

TRADELENS

and the 4th industrial revolution

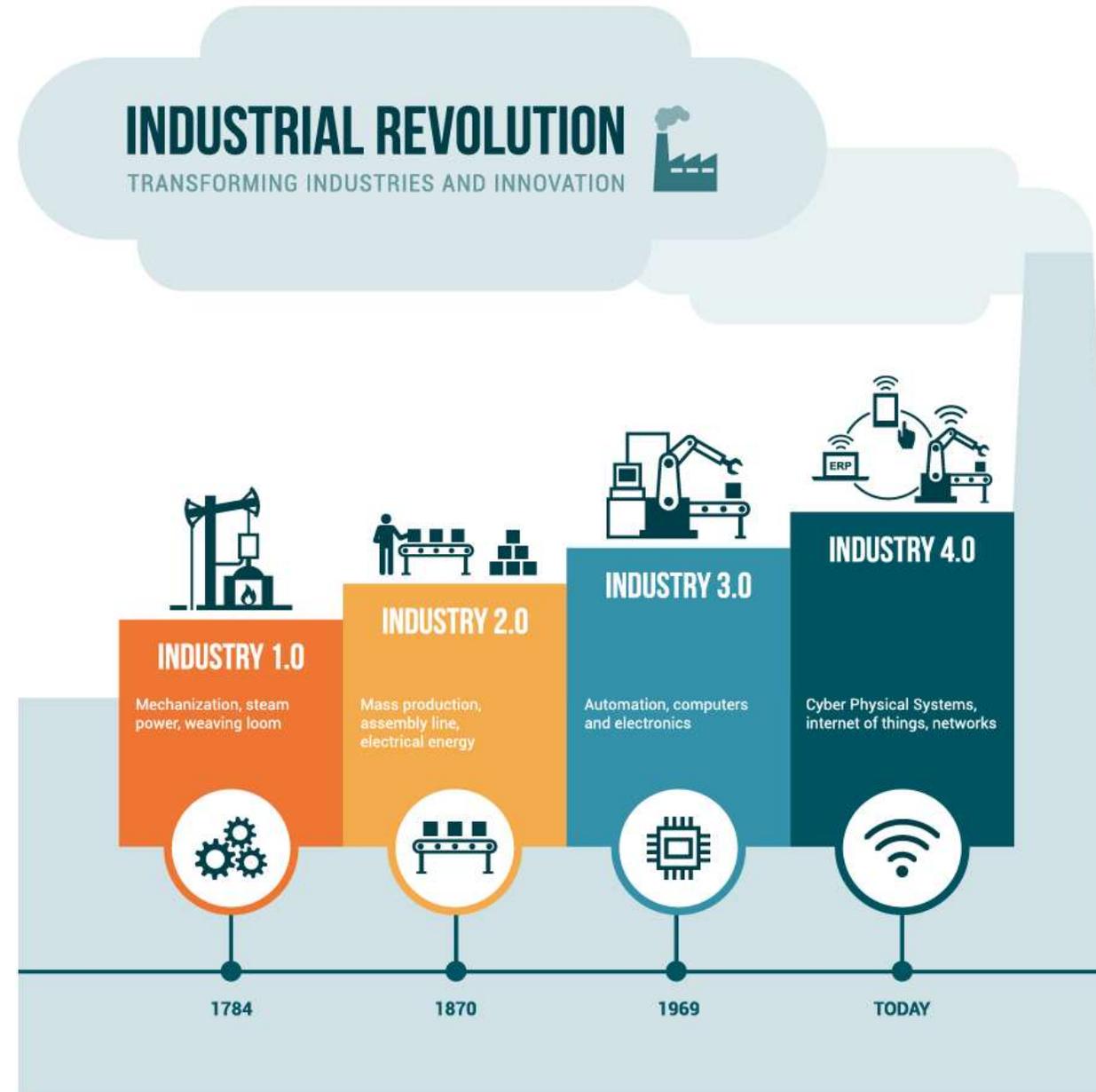
Lima, October 2019

The 4th industrial revolution

- + The 1ST industrial revolution began in the 18th century with water and steam power
- + The 2ND with electricity
- + The 3rd beginning of the third with the internet

The past few decades we have been living in the third industrial revolution in technological development.

The technologies driving the fourth industrial revolution are still in their infancy, but they are here to stay.



How the 4th industrial revolution impact the shipping industry

- + The shipping industry has introduced digital innovations at a slower pace than some other industries. This slower rate of digital adoption could be potentially catastrophic for even the biggest established players in the business
- + The shipping industry is still suffering from some very significant inefficiencies. 50% of trucks travel empty on their return journey after making a delivery
- + Digital transformation can bring important social and environmental benefits by increasing efficiency and support cutting down energy consumption and CO2 emissions

How Blockchain is driving the 4th industrial revolution

The “fourth industrial revolution” has been described by the World Economic Forum as a new era of technology and industry.

A trinity of disruptive technologies is driving this revolution:

- +Blockchain
- +Internet of things
- +Artificial intelligence

TRADELENS

AN OPEN AND NEUTRAL BLOCKCHAIN-POWERED PLATFORM THAT IS DIGITIZING THE GLOBAL SUPPLY CHAIN AND TRANSFORMING TRADE

- + TradeLens is ushering in a new era in global supply chains—one where all parties can collaborate, share data, and realize the benefits of digitization.
- + Data is published directly from the source so the right people can securely manage their supply chain in near real-time.
- + TradeLens breaks down longstanding data and processing silos that exist among trading partners and simplifies the flow of documentation that accompanies every shipment.
- + Currently, the platform handles 13 million events and more than 100,000 documents every week and growing.
- + The platform is being driven by a broad collaboration of industry players under the leadership of IBM and Maersk

GLOBAL TRADE IN NUMBERS



\$16+ TRILLION IN GOODS

ARE SHIPPED ACROSS INTERNATIONAL BORDERS EACH YEAR



80% OF THE GOODS

CONSUMERS USE DAILY ARE CARRIED BY THE OCEAN SHIPPING INDUSTRY



BY REDUCING BARRIERS WITHIN THE INTERNATIONAL SUPPLY CHAIN,

GLOBAL TRADE COULD INCREASE BY NEARLY 15%

GLOBAL TRADE IS HIGHLY INEFFICIENT AND BURDENED BY PAPER-BASED PROCESSES

+ Data trapped in organizational silos

Information is held in paper and various digital formats across dozens of service providers along the supply chain, requiring complex, cumbersome, and costly peer-to-peer messaging. The result is inconsistent information across organizational boundaries, latency in obtaining shipment visibility, and blind spots that hinder the efficient flow of goods.

+ Manual, time-consuming, paper-based processes

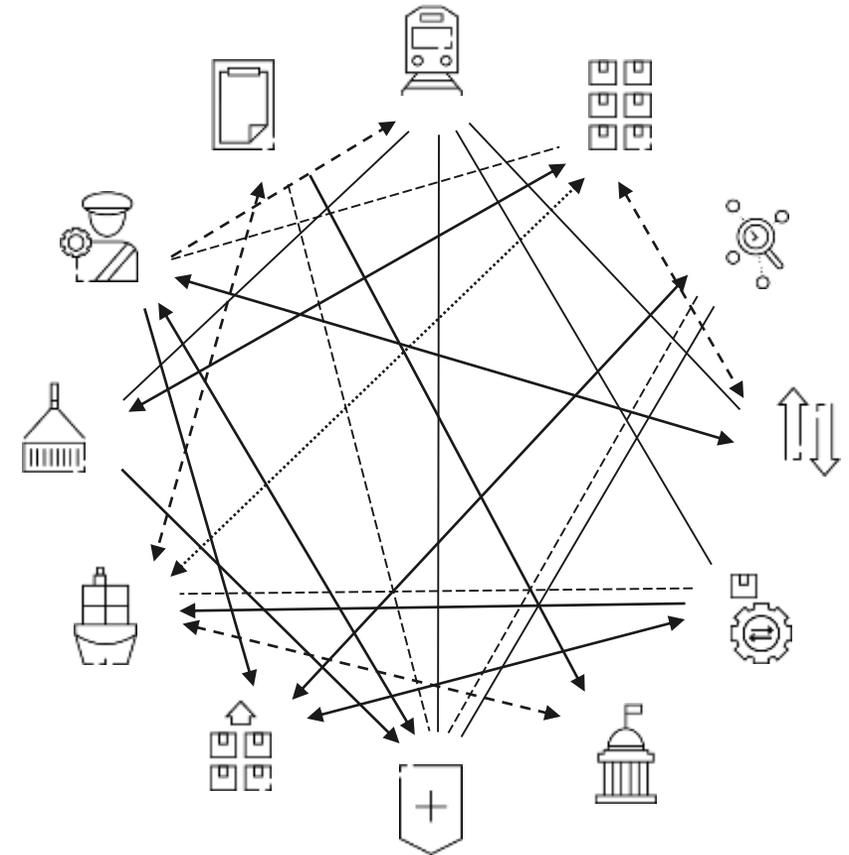
The collection and processing of up-to-date data, as well as inefficient trade document exchange, requires manual checks and frequent follow-ups and results in errors, delays and high compliance costs. Late filings are common due to missing information.

+ Clearance takes too long and is often subject to fraud

Risk assessments by customs authorities lack sufficient and trusted information resulting in high inspection rates, added prevention measures against fraud and forgery, and delayed customs clearance.

+ High costs and poor customer service

These challenges have significant downstream repercussions. The inability to forecast and plan effectively, address supply chain disruptions in near real-time, and share trusted information across the supply chain leads to excessive safety stock inventory, high administrative costs, operational challenges, and ultimately poor customer service.



OUR MISSION

DIGITIZE THE GLOBAL SUPPLY CHAIN

+ Connect the ecosystem

Bring together all parties in the supply chain - including shippers, freight forwarders, intermodal operators, ports and terminals, ocean carriers, customs and other government authorities, and others - onto a blockchain-based platform with a secure permission and identity framework.

+ Drive true information sharing

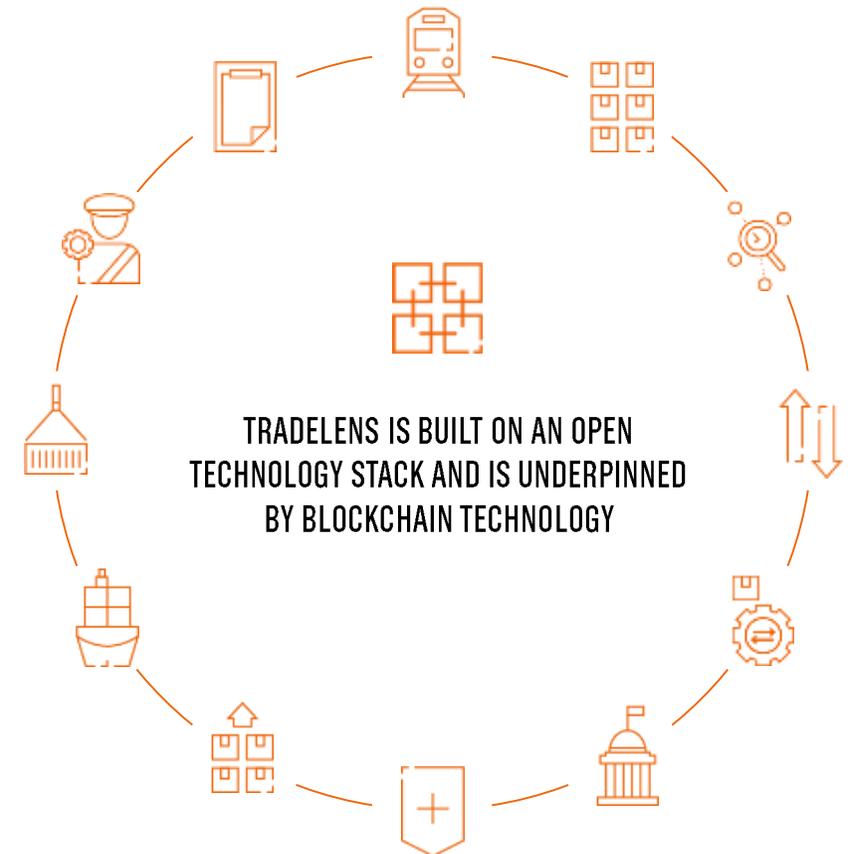
Provide for the seamless, secure sharing of near real-time, actionable supply chain information across all parties to a trade - encompassing shipping milestones, cargo details, trade documents, the structured data embedded in trade documents, customs filings, sensor readings, and more.

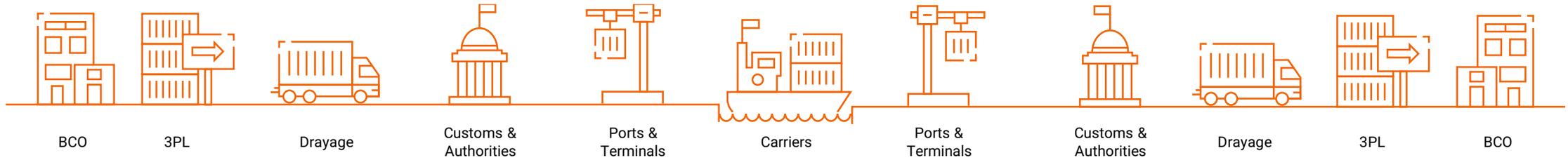
+ Foster collaboration and trust

Enable the digitization and automation of the cross-organization business processes integral to global trade, including import and export clearance, with blockchain ensuring secure, auditable, and non-repudiable transactions.

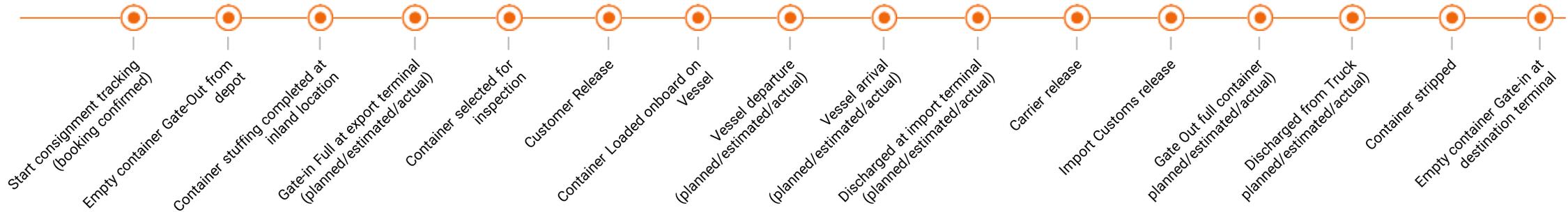
+ Spur innovation

Lay the foundation for ongoing improvement and innovation through an open, publicly -available API, the use of standards and promotion of interoperability, and the launch of an Application Marketplace that parties can use to build and deploy TradeLens-powered applications for themselves, their partners, and their customers





SHIPPING MILESTONES AND SHIPMENT DATA*



STRUCTURED AND UNSTRUCTURED DOCUMENTS*



TRADELENS BLOCKCHAIN BUSINESS NETWORK



* Note: representative sample only of the data on the platform

TradeLens Core

MILESTONES

Data that are precise and accessible to all parties help shipments move faster. TradeLens provides a near real-time publish and subscribe mechanism for exchanging milestone data between the entities that are involved in the shipment.

Importers and exporters who use TradeLens can easily determine the status of their shipments through access to more than 120 shipment event types, communicated directly from the source, including document updates and planned, estimated and actual transport milestones.

Planned

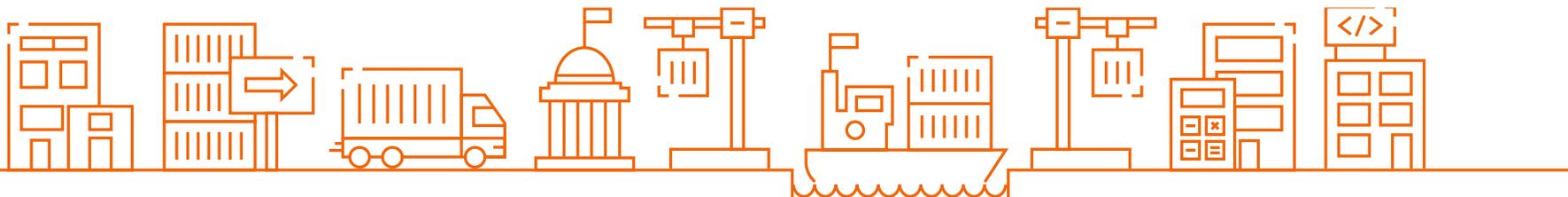
- + Planned stuffing start
- + Planned stuffing completed
- + Planned loaded on truck
- + Planned gate out
- + Planned gate in
- + Planned discharge from truck
- + More...

Estimated

- + Estimated rail arrival
- + Estimated discharge from rail
- + Estimated loaded on barge
- + Estimated barge departure
- + Estimated barge arrival
- + Estimated discharge from barge
- + More...

Actual

- + Actual loaded on vessel
- + Actual vessel departure
- + Actual vessel arrival
- + Actual discharge from vessel
- + Actual stripping start
- + Actual container stripped
- + More...



TradeLens Core

DOCUMENT SHARING

TradeLens provides a framework for sharing documents among trade parties, with security, version control, and privacy. Authorized users with the required permissions can upload, download, view and edit documents. The TradeLens document store allows documents to be securely stored and viewed by various parties to a shipment.

Digitized document benefits

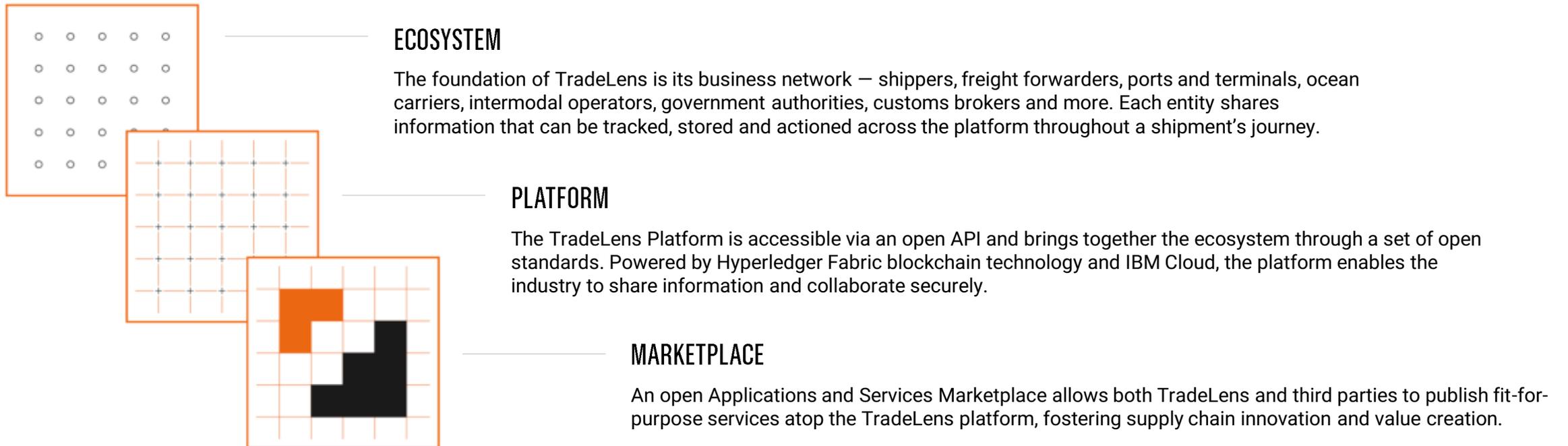
- + Trade documents are associated with containers, and consignments in a distributed and shared repository, eliminating endless file, folder and email searching for information.
- + TradeLens supports the use of structured documents. The information they contain can be easily analyzed and interpreted, allowing for greater automation and accuracy.
- + Each time a document is edited or uploaded to the TradeLens platform, a new version of the document is created and added to the document store, eliminating multiple copies and the inconsistency of identifying the latest versions.
- + TradeLens uses the Hyperledger Fabric permissioned blockchain to guarantee the immutability and traceability of trade documents.
- + Participants assigned to the consignment have default access rights based on a unified permissions model
- + Network participants assigned to a consignment can immediately access shared documents and data, never having to wait for a document to be sent.

DOCUMENTS SUPPORTED ON THE PLATFORM

- + Sea Waybill*
- + Commercial Invoice *
- + Packing List *
- + Booking Request
- + Booking Confirmation
- + Shipping Instructions
- + Export Declaration
- + Bill of Lading
- + Pro-Forma Invoice
- + Arrival Notice
- + Import Declaration
- + Health Certificate
- + Phytosanitary Certificate
- + Veterinary Certificate
- + Fumigation Certificate
- + Inspection Certificate
- + Certificate of Analysis
- + Certificate of Origin
- + Dangerous Goods Declaration

* Structured support

THE TRADELENS SOLUTION



THE TRADELENS ECOSYSTEM

ECOSYSTEM PARTICIPANTS

NETWORK MEMBERS



Ocean Carriers

Provide the transportation plan, information about the status of shipments across the ocean leg, and critical documents such as the BoL; access end-to-end supply chain data in near real-time including events directly from shipper, intermodal, customs and 3PLs



Ports / Terminal Operators

Provide information about the disposition of cargo within the boundaries of the port/terminal; access near real-time information to enrich port collaboration and improve terminal planning



Intermodal Operators

Provide transportation plans and information on the disposition of shipments carried on trucks, rail, barges, etc.; improve planning and utilization of assets given near real-time access to end-to-end supply chain events for shipments



Government Authorities

Provide information about the export and import clearance status for shipments into and out of the country; access end-to-end supply chain information for improved customs clearance and risk assessments

TRADELENS CLIENTS



Shippers/BCOs

Engage with the platform as a consumer of shipping information to improve supply chain management, as a means to collaborate with supply chain partners, and as a way to streamline clearance



Freight Forwarders / 3PLs

Engage with the platform as a consumer of shipping information, a means to collaborate with customers and supply chain partners, and a way to improve customs brokerage capabilities



Financial Services

Engage with the platform as a consumer of supply chain information for a variety of trade finance, insurance, and other purposes to reduce the risk of fraud and increase speed and flexibility to customers

OCEAN CARRIERS

The ocean leg is at the heart of a container shipment journey, and as such carriers are the linchpin of the end-to-end information model by providing the booking that links all parts of the journey.

Given the central role that carriers play today in safeguarding and distributing key information and documents across parties to a shipment, they are in a unique position to govern the blockchain network that will transform the industry's information-sharing model.

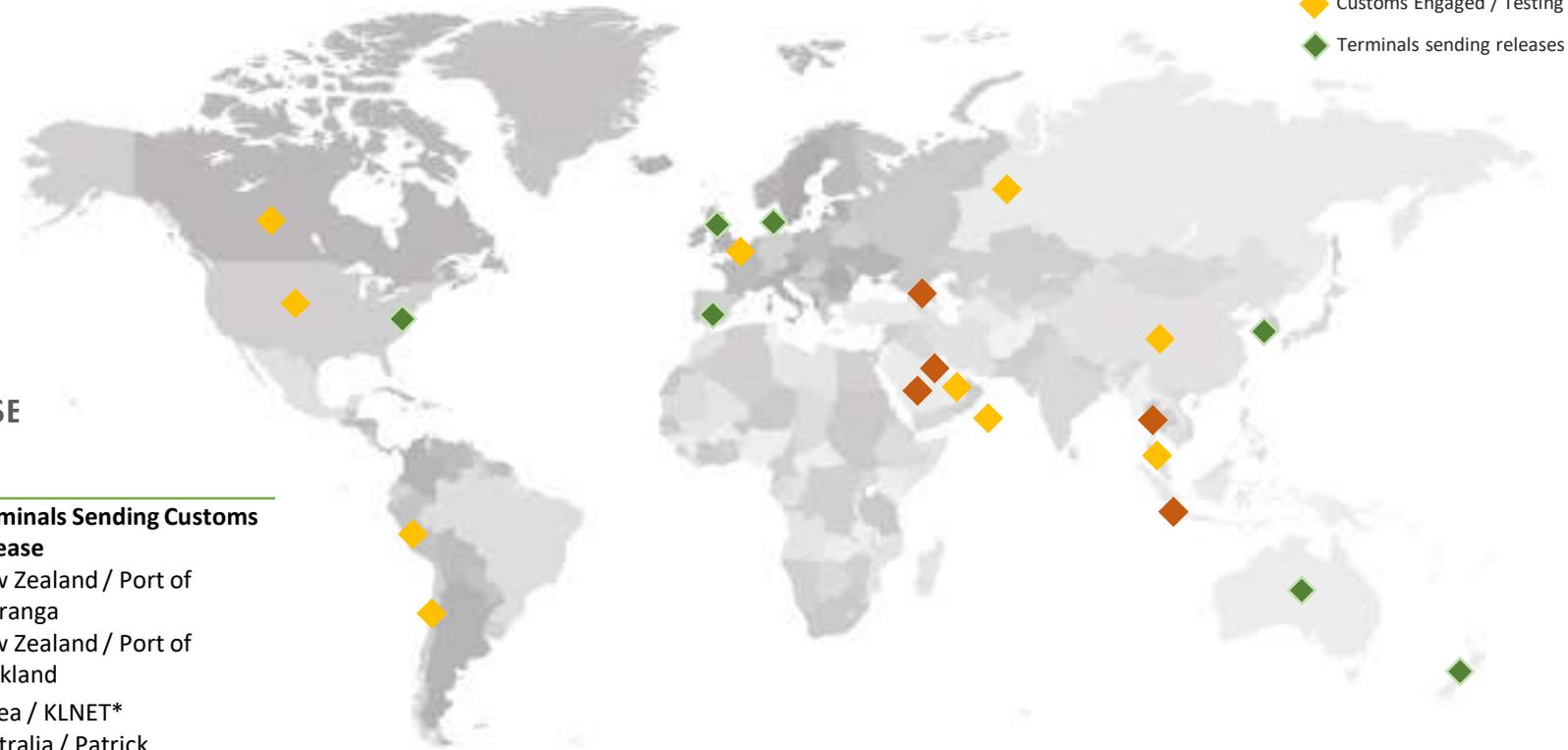
TradeLens is currently in partnership with 17 global ocean carriers*.



* CMA CGM, MSC, Hapag-Lloyd and ONE have agreed to join TradeLens; final on-boarding pending. Speak with your TradeLens representative for a report on current onboarding status.

GOVERNMENT AUTHORITIES

- ◆ Customs Signed / Onboarding
- ◆ Customs Engaged / Testing
- ◆ Terminals sending releases



5 CUSTOMS SIGNED/ONBOARDING
10 CUSTOMS ENGAGED / TESTING
8 TERMINALS SENDING CUSTOMS RELEASE

Countries Signed / Onboarding

- Azerbaijan
- Indonesia
- Bahrain
- Saudi Arabia
- Thailand

Countries Engaged / Testing

- Abu Dhabi
- Canada
- Peru
- Chile
- Netherlands
- China
- USA
- Malaysia
- Jordan
- Russia

Terminals Sending Customs Release

- New Zealand / Port of Tauranga
- New Zealand / Port of Auckland
- Korea / KLN*ET*
- Australia / Patrick Terminals**
- Denmark / APMT Aarhus
- Great Britain / MCP***
- Spain / Port of Algeciras
- USA / Port of Virginia

PORTS AND TERMINALS

Port communities and terminal operators are seeking ways to reduce the cost of connecting partners in the supply chain in order to increase stack placement efficiency and optimize truck and vessel service times.

TradeLens is focused on maximizing the value of these participants by:

- + Reducing the cost of connecting to shipping lines and the broader port community by leveraging an industry standard platform participants are already connected to
- + Simplifying conversational electronic communications of ETAs for all port community participants improves utilization of port assets
- + Enabling advanced communication on aggregated booking volumes and next mode of transport provides better data for stack placement decisions, leading to better truck and vessel service times



* This list of ports and terminal operators is not exhaustive. Speak with your TradeLens representative for a complete list, along with current onboarding status.

PORTS AND TERMINALS STATUS LATIN AMERICA

11 TERMINALS LIVE IN LAM
8 TERMINALS ONBOARDING

Terminal Name	Status	Terminal Name	Status
APM Terminals in Callao Port	Live	Iquique Terminal Int. (ITI)	Onboarding
APM Terminals Lazaro Cardenas	Live	Manzanillo Terminal	Onboarding
Buenos Aires, Terminal 4	Live	Manzanillo, Mexico (SSA)	Onboarding
Cartagena Container Terminal Operator S.A.S. (CCTO)	Live	San Antonio Terminal Int. (STI)	Onboarding
Itajai, Porto de Itajai	Live	Santa Marta Terminal	Onboarding
Montecon Montevideo	Live	Santos, Santos Brasil Terminal	Onboarding
Pecem Port of	Live	Balboa Port Terminal	Onboarding
San Vicente Trm Int. (SVTI)	Live	Brasil Terminal Portuario	Onboarding
TCBUEN	Live	Terminal Zarate SA	Onboarding
Terminal de Contenedores Quetzal	Live		
Terminal Puerto Arica (TPA)	Live		
Valparaiso Terminal	Live		



THE TRADELENS PORT AND TERMINAL NETWORK

- + Coverage across 6 continents
- + 70 ports and terminals directly integrated with TradeLens
- + Data from up to 600 ports and terminals captured by existing TradeLens members

- Ports and terminals directly integrated with TradeLens
- Ports and terminals contributing data via carriers to TradeLens

Interactive map of TradeLens port and terminal network:

<https://www.tradelens.com/ecosystem/>



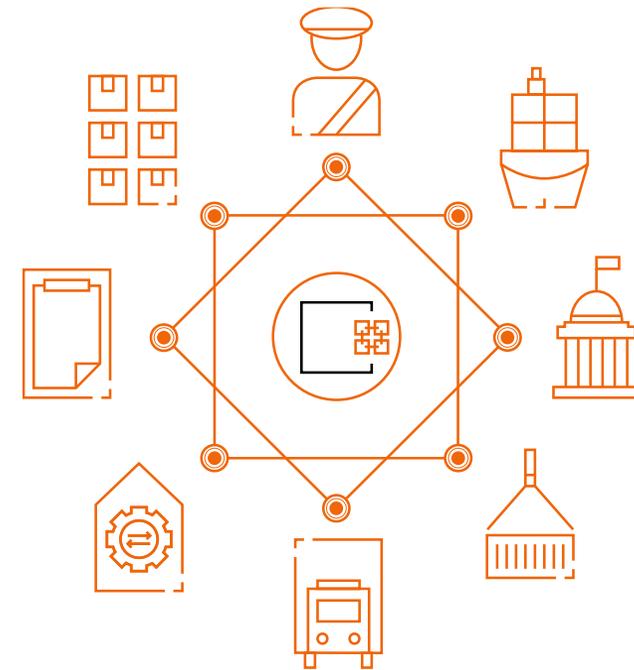
THE TRADELENS PLATFORM

BLOCKCHAIN

The TradeLens blockchain is a shared, immutable ledger that records transactions and tracks tangible and intangible assets. Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.

While the power of TradeLens comes from its members, blockchain enables secure distribution and storage of vital information at the heart of the platform.

TradeLens uses the IBM Blockchain Platform which is based on Hyperledger Fabric, an open-source permissioned blockchain where the peer members ("Trust Anchors") are known to the network based on cryptographic identities.



How the TradeLens blockchain connects the ecosystem:

- + **Tamper-proof recording and non-repudiation** for all data submitted to the solution.
- + **Verifiability** of data against the recorded proof of submission on the blockchain.
- + **Recoverability** of the solution from the data recorded on the blockchain.
- + **Provenance and Auditability.** All transactions are signed and dated on the ledger.
- + **Privacy** of data to ensure that it is only shared with relevant organizations.

DATA SHARING

TradeLens permissions are determined through a combination of the organization’s role and the data type. The TradeLens platform then permits access to data according to the permission matrix.

The full Data Sharing Specification is available [here](#)

	Transport Service Buyer	Consignor	Consignee	Origin 3PL Agent	Destination 3PL Agent	Export Customs Broker	Import Customs Broker	Request Party	Notify Party	Transport Service Provider	Origin Marine Terminal	...
Events												
Planned stuffing start	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Planned stuffing completed	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
Actual loaded on truck	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
Estimated gate out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
Actual gate in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
• • •												
Documents												
Booking Confirmation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
Shipping Instructions	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Bill of Lading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
Sea Waybill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
House Bill of Lading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
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Participant has an obligation to provide (publish) the data, where relevant/applicable Participant has read access (can subscribe) to the data Participant has no access to the data

THANK YOU