

CBDC Part 2: An Introduction to R3's Corda

WEEKLY RECAP

- Total market cap. reached \$119bn (a 0.2% decrease), and 7 day trading volume slumped 4.8% for top 100 crypto

WEEK AHEAD

- 28 Jan:** Stellar lightning fork for XLM
- 31 Jan:** Mainnet launch for ZIL

THOUGHTS OF THE WEEK

Corda argues that the essence of blockchain is "ensuring that data held by different actors is, and remains, consistent as operations are applied to update that data, and that this forms the foundation on which reliable transactions (txs) are built." This view allows Corda to pursue the advantages of a distributed ledger technology (DLT) without utilizing a blockchain.

"[Corda] is heavily inspired by blockchain systems, but without the design choices that make traditional blockchains inappropriate for many financial txs." Corda defines its ledger as a set of immutable state objects. This ledger acts as a reliable single source for the Corda platform, yet it does not make txs nor entries on this ledger globally visible. Cryptographic hashes are instead utilized to identify parties and data and ensure that only parties that are part of an agreement can see relevant ledger details.

Corda seeks to achieve consensus among parties of an agreement on the state of that specific agreement as it evolves. This "per agreement" approach is in contrast to systems (e.g. Bitcoin) that seek to achieve consensus on the state of an entire ledger. Updates to the Corda ledger are applied using txs that consume existing state objects and create new state objects (there is no native cryptocurrency involved). The validity of a tx can be checked independently by parties by running the contract code. However, a predetermined observer node (Notary) is required to reach consensus over uniqueness. Importantly, this observer node only checks consumed input states, and does not need to see the full content of a tx. There is no concept of mining in Corda.

On Corda, state objects represent an agreement between parties. This agreement is governed by contract code that is linked to legal prose. Transactions in turn transition state objects through a lifecycle, and transaction protocols enable parties to coordinate actions without a central controller. Combined, these components are referred to as CorDapps, and need to be built by developers on the platform.

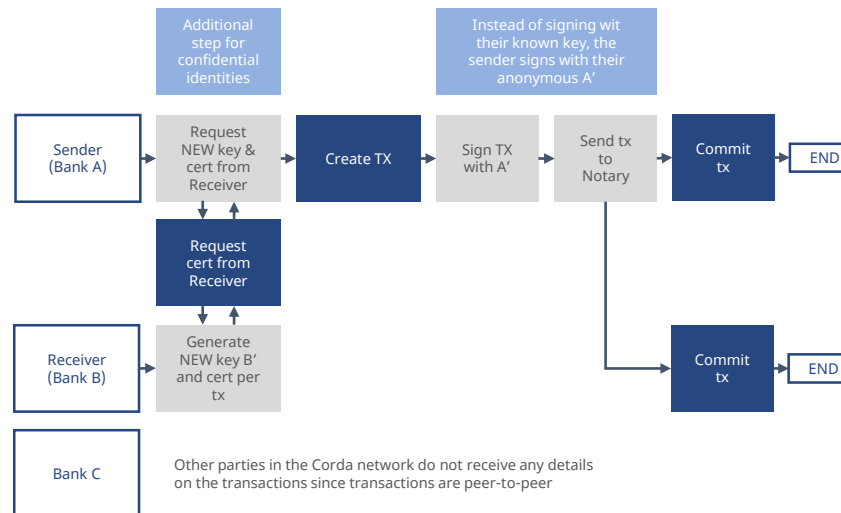
Corda is a timely reminder that a blockchain is only a way to implement a distributed ledger, but not all distributed ledgers necessarily employ blockchains. Hyperledger Fabric and Quorum are two alternative ways of building distributed ledgers. CBDC Project Ubin 2 interestingly compares all three, a comparison we will return to.

TOP CRYPTO PERFORMANCE SUMMARY

| Name | Price | 7D% | Vol. | 7D% | Mkt Cap. | % Total Mkt |
|------|------------|--------|---------|---------|----------|-------------|
| BTC | \$3,595.27 | -0.05% | 31.22bn | -2.05% | 62.93bn | 52.74% |
| XRP | \$0.31 | -2.93% | 2.22bn | -10.67% | 12.81bn | 10.73% |
| ETH | \$115.26 | -3.57% | 14.78bn | -5.27% | 12.05bn | 10.10% |
| BCH | \$123.81 | 0.12% | 1.32bn | 19.10% | 2.18bn | 1.83% |
| EOS | \$2.40 | 1.69% | 3.96bn | -11.97% | 2.17bn | 1.82% |
| USDT | \$1.01 | -0.81% | 21.46bn | -7.65% | 2.04bn | 1.71% |
| LTC | \$32.97 | 5.61% | 3.74bn | 16.03% | 1.99bn | 1.66% |
| TRX | \$0.03 | 21.48% | 1.54bn | 56.98% | 1.93bn | 1.62% |
| XLM | \$0.10 | -6.34% | 0.71bn | 15.48% | 1.88bn | 1.57% |
| BSV | \$72.20 | -4.26% | 0.30bn | -11.01% | 1.27bn | 1.06% |

CHART OF THE WEEK

Transaction Flow of Fund Transfers in R3's Corda



TOP CRYPTO NEWS AT A GLANCE

Cboe withdraws rule change request to list Bitcoin ETF: The decision is a result of the U.S. government shutdown as the end of review period approaches. Cboe plans to resubmit a filing at a later date.

Bithumb seeks U.S. listing via reverse IPO: Bithumb has signed a binding letter of intent with BTHMB Holdings on the merger deal. Once Bithumb is listed, the combined entity would be known as Blockchain Exchange Alliance.

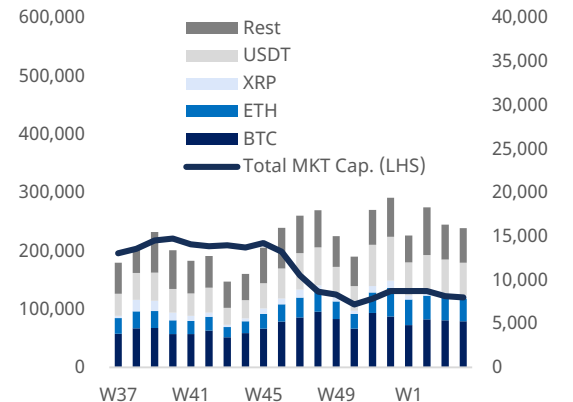
The Monetary Authority of Singapore (MAS) halts local STO due to regulatory violations: The issuer failed to register with the MAS and to comply with the advertising prohibition.

Coinbase adds taxation support to U.S. customers, including TurboTax integration: Users of Coinbase.com and Coinbase Pro can import transactions into the crypto-specific section of TurboTax Premier automatically.

NETWORK FUNDAMENTALS

| | BTC | ETH |
|-----------------------|-------------------------------------------------|------------------------------------------------------|
| Hashrate | 42,328,154 TH/s (+4.5%) | 171,078 GH/s (-4.4%) |
| # Wallet Users | 32,625,561 (+0.6%) | 55,808,666 (+0.7%) |
| Top 3 Miners | BTC.com (15%) AntPool (12%) BTC.TOP (10%) | Ethermine (27%) SparkPool (22%) NanoPool (13%) |

MARKET CAP & TRADING VOL. (US\$ MN)



DISCLAIMER

Abbreviations: ABC: Adjustable Blocksize Cap; b/w: between; BCH: Bitcoin ABC; BCH SV: Bitcoin Satoshi Vision; bn: billion; BTC: Bitcoin; CBDC: Central bank digital currencies; Cboe: Cboe Global Markets, Inc.; crypto: cryptocurrencies; DLT: Distributed Ledger Technology; ETF: Exchange traded funds; ETH: Ethereum; Feb: February; ICO: Initial Coin Offerings; Jan: January; Market Cap: Market Capitalization; MAS: The Monetary Authority of Singapore; mn: million; SEC: The U.S. Securities and Exchange Commission; Trading Vol.: Trading Volume; Tx: Transactions; US\$: United States Dollars; USDT: USD Tether; XLM: Stellar Lumens; XRP: Ripple; ZIL: Zilliqa

Chart of The Week: Sources: Project Ubin Phase 2 whitepaper, R3, Standard Kepler Research

Market Cap & Trading Vol.: Sources: Coinmarketcap, Standard Kepler Research
The horizontal axis represents the week number in 2018. For instance, W37 indicates the thirty seventh week in 2018. W1 indicates the first week in 2019. The primary vertical axis represents total market capitalization; and the secondary vertical axis represents total trading volume.

Network Fundamentals: Sources: Blockchain.com, Blocktrail, Etherchain.org, Etherscan.io, Standard Kepler Research

Thought of The Week: Sources: Bloomberg, Coindesk, Coinmarketcap, Cointelegraph, Project Ubin Phase 2 whitepaper, R3, Standard Kepler Research

Top Crypto News At a Glance: Sources: CCN, Coindesk, Cointelegraph, Standard Kepler Research

Top Crypto Performance Summary: Sources: Coinmarketcap, Standard Kepler Research

Week Ahead: Sources: Cryptocalendar.pro, Standard Kepler Research

Weekly Recap: Sources: Coinmarketcap, Standard Kepler Research

Past performance does not guarantee future results.

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The price of Bitcoin and other cryptocurrencies are highly volatile in nature. It is suggested that clients should perform their own due diligence and consult a fully qualified independent professional financial adviser before making any investments in cryptocurrencies.

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Unless otherwise stated, all data is as of January 27, 2019 or as of most recently available.

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