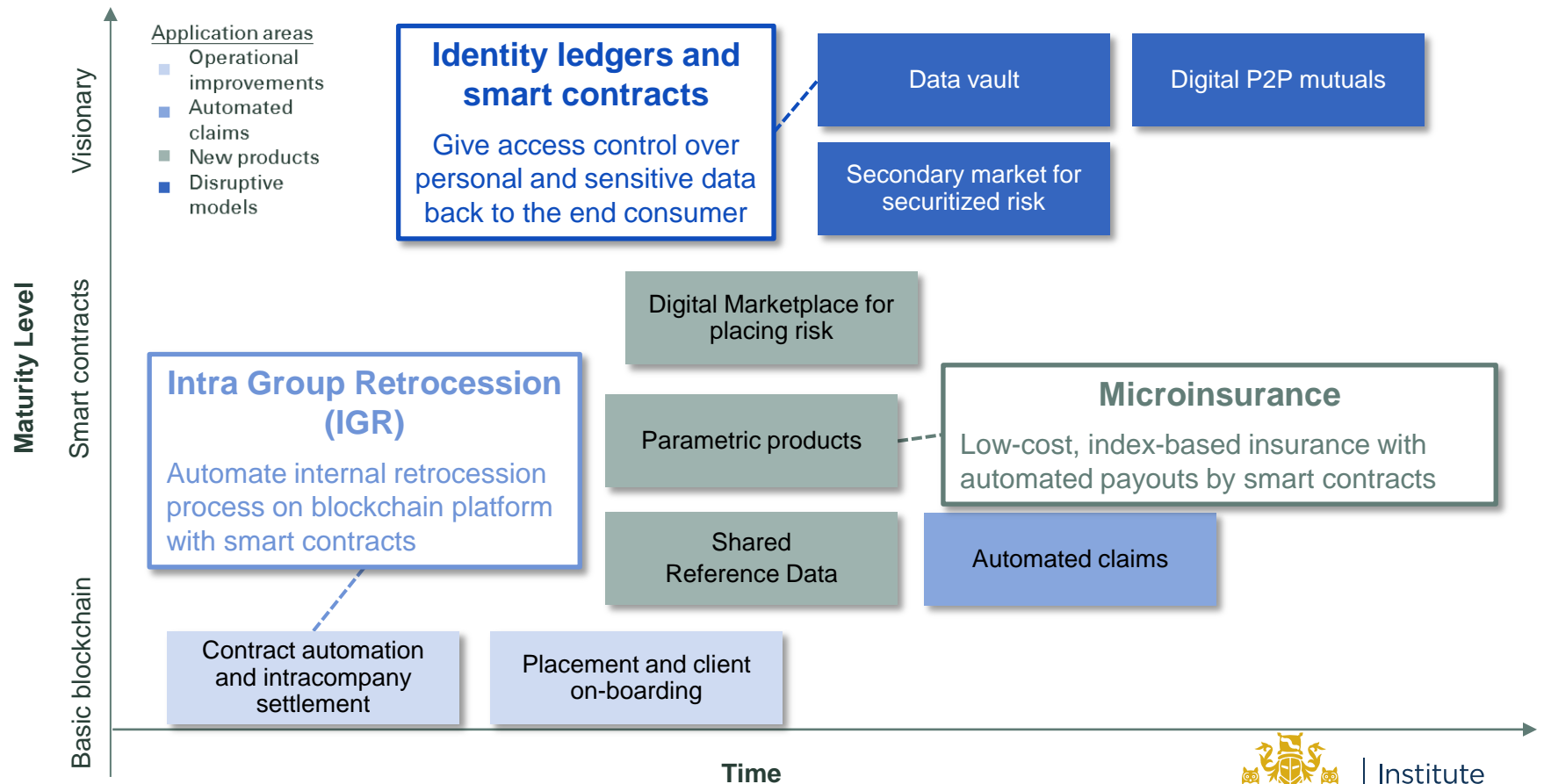


3. Swiss Re activities

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Blockchain to evolve with concrete business applications



Proof of concept for IGR process is the first step in establishing industry standards

1 Internally: blockchain for internal retrocession

Automate internal retrocession process on blockchain platform with smart contracts. Integrated retrocession combining Cat XoL with Q/S: Create contract, process statement, compute cession, generate payment instruction, record settlement.

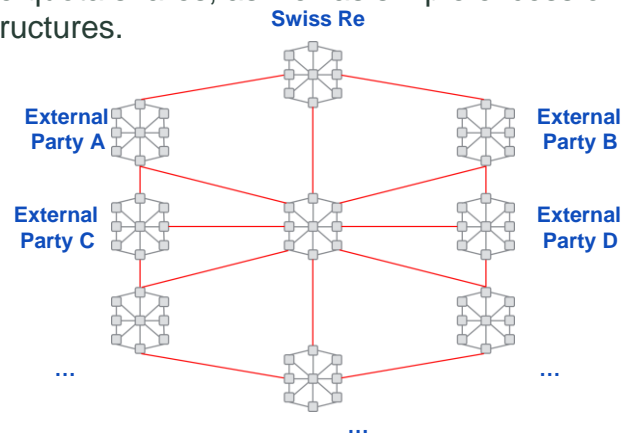
Swiss Re Internal



Network of retrocessionaires and retrocedents within Swiss Re group (Intra-Group Retrocession: IGR)

2 Externally: extend network across the industry (B3i)

Once proven, extend network across insurers, reinsurers, retrocedents, retrocessionnaires. Most natural fit for proportional contracts, e.g. non-life quota shares, as well as simple excess of loss structures.



Within the reinsurance market covering cessions between insurers, reinsurers and retrocessionnaires

Benefits include:

- 1) acceleration of process and settlement
- 2) reduction in cost and operational risk
- 3) increased transparency for all participants
- 4) better quality cash management



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Blockchain implementation of parametric products for low premium, high volume business

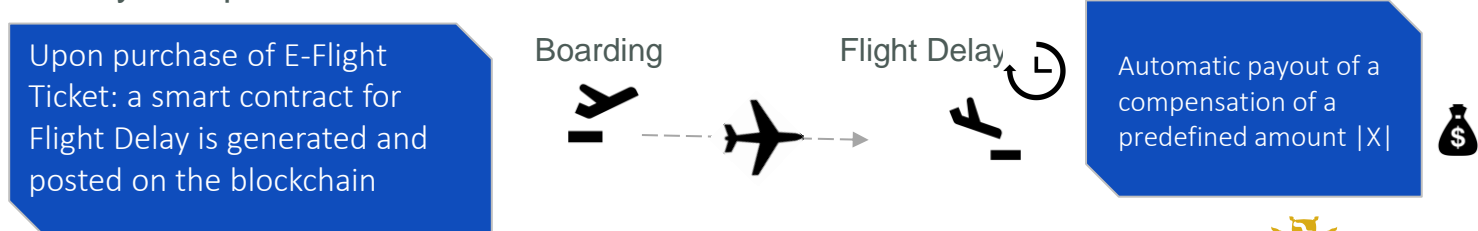
Integration of Blockchain and Smart Contracts into the Microinsurance / Insurance-on-Demand Market

- **Low premium, high volume business**
- **Transaction fees** are the main obstacle to it
- Blockchain might offer a way to solve this issue and **gain in efficiency along the insurance value chain**

Index-based insurance for severe weather conditions :



Flight Delay Compensation:



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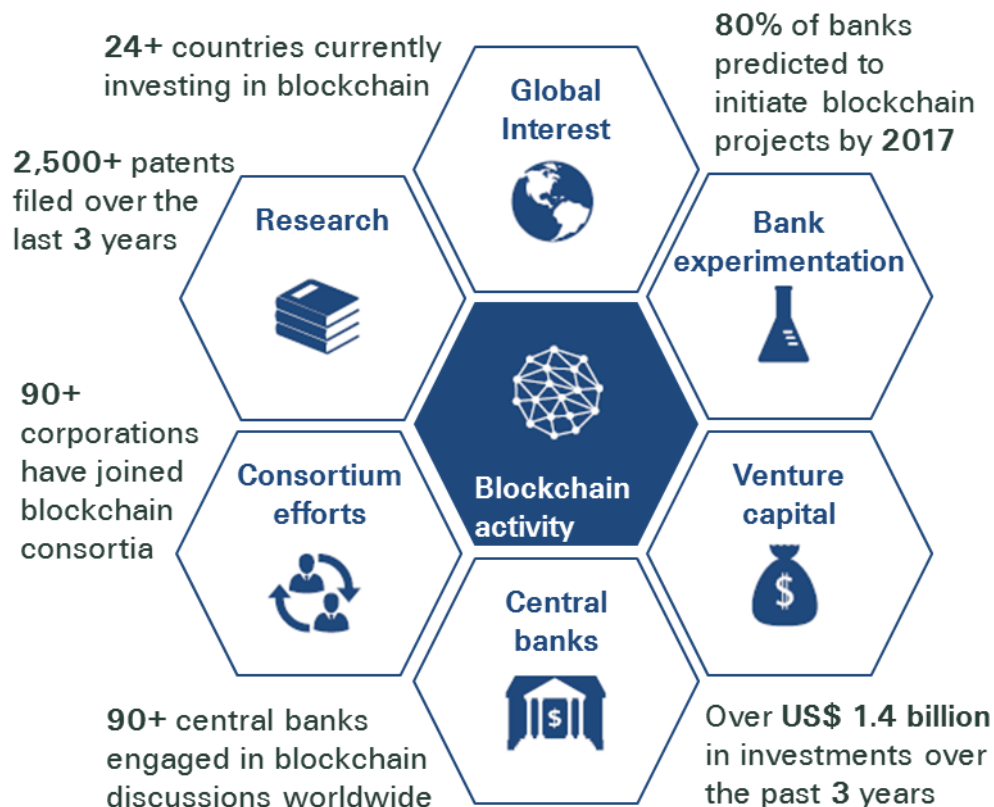


4. Outlook

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Significant hype, early promises



Source: World Economic Forum

Top Challenges

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



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Market outlook for 2017

- Investment will get focussed towards establishing standards, achieving scalability, ensuring confidentiality etc.
 - Private blockchains with limited subset of trusted participants will emerge
 - **Blockchain “inspired” applications** addressing specific industry needs (e.g. R3 Corda)
 - **Regulators step in** to assess challenges and benefits
 - First wave of enterprise applications would **go into production** in financial services
 - New areas of research will include potential synergy between **blockchain, IoT and Big Data**
- The blockchain is not a panacea, and the technology and business applications are still evolving
 - However, the technology has potential to enhance cooperation among re/insurers, to reduce operational costs and to create new product and enhancement opportunities



Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



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