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BLOCKCHAIN & REAL ESTATE

Opportunities, lessons & next steps

ELRN WORKSHOP 01-06-2018, Tallinn

Jacques Vos, Kadaster

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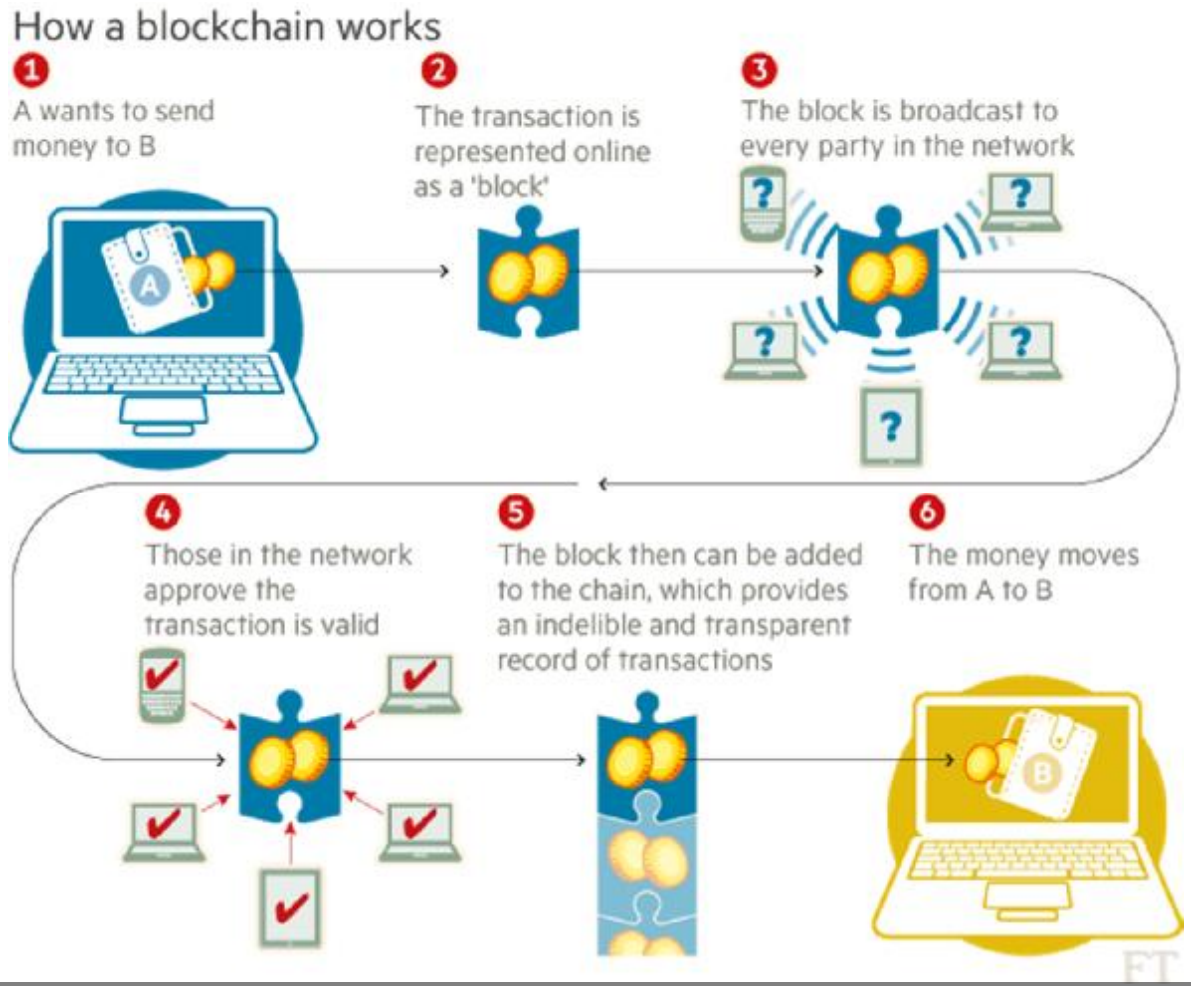
Last year…

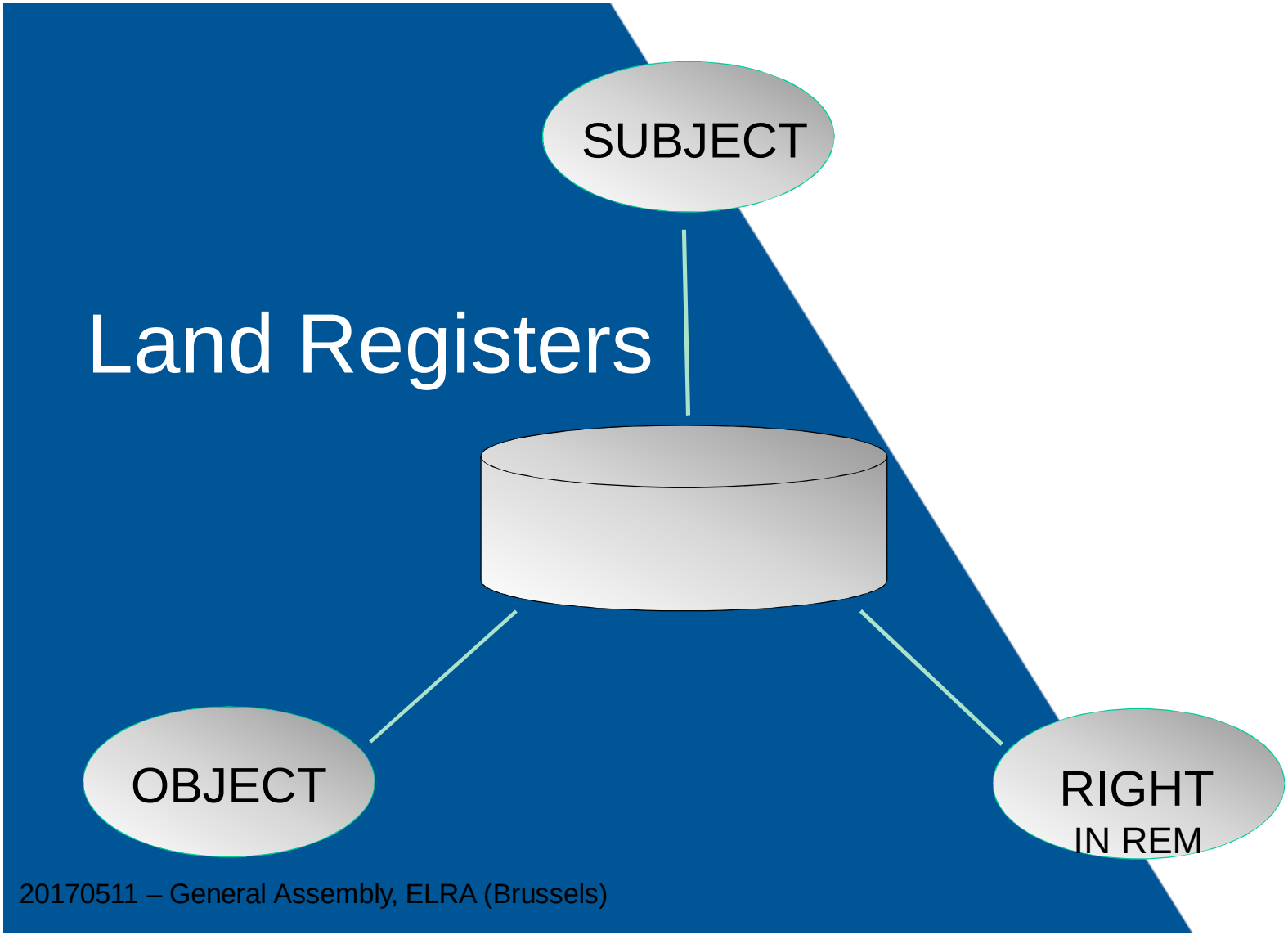
“Land Registry and Commercial Registers – they will become obsolete.” (Emerce)

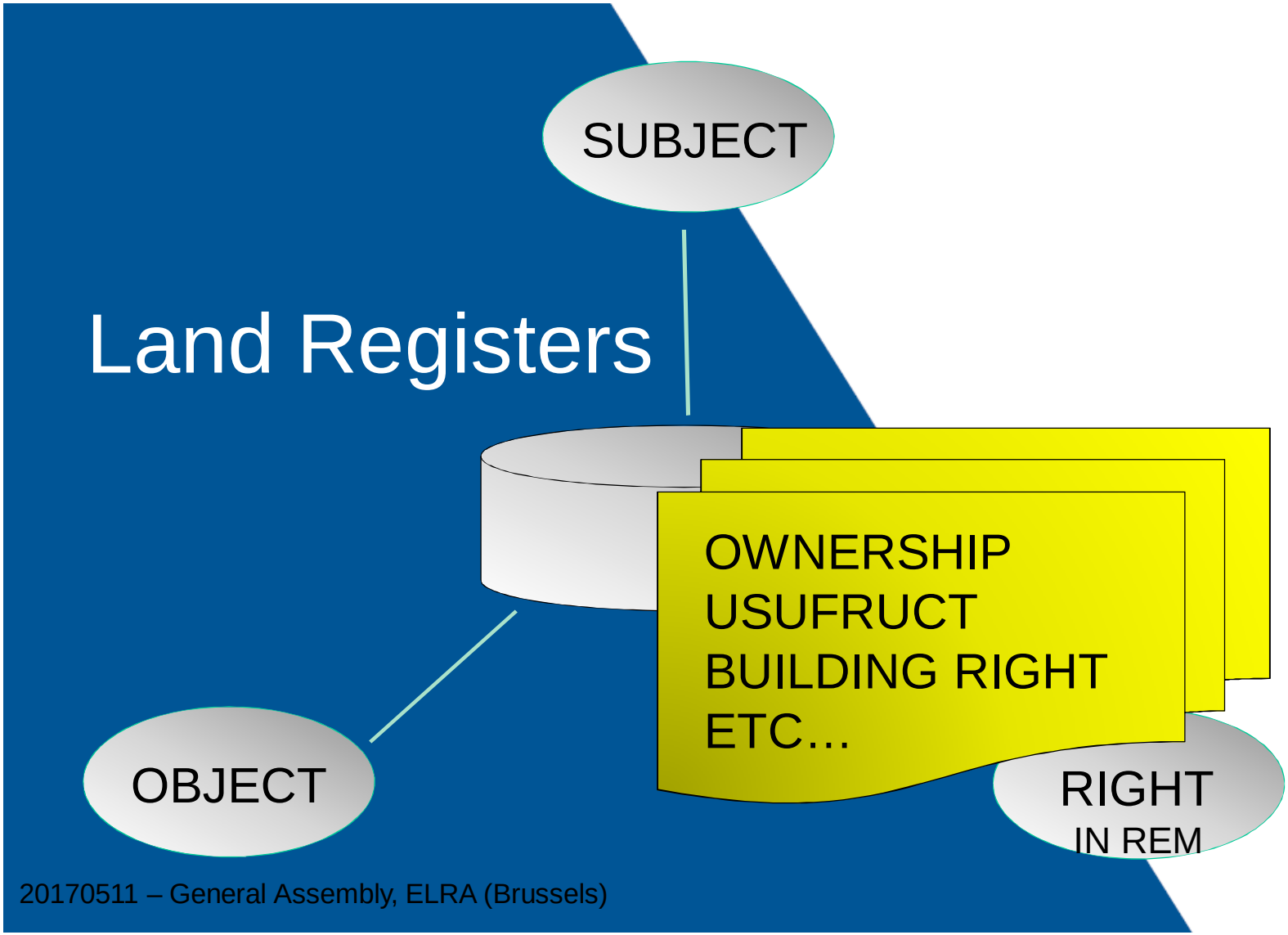


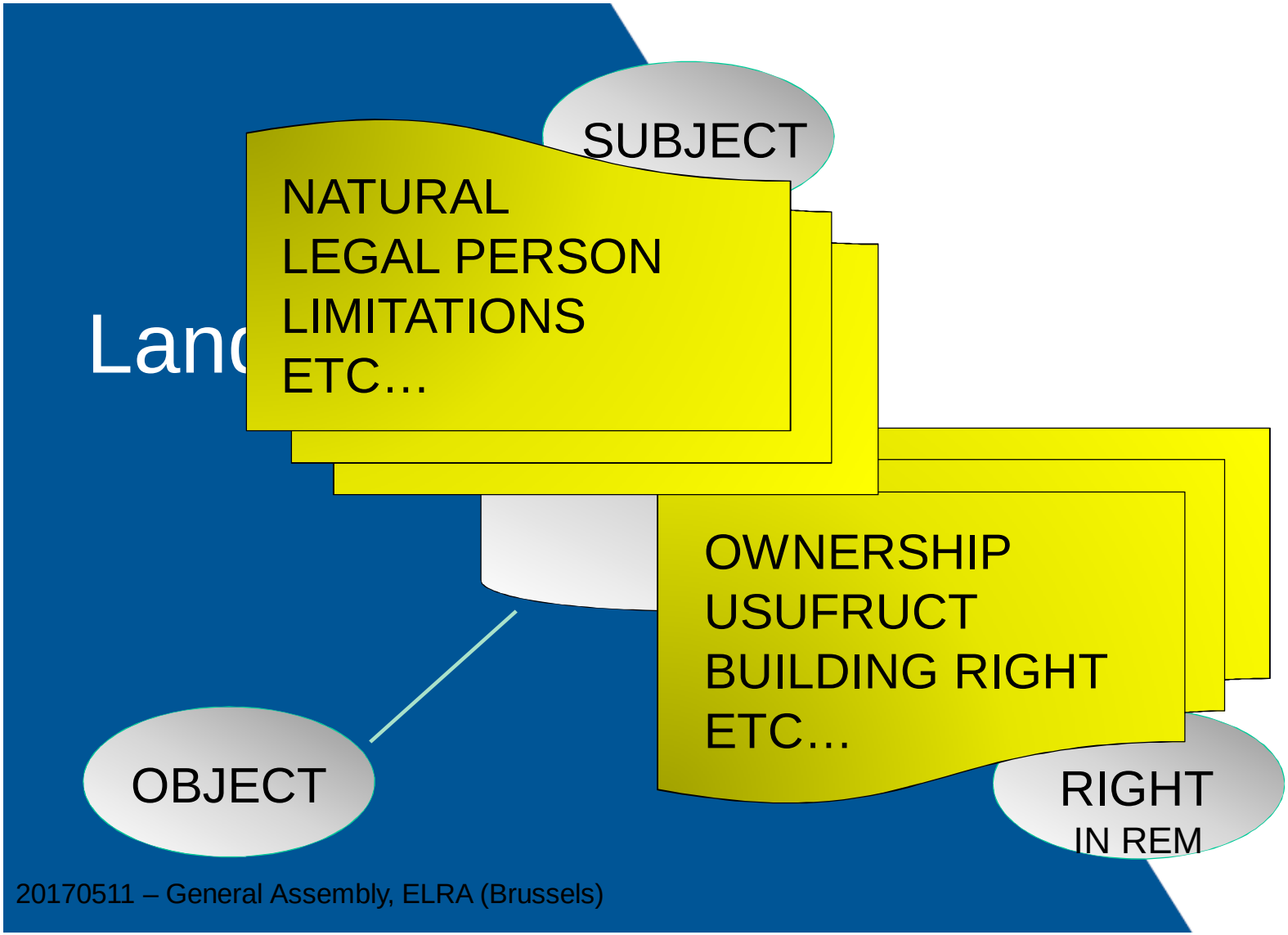
source: ft.com

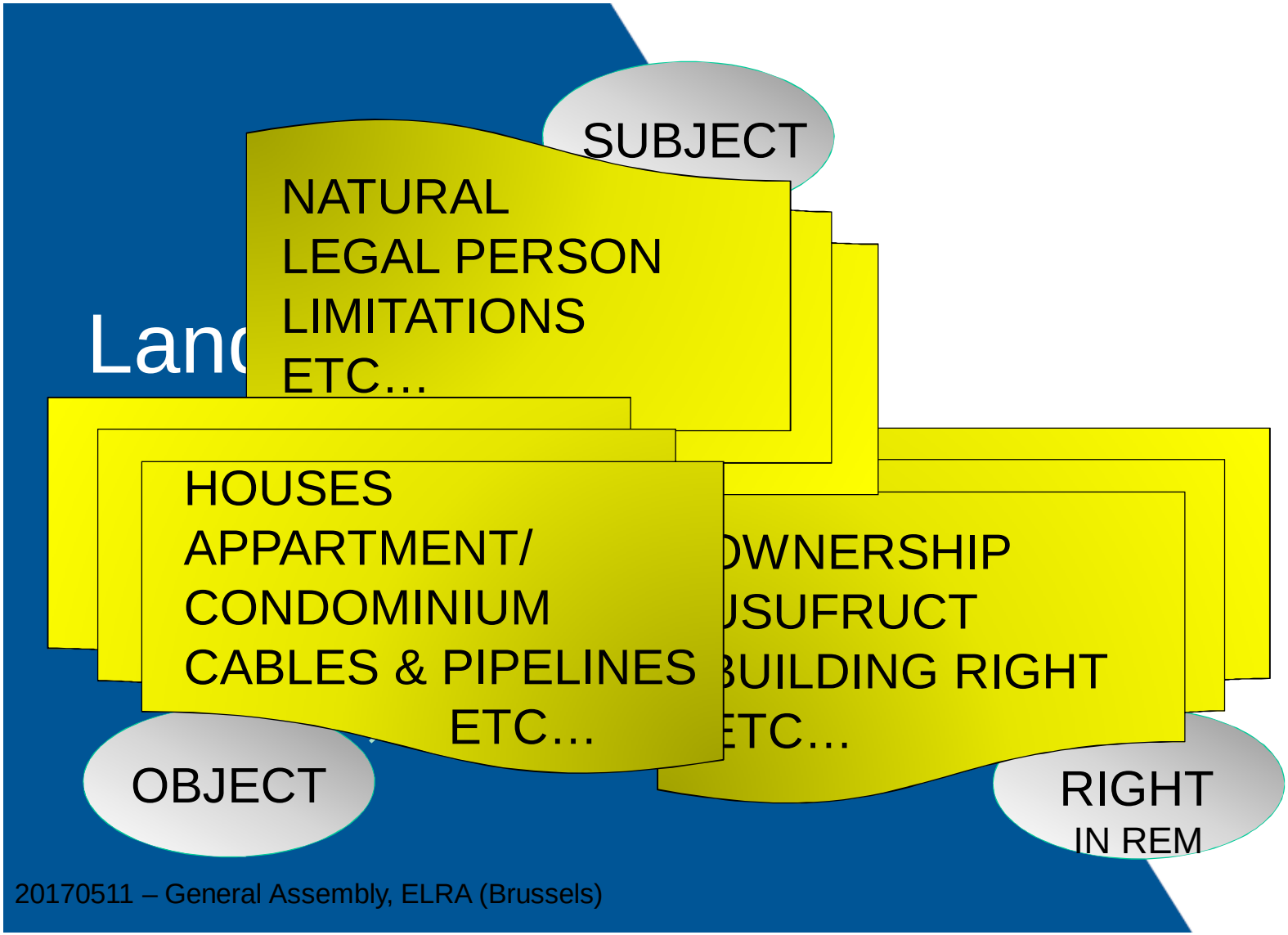
BLOCKCHAIN WILL BRING …

- INFORMATION SYMMETRY
- IMMUTABILITY
- TRANSPARENCY


SUBJECT
Land Registers
OBJECT
RIGHT
IN REM


SUBJECT
Land Registers
OWNERSHIP
USUFRUCT
BUILDING RIGHT
ETC…
OBJECT
RIGHT
IN REM


Land
SUBJECT
NATURAL
LEGAL PERSON
LIMITATIONS
ETC…
OWNERSHIP
USUFRUCT
BUILDING RIGHT
ETC…
OBJECT
RIGHT
IN REM


SUBJECT
NATURAL
LEGAL PERSON
LIMITATIONS
ETC…
Land
HOUSES
APPARTMENT/
CONDOMINIUM
CABLES & PIPELINES
ETC…
OWNERSHIP
USUFRUCT
BUILDING RIGHT
ETC…
OBJECT
RIGHT
IN REM

Blockchain (1)

ARCHIVE	Yes, hash/pointer
REGISTRATION	No, too complex
INFORMATION	No, data retrieval

Blockchain (2)

Genesis-block	Who? Quality- issue
Governance?	DAO, indemnity
Smart contracts	Code = **law = code**

Blockchain (3)

Vendor lock-in?	Who owns data
Bitcoin-based?	PoS & no PoW
Complete?	No, data retrieval

Trust as a fairytale?

SECURE DATA	C.I.A.? D.I.Y.?
IMMATURE	PoW? PoS? DAO?
OPEN & TRANSPARANT	Transparant: yes, open?

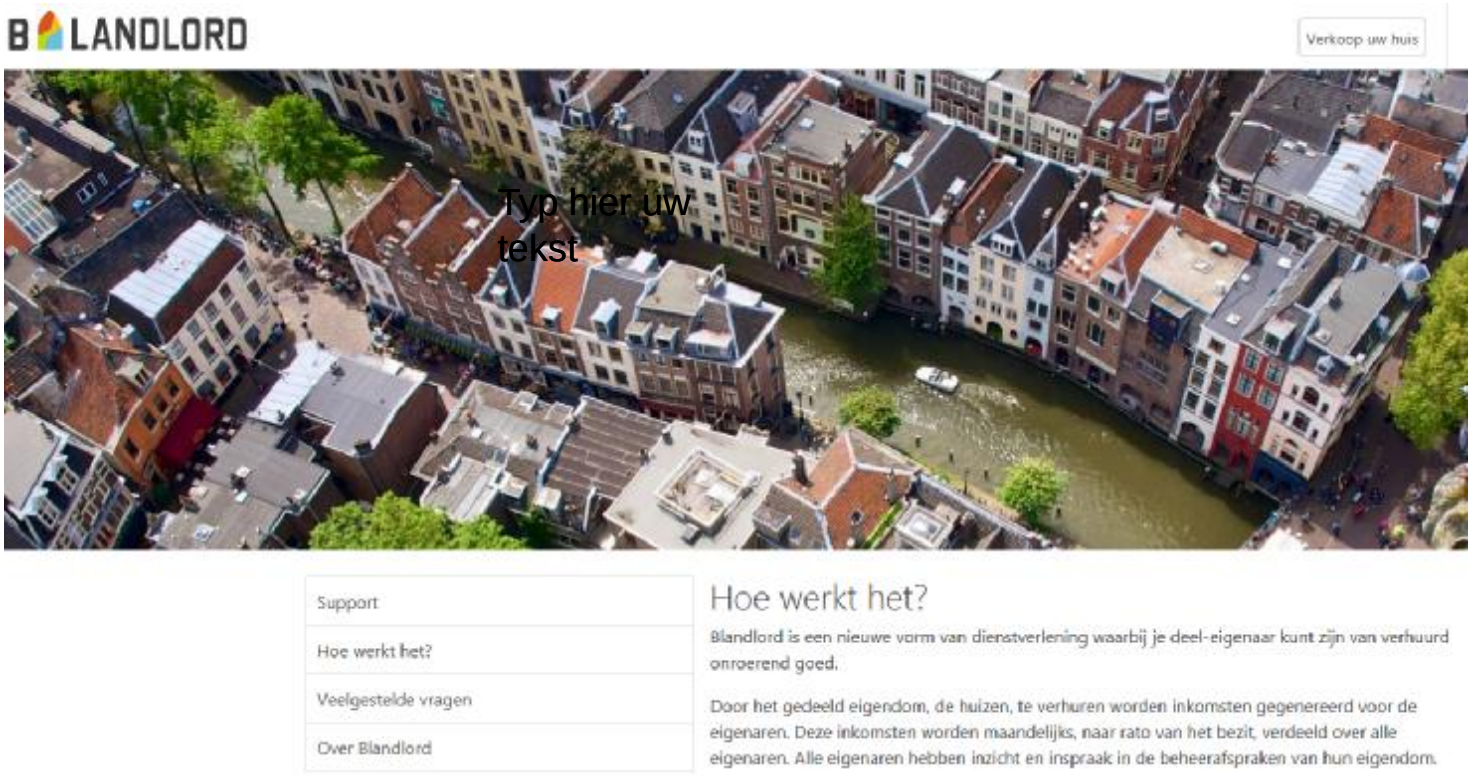
In Future?

VARIOUS INITIATIVES	Redundancy & privatization!
STANDARDIZATION	ISO/TC307, BIM, etc.
SMART CONTRACTS	Not all legal aspects

TRUSTED THIRD PARTIES…

- VALIDATE TRANSACTIONS
- GUIDE A CERTAIN PROCES
- DRAFT CONTRACTS
- IDENTIFY OBJECTS & SUBJECTS
- ARE AN INDEPENDANT WITNESS
- PREVENT FRAUD

FRACTIONAL OWNERSHIP



BRICKLAND
BRICKHOUSE
BLOQHOUSE
ETC.,
ETC

This year…

‘BLOCKCHAIN WILL REPLACE EVERYBODY’

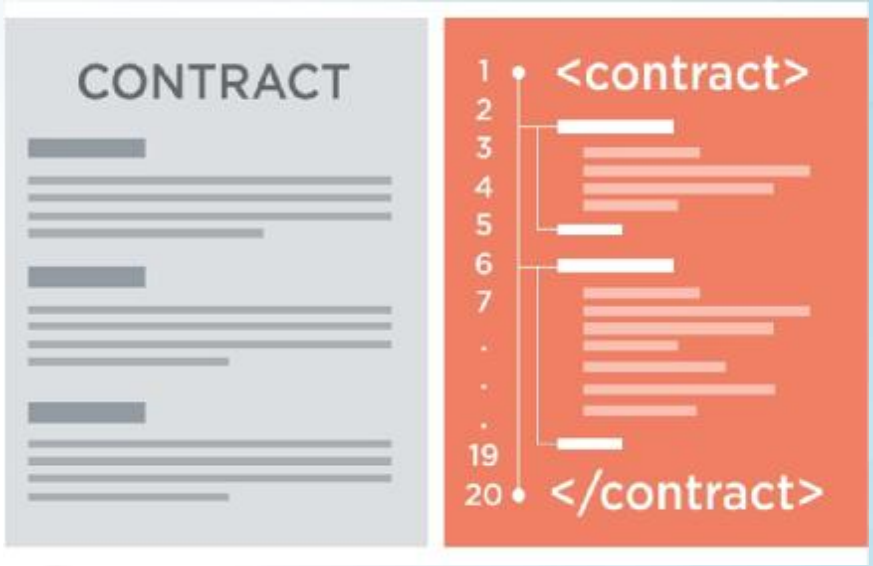
- REMOVE SLACK FROM PROCESSES	à	STREAMLINING PROCESSES
- INCREASE TRANSPARENCY	à	KADASTER-ON-LINE
- IMPROVE PRIVACY	à	SELF- SOVEREIGN IDENTITY…?
- PREVENT FRAUD	à	GARBAGE IN …
- A NEW CHAPTER FOR A DIGITAL INFRA	à	POSSIBLE WHAT WAS NOT POSSIBLE, TOO COMPLEX OR TOO EXPENSIVE

‘BLOCKCHAIN WILL PERHAPS REPLACE EVERYBODY’

- SCALING: (INTER)NATIONAL
- STANDARDISATION (SEMANTICS)
- IDENTIFICATION
- ACCESS & CONTROL
- GOVERNANCE: QUALITY, RULE OF LAW, ENFORCEMENT
- TECHNOLOGY/ ARCHITECTURE
- SECURITY

‘BLOCKCHAIN WILL NOT REPLACE EVERYBODY’

- ONLY PART OF THE SOLUTION:
  - A. PROCESS OPTIMALISATION
  - B. ORGANISATION FORM
  - C. GOVERNANCE
  - D. SEMANTICS



‘BLOCKCHAIN WILL REPLACE HARDLY ANYBODY’

- BUT: CRITICAL VIEW ON OWN ORGANISATION & ROLE
- AND: CRITICAL VIEW ON THE WHOLE (REAL ESTATE) CHAIN
- AND: STANDARDISATION IN SCOPE
- DIFFFICULT:
  ‘ISLANDS’ (SECTORAL, NATIONAL & INTERNATIONAL)

WHEN TO START WITH BLOCKCHAIN?

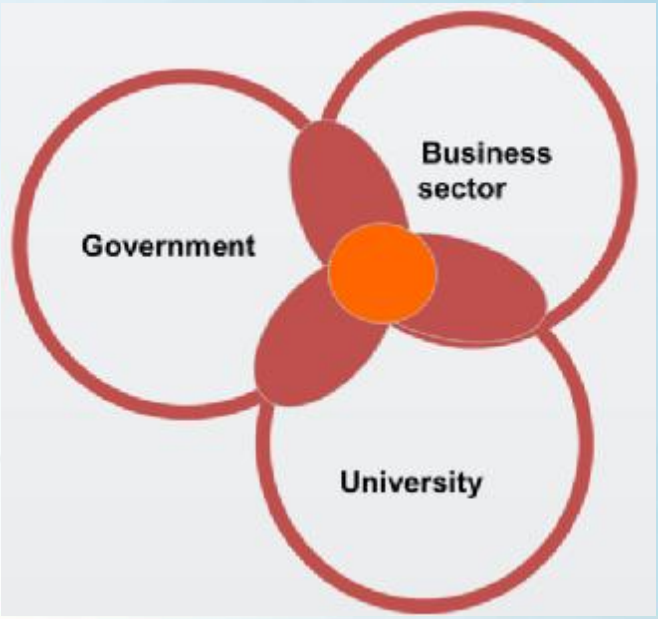
WHY IS BLOCKCHAIN INTERESTING?

- MULTIPLE OWNERSHIP
- NO NATURAL (UNWANTED) CENTRAL AUTHORITY
- RELIABLE EXCHANGE OF INFORMATION
- EASY INTERPRETABLE (à EASY TO AUTOMATE) RULES

WHAT ELSE DO YOU NEED?

- OTHER WAYS OF ORGANISINGG & SHARING INFORMATION
- UNIQUE ID FOR OBJECTS & SUBJECTS
- (POSSIBLE) CHANGE OF LEGISLATION & POLICY
- ‘SHARED PRIVATE DATA’ SOLUTION

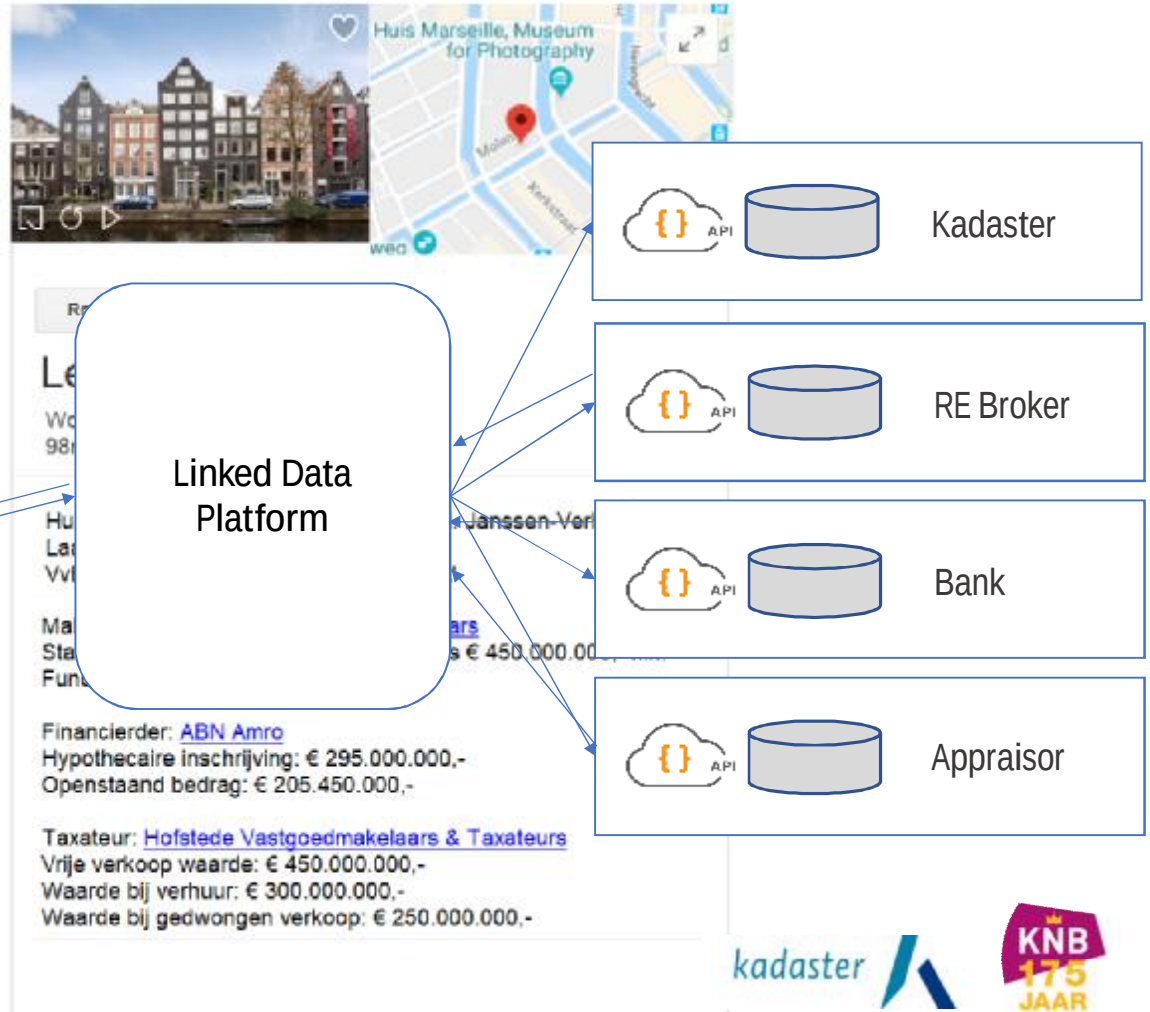
à NEW DIGITAL INFRASTRUCTURE



TOWARDS AN INFRASTRUCTURE OF SMART OBJECTS

Vastgoed

Leidsegracht 82n, Amsterdam



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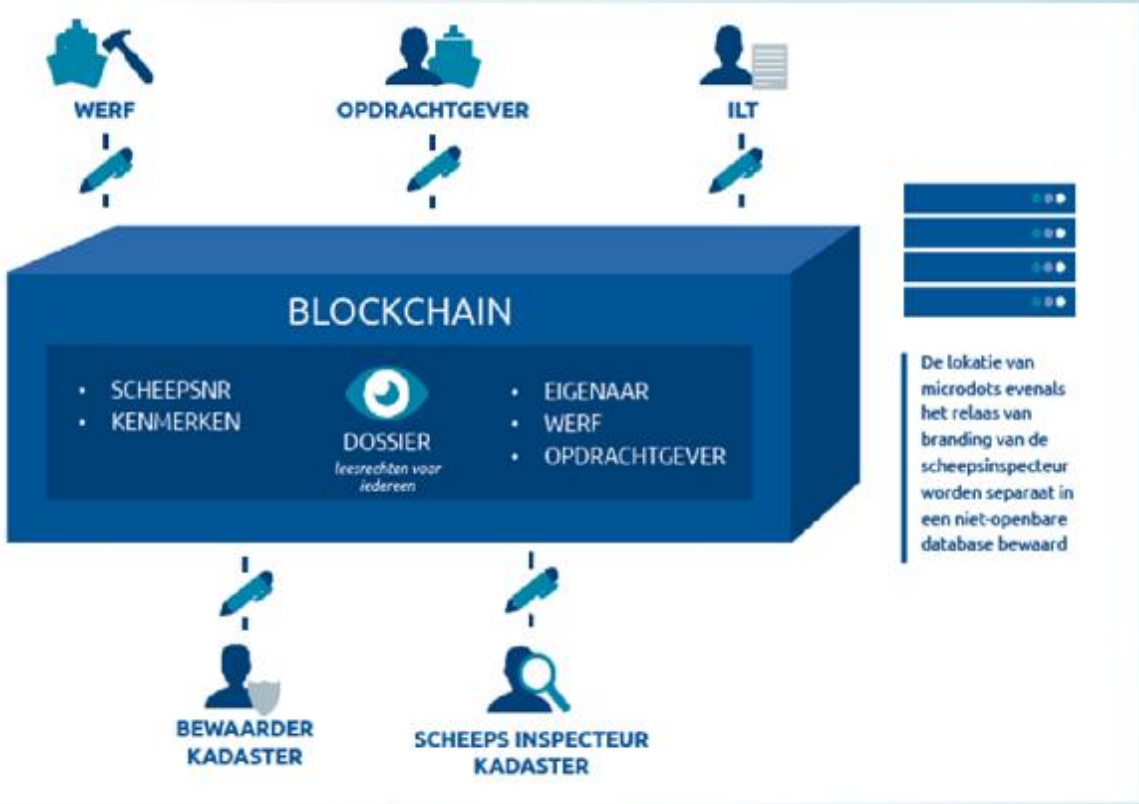
KNB 175 JAAR

FIRST TESTS: DBC-PILOTS

1ST REGISTRATION OF A SHIP



FIRST TESTS: 1ST POC: REQUEST PERMIT

A. VALIDATE ACTUALITY OF INFORMATION

B. VERIFY PROVISION BY SOURCE (KADASTER)

C. VERIFY USE OF INFO (BY USING *HASHES*)

D. CONCLUSION: BC INTERESTING, BUT COOPERATION NEEDED

Niet veilig | eenvoudigbeterbouwen.nl/#

Eenvoudig beter bouwen | Account | Aanvraag | Dossiers | Controleren | Blockchain | Jasper

Nieuwe aanvraag

ZOOM VERDER IN OM TE STARTEN

Kaart: TOP50 Zoomniveau: 9

Proof of concept by kadaster

FIRST TESTS: 2nd POC: BUILDING FILE

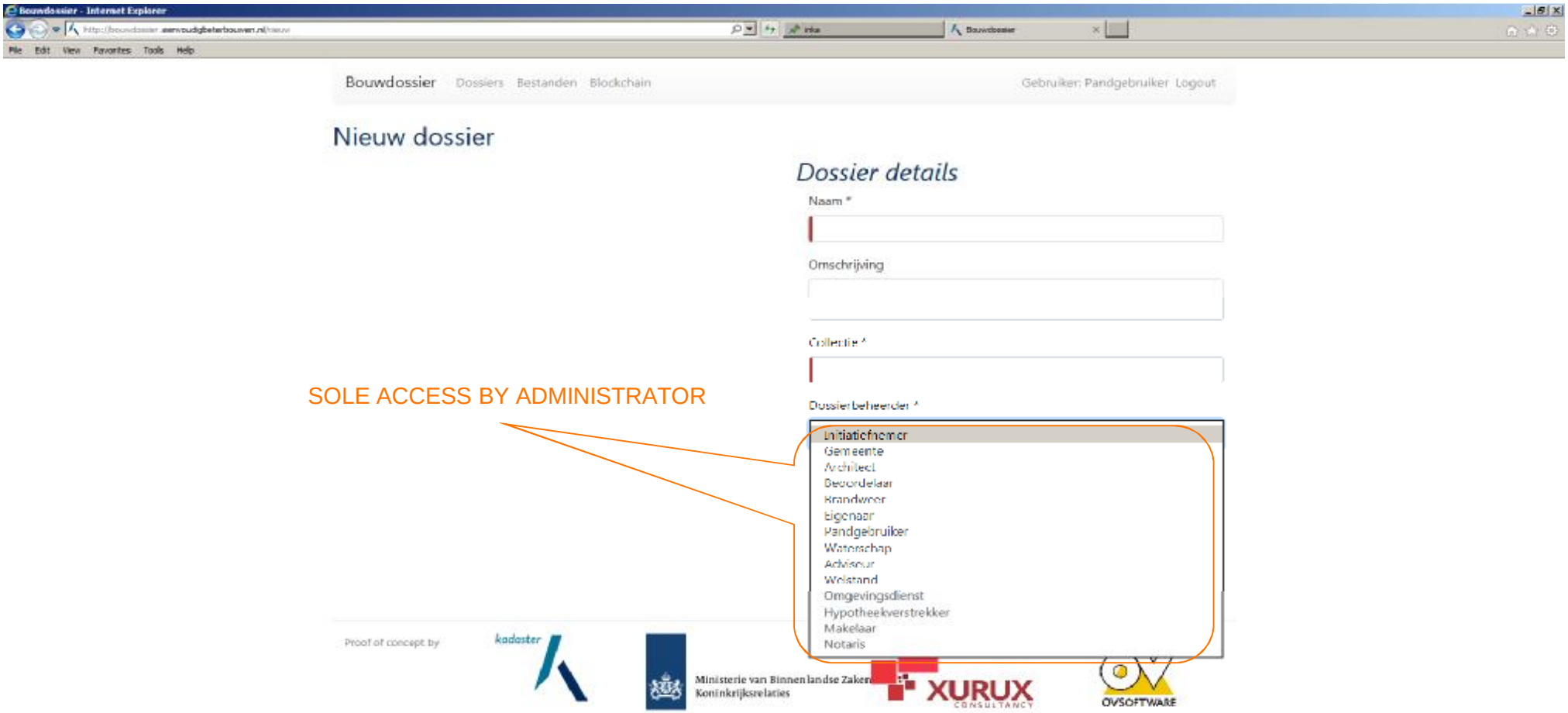
A. DECENTRALISED SOLUTION FOR BUILDING FILE

B. EVERYBODY CAN START A FILE AT ANY MOMENT

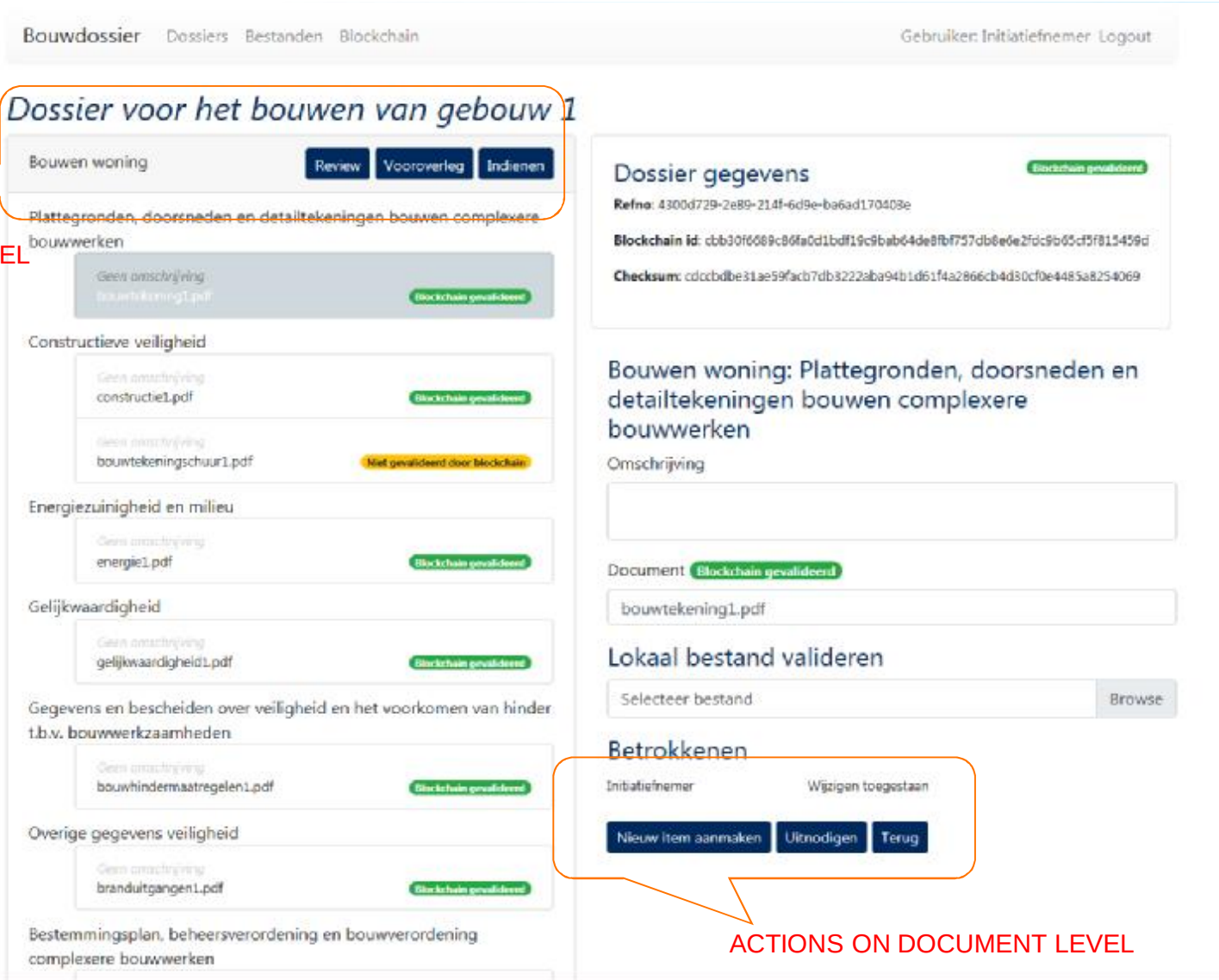
C. BC USED TO KEEP THE STATUS OF DOCUMENT/ DATA

D. VERIFICATION METHOD

EVERYBODY CAN START A FILE



SOLE ACCESS BY ADMINISTRATOR



ACTIONS ON FILE LEVEL

ACTIONS ON DOCUMENT LEVEL

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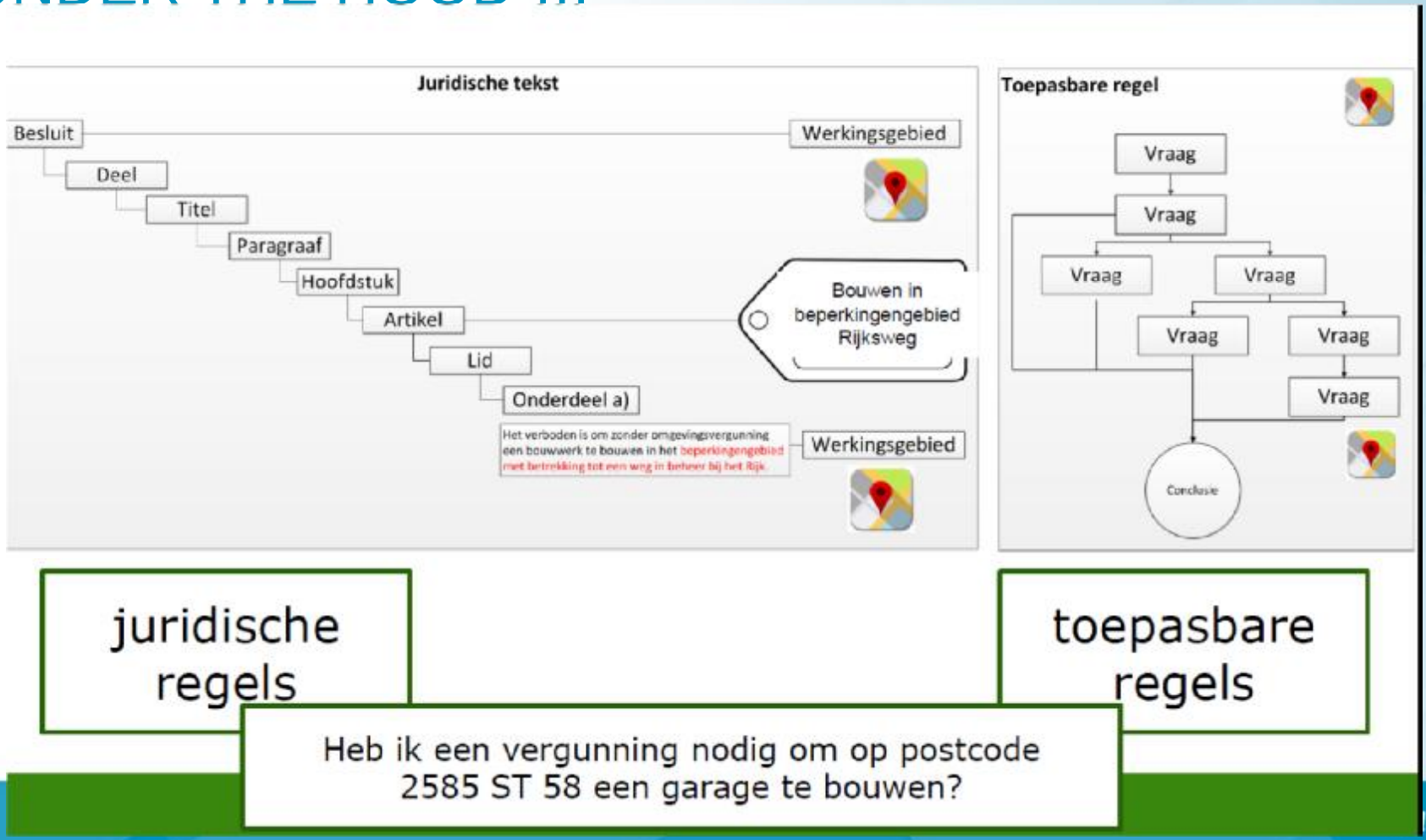
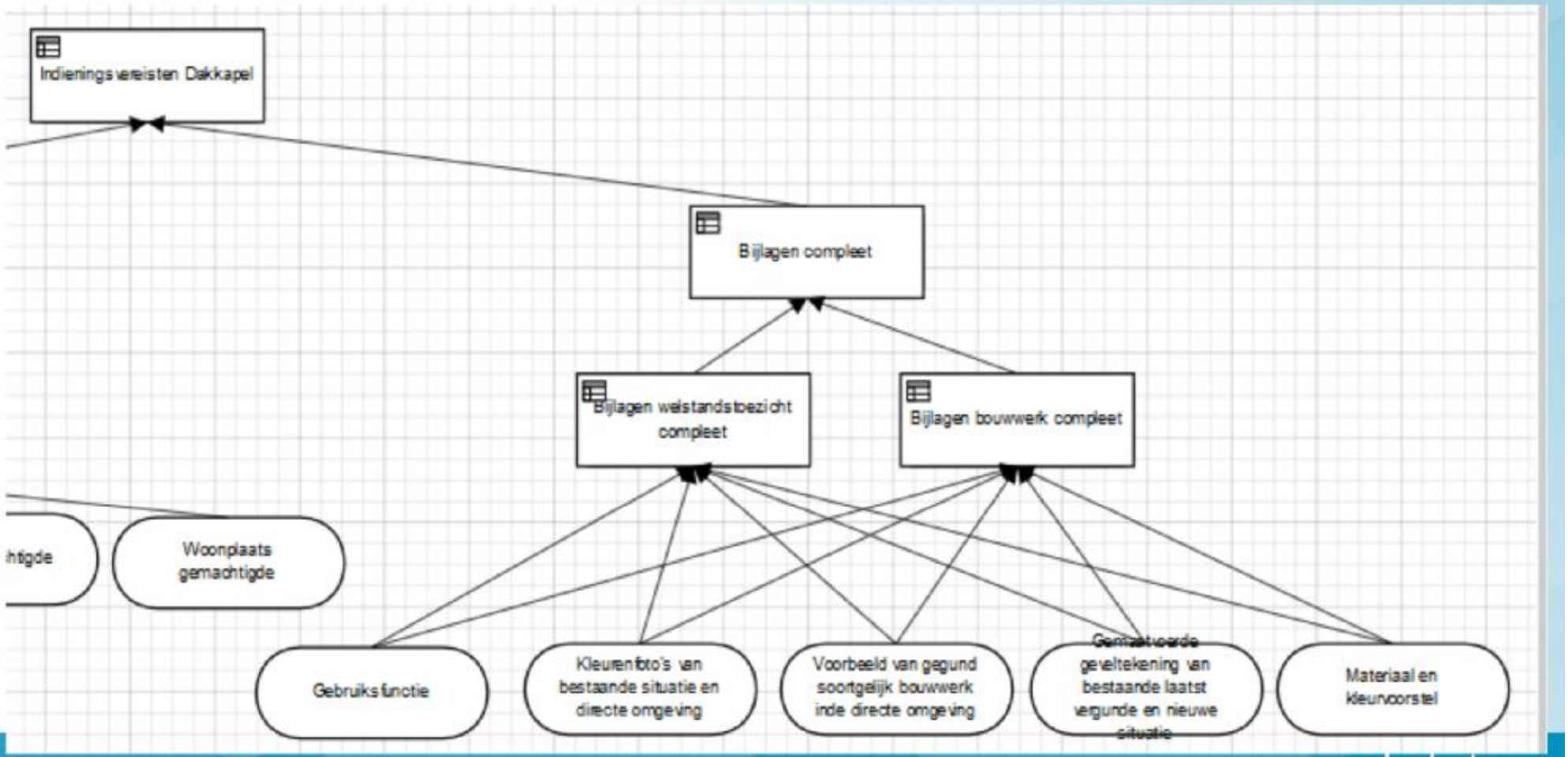
UNDER THE HOOD …



AND UNDER THE HOOD (2) …



FIRST TESTS: 3rd POC: BLOCKCHAINGERS

A. KADASTER *TRACK SPONSOR* WITH ‘CHALLENGE’

B. ‘CONSCIOUS HOUSE’

C. BC USED TO SHARE INFORMATION ON OBJECTS

D. DEMONSTRATOR (THE LEDGER)

ecouser

Current role: user

- My House
- House information
- Service history

Uitloggen

My house

Marked as done
Offer is done with hash:
1227f56ef085d2f634d09ff71c051fe28f9

View house →

B+

Eco score

View eco score →

Wallet

€27307.50
House balance

Latest Transactions

Payment
€1000

Boiler check-up
€-200

€900 ▲
This month

€17890 ▼
This year

View wallet history →

What you missed 5

Payment transfered — 3 days ago
€200 was transfered to the account of "Boiler and sons ltd".

Boiler check-up — 3 days ago
Boiler check-up has been validated by the home owner

Boiler offer accepted — 3 days ago
Boiler offer by "Boiler and sons ltd." has been automatically accepted

Boiler offer requested — 5 days ago
Boiler offer has been automatically requested. Price threshold was lower than €1000

Your boiler will need a new check-up in 2 weeks — 2 weeks ago
Your boiler is due for it's yearly check-up.

Upgrades

In progress

Solar panel installation
Installation by Solar Inc. for 100
Mark as done

Suggestions

Solarpanels — €200
Solarpanels are installed covering at least 50% of the roof

Insulation — €500
Insulation with a thickness of at least 24cm

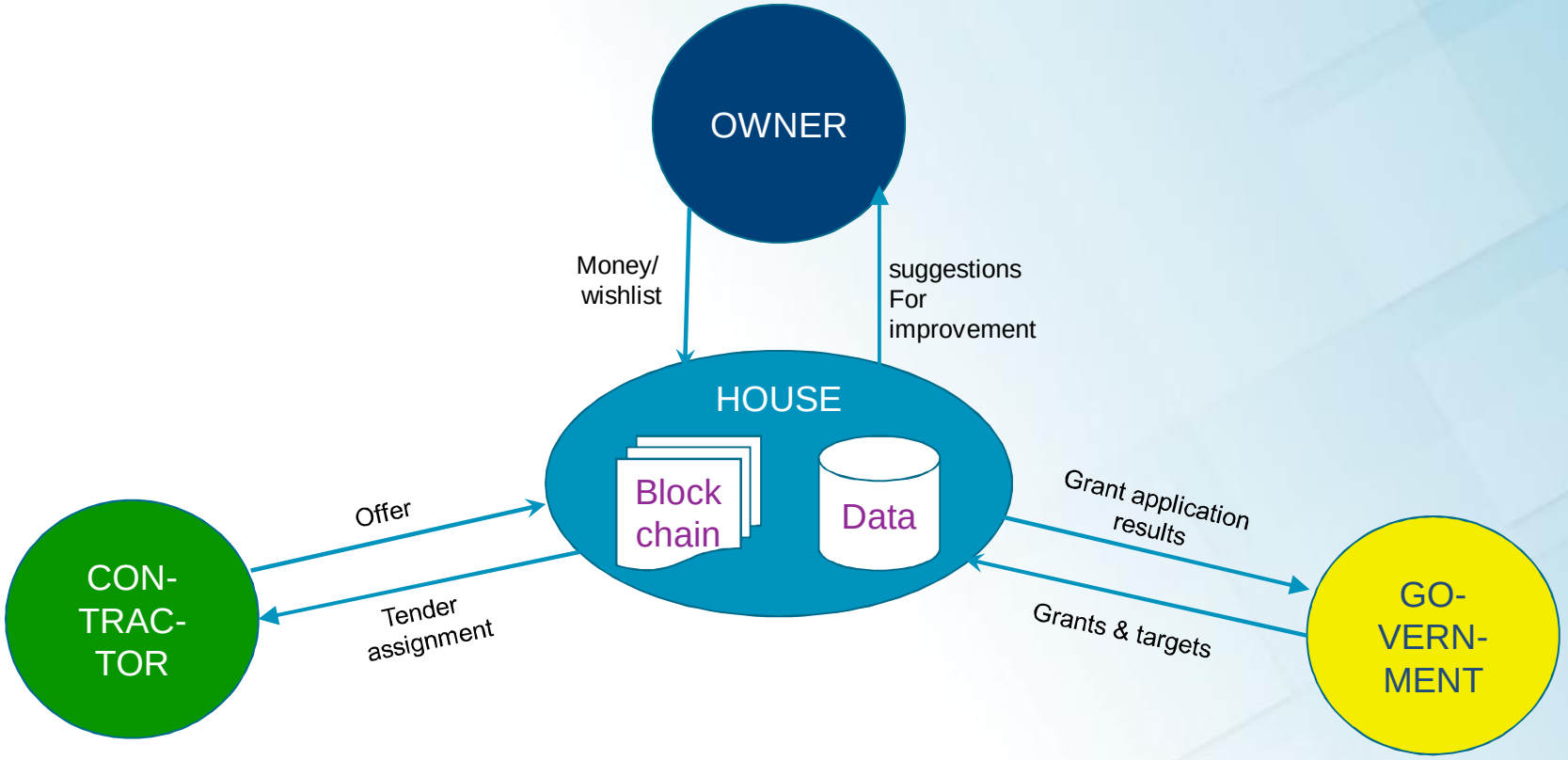
View all potential upgrades →

Service history

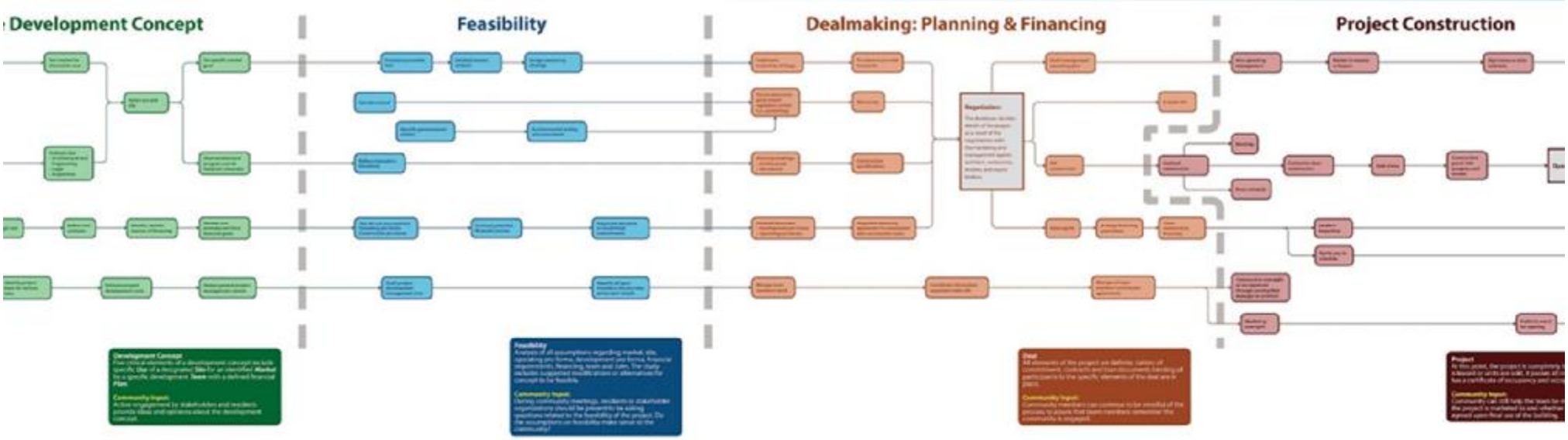
Solar panel installation
10 mins ago

Boiler maintenance
4 months ago

Porch installation
1 year ago


OWNER
Money/
wishlist
suggestions
For
improvement
HOUSE
Block
chain
Data
Offer
Tender
assignment
Grant application
results
Grants & targets
CON-
TRAC-
TOR
GO-
VERN-
MENT

FROM SHARED PROCESS



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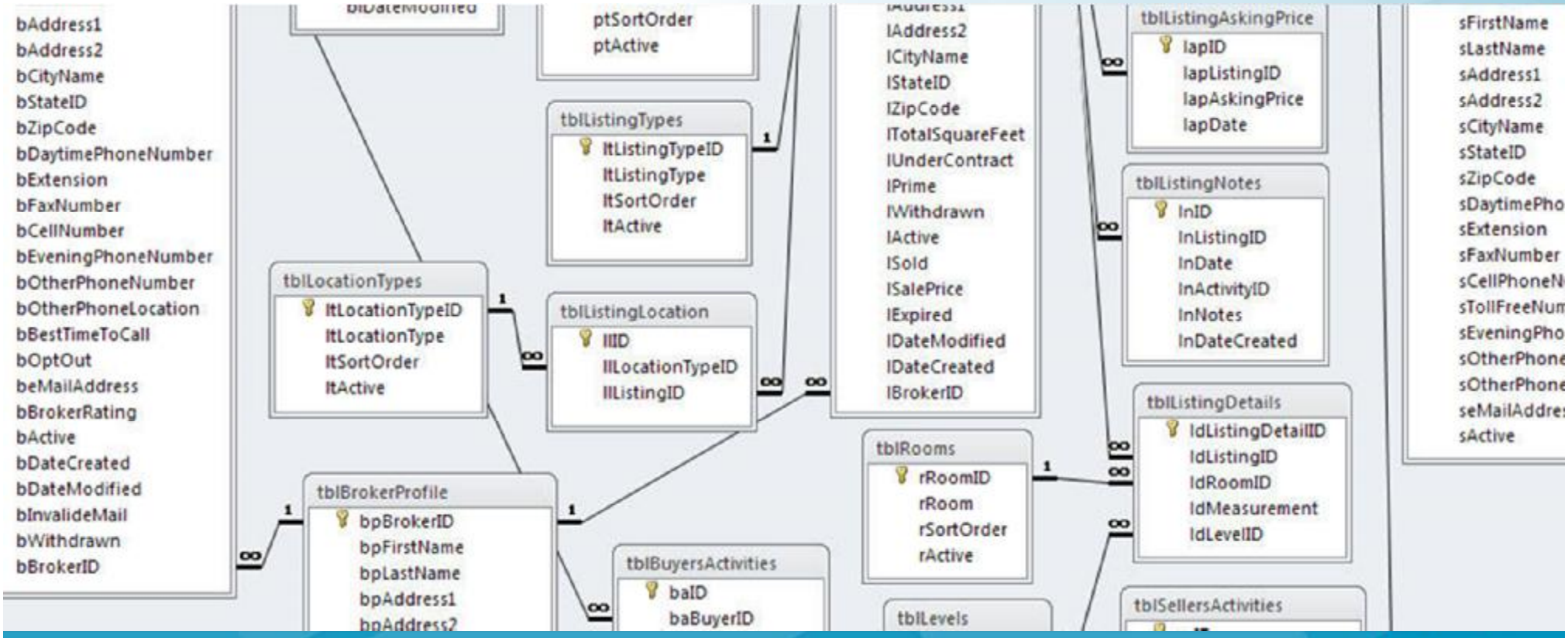
TO SHARED DATA



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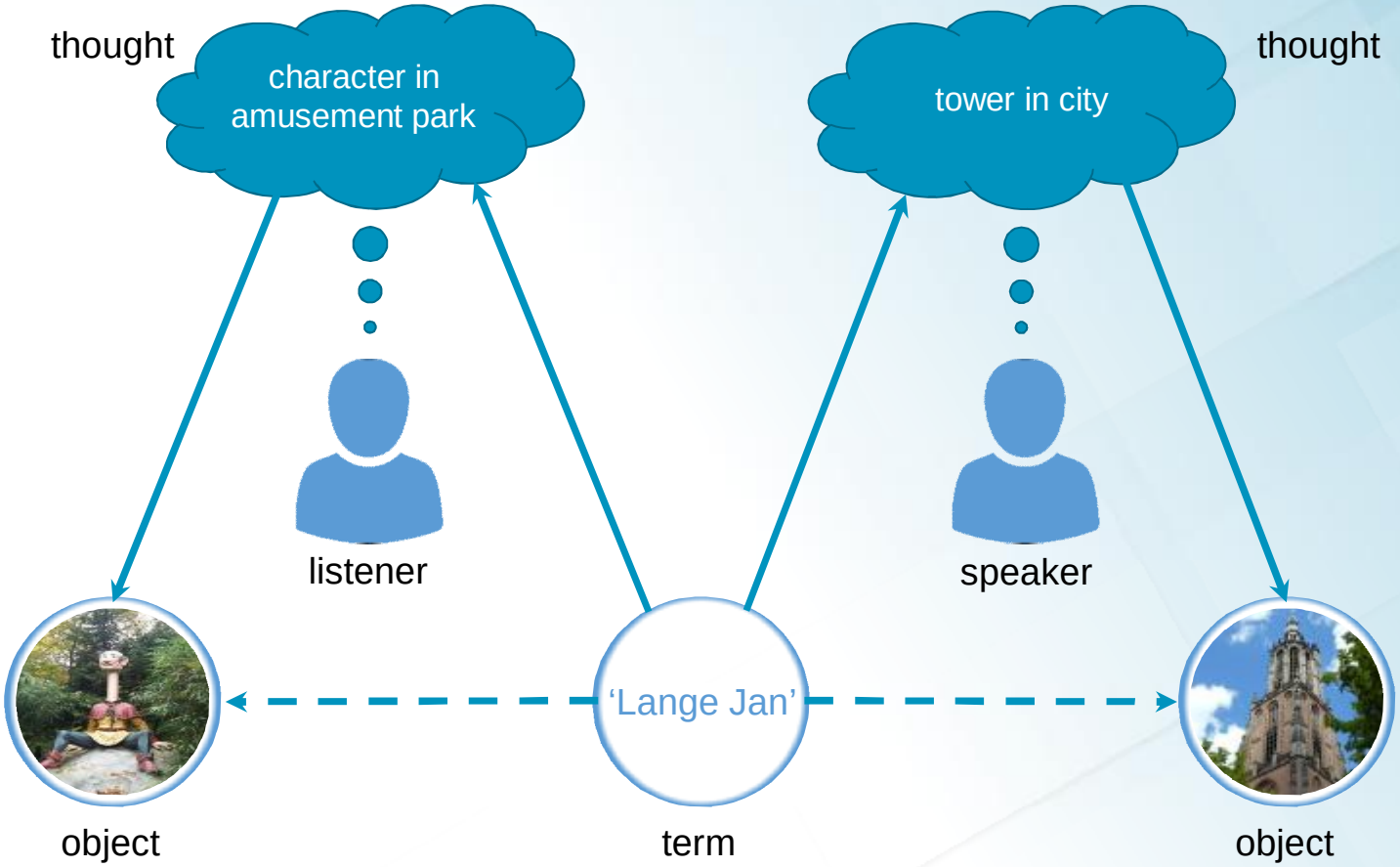
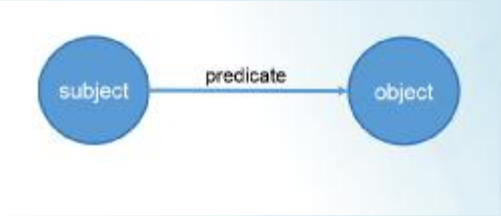
BUT BEFORE WE WILL BE REPLACED …

1. OPEN SOURCE (TRANSPARANCY, ACCEPTANCE)
2. ANALYSIS ADDED VALUE (ALTERNATIVE TECHNOLOGY?)
3. CONFIDENCE WITH PARTIES INVOLVED
4. MEANING OF DATA (AGREEMENTS & DESCRIBING)


thought
character in amusement park
tower in city
thought
listener
speaker
'Lange Jan'
object
term
object

1. TECHNOLOGICAL DEVELOPMENTS (2)

- Linked Data
  - Makes use of ‘URI`s to name (identify) things
  - 3 realities:
    - ‘Natural’ reality
    - Institutional reality
    - Administrative reality **à** triples:



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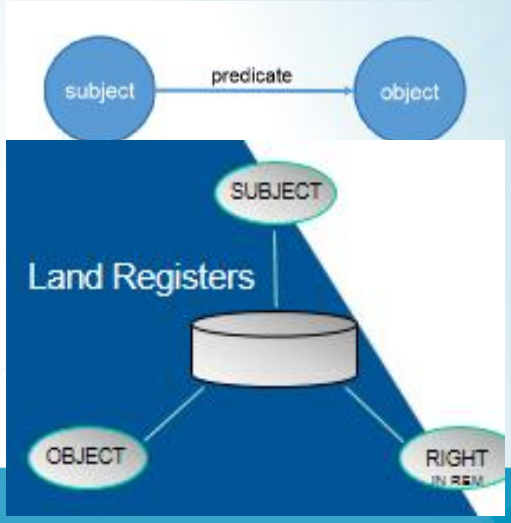

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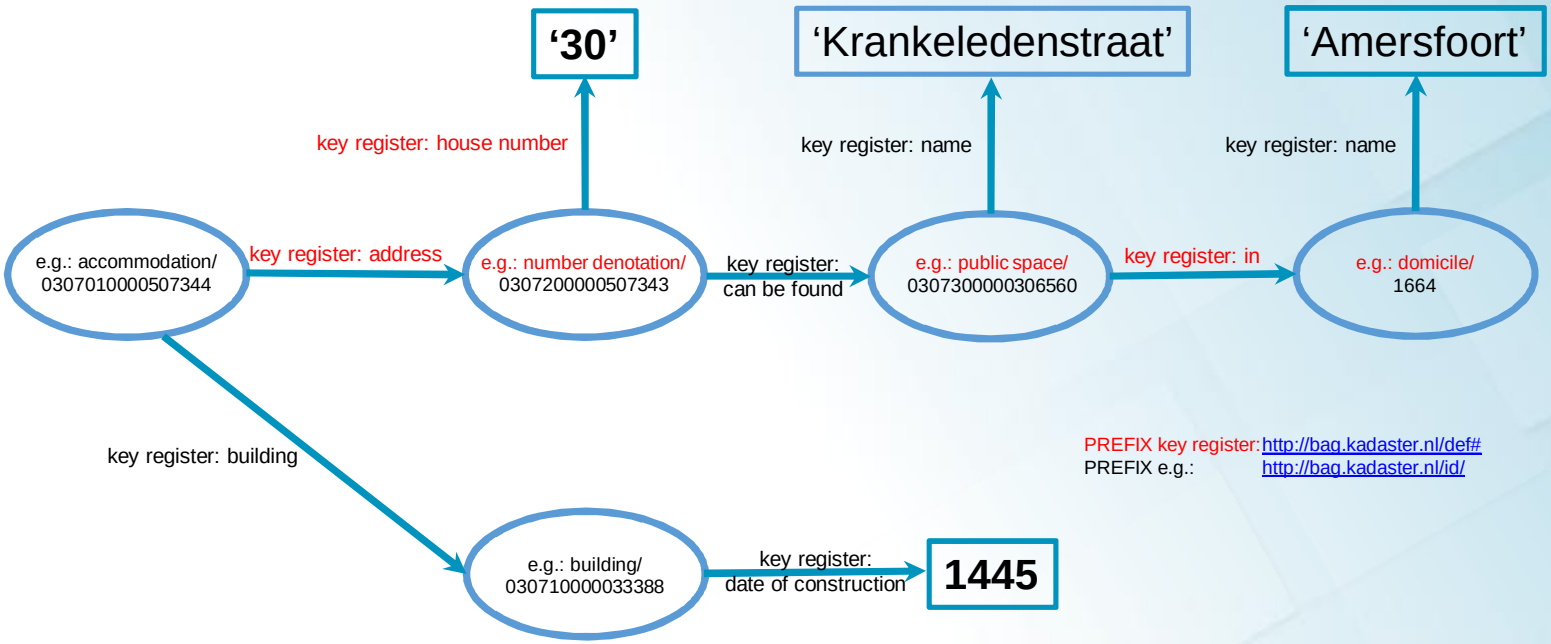
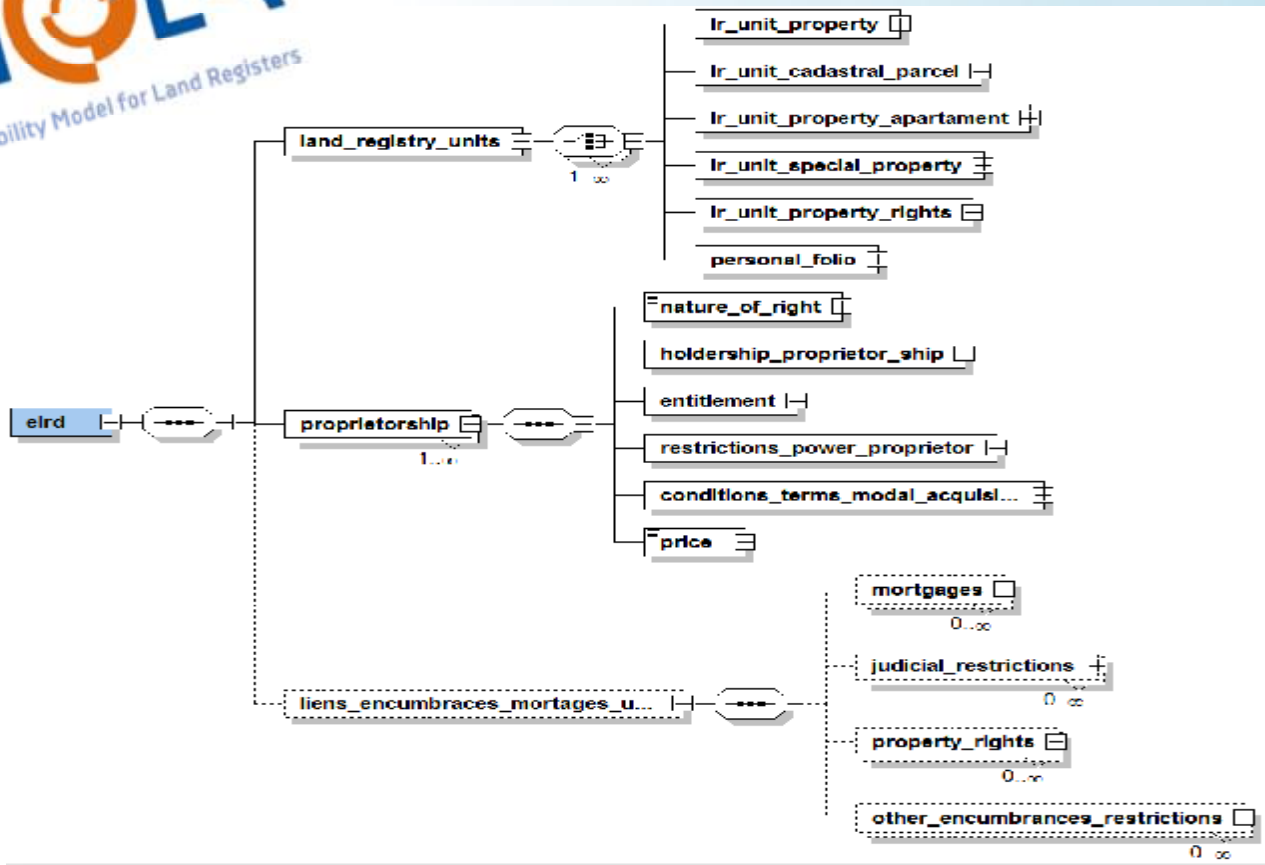
Source: Brattinga, et al



Source: Brattinga, et al

XML SCHEMA

Interoperability Model for Land Registers



Source: IMOLA project, Jesus Camy

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