



Exploring the application of blockchain technology for Emissions Trading and climate-related Monitoring, Reporting and Verification systems in Mexico

“Understanding Blockchain and Distributed Ledger Technology”

Introductory Workshop, August 23rd 2018, Mexico City / Lima

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Blockchain Technology and the World Economy

2015



2016

42 Financial Intermediates
start bc based collaboration



2017



«By 2027 about
10% of World GDP
will be stored on
blockchains»



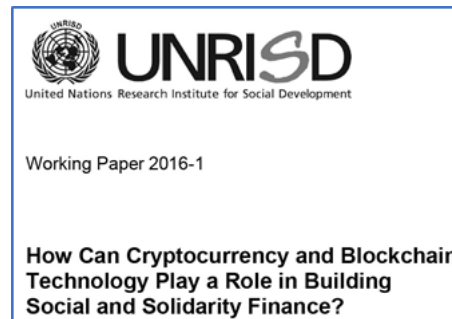
Blockchain Technology and the World's Challenges

2015



The **WFP** is the first UN agency to experiment with bc technology. The agency is using bc to distribute humanitarian aid to those in need. In 2017 a second bc project is launched to support Syrian refugees.

2016



2017



“UNICEF is funding blockchain projects to solve the worlds biggest problems”



Outline

1. Understanding Blockchain and Distributed Ledger Technology
2. Use cases supporting climate action
3. Presentations on key features of climate instruments in Mexico, namely
 - emissions trading registry
 - MRV System for climate policies
 - MRV System for climate finance
4. Blockchain based climate instruments – Potentials and challenges



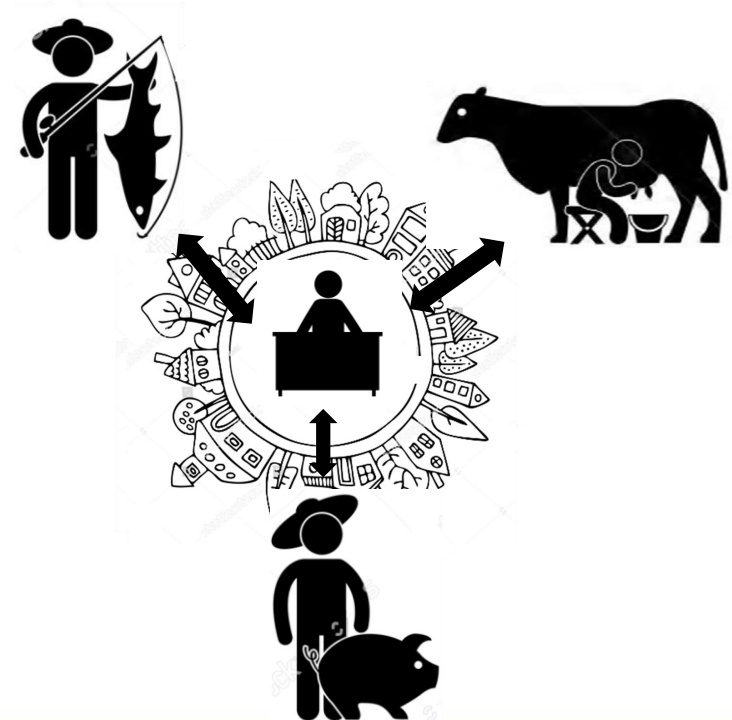
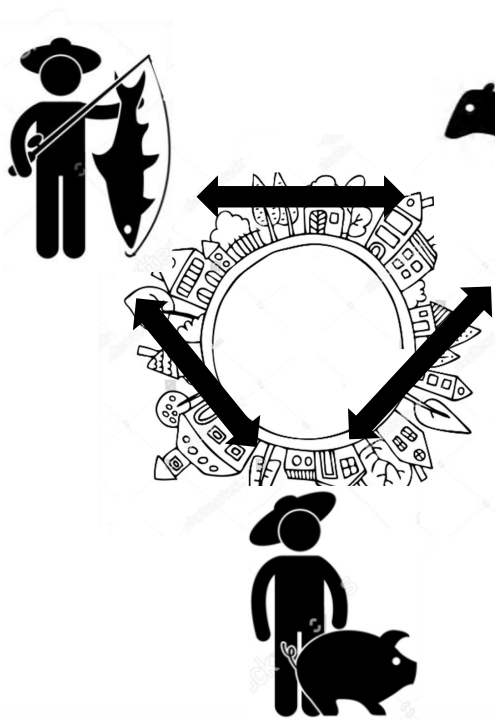
Understanding Blockchain and Distributed Ledger Technology Part 1





Understanding Blockchain and Distributed Ledger Technology

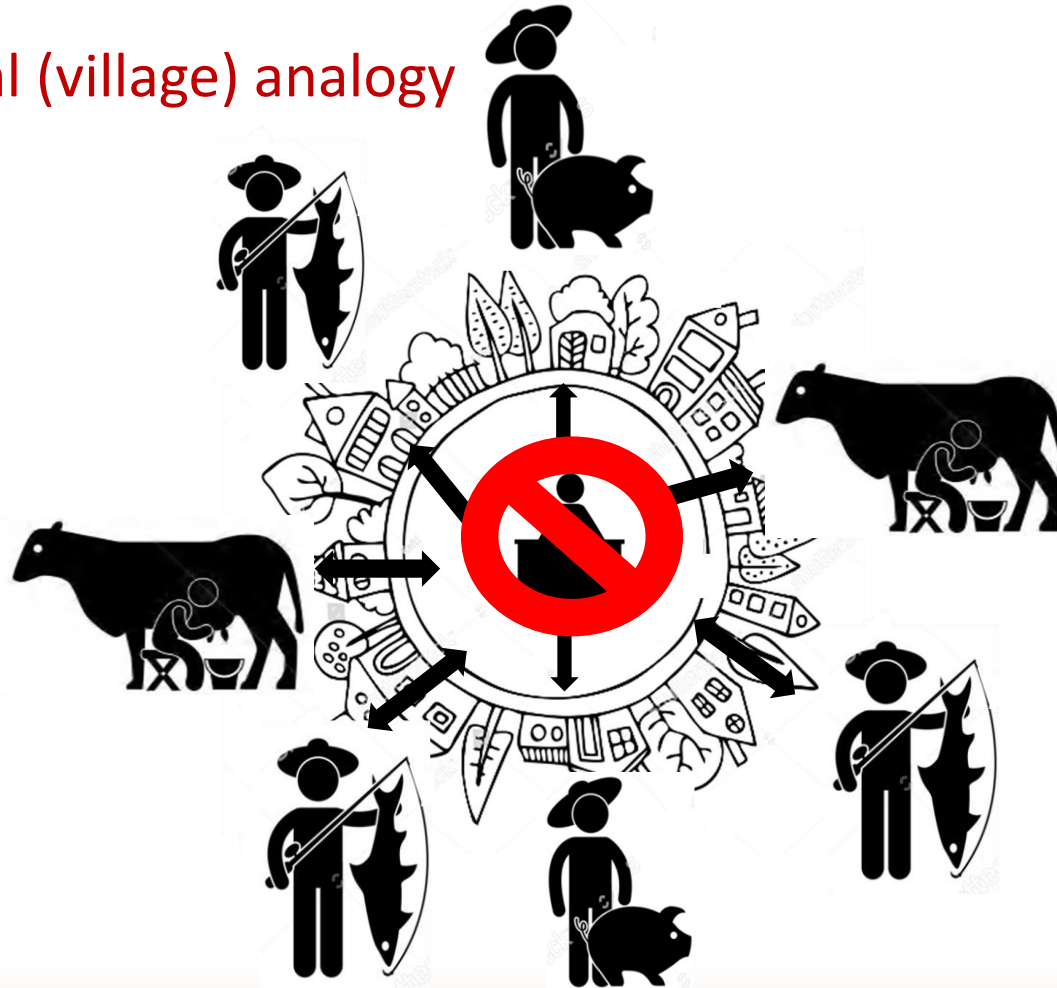
A non-technical (village) analogy





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A non-technical (village) analogy





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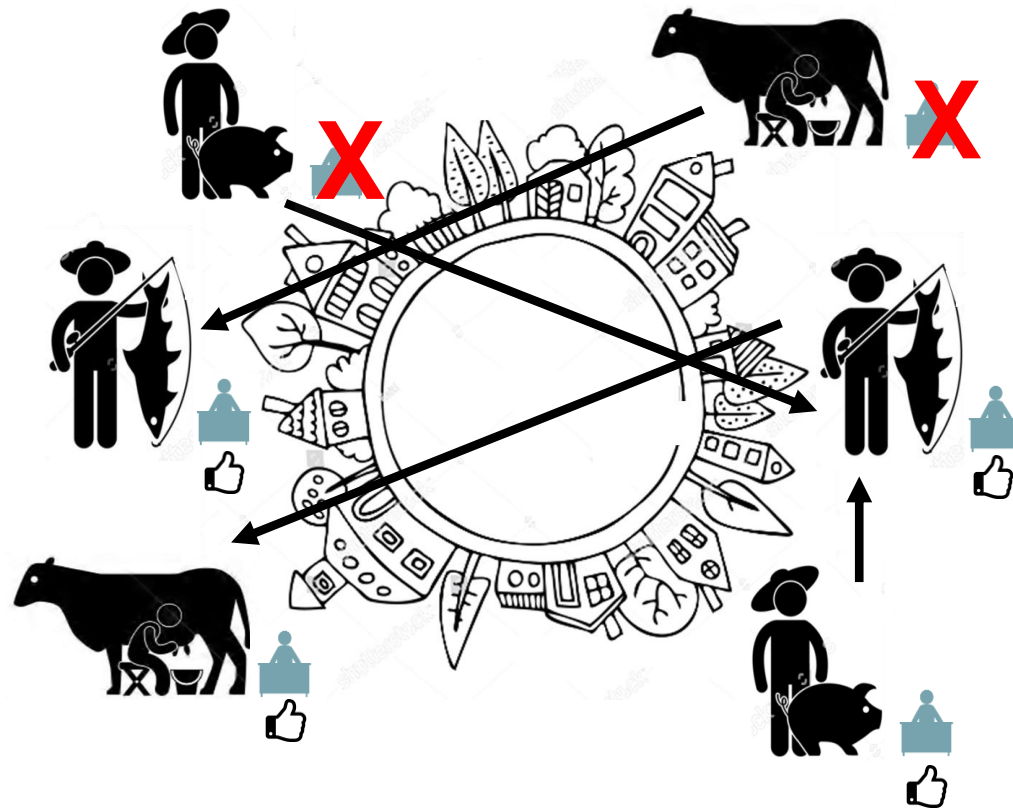
A non-technical (village) analogy

1. Registration Meeting

2. Validation Meeting



NETWORK CONSENSUS





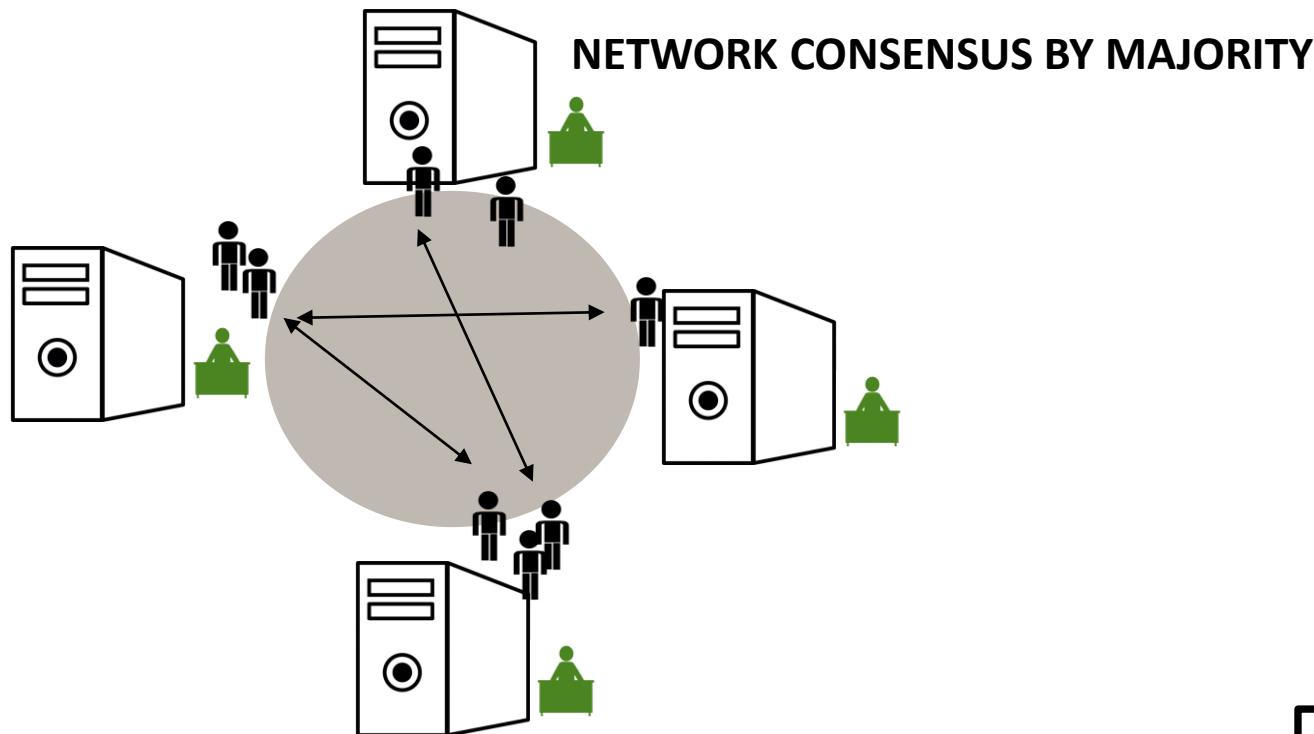
Understanding Blockchain and Distributed Ledger Technology Part 2





Understanding Blockchain and Distributed Ledger Technology

Technical Fundamentals



Transaction #1 B-D,
Transaction #2 F-H
Transaction #3 U-K
Transaction #8 I-W
(...)

Transaction #7 G-D,
Transaction #4 P-H
Transaction #9 Ü-K
Transaction #5 I-O
(...)

Transaction #23 B-D,
Transaction #10 S-H
Transaction #93 U-K
Transaction #81 I-D
(...)



Understanding Blockchain and Distributed Ledger Technology

Technical Fundamentals – Bitcoin Transactions

BLOCKCHAIN		WALLET	DATA	API	ABOUT	Q. BLOCK, HASH, TRANSACTION, I	GET A FREE WALLET
633201e4409d3c017e33247caaf1b33008cda067a11f3e4463e08dd07618	2018-08-20 19:29:45						
1H477aQL4zVWnWY3RXRon6XsrsXsBMJLap	→	3PEy7V9xKuX3qQRFK8sQ3QMvYx7faxH8 12vZnv8XZyzWwR2Yp3eWrDWS6GzJRoph	0.00598433 BTC 0.00036666 BTC				0.00635099 BTC
2b57c95a34c8daa5c57566264fad47719000c715d544531eb40773d95e0c7	2018-08-20 19:29:43						
1AMLkRymRopoPGfm9XSvLrLw896zUS327A	→	1CYVzg5ZADeUUL3PWqpg7XCcj1L18Hk5t 1HU6M8jQmbbUYZmE7jZASwmuJdK9geRE4	0.4986446 BTC 0.051692 BTC				0.5503366 BTC
61a3240805c3c338cd6c361fcd95815884930a82b6490653b76c66dd67fa	2018-08-20 19:29:56						
3K9jFzG1gopyZtHm6lrvLpgDnRISPNe3e	→	181UatZ5NeZKGeFENsngSg68zmP75Lc 3PCEYHd7jer3bbcpvutZsmoeWdYWWuy	0.00015451 BTC 0.01414946 BTC				0.01430397 BTC
285e3a5c3b2925a3e198b2cd85442d7026d18a315854235297616145ee11	2018-08-20 19:29:51						
1GZcdT8wxCa2oNH7fWJW8tt1RHGTma22u 1GnqbD8cqrH5d47sS3BNPnHnHZw1bG2DBx	→	1C52hxiURz91NTW5bEYibwx3HTLKgdDoe 1LmvBa6Myp2gBSVtz8VjqvVfn2WPx452h 3PzZIMVngAavf5BnYYa5eJXb6CiawmY4S	299.07647104 BTC 0.05247303 BTC 1.121 BTC				300.24994407 BTC
5264b9765d316c684626dc7ec8521c077b7e4b803244d24eb1e5c34535148d8	2018-08-20 19:29:54						
1CzxAmcKe6YnPWduSeq2ZaRbg2ZjsAjnyj	→	3L5AXAKLDaCZ85Hxnmh1hPYg8ddWVUJ 1jDM31FwLqNbrefm8npzLy2g12acVsjL	0.00222461 BTC 0.00011818 BTC				0.00234279 BTC



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Technical Fundamentals – Ethereum Transactions

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More than > 295364512 transactions found (showing the last 500k records)

TxHash	Block	Age	From	To	Value	[TxFee]
0xaccba8c5166f08f...	6184257	37 secs ago	0xe615d5ce9c8c66...	0xc6db1a70ac4e71...	0.94 Ether	0.00000283
0x3cd70f463045eb1...	6184257	37 secs ago	0x05851336f3a202f...	0x7f4404db6a3f4d3...	0 Ether	0.00094878
0xed51fcb3ff4ab36...	6184257	37 secs ago	0xeeb2b72f1f9a36...	Zethr	0 Ether	0.00050631
0x4d5969f705d22eb...	6184257	37 secs ago	0xc5cb2f3a5e58f2...	0x91dfa9d9e062a50...	5,199916 Ether	0.0000084
0x9cfd9d3daa0f44b...	6184257	37 secs ago	IDEX_2	IDEX_1	0 Ether	0.00057032
0x34efe700d6d8202...	6184257	37 secs ago	0x612e582e3aa710...	0x3e419b0401339df...	0 Ether	0.00021238
0x497eef4b0174265...	6184257	37 secs ago	0xf8814620d92730a...	FuzeXTToken	0 Ether	0.00025687
0xc1828ab9f36c0cc...	6184257	37 secs ago	0xe615d5ce9c8c66...	0x25d21bcf5a08cea...	0.7888 Ether	0.00000283
0x14c1f14b6989f8e...	6184257	37 secs ago	0xbcd3dcf51c84873...	0x03e3f0c29565f13...	0 Ether	0.00029531
0x8d29aa21c6683a...	6184257	37 secs ago	0x2a5994b501e6a5...	0x39e8b153dd78da4...	0.29655654 Ether	0.000105
0xd1f83630acaadd3...	6184257	37 secs ago	0xe072ef543ea21b...	0xc29004ab38334d...	0 Ether	0.00036547
0xc3fc933d48a77b...	6184257	37 secs ago	DDEX	0xProtocol_Exchange	0 Ether	0.000208148
0x05111a0b227edf14...	6184257	37 secs ago	0xcc3d96806ef7c5...	0x2c06b4f596db2e3...	0 Ether	0.00057411
0xd6939f2323d14a...	6184257	37 secs ago	0x5aad9d7899fa25e...	0xb89dd647788c54...	0.08987247 Ether	0.00021
0xd235a823e1362e...	6184257	37 secs ago	0x985e65a3bd379...	0x4e005a760e0e1...	0 Ether	0.00021803
0xa1c2d866dccc44...	6184257	37 secs ago	0xf5ec3b28b7dae2...	0x663e4229142a27f...	0 Ether	0.00149683
0xd5edfe7af4833e9...	6184257	37 secs ago	0x05851336f3a202f...	0x7f4404db6a3f4d3...	0 Ether	0.00094878
0x9d0ca7fa3235d55...	6184257	37 secs ago	0x00004242ca3469...	0x0224853bdf7f6b04...	0 Ether	0.0011742
0xd2c2be4b714bd5...	6184257	37 secs ago	0x46a19defe82a26...	0x4012409368620d...	1.866 Ether	0.000441

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Understanding Blockchain and Distributed Ledger Technology Part 3





Understanding Blockchain and Distributed Ledger Technology

Hash Algorithm – the key ingredient of DLT

MEXICO D.F.

e95710f3443034a47c93dda8c12a4faa659eba5c3f3570fc4
ef7ae26f4bb323d

Nothing is decided until everything is decided

9f62f85d500c8d4682c2aa9f8a00d89658be956b3a680dfd
370eb1c9bb94e445

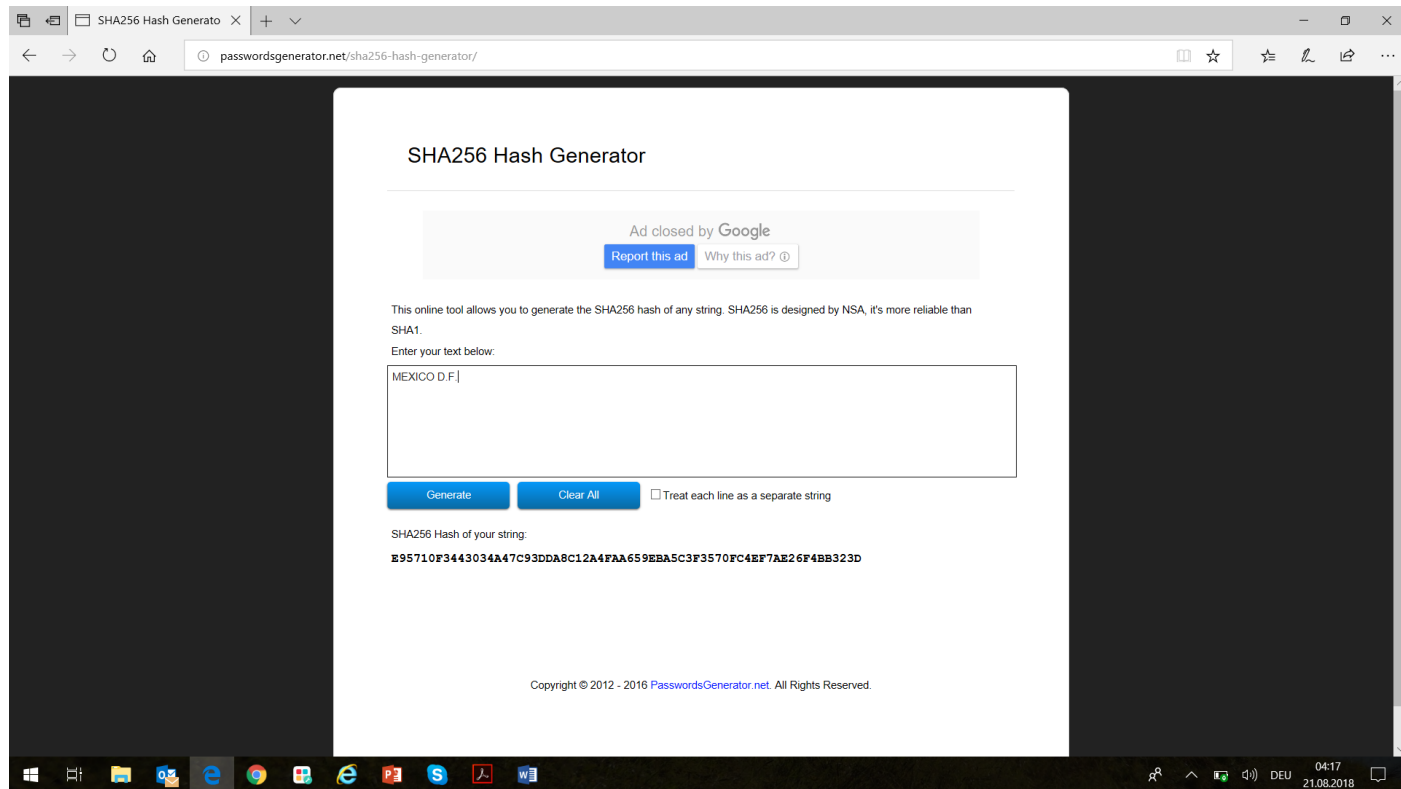
Nothing is decided until everything's decided

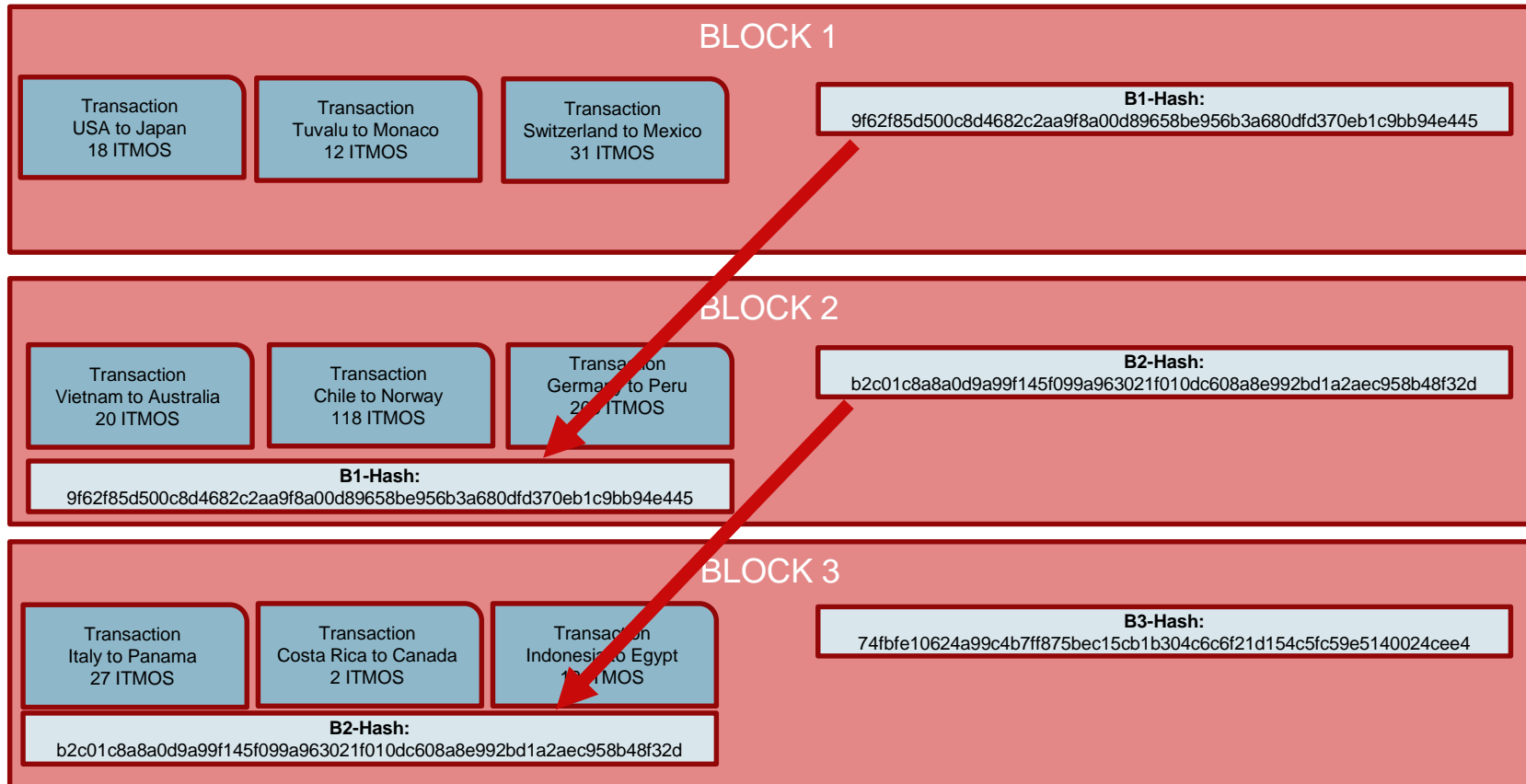
3f9801bc00d0a466b42c006dbbbf312ce38d1cf515a999bb
09f9b556feeb5624



Understanding Blockchain and Distributed Ledger Technology

Hash Algorithm – the key ingredient of DLT







Blockchain Hashes do ensure:

- Immutability
- Trust
- Effective decentralisation by providing means to sync distributed data sets (relevant for the integration of smart contracts)
- Data security on a new level
- Sharing data, while retaining control. This in turn brings transparency and thus greater stakeholder inclusion.



To sum up....





To sum up....

A Blockchain is a database / ledger system that maintains a continuously growing list of data records (f.e. transactions) and is based on the following **features**:

SP

Shared „Publicly“

Servers, or nodes, maintain the entries (blocks) and every node sees the transaction data in the blocks when created

DC

Decentralize d

There is no central authority required to approve transactions and set rules – the blockchain based workflow is decentralized

SC

Secure

The database is an immutable record. Posts to the ledgers cannot be revised or tampered with – not even by the operators of the database

TD

Trusted

Distributed nature of the network requires computer servers to reach a consensus, which allows for transactions to occur between unknown network participants.

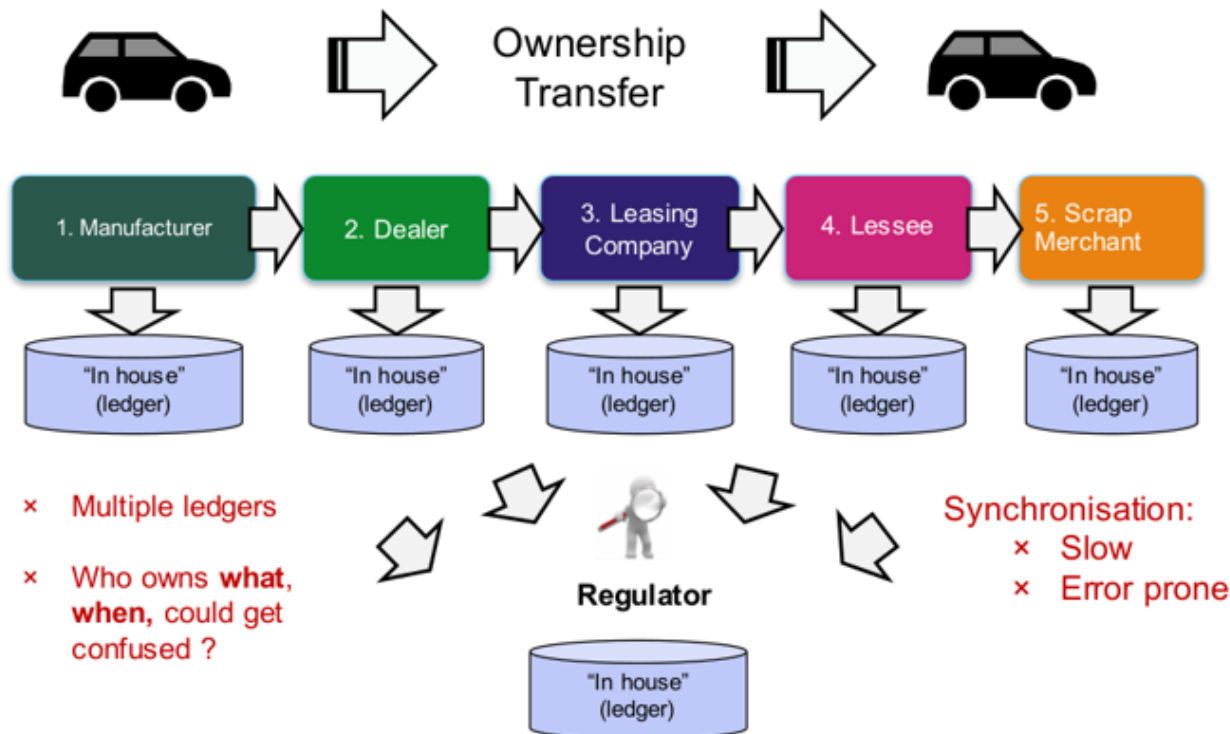
AU

Automated

The software which enables blockchain based operations prevents the entry of conflicting or double transactions into the data set. Transactions occur automatically.

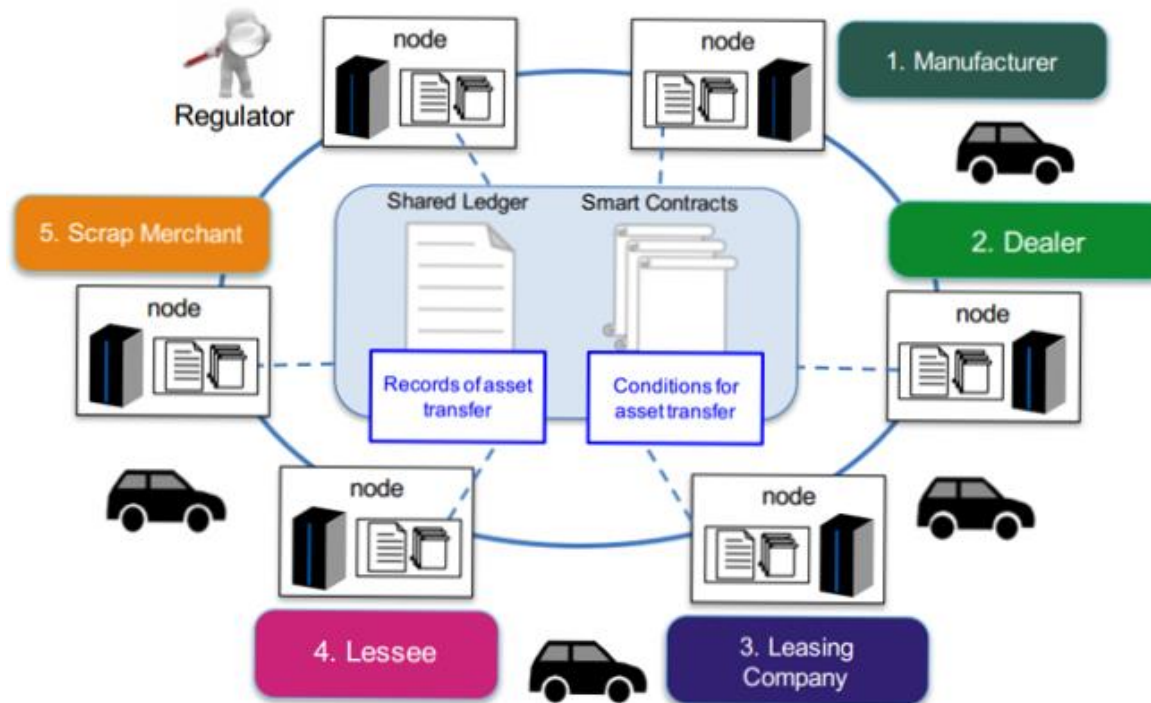


Existing Business Network – Example of Car Leasing Work Flow





Business DLT Network – Example of Car Leasing Work Flow on a Blockchain





Muchas Gracias

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