TRADE FINANCE & BLOCKCHAIN
Closing the $1.5 trillion gap
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EXECUTIVE SUMMARY

- Trade finance is the 3rd most targeted sector for DLT use.

- Distributed ledger technology and blockchain could increase global trade volumes by $1.1 trillion by 2026.

- Distributed ledger technology reduces fraud and cuts verification time from 1-2 weeks to 24 hours via smart contracts.

- 5 major consortia are working to close the $1.5 trillion-dollar supply-demand gap in global trade finance. In addition, a number of smaller groups with a regional/industry focus have gone live in the last year.

- R3’s Corda is the most popular building block for trade finance products currently in development.

- Digitization and blockchain adoption could reduce costs of traditional trade finance by 35%.
WHY HAVE WE CREATED THIS REPORT?

• Define the problems of legacy trade finance.
• Identify the key players and consortia disrupting the trade finance industry.
• Understand the technological differences of the blockchain/DLT infrastructure used for trade finance.
• Show other blockchain innovators in the trade finance industry outside of major consortia.
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   Key challenges and blockchain as a solution

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   Overview of the top 5 trade finance consortia

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   Comparison of top distributed ledger technology infrastructure and other smaller trade finance blockchain projects
Within banking & finance, **trade finance is the 3rd most targeted sector for DLT use**

- Trade finance describes the processes involved in financing domestic and international trade. It involves numerous actors, including importers, exporters, banks, carriers, customs officials, and insurers.

- Trade finance is heavily reliant on paper documentation. Its complex legacy processes have made it difficult to digitize and modernize.

- Through automating this legacy documentation process, blockchain can streamline trade finance, leading to an increase in trade volume by $1.1 trillion.

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Sources: Cambridge Blockchain Research Report; World Economic Forum, Bain & Company Trade Tech White Paper
Distributed ledger technology and blockchain could increase global trade volumes by **$1.1 trillion by 2026**, off the current base of $16 trillion. - Bain & Company & HSBC, 2018
Distributed ledger technology reduces fraud and cuts verification time from 1-2 weeks to 24 hours via smart contracts.

Trade finance is still paper-based and heavily reliant on manually checking documents.

• 10-20 documents change hands between 20 parties, creating 5,000 data field interactions
• 90% of interactions are 'ignore/transmit to next party'
• Document approval can take 1-2 weeks from initial contact to final payment
• Immutable data eliminates need for manual verification
• Reduced risk of fraud or human error
• 35% reduction in costs

Issues with traditional trade finance

Manual contract creation
The importer’s bank conducts a manual review of the agreement provided by the importer and tenders financials to the correspondent bank. This process is repeated by multiple parties to ensure information is consistent.

Multiple platforms
Miscommunication and fraud are common because of the multiple platforms companies use to communicate across international borders.

Repetition of task by intermediaries
The shipment of goods can be delayed until multiple, repetitive checks are performed by intermediaries and numerous communication points.

Transaction fees due to manual settlement
Intermediaries incur costs and can pass these on to the buyer or seller. As changes are made to documentation, significant version control challenges emerge.

Invoice factoring eats into revenues
To ensure prompt payment, exporters will use invoice factoring from multiple banks and other financial intermediaries. The exporter will receive payment upfront for a fee of up to 5% of the total invoice. There is extra risk if the goods are not successfully delivered.

Proof of ownership
Bills of lading (B/L) can be produced and sent multiple times due to the inability of banks to verify their authenticity.

Manual AML reviews
The exporter’s bank is required to conduct manual AML (anti-money laundering) using the financials provided by the importer’s bank.

Delayed payment
Multiple intermediaries must verify that funds have been delivered to the importer as agreed before the funds are paid out to the exporter’s bank.

Sources: Deloitte, “How Blockchain Can Reshape Trade Finance”
Blockchain technology offers solutions for the problems in trade finance

- **Real time review**
  Documents can be accessed and reviewed by the relevant parties in real time without relying on document couriers and fax machines. This reduces the time to initiate shipment.

- **Decentralized contract execution**
  As contract terms are met, status is updated on Blockchain in real time; reducing the time and headcount required to monitor the delivery of goods.

- **Disintermediation**
  Banks facilitating trade finance through the blockchain don’t need a trusted intermediary to assume risk, eliminating the need for correspondent banks.

- **Transparent factoring**
  Invoices accessed on the blockchain provide a real-time and transparent view into subsequent downstream short-term financing.

- **Automated settlement and reduced transaction fees**
  The title available on the distributed ledger provides transparency into the location and ownership of the goods.

- **Proof of ownership**
  As contract terms are met, status is updated on the blockchain in real-time, reducing the time and headcount required to monitor the delivery of goods.

- **Reduced counterparty risk**
  Bills of lading are tracked through the blockchain, eliminating the potential for double spending.

- **Regulatory transparency**
  Regulators are provided with a real-time view of essential documents to assist in enforcement and AML activities.

Sources: Deloitte, "How Blockchain Can Reshape Trade Finance".
R3 leads a consortium of 200+ members and partners across multiple industries and has raised $112m

What is it? R3 is an enterprise blockchain software firm that leads a consortium of more than 200 partners and members on its Corda distributed ledger technology platform. They have a global team of over 180 professionals in 13 different countries, and are currently supported by over 2,000 technology, financial and legal experts from their global member base.

R3’s mission is to fix the issue of legacy banking and financial technology platforms that struggle with interoperability, risk, inefficiencies, and high costs. Its core focus is providing its members and partners with the opportunity to develop new innovative applications for finance and commerce on its platform.

However, the Corda platform is already being used in multiple industries ranging from trade finance, to commerce, identity, shipping and insurance, to name a few.

Technology: Corda is an open-source DLT platform designed for interoperability with incumbent systems.

Milestone: R3 launched Corda in 2016 to use DLT in finance, shipping, insurance, and healthcare. In 2018, Corda Enterprise launched as a commercial version of the open-source Corda project.

Sources: Blockdata.tech, R3 2018
5 major consortia are working to close the $1.5 trillion-dollar supply-demand gap in global trade finance.

Sources: Blockdata.tech, Bloomberg
Notes: Market Cap as of 08/04/2019
Voltron

What is it? Voltron is a coalition of 12 banks which has launched a blockchain-based trade finance initiative based on R3’s Corda distributed ledger technology (DLT) platform. The platform, which is now accessible to all customers of the participating banks, attempts to digitize all documentary collection, tracking, and the facilitation of exchange for commercial documents and Letters of Credit via the Voltron network.

The aim of Voltron is to streamline the entire trade finance cycle by ensuring faster decision making from banks, enhancing trust, the automation of contractual agreements, and the supply chain process - by reducing the lengthy coordination of intermediaries, multiple trading partners and banks involved.

Voltron consists of 12 consortium members and is currently focused on Letters of Credit. It recently completed an L/C for a cargo shipment of soybeans from Argentina to Malaysia.

Technology: Voltron is built on R3’s Corda Enterprise platform.

Milestone: First prototype demoed mid-2017. Launched October 2018 with 8 partner banks. Initial integrations include Bolero, an electronic bill of lading (eBL) system, and EssDocs, a paperless document service.

Sources: Blockdata.tech
Marco Polo Network

**What is it?** Marco Polo is a trade finance initiative led by TradeIX and R3. The platform attempts to improve the trade ecosystem and its participants through providing secure, distributed data storage and bookkeeping, automated contract enforcement, identity management, asset verification and tracking to name a few. It promotes the development of improved ERP-embedded working capital finance applications, and a blockchain technology structure that can be utilized by banks and their corporate clients.

Marco Polo’s mission is to provide innovative trade finance solutions in order to benefit the wider trade ecosystem. It is designed to be a truly open network that allows interoperability for applications and legacy systems at banks and corporates involved in international trade transactions.

**Technology:** The platform is built by TradeIX, based on R3’s Corda distributed ledger framework.

**Milestones:** TradeIX reported one of the first successful trade financing transaction pilots in October 2017. Using TIX Core, Standard Chartered was able to digitally discount receivables and simultaneously secure credit risk through insurer AIG for an undisclosed logistics company. Completed its first real transaction on March 28th, 2019 between two German firms trading between China and Germany.

Sources: Blockdata.tech
we.trade is a collaboration between 14 European banks. The project connects parties involved in a trade deal on one platform, helping SMEs initiate new trading relationships and provides them with access to financing solutions. Shareholders include Caixa Bank, Deutsche Bank, Eurobank, Erste Group, HSBC, KBC, Natixis, Nordea, Rabobank, Societe Generale, UniCredit, and Santander.

Technology: we.trade is built on Hyperledger Fabric, with IBM as the technology project lead.

Milestone: we.trade was one of the first trade finance blockchain solutions to go live. In October 2018, we.trade merged with the Batavia consortium, absorbing the latter’s membership of UBS, Caixa Bank, and Erste Group. They were both built on Hyperledger Fabric, and UBS, whose head of strategic innovation and market development for corporate and institutional clients said that the “platforms have a lot of commonalities, which were increasingly uncovered as we developed them.” We.trade partnered with Hong Kong’s eTradeConnect in October 2018.

Sources: Blockdata.tech
**eTradeConnect**

*formerly known as Hong Kong Trade Finance Platform (HKTFP)*

<table>
<thead>
<tr>
<th>YEAR OF ESTABLISHMENT</th>
<th>GEOGRAPHICAL FOCUS</th>
<th>BANKING PARTNERS</th>
<th>PRODUCT FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>ASIA</td>
<td>12</td>
<td>FULL DOCUMENT DIGITIZATION</td>
</tr>
</tbody>
</table>

**What is it:** eTradeConnect is an initiative created in partnership with the Hong Kong Monetary Authority (HKMA) and several banks to build a trade financing platform, with a number of banks expected to join during the later stages of development. The platform has been built using Distributed Ledger Technology and is designed to increase the transaction efficiency, and reduce fraud and duplication of tasks for trading partners in and around Hong Kong.

Their mission is to facilitate the settlement and financing of trade through the sharing of trade data, ensuring high security and efficiency in an effective and cost-efficient way - as opposed to legacy trade finance and inefficient paper-based processes. Its core focus is primarily within Asia, but it can help digitize the trade corridor between both Asia and Europe after they announced their collaboration with we.trade.

The consortium could help plug the $600 billion trade finance gap in Asia, which represents 40% of the global annual total.

**Technology:** eTradeConnect is built on Hyperledger Fabric.

**Milestone:** Officially announced in October 2017 as HKTFP, Hong Kong’s first large-scale multi-bank blockchain project. In October 2018, they announced a partnership with the other major Hyperledger trade finance project, we.trade.

**Sources:** [Blockdata.tech](https://blockdata.tech)
Komgo is an initiative and blockchain project lead by both the Komgo team and Consensys by building a blockchain-based platform for commodity trade finance. The use cases of the platform will allow banks, traders and all other participants in the network to transact off of its software, simplifying communication and operations through interoperability, improving optimization, data security and exchange. Its member-shareholders include banks, commodities traders, energy companies and inspection and certification companies.

Their mission is to catalyse the commodity trade network by providing a fully decentralized interoperable blockchain solution to act as a data exchange for the industry.

**Technology:** Komgo is built on the Quorum blockchain. It has a proprietary document transfer system called Kite that allows secure transfer without revealing the contents to Komgo.

**Milestone:** Tested in early 2017 with a shipment of crude oil from Africa to China. A year later, Kombo was successfully used to facilitate a trade of soybeans from the US to China. Komgo launched with a KYC product and a facility for Letters of Credit.

Sources: [Blockdata.tech](#)
Other consortia tackling issues in trade finance

**India Trade Connect**
- **USE CASE**
  - Blockchain-based solution for banking trade finance
  - Bill collection, letters of credit, trade transactions, invoice financing
- **PROJECT LEAD**
  - Infosys
- **MEMBERS**
  - ICICI Bank
  - Kotak Mahindra Bank
  - Yes Bank
  - RBL Bank

**World Blockchain Trade Consortium**
- **USE CASE**
  - Invoice checking, fraud mitigation, double-financing
  - A blockchain application developed by Trade Finance Market (TFM)
- **PROJECT LEAD**
  - NCI
- **MEMBERS**
  - To be announced...

**Interswitch**
- **USE CASE**
  - To develop a blockchain-powered supply-chain finance solution in Nigeria
- **PROJECT LEAD**
  - Interswitch
- **MEMBERS**
  - UBA
  - GTBank

**TradeLens**
- **USE CASE**
  - To create trust and transparency across the global supply chain, transportation management systems, shipment tracking, permission-based sharing
- **PROJECT LEAD**
  - MAERSK
- **MEMBERS**
  - Agility
  - Seatrade

Sources: [Blockdata.tech](https://www.blockdata.tech)
More than 80% of the trade finance products developed on R3's Corda are in development

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PROJECT LEAD</th>
<th>HQ</th>
<th>USE CASE</th>
<th>LAUNCH DATE</th>
<th>DEVELOPMENT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MonetaGo</td>
<td>MonetaGo</td>
<td>US</td>
<td>Fraud mitigation, supply chain finance (factoring, receivables) and corporate issuance (certificates of deposits)</td>
<td>March, 2018</td>
<td>LIVE (moving to Corda from HyperLedger Fabric)</td>
</tr>
<tr>
<td>B2P for procure-to-pay</td>
<td>Digital Ventures, (capital arm of SCB)</td>
<td>Thailand</td>
<td>Procurement, invoicing, supply chain management, ERP integration, tracking (status of approval &amp; payments), e-Tax</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Everchain</td>
<td>S-Labs</td>
<td>China</td>
<td>Financial asset transactions, digital credit records, data upload, inquiry, chain management, payments, asset issuance</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>ChainNova Shipping Trade Finance Platform</td>
<td>ChainNova</td>
<td>China</td>
<td>Documentation digitisation (Letter of credit, bill of lading, invoice traceability, electronic messaging transmission)</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Decentralized Procurement Platform</td>
<td>Digiledge</td>
<td>India</td>
<td>Audit trail, smart contract automation, data ownership, payment approval, invoicing, purchase ordering</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Invoice Discounting Platform</td>
<td>Digiledge</td>
<td>India</td>
<td>Invoice factoring, audit trail, smart contract automation, integration with legacy credit scoring &amp; ERPs</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Letter of Credit</td>
<td>R3 (Corda)</td>
<td>US</td>
<td>Letter of credit</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Persistent Systems Trade Ledger</td>
<td>Persistent Systems</td>
<td>India</td>
<td>Audit trail, bill of lading, invoicing, document verification</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>Phio</td>
<td>Satoshi Systems</td>
<td>UK</td>
<td>Tracking, Letter of Credit, Bill of Lading, other document digitisation, supply chain provenance and trade automation</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
<tr>
<td>VaultChain</td>
<td>Tradewind Markets</td>
<td>US</td>
<td>Digital trading, settlement and ownership solutions for precious metals, tradewind platform integration</td>
<td>March, 2018</td>
<td>LIVE</td>
</tr>
<tr>
<td>x-DeFraud</td>
<td>Kratos Innovation Labs</td>
<td>Singapore</td>
<td>Digitization of trade cycle documents (via smart contracts), fraud mitigation, tracking of inventory</td>
<td>Tbd</td>
<td>In Development</td>
</tr>
</tbody>
</table>

Sources: Blockdata.tech
## Distributed Ledger Tech infrastructure used in trade finance applications

<table>
<thead>
<tr>
<th>Type</th>
<th>Modified Ethereum blockchain</th>
<th>DLT</th>
<th>Permissioned DLT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>JP Morgan &amp; Ethereum</td>
<td>R3</td>
<td>Permissioned</td>
</tr>
<tr>
<td>Consensus Mechanism</td>
<td>Istanbul BFT, Raft</td>
<td>BFT</td>
<td>Linux Foundation</td>
</tr>
<tr>
<td></td>
<td>Majority voting</td>
<td>Raft</td>
<td>PBFT</td>
</tr>
<tr>
<td>Smart Contracts</td>
<td>Yes (legally bound)</td>
<td>Yes</td>
<td>Pluggable framework</td>
</tr>
<tr>
<td>SC Language</td>
<td>Solidity</td>
<td>Kotlin, Java</td>
<td>Yes</td>
</tr>
<tr>
<td>Native currency</td>
<td>No</td>
<td>No</td>
<td>Golang, Node.js</td>
</tr>
<tr>
<td>Industry focus</td>
<td>Financial Services primary (Cross-industry)</td>
<td>Financial Services primary (Cross-industry)</td>
<td>Cross-industry</td>
</tr>
<tr>
<td>Use case</td>
<td>Applications for high speed and high throughput processing of private transactions</td>
<td>Create automated auditing and encapsulation of business rules into transactions</td>
<td>Maintains a bank account for an importer, and issues a Letter of Credit on its behalf</td>
</tr>
<tr>
<td>Features</td>
<td>Transaction and contract privacy</td>
<td>Consensus on the data</td>
<td>Identity management</td>
</tr>
<tr>
<td></td>
<td>Multiple voting-based consensus mechanisms</td>
<td>Privacy with provenance</td>
<td>Privacy and confidentiality</td>
</tr>
<tr>
<td></td>
<td>Network/Peer permissions management</td>
<td>Interoperability with legacy infrastructure</td>
<td>Efficient processing</td>
</tr>
<tr>
<td></td>
<td>Higher performance</td>
<td>Industry flexible</td>
<td>Chaincode functionality</td>
</tr>
</tbody>
</table>

Sources: Blockdata.tech
### Selected trade finance disruptors outside of blockchain consortia

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PRODUCT / SERVICES</th>
<th>FOUNDED</th>
<th>HQ</th>
<th>TEAM SIZE</th>
<th>LAST ROUND</th>
<th>ROUND TYPE</th>
<th>INVESTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CargoX</td>
<td>Blockchain-Based Bill of Lading (B/L) Documents for Global Trade</td>
<td>2017</td>
<td>Slovenia, Ljubljana</td>
<td>21</td>
<td>$7 M Feb, 2018</td>
<td>ICO</td>
<td>-</td>
</tr>
<tr>
<td>Hijro</td>
<td>Financial operating network for global trade</td>
<td>2014</td>
<td>US, Lexington</td>
<td>5</td>
<td>$1.7 M May, 2016</td>
<td>Seed</td>
<td>Startupbootcamp, ff Venture Capital, Draper Associates</td>
</tr>
<tr>
<td>Querto</td>
<td>B2B payment platform</td>
<td>2016</td>
<td>UK, London</td>
<td>5</td>
<td>$1 M Dec, 2018</td>
<td>Seed</td>
<td>Pi Ventures</td>
</tr>
<tr>
<td>TRADING</td>
<td>Post-trade workflow automation platform for the commodity trading</td>
<td>2017</td>
<td>Greece, Athens</td>
<td>36</td>
<td>$113 K June, 2017</td>
<td>Angel</td>
<td>-</td>
</tr>
<tr>
<td>Early supply chain financing</td>
<td></td>
<td>2017</td>
<td>Spain, Madrid</td>
<td>5</td>
<td>$50 K Aug, 2018</td>
<td>Convertible note</td>
<td>Seedcamp</td>
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<tr>
<td>TANGO Trade</td>
<td>Low cost financing and create a payment assurance request to suppliers around the world</td>
<td>2018</td>
<td>US, San Mateo</td>
<td>6</td>
<td>$Undisclosed Aug, 2018</td>
<td>Seed</td>
<td>Village Global</td>
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<tr>
<td>skuchain</td>
<td>EC3, popcodes, brackets, financing, zero knowledge collaboration</td>
<td>2014</td>
<td>US, Mountain View</td>
<td>12</td>
<td>$Undisclosed Mar, 2018</td>
<td>Seed</td>
<td>NTT DOCOMO Ventures, Digital Currency Group, Amino Capital</td>
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<tr>
<td>Gatechain</td>
<td>Electronic trade documents, automated export financing, smart factoring solutions</td>
<td>2016</td>
<td>Switzerland, Zurich</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Tradefinex</td>
<td>Invoice factoring, digital bond, r3 cords bridge</td>
<td>2017</td>
<td>Singapore</td>
<td>40</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>CBachange</td>
<td>Blockchain-based platform for receivables financing and factoring</td>
<td>2017</td>
<td>Germany, Berlin</td>
<td>4</td>
<td>-</td>
<td>-</td>
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</table>

**Sources:** [Blockdata.tech](https://blockdata.tech)
### Features and USPs of blockchain projects in trade finance

<table>
<thead>
<tr>
<th>Source</th>
<th>Letter of Credit</th>
<th>Insurance</th>
<th>Permits</th>
<th>Invoicing</th>
<th>Certificate of Origin</th>
<th>Bill of Lading</th>
<th>Payments</th>
<th>Sales Agreement</th>
<th>Packing List</th>
<th>Financing</th>
<th>Tracking</th>
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<td>TangoTrade</td>
<td>✭</td>
<td>✓</td>
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</table>

**Sources:** Blockdata.tech
GLOSSARY

**Trade finance** - finance for domestic & international trade; includes actors like importers, exporters, banks, carriers, customs officials, and insurers.

**Letter of credit (L/C)** - document that guarantees that the buyer’s bank will pay for the goods upon receipt; protects the seller against non-payment.

**Bill of exchange** - document requiring the receiver to pay an agreed amount to the issuer.

**Bill of lading (B/L)** - document issued by a carrier to acknowledge receipt of goods for shipping; the party that possesses the B/L technically owns the goods.

**Blockchain** - a type of distributed ledger that stores data in blocks.

**Certificate of origin (CO)** - document that declares the country of origin of a good or commodity.

**Consensus mechanism** - protocols that ensure that all nodes on the blockchain are in sync and agree on the legitimacy of transactions.

**Consortium** - association of organizations, companies, or government entities that gather together for a common goal or objective.

**Invoice factoring** - a form of debtor finance where the seller receives payment from a third party at a discount. This allows a seller to receive payment immediately instead of waiting 30 or more days for the buyer to pay the invoice.

**KYC** - abbreviation of Know Your Customer; the process of verifying the identity of a bank’s customer/client in order to prevent banks from being used for illegal activities like money laundering.

**AML** - abbreviation of Anti-Money Laundering; legal measures that required banks to prevent, detect, and report money laundering.

**Smart contract** - protocol that allows the execution and enforcement of credible transactions on a blockchain or distributed ledger without a trusted third party.
Mapping the digital economy

- Blockdata is committed to mapping the technology that is shaping the future of the global digital economy.
- It lists fundamental information on the projects, companies, tokens, and products built with blockchain technology.
- Blockdata is used by news organizations, governments, and forward-thinking companies who want to better understand blockchain technology.