

# Smart contracts for PropTech

## Smart enough?

Sept. 4, 2019 – Smart Buildings 4 Smart Cities



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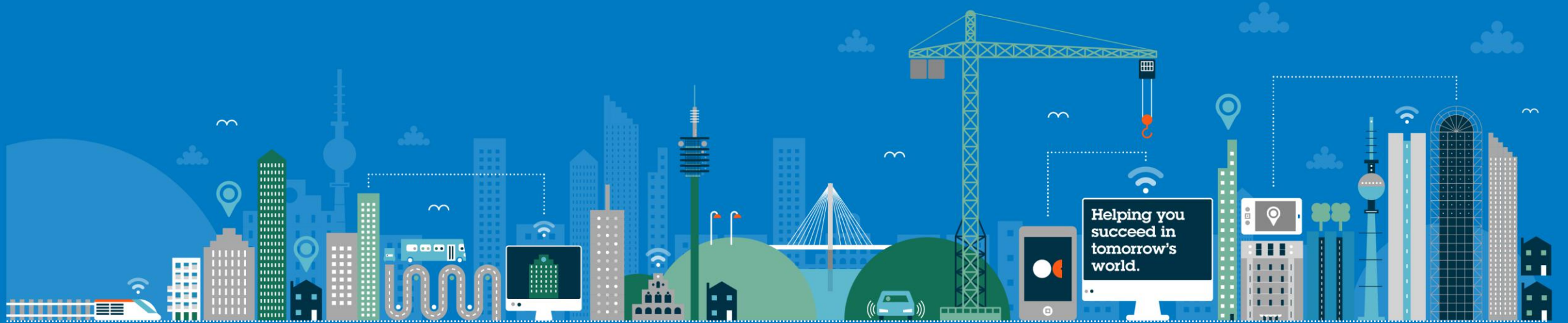
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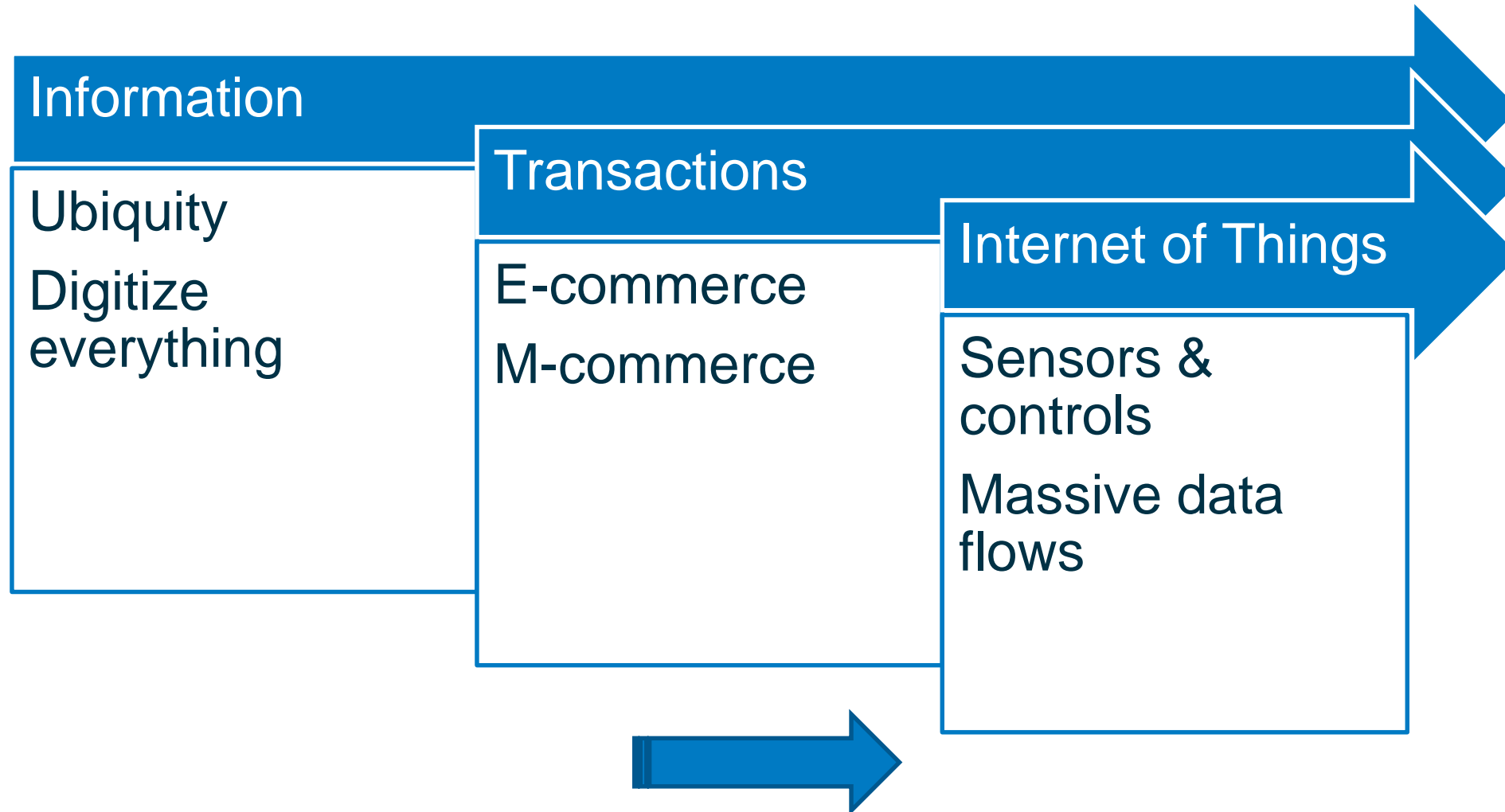


# 1

## What smart contracts are

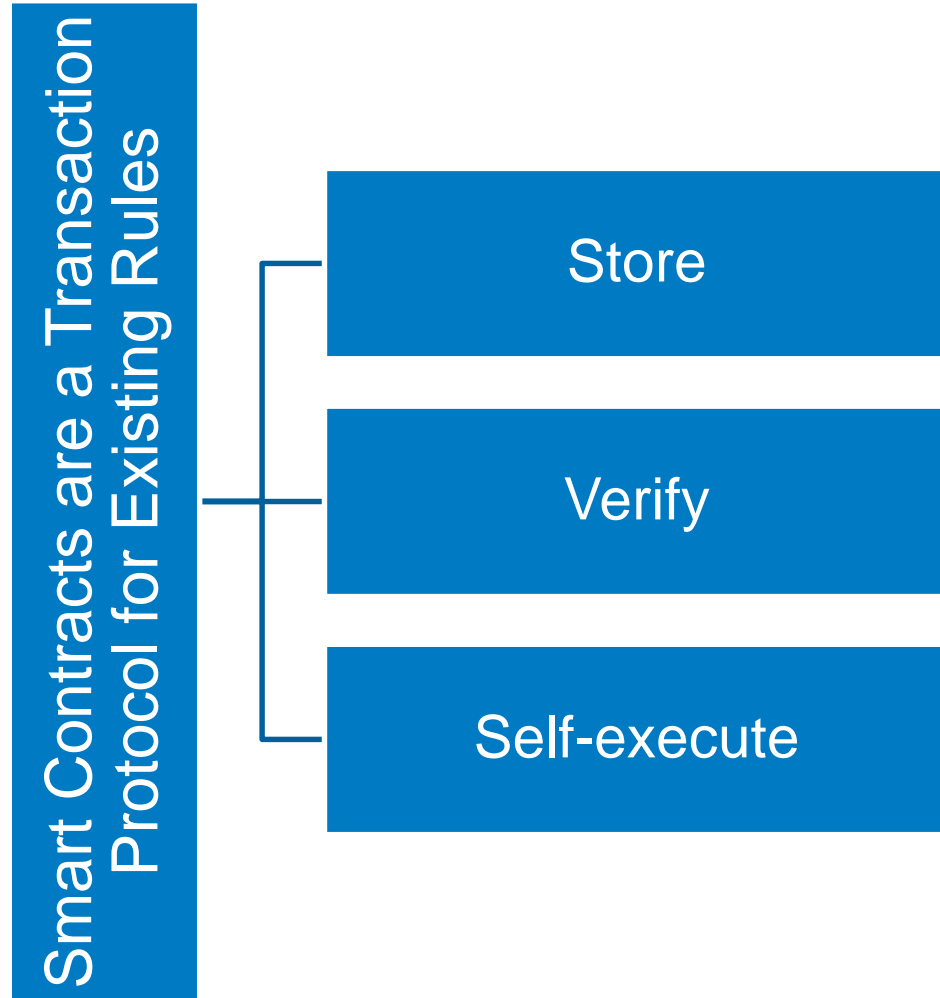
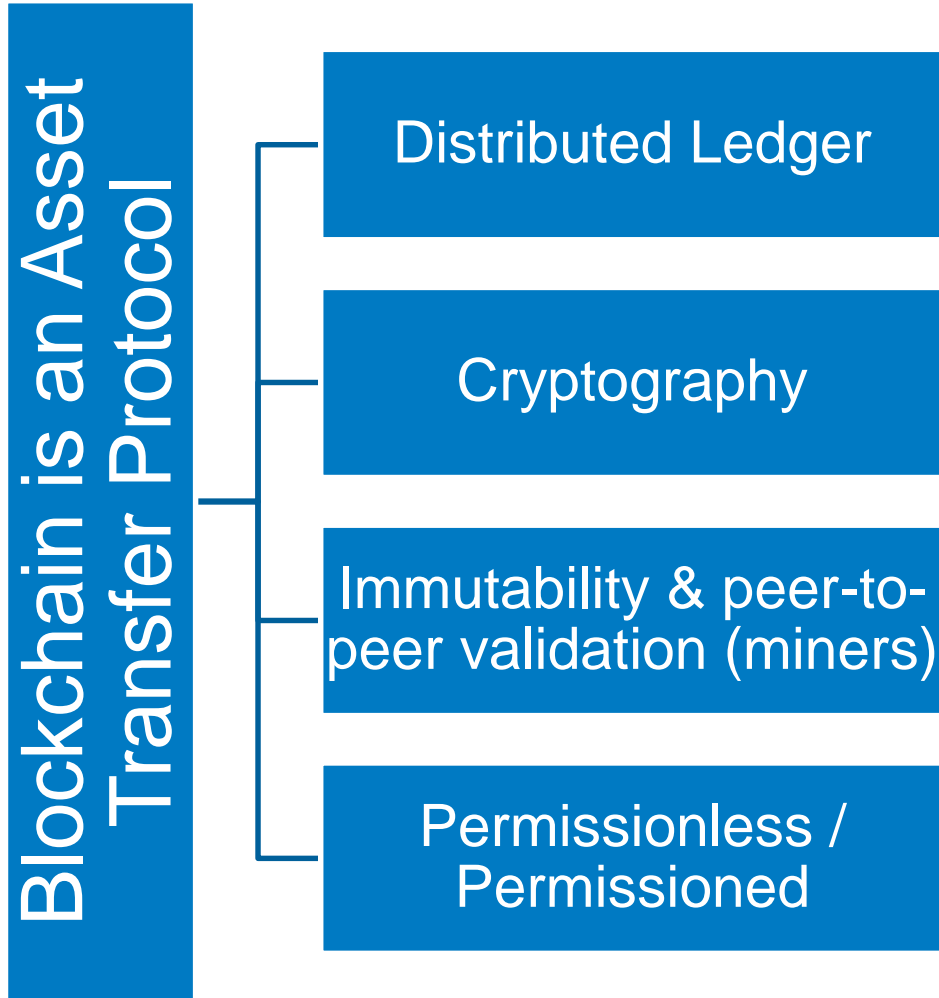


## A quick look at the evolution of ICT (functional view)



A tipping point for the Real Estate sector?

# What are blockchain and smart contracts?



# How blockchain and smart contracts disrupt classical legal processes

## Distributed trust

- Hack the central authority/middleman
- Create trust by technology

## Immutability

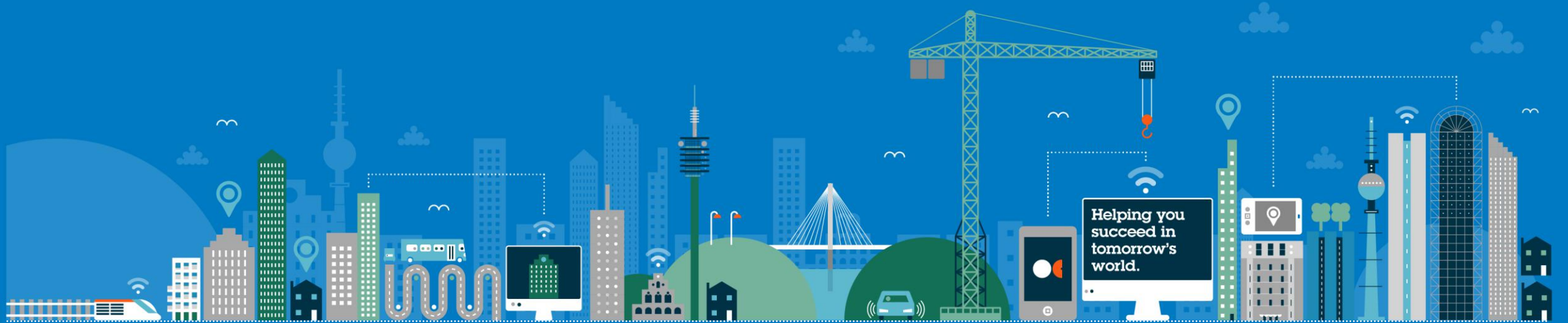
- Traceability
- Authentication

## Self-execution

- Trigger events ("if this... then that...")
- Automated performance

# 2

## Use cases for smart cities/buildings



- Land ownership and information registry ("oversimplify due diligence")
- Property & facility management (operate rentals, sustainable energy management, etc.)
- Home services (e.g. renovation management)
- Listings and search tools
- Insurance: slicing coverage per parcels or rental periods, etc.
- IoT for home security, energy consumption, etc.
- Tokenization, ICO's, etc.



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Plenty of potential  
use cases...



- Slock
- SafeShare
- Bitfury/Estonian government
- Propy
- (...)



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But real use cases  
still need to get  
their bearings

# Slock.it



products ▾

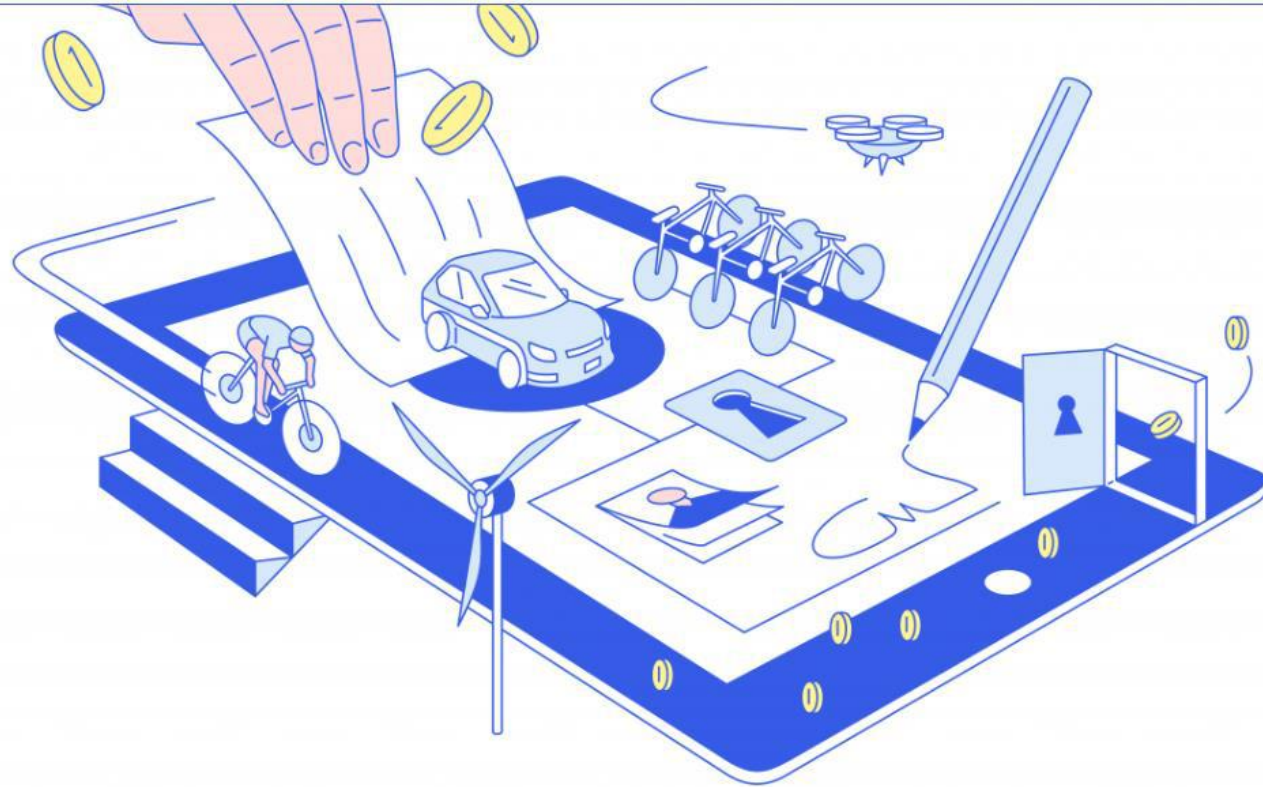
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⊕ **slock.it** connects devices to the **blockchain**, enabling the **economy of things**

# Propy.com



## Visit a property

Find your dream home, then close online on Propy.

## Sign

E-sign the offer, disclosures and other documents via DocuSign.

## Pay

Provide your bank account to initiate the transfer to escrow, or use crypto.

## Get the deed

Deed is recorded traditionally and on the blockchain.

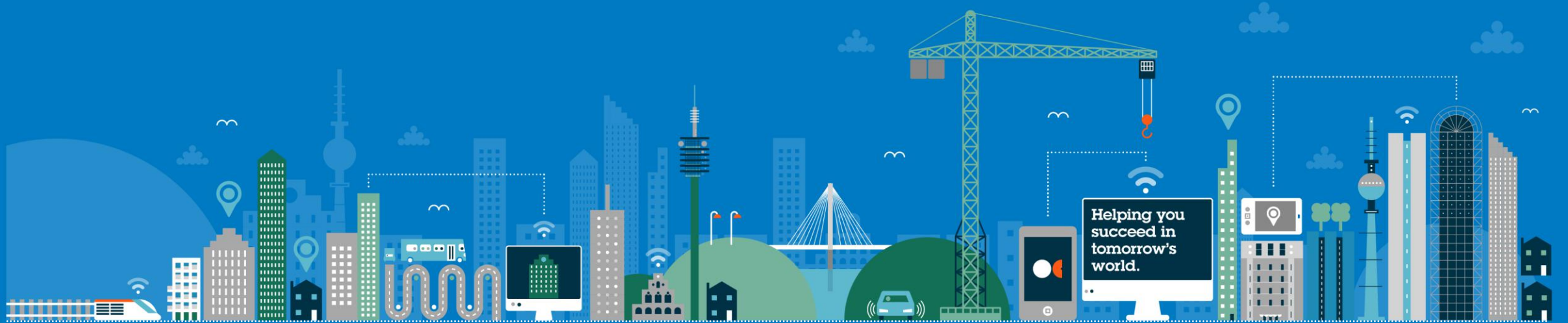
[Try it out](#)

Let's see  
how it works in

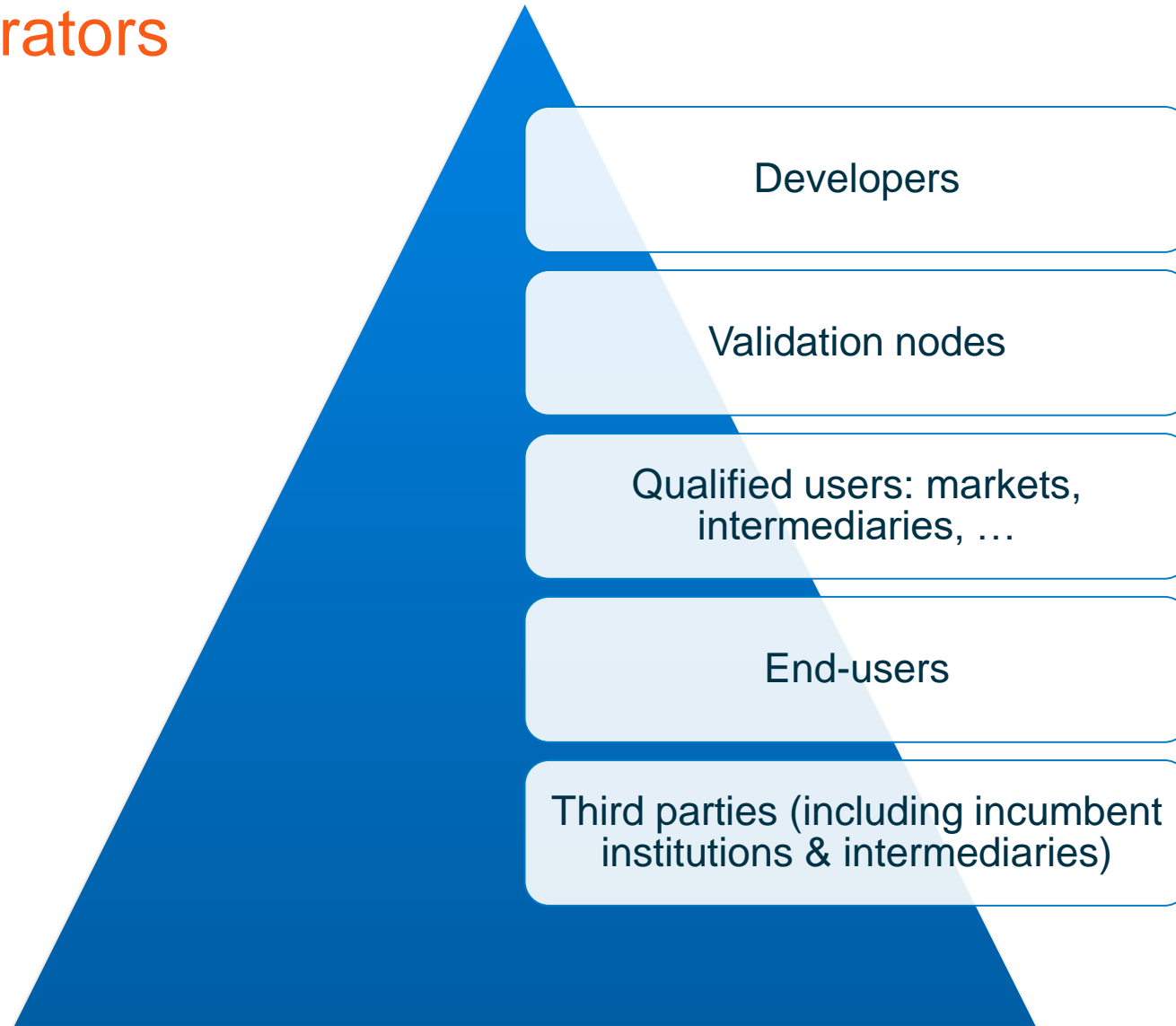
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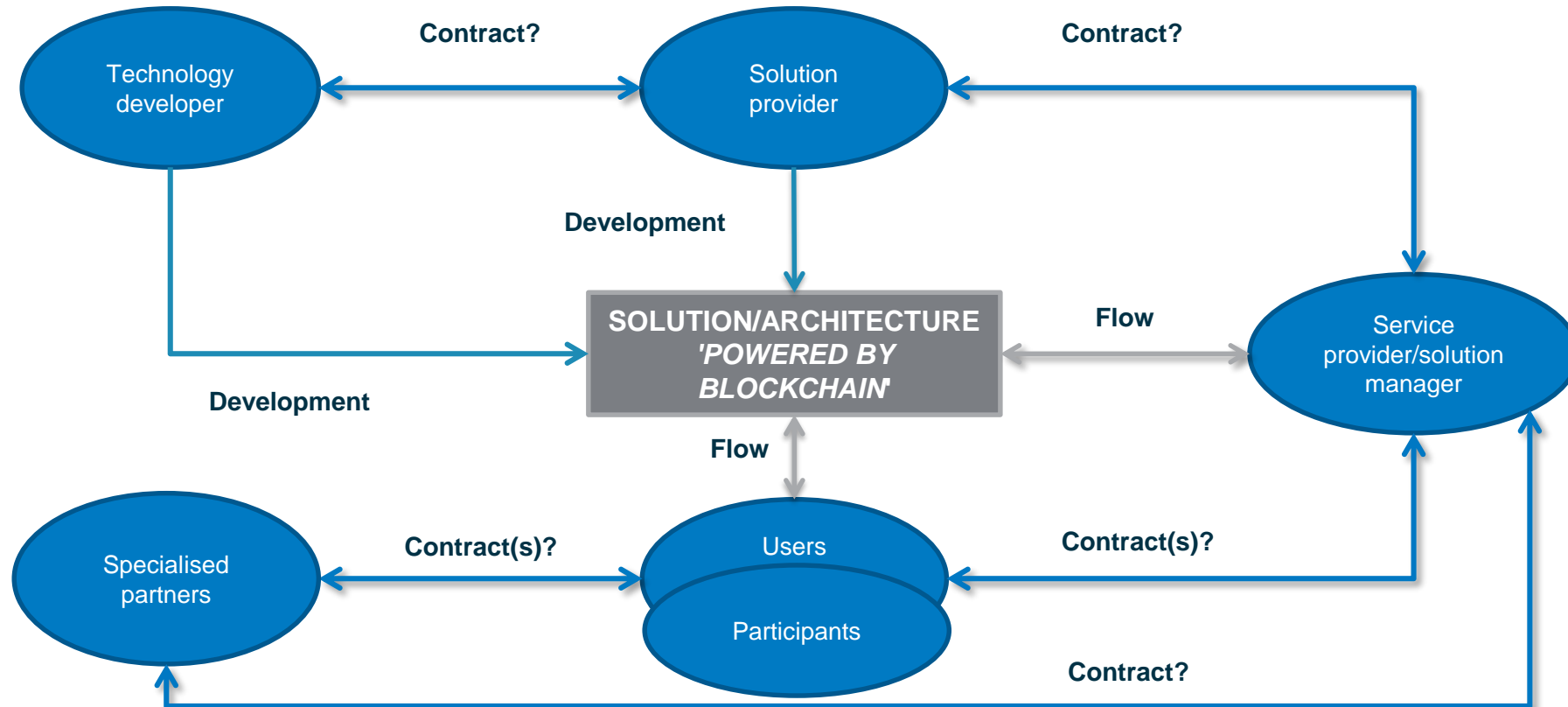
# 3 A few legal challenges



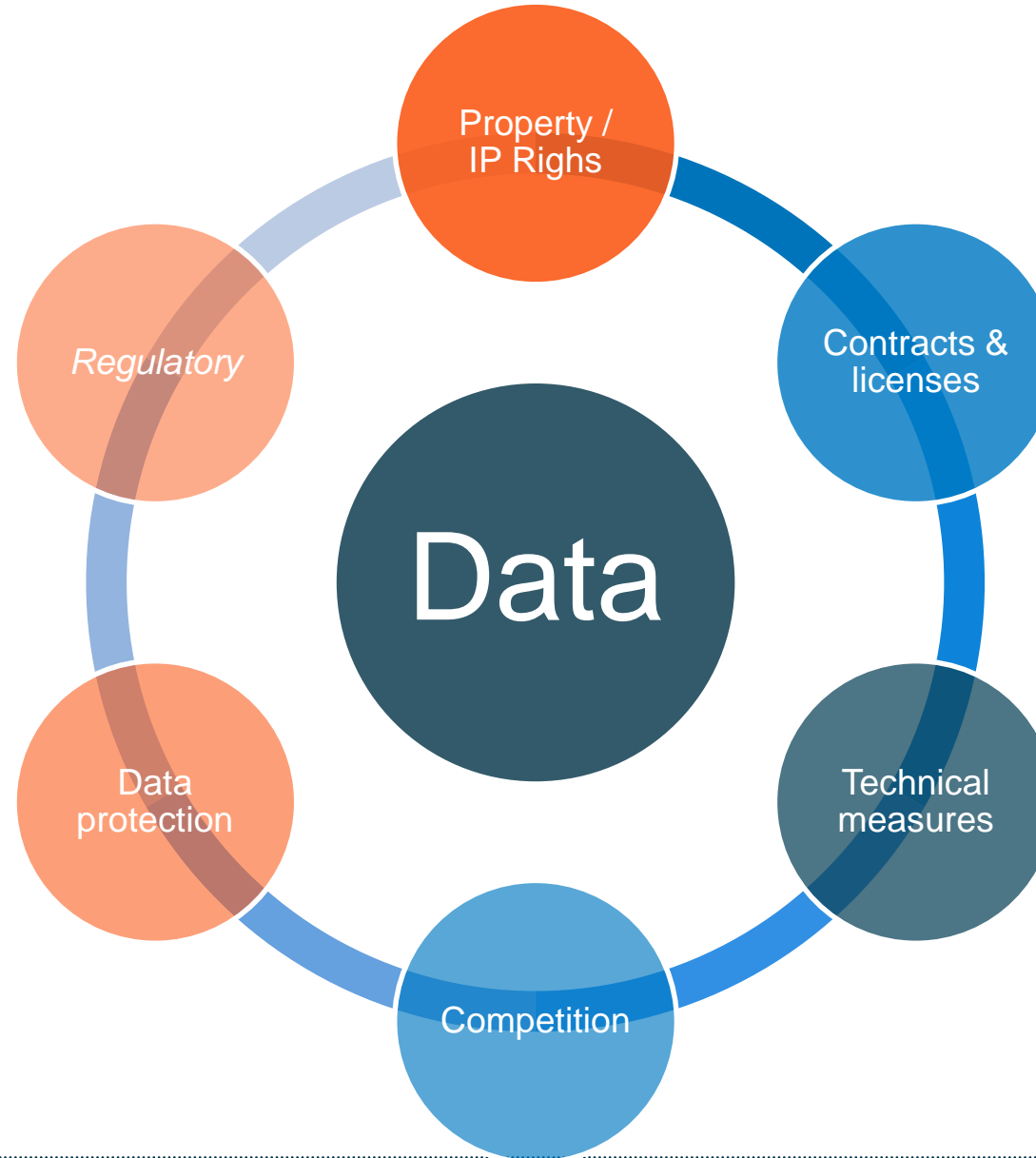
# The web of operators



# The web of contracts



# "Data laws" ...



# Challenges of Privacy & Data Protection



## ➤ Privacy by design

- Measures such as pseudonymisation to protect the rights of individuals
- Implement and integrate DP principles into the processing
- Ensure that by default (i) only personal data which are necessary... are processed, and (ii) personal data are not made accessible to an indefinite number of persons without intervention from the individual

## ➤ User rights

- Data portability
- Right to be forgotten?

## ➤ Risk assessment & Security

- Assess risks & implement practical measures & policies
- Data breach notifications (72 hours)



# Challenges of Privacy & Data Protection



➤ **Blockchains are (distributed) (transparent) databases**

- Definition of personal data
- Although anonymous, can nodes/members still be traced back and re-identified ?

➤ **Blockchains are distributed (transparent) (databases)**

- Purpose limitation
- Access limitation

➤ **Blockchains are (distributed) transparent (databases)**

- Data minimization / storage duration
- What elements of the self or of a person's identity are left on the blockchain? (property transactions, management of IoT networks such as smart meters, insurance contracts, etc.)

# Smart Contracts & Risk Allocation

## Smart contracts assume an underlying contract needs performance

- They may be a good fit for some contracts or transactions but not all of them ("vending machine")
- Underlying contract must be valid and accepted

## Smart contracts operate automatically

- Provided that the contract rules have been well understood and adequately translated into code!
- "No need to go to court": seriously?
- Outside of existing legal remedies or limitations (e.g. consumer protection)

## Smart contracts cannot foresee the unforeseen...

- Code and algorithms cannot capture all possible circumstances, errors, business changes, etc.
- Liability exposure remains governed by legal and contractual provisions → quid if the smart contract causes a bigger harm/loss than the "human" performance?

# Legal check-list for Smart Contracts projects?

## Identify

- The operators
- The constraints (regulatory, competition, data protection, consumer protection, etc.)

## Protect

- Brands & trade secrets
- Build / IT developments
- Exploitation of results

## Manage expectations & risks

- Scope of work
- Roles & responsibilities
- Timeline
- Exit arrangements
- Liability & Indemnities

## Comply

- Definition of roles
- Security & Cybersecurity
- Data Protection & Information of Users
- Limitation of service benefits & risk exposure

# Contract Rules for Access to Data

## Scope

Description of datasets,  
updates, processes, ...

## Access & Re-use

Who has the right? Subject to  
what conditions & limitations

## Service performance

SLA's, infrastructure,  
transmission processes, ...

## Post-termination

Hand-over data? Erase?  
Purpose limitation?

## Scope

Quality and reliability of data  
Error notification

## Access & Re-use

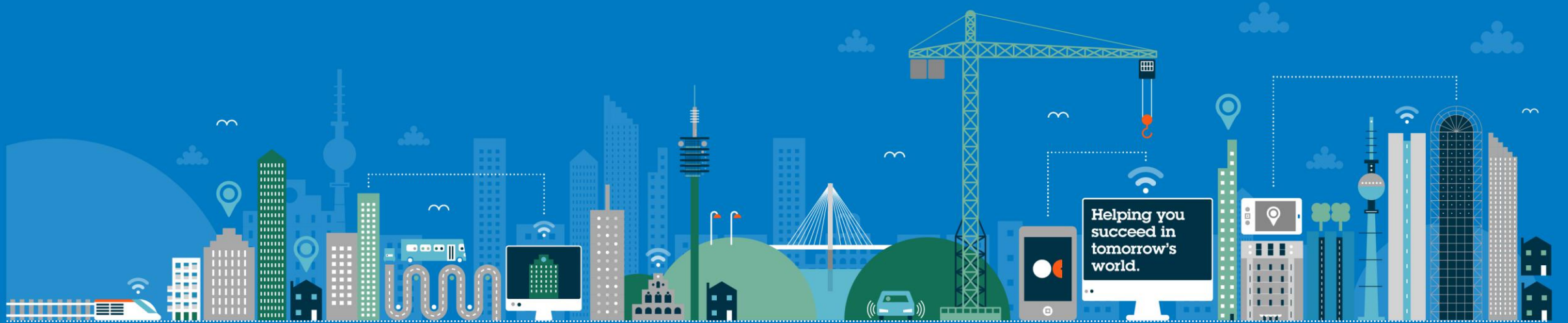
Inferred data and results? Sub-  
licenses? Purpose limitation?

## Service performance

Liabilities, sanctions, remedies,  
audits, etc.

## © like creativity... 😊

# 4 A changing role for institutions and intermediaries?



# Can Technology Restore Trust?



- **Intermediaries are accountable. Technology is not (and cannot be)**
  - E.g. if a patent assignment is not properly registered, in a totally decentralized setting, who will be responsible?
  
- **Transparency requires trust, as much as trust requires transparency**
  - E.g. in e-voting systems, anonymity is a must-have
  - E.g. transaction ledgers must be trusted by all users as a pre-requisite
  
- **Smart Contracts & Proof of transactions**
  - Smart contracts cannot be broken (unlike contracts) ; they are exposed to flaws in coding (don't blame the lawyers, then...)
  - Legal evidence still requires an intermediary / trusted third party

## Role of central authorities for real estate transactions

Authenticate individuals

Certified register of land titles

Digital signatures

Digital awareness amongst users

Professional services disrupted?

A new role for notaries, agents, lawyers, etc.?

There's still a long way to go before full disruption...

But authorities can create a stimulating environment for blockchain

# Thank you for your attention

