

# Blockchain

A Distributed Ledger Technology

+

# XBRL

A Global Standard for Exchanging  
Business Information.



# How Did We Get Here?

**XBRL** is a freely available and global standard for exchanging business information. XBRL allows the expression of semantic meaning commonly required in business reporting.

1998  
XBRL



2000  
XBRL  
Specification  
1.0.

2001  
First SEC Filing  
Morgan Stanley  
  
+  
XBRL for General  
Ledger Taxonomy  
was Released

2003  
XBRL  
Specification  
2.1

2006  
XBRL spins off  
from AICPA to  
become separate  
non-profit

2008  
SEC adopts rule requiring  
XBRL for public company  
and mutual fund  
reporting as well as credit  
rating agency disclosures



2009  
Bitcoin  
software  
released by  
Nakamoto

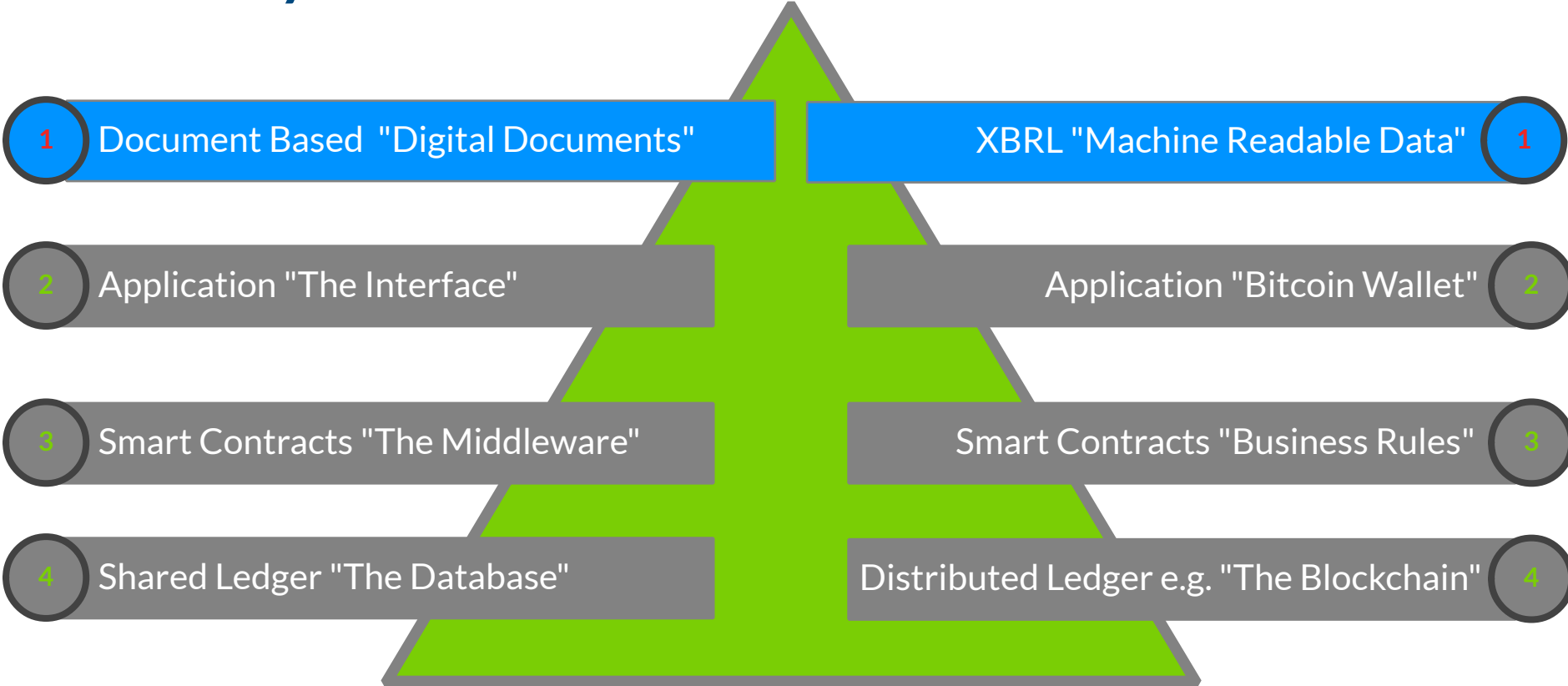
2014  
More than 80  
uses of  
cryptol ledgers

**Blockchain** is a decentralized software mechanism that enables a public distributed ledger system.

2008  
Satoshi Nakamoto  
and "Bitcoin: A Peer-  
to-Peer Electronic  
Cash System"  
Paper available at  
<https://bitcoin.org/bitcoin.pdf>



# A Four Layer Model



**Difficult to Achieve without Common Data Standards and Processes.**

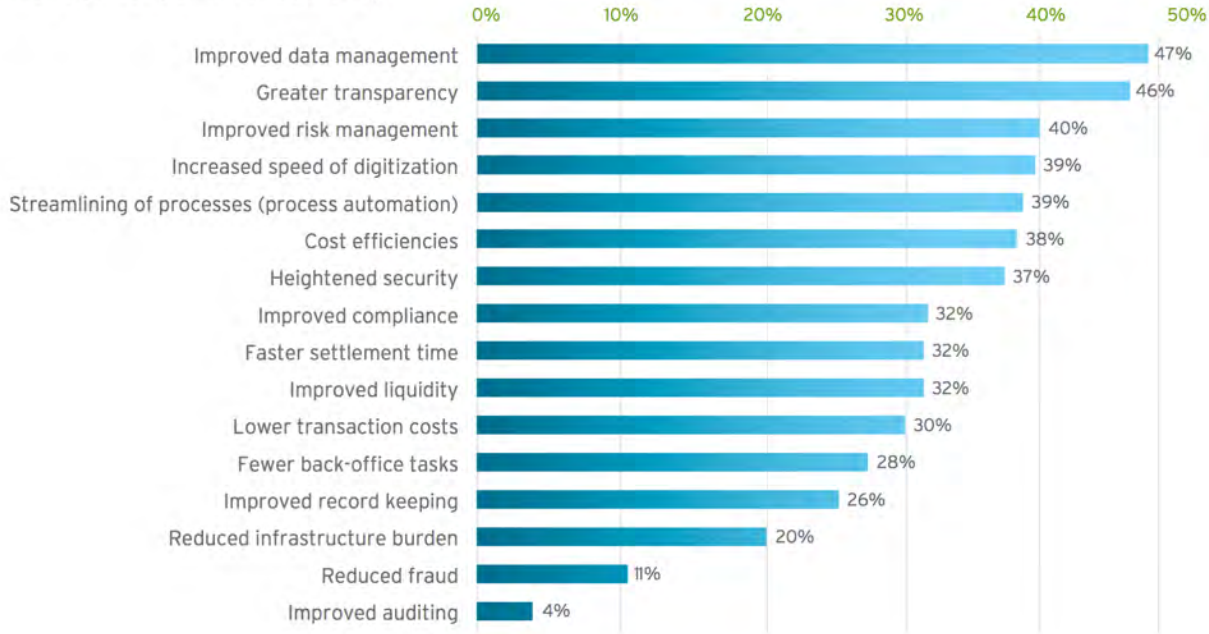
The technology most likely to change the next decade of business is not the social web, big data, the cloud, robotics, or even artificial intelligence. It's the blockchain, the technology behind digital currencies like Bitcoin.

----- Don Tapscott



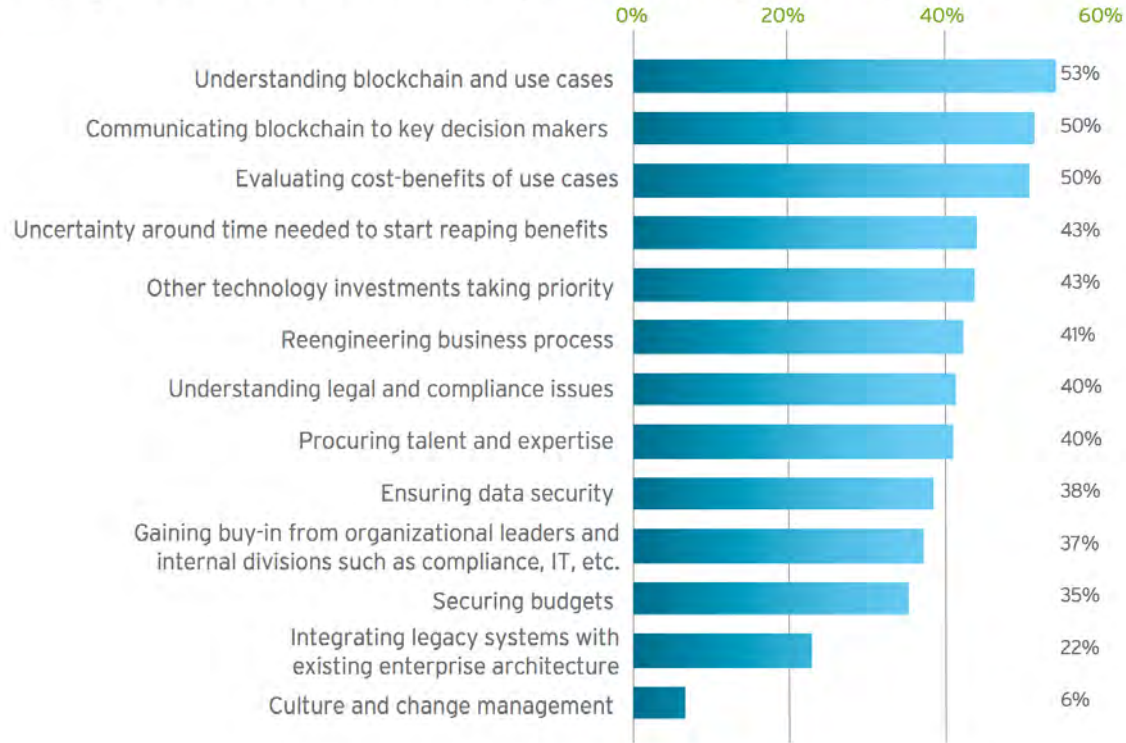
## Top Expected Benefits

Respondents believe blockchain will address many industry pain points, especially data management and transparency.



## Top Internal Barriers to Adoption

The most often cited internal barriers to adoption were business and strategic in nature, such as understanding blockchain and communicating what it is to key decision makers.



- 120+ regulators in 65 countries
- The ESEF mandate means 28 countries across Europe by 2020.



# BlockChain + XBRL

## FinTech

Aims to compete with traditional financial methods in the delivery of financial services.



## RegTech

Aims to address regulatory compliance challenges through technological innovation.



- The integration of blockchain and XBRL provides a seamless data solution, with blockchain as a potential output from XBRL based reporting.
- Blockchain's smart contracts might be facilitated by XBRL's powerful, persistent data model.



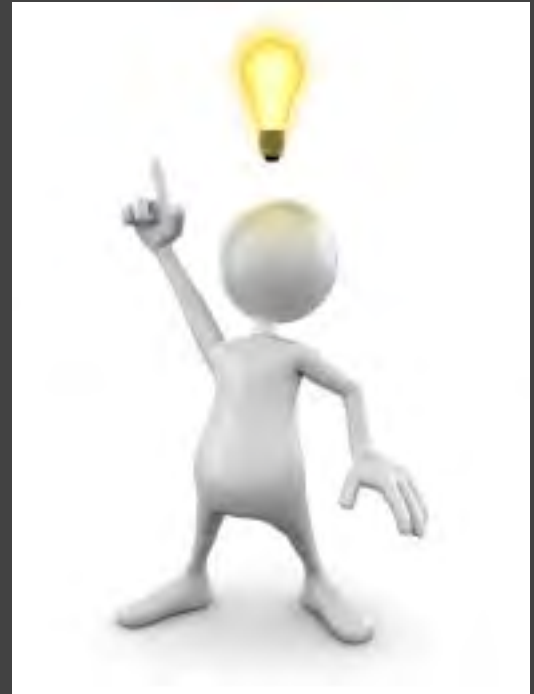
# A Note About "Smart Contracts"

# “Smart Contracts” is in Many Ways Misleading

Smart constructs are neither “smart”, nor are they contracts in a legal sense unless they are bound by a separate, real-world legal framework.

Smart contracts are **business rules encoded in software**; they are as good as the person or team devising the rules and the developer(s) turning those rules into code.

# Drivers for Innovation



# The Programmable Economy

## The Trillion Dollar Cost of Regulations

Since 2008, sweeping changes to healthcare, environmental, labor and energy policies have come with staggering costs.

**25,155 New Regulations**

Issued in the past eight years under the Obama Administration



**\$ 727 Billion**

The economic impact of new regulations



**460 Million**

new hours of paperwork required as a result of new regulations

FiscalNote

Data is the elephant in the room



# Data Quality



# LEI

Global Legal Entity Identifier Foundation (GLEIF)

Joint initiative between XII and Global Legal Entity Identifier Foundation is looking to embed LEI into XBRL taxonomies, allowing seamless identification of parties and counter-parties in enterprise reporting.

## Structure of the LEI Code



Sparkasse Bremen AG

5 2 9 9 0 0 9 D 9 B I L 4 D 4 U H T 9 3

# The Mega-Master Blockchain List

An online brainstorm what asset registries, keys or related items theoretically could be implemented in a blockchain model.

# The Mega-Master Blockchain List

## I. Financial Instruments, Records and Models:

- Currency
- Private equities
- Public equities
- Bonds
- Derivatives (futures, forwards, swaps, options and more complex variations)
- Voting rights associated with any of the above
- Commodities
- Spending records
- Trading records
- Mortgage / loan records
- Servicing records
- Crowd-funding
- Micro-finance
- Micro-charity



# The Mega-Master Blockchain List

## II. Public Records

- Land titles
- Vehicle registries
- Business license
- Business incorporation / dissolution records
- Business ownership records
- Regulatory records
- Criminal records
- Passports
- Birth certificates
- Death certificates
- Voter IDs
- Voting
- Health / Safety Inspections
- Building permits
- Gun permits
- Forensic evidence
- Court records
- Voting records
- Non-profit records
- Government/non-profit accounting/transparency



Source: <http://ledracapital.com/blog/2014/3/11/bitcoin-series-24-the-mega-master-blockchain-list>

# The Mega-Master Blockchain List

## III. Private Records

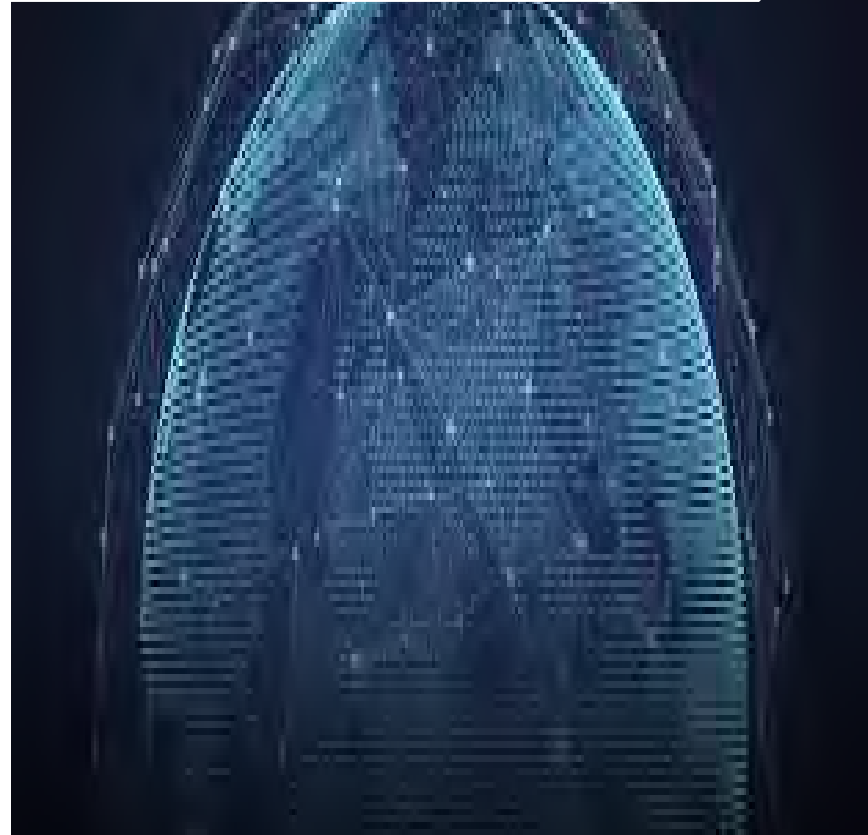
- Contracts
- Signatures
- Wills
- Trusts
- Escrows
- GPS trails (personal)



# The Mega-Master Blockchain List

## IV. Other Semi-Public Records

- Degree
- Certifications
- Learning Outcomes
- Grades
- HR records (salary, performance reviews, accomplishment)
- Medical records
- Accounting records
- Business transaction records
- Genome data
- GPS trails (institutional) Delivery records
- Arbitration



# The Mega-Master Blockchain List

## V. Physical Asset Keys

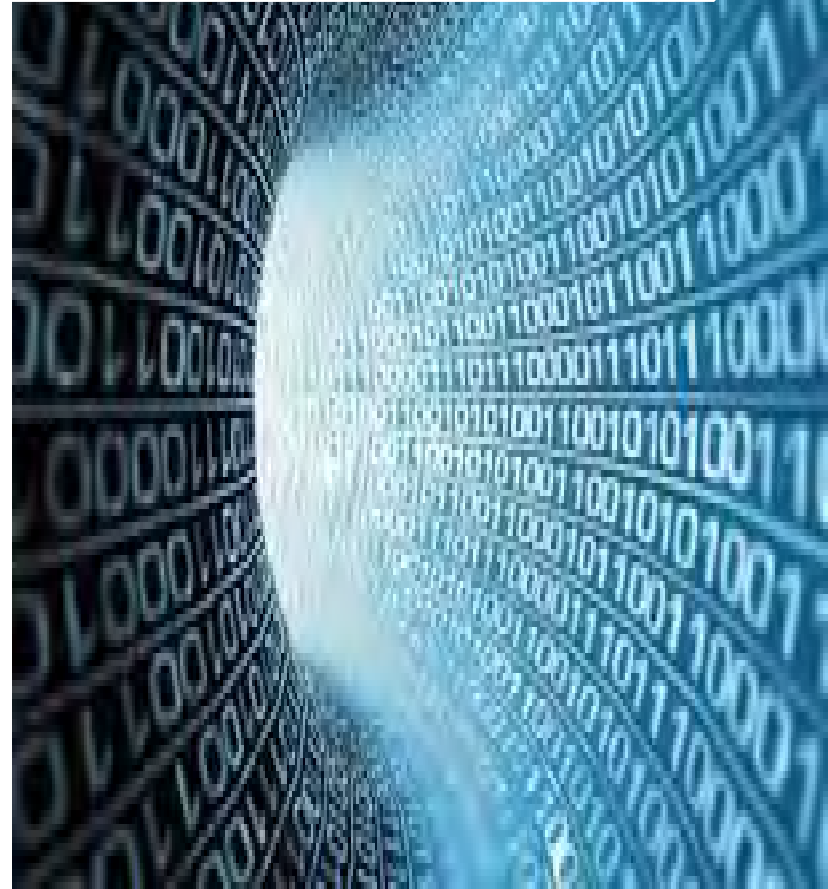
- Home / apartment keys
- Vacation home / timeshare keys
- Hotel room keys
- Car keys
- Rental car keys
- Leased cars keys
- Locker keys
- Safety deposit box keys
- Package delivery (split key between delivery firm and receiver)
- Betting records
- Fantasy sports records (!)



# The Mega-Master Blockchain List

## VI. Intangibles (?)

- Coupons
- Vouchers
- Reservations (restaurants, hotels, queues, etc)
- Movie tickets
- Patents
- Copyrights
- Trademarks
- Software licenses
- Videogame licenses
- Music/movie/book licenses (DRM)
- Domain names
- Online identities
- Proof of authorship / Proof of prior art



# The Mega-Master Blockchain List

## VI. Other

- Documentary records (photos, audio, video)
- Data records (sports scores, temperature, etc)
- Sim Cards
- GPS network identity
- Gun unlock codes
- Weapons unlock codes
- Nuclear launch codes (!)
- Spam control (micro-payments for posting)



# Samples

# Ethereum

An open-source, public, blockchain-based distributed computing platform featuring smart contract (scripting) functionality, which facilitates online contractual agreements

The Russian President Vladimir Putin met personally with Vitalik Buterin at the St. Petersburg International Economic Forum (SPIEF) to discuss how his creation, the Ethereum Blockchain, could be used to help integrate not only the Eurasian power's energy industry onto this technology, but also to broach the idea of what it would take to **create a sovereign cryptocurrency as well.**



# Fit for Purpose: Code-Named Jasper

## Use Case - The R3 Technology Consortium:

Payments Canada

The Bank of Canada

Major Canadian banks and technology consortium R3 began an ambitious project – code-named Jasper.



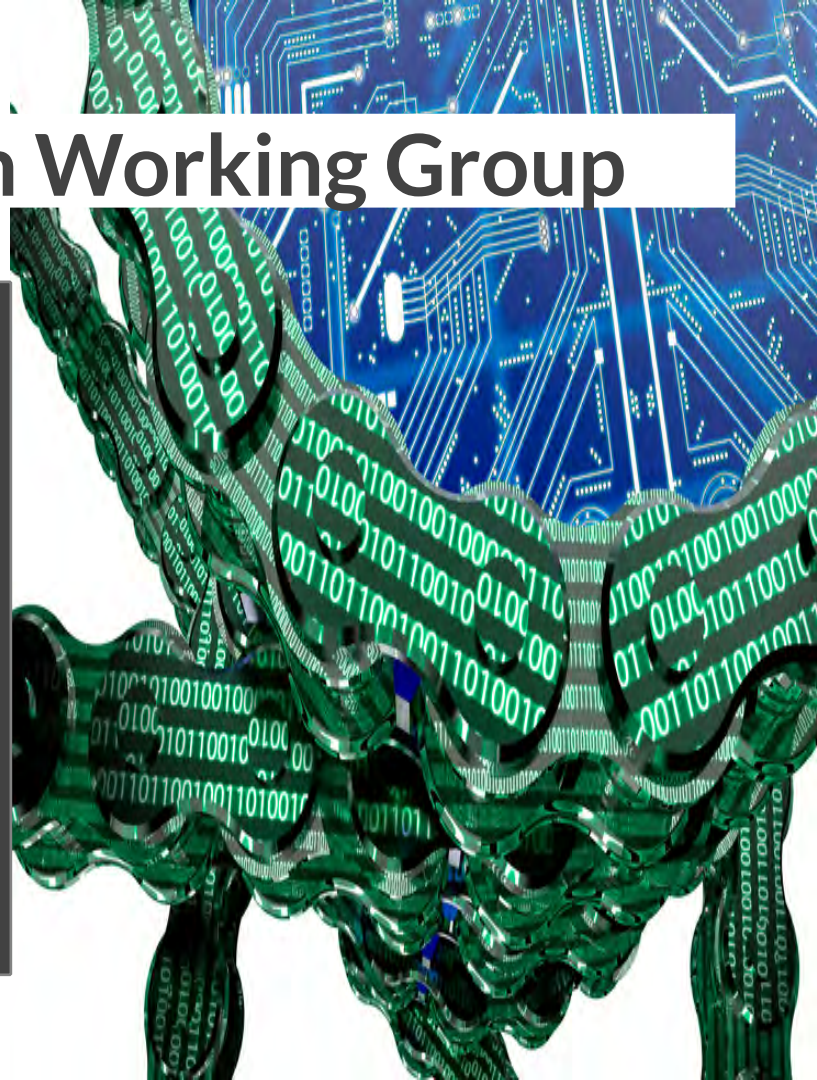
## The Jasper Project Objective:

- To build and test an experimental wholesale interbank payment system blockchain

Could replace existing wholesale payments technology within that country's financial system. The verdict? Not yet.

# XBRL US Forms Blockchain Working Group

The goal of the working group is to establish a standardized method to represent a token across all blockchain networks in order to eliminate transactional friction and reduce processing costs; enable automation and provenance tracking; and allow interoperability of transactions on a global scale.



# Rational view of blockchain-related technologies

In January 2017, a member of the executive board of Deutsche Bundesbank, Germany's central bank, talked about a conceptual blockchain study of the bank: "The prototype works. Having said that, its further development for mass use is still presenting many challenges. . . . At this point, **we are unable to say whether this application can be adapted for mass use or whether this is even a viable option in terms of costs.**"

# Key Use Cases

- Organized Supply Chain
- Multi-party financial transaction
- Tracking of quantifiable or tangible assets
- Decentralization of business processes

# UK's Central Bank - FinTech Accelerator Program

According to the regulator, 70%-80% of its regulatory data is in XBRL format and they are interested in new ways to realize cost efficiencies, and enable advanced analytics on those data sets.



The Accelerator also plays a part in informing the Bank's understanding of how technological innovation could impact our policy objectives, in particular financial stability.

The International Monetary Fund (IMF) has published a staff discussion note on ways that distributed ledger technology can improve the global economy.

In its paper, the IMF sets out an economic framework for thinking through the channels that FinTech might provide solutions.

IMF STAFF DISCUSSION NOTE

## **Fintech and Financial Services: Initial Considerations**

Dong He, Ross Leckow, Vikram Haksar, Tommaso Mancini-Griffoli, Nigel Jenkinson, Mikari Kashima, Tanai Khiaonarong, Céline Rochon, and Hervé Tourpe

DISCLAIMER: Staff Discussion Notes (SDNs) showcase policy-related analysis and research being developed by IMF staff members and are published to elicit comments and to encourage debate. The views expressed in Staff Discussion Notes are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

# Key Takeaways

An Opportunity for Major Research

# Key Takeaways

- **Evolving** from a digital currency infrastructure into a platform for digital transformation.
- Offer a radical departure from the current transaction and recordkeeping mechanisms and can serve as a foundation of **disruptive digital businesses**
- **Operating** outside traditional legal, accounting and institutional governance frameworks, threatening long-standing working practices.
- **Improve record-keeping** and transactional efficiencies across many different processes and industries.
- **Reduce complexities** using blockchain and XBRL to power smart ledgers and contracts..... but what else?





# Thank You!

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