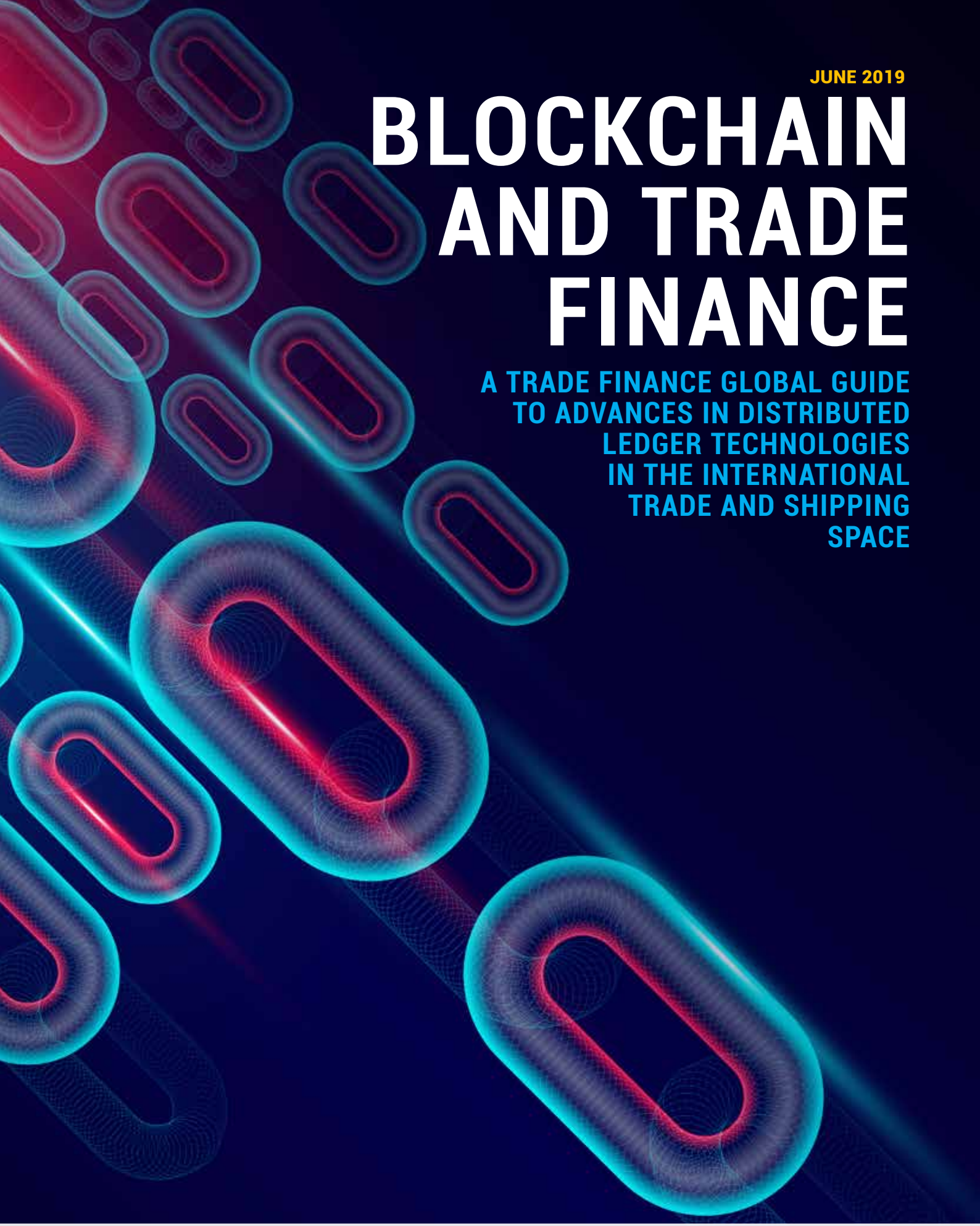


JUNE 2019

BLOCKCHAIN AND TRADE FINANCE

A TRADE FINANCE GLOBAL GUIDE TO ADVANCES IN DISTRIBUTED LEDGER TECHNOLOGIES IN THE INTERNATIONAL TRADE AND SHIPPING SPACE

TRADE FINANCE GLOBAL

TRADEIX

Contents

Evolution of Technology in Trade Finance

Distributed Platforms & Networks

A "Network-of-platforms" where individual systems and platforms transact and exchange data over an open and distributed network.

Supports and automates multi-party trade transactions without requiring every participant to come to a single destination platform and network to transact.

Each participant can control, secure, and manage their own data in any way they see fit. Users can deploy the software instance on-premise, in the cloud, or in a hybrid deployment.

Access to the network and its participants requires only a single integration and single interface for connecting to the network and transacting with all other network participants. Once connected, any software system, platform, or application can seamlessly exchange data and ensure data across these independent systems is always kept in sync.

Destination Platforms & Networks

Each user access a central platform and central database owned and operated by a third-party vendor.

Users are only able to transact with others on the same destination platform. Transactions across destination platforms and networks require costly, bespoke integrations.

Utilizes a central database that is owned and operated by a single third-party database administrator who records, coordinates, and establishes trust in all trade data and transactions. This central party has control and has visibility into all data across the network.

Any user on the destination platform should be able to transact with others on the destination platform. Moving data and transacting between different destination platforms and networks requires one-off, bespoke integrations that leverage centralized middleware.

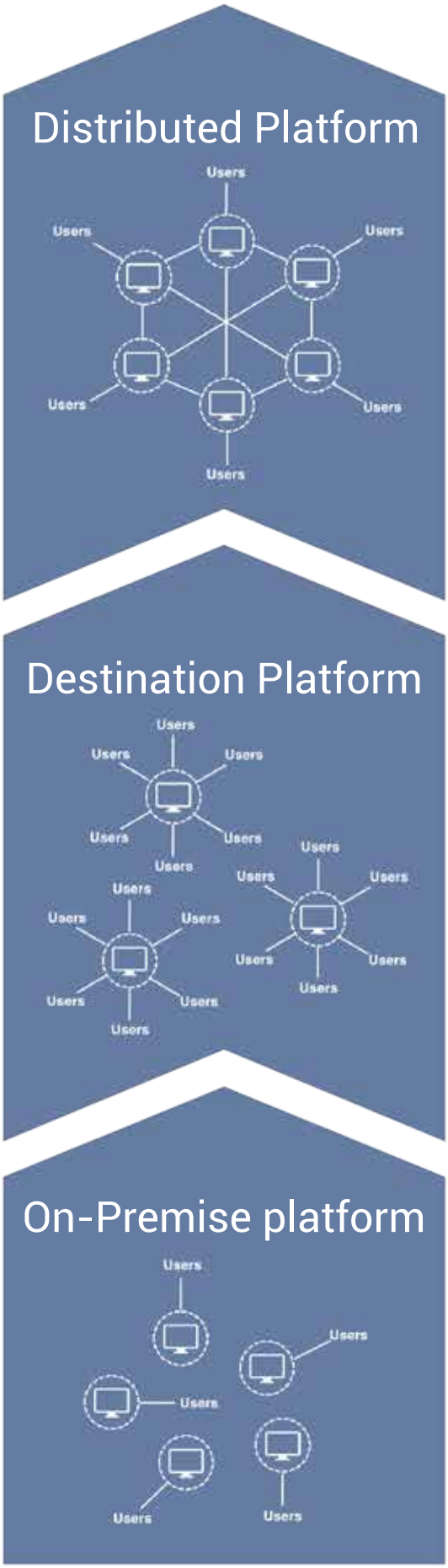
Single Instance, On-Premise Software

Each user deploys software in their own data centre and server.

No ability to support seamless multi-party transactions across different systems, platforms, and applications. Each trade data is trapped in a digital silo.

Each participant can control, secure, and manage their own data in any way they see fit. Users can deploy the software instance on-premise, in the cloud, or in a hybrid deployment.

Each new connection requires a costly, bespoke integrations.



1 Introduction

To date, attempts to digitize trade and trade finance and to connect trading parties have been relatively unsuccessful. Internal processes have become increasingly digital but transactions involving multiple parties are still costly, complex, and largely paper based. This lack of success to date has been due primarily to the limitations of legacy technology systems, platforms, and networks that supported such digitization efforts.

We identified three key requirements that trade networks and platforms must meet simultaneously in order to achieve the levels of global scale and adoption required to address the structural deficiencies in the way we conduct and finance trade. Those key requirements are:

- Ability to support seamless transactions across different systems, platforms, and applications
- Ability for users to manage and control their own data and to support a wide variety of deployments
- Ability to connect-once-to-connect-to-many

While legacy platforms and networks can typically meet one or maybe even two of these requirements, none are able to meet all three requirements simultaneously. This places hard limits on their levels of global scale and adoption, and thus their ability to digitize trade and give rise to a truly connected ecosystem of trading parties.

The potential benefits of distributed platforms and networks cannot go understated. By meeting the three key requirements for global scale and adoption of trade systems simultaneously, these new types of platforms and networks have the potential to rewire and transform the way we conduct cross-border commerce and finance trade.

Just as TCP/IP, HTML, and HTTP provide shared and open standards and protocols that enabled the Internet to become what it is, so too can blockchain and related technologies create a flatter, smarter, more connected, and overall better world for global trade and commerce.

Dave Sutter,
Chief Strategy Officer, TradeIX

TRADEIX

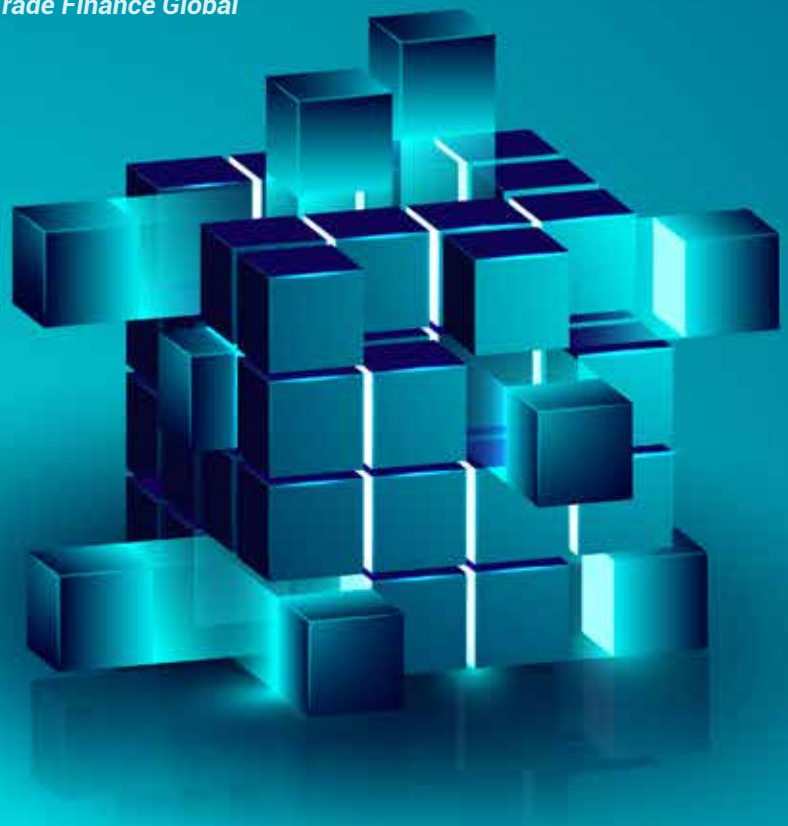
1.1 Foreword

Distributed ledger technology, colloquially termed blockchain, gained significant attention in 2017, paralleling the hype surrounding the cryptocurrencies that are facilitated by the technology. Inspired by this hype, many innovative initiatives have sought out to capture the functional essence of DLT and apply it to a wide assortment of industries and domains.

One such industry particularly ripe for the disruptive potential of DLT is trade finance, which predominantly remains bogged down by legacy technology systems heavily supplemented with paper-based processes.

In the years since, organizations of all different size and scope have come together to investigate the technology and develop viable Proof-of-Concepts. The relative infancy of these consortia and the blockchain technology they are working with, renders it nearly impossible to determine for certain where the industry will lead. That said, this whitepaper maps the current state of the ecosystem and peers through the fog of uncertainty along the path ahead, which may help with wrangling the behemoths that these consortia may well become.

Deepesh Patel,
Editorial Director, Trade Finance Global



1.2 How consortiums developed and thoughts for the future

Consortiums have become a common method for businesses to collaborate on the use of blockchain and DLT technology – which developed out of the technology underpinning cryptocurrencies such as Bitcoin. Since 2017, groups of banks and other financial institutions have come together to create common platforms that can be used by each member of the network. More than 30 such consortia have been founded, most of them having between 10 and 15 initial members but membership is expected to grow.

The main advantages seen of joining a consortium are that it presents a relatively low risk and low-cost way of using the technology. And, in order to utilise blockchain's real effectiveness, the more users there are in the network, the more advantages and value there is to all of them. In trade finance, this includes financial institutions, plus every party in the trade cycle as well as customs bodies and regulators.

Operationally, these consortia are only just beginning to get under way, for these are collaborative ventures tackling complex technological issues in order to create products that members want to have. During 2019 and 2020 it is expected that we will see these consortia picking up speed. As they do so they will start to impact the conduct of cross-border trade.

According to Emmanuel Ganne, Senior Research Analyst at the World Trade Organisation (WTO), blockchain consortia have the potential to transform global trade. As she says in her recent report Can Blockchain Revolutionise International Trade?: "If the projects that are under development succeed, blockchain could well become the future of trade infrastructure and the biggest disruptor to the shipping industry and to international trade since the invention of the container."

Although not everyone is yet convinced of the use of blockchain and DLT, the networks can bring trust and visibility and in the near future, for example in international trade, we could see these platforms reducing the time of letter of credit processing from days to minutes if not seconds.

Michael Bickers,
Editorial Director, BCR Publishing

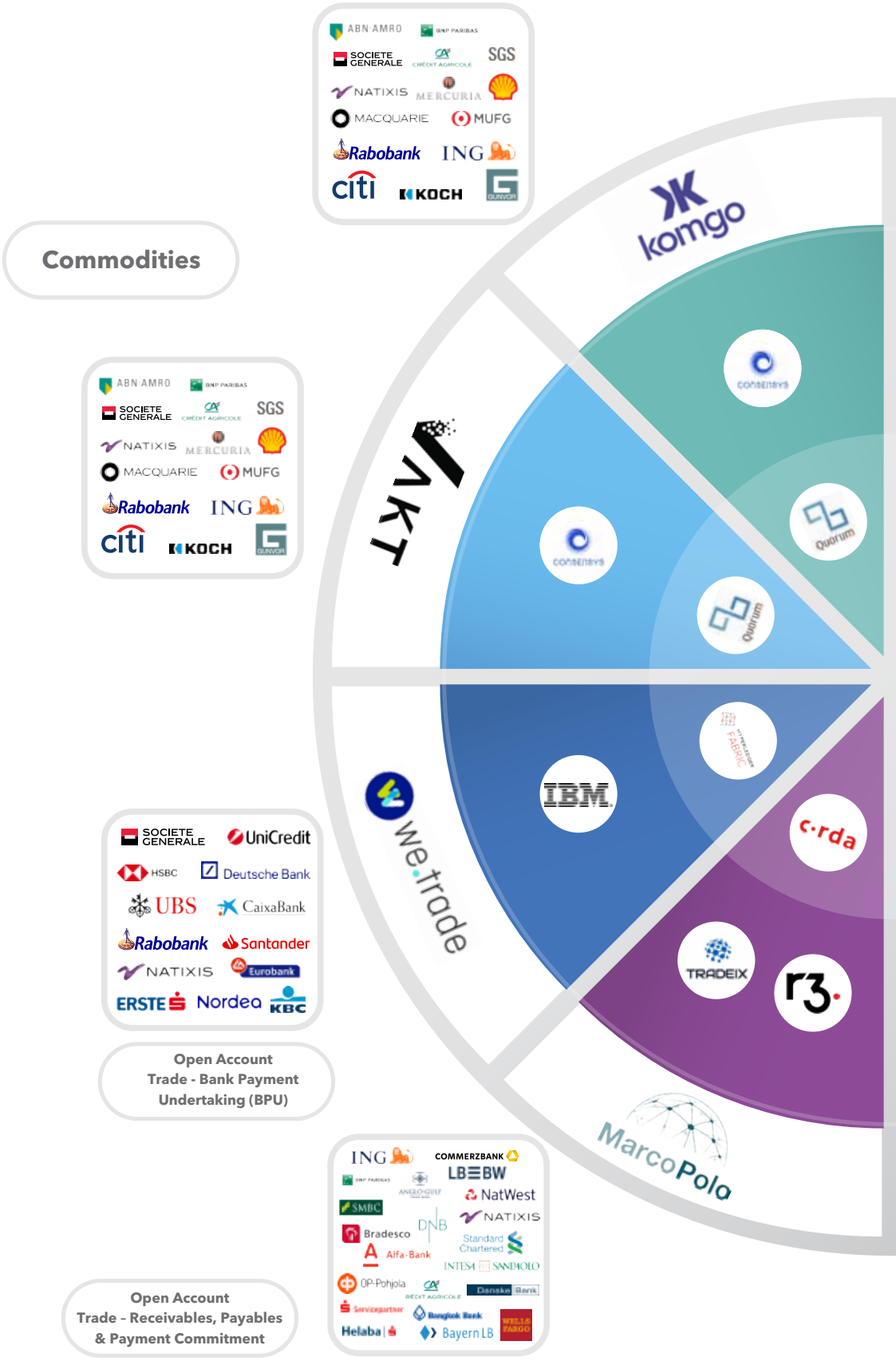
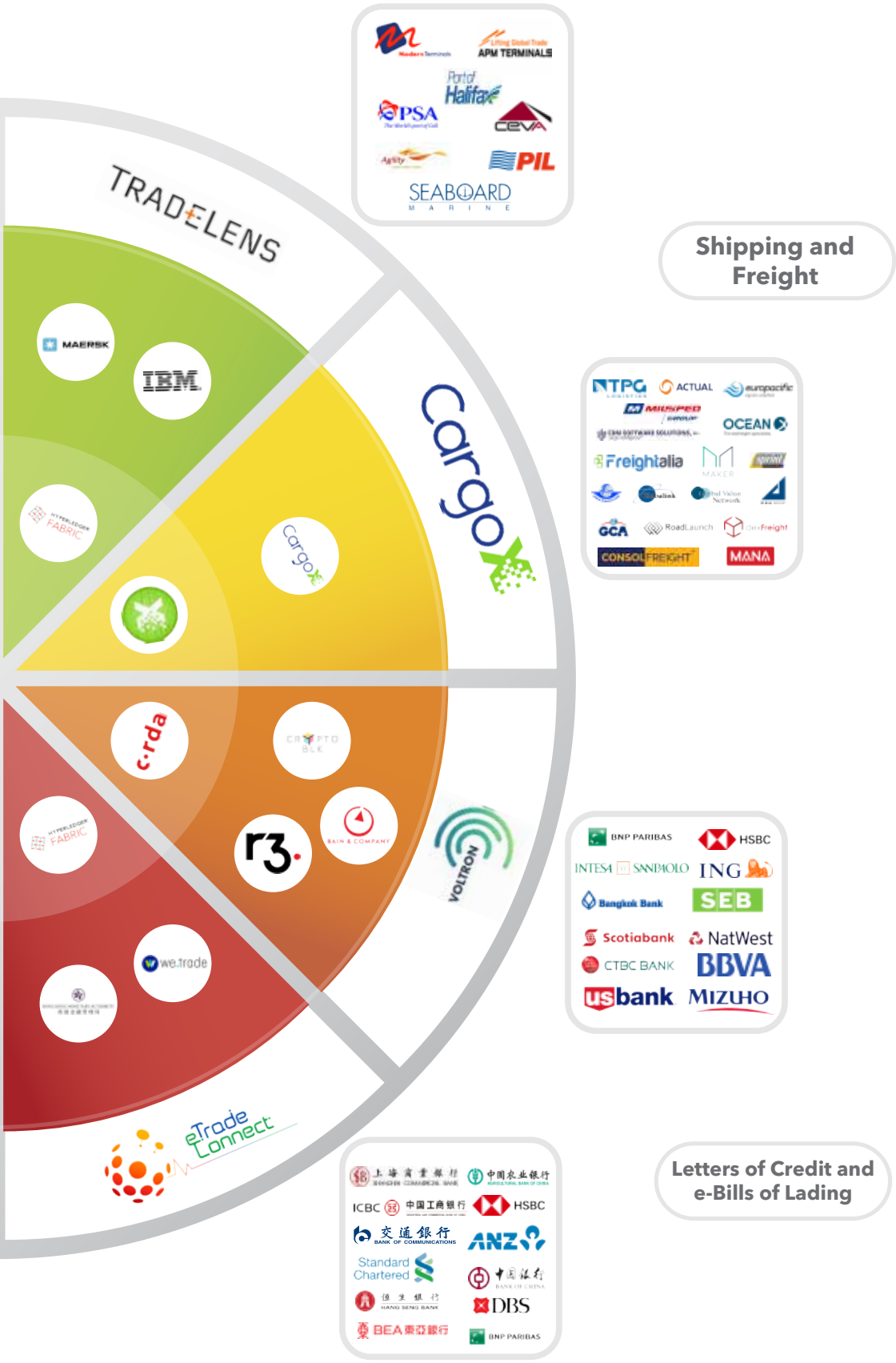


Figure 1. Depiction of the current state of the market. Each segment represents a network in the ecosystem. The underlying technology is shown at the core, followed by the network leads, and finally the participants. There are several more consortia and networks represented within the trade finance ecosystem; this paper highlights the major players with 8+ companies as key members or shareholders.

Consortia & Networks 2019 - Where we are at now



Shipping and Freight

Letters of Credit and e-Bills of Lading

2 The Current State of the Market

The use of distributed ledger technology in the trade finance space is moving fast.
Today's DLT-trade ecosystem can be sectioned into a series of eight major consortia and networks that are taking strides in various areas of the space. At the core of each of these lies an underlying technology. These core infrastructure products are built on and customized by consortia leads, creating a form of value. External players, from banks to shippers, plug into these platforms to harness this value for themselves or to pass it along to their clients.

These consortia and platforms operate in four fundamental sub-categories: Letters of credit and e-bills of lading, open account trade, commodities, and shipping and freight. Each of these sectors remain strongly interlaced within the trade finance space.
In the following sections we will deep dive into the underlying DLT technologies, exploring their technical functionality and key differences from a managerial level. After that we will explore each of the eight platforms that operate on these technologies, again looking at the fundamental differences among them and the various niches they are seeking to address.

Carter Hoffman,
Assistant Editor,
Trade Finance Global

2.1 Underlying technologies

At the core of every DLT based platform lies the underlying distributed ledger technology infrastructure. Each technological infrastructure offers its own unique set of features and core design decisions that fundamentally affect the use cases that it can be applied to. In the financial space, the primary focus is on a permissioned structure, where access is restricted to a set of verified players. This focus is important in the space due to its immensely regulated nature. Permission-less networks, however, should not be ignored entirely. They can still hold a place for specific use cases. Even within the commonly sought out permissioned networks, the core design decisions can still hold a major impact on many business specific aspects, particularly privacy. Different approaches taken in the development of DLT have led organizations to develop different infrastructures. Currently, there are three primary underlying technologies employed in the trade sector: Corda, Hyperledger Fabric, and Quorum. These three, as well as the highly adaptable public Ethereum network will be explored in the following sections.

2.1.1

Quorum

Quorum is an enterprise blockchain solution built on top of the standard Ethereum protocol layer. Essentially, the Quorum layer seeks to instill the permissioned structure and privacy controls necessary for enterprise use, specifically financial enterprise use.

To help ensure privacy, Quorum prevents all but the authorized parties from seeing a specific transaction. This is done by augmenting the shared, single blockchain with a smart contract architecture that provides for the segmentation of private data. Under this approach, each node on a network maintains both a public state database and a private state database. Nodes then only execute ledger-update smart contracts if they are party to said contract. This is determined either by the contract being public or by the node being party to a private contract. This means that a node not party to a specific private contract, simply will not store that information. Despite this, each node can be assured that all network transactions exist in a cryptographically secure form somewhere on the network.

Consensus on Quorum currently exists in the form of majority voting, following a confirmation check to ensure that each node has the same current public state database. Furthermore, through a series of Merkle Tree hash checks, the network is also able to confirm an overall consensus on the collective standing of the private states through this same confirmation check. Once the state of the ledger is confirmed, a majority vote decides on the series of transactions to be included in the subsequent block. This consensus mechanism, however, exists on Quorum in the form of a smart contract. This means that it can easily be updated to match future distributed ledger consensus standards.

2.1.2

Hyperledger Fabric

Hyperledger Fabric, a Hyperledger blockchain framework hosted by the Linux Foundation, an open-source blockchain infrastructure governed by the Linux foundation, facilitates a multi-channel global broadcast infrastructure. Within a network, peers are able to interact with one another through a series of channels, which could include all of the peers on the network or smaller subsets of peers for ensuring the privacy of sensitive transactions. Each channel within a network maintains a separate ledger. The ledger consists of two parts: the world state and the transaction log. The world state is synonymous to a database containing the current state of the channel-specific ledger at any given time. The transaction log is an immutable record of all the transactions that have led to this current world state. It can be used as a verifiable provenance trail for the ledger. Individual peers on a network would maintain a ledger record for each channel that they are a part of.

Beyond this core infrastructure, Hyperledger Fabric operates a very modular architecture. This means that aspects of the network such as identity management, consensus, or encryption can be selected from a ranging menu of options providing a comprehensive, yet customizable network. Such customization allows network administrators to select the features most suitable for their individual situation, allowing Hyperledger Fabric to be effectively applied to a wide array of use cases.

Fabric also takes a unique approach to smart contract implementation, which they call 'chaincode'. This is done by employing an execute-order-validate execute-order-commit framework, in contrast to the order-execute approach employed by most other networks. Under the order-execute approach, smart contract code is ordered and then transmitted out all other nodes on the network who then independently execute the code. In such approach all contracts need to be deterministic, which leads to smart contract-specific language development to ensure determinism (like Solidity) . The fabric approach taken by Hyperledger Fabric developers, however, allows for simultaneous processing.
This is thanks to the application specific endorsement policy that defines how many peer nodes and which ones need to contribute to execution of smart contracts, which also eliminates non-determinism. because code is executed first creating potential new states that are presented for ordering. Once approved, these new states are then committed to the ledger. This approach is designed to increase overall performance and scalability since execution is not redundantly completed on every node. Moreover it allows for language flexibility: chaincode can be written in Go and Node.js, and with the use of Hyperledger Burrow - in Solidity.

2.1.3

Corda

The Corda DLT platform, developed by R3, employs a point-to-point data broadcast system. Such a design eliminates the notion of a single principal ledger, opting instead for transactional data to be shared only with those entities on the network specifically involved in the transaction. This ensures a higher level of privacy for all nodes by sharing data on a strictly need to know basis.

Corda is able to achieve this through a combination of states and transactions. "A state is an immutable object representing a fact known by one or more Corda nodes at a specific point in time." Transactions consume current states as inputs, apply the desired action, and propose a potential new state. Once verified, the proposed states become the current states and the old current states are marked "historic". To verify if a transaction is valid, it must reach two types of consensus: validity and uniqueness.

Validity requires all parties to a transaction to apply their public key signature to the transaction. To do this, a party will need to ensure that, not only is the proposed transaction valid, but that all previous transactions altering states with the asset in question are valid as well. As information is only shared on a need to know basis, a party may not have direct access to all of these transactions. If this is the case, the party to whom the transaction has been proposed will request the chain of transactions that led up to the creation of the inputs to the proposed transaction. The proposing party will have this chain as they would have requested it in the same fashion when initially acquiring the asset themselves. Once the chain can be confirmed and the current proposed transaction accepted, all parties will attach their public key signature marking the transaction as valid. To achieve uniqueness consensus, each transaction is then signed by a "Notary" if these same inputs have not been used for any previous transactions. This is done to prevent instances of double spending.

Corda binds all on chain contracts to a traditionally recognized written legal agreement outlining the intended use of each contract by allowing for an object to be included in the code. This helps to circumvent to current grey area surrounding the legal enforceability of smart contracts. Furthermore, as a permissioned network, each node must be certified and linked to a registered entity providing a further layer of legal accountability.

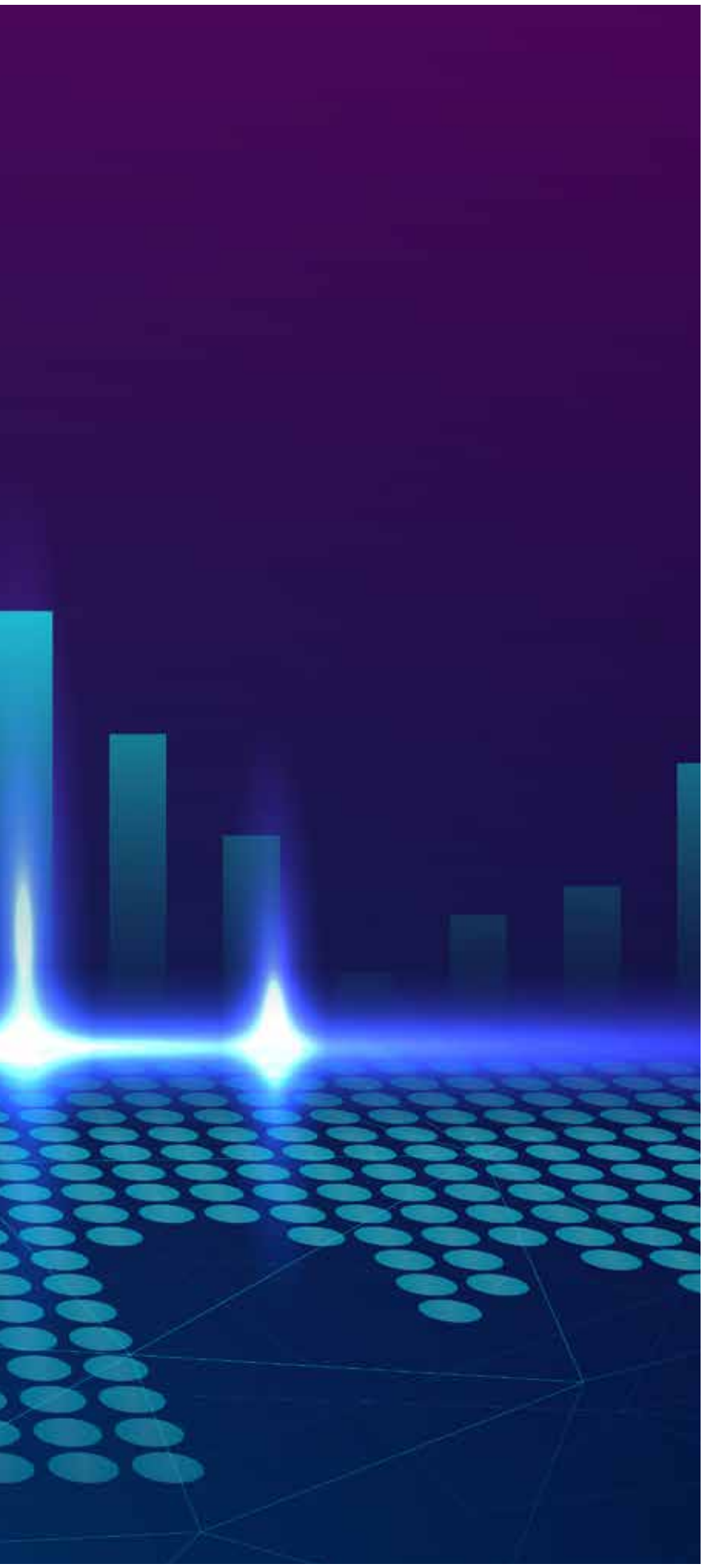
2.1.4

Ethereum

Ethereum differs from the other platforms discussed in the sense that it a public permissionless network. This means that anyone in the world is able to join the network and participate in the submission and verification processes. At the core of Ethereum lies the Ether cryptocurrency, currently the second most valuable cryptocurrency by market cap. Ethereum, however, is much more than just a cryptocurrency. The platform side of Ethereum allows for the creation of decentralized applications (dApps). These dApps are capable of the same functionality as traditional computer programs, but are facilitated over a peer-to-peer network rather than a centralized client-server network.

To run a dApp, developers must pay computationally determined fee, termed "gas", in order to operate their code. That is to say that the more computations the code must execute the higher the fee. These fees serve as a resistance against network slowing infinite loops, potentially enabled by the Turing-complete scripting language, by ending the execution of the code upon reaching the predefined gas limit. As Ethereum currently follows a proof-of-work consensus mechanism (although they are investigating a transition to Proof-of Stake), the gas fees are paid out to the block miner. When considering Ethereum as a blockchain platform in the trade finance space it is crucially important to understand that it operates on a permissionless and anonymous global broadcast infrastructure. Due to privacy and regulatory reasons, this means that its practical use cases in the trade finance industry are greatly limited.

2.2 Where are we at now?



Trade finance has been a very slowly moving space when it comes to embracing digital innovations. However, the coin is now flipping: new data sharing technologies and ambitious plans from major trade originators provide much hope for a new trade finance landscape to emerge in the foreseeable future. Will the new trade consortiums succeed to scale, and by when?

Corporates were first to digitise trade flows

Half a century ago, large corporations started to adopt digital technologies to operate their business-to-business supply chain activities. The use of electronic data interchange (EDI) links was initially introduced in automotive and retail industries, and later expanded into manufacturing, healthcare, pharmaceutical, utility and construction companies. The goal was then to accelerate the communication with suppliers with a focus on digitising the corporate-to-corporate (B2B) information flows such as purchase orders, shipping documents and invoices.

Whereas the corporate-to-corporate space, including the logistics space, was moving fast towards digital processes, the corporate-to-bank and bank-to-bank spaces remained wedded to their established paper practices. The only notable development during two first decades of the 21st century was (1) banks starting to roll out their own single-bank portals to address their clients' needs for online trade finance services and (2) bank-agnostic platforms emerging to bring innovative services such as supply chain finance.

Banks are betting big on data technologies

Fast forward to 2019 and the situation is very different as recent technologies such as cloud platforms as well as data sharing technologies known as Distributed Ledger Technology (DLT) have invaded all three key spaces of the trade finance market: corporate-to-corporate, corporate-to-bank, and bank-to-bank.
Among new technologies, DLT has emerged as the strategic data sharing and communications infrastructure for transaction banks. Use of DLT started primarily in the bank-to-bank space but quickly expanded to the corporate-to-bank space, thereby enabling transactions to be tracked on the blockchain from start to finish.

DLT as the new technology for innovation

The various consortia that banks have set up represent huge opportunities to grow trade finance volumes whilst increasing efficiency and decreasing operational costs – thereby increasing trade business margins. Whereas digitisation was traditionally implemented within bilateral relationships, blockchain technology brings all parties together to enable them to re-invent trade business processes. DLT has definitively reached the status of preferred infrastructure technology for innovating in trade and trade finance.

Specialisation will make the difference

By focusing on specific value propositions, the blockchain consortia have the ability to re-invent and operationalise business processes in an end-to-end way, giving full visibility of the data and associated opportunities associated with each transaction. They can sometimes even re-invent business processes from the start. Business specialisation is sometimes combined with a regional focus. We believe this is a winning formula for consortia to adopt.

Now comes the time for market-wide innovation in trade finance

Digitising trade and trade finance is a very long journey. Most digitisation initiatives in trade have delivered tangible value but never succeeded to scale. Now comes the time for blockchain-based innovations such as the multi-bank consortiums mentioned in this paper to scale at global level.

A major factor in scaling digitisation and underpinning its success will be the creation of networks. These can be understood as eco-systems in which different commercial applications and

entities (banks, non-banks fintechs, altfins …) can interact freely though common standards and network services such as digital notaries and legal identifiers. There are very promising initiatives in this area with the vocation to create an internet for digital trade. Associations such as ITFA and the ICC are also working on standards and rules with industry-wide applications.

We believe that by 2025 we will see a thriving community of DLT enabled trade finance business with significant and meaningful milestone achieved before then. All aboard!

Sean Edwards,
Chair, ITFA

Andre Casterman
Chair, Fintech Committee, ITFA

2.3 Consortia/Networks

2.3.1

Open Account Trade

Open account trade, an increasingly popular method reportedly accounting for 90% of trade volume, places the financial burden on the exporter. To overcome the risks associated with this financial burden, exporters often seek external sources of financing. Without DLT, these alternative financing solutions, more often than not, eliminate the visibility into trade deals that banks traditionally need to know at which key points to step in and provide value. Through establishing themselves as key first movers in the DLT space, banks, joining forces to form value expanding consortia, are seeking to attract customers looking to reap the benefits of DLT on trade finance.

we.trade

we.trade Innovation DAC is a joint-venture company owned by 12 European banks. It started with nine banks in January 2017 under the name of Digital Trade Chain and later officially changed to we.trade at SIBOS in October 2017.

Together with IBM, we.trade has developed a digital trade platform based on Linux Foundation's Hyperledger Fabric to run on the IBM Blockchain Platform. The platform is built to simplify the trade finance processes by digitalizing the management, tracking and security of domestic and international trade transactions. we.trade is the first blockchain-based trade platform for banks and their commercial clients in Europe.

In October 2018, Ex-Batavia Consortium Banks, Caxia, Erste, UBS join as shareholders. In March 2019, we.trade and HongKong based eTrade Connect completed a successful PoC to connect platforms.

CaixaBank, Deutsche Bank, Erste Group, HSBC, KBC, Natixis, Nordea, Rabobank, Santander, Societe Generale, UBS and UniCredit are the participating banks of we.trade while UniCredit AG in Germany and Eurobank are licensee banks.

Marco Polo

The Marco Polo consortium, powered by R3's Corda DLT platform, consists of over 20 banks comprising a global reach. The fundamental aim of the network is to facilitate trade and working capital finance solutions. This namely includes receivable finance, factoring, and payment commitment with and without financing. It also provides secure, distributed data storage and bookkeeping, identity management, and asset verification among other features.

Open APIs and legacy system compatibility allow banks to easily integrate to their corporate clients with their ERP systems. This helps to limit internal disruption and eases communication with enterprise clients. The first transaction on Marco Polo was conducted in March 2019.

Currently, ING, Commerzbank, BNP Paribas, AngloGulf Trade Bank, NatWest, Natixis, Bangkok Bank, Standard Chartered Bank, OP Group, SMBC, DNB, Danske Bank, LBBW, Intesa Sanpaolo, Crédit Agricole, Banco Bradesco, Alfa-Bank, BayernLB, Helaba, S-Servicepartner, Raiffeisen Bank Internationa, Banco Bradesco, are officially part of the Marco Polo Network.

2.3.2

Commodities

Commodities have always been difficult and complex products to finance. They typically have low margins and goods are traded cross border in jurisdictions where there may be a lack of trust between counterparties. These facets inherently raise the risk of such transactions, contributing to many financiers hesitation to work with new or growing companies. DLT's cost reducing promise will increase margins while its deterministic trust structure will allow firms to partake in transactions that they previously would not have even considered. In the marketplace today, there are two major DLT networks operating in the commodities space.

Komgo

komgo is a live commodity trade finance digitization tool built on the Quorum blockchain infrastructure. Through the komgo network banks, traders, and all other participants are able to transact off the same secure software. This simplifies and secures the process and bring a level of scalability that was previously not possible.

The main features of komgo include several digital trade finance related products (including LCs, SBLCs, receivables discounting and inventory financing), allowing commodity houses and other players to submit digital trade data and documents to financing institutions and apply for credit directly on the platform, and a KYC solution, standardizing and facilitating the process while maintaining privacy by transmitting data on a need to know basis: users can now benefit from a single source of trust to exchange documents on a secure and private network to perform KYC tasks. The first transaction on the komgo platform was announced in December 2018.

Vakt

Vakt, powered by Quorum, is a blockchain based post-trade platform designed for the oil industry. As a post trade platform, it connects key parties to trades allowing them to handle every step between the initiating trade and final settlement. This includes deal recap, confirmation, contract, logistics, and invoicing. Essentially, Vakt's management of the post trade cycle eliminates reconciliation and paper-based processes. Partnering with Komgo's commodity trade financing network, Vakt will concentrate on the actual raw material transaction, allowing for deals to be processed through the platform. It was originally launched in 2018 by nine of the largest players in global energy commodities trading. Since its launch, it has grown to 12 major shareholders, seven of whom it shares with the Komgo network.

2.3.3

Shipping and Freight

The logistical operations behind the movement of goods from one location to another is frequently cited as being ripe for innovation. The process can include a large number of stakeholders including the importer, exporter, customs authorities, port facilities, shippers, and NVOCCs to name but a few. Currently, each of these entities maintain their own independent record of the activities, which must be manually reconciled upon the receipt of physical documents. This injects unnecessary costs into the supply chain while fostering the potential for logistical delays in delivery. DLT is frequently touted as a means of eliminating these costs, creating value in the process. Two major platforms are seeking to implement solutions in this area.

CargoX

CargoX is an independent supplier of an on-chain bill of lading (B/L) powered by the Ethereum network. Additionally they have created a Blockchain Document Transaction System (BDTS) open source protocol to tokenize, encrypt, and transfer the B/L along with any additional documents required for trade processes. Additionally, the system API is enabled for integrations and its inter-operable with other blockchains, meaning it can be integrated into other ERP systems to supplement their functionality.

In addition to the promised cost savings for creating the B/L, CargoX will also speed up the process, reducing 5-10 day document transport times to mere seconds. Furthermore, the lack of physical documentation significantly reduces the courier costs associated with transferring the documents between multiple stakeholders and eliminates the costs of filing paper.

TradeLens

Formed in August 2018, TradeLens, jointly owned by IBM and Maersk and powered by the Hyperledger Fabric blockchain, is a trade platform for containerized shipping, connecting the entire supply chain ecosystem. The current TradeLens ecosystem consists of various organizations including carriers, ports, terminal operators, and freight forwarders. Document and event creation and management can be handled on native systems through open API access, or by accessing the built-in user interface. The platform is designed to facilitate end to end supply chain shipping and documentation, which involves a large number of diverse parties. Each transaction and event, however, is recorded with privacy at the forefront, restricting visibility to authorized parties on the channel.

2.3.4

Letters of Credit and E-Bills of Lading

The digitization of traditional tools like the Letter of Credit and Bill of Lading are being investigated headlong. Prior to DLT development, tools such as Bolero's e-Bill of Lading (eBL) and Commerzbank's Bank Payment Obligation (BPO) have sought to do just this. They have received some, but limited traction along the way, failing (to date) to achieve the network effects necessary to drive value. Currently, two major consortia are investigating applying DLT to help tackle the issue and quell digitization concerns.

eTrade Connect

eTrade Connect is an Asia-Pacific consortium managed by the Hong Kong Monetary Authority and powered by Hyperledger Fabric. Launched in September 2018, the consortium aims to build better trust among trade participants, improve efficiency, reduce risks, and facilitate trade counterparties to obtain financing by digitising trade documents and automating trade finance processes. Since its launch, eTrade connect has grown to 12 banks and signed a memorandum of understanding with the European we.trade consortium operating on the same underlying technology. While primarily focusing on the Asia-Pacific region, this partnership may help open a corridor between Asia and Europe.

Voltron

Voltron is coalition over 50 banks and corporates delivering a Corda-powered open industry platform to create, exchange, approve, and issue L/Cs. The platform, currently accessible to all customers of member banks, will enable banks to provide faster service levels, financing decisions, and lower rates to their customers. In addition to Voltron created documents, trade documents produced on external networks by a corporation's supply chain partners can also be digitally sent, verified, and processed in Voltron.

Launched in October 2018, this globally reaching consortium completed its first transaction in April 2019.

3 Gartner Hype Cycle

The Gartner hype cycle serves as a tool to help decision makers and investors gauge the actual current state of a technology in a given domain, separating its real-world utility from its surrounding hype and disillusionment. The cycle was first introduced in 1995 and has since served as an accurate representation of the typical progression of an emerging technology. There are two fundamental lessons that can be garnered from the hype cycle. Firstly, enterprises should not invest in technologies just because they are being hyped. Secondly, enterprises must be wary to discredit technologies simply because they are not living up to this early over expectation. Visually seeing where a technology for a given domain lies on the hype cycle curve, allows decision makers to quickly determine if the technology is currently experiencing overhype or disillusionment. Leveraging this knowledge will help in making sensible business decisions. Our notion of where DLT in the trade and shipping domains lie, is shown in Figure 2 overleaf.

Trade

Based on a detailed analysis of market events on the DLT space for trade, we have determined that today, trade has reached the far side of the peak of inflated expectations, looming just ahead of the trough of disillusionment. Our analysis predicts that DLT in the trade space will reach the plateau of productivity in 5-10 years.

Shipping

The development of DLT in the shipping space came shortly after DLT in the trade space, and has followed a similar pattern of events ever since. Based on this we have determined that shipping today also lies just beyond the peak but still sits slightly behind the trade domain. Similar to trade, DLT in the shipping space is expected to reach the plateau of productivity in 5-10 years.

In the subsequent sections we will justify why we have identified these points, highlight what key milestones may lie ahead, and identify some fundamental advancements that need to be made to facilitate the push to mass adoption.

3.1

How did we get to where we are?

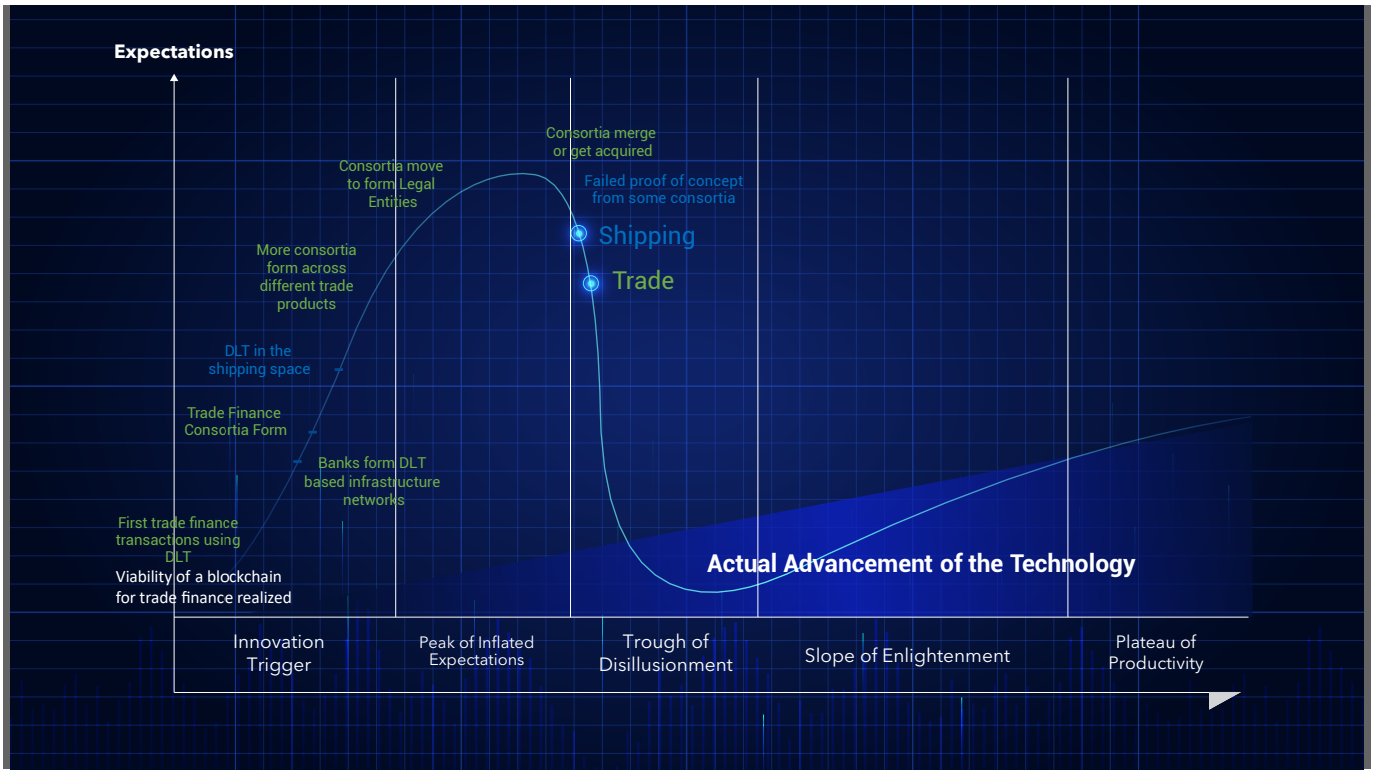


Figure 2. Our indication of the current position of DLT for trade and shipping on the hype cycle curve, supported by past events.

For DLT as related to both the trade and shipping domains, the technological trigger occurred in the years following the inception of blockchain in 2009. These years were ripe with talks surrounding use cases for the technology, with no products yet to exist.

With respect to trade, hype started to grow in September 2016 when Barclays and Wave completed the world's first blockchain transaction. This milestone breakthrough was closely followed by JP Morgan forming an interbank information network using the Quorum infrastructure in October of the same year. The following year saw the formation of the we.trade and Marco Polo consortia in January and September respectively.

The shipping-specific DLT domain gained hype in a similar fashion a few months after the trade domain. TradeLens and CargoX were both launched in January 2018, with Voltron following in June with their first successful transaction. Each of these highly-specialized first generational products, with limited practical use are highly representative of the rising hype phase of the hype cycle.

At the peak of inflated expectations, the number of providers grows and many of the enterprises begin to alter their business strategies for the technology. Vakt and Komgo formed in August of 2018, and many of the other consortia formed earlier began the process of themselves becoming legal entities around this time. Near the end of the peak, acquisitions and failures begin to occur. Batavia merges with we.trade in October 2018 and reports emerge that the TradeLens network is struggling to gain traction.

3.2

What is coming?

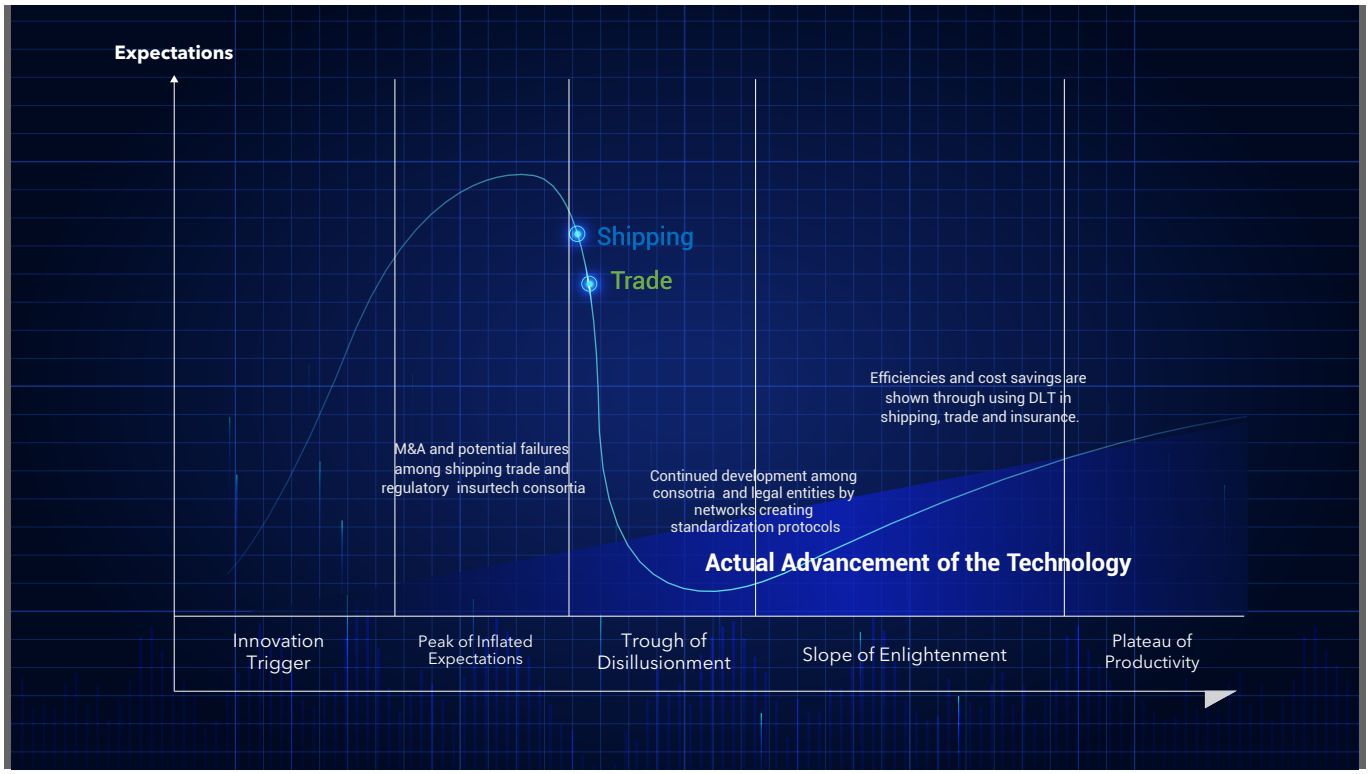


Figure 3. Our prediction of key future events that will facilitate movement along the hype cycle curve.

Following the Hype cycle model, there are some deceptively dark times over the horizon for DLT in the trade and shipping spaces. Early stage trials, successful on a small scale, may struggle when bringing the technology to a larger scale. These necessary minor shortcomings will be disproportionately cited in the media, rapidly discrediting the technology and bringing the hype to the depths of the trough of disillusionment. On the way down more failures and further consolidations may occur while developers work with early stage feedback to create enhanced versions of the technology. During this decline, later-stage investors may be interested in providing funding, capitalizing on the relatively inexpensive equity available following the hype micro-bubble bursting.

While all this media downturn is occurring on the surface, developers and designers will continue to toil away at improving the technology. Over time, the merit of the technology itself, and it's real ability to hold a positive impact on the industry will gradually be realized, pulling it up the slope of enlightenment. After gathering traction as an enterprise solution for shipping and trade, media hype surrounding DLT in these industries will come to an end, bringing with it an end to the hype cycle.

3.3

What needs to be done?

3.3.1 Regulation and Legal Challenges around Digitization

The superimposition of DLT into the trade and shipping space naturally brings about a major step towards the digitization of trade. The process of trade digitization, however, is still traversing a legislative grey area. In many jurisdictions, including the USA, there are currently no regulations or laws that recognize electronic negotiable instruments in lieu of their written counterparts. Overcoming this immense operating hurdle will be a key initiative to reaching the full potential of DLT in the trade space.

A working group spearheaded by R3, BAFT, and Shearman & Sterling LLP has delved into this issue and recommended a handful of potential solutions. The short-term solution recommended, and currently employed by several consortia, is to inextricably intertwine a written 'Rulebook' with the digital platforms, defaulting any disputes to the legally recognized writings.

The ideal final state proposed by this working group is to amend the legislation itself. They estimate that the timeline between preparation and enactment for such an endeavour will span years. To further complicate matters, in an international trade ecosystem, platforms must abide by the legal limitations of every operating jurisdiction. This may require the legislation of several different countries to be altered. A prerequisite to this potentially necessary alteration would be a certain degree of standardization within the industry, particularly with regards to the future vision of the legislatively relevant aspects of the field.

3.3.2 The Evolution of Technology in Trade

Why Distributed Platforms and Networks can achieve global scale and adoption previously impossible with Legacy Technologies, Architecture, and Business Models.

Until the early 2000s, enterprise software was deployed almost exclusively as a single instance in data centers and servers on premise. While these "on-prem" software systems may be suitable for managing internal processes and tasks, they introduce tremendous amounts of cost, risk, and complexity when it comes time to transact and share data with parties outside of the on-prem systems. Each new connection requires a bespoke integration and moving data between systems introduces significant reconciliation challenges and place hard limits on business models.

A wave of new players began emerging in the early 2000s that attempted to digitize trade and streamline transactions between trading parties by bringing users to central "destination" platforms and networks, primarily offered as Software-as-a-Service. Under this model, participants are able to transact digitally with trade data being stored in a centralized database, owned and operated by a third-party vendor.

While these destination platforms make it easier for participants to transact, they introduce issues around data custody, residency, control, and privacy because a single third-party controls and manages all data. Moreover, users are unable to transact across destination platforms. Moving data and facilitating transactions between destination platforms and networks is still costly, complex, bespoke, and risky. Hundreds, perhaps thousands, of such destination platforms and networks exist on the market today, meaning trade remains heavily fragmented and the technology systems that support it are still siloed and largely disconnected.

In the past years, leading institutions and industry bodies have invested heavily in the application of distributed ledger technology (DLT) in trade finance. Platforms and networks powered by DLT can support and automate multi-party trade transactions without requiring every participant to come to a single destination to transact. Today, however, both on-prem software instances and destination platforms and networks still remain isolated digital islands, whereby trade data and documents on one platform are not easily transferable to other networks. That means treasurers and bankers must still manage a plethora of integrations, systems and processes from an equally diverse number of technology providers and financial institutions leading to portal fatigue.

Networks and platforms powered by DLT allow for new distributed trade finance platforms such as for example the Marco Polo Network. This new "Network of Platforms" have been recently introduced to the market and are growing rapidly in terms of participants. They are based on the concept of connect-once-to-connect-to-many, whereby participants require only one interface and a single integration to transact with all other participants across the network. Instead of a corporate undertaking ten bespoke integrations to connect to their ten banking partners, they must integrate only once to their node. When completed, they can then seamlessly transact and exchange data with all ten of their banks. The same is true in reverse for the bank. The bank must integrate only once to connect seamlessly and transact with all of their corporate clients.

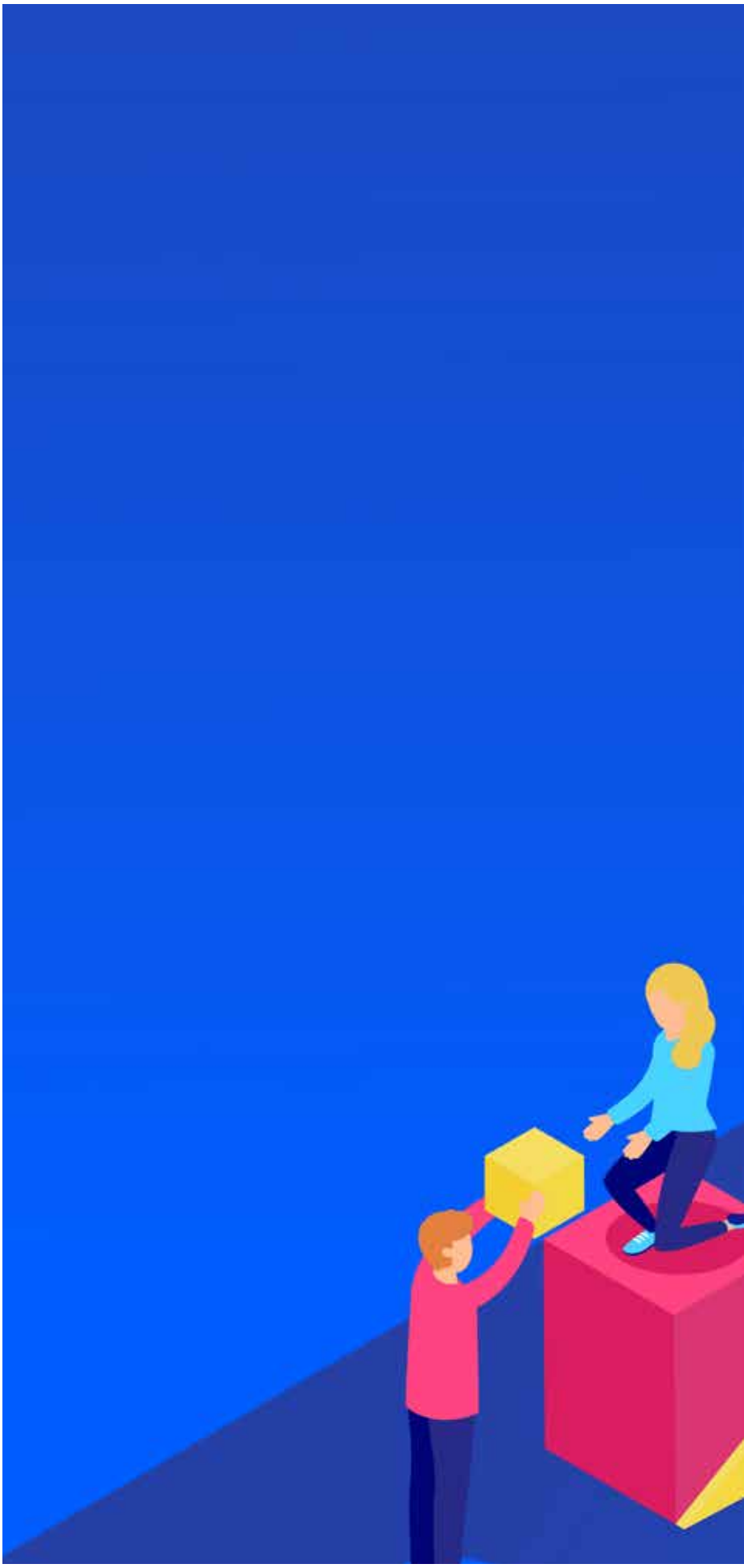
In addition, each participant controls, secures, and manages its own data and maintains

custody over its trade assets. This means each participant is able to comply with all data residency, data custody and regulatory requirements. They can also support many different deployment requirements and configurations, enabling each participant to choose the one that meets both regulatory and organizational requirements.

The potential benefits of these new distributed platforms and networks are being recognized by the trade finance market and growing rapidly as shown by the Marco Polo Network. Today, the industry overall has both the need and the required distributed platforms and networks to work towards the world's first shared and open infrastructure for global trade and all of its related activities.

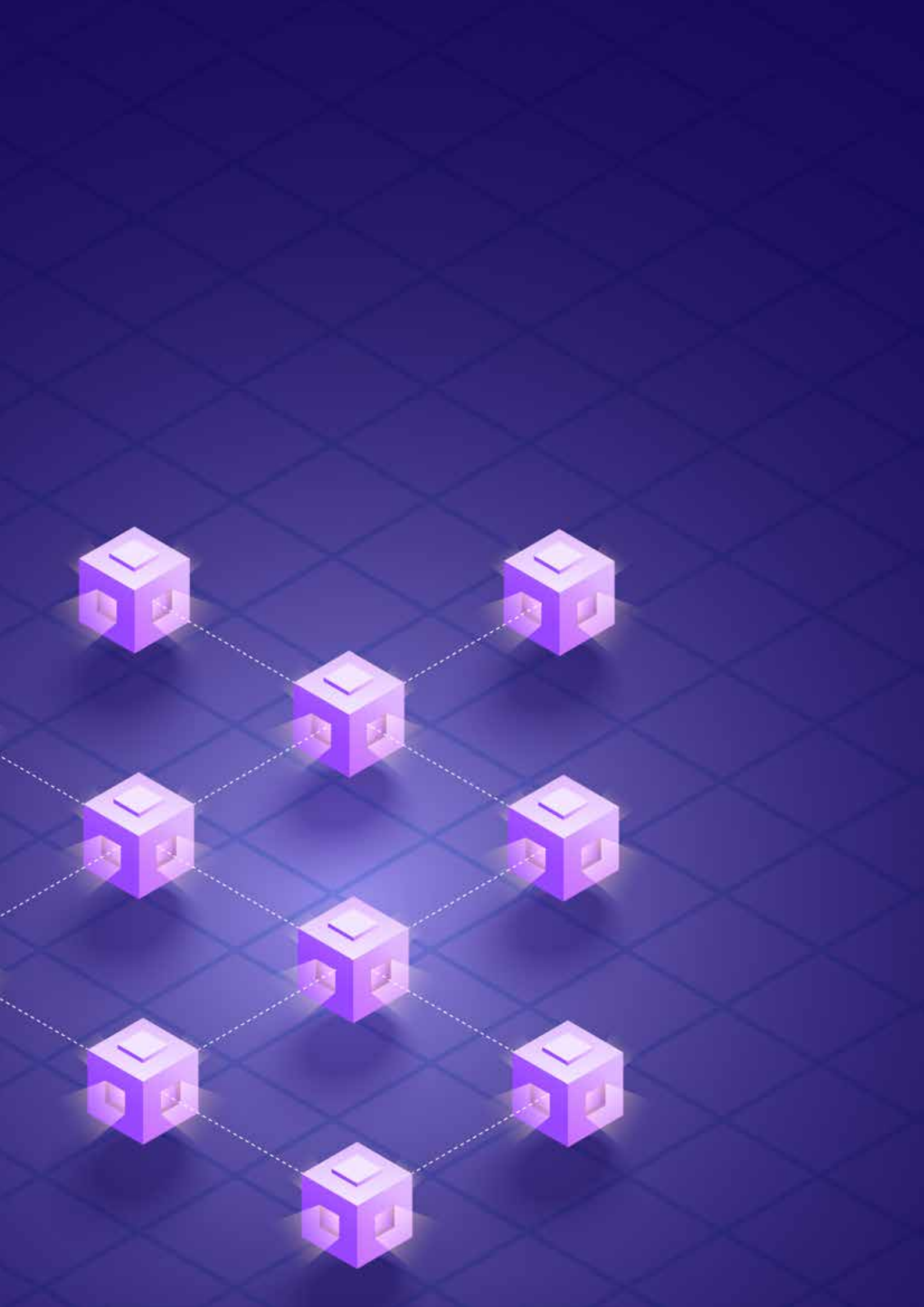
Dave Sutter
Chief Strategy Officer, TradeIX

TRADEIX



4 CONCLUSION

Should DLT in the trade and shipping space continue to closely follow the Gartner hype cycle framework, as most nascent technologies do, then there are likely to be some seemingly dark times ahead. News of failures and consolidations will reach the media and the once utopian narrative will steadily dissipate. However, the narrative is just that: a story. The real, underlying potential and value will remain hidden between the pages, growing stronger with each passing day. This growth, however, will not come without nurturement. Decision makers, investors, and industry experts need to continue to devote the time and resources to developing DLT for the trade space, despite the media facilitated fog of disillusionment that will come. Only by seeing the truth behind the hype will these key stakeholders have the confidence to persevere with their endeavours. The technology is here and the industry is ready, but only the people within can determine how the future will look.



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