tufe2018
HIGH-LEVEL INTERNATIONAL INTERDISCIPLINARY CONFERENCE

PoC
Power of Chain

**The Transformation of Global Real Estate
Land Registry Systems:
Protecting Rights and Advancing Economic Development with
Blockchain**

**Presented
by
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❖
Power of Chain Consultancy

FIBREE

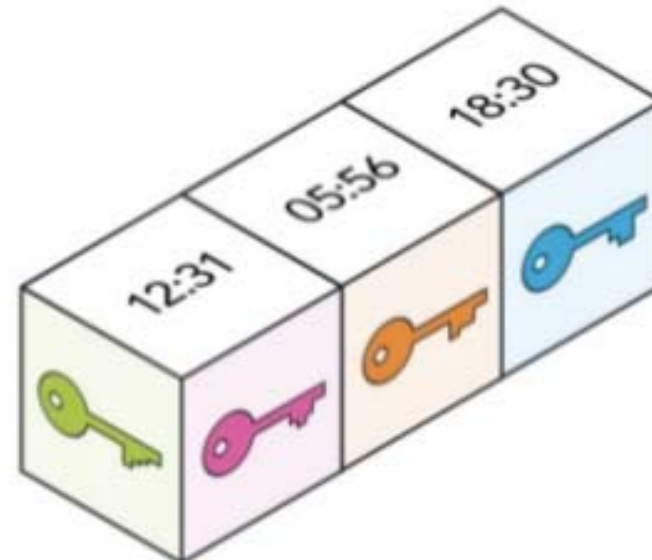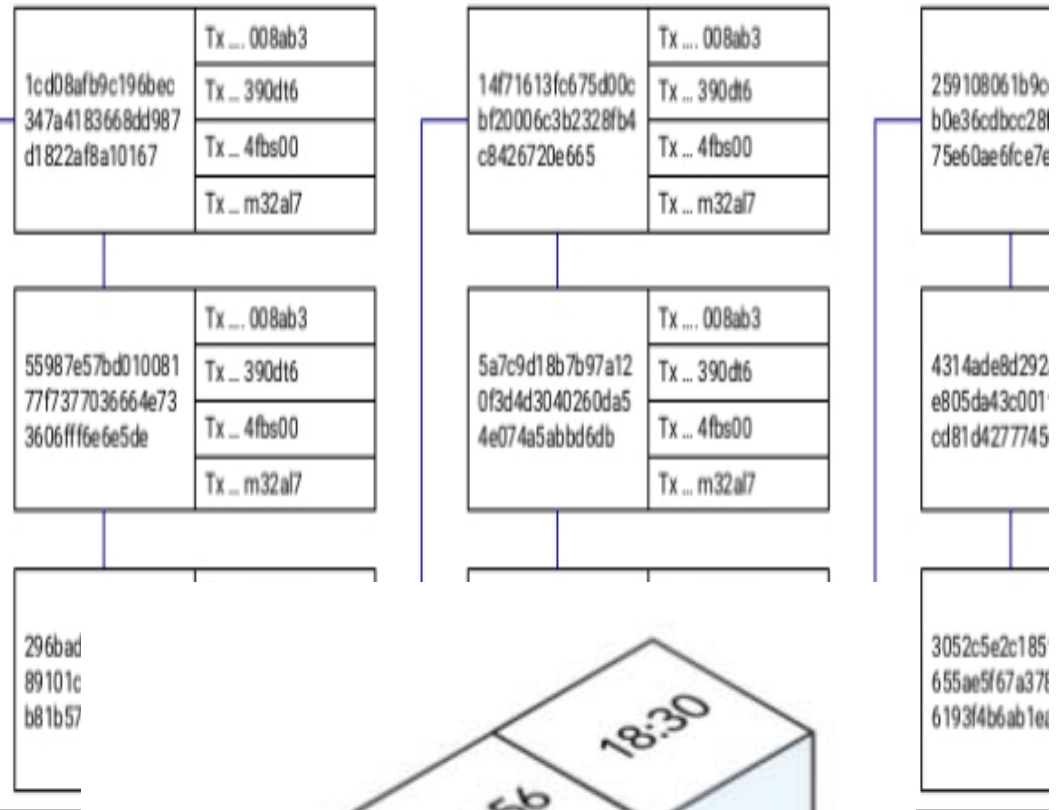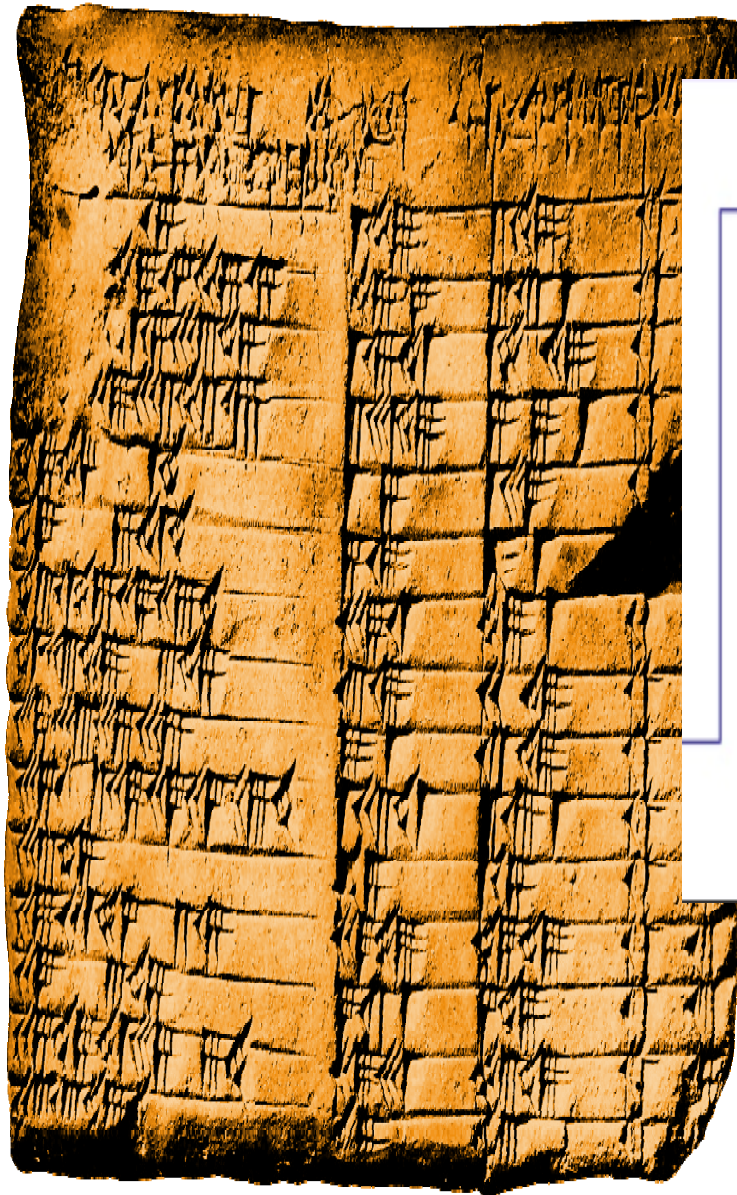**Foundation for International Blockchain &
Real Estate Expertise   fibree.org**

GBA

**Government Blockchain Association
gbaglobal.org**

PRESENTATION OUTLINE

II. Land Registry Systems - *Revisited*

➤ Systems by which matters concerning <u>ownership</u>, <u>possession</u> or <u>other</u>
   rights of real property *are recorded and preserved.*

➤ To maintain records regarding land and other real estate to properly
   assess its value and to collect

➤ Promotes internal confidence between its people, commercial enterprises
   and its government.

➤ Documents and data recorded is usually the information --
   that shows legal ownership and provides protection.

The Fee Simple Bundle of Rights

Occupy and Use
Build
Grant Easements
Mortgage
Mine, Drill, Farm
Restrict Use
Covenant

Fee Simple Ownership

Exclude Others
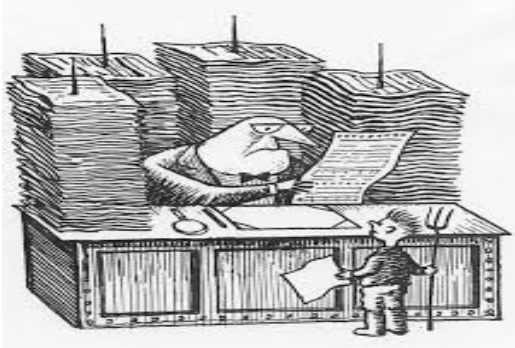Sell
Refuse to Sell
Give Away Abandon
Rent or Lease
License
Devise by Will

III. Real Estate – The Friction
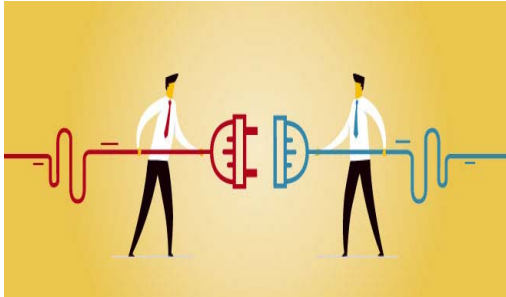
Pain Points: centralization & fragmentation

- **Government bureaucracy**

- **Non-interoperable/proprietary software**

- **Human error**

- **Incomplete and insecure property data**

III. Real Estate – The Friction

- **Unnecessary third parties**

- **Expensive due diligence & high transaction costs**

- **Inefficiencies**

- **Fraud/Collusion**

IV. The Case for Blockchain

IV. The Case for Blockchain

Blockchain offers an immutable, open-source, universal protocol for:

- buying-selling-renting real estate

- transfer and registration of ownership or titles

- recording of transaction documents or whole transactions

- escrow services

- virtual notarization

- crowdfunding/capital raising

- asset tokenization / fractionalization of assets

- construction industry/real estate development

- surveying/appraising

- and much more

IV. Case for Blockchain

What else does Blockhain mean for the real estate industry?

- ✓ increases financial inclusion and privacy

- ✓ internationalizes markets/increases foreign investment

- ✓ increases liquidity of assets

- ✓ allows ownership/title disputes to be handled fairly/transparently

- ✓ serves as a backup if the original documents are lost, moved or

  destroyed

IV. Making the Case for Blockchain in Real Estate

Decentralization & Unification

Efficiency   Transparency   Trust   Resilience

Helps promote
- ✓ property rights formalization
- ✓ registry modernization
- ✓ the collection/analysis/availability of data
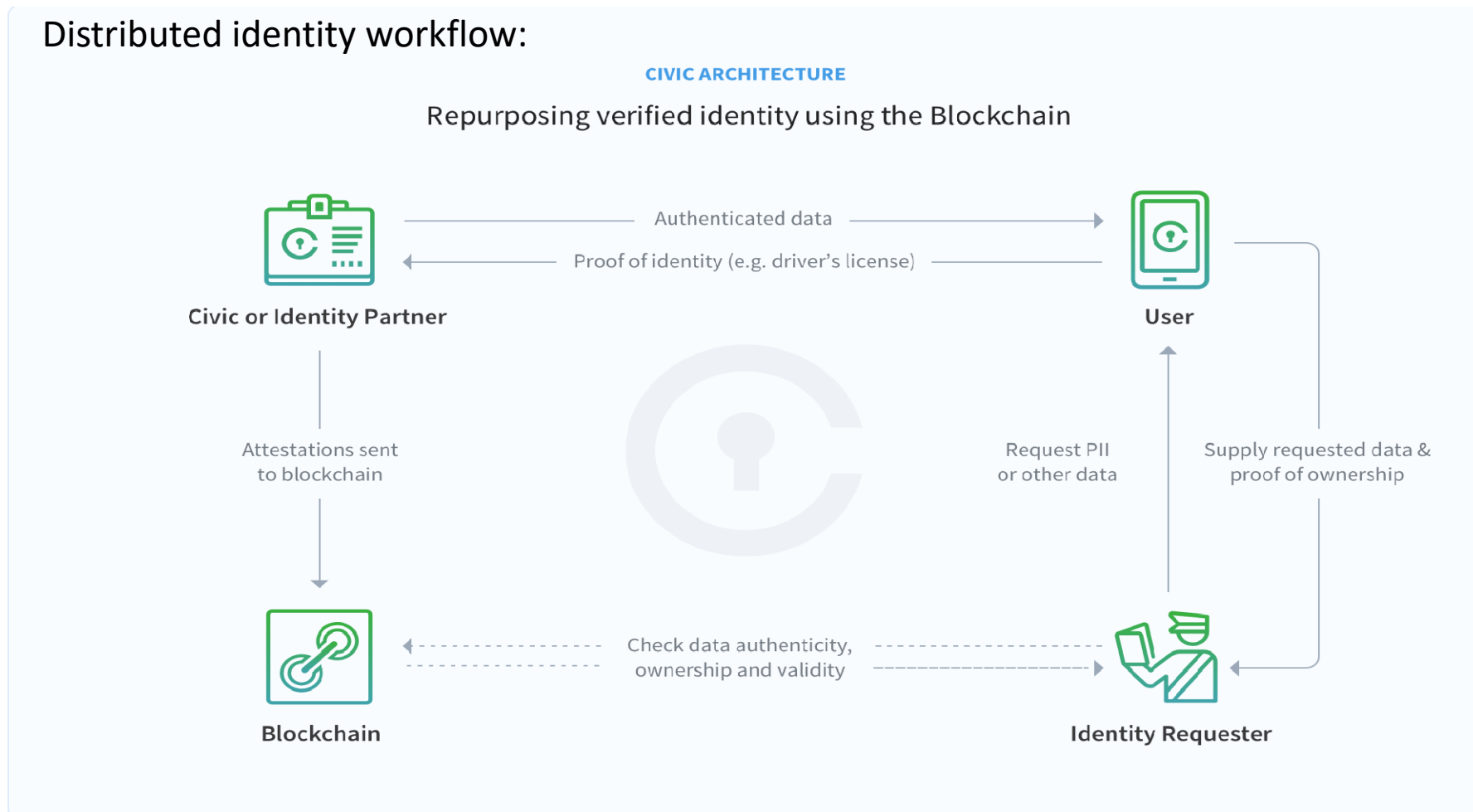
Generates
- ✓ lower transaction costs

BLOCKCHAIN

V. Prerequisites for Blockchain

Prerequisite No. 1

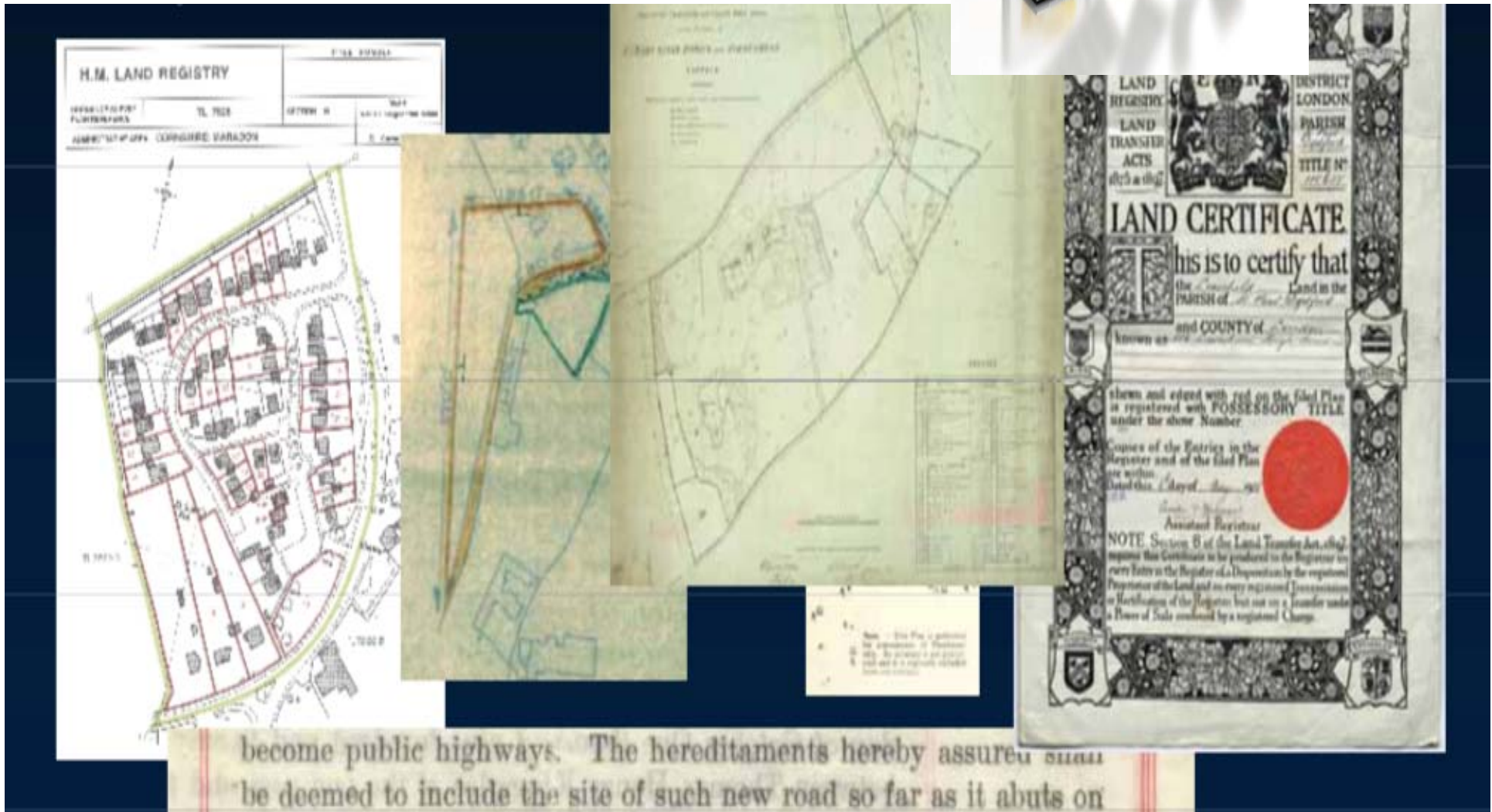**Legal identification** (property owner, easement beneficiary, seller, buyer, lessor, lessee, etc.)

Distributed identity workflow:

CIVIC ARCHITECTURE

Repurposing verified identity using the Blockchain

Authenticated data

Proof of identity (e.g. driver's license)

Civic or Identity Partner

User

Attestations sent to blockchain

Request PII or other data

Supply requested data & proof of ownership

Blockchain

Check data authenticity, ownership and validity

Identity Requester

Prerequisite No. 2

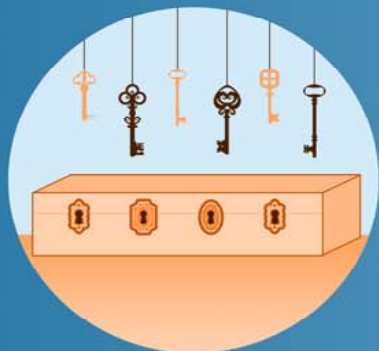**Digitized Records** (conversion from paper to digital)

Prerequisite No. 3

Form of technology used to add additional security for blockchain/cryptocurrency transactions.   Enormous potential: trustless escrow, robust security, data integrity.

WHAT IS MULTISIG and why does it matter?

MultiSig transactions, short for multi-signature, give several users access to a single wallet. Cryptocurrency wallets have a public key, which is shared, and a private key, which is kept secret. Transactions must be signed with a users private key in order to verify ownership, and validate a transaction.

MULTIPLE KEYS

Multi-sig wallets have a public key with more than one private key.
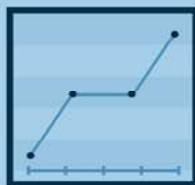
M of N TRANSACTIONS

Requires multiple parties to be in agreement to complete a transaction.

ADVANCED SECURITY

Provides extra security, making coins safer from theft.

Multisig was first introduced in 2012, but did not become wide-spread until 2014.

3 of 7

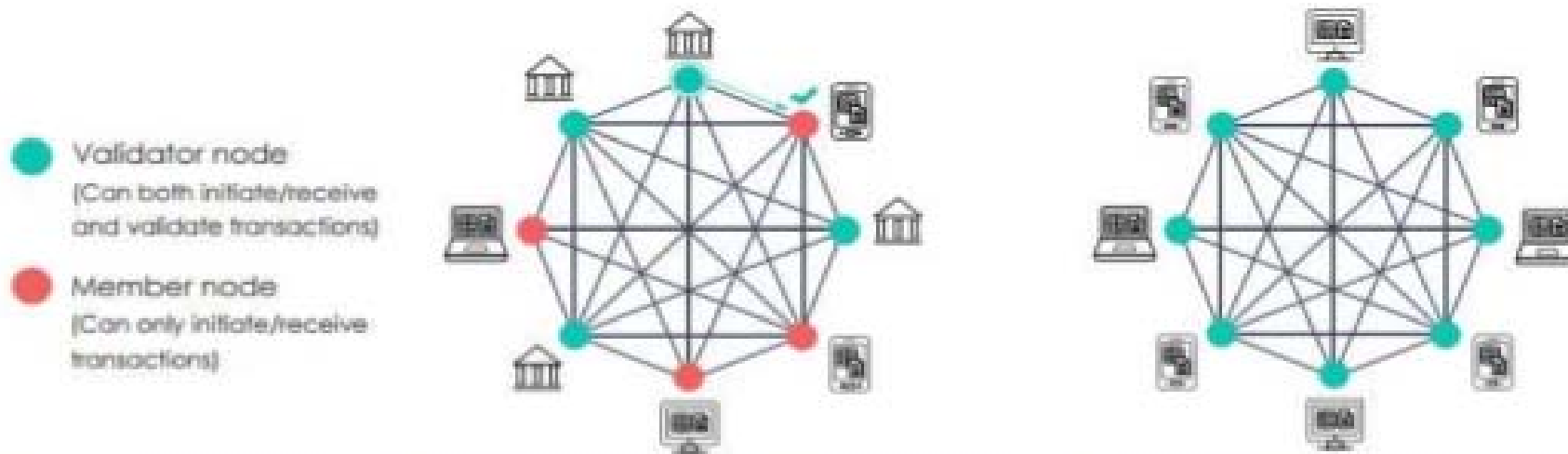A multisig wallet may only require a certain number of its multiple users to validate a transaction.

In 2014, less than 0.02% of BTC transactions were secured by multisig. That number is now 10%.

3

Public addresses begin with the number 1, Multisig addresses begin with the number 3.

Prerequisite No. 4

Private, Public, Hybrid Blockchains: no universal format; private blockchains or better yet, a hybrid chain, will mostly be used -- where decisions are tracked on a private chain with hashes of key documents recorded on a public chain.

Validator node
(Can both initiate/receive and validate transactions)

Member node
(Can only initiate/receive transactions)

	Permissioned Blockchain (Private)	Permissionless Blockchain (public)
How do you get access to the network?	Authorized access	Open access
How are their approach to laws and regulations?	Aims to follow financial regulations such as AML/KYC	Aims to create censorship resistant, anonymous transactions, outside current legal framework
Who are the validators?	Pre-selected, trusted validators	Anonymous, fully decentralized validators
What can it be used for?	Enterprise-level systems	Permissionless innovation, open-access applications

Prerequisites

Pre-requisite No. 5: Accurate data

➢ Digitizing/recording of data and documents that are accurate -- *free from fraud, error-free, etc.*

Pre-requisite No. 6: Connectivity and a tech-aware population

➢ Citizens connected to the internet – *must have access to technology to perform and participate.*

Pre-requisite No. 7. A trained professional community

➢ Blockchain technologies/hardware requirements are complex. Technology needs to be *understood to be managed*. Public agencies need trained personnel.

VI. Blockchain Registry Integration Levels
From the simple to the radical, disruptive future...

Level	Name	Description	Example
0	No Integration	No use of Blockchain	Most of the world
1	Blockchain Recording	Public Blockchain used to record documents related to land transactions	Brazil, Georgia, Dubai
2	Smart Workflow	Blockchain used to record progress of a transaction	Sweden, Dubai Properties (Landstream)
3	Smart Escrow	Smart contracts used for escrowing payment	Propy
4	Blockchain Registry	Central database replaced with a permissioned Blockchain	Dubai
5	Disaggregated Rights	Various rights to a single parcel are disaggregated and managed via Blockchain	No known example
6	Blockchain Fractional Rights	Rights for a given parcel are fragmented and managed via Blockchain	30 + startups and growing!
7	Peer-to-Peer Transactions	Rights are transacted without intermediaries on Level 4 system	No known example
8	Interoperability	Different Blockchain registries merge	No known example

Source: Future of Property Rights 2017

VII. Adoption - Pilot Programs & Actual Use

Country/Geo Region	Company/Collaboration	Results
USA Cook County Recorder of Deeds Chicago, Illinois	velox.RE	Test of a real estate conveyance with a property owner. Met all the legal, procedural, software requirements agreed upon.
Sweden India	ChromaWay	Focused on using a smart contract to make a more seamless transactional process.
Republic of Georgia/ Ukraine	BitFury	Property did not change ownership but existing records were "backed up". USE CASE
Brazil	UBITQUITY	Successful pilot program. Parallel platform. USE CASE
State of Vermont/ Ukraine	PROPY	PH I: Created the 1st property apt. ownership transfer across borders/payment in cryptocurrency.
Honduras	FACTOM epigraph	2015. Stalled. Terminated. Project "political in nature". USE CASE

VII. Adoption - Pilot Programs & Actual Use

Country/Geo Region	Company/Collaboration	Results
Dubai	CONSENSYS	"Smart City" Secure all gov't. documents on a blockchain by 2020.
Zambia	MEDICI LAND GOVERNANCE	MOU: build a land governance program.
United Kingdom Her Majesty's Land Registry (HMLR)	BLOCKCHAINDIGITAL r3. c·rda	Initiative "Digital Street" exploring how DLT & Smart Contracts can make the property buy/sell process, simpler, faster and cheaper.
Russia	ethereum	To test blockchain in 2017/2018.
Australia State of New South Wales	ChromaWay	Complete a PoC by July 2019 "official mandate".

VII. Adoption - Pilot Programs & Actual Use

Country/Geo Region	Company/Collaboration	Results
Ghana	IBM /Land Layby Group	2017/2018
Puerto Rico Caribbean	{IN VID}	Paper to digital system 2014. USE CASE Karibe-CS.pdf
		.

Cutting Through the Hype

Challenges - Obstacles - Adoption

Blockchain is a means to decentralization

- ✓ global
- ✓ borderless
- ✓ neutral
- ✓ immutable
- ✓ censorship resistant
- ✓ permissionless access
- ✓ permissionless consensus
- ✓ permissionless innovatation

Challenges - Obstacles

VIII. The Future of Blockchain for Real Estate
Challenges - Obstacles - Adoption

- Transaction speeds must increase without compromising data security

- Development of identity solutions – SSI Self-Sovereign Identity

- Legal recognition of smart contract use, of digital, blockchain identity/signatures

- Related technology integration: AI, Quantum Physics

- Interested and supportive government and government regulation

- Establishing an official registry - paper, digital, blockchain

- Interoperability – no platform communication, no interconnection

- Blockchain companies competing for land registry contracts

- Education – lack of government outreach and education

Thank you

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