Gaat blockchain de vastgoedsector veroveren?
Introductie Dennis de Vries

- Joined in 2015 as senior manager Audit serving financial institutions
- Appointed lead KPMG Digital Ledger Services Netherlands in 2016
- Member of KPMG DLS Global Steering Committee

- 14 years internal audit
- 5 years business management
- First ever ING Bank blockchain researcher for Executive Board in 2014

- 25 years of bicycling around the world
- 50+ trips to over 35 countries
De essentie van blockchain

CRYPTOGRAPHY

— Private & Public Keys
— Hash Algorithms
— Merkle Tree

Value transfer via the internet...

PEER TO PEER NETWORK

— Decentralized & distributed network architecture
— No central governing body
— Nodes linked over the Internet

...without a trusted third party...

CONSENSUS MECHANISM

— Nodes collaborate to validate information
— Use various types of consensus models
— Initial Bitcoin Blockchain uses ‘Proof of Work’

...validated by nodes within a network...

OPEN SOURCE CODE

— Source code open to review by anybody
— Catalyst for wave of innovation
— Many different implementations today

...based on open source protocol...

DECENTRALIZED LEDGER

— Public record of all transactions
— Every stakeholder has the same ledger
— Avoids ‘cheating’ and automatically reconciles all data

...completely transparently

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Blockchain voor vastgoed
Use cases voor blockchain in vastgoed

- Digital ownership record
- Document management
- Rental contracts
- Object passport
- Intellectual property management
- Service cost payments
- Tokenise your house
- Access management
- Smart contracts
Digital ownership record

Vermont City Pilots Land Registry Record With Blockchain Startup

Russia's Government to Test Blockchain Land Registry System

Kenya's real estate industry goes hi-tech with blockchain

100%: Dubai Will Put Entire Land Registry on a Blockchain

Bermuda Could Launch a Blockchain Land Registry

Sweden Moves to Next Stage With Blockchain Land Registry
Document management

The Land Registry in the blockchain - testbed
A development project with Lantmäteriet, Landshypotek Bank, SIBAB, Telia company, ChromaWay and Kairos Future

March 2017
Rental contracts

ABN-AMRO Torch project

Without it, the bank has to go to great lengths to gather this information.
Object passport / Building Information Management

Cradle-to-cradle on the Blockchain

Repair and maintenance trail

Automaker Renault Trials Blockchain in Bid to Secure Car Repair Data

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Intellectual property management

Blockchain and Intellectual Property
Alicante, 26 October 2017

On the 26 October 2017, the EU IPO brought together around 80 people to interact and discuss the implications of blockchain technology on the world of intellectual property. Participants included blockchain experts, national IP offices, right holder representatives and representatives from civil society. The conference covered the basic concepts of the technology, the many aspects of interaction between the technology and intellectual property, 3 practical use cases and a look into the future.
Tokenize your house

Tokenizing REAL ESTATE ON THE BLOCKCHAIN
Internet of things & access management
Internet of things & smart contracts

Rent, sell or share anything

Download Press Kit

With Slock.it, Airbnb apartments become fully automated, smart objects can be rented on demand and unused vehicles get a new lease on life. We’re developing the future infrastructure of the Sharing Economy. Learn more.
Blockchain Innovation Lab

**Preparation**
- Kick-off meeting
  - Workshop with Microsoft, Cegeka & KPMG

**Short listing**
- Use case ideation
  - Desk research insurance use cases
  - Gather member experience
  - Brainstorm session

  **Technical orientation session**
  - Blockchain introduction workshop
  - Ecosystem overview workshop
  - Gather member experience

  **Use case shortlisting**
  - Use case high level qualification
  - Shortlisting workshop with members and KPMG, Cegeka and Microsoft

**Use case qualification & selection**
- Qualification of use cases
  - High level current vs future state analysis
  - High level cost / benefit analysis
  - KPMG / Cegeka / Microsoft expert validation
  - Selection workshop

  **Ecosystem orientation**
  - Ecosystem overview
  - Gather member experience
  - Previous PoC expert lessons learned overview
  - Protocol selection

  **Define team composition**

**Develop**
- Day 30 - 89

**Launch**
- Day 90

**Weekly sprints**
- 4 days development, 1 day review & testing
- Programme guided by a lean startup/scrum expert
- Digitally tracked progress

**Connecting the right experts from KPMG, Microsoft and Cegeka**

**3-weekly progress checks**

**Weekly contact and collaboration**

**Result**
- General direction

**Result**
- Top 3 use case shortlist validated by members and external experts

**Result**
- Use case, protocol and team selected

**Result**
- Tested and validated MVP
- Next steps for Prototype
Know Your Customer

KYC Current Value Chain

KYC Presentation of Concept

KYC Use Case Benefits

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Blockchain Assessment Solution

The model contains blockchain specific risks grouped in ten IT risk areas.

For each risk area a set of controls have been defined to allow KPMG to assess the maturity on the specific risk.

The controls are plotted on a maturity level scale, this can be seen as a pyramid, starting at level 1, working up to level 5.

**Level 1 - Ad hoc**
Lack of defined on boarding and off boarding procedures for network participants.

**Level 2 - Reactive**
Procedures are in place to ensure data confidentiality. On boarding and off boarding procedures are defined. Loosely defined Segregations of Duties for network roles.

**Level 3 - Proactive**
Controls are in place to detect unauthorized access. Transactional data is only shared with parties included in the transaction and applicable supervisory authorities.

**Level 4 - Service**
On boarding and off boarding procedures are defined for all network participants and periodic compliance checks take place.

**Level 5 - Value**
On boarding and off boarding procedures are defined also for future state operation of the network.
Thank you

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