The Land Registry in the blockchain

ISO/TC211
Magnus Kempe, Kairos Future
The Blockchain
How to create trust in a digital society?
The Blockchain can be a solution to problems not solved…

- Assets – Creation and transfer of unique digital units

- Register – Verify digital files authenticity, identity, order in time, and place

- Applications – Control roles and processes of applications
Bitcoin was a catalyst of innovation

**Asset**
- Bitcoin

**Register**
- Blockchain

**Application**
- Smart contract
  - Distributed ledger
  - Embedded contract/Dapp
Private and public keys
Hash functions

SHA 256
Consensus algorithm
Blockchain for real estate transactions
Wealth without mortgages is not possible

“Mortgage markets seem to develop only at relatively high levels of gross domestic product per capita.”

The Land Registry in the Blockchain
Purpose with the first project

- Show how the blockchain technology can improve the real-estate transaction process
- Describe the basic function and value of the technology and why it is interesting for the future
- Demonstrate a proof of concept as a mobile application
Purpose with the second project

- Develop a working technical environment with the blockchain and the smart contract engine with user interfaces
- Improve the process and look into the mortgage deed process
- Continue the communication and the dialogue with external partners to gain a better understanding of potential weaknesses, security concerns, legal issues, process and integration issues.
- Write a report to document the project and the findings.
- Telia, Lantmäteriet, ChromaWay, Kairos Future, Landshypotek Bank and SBAB were part of the project.
Purpose with the third project – implementation test

- To make the world’s first fully digital real estate transaction, and make all participants in the process confident in the technology and the agreement in both the real estate contract, and mortgage deed contract.
- To implement the blockchain solution so that the participating organizations can run a node independently, either in a proprietary test environment, i.e. an SQL based Consortium Database, or remotely.
- To develop a user friendly interface for non professional users such as buyers and sellers.
- To make a framework for possible governance structures of the blockchain and the contract engine, for wider Swedish or international use.
- To elaborate on further improvements of the process and new areas of development such as tracking promissory notes and the apartment registry.
The value and benefit with the solution
Improvements compared with today

- Each participant in the contract have a contract that can not be lost or stolen
- The information in the contract is easy to validate
- Proof of all the signatures of the participants in the contract are easy to validate including mortgage deeds, contracts, transactions, payments etc.
- No other contract can be ongoing involving the same property without notice, i.e. this risk of double selling is eliminated
- Fraudulent overtaking of a property will be significantly more difficult
- The process and who is about to do the next step is visible for everyone involved in the contract
- Information that should be kept confidential, like the promissory note, stay confidential and information that should be public can be made public
Improvements continued

- The liquidity of the real estate can be improved since the ownership and value of the property can come into effect after the purchase contract and not after the bill of sale.
- The contracts will be finalized including commitment to downpayment at the time of signing the contract – a significant improvement and comfort and time saving solution for seller, buyer, agents and banks.
- The time savings of the banks and the real estate agent will most likely bring down cost for both them and the consumer.
- The mortgage deed process will be secure and eliminate situations where the mortgage deed is not transferred to the buyers bank on time.
- The new source of accurate and early data will serve as a basis for further innovation and business development, within derivatives, cross selling, predictive analytics, macro analysis and more.
Architecture and interface
Admin interface
Admin interface after two more actions
Other applications
Food traceability
Patient data records
Standards

- **Standards**
  - Terminology and taxonomy
  - Legal requirements
  - ID – solutions

- **Guidelines**
  - Governance
  - Export formats
  - Interoperability
  - Privacy

- **Use case specific**
  - Property
  - Food
  - Patient data
  - Promissory notes
Land registry

Mortgage deed registry

Block-chain, Verifications

Real world representation Land, IOU

File/contract state storage

Application/Contract engine

ID – registry and application

User interfaces

Agent

Bank

Buyer

Seller

Consultants for Strategic Futures