



Blockchain Technology and Cryptocurrencies

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- What Is Distributed Ledger Technology / Blockchain Technology?
- What are Virtual Currencies / Cryptocurrencies?
- Can Virtual Currencies become Money or Assets?
- What are the Policy and Regulatory Challenges for Governments and Central Banks?
- What are the Challenges for Retail Banks?
- What other industries will be heavily affected by DL Technology?
- What has happened in the DL Technology space since my presentation in November 2016?
- What is happening in 2018 in the DL Technology space?



How do we record transactions today?

- An exchange of funds requires accounting, and these systems generally run *centralized* in a bank, company or organization using accounting SW or a *Ledger*
- Recording is mainly a *manual process*
- Typically we record:
 - the buyer and the seller
 - the values exchanged
 - the currency
 - the date the transaction is made

Sender	Receiver	Amount	Currency	Date
Ismail	Thomas	0.47655	MAN	23.11.2017
Vendon	Robert	1.33299	MAN	23.11.2017
Anar	Benjamin	3.453776	EUR	23.11.2017
Thomas	Dorit	0.00054353	GBP	23.11.2017
Derdon	Hikmet	0.6554701	MAN	23.11.2017
Dorit	Ismail	22.5477858	CHF	23.11.2017
Robert	Thomas	7.6965220	MAN	23.11.2017
Valery	Vendon	6.,676	USD	23.11.2017
Ramin	Shiri	1.793736	GBP	23.11.2017



What does DLT do differently from manual recording of transactions?

- Internet technology has made possible decentralized settlement systems built on ***Distributed Ledgers*** located on individual nodes of the payment system
- This distributed ledger concept is also called ***Blockchain Technology*** and is a key aspect of VCs, i.e. the blockchain technology behind Bitcoin and other VCs
- Blockchain is typically Peer-to-Peer and anonymous or semi-anonymous
- Blockchain captures all transactions ever made in its system and verifies each transaction
- All nodes confirm the encrypted «Signature» of a Blockchain, therefore making an **undetected change to a Block impossible**
- The Blockchain system governs all transactions **automatically**

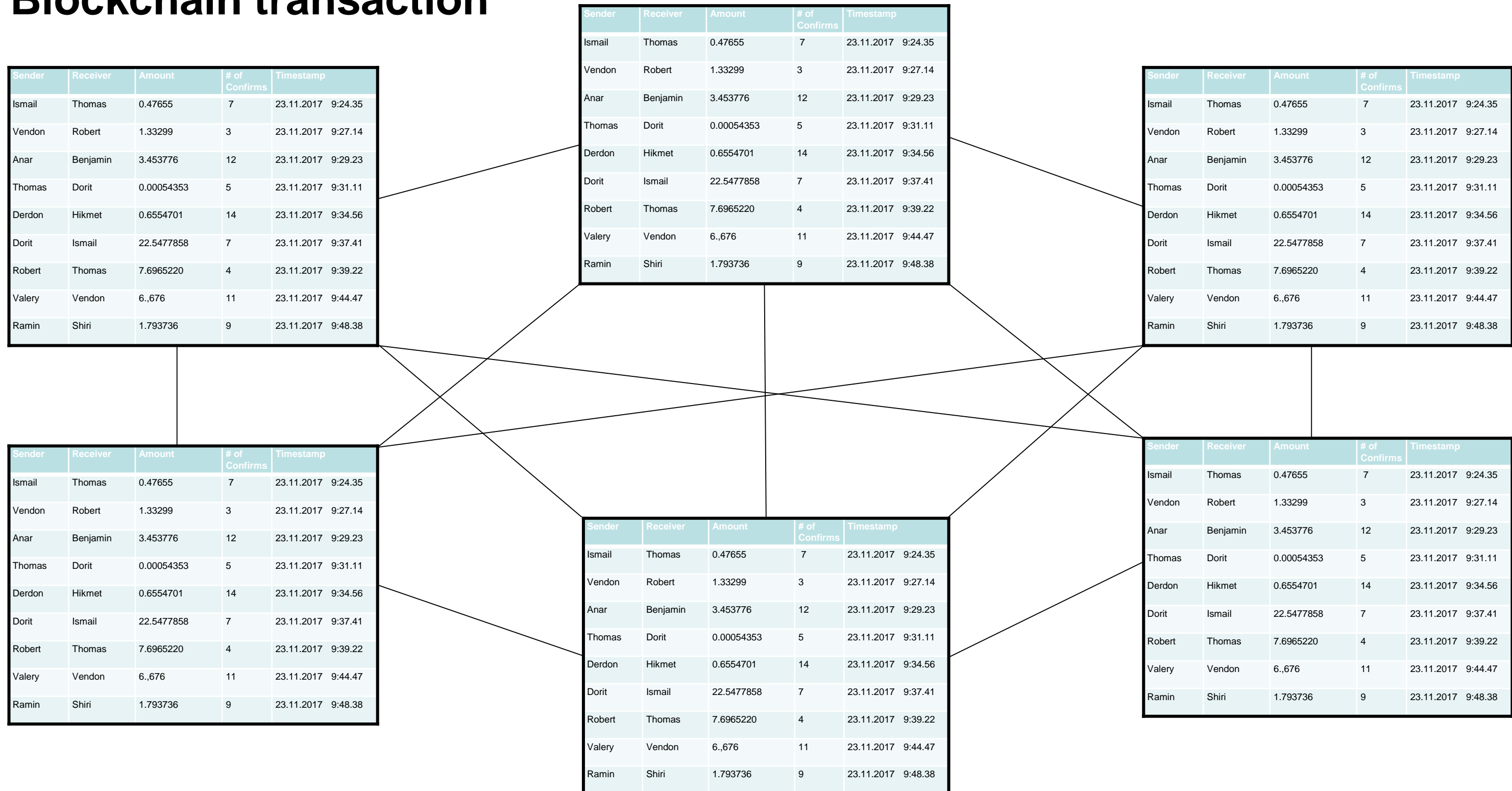


- **What does a Blockchain record?**
- **The Blockchain automatically records:**
 - **the buyer and the seller**
 - **the values exchanged**
 - **the timestamp of the transaction**
 - **The number of **Confirms****

Sender	Receiver	Amount	# of Confirms	Timestamp
Ismail	Thomas	0.47655	7	23.11.2017 9:24.35
Vendon	Robert	1.33299	3	23.11.2017 9:27.14
Anar	Benjamin	3.453776	12	23.11.2017 9:29.23
Thomas	Dorit	0.00054353	5	23.11.2017 9:31.11
Derdon	Hikmet	0.6554701	14	23.11.2017 9:34.56
Dorit	Ismail	22.5477858	7	23.11.2017 9:37.41
Robert	Thomas	7.6965220	4	23.11.2017 9:39.22
Valery	Vendon	6.,676	11	23.11.2017 9:44.47
Ramin	Shiri	1.793736	9	23.11.2017 9:48.38

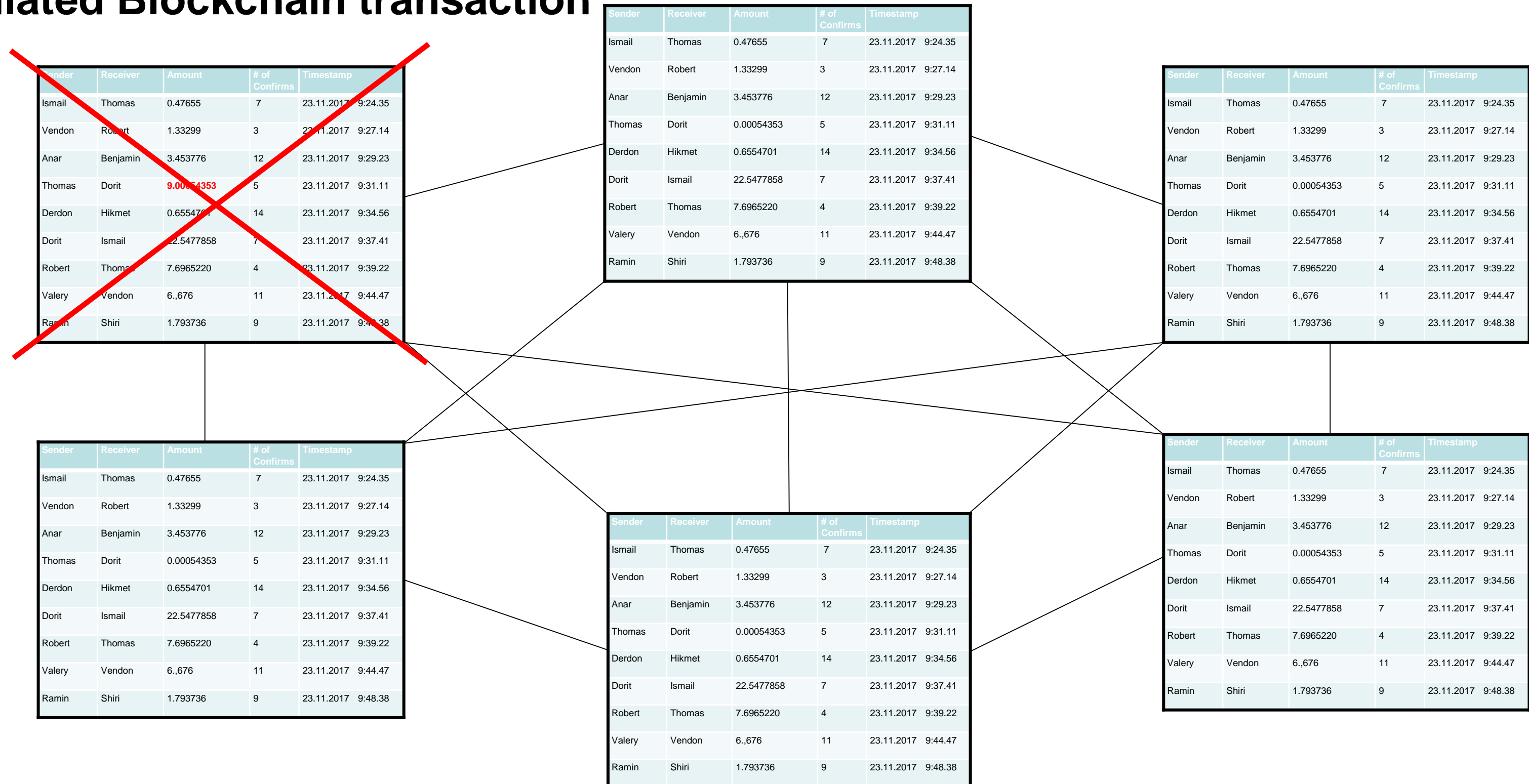


A correct Blockchain transaction





A manipulated Blockchain transaction



What is the big deal behind DLT / Blockchain?



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Distributed Ledger Technologies have the potential to change most financial processes by:

- **Reducing transaction costs**
- **Making proof of ownership automatic and **unalterable****
- **Eliminating need for separate record keeping**
- **Potentially becoming enhancements or even replacements for FIAT currencies**
- **Potentially being applied to any transaction requiring fast, accurate, and secure record keeping (i.e. land, asset or credit registries, payment and **settlement infrastructure** for transactions in FIAT currencies, even **recording securities trades** and other assets**

There are Different Types of Blockchains...



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Three types of Blockchains today:

- **Public Blockchains** (governed by Proof-of-Stake or Proof-of-Work and assoc. voting rights); Bitcoin, Ethereum, and other VC
- **Private Blockchains** (governed by Owner of the Blockchain); does not need a VC
- **Hybrid Blockchains** (validation done by a pre-defined group of companies, customers, institutions, etc); users can be public or private
- Some Public Blockchains can have a «private» element to allow making specific / private rules (smart contracts) while being tethered to or linked to an underlying VC

What are Virtual Currencies / Cryptocurrencies?



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Virtual Currencies are an Application of DLT / Blockchain

- Over 3000 VCs currently exist and 1'300 are traded regularly
- The largest VC by far is Bitcoin, followed by Ethereum, Bitcoin Cash, Ripple & Litecoin
- On January 1st, 2017, the marketcap of **all VCs world-wide** was USD17.7 bn
- The Market value of VCs is currently USD 235 bn, where Bitcoin is USD 130 bn
- Many governments are grappling with regulating VCs, defining policies
- VCs have the potential to be very disruptive but also very beneficial to society

Can Virtual Currencies become Money or Assets?



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VCs are here to stay and will evolve heavily over the next years

- Some Nations will create a parallel national VC to their FIAT Currency very soon
- Some Nations are under pressure from market forces to create alternative VCs
- Some countries will disallow use of VCs within their borders
- Deflationary nature of VCs could potentially balance the inflationary properties of FIAT currencies.
- VCs will have to allow some form of taxation, even if transaction is encrypted.
- While some nations will create their own VC, a world-wide VC could potentially emerge as well, that would allow conversion between national currencies.
- Public VCs make Capital Export Control very difficult. Exapmles are Venezuela, Greece, China, Vietnam
- Deflationary nature is currently making some VCs an asset, but potentially a bubble

What are some of the Challenges for Regulators?



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Policy Makers are grappling with classifying VCs:

- VCs combine properties of currencies, commodities, and payments systems
- their classification can have implications for their legal and regulatory treatment; even in defining which national agencies should regulate them
- The US IRS classifies VCs as «Property» for federal taxation, whereas the US Treasury Dept. Defines VCs as «Values»
- VCs know no borders, so regulating a VC transaction is extremely difficult
- DLT eliminates centralized intermediaries, (issuer or processor), so whom to regulate?

What are the Challenges for Retail Banks?



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Retail Banks are strategically in the most difficult position:

- Public VCs will persist for foreseeable future (similar to Internet)
- Governments can create national VCs to control fiscal policy of country.
- This will make it difficult for Retail Banks to add value in a «private» VC regulated by a Central Bank
- So between the public VCs with no intermediaries and the national «Private» VC with central policy making, the room for retail banks is squeezed
- **Virtualization** of banks can now be performed by new market entrants

What other industries will be heavily affected by DLT Technology?



All Industries recording, processing or auditing transactions will be affected

- Logistics, freight companies and shippers
- All the auditing industry (DLT is the recording – but also the auditing – medium)
- All current and future e-Government services can be migrated to DLT systems
- All participants in the financial and Insurance products markets, Venture Capital
- Food and Pharmaceutical companies, Security Printing companies, Health Care providers, Hospitals, Identity and Security companies and **most other industries**

What has happened in the DL Technology space since presentation in November 2016?



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In my last presentation to the Banks Association here in Baku:

- I emphasized the need to virtualize every aspect of a bank
- I mentioned how the need to identify the banking customer would require a solution
- This would be the new national eID with the capability for a digital signature and authentication; this new eID is ready and will go live 1st January 2019
- I stated that VCs and DLT will continue to evolve rapidly and pose risk a to many industries – also banks

What is happening in 2018 in the DL Technology space?



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We will see more applications of DLT in new industries

- Food and Pharmaceuticals are racing to adopt DLT for product safety tracking
- Auditing firms and banks will realize how threatend they are by new participants
- First nations will adopt formal VC policies and regulation; perhaps even a national VC
- First cross-national VC could be created, i.e trying to circumvent the Petrodollar
- First well-established companies could do an ICO versus a traditional IPO

Thank You Very Much for Your Interest



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