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Direcció

BLOCKCHAIN

ECOSISTEMAS



Luz Parrondo
UPF –Barcelona School of Management

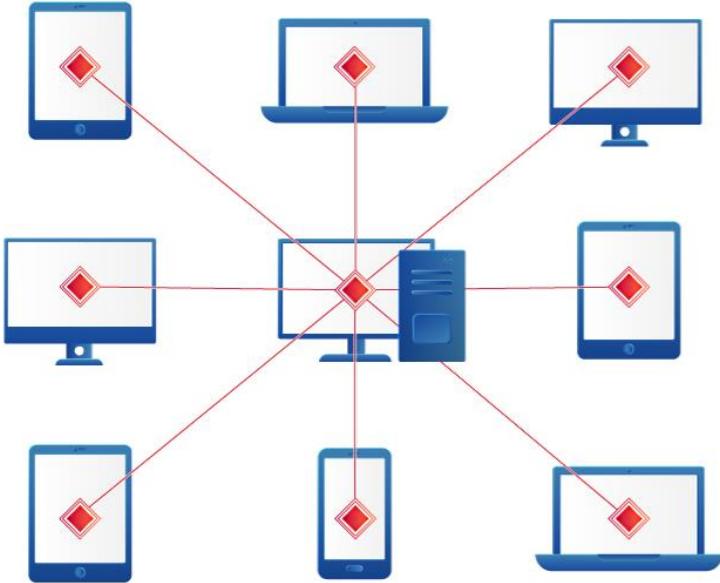
BLOCKCHAIN



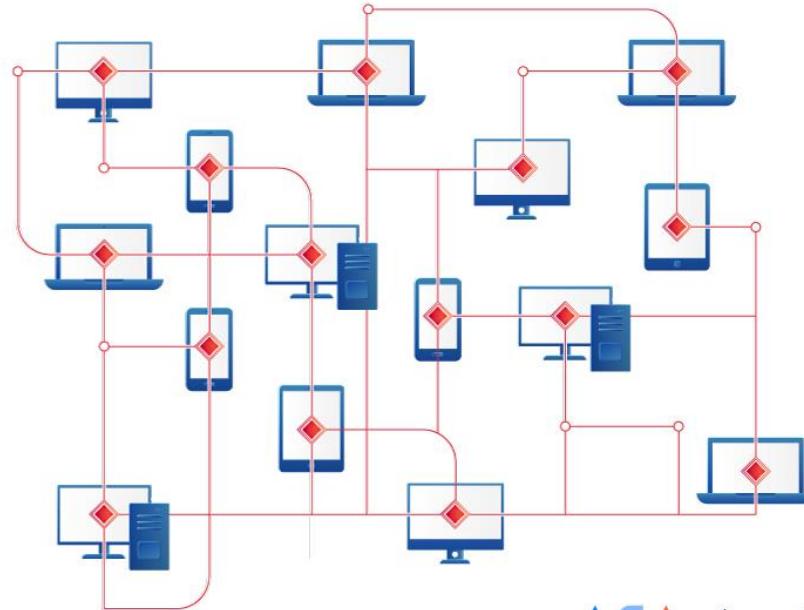
ERP- Inter Organizational

Centralized vs. P2P

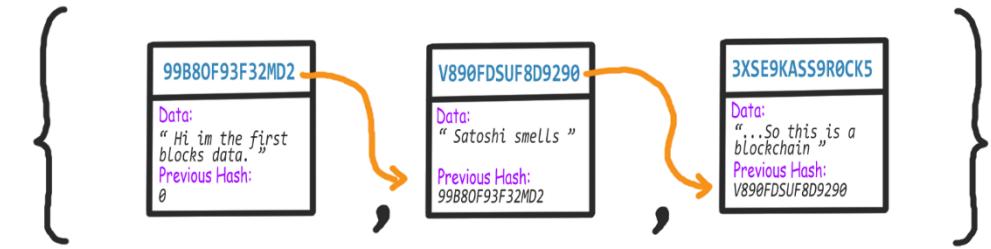
Centralized network



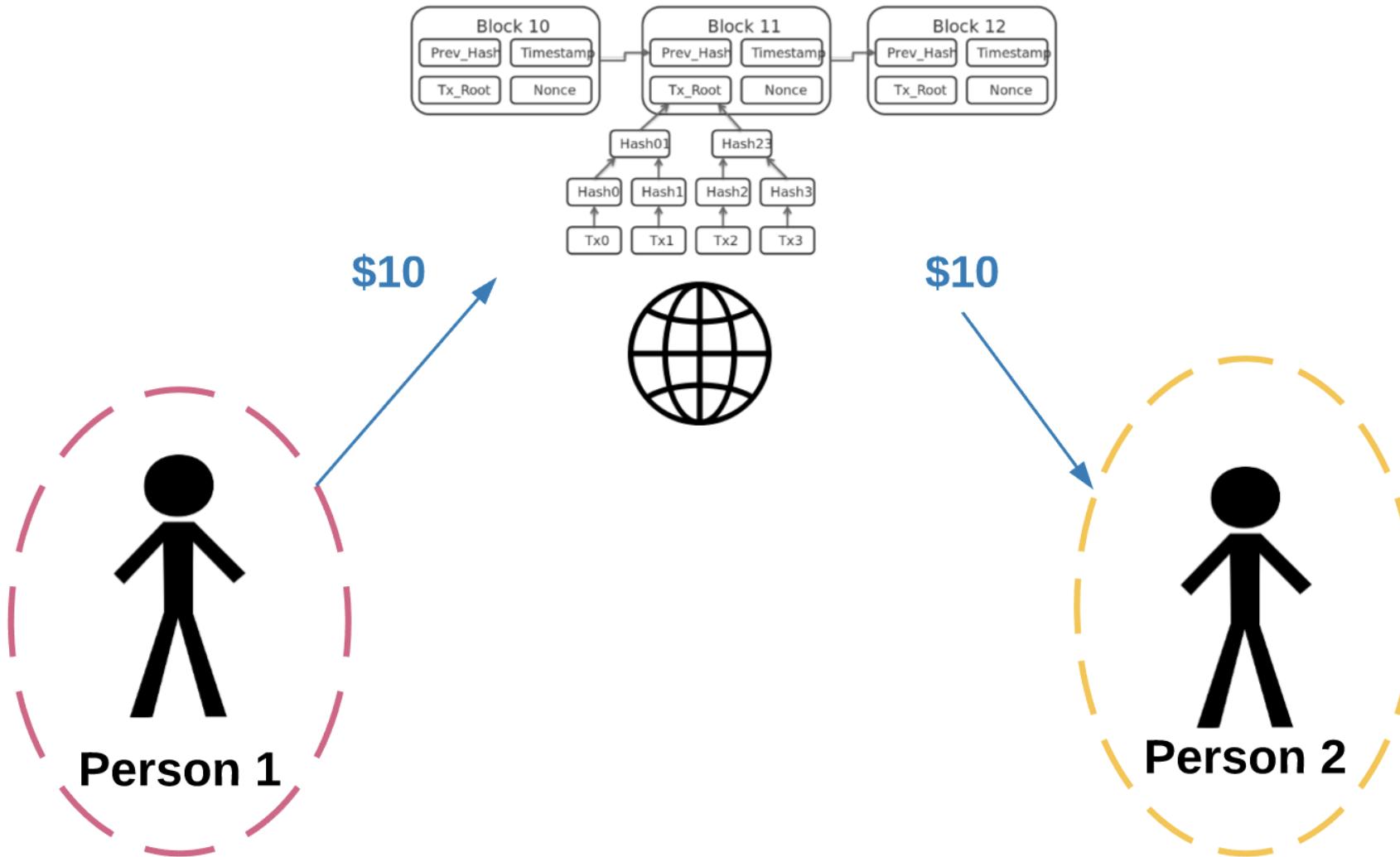
P2P network



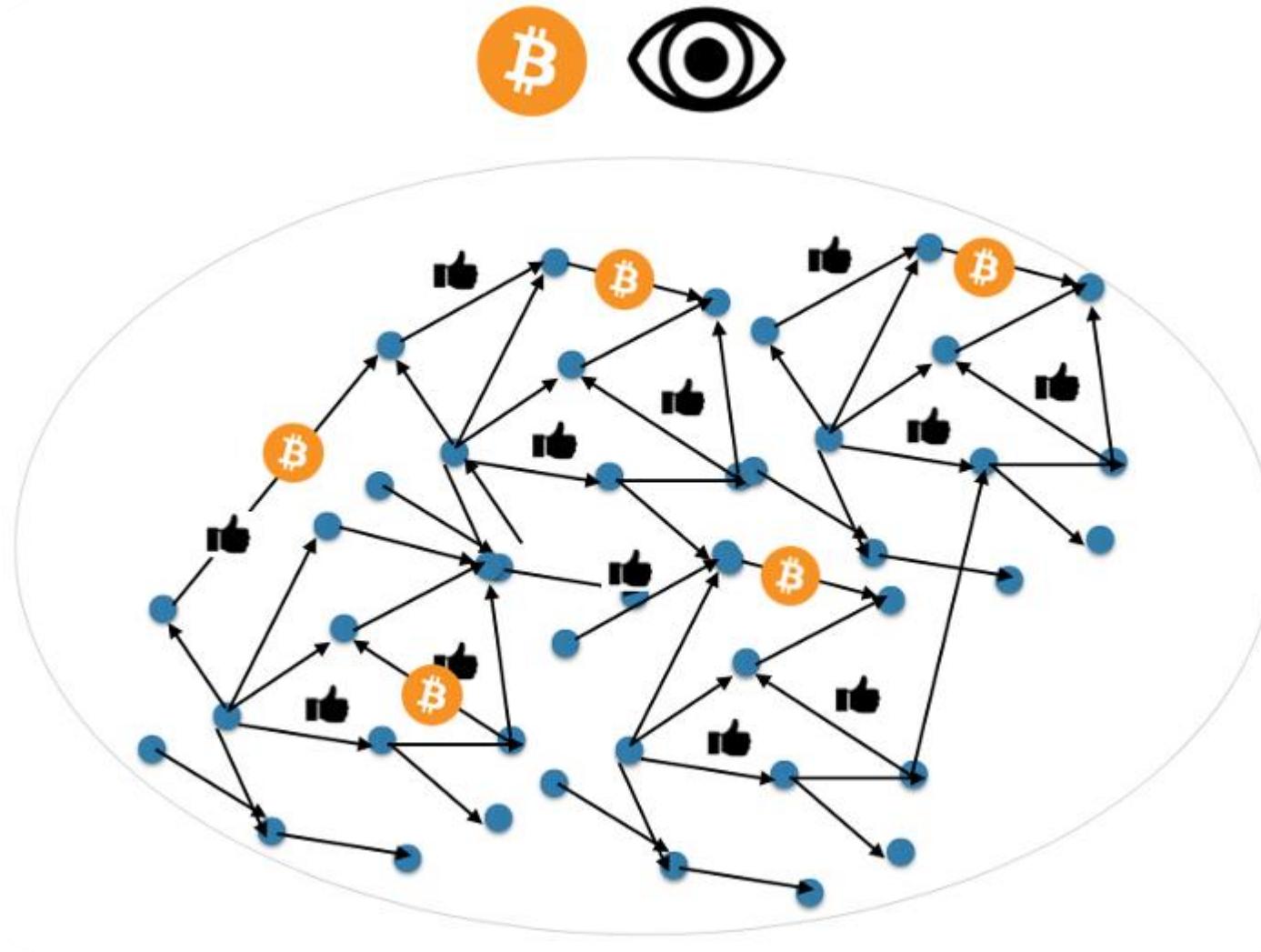
Technology = Trust



Blockchain

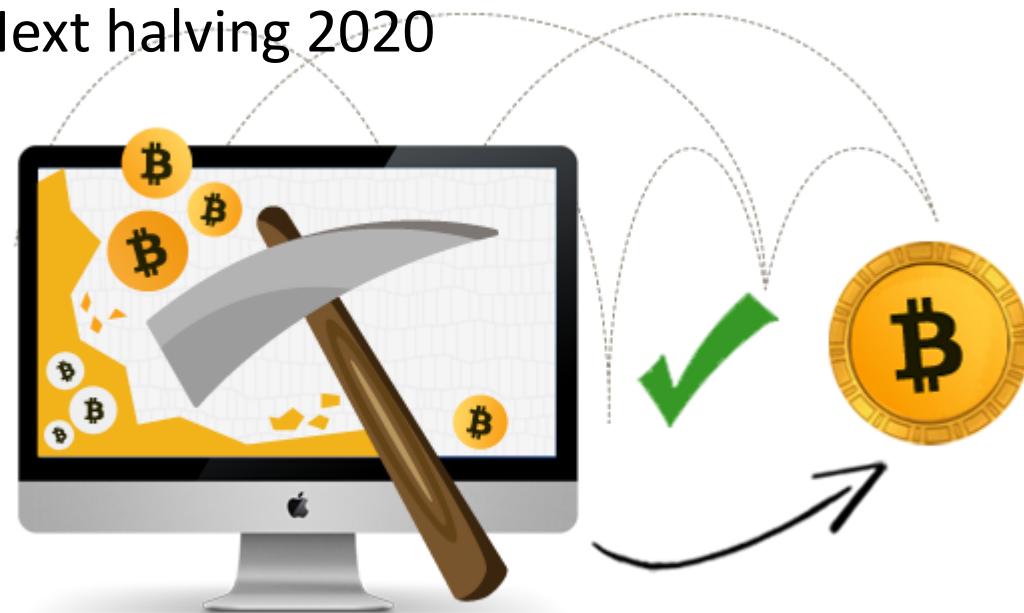


The “Central Bank of Internet”

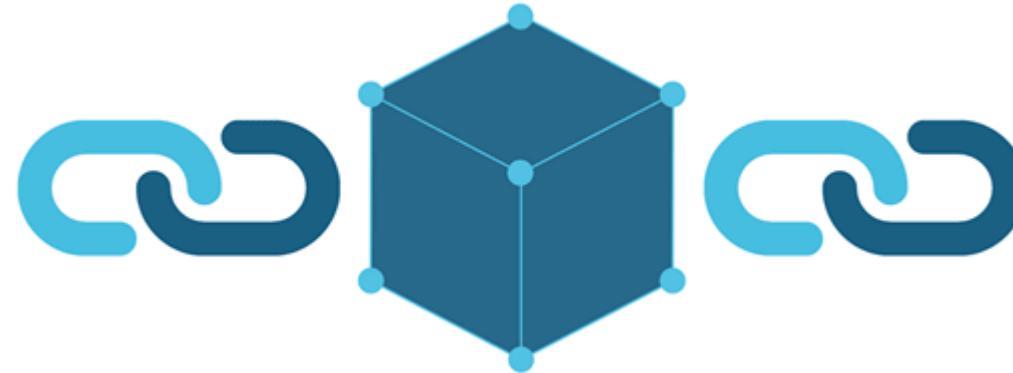


Mining

- Number of bitcoins per block started in 50BTC
- Decrease 50% every 210,000 blocks (every 4 years, since 6 blocks /hour are found) - More miners more difficult
- Today every block generates 12,5BTC - Next halving 2020
- Total 21,000,000 in 2140



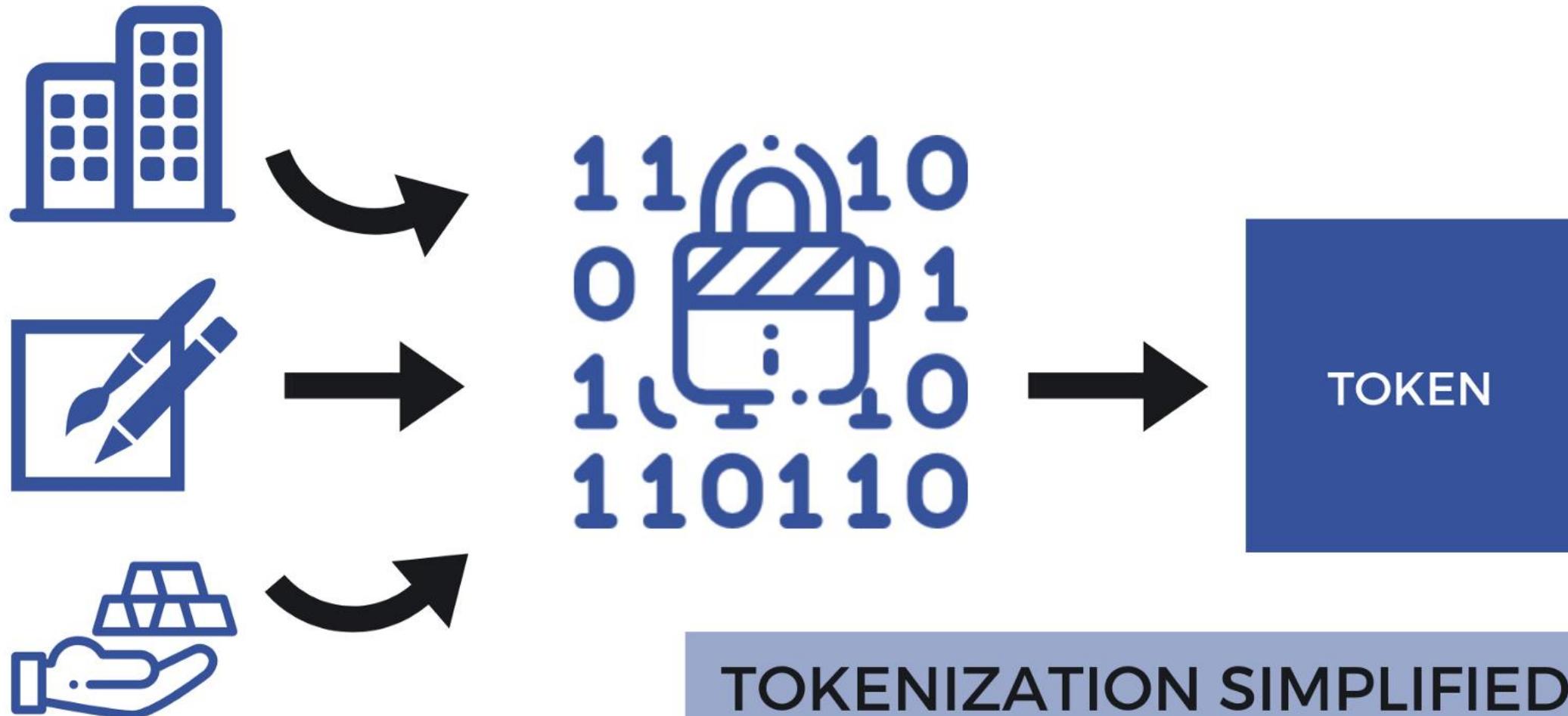
DLT s (including Blockchain)



- Decentralized
- Persistent:
- Immutable:
- Public (auditable



Asset tokenization



Any type of asset



Tokenization of assets (Tokencomics)

Is the process of replacing sensitive data with **unique identification** symbols that retain all the essential information about the data without compromising its security.

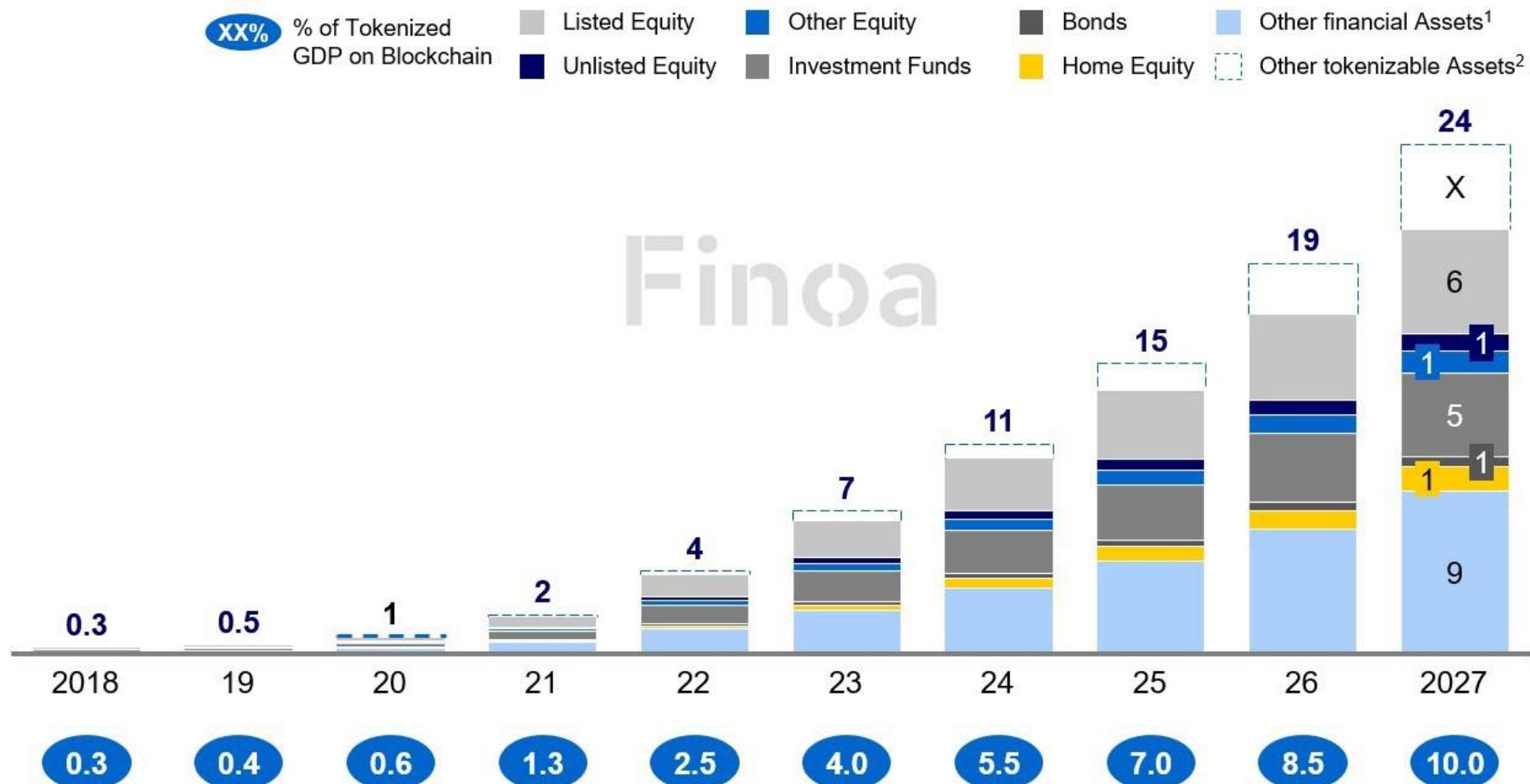


Tokenization of natural resources



Market outlook on a \$24trn business opportunity

Projected Tokenized Market Volume until 2027, in \$trn by asset class



1 e.g. Insurance Policies, Pensions, Alternative Investments

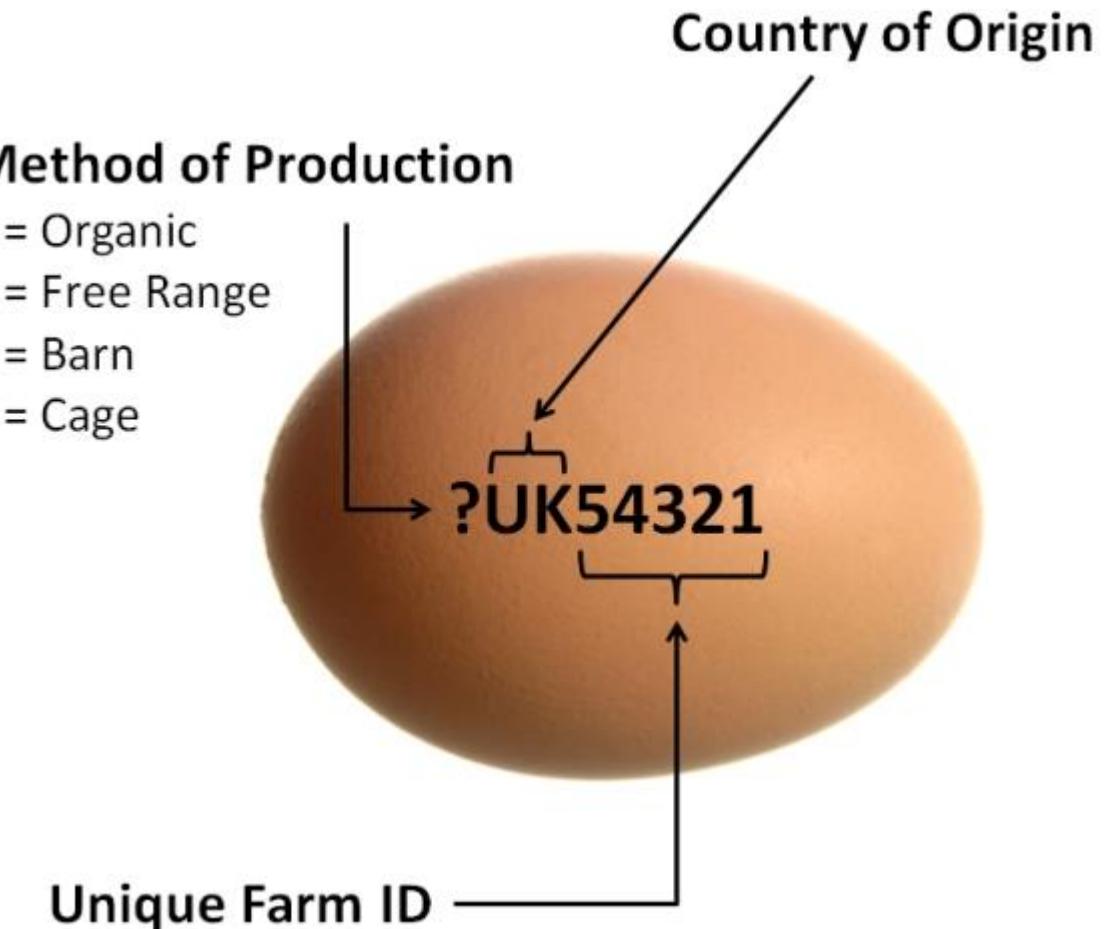
2 e.g. Infrastructure Projects, Car Fleets, Patents

Tipping point expected 2025-2027

Research and surveys from institutions such as the **World Economic Forum (WEF)**, **Deloitte or McKinsey** project that

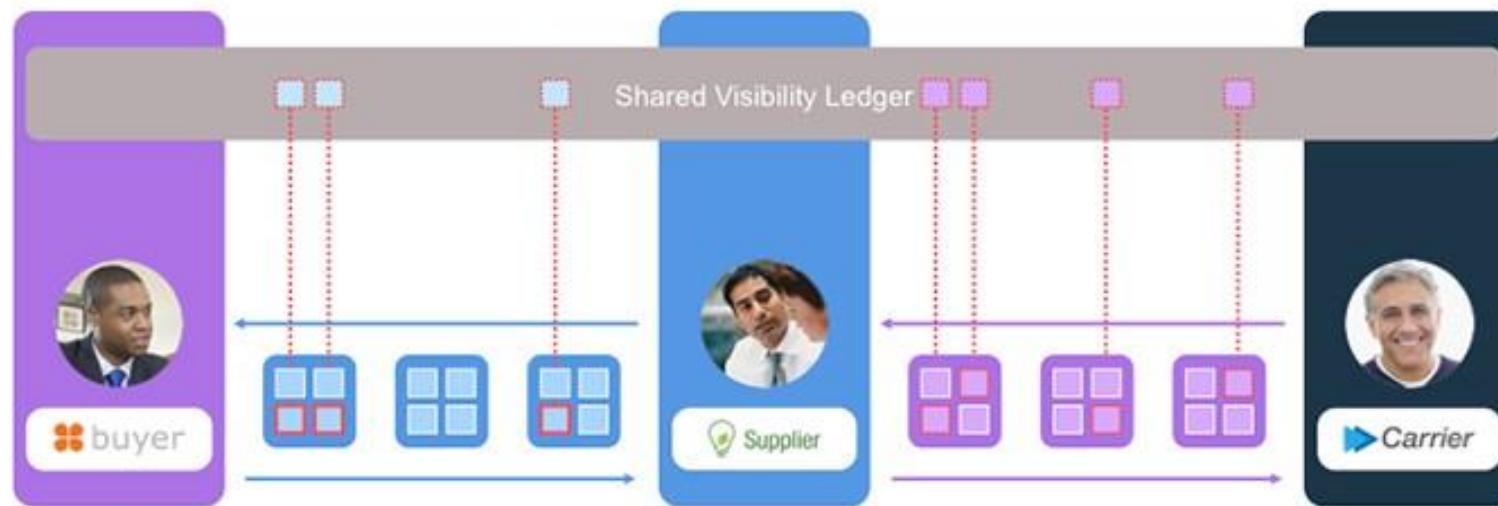
up to 10% of the global Gross Domestic Product (GDP) will be stored and transacted with the help of blockchain technology by 2025–27.

Product tokenization



Connecting all participants (transparency)

Blockchain: One Truth Across Networks
for the Supply Chain



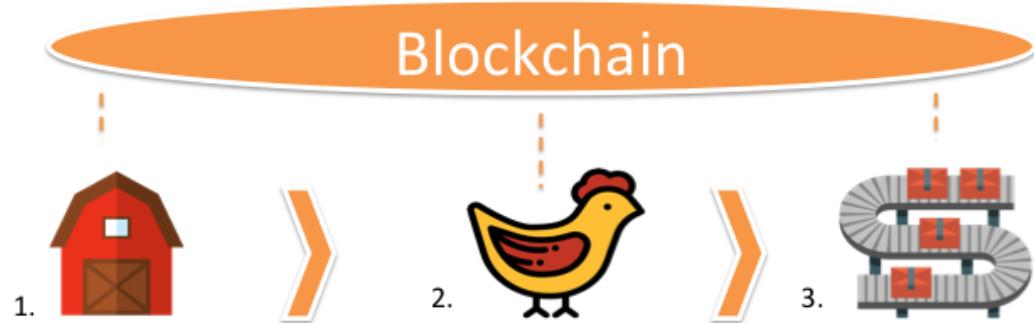
Supply chain efficiency

The graphic illustrates the joint effort of IBM and Maersk to revolutionize supply chain management. A central flowchart shows a linear sequence of supply chain nodes: a tree, a factory, a smartphone, a tablet, a truck, a ship, a glass, a house, a delivery truck, money, a clipboard, and a forklift. Arrows indicate the flow of goods or information between these nodes. The entire diagram is set against a background of a world map, symbolizing global reach and integration. Overlaid text highlights the key benefits of their collaboration:

- SIGNIFICANTLY REDUCE DELAYS AND FRAUD
- SAVING BILLIONS OF DOLLARS ANNUALLY

Origin and destination

End-To-End Blockchain-Enabled Supply Chain (Part 1)



Supplier

- Uploads data on antibacterial fodder
- Chicken tagged with RFID chip; provides free range

Producer

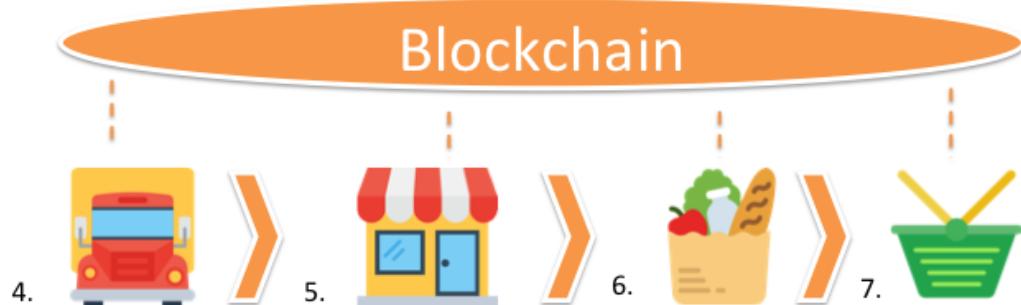
- Gets information on required cuts; prepares meat accordingly
- Adds QR code to packaging

Distributor

- Automatically receives notifications about receipt of chicken products
- Chooses best suited 3PL based on all available customer data



End-To-End Blockchain-Enabled Supply Chain (Part 2)



3PL

- 3PL (Third Party Logistics) is informed about origin and destination of the product
- Is given instructions on how to store the product

Retailer

- Runs machine learning based forecasting
- Adds updates to data records
- Provides app for final customer

Store

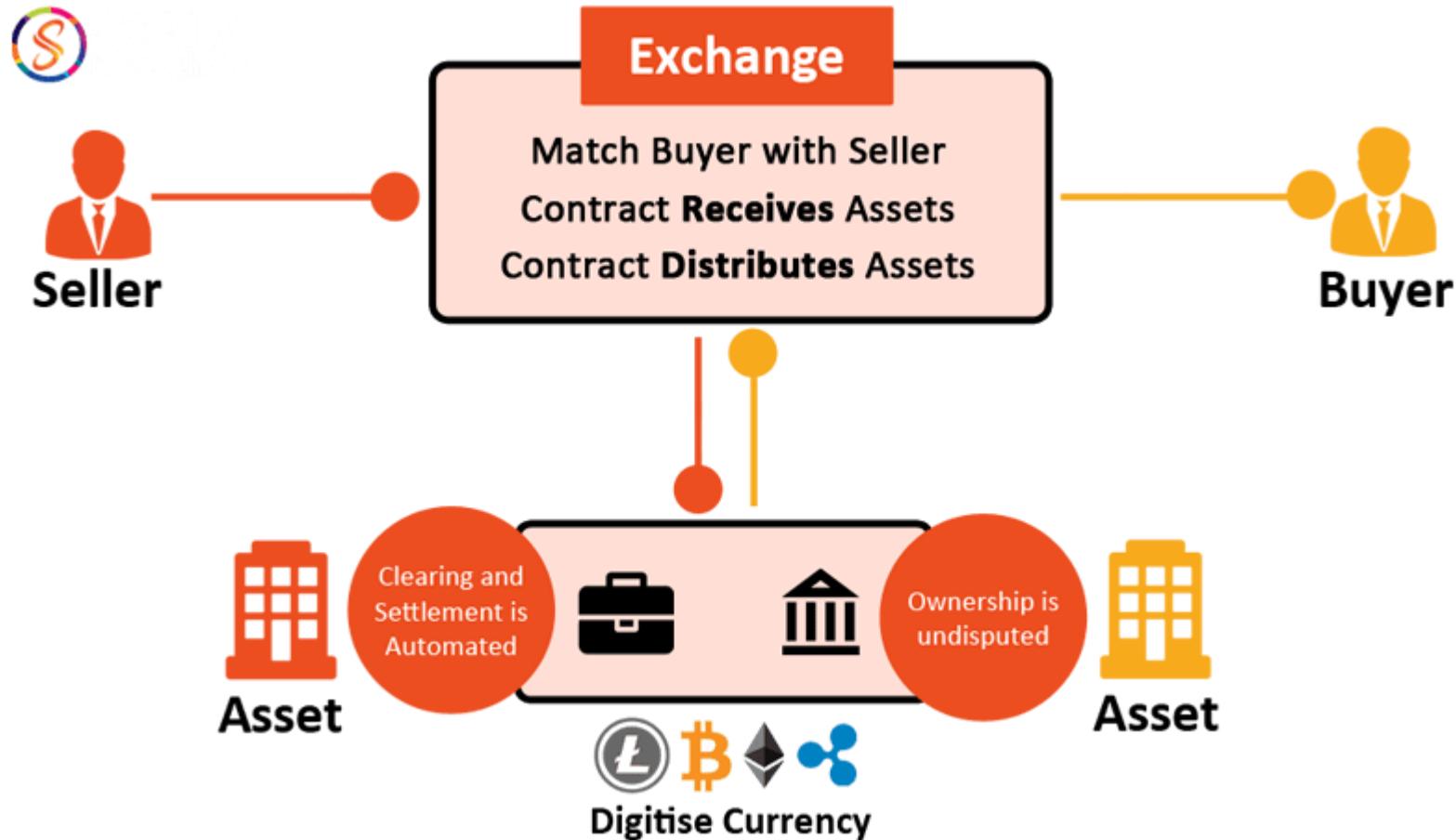
- Has full transparency on delivery time
- Adapts orders, promos etc accordingly

Customer

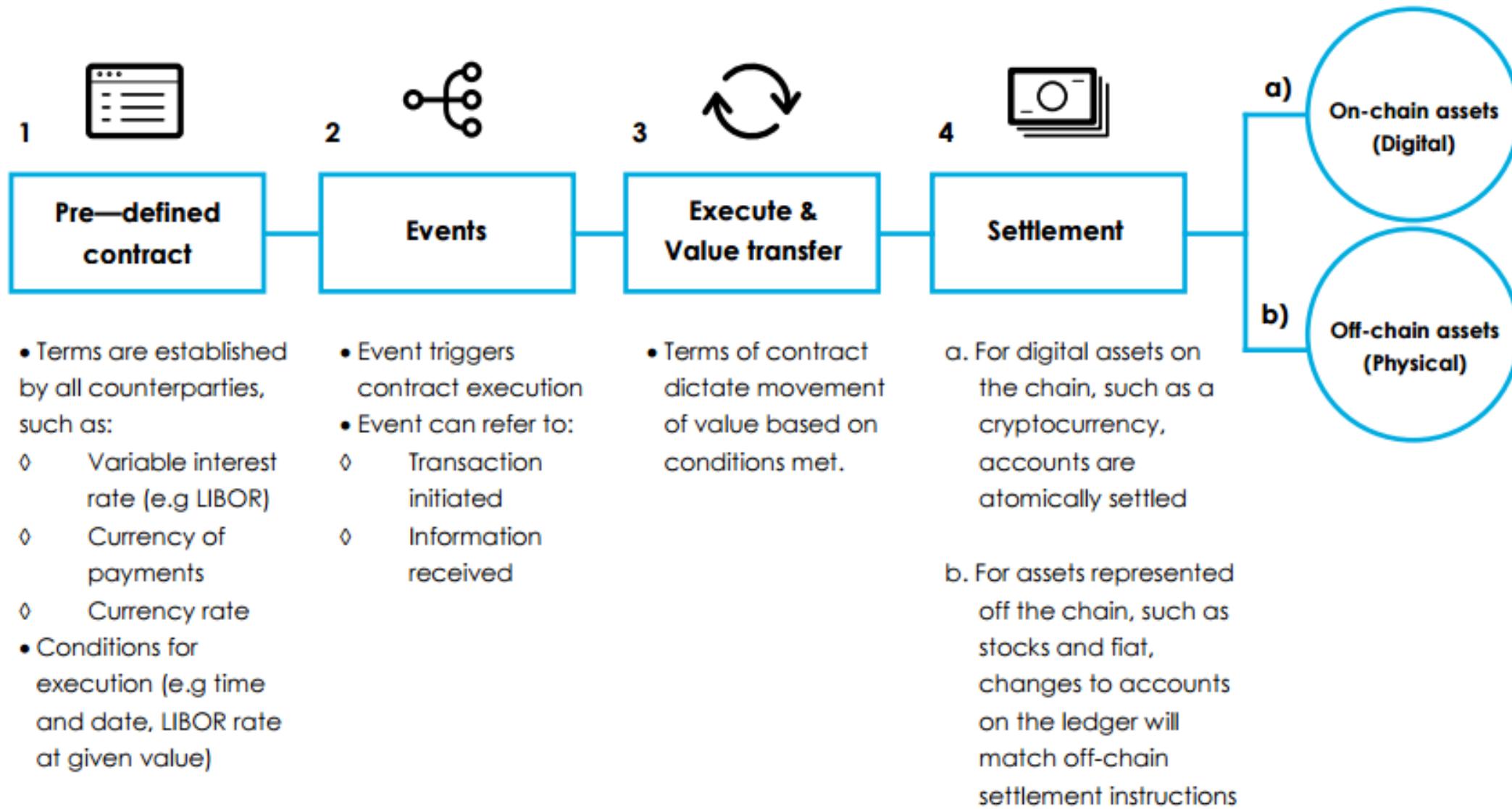
- Scans QR code via app
- Gets insights into origin of the chicken product; ageing; duration etc



Smart contracts



Smart contracts



Self execution of actions on preset rules

SMART CONTRACT



Supply chain - use of smart contracts

Logged as the Importer Bank

Demonstration: View, Edit, and ... × +

linux05.watson.ibm.com/openchain/

Most Visited Bookmarks Toolbar LinuxConDemo Assets | IBM.Next blockchain cognitive

My Contracts: Browse, Edit, and Monitor

Logged in as ImportBank (Sign out)

New Contract

Product: PartsDelivery

Vendor: SupplyCorp

Price: 1000000

Bank: ExportBank

Approvals: Trucker
PortAuthority
CustomsAuthority

Conditions:

Publish

Contracts Deployed By Me

Contract Name: PartsDelivery

Contract Type: LC_3

Signatories: Trucker
PortAuthority
CustomsAuthority

Status: Pending

Update All

Update

Contracts Pending My Signature

Contract Name

Contract Type

Signed By

Register Signature

My Bank Accounts

Update All

Bank Name

Account Balance

The screenshot shows a web browser window for the 'OpenChain' platform at 'linux05.watson.ibm.com/openchain/'. The user is logged in as 'ImportBank'. The main interface is titled 'My Contracts: Browse, Edit, and Monitor'. On the left, there's a 'New Contract' form with fields for Product (PartsDelivery), Vendor (SupplyCorp), Price (1000000), Bank (ExportBank), Approvals (Trucker, PortAuthority, CustomsAuthority), and Conditions. A 'Publish' button is next to the form. To the right, there are two tables: 'Contracts Deployed By Me' and 'Contracts Pending My Signature', both with 'Update All' buttons. The 'Contracts Deployed By Me' table lists one contract named 'PartsDelivery' of type 'LC_3' with signatories 'Trucker', 'PortAuthority', and 'CustomsAuthority', all in 'Pending' status. The 'Contracts Pending My Signature' table is currently empty. At the bottom, there's a 'My Bank Accounts' section with a 'Bank Name' and 'Account Balance' table.

Supply chain - use of smart contracts

Logged as the Port Authority

My Contracts: Browse, Edit, and Monitor

Logged in as **Trucker** ([Sign out](#))

New Contract

[Publish](#)

Product:

Vendor:

Price:

Bank:

Approvals:

Conditions:

Contracts Deployed By Me

[Update All](#)

Contract Name	Contract Type	Signatories	Status	Update
PartsDelivery	LC_3	Trucker, PortAuthority, CustomsAuthority	Pending	Update

Contracts Pending My Signature

[Update All](#)

Contract Name	Contract Type	Signed By	Register Signature
PartsDelivery	LC_3	Trucker	

My Bank Accounts

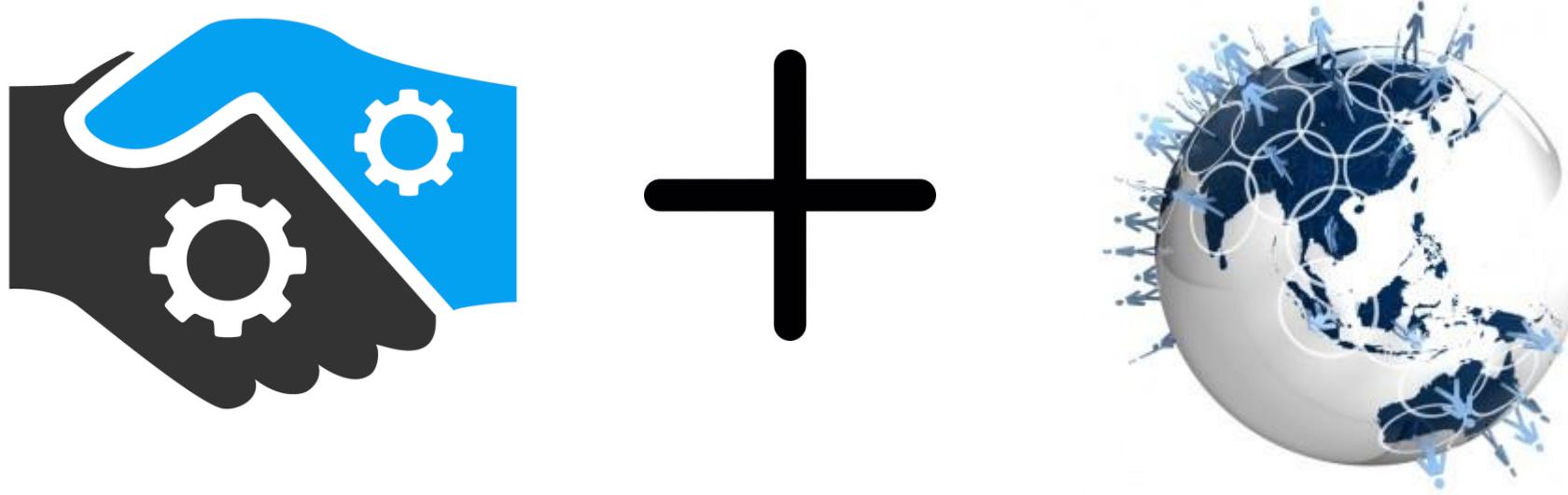
[Update All](#)

Bank Name	Account Balance
Bank A	1000
Bank B	2000

Number of blocks added to chain: 3

```
javascript:signContract('Trucker','PartsDelivery')
```

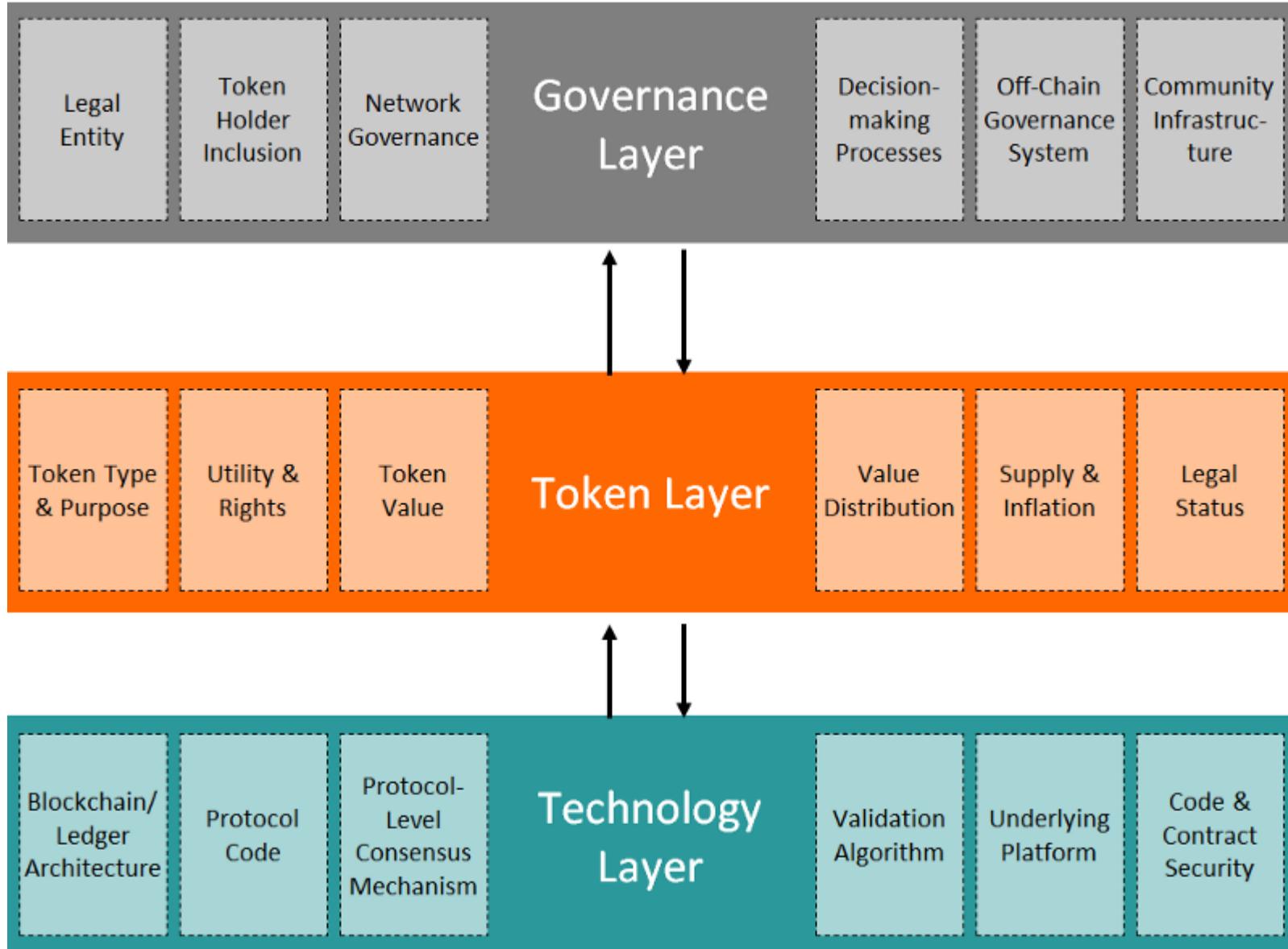
Smart contracts + Global DB



AUTONOMIZATION

SELF-GOVERNING ECOSYSTEMS

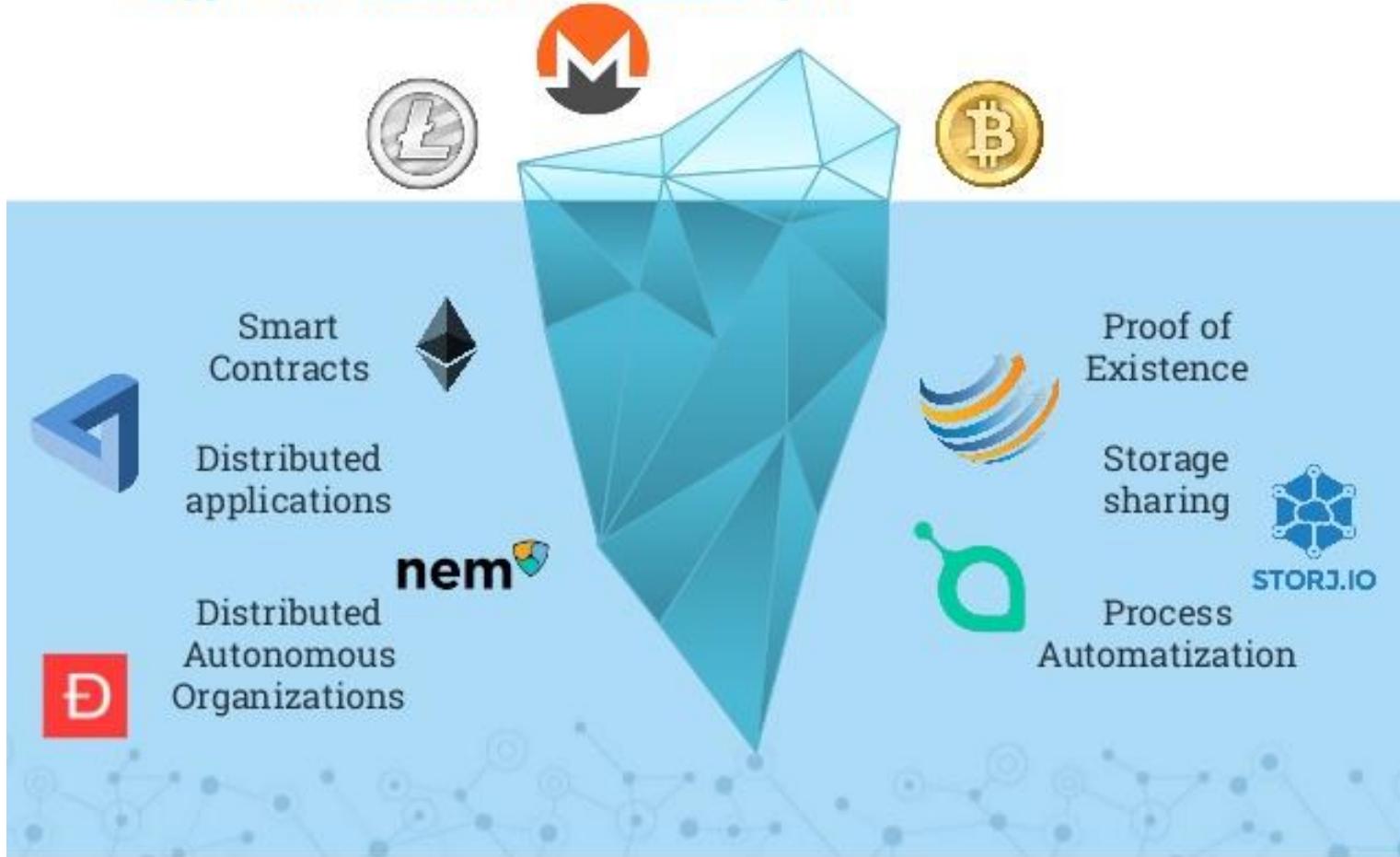
DLT SYSTEM LAYERS



And much more...

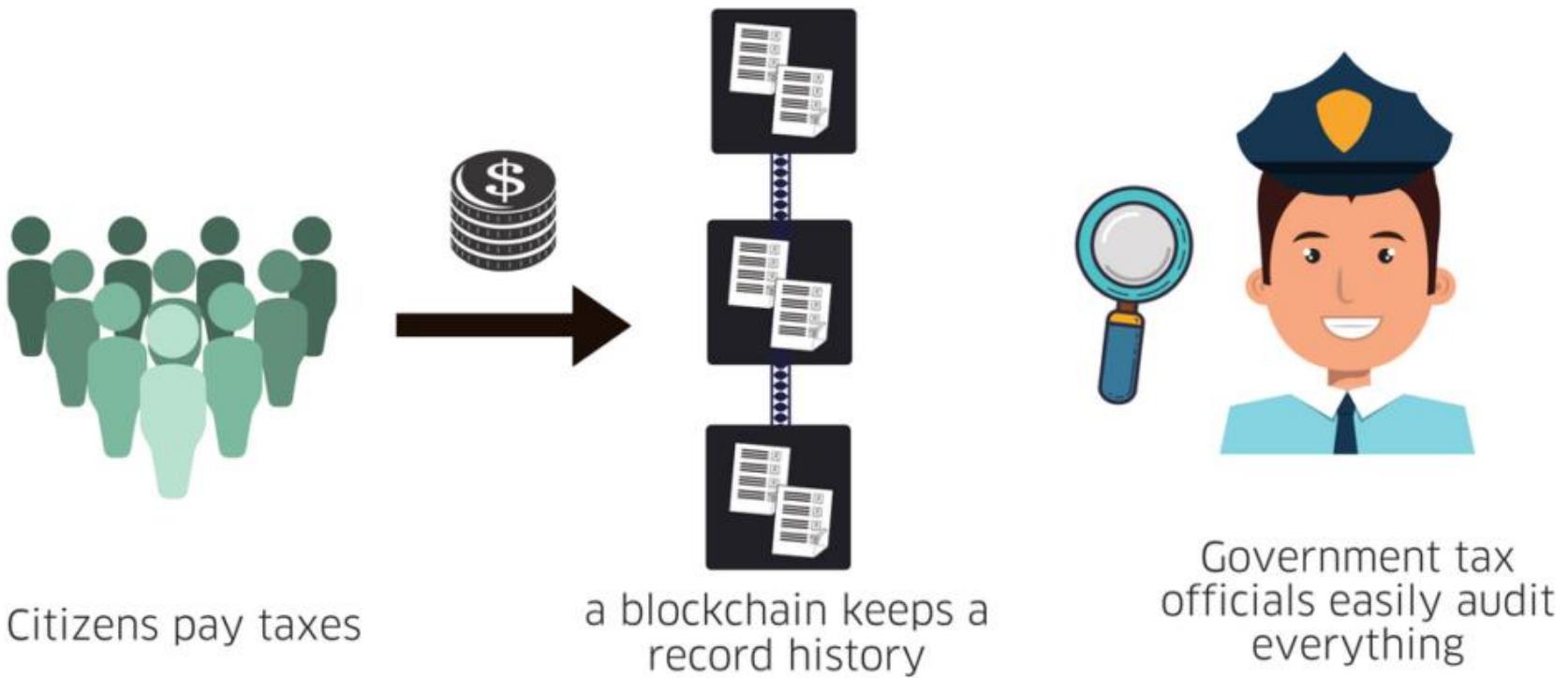


Cryptocurrencies are the smallest part



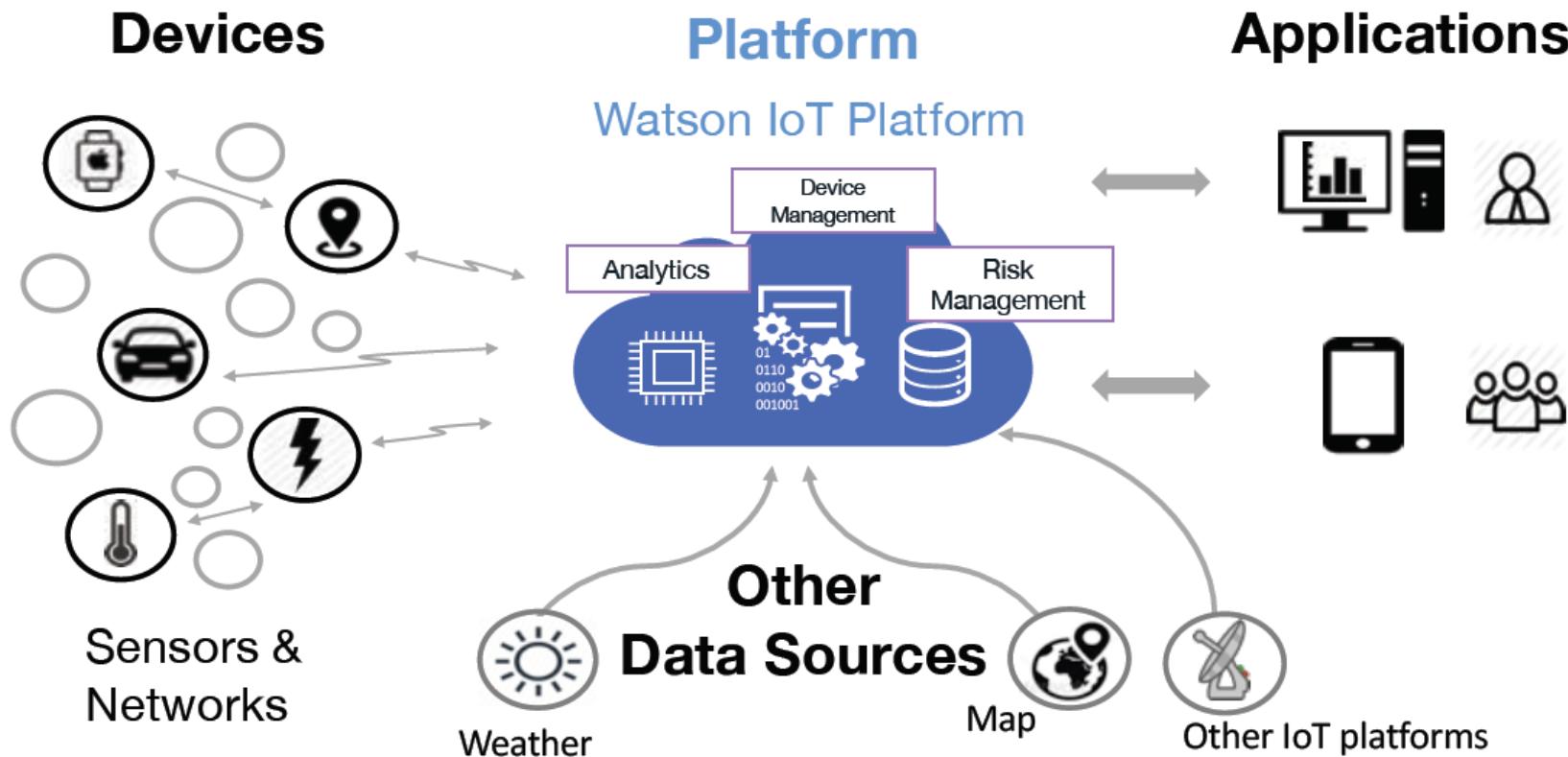
Taxation

Blockchain-based Taxation



Blockchain + IoT

In X years there may be sensors in clothes, in the car...
You will not generate the information... your actions will.



Blockchain & The Smart City

Chinese Auto Giant announces that it will use blockchain technology as part of its \$30 billion smart cities initiative.

I had the pleasure to be invited to give a presentation during the first Amsterdam Tech City event in July 2016. This kick off meeting focused on Blockchain & the City. City officials gathered with external experts in the City Hall of Amsterdam. For me, as a former member of the City Council, this was a familiar spot. In my presentation How the blockchain became mainstream I gave examples of the fast growth of serious interest for the blockchain among established financial institutions in the past 2 years.

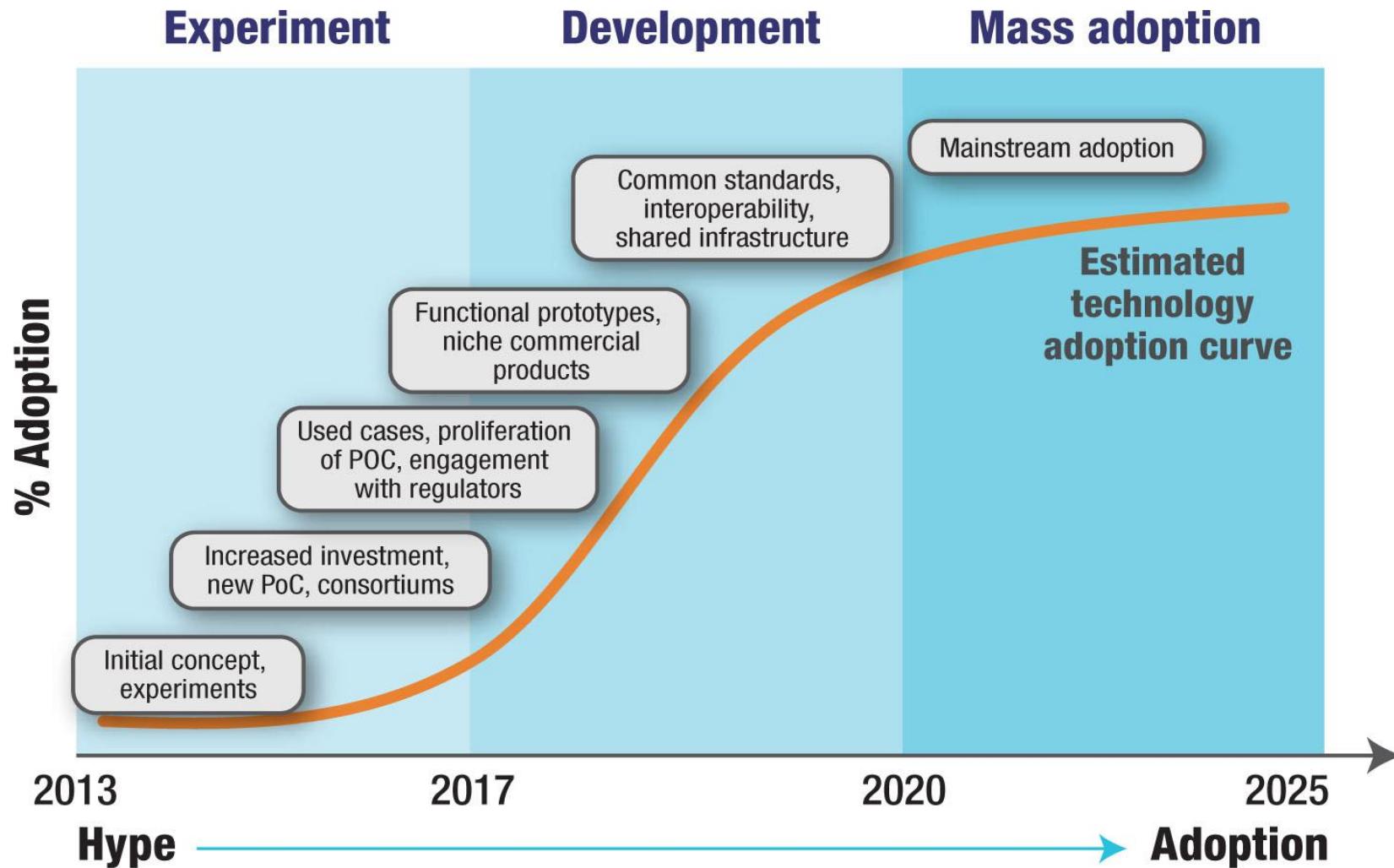
Continue reading here:

<http://www.carlienroodink.nl/2016/10/blockchain-the-smart-city/>



Mainstream adoption in financial services could take five to seven years

Figure 3. Estimated time frame of DLT adoption



Gobernance



DAO (Decentralized Autonomous Organization)



DAO (Decentralized Autonomous Organization)

A business or organization **whose decisions are made electronically by a written computer code or through the vote of its members.**

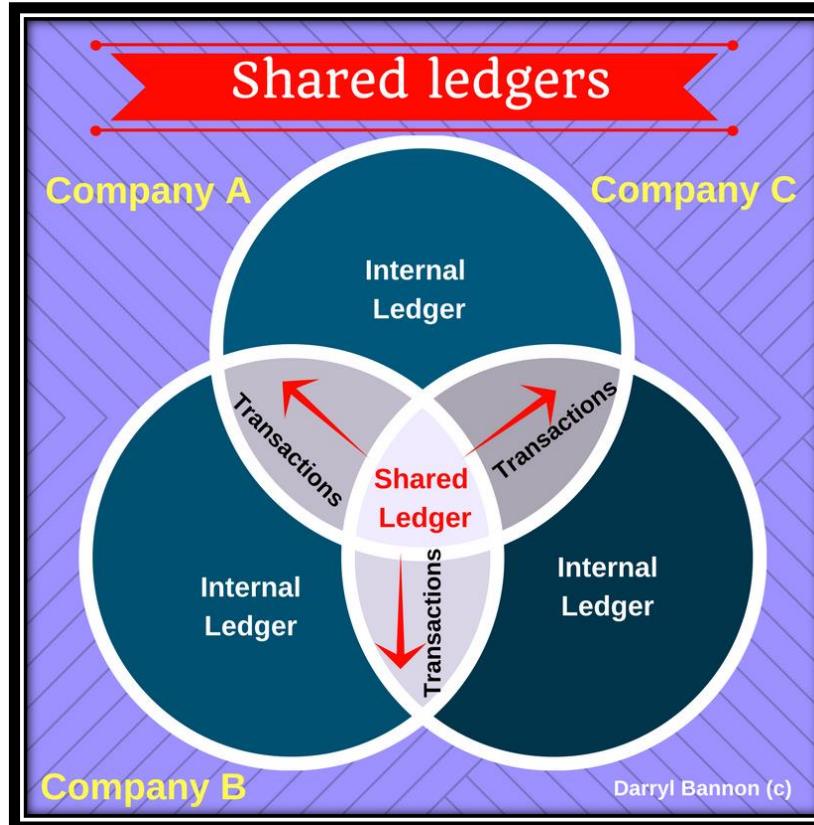
In essence it is a **system of hard coded rules** that define which actions an organization will take.

“We could have companies without CEOs or hierarchy. The uses for such an infrastructure are tremendous in scale. If regulatory structures permit, blockchain data could replace many public records like birth certificates, marriage certificates, deeds, mortgages, titles, sex offender records and missing persons. Healthcare clinics can function autonomously, cab companies can control a fleet of driverless cabs, a software development company can employ thousands of independent programmers.

The list is quite large and a DAO model can be applied to almost any business.”



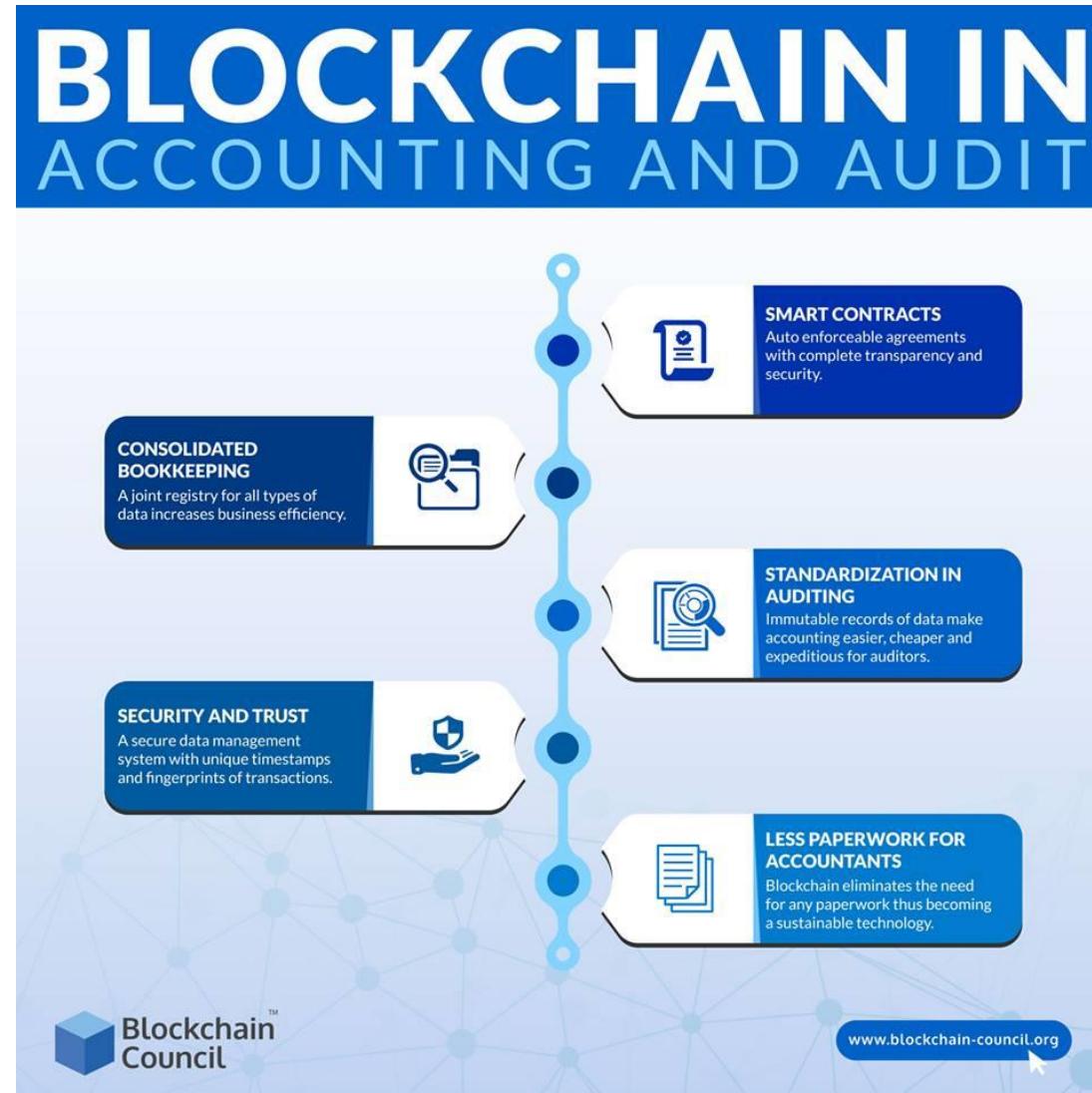
Contabilidad, reporting y auditoría



Combinado con **Internet of Things (IoT)**:

- "Soy una máquina de widgets y pertenezco a Bob S.A., aquí hay una firma digital para demostrarlo".

Contabilidad, reporting y auditoría



Ya están aquí....

SAP has recently launched – SAP Leonardo,

A digital innovation system, includes some early-stage blockchain capabilities, and integrates them with other breakthrough technologies – such as the IoT and machine learning. SAP Cloud Platform also includes blockchain-as-a-service (BaaS) pilot is giving registered customers an easy way to experiment with the technolo

SAP Leonardo



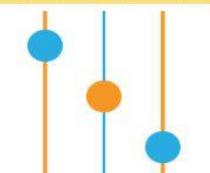
Internet of Things



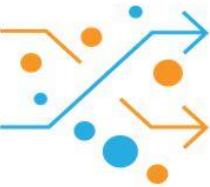
Blockchain



Machine Learning



Analytics



Big Data



Design Thinking

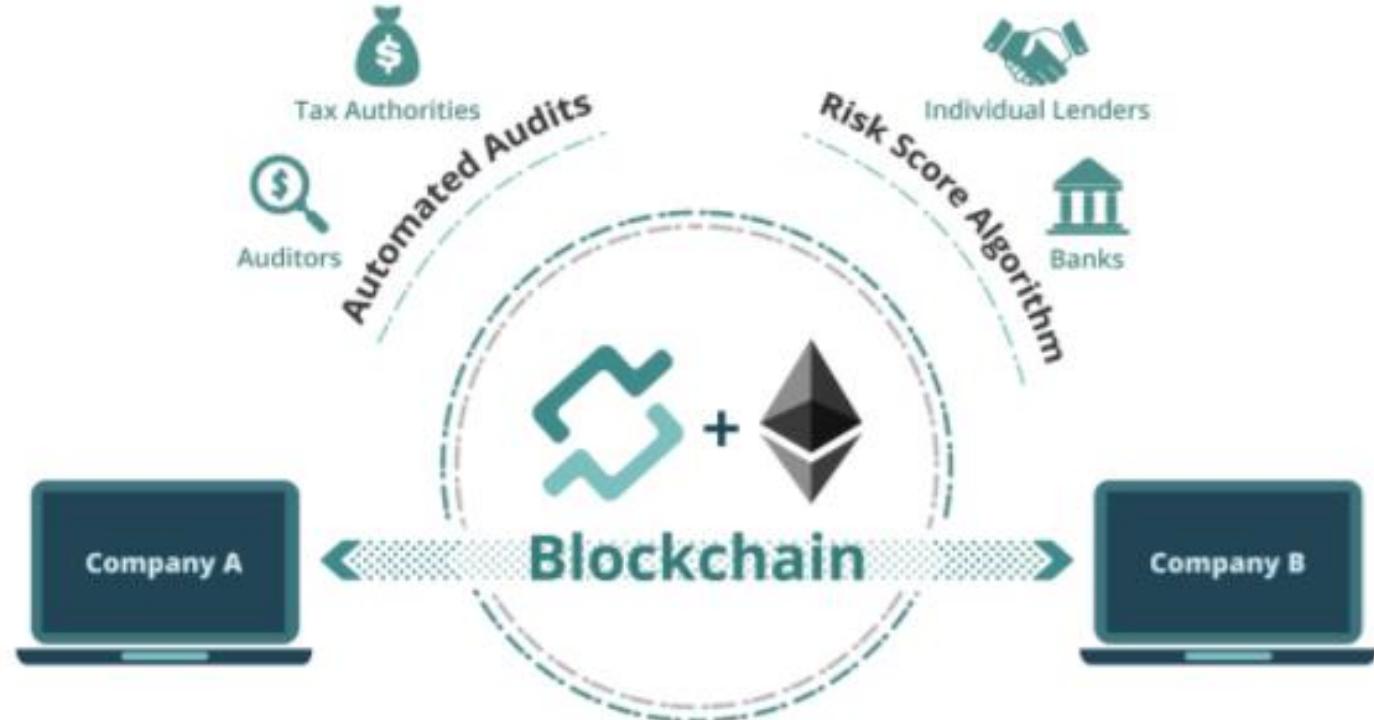


Data Intelligence

Contabilidad, reporting y auditoría

- Transición de Propiedad única → sistema abierto
- **Visibilidad total** de las transacciones
- Huella temporal y trazabilidad
- En tiempo real
- Smart contracts **reducen el coste de**:
 - monitorización
 - control
- Smart contracts + IoT + IA

PayPie Single Ledger



Contabilidad, reporting y auditoría



Expansión 30 agosto 2018

*“En lo sucesivo, las firmas de auditoría, incluso pequeñas, irán asumiendo el potencial de ventajas que a su negocio brinda la DLT como mecanismo de contabilidad de **triple entrada** con la consiguiente optimización de la función de control contable y alivio de costes de conciliación y auditoría interna en que se ha de incurrir por mandato del legislador.”*

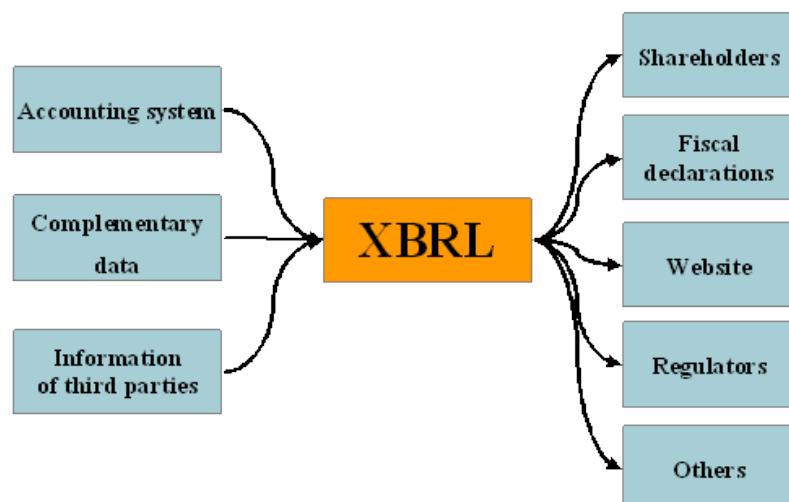
*“También evita la DLT **costes transaccionales** asociados a la publicidad externa y prueba de las operaciones ... con una referencia a particular al **empleo de la DLT en el mecanismo estándar de reporte financiero globalizado XBRL**.*

*“La digitalización de los estados financieros y no financieros en Europa se acelera, y el nuevo formato **Inline XBRL (iXBRL)** regirá a partir de 2020, en las compañías de capital con sede operativa en Europa.”*

(eXtensible Business Reporting Language)

Algún día todas las entidades con actividad económica (no solamente empresas) publicarán sus cuentas inmediatamente, **en formato estándar y común para todos, directamente explotable, sin costes añadidos y de forma transparente y comparable con total fiabilidad.**

La tecnología DLT (como Blockchain) es la herramienta perfecta para transmitir esta información de forma inmutable e inalterable



Contabilidad, reporting y auditoría

Los cuatro auditores más grandes del mundo, **Deloitte, Ernst & Young, KPMG y PwC**, están trabajando con 20 bancos taiwaneses para probar la tecnología Blockchain que ofrece una nueva forma de realizar confirmaciones bancarias.

El proyecto piloto:

Simplificar los procesos de confirmación externa (manual actualmente)

En el nuevo esquema en Taiwán, **los bancos migrarán los datos de las transacciones a una cadena de bloques a la que tendrán acceso las firmas de auditoría.**

El piloto aprovecha la estructura inalterable, distribuida e inmutable de un sistema blockchain para asegurar y automatizar el proceso de confirmación, acelerando potencialmente los tiempos de confirmación de un promedio de dos semanas a un solo día.

Contabilidad, reporting y auditoría

Empresas vinculadas, Joint Ventures o franquicias

Solución con Blockchain:

- Smart contracts pueden realizar complejas **transacciones automatizadas**.
- La red blockchain **elimina las discrepancias** entre los diferentes sistemas ERP
- Ser **reducen los procesos manuales**
- El **reporting es más preciso y rápido**
- Mejoramos la **compliance**.

¿Qué es FINTECH?



FINanzas + TECnología

Sector financiero (uno de los pioneros)

Banco Santander utilizará Blockchain en mercados de capitales

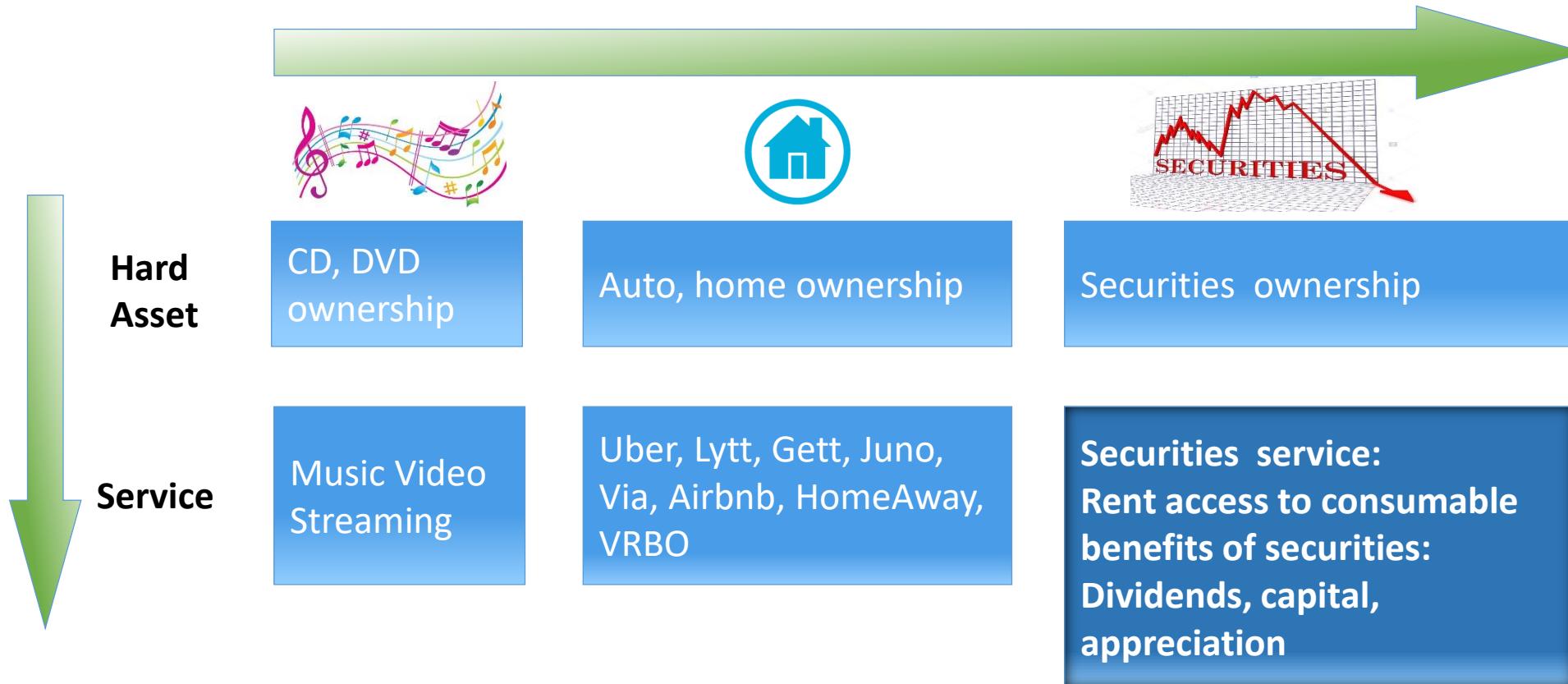
By **FrecuenciaOnline** - 23/07/2018



Banco Santander creó un equipo de investigación

de Blockchain para analizar el potencial de la tecnología en la negociación de valores.

Reinventando el sector financiero



Servicios bancarios pueden llegar a ser una “commodity”

GAFA(A) Los nuevos Bancos/Fintechs?

GAFA & Financial Services

Their Key Motivations



GAFA Los nuevos bancos / Fintechs?

- ✓ Tienen muchos **millones de clientes** con los que pueden comprometerse,
- ✓ **Entienden** lo que motiva a sus clientes,
- ✓ Tienen acceso al **talento**,
- ✓ Tienen enormes **reservas de capital para invertir**.

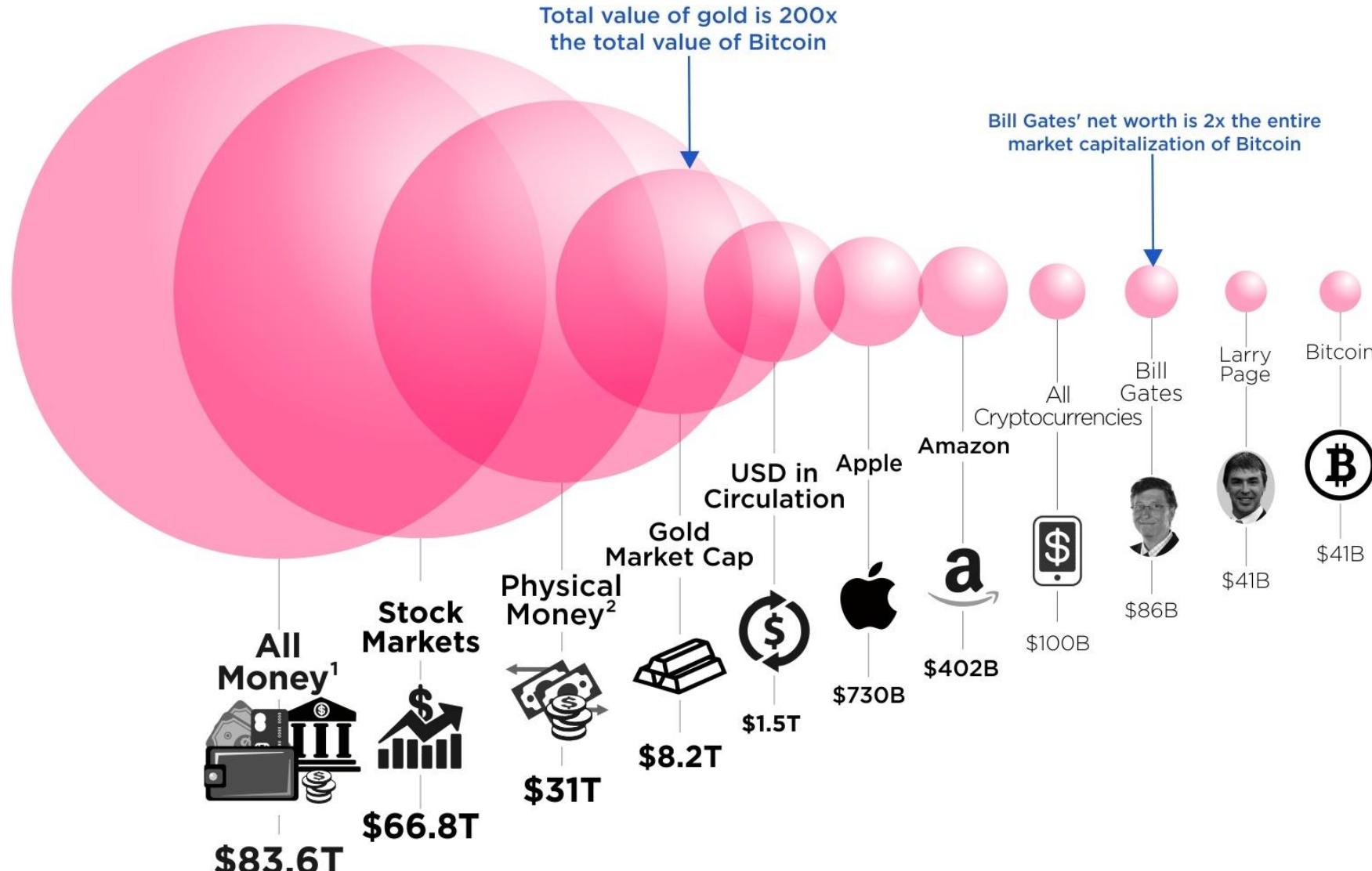
- ✓ Su única debilidad: su **marca**. ¿Se sentirán cómodos sus clientes?

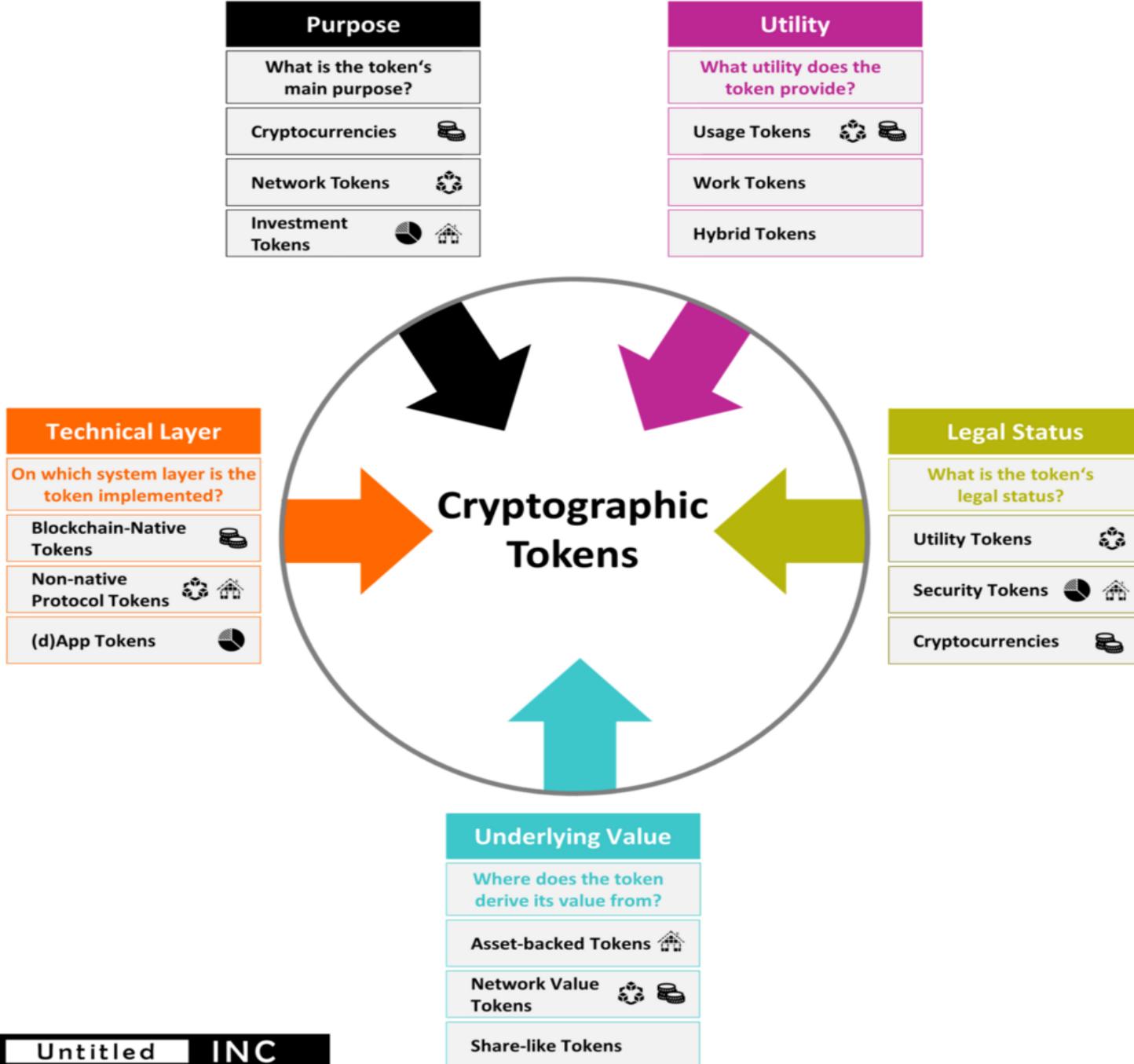
Los clientes obtendrán acceso a un conjunto mucho más amplio de productos financieros a precios más bajos.

En el proceso, la relación entre los bancos y sus clientes se diluirá aún más, y el **banco como servicio de consumo** podría eventualmente convertirse en una realidad.

Money supply

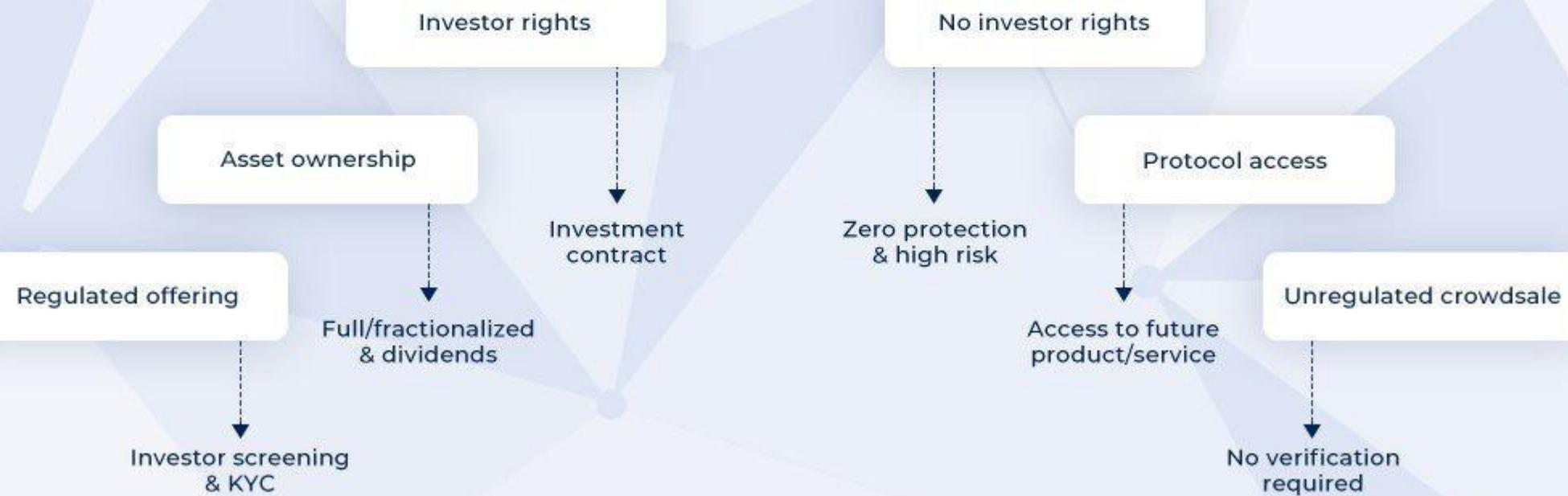
Putting the World's Money into Perspective





Fungible vs non-fungible token

Fungible Tokens	Non-fungible Tokens
Interchangeable A token can be exchanged for any other token with the same value. An EUR coin can be used for another EUR coin, with no difference to the user.	Non-interchangeable NFTs cannot be replaced with other tokens of the same type. If you lend the token to someone, you would expect them to return the same token, just as a museum that lends a Picasso painting to another museum for an exhibition. The other museum cannot simply return another Picasso painting.
Uniform Tokens of the same type are identical in specification, each token is identical to another token of the same type.	Unique Non-fungible assets have unique information or attributes that make them irreplaceable or impossible to swap. Each token is unique and differs from other tokens of the same class. While plane tickets from and to the same destination look the same, each one has different passenger names, departure times and seat numbers, and therefore not easily transferable.
Divisible FTs are divisible into smaller amounts. It does not matter which unit you get as long as it has the same value. Changing bills for coins is a good example. Fungible tokens are divisible meaning you can send a fraction of token to someone else.	Non-divisible Cannot be divided, the elementary unit is the token. You cannot trade your university certificate with a university certificate of that same university but of another person, and you cannot divide it into different parts.

STO scope**STO vs ICO**

Security Token vs Utility Token



App Tokens launch during unregulated crowd-sales

Securities Tokens launch during regulated offerings with mandatory KYC/AML/Accreditation

Consideraciones de la CNMV sobre criptomonedas e ICOs - 8 Febrero 2018

Como factores para valorar si a través de una ICO debe considerarse que se están ofreciendo **valores negociables** se estiman relevantes los siguientes:

- Que los “tokens” atribuyan derechos o expectativas de participación en la potencial revalorización o rentabilidad de negocios o proyectos o, en general, que presenten u otorguen derechos equivalentes o parecidos a los propios de las acciones, obligaciones u otros instrumentos financieros incluidos en el artículo 2 del TRLMV.
- En el caso de “tokens” que den **derecho a acceder a servicios o a recibir bienes** o productos, que se ofrezcan haciendo referencia, explícita o implícitamente, a **la expectativa de obtención por el comprador o inversor de un beneficio como consecuencia de su revalorización o de alguna remuneración asociada al instrumento o mencionando su liquidez o posibilidad de negociación en mercados equivalentes o pretendidamente similares a los mercados de valores sujetos a la regulación**.

La CNMV y el Banco de España advierten que, **hasta la fecha, ninguna emisión de “criptomoneda” ni ninguna ICO ha sido registrada**, autorizada o verificada por ningún organismo supervisor en España. Esto implica que no existen “criptomonedas” ni “tokens” emitidos en ICOs cuya adquisición o tenencia en España pueda beneficiarse de ninguna de las garantías o protecciones previstas en la normativa relativa a productos bancarios o de inversión.

Las “criptomonedas” así como los distintos actores implicados en su comercialización directa, **no están regulados en la Unión Europea**. Esto implica que si una persona compra o mantiene “criptomonedas” no se beneficia de las garantías y salvaguardias asociadas a los productos financieros regulados.

Se presenta el primer "Security Token Offering" lanzado desde España



Publicado 06/03/2019 10:16:49 CET

NEXT

NEXT, la plataforma de coches conectados, ha anunciado el lanzamiento de su Security Token Offering para financiar su expansión. Es la primera empresa que levanta capital de esta forma en España tras el comunicado de la CNMV del 20 de septiembre de 2018 en el cual se detallaron los requisitos para hacer una emisión de esta forma desde España

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Últimas noticias / Comuni

- Una vivienda puede incrementar su valor hasta un 25% invirtiendo en soluciones de eficiencia energética
- Las mujeres autónomas mejoran su situación laboral durante la crisis según el informe del Ministerio de Bienestar Social
- Escape Room 2.0: La simulación de escape room como revolución en actividades de team building para empresas

Breve resumen de contabilización

	Columna1	Contabiliza como	Valor	Realización	Valor2	Resultado	IVA
Payment token	Compra/Venta	Activo intangible Efectos comerciales	Coste	Permuta	Valor razonable	Beneficio o pérdida	NO
	Minería/Exchangers	Inventario	Coste	Venta	Precio venta	Beneficio o pérdida	NO
Utility token	Compra/venta	Anticipo compra Venta	Coste	Venta efectiva	Valor token a fecha	Beneficio o pérdida	SI
	Accesso a plataforma	-	-	-	-	-	-
	Derechos voto	-	-	-	-	-	-
Security token	Inversión	Activo financiero	Coste	Venta Cierre	Pº Venta Valor mercado	Beneficio o pérdida	NO
	Financiación (acciones o bonos digitales)	Patrimonio Neto Pasivo	Coste			-	NO