TRADELENS

TRADELENS OVERVIEW

20.11. 2019

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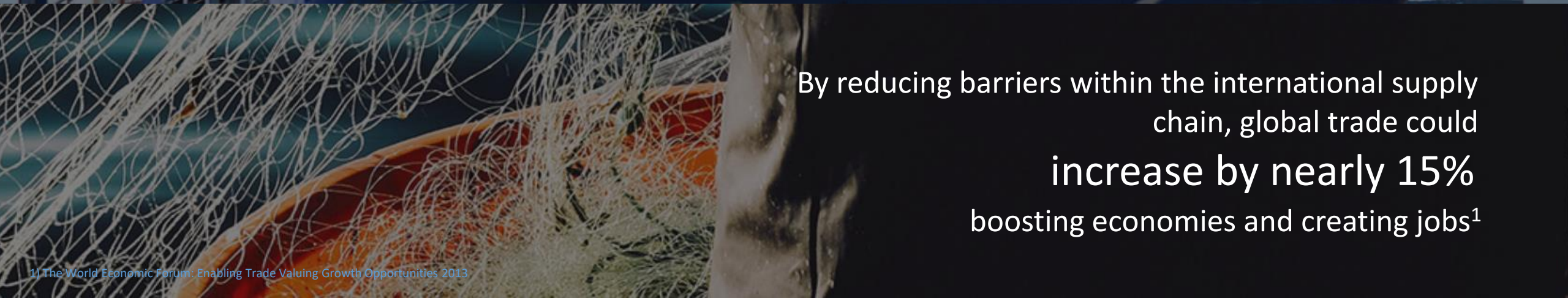
More than

$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%

boosting economies and creating jobs[1]

1) The World Economic Forum: Enabling Trade Valuing Growth Opportunities 2013

THE CHALLENGE

Global trade is burdened with inefficiencies and costly processes

- Data is trapped in organizational silos
- Processes are time-consuming
- Clearance is subject to delays
- Operations are complex and costly

Critical shipping data is held on various paper and digital systems. Inconsistencies, delays and blind spots lead to poor decision-making.

Manual follow-ups result in inconsistent exception handling and audit procedures. High compliance costs often follow.

Customs clearance involves high levels of risk assessment to prevent fraud and forgery, which often leads to shipment delay.

Restricted ability to forecast, plan and share verified information leads to operational challenges and poor customer service.

TRADELENS

A few examples from our pilot illustrate these inefficiencies

A single shipment of avocados from Mombasa to Rotterdam **involves 30 actors, 100+ people, and 200 information exchanges**

- Inconsistent information across organizational boundaries and blind spots throughout the supply chain hinder the efficient flow of goods
- Complex, cumbersome, and costly peer-to-peer messaging
- Manual, time-consuming, paper-based processes
- Risk assessments often lack sufficient information; clearance processes subject to fraud

Pilot shipments from Central Europe to the U.S. resulted in containers being **delayed for 4 weeks** due to lack of transparency and delayed information exchange

- Missing customs documents prevented gate-in at time of arrival
- Pre-announcement to Terminal was not updated in time. Containers arrived on different mode, causing complications for receipt
- Late filing due to miscommunication between exporter and Customs over documentary requirements.
- Containers missed the vessel due to late gate-in, visibility issues and communications delays; as a result the containers were rolled
- Limited visibility over transport plan issues meant inland providers were unable to carry cargo on the expected date

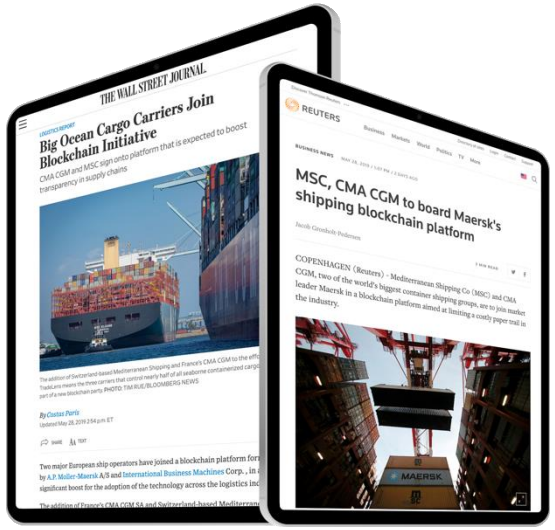
A customer support agent for a freight forwarder may have to **make up to five calls to different parties** to answer a simple location question

- To track a ship or container for the BCO, the Customer Support Agent from the Freight Forwarder may have to call the:
  - Port
  - Carrier
  - Trucking operator
  - Rail operator
- This scenario occurs throughout the supply chain

KEY TAKEAWAYS

- **Data are siloed**
- **Business processes are manual and intensive**
- **Supply chain partners spend too much time chasing information**

OUR JOURNEY



January 2018
Beta release of the platform and launch of Early Adopter Program; trials underway

Ocean carrier additions:
Maersk Line, Safmarine, Hamburg Sud, Sealand join

August 2018
Formal launch of TradeLens

Ocean carrier additions:
PIL, Namsung and Boluda join

September 2018
TradeLens limited-availability release

Ocean carrier additions:
Seaboard Marine and KMTC join

December 2018
TradeLens commercial release; 1.5 million events per day published to the platform; working with more than 100 ecosystem members

Ocean carrier additions:
ZIM joins

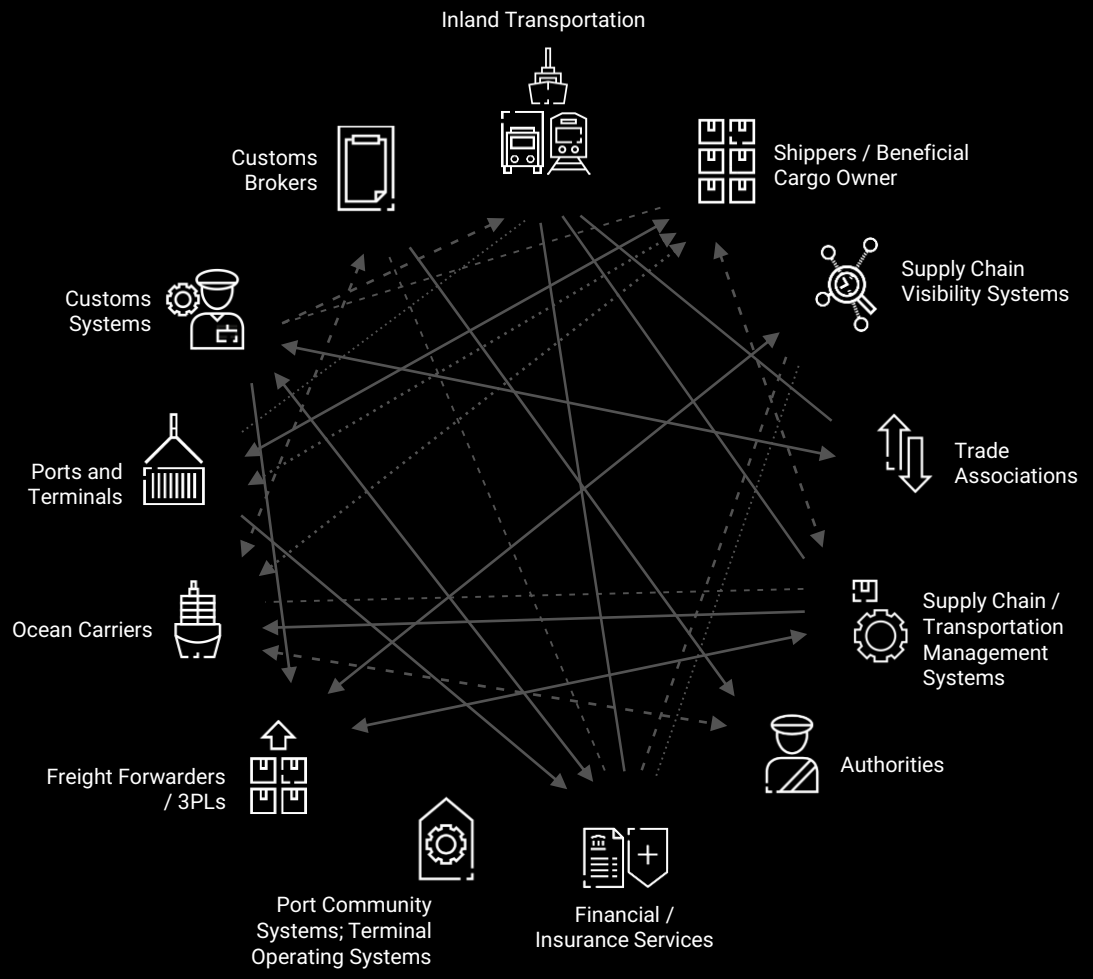
Ocean carrier additions:
CMA and MSC join

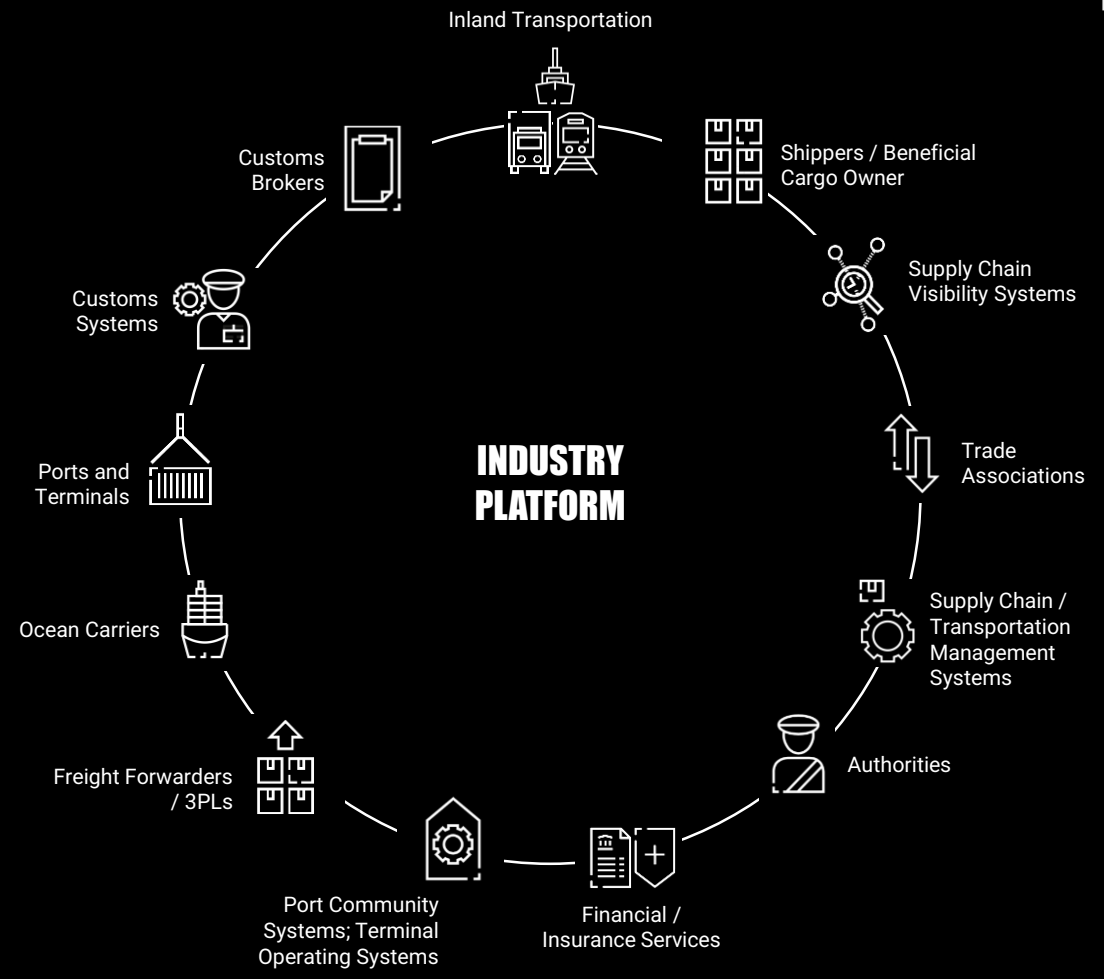
June 2019
Hapag Lloyd and ONE agree to join. Five of the largest six carriers now plan to be on the TradeLens platform by the end of 2019.

Read more

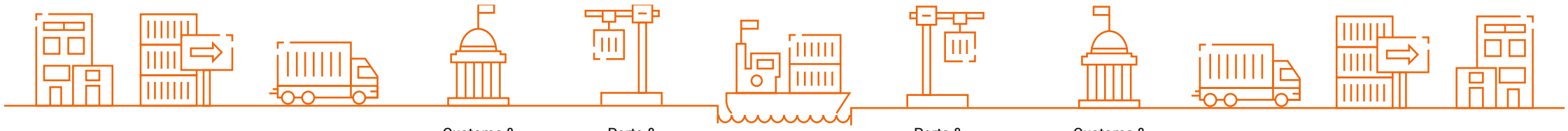
August 2019
TradeLens processing 2 million events per day and 100 thousand documents per week; supporting more than 150 ecosystem members

OUR MISSION

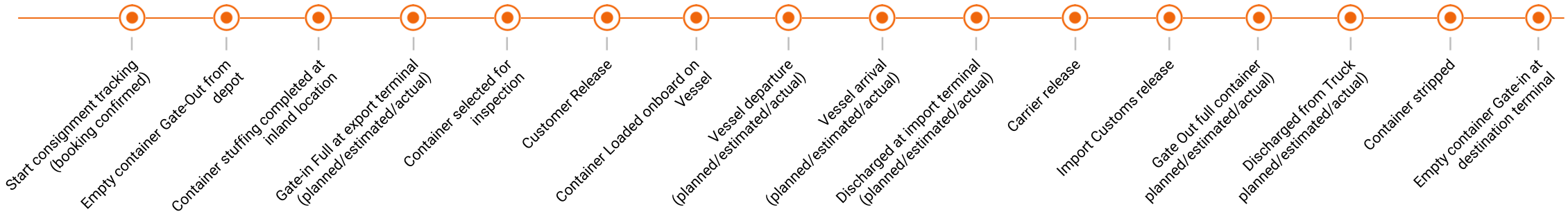




TRADELENS



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

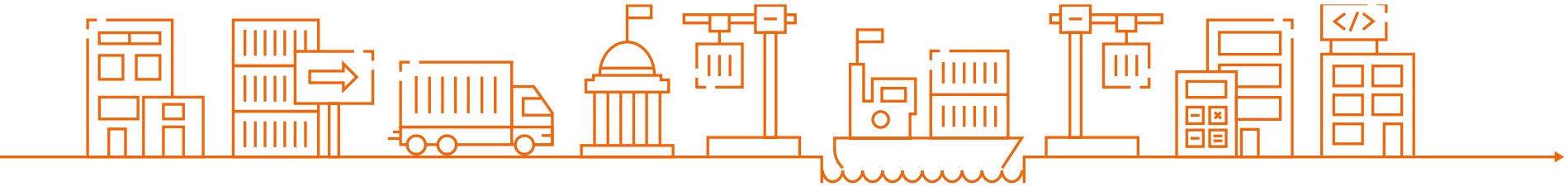
+ Planned stuffing start
+ Planned stuffing completed
+ Planned loaded on truck
+ Planned gate out
+ Planned gate in
+ Planned discharge from truck
+ More…

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 Information Flow

SHIPMENT PLANNING

Event	Source
Start Shipment Tracking	Shipper, 3PL
Add Shipment Reference	Shipper, 3PL
Start Container Transport tracking	Carrier
Add Container Tracking Reference	Carrier
Add Container to Shipment	Carrier
Update Physical Container ID	Carrier
Booking Request Submitted	Shipper, 3PL
Booking Request Confirmed	Carrier
Shipper Updated	Shipper, 3PL
Consignee Updated	Shipper, 3PL
Cargo Type Updated	Shipper, 3PL
Shipping Instructions Submitted	Shipper, 3PL
Packed Container Interchanged	Carrier, 3PL
End Container Tracking	Carrier

ORIGIN INTERMODAL

Event	Source
Packed container sealed	Shipper
Packing list available	Shipper, 3PL
Estimated Loading on Truck	Carrier, Shipper, 3PL
Loaded on Truck	Carrier, Trucker, 3PL
Estimated Gate In	3PL, Trucker, Terminal
Gate In	3PL, Trucker, Terminal
Estimated Discharge from Truck	3PL, Trucker, Terminal
Discharge from Truck	3PL, Trucker, Terminal
Estimated Stuffing Start	3PL, Shipper
Stuffing Started	3PL, Shipper
Estimated Stuffing Completed	3PL, Shipper
Container Stuffed	3PL, Shipper
Estimated Loading on Rail / Barge	3PL, Rail
Loaded on Rail / Barge	Rail, Barge
Rail / Barge ETD	3PL, Rail, Barge
Rail / Barge ATD	Rail, Barge
Estimated Discharge from Rail / Barge	Rail, Barge
Actual Discharge from Rail / Barge	Rail, Barge

EXPORT COMPLIANCE

Event	Source
Export documentation submitted	Customs broker
Export documentation approved	Customs
Customs release	Customs
Dangerous Goods declaration submitted	Shipper
Dangerous Goods request approved	Carrier
VGM submitted	Shipper, 3PL
Geography specific certificate submitted	3PL
Geography specific certificate approved	Customs

ORIGIN PORT

Event	Source
Estimated Gate In	Terminal, 3PL, Trucker
Gate In	3PL, Trucker, Terminal
Estimated Discharge from Truck	3PL, Trucker, Terminal
Discharge from Truck	3PL, Trucker, Terminal
Rail / Barge ETA	3PL, Rail, Barge
Rail / Barge ATA	Rail, Barge, Terminal
Estimated Discharge from Rail / Barge	Rail, Barge, Terminal
Actual Discharge from Rail / Barge	Rail, Barge, Terminal
Estimated Loading on Vessel	Terminal
Do not load	Carrier
Loaded on Vessel	Terminal

OCEAN TRANSPORT

Event	Source
Vessel ETD	Terminal, Carrier
Vessel ATD	Terminal, Carrier
Vessel ETA	Terminal, Carrier
Vessel ATA	Terminal, Carrier
Estimated Loading on Vessel	Terminal, Carrier
Loaded on Vessel	Terminal, Carrier
Bill of Lading available	Carrier
Estimated Discharge from Vessel	Terminal, Carrier
Discharged from Vessel	Terminal, Carrier
Shift-cell	Terminal
Shift-pier	Terminal

IMPORT COMPLIANCE

Event	Source
Advance declaration submitted	Carrier
Advance declaration approved	Customs
Import documentation submitted	3PL
Import documentation approved	Customs
Customs release	Customs
Certificate of origin available	3PL
Cargo specific certificate submitted	3PL
Cargo specific certificate approved	Customs

DESTINATION PORT

Event	Source
Estimated Discharge from Vessel	Terminal
Discharged from Vessel	Terminal
Packed container not selected for inspection	Customs
Packed container passed inspection	Customs
Packed container selected for scan	Customs
Estimated Loading on Truck	Terminal
Loaded on Truck	Terminal, Trucker, 3PL
Estimated Gate Out	Terminal, Trucker, 3PL
Gate Out	Terminal, Trucker, 3PL
Estimated Loading on Rail / Barge	Terminal, Rail, Barge, 3PL
Loaded on Rail / Barge	Terminal, Rail, Barge
Rail / Barge ETD	Terminal, Rail, Barge, 3PL
Rail / Barge ATD	Terminal, Rail, Barge
Terminal release	Terminal
Carrier release	Carrier

DESTINATION INTERMODAL

Event	Source
Estimated Loading on Truck	Terminal, 3PL, Trucker
Loaded on Truck	Terminal, 3PL, Trucker
Estimated Gate Out	Terminal, Trucker, 3PL
Gate Out	Terminal, Trucker, 3PL
Estimated Gate In	Terminal, 3PL, Trucker
Gate In	Terminal, 3PL, Trucker
Estimated Discharge from Truck	3PL, Trucker, Terminal
Discharge from Truck	3PL, Trucker, Terminal
Loaded on Rail / Barge	Rail, Barge
Rail / Barge ETD	3PL, Rail, Barge
Rail / Barge ATD	Rail, Barge
Rail / Barge ETA	3PL, Rail, Barge
Rail / Barge ATA	3PL, Rail, Barge
Estimated Discharge from Rail / Barge	Rail, Barge
Actual Discharge from Rail / Barge	Rail, Barge
End Shipment Tracking	Shipper, 3PL
Seal(s) removed	Shipper, 3PL
Container stripped	Shipper, 3PL

Not all events are represented above

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

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

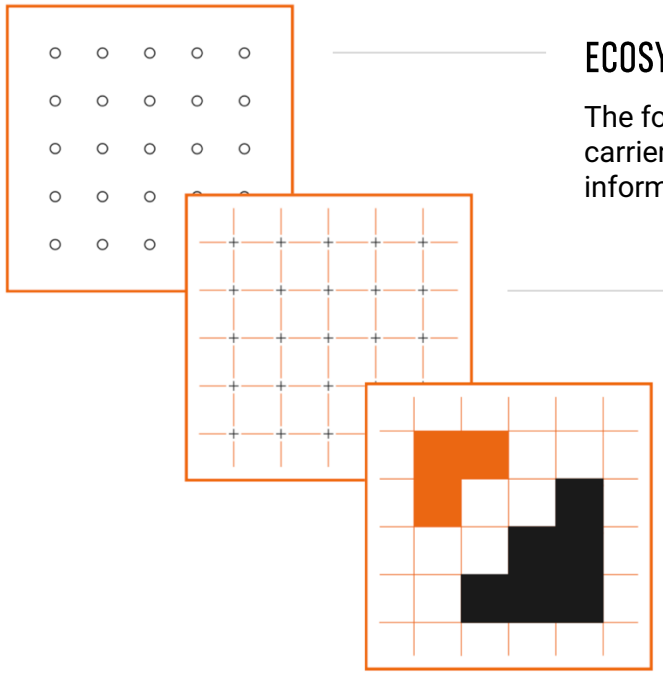
Freight Forwarders / 3PLs

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

THE TRADELENS SOLUTION



ECOSYSTEM

The foundation of TradeLens is its business network — shippers, freight forwarders, ports and terminals, ocean carriers, intermodal operators, government authorities, customs brokers and more. Each entity shares information that can be tracked, stored and actioned across the platform throughout a shipment's journey.

PLATFORM

The TradeLens Platform is accessible via an open API and brings together the ecosystem through a set of open standards. Powered by Hyperledger Fabric blockchain technology and IBM Cloud, the platform enables the industry to share information and collaborate securely.

MARKETPLACE

An open Applications and Services Marketplace allows both TradeLens and third parties to publish fit-for-purpose services atop the TradeLens platform, fostering supply chain innovation and value creation.

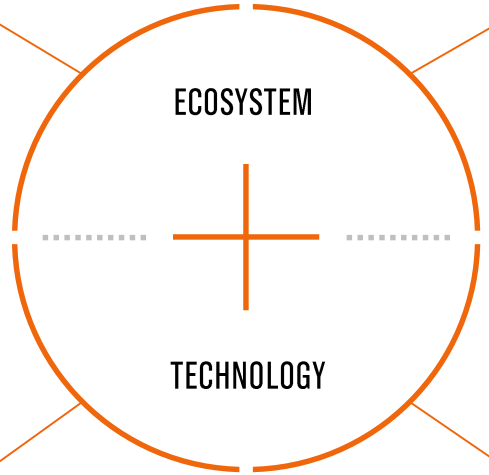
THE TRADELENS COLLABORATION

Network Members

Network Members provide and gain access to end-to-end supply chain information. Network Members include ocean carriers, ports and terminals, customs and government authorities, intermodal operators, data providers and other logistics providers.

TradeLens Clients

TradeLens Clients are the primary consumers and beneficiaries of the platform. TradeLens Clients include shippers/BCOs such as manufacturers and retailers, as well as 3PLs, financial institutions, and others.



IBM and Maersk GTD

IBM and Maersk GTD* are developing, operating, and supporting the platform under a joint collaboration; the TradeLens Advisory Board will help shape the platform and establish open standards.

Development Partners

Development Partners offer value added services to the ecosystem through an application portfolio. The portfolio consists of TradeLens offerings, offerings from Network Members and Clients, and offerings from third parties.

* Maersk GTD is the subsidiary of A. P. Moller Maersk responsible for TradeLens

THE TRADELENS ECOSYSTEM

Ports & Terminals

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

+ 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

Governments

Abu Dhabi Customs
Azerbaijan Customs
Australia Home Affairs
Bahrain Customs
Canada Customs
Dutch Customs
Ghana/GCNET
Peru Customs
Russia Customs
Saudi Arabia Customs
Singapore Customs

3PL AND INTERMODAL

CEVA
SUNBURST TRUCK LINES
IMC
SPIL
LIVINGSTON
GUARANFEEDER
Agility
Satellite
UNIFEEDER
DAMCO
WorldWideAlliance
KOTAHI

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*.

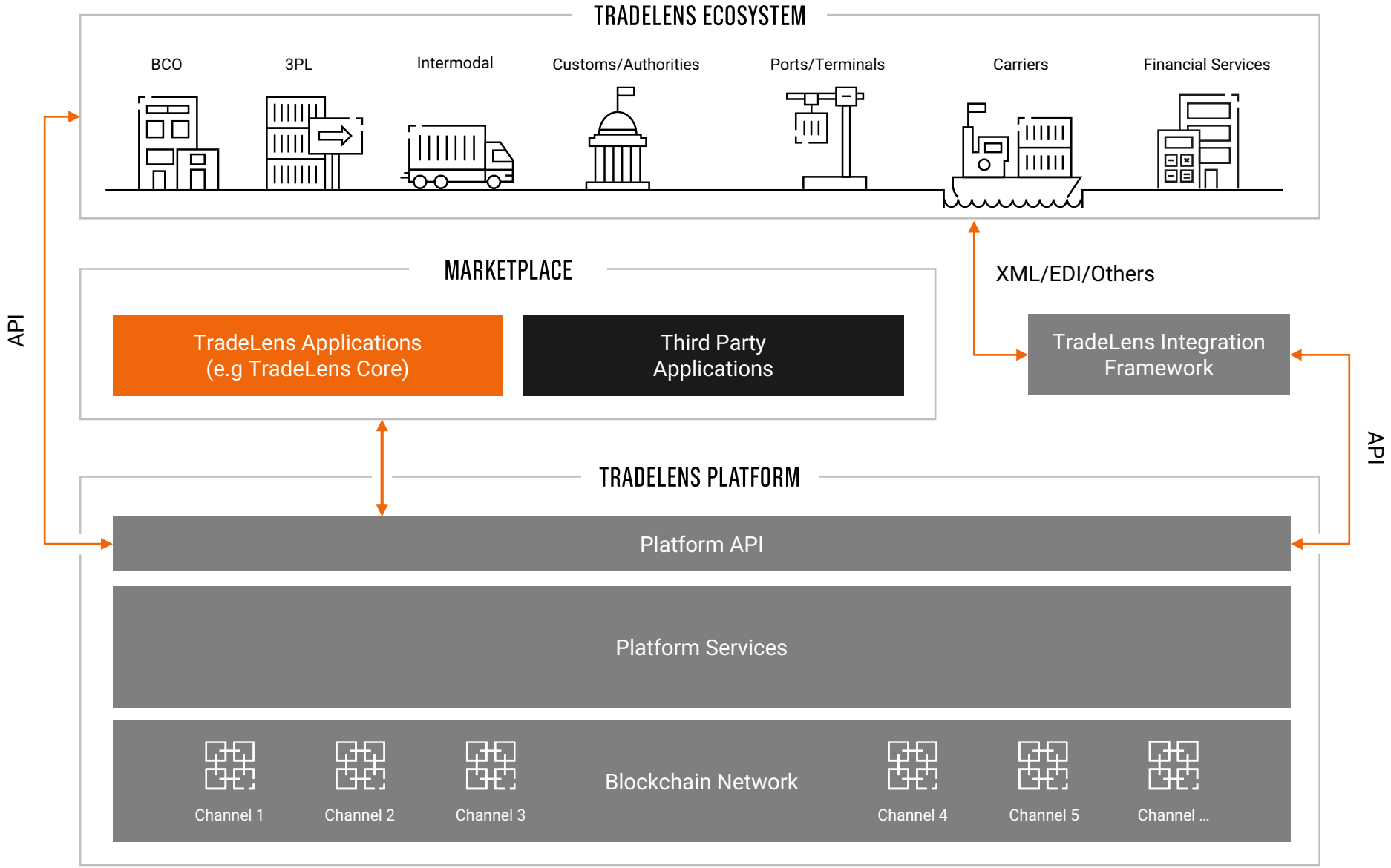
CMA CGM, APL, ANL, CNC, KMTC, ONE (Ocean Network Express), MSC, Seaboard Marine, Boluda Corporación Marítima, PIL, ZIM, Namsung, Maersk, Hamburg Süd, Safmarine, Sealand A Maersk Company, Hapag-Lloyd

DATA ON 60% OF GLOBAL CONTAINER SHIPPING VOLUME

ESTIMATE BY Q1 2020

* 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.

SOLUTION ARCHITECTURE



FLEXIBLE

TradeLens has been developed to be adaptable and simple to use.

APIs

TradeLens is committed to openness, the platform can be accessed using standard, non-proprietary and publicly available APIs that are designed specifically for ease of integration.

WEB

The platform can also be accessed via the web without integration. Users can engage with essential platform features including the search and track functions and document access through a secure SSO web app.

TradeLens Core

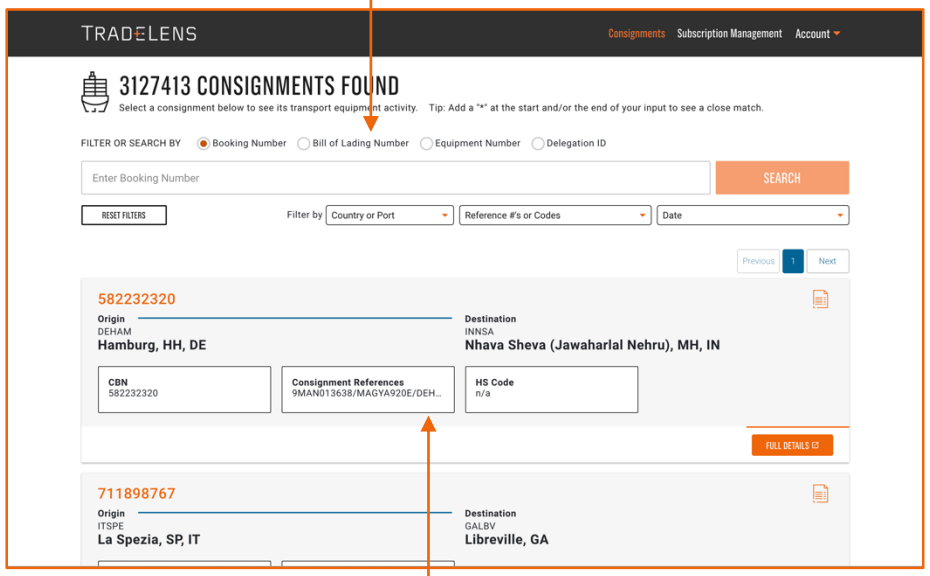
SHIPMENT MANAGER UI

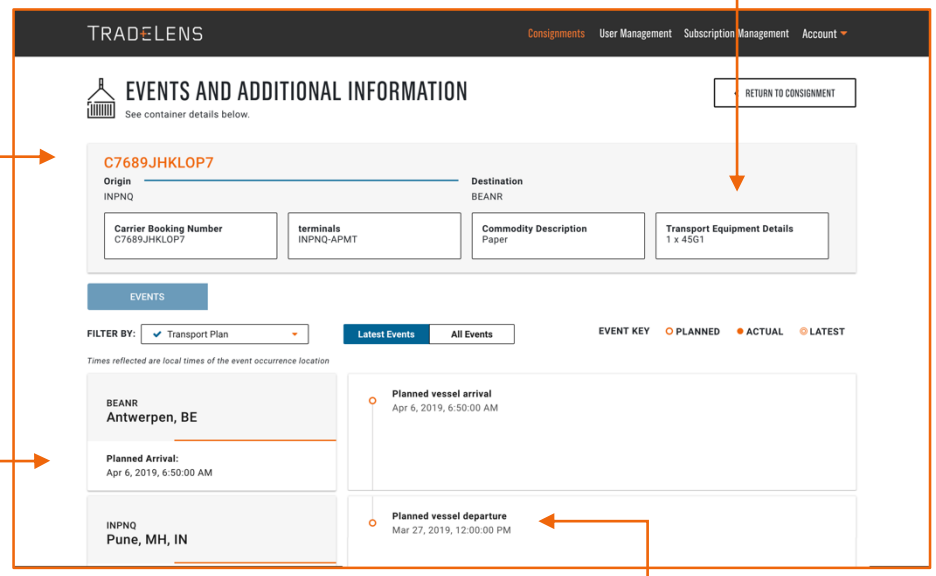
TradeLens can be accessed via the web without integration. Users can engage with essential platform features including the search and track functions and document access through a secure SSO web app.

Consignments can be identified by booking, equipment, bill of lading and client reference numbers.

View shipping events, documents and transportation plan.

Events are sourced directly from carriers, ports, terminals and other parties to the shipment.





A single, secure, simplified view across all shipments in the supply chain

120 plus standardized events published from the source.

Near real-time events directly from the source are instantly visible to all parties to a consignment.

FUTURE OF THE MARKETPLACE

1 – 2 YEAR OUTLOOK (SUBJECT TO CHANGE)

+ **TradeLens Core (released December 2018)**
  Releasing smart notification built with business logic to bolster agile supply chains.
+ **Shipping Instruction Automation**
  Simplify the complexity and iteration between shipper and provider in the sending of instructions and creation of a complying bill of lading.
+ **Negotiable Electronic Bill of Lading**
  A digital asset providing secure paperless transfer of ownership and cargo release.
+ **Freight Booking**
  Seamlessly book freight with TradeLens member carriers.
+ **Trade Finance**
  Digital alternatives to traditional letters of credit, leveraging TradeLens milestone, document, and e-Bill capabilities.
+ **Cargo Insurance**
  Purchase highly competitive cargo insurance from leading firms, enabled by TradeLens data.
+ **Cross-mode Dangerous Goods**
  Simplified, consistent, and auditable means to share dangerous goods documentation across all modes of transport
+ **Additional Developments**
  Advance Ship Notification (ASN) automation, AI logistics insights, interoperability with leading blockchain solutions, and more.

+ **The TradeLens Marketplace**
  Supporting a partner program on TradeLens.com in Q4 2019.

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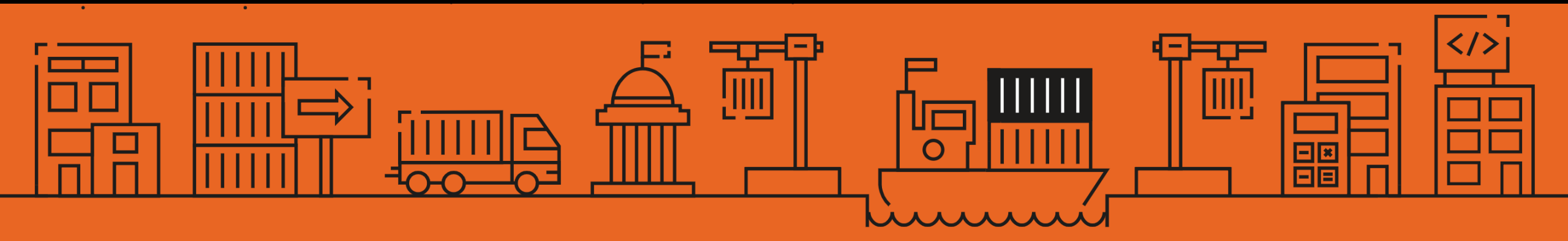
PARADIGM SHIFTING MODEL

TRADELENS

- Shipping milestones, trade documents, cargo details, IoT readings, and more
- Seamless, permissioned, role-based access
- Industry standards - UN-CEFACT
- Full transparency across the supply chain



Thank You!

IBM **Blockchain**

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