Opening Remarks

Jean-Christophe Rossand
Assistant Director Cargo Intelligence and Air Mail Settlement, IATA

IATA
AVIATION
DATA
SYMPOSIUM

ATHENS, GREECE 25 – 27 JUNE 2019

AIR FREIGHT

IATA

Air freight track - Agenda (1/2)

Time	Session
14:30	Opening Remarks
14:35	E-commerce: A key opportunity with challenging requirements
14:50	E-commerce is a mix of Cargo & Mail. How can you handle this challenge efficiently?
15:10	Reducing customer spent & predicting arrival time leveraging data & AI
15:30	Networking Break

Air freight track - Agenda (2/2)

Time	Session
16:00	**From logistical chains to logistical networks:** ONE Record vision & roadmap of AF/KL TradeLens: An industry network Panel
16:55	**Leveraging IoT to reduce costs and improve value proposition:** Is the dream of end to end visibility in air cargo becoming a reality? Blockchain puts the SMART into ULD
17:35	Tomorrow's data heroes
17:55	Closing
19:00	Networking Dinner

E-commerce: a key opportunity with challenging requirements

Dr. Ludwig Hausmann, Partner, McKinsey & Company

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E-commerce - a key opportunity with challenging requirements

IATA, Aviation Data Symposium & AI Lab

Dr. Ludwig Hausmann, Partner

Athens | June 2019

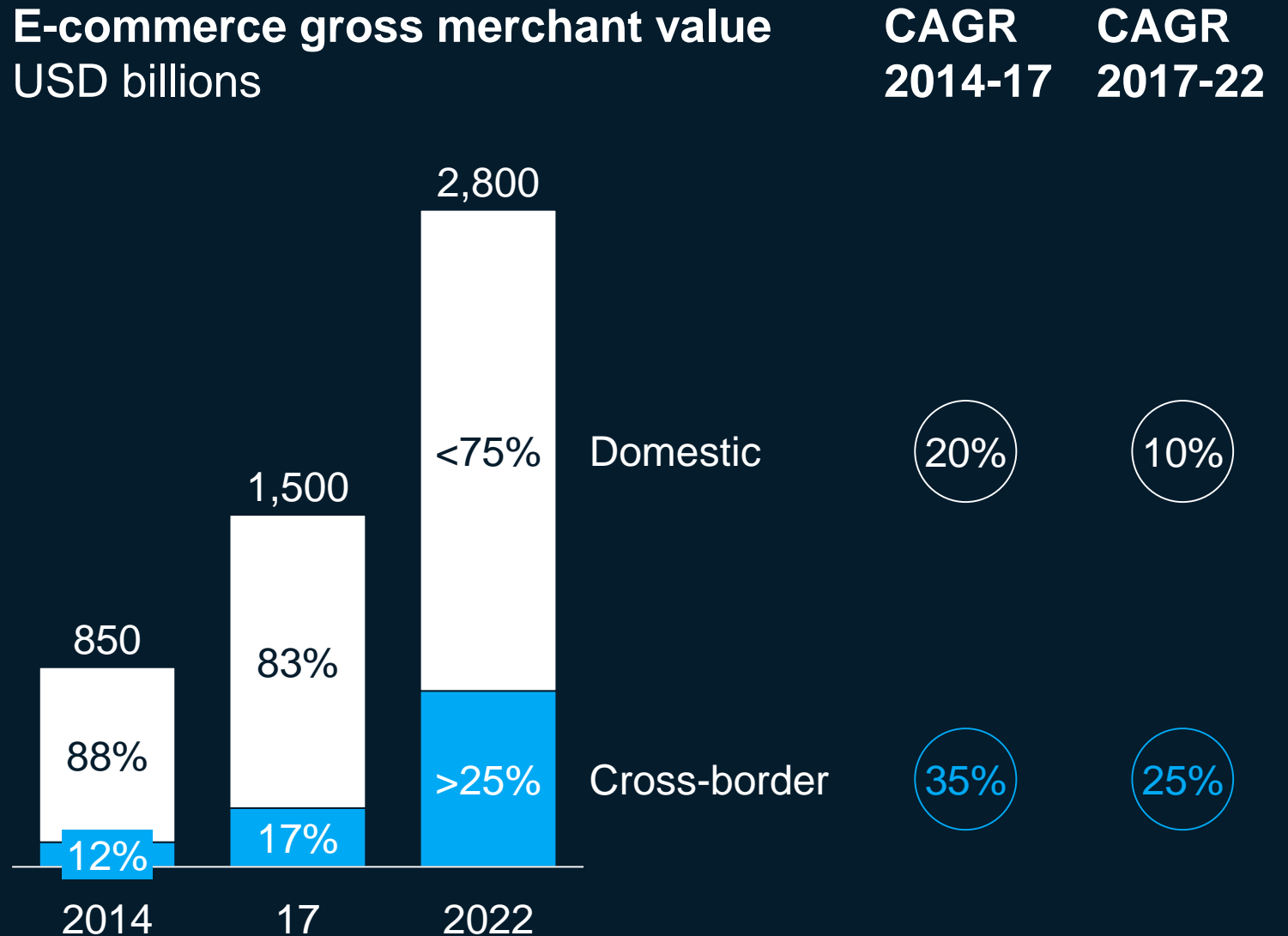# 3 key questions on cross-border e-commerce in air cargo

1. How relevant is cross-border e-commerce really?

2. What's in it for cargo airlines?

3. Where do cargo airlines stand today and where do they need to improve?

3 key questions on cross-border e-commerce in air cargo

1. **How relevant is cross-border e-commerce really?**

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Cross-border e-commerce is expected to expand at an annual growth rate of 25% the in coming 5 years

E-commerce gross merchant value
USD billions

	CAGR 2014-17	CAGR 2017-22
Domestic	20%	10%
Cross-border	35%	25%

2,800

1,500

<75% Domestic

850

83%

88%

>25% Cross-border

17%

12%

2014   17   2022

Why are consumers choosing to buy from non-domestic websites?

Number of customers citing respective reason for shopping cross-border

Product availability
The only way to get this rugby gear to Australia is to ship it in from the UK

Lower price
Buying this camera gear straight from Japan saved me EUR 250

Greater selection
The only way to get the full lineup of my favorite cosmetics brand is to buy it directly from the US

Product quality
By buying this handbag straight from Italy, I could be sure I get the best product quality

Brands are "rising stars" – they expect even higher cross-border growth than other sellers

Share of respondents expecting growth of cross-border revenue share
2016, in percent
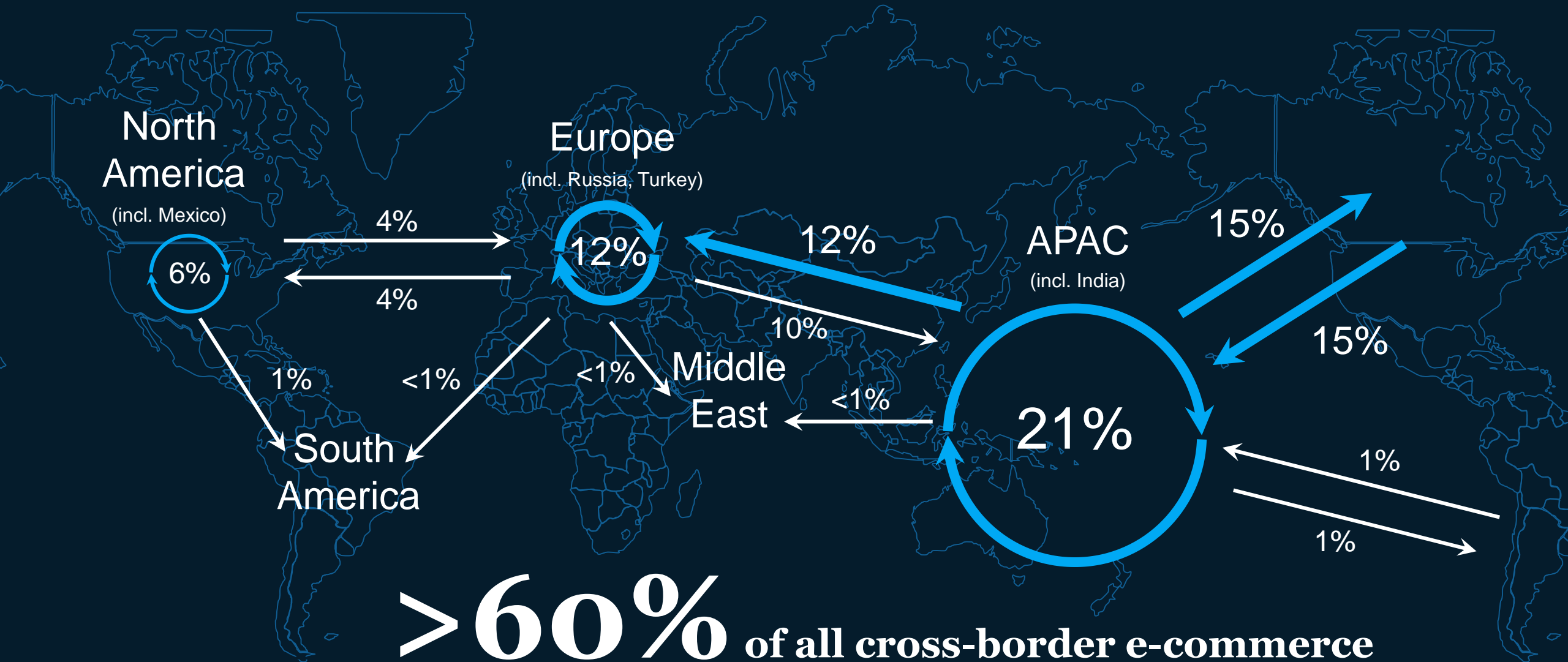
Average cross-border share of total revenue, 2016

Category	Share of respondents	Average cross-border share
E-commerce giants	62	15%
Fashion e-tailers	78	12%
Non-fashion e-tailers	66	11%
Brick and mortars	67	11%
High-value brands	73	15%
Low-value brands	78	11%

Ø 71
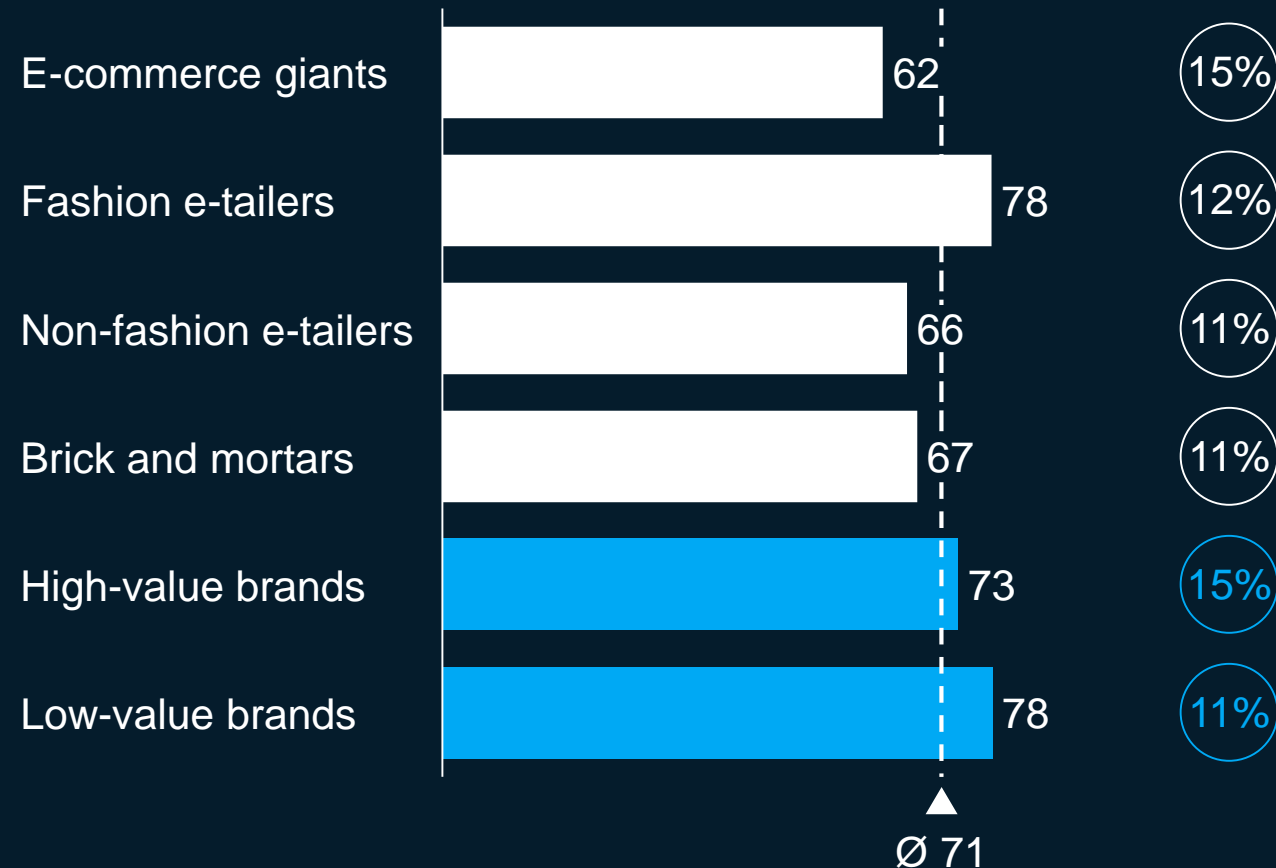
Three key questions on cross-border e-commerce in air cargo

1. How relevant is cross-border e-commerce really?

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~**5**bn **shipments annually**

% → Percentage of total trade
→ Top 5 trade lanes
⟳ Intra-regional

North America
(incl. Mexico)

6%

Europe
(incl. Russia, Turkey)

12%

APAC
(incl. India)

21%

4%
4%

12%

10%

15%
15%

1%
<1%
<1%
<1%

Middle East

South America

<1%

1%
1%

>60% **of all cross-border e-commerce shipments are intercontinental**

~80% of cross-border B2C shipments are sent via air, most of them channeled through postal companies

Cross-border B2C shipment volume, 2017

Future growth

Total		~5 bn
Non-air	Other modes (regional road, sea)	~15-20%
Air	Express air (via integrators)	~5%
	Postals (via airlines)	~70%
	Others via airlines (CEPs, forwarders, airlines through own channels)	~10%
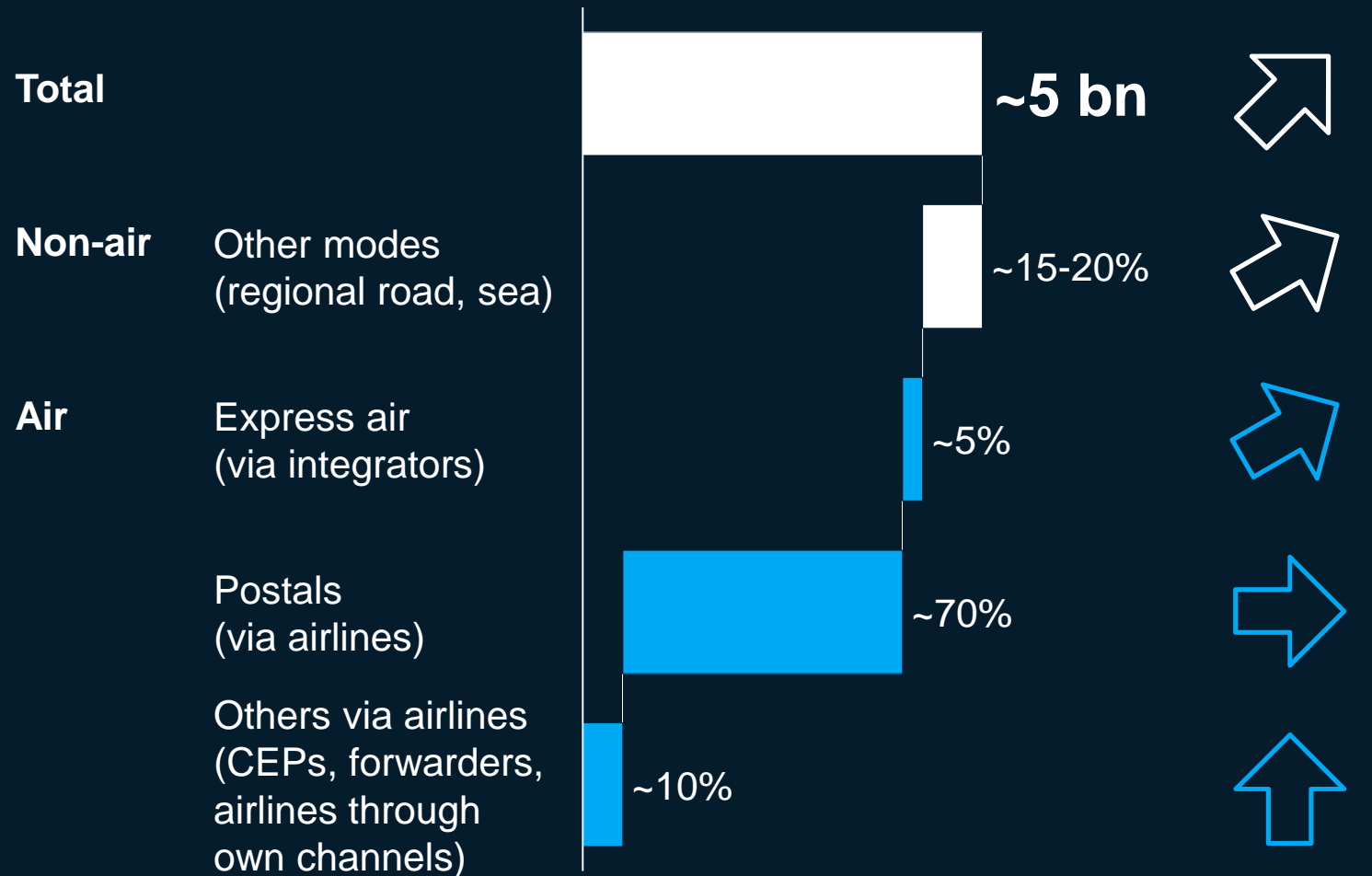
For air cargo, e-commerce accounts for over 10% of total air cargo volumes already - and the share will be growing

		2017	2022+
	Share of air cargo trade volume	10%	20%
	Share of air cargo revenues	5%	12%

3 key questions on cross-border e-commerc in air cargo

1. **How relevant is cross-border e-commerce really?**

2. **What's in it for cargo airlines?**

3. **Where do cargo airlines stand today and where do they need to improve?**

Speed trumps price, but faces greatest issues when shopping cross-border

Consumer experiencing issue
Percent

Importance for shippers
Percent

High ▢▢▢▢ Low

Issue	Consumer experiencing issue	Importance for shippers
Speed	35	36
Price	9	24
Reliability/ quality	12	16
Integration/ transparency	15	15
Other	4	8

Parcel integrator services score best across requirements except for 1 key category: pricing

Legend: ● Postal operators ● Parcel integrators ● Airlines ➤ Improvement need for airlines

	Operational category		
Speed	Delivery speed	E+>10 globally ●(Postal) ●(Airlines)➤●(Parcel)	E+1 globally
Price	Delivery price	EUR 50 ●(Parcel) ●(Airlines) ●(Postal)	EUR 10
Reliability/ quality	Share of undamaged deliveries	Low ●(Postal) ●(Airlines)➤●(Parcel)	High
	Service level adherence	Low (<50%) ●(Postal) ●(Airlines)➤●(Parcel)	High (>90%)
	Customs handling	Basic and optional ●(Postal)●(Airlines)➤●(Parcel)	Integrated full service
Integration/ transparency	Transparency/ tracking	Low/ fragmented ●(Postal)●(Airlines)➤●(Parcel)	High/ end to end
	Returns handling	Slow and cumbersome ●(Airlines)●(Postal)➤●(Parcel)	Fast and convenient
Other	Insurance	Excluded/ expensive ●(Postal)●(Airlines)➤ ●(Parcel)	Included/ free
	Global reach	Limited presence ●(Postal) ●(Airlines)➤●(Parcel)	Global presence
	Specific requirements	Low customization ●(Postal)●(Parcel)●(Airlines)	High customization

Slow international postal shipment clashes with the expectation of consumers today and of even more tomorrow

Share of cross-border B2C shipment by delivery time
Percent

Shippers who perceive delivery as acceptable or fast
Percent

	Share		Perceive
Same day	1		100
Next day	3		99
2-3 days	13		90
4-5 days	17		70
6-7 days	14		40
8+ days	52		>10
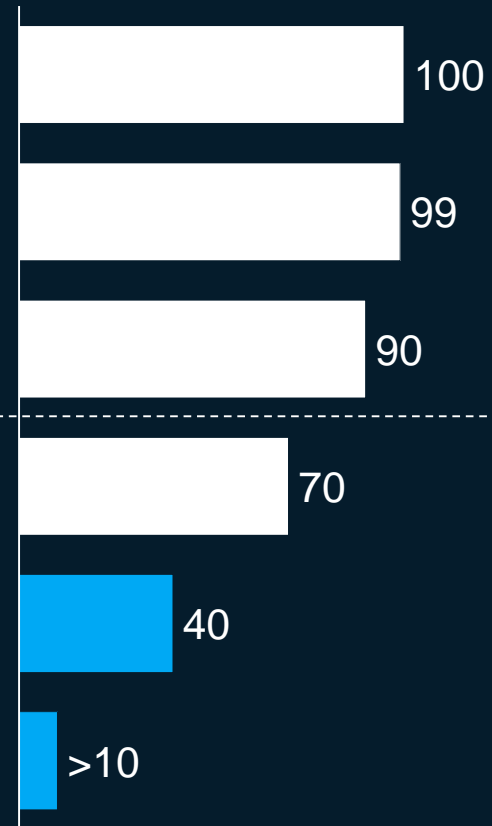
AliExpress

"New normal" following Alibaba's 72h click-to-door promise

Price vs. speed comparison of a single parcel for international shipping shows opportunity for hybrid delivery product

Price, EUR

Express shipments account for **<10% of volumes**

Postal shipments account for **>70% of volumes**

Opportunity for hybrid product

160
150
140
130
60
50
40
30
20
10
0

30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 **Speed,** days
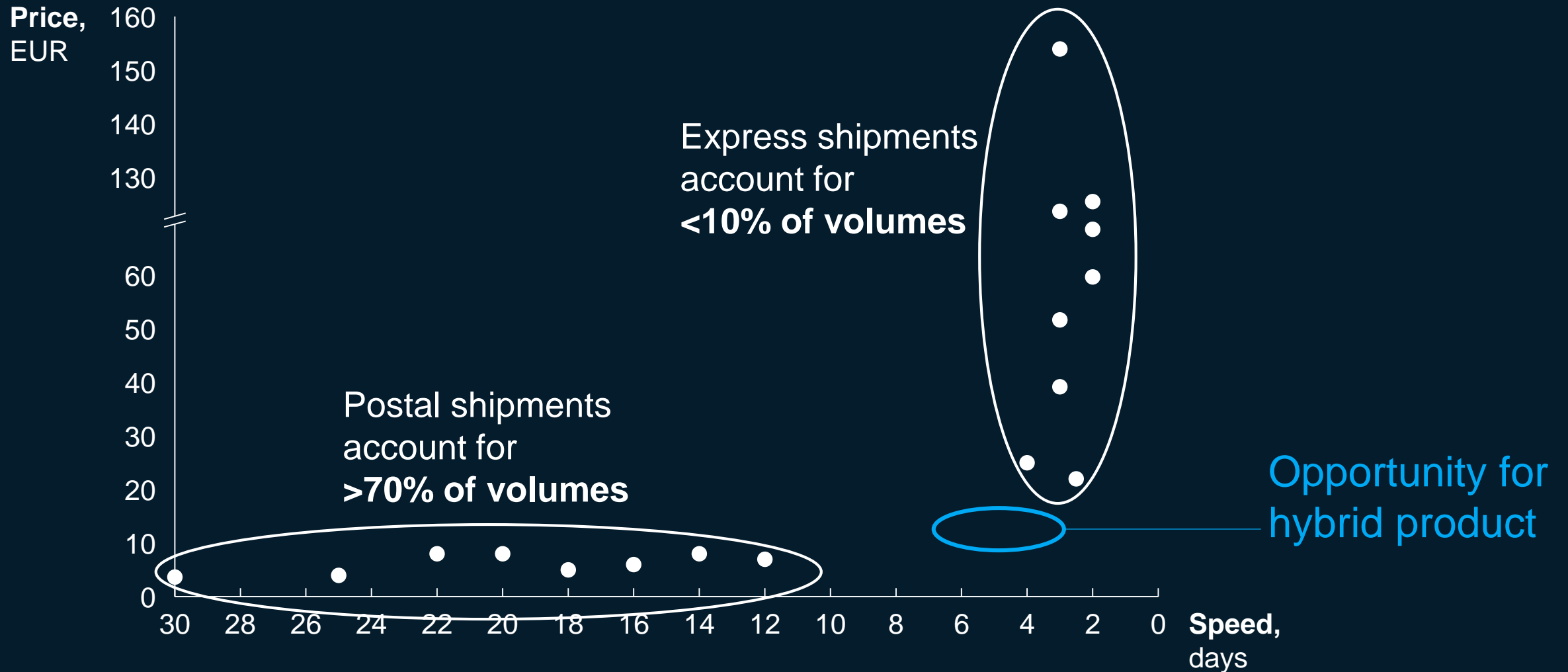
Current inefficient cross-border shipment processes will have to be improved through automated data exchange and digitization

Today

- Inconsistent information and "blind spots" throughout the supply chain
- Complex, cumbersome, and costly peer-to-peer messaging
- Manual, time-consuming, paper-based processes
- Clearance processes subject to fraud
- High share of administrational costs

Future
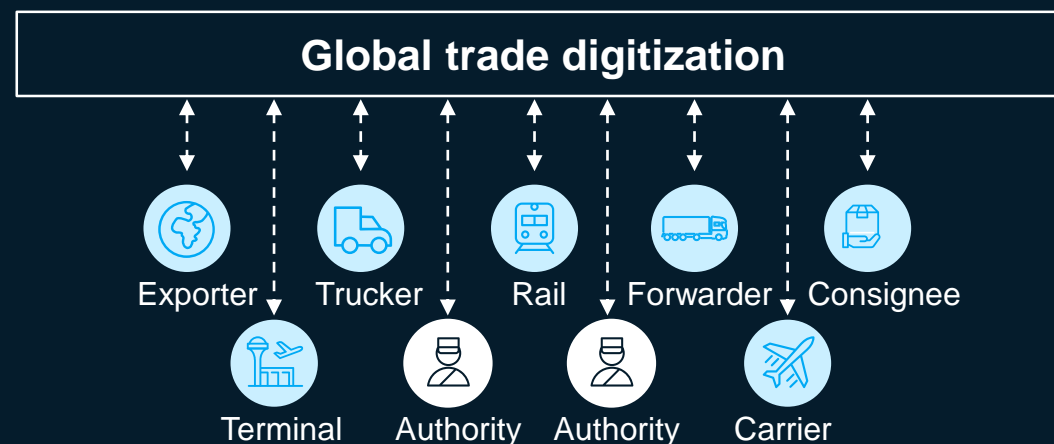
- Fast, secure access to end-to-end supply chain information; single source of the truth
- Verifiable authenticity and immutability of digital documents
- Trusted cross-organizational workflows
- Better risk assessments
- Far lower administrative expenses

Specifically, a transparent and integrated cross-border delivery service needs to solve various breakpoints across providers today

CM and payments

Customs clearance/ support

Seamless integration with last-mile delivery companies

E-commerce shippers

Ware-house

First/mid mile

Airport

Customs

Air linehaul

Customs

Airport

First/mid mile

Ware-house

Last mile

Customer

Returns

Packaging/ labeling

Consolidation

Capacity status

Reverse logistics/ complaint management

End-to-end shipment visibility

Different data types and systems in cross-border e-commerce logistics create a complex landscape to integrate

	Shippers	Warehouse	First/Mid Mile	Customs	Airport	Air linehaul	Last Mile/ Returns
Data type	Std. electronic messages Regulated data exchange	Mobile computing Bar code scanning RFIDs Voice technology	AutoID solutions RFIDs Mobile computing GPS Enabled	Std. electronic messages Regulated data exchange	Std. electronic messages Regulated data exchange	Mobile computing Bar code scanning RFIDs	GPS enabled eProof of delivery Track and trace
Source of data	External online sources Loyalty programs Call centers and surveys	Receiving/distribution Picking and shipping Mobile inventory management Cross docking	Contractors External online sources Call centers and surveys	Shipper data External online sources	eAWB – eAir Waybill eCSD – eConsignment Security Declaration eHM – eHouse Manifest	Linehaul Management Zone (LMZ) Customers Delivery Requirement (CDR)	Shipper data External online sources Call centers and surveys
IT solutions	IMS – Inventory Management Systems	WMS – Warehouse Management Systems	**TMS – Transportation Management Systems** **Planning and optimization** Load consolidation Load planning and scheduling Mode and carrier selection		**Execution** Freight audit and payment Freight procurement Multi-modal transportation	**Visibility and performance management** Shipment track and trace Visibility and analytics	
Providers	NetSuite ERP SAP S/4 HANA IBM CMS	NetSuite ERP Oracle WMC IBM Sterling WMS	Mercury Gate 3PLink TMS	ATLAS	Electronic Cargo Handling &Operating System (ECHOS)	Optym	LogiNext PostMates

Deep dive customs clearance: With increasing e-commerce volumes, customs has turned into a key issue for stakeholders

Challenges of cross-border e-commerce

Buyers and sellers with **limited knowledge** of customs regulations

Declared values for B2C shipments are often **incomplete or inaccurate**

Large share of shipments falling **below the de minimis** value threshold

Direct injection models and free trade transit zones misused for shipping non-declared, de-facto customable goods, or **counterfeits**

Impact on customs regimes

Distorted trade statistics and market transparency

Large share of **counterfeit products** sent through parcel/postal products

Overstretched customs inspection capacities, **delays in customs clearance,** and trade disruptions

Deep dive customs clearance: Solutions from public authorities and private operators – incl. airlines – will be required

Public authorities/ industry associations

Create data standards to prepopulate declaration forms for buyers to approve and submit in 1-click

Accelerated processing of declarations from participating shippers

Platform to facilitate a seamless and immediate information exchange

Parcel carriers/e-commerce platforms/airlines

Provide access to accurate information on transaction value, volume, buyer/seller identification, Inco-terms, etc.

Develop integrated customs clearance solutions for e-commerce shipments

How can air cargo develop a strategy to benefit from growth in e-commerce?
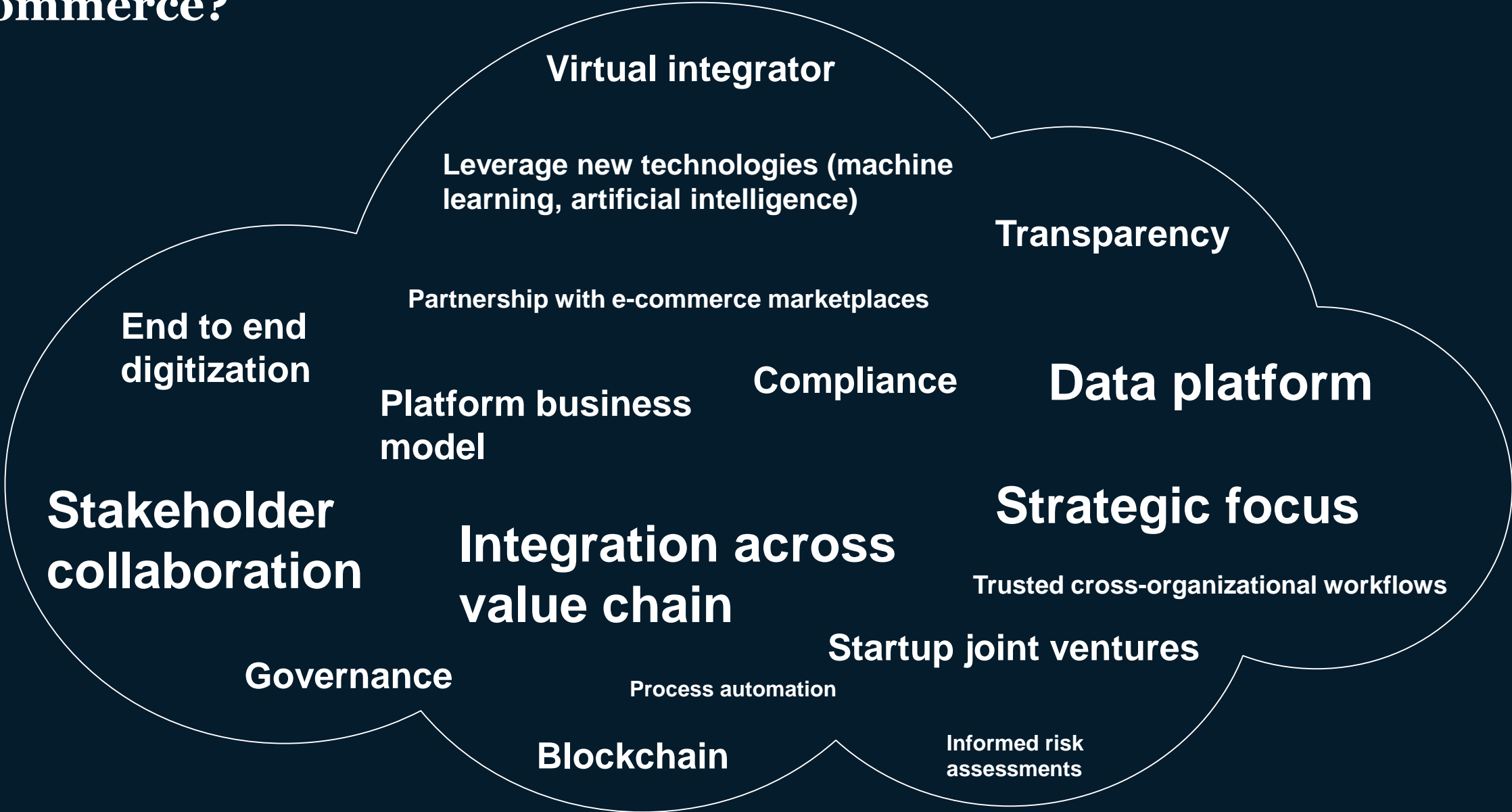
Virtual integrator

Leverage new technologies (machine learning, artificial intelligence)

Transparency

Partnership with e-commerce marketplaces

End to end digitization

Compliance

Data platform

Platform business model

Stakeholder collaboration

Integration across value chain

Strategic focus

Trusted cross-organizational workflows

Governance

Startup joint ventures

Process automation

Blockchain

Informed risk assessments

Thank you

McKinsey & Company

E-commerce is a mix of Cargo & Mail. How can you handle this challenge efficiently?

Bernd H. Foerster, Senior Manager, Head of E-Commerce Products, Qatar Airways

Jos Nuijten, VP, Network Integration Strategy, Descartes Systems Group

Milestones in Qatar Airways Cargo

1997

Qatar Airways Cargo commences operations

2011

The 100th destination is added to the route map

2014

Hamad International Airport begins operations

October 2018
Intro of vMail/Croamis Interface
Re-launch of QR-Ecommerce

April 2019

Daily Handling of ~140T Mail in DOH

2003

QR Cargo is officially launched

2013

QR becomes a **one**world member

2016

QR Mail is launched as an airport to airport product

January 2019

QR achieves 2nd rank in YoY international FTK with a 6.6% market share

Our Operations - Airmail Unit at Hamad International Airport

We are investing heavily in state-of-the-art infrastructure to leverage the synergies of our great network, frequencies of flights and now with a accelerated turnaround time thanks to a dedicated mail handling unit.

- Completely new structure 70m x 70m dedicated for mail handling.

- Automated equipment to be installed 2019/20.

- Providing a total capacity of up to 500 tons per day.

How is cargo driven by data?

Agents send FWB (Freight Waybill) messages to QR systems

FSU (freight status update) messages are sent at:
- Acceptance level
- Aircraft departure level

FSU (freight status update) messages are sent at:
- Aircraft arrival level
- Receive notification level

RCS

DEP

ARR

RCF

NFD

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QATAR AIRWAYS القطرية | CARGO
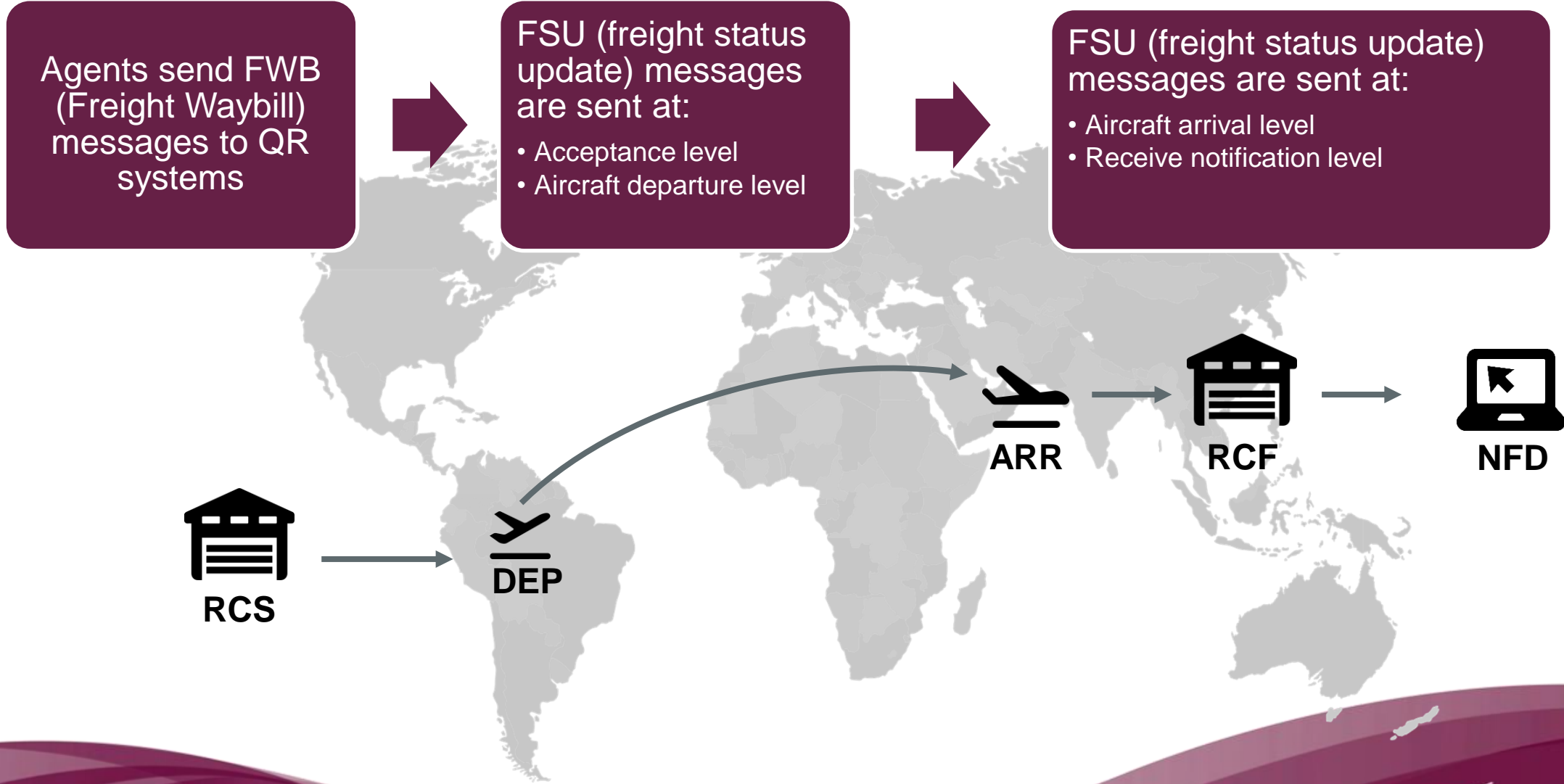
Total Transparency to the Customer!

Through every touch point in the cargo process, messages are transferred and translated into Qatar Airway's live tracking system online.

How is e-commerce driven by data?

Similar to cargo, e-commerce is also driven by sophisticated data messaging between various systems in order to provide status updates to customers and business operations.

At Origin
RCS, MAN, DEP

At Airmail Unit, Doha
ARR, DLV or DEP (if not final destination)

At Destination
DLV
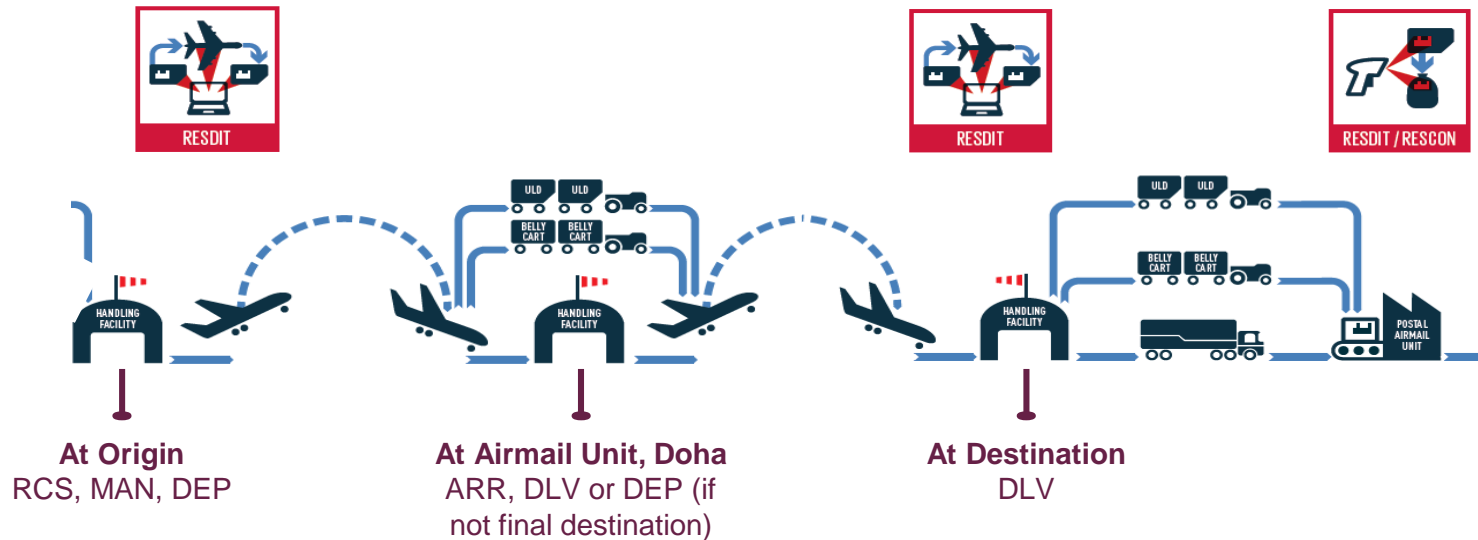
Adapted from: UPU, IATA, IPC. Post-Airline Supply Chain Integration EDI Guide (2017)

Public and private postal operators send CARDIT messages to QR to pre-book their shipments

QR consumes and processes the CARDIT in its cargo reservation and operations system CROAMIS

E-commerce is scanned at bag-tag level to ensure true possession and generation of FSU

QR sends FSU via RESDIT message through Descartes vMail.

These messages are then pushed through to the IPC server, where all postal authorities can track and trace

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The benefits to our customers

Instant booking creations → Bookings mapped to customers based on commercial and operational parameters.

Real time track and trace → Visibility on demand from direct data transmissions to the IPC server from Descartes vMail.

Custom reporting tools → Bespoke reporting and dashboard tools, showing performance and journey progression.

Reduced Billing Rejections → Increased customer confidence for reconciliation and payment activities. Invoicing success rate at over 97%.

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The benefits for Qatar Airways Cargo

No manual entries → Zero down on resource wastage, making time for what matters most in the business.

CARDIT based capacity planning tools → Allows robust connection planning from origin to final destination.

Increased efficiency and unrivalled data quality → Industry leading performance on data transparency and operational excellence.

Accurate billing and invoicing achieved → Payments made on time and billing cycles respected - no omissions.

100% revenue recognition → Full visibility on revenue and participation into the IATA PASS initiative.

100% paperless initiative → Electronic downloads on demand. Whenever, wherever.

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CROAMIS & Descartes vMail Interface

Qatar Airways

+

Descartes vMail

=

End-to-End Mail Management Solutions

01st October 2018
CROAMIS & Descartes vMail
Interface Launch - official cutover

First airline to
automate mail scanning
between two data platforms

IATA-UPU Electronic Data Interchange
initiative:
Fully compliant

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60 active scanning stations

Real-time track and trace

Target: 100% EDI driven

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Descartes Cargo and Mail integration

Next steps…

- The need to share Cargo and Mail Data is growing
  - eCommerce
  - Security
  - Operational integration and optimization

- Challenges:

  - Different Standards
    - Mail: UPU Cardit/ Resdit
    - Cargo: CargoXML/ CargoIMP

  - Cargo is driven by the Air Waybill
    - Who is going to assign the Postal AWB...

Cargo and Mail Integration

Mail and Cargo Working Together

Mail integration

Post	Mail Unit	Cargo Unit
CARDIT	Scan Information	
	Mail System	
	AWB/ HWB	
		Cargo System
RESDIT		Status Information
		Security Filings
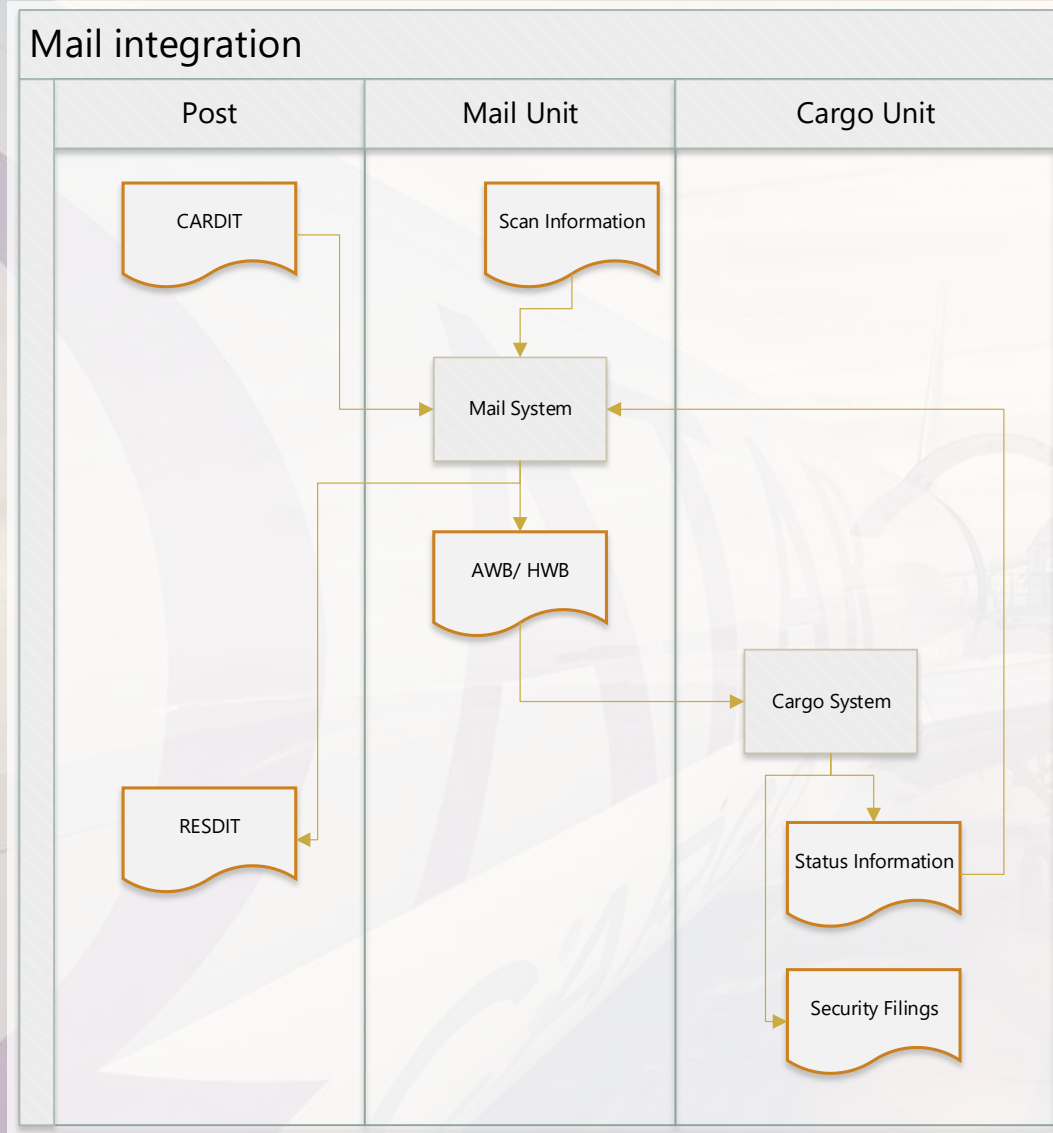
Information	UPU	IATA
Consignment information	CARDIT	XFWB
Receptacle information	CARDIT	XFHL
Status information	RESDIT	XFSU

How does data drive our bookings…

Descartes vMail - Action History screen for DOH-PVG mail booking

Lookup Item By Tag > **Item Actions**

Item:

Post:
Tag: QADOHACNSHAAACN90100001100182
Weight: 18.2 kg
Consignment: QADOHA113915
To/From: DOH-PVG
In Custody: No
Received: 16.06.2019 15:16:20 (Z+3)
Delivered: 17.06.2019 13:47:00 (Z+3)

Fix

Cardits:
-- 2258
        QADOHA113915 (Final) - Assigned

Create Action: -- select -- ▼   Go

Action History: (View Sent Events)

Time Zone: (Z+3)

16.06.2019
  DOH
      15:16:20 -- Receive
      15:16:21 -- Add to nest DOHT21255PRI
      15:16:22 -- Stage to flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
      16:17:54 -- Unstage from flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
      16:17:54 -- Remove from nest DOHT21255PRI
      16:17:54 -- Load on flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
17.06.2019
  DOH
      01:59:00 -- Depart on flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
  PVG
      10:47:00 -- Arrive on flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
      13:47:00 -- Unload from flight QR870, DOH (17.06.2019 02:00 LT) - PVG (16:20 LT)
      13:47:00 -- Deliver

How does data drive our bookings…

CROAMIS - Booking screen for DOH-PVG mail booking

How does data drive our bookings…

CROAMIS - Operations Build Up Export Screen, DOH-PVG

How does data drive our bookings…

CROAMIS - Allotment Screen, DOH-PVG

How does data drive our bookings…

CROAMIS - Accounting Screen, DOH-PVG

How does data drive our bookings…

Descartes vMail - Reporting Screens, DOH "Outbound Flights"

How does data drive our bookings…

CROAMIS - Mail Monitoring Dashboard, network view

How does data drive our bookings…

CROAMIS - Mail Booking Verification, network overview
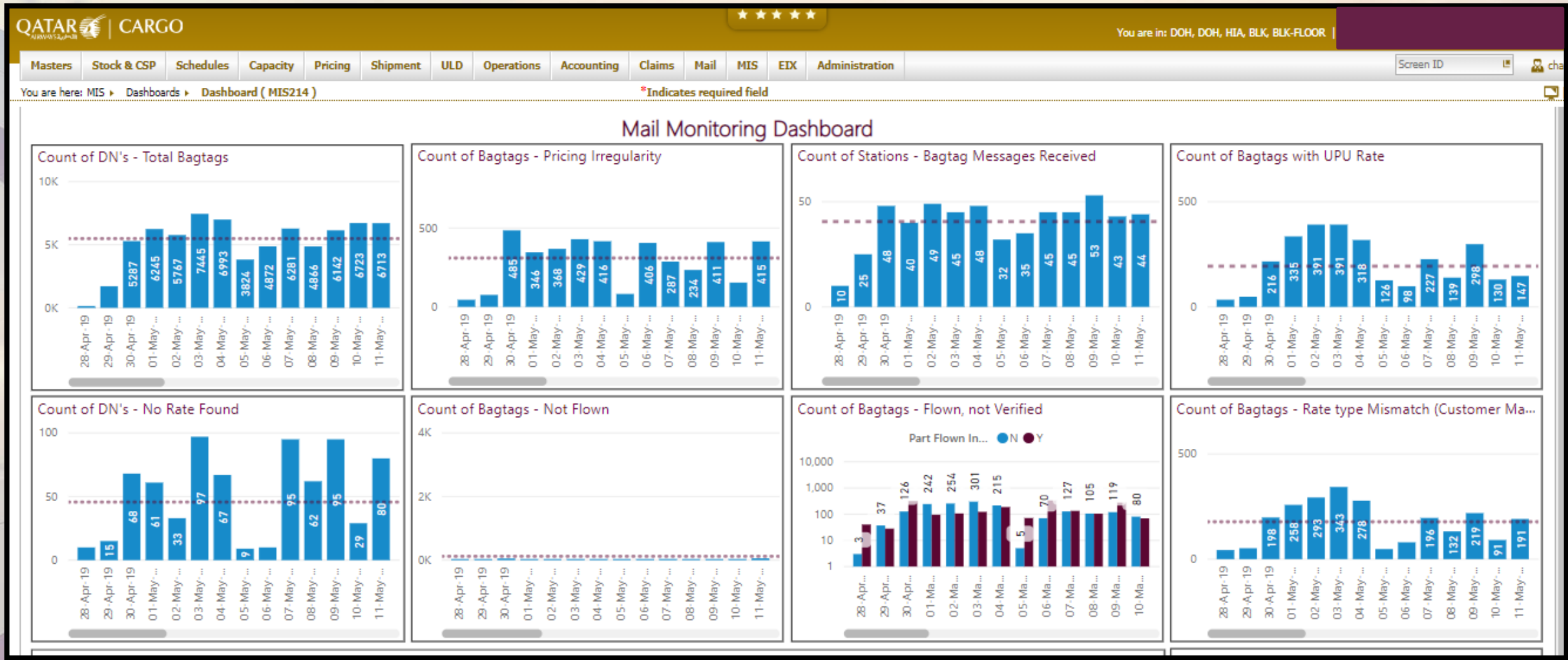
Questions?

Presented by:

Bernd Foerster
Senior Manager
E-Commerce Products

With the help of:

Jos Nuijten
Descartes
Air Product Strategy

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QATAR AIRWAYS القطرية | **CARGO**

Reducing customer spent & predicting arrival time leveraging data & AI

Erez Agmoni
Head of Supply Chain, Warehousing and Distribution - America, Maersk

Maersk Harmony

Reducing customer spent & predicting arrival time leveraging data & AI

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About the speaker

Dr. Erez Agmoni
Head of SCM WND – North America
Maersk

Erez has a broad industry experience of more than 25 years where he spent most of his carrier in Asia in different roles included forwarding COO and CCO of GAC and as a regional cargo manager for EL-AL airlines. Erez also spent 6+ years working and running an IT company which built different software and infrastructure solutions for its customer.
For the past 9 years Erez is working for Maersk (& Damco) in various roles (Airfreight regional manger, Supply chain re-engineering and Warehousing & Distribution)

Erez is holding a computer engineering bachelor degree, telecommunication science master degree and a PhD in organization development.

MAERSK

About the Company

Maersk Line founded with route between Asia and the United States

1928

Maersk Oil produces first oil in North Sea

1972

First container vessel added to the fleet

1975

Triple-E vessels, the world's largest and most efficient container vessels launched

2013

Sales and Purchase Agreement (SPA) with Oetker Group for integration with Hamburg Süd

2017

1904

Company founded in Denmark with one freighter

1962

DUC established, paving the way for oil & gas business

1972

Maersk Drilling founded

2001

APM Terminals founded

2016

A. P. Møller – Mærsk A/S is reorganised into two separate divisions: Transport & Logistics and Energy

2018

Maersk Line and Damco Supply Chain Management announced to integrate as Maersk

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Motivation

Competitive pricing — 96%
On-time delivery of your cargo — 85%
Partnership with your business — 54%
Sustainability profile of the carrier — 50%
Proactive customer services — 46%
Top 5
Overall ease of doing business — 41%
Accommodating your business' shifting needs — 37%
Fastest transit times — 30%
Continuous visibility of your cargo — 17%
Industry leading innovations supporting your business — 17%
Deep understanding of your business — 13%
Transparency of costs — 13%

Q3. Please rank your organizations' top 5 considerations when selecting a logistics provider, in order of importance.

What problem does Harmony try to solve?

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Typical End-to-End Lead Time

Is it really the case?

Supply chain example	Logistics provider picks from factory	LCL transport	Warehouse consolidation Shanghai	Intermodal	Terminal (incl customs clearance) Shanghai	Air/Ocean	Terminal (incl customs clearance) Los Angeles	Intermodal	Warehouse de-consolidation Los Angeles	Long haul	Fulfilment Center
Est. transit time		1 day	4 days	2 day	3 days	13 days / 3 days (air)	3 days	2 day	4 days	1 day	**Total transit time 33 days (ocean)**

Most systems use average time to capture lead time

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Actual End-to-End Lead Time

Legend

● Terminals (subsidiaries)
■ Terminals (associated)

China — Tianjin, Qingdao, Dalian, Shanghai, Xiamen, Guangzhou

USA — Los Angeles, New York, Savannah

| Supply chain example	Logistics provider picks from factory	LCL transport	Warehouse/consolidation Shanghai	Intermodal	Terminal (incl. customs clearance) Shanghai	Air/Ocean	Terminal (incl. customs clearance) Los Angeles	Intermodal	Warehouse /de-consolidation Los Angeles	Long haul	Fulfilment Center
Est. transit time		1-3 day	2-7 days	1-3 day	1-7 days	9-19 days 1-5days (air)	1-5 days	1-3 day	2-7 days	1-3 day	**Total transit time 19-57 days (ocean)**

Most systems use average time to capture lead time – but reality shows a different story

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If not averages then what?

Variability in lead-time leads to excess inventories, inventory shortages or both. It becomes increasingly difficult to plan your downstream supply chain with unreliable lead-times
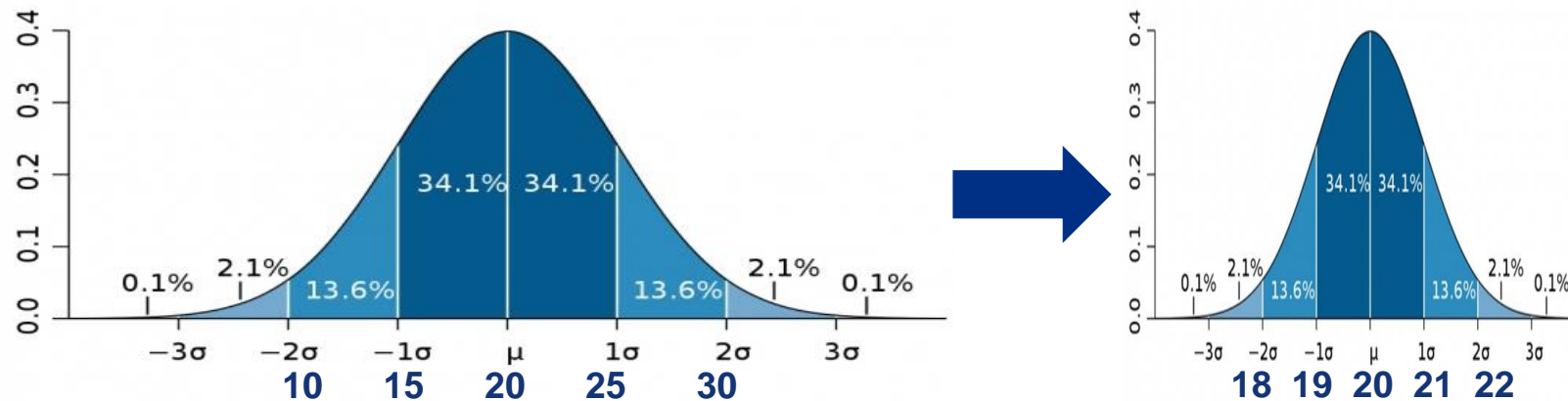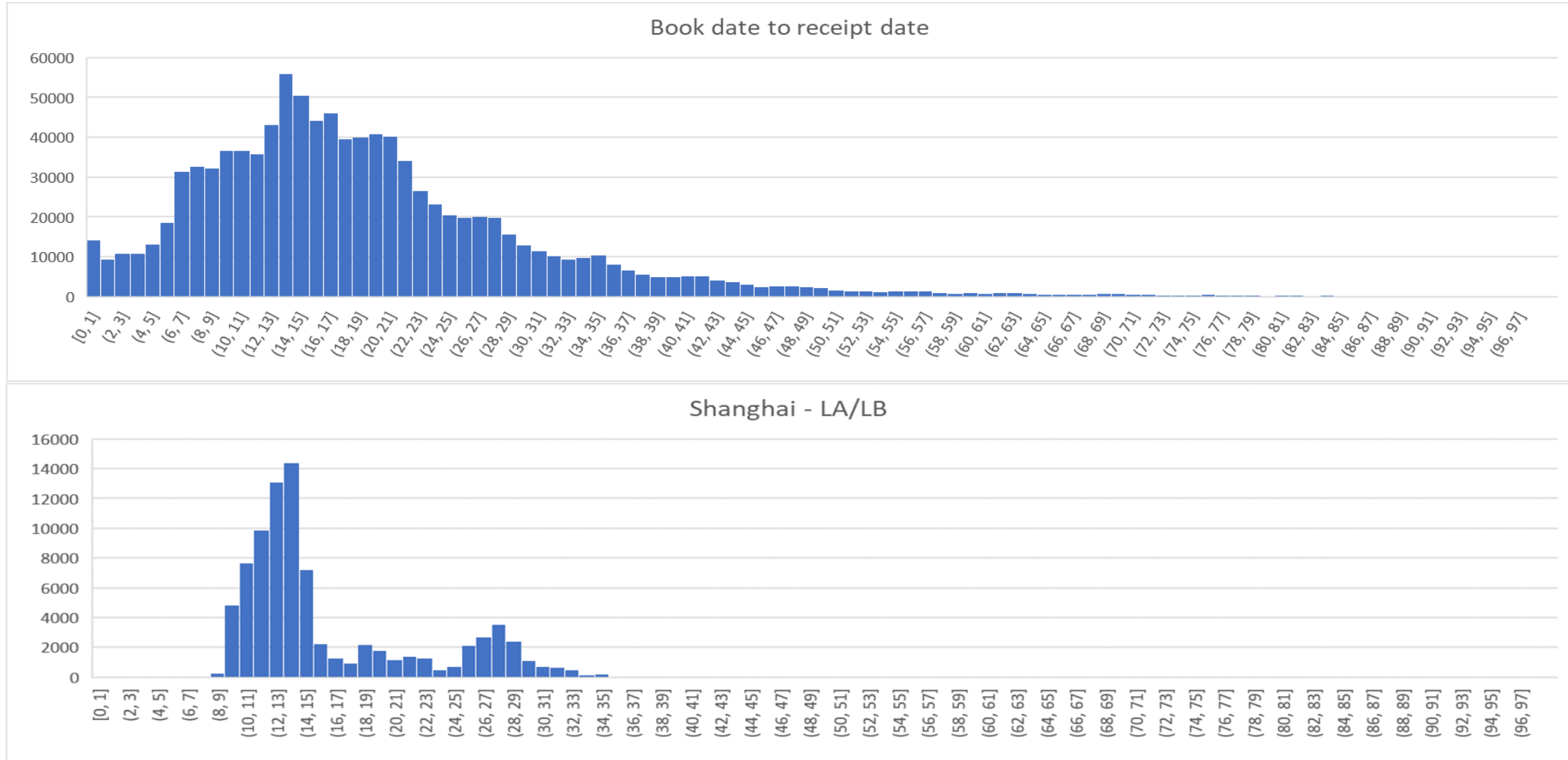

Reduction in Variability of Lead Time

A reduction in lead time variation positively influences the supply chain:

- Better Transportation Planning
- Reduced Inventory Carrying Costs

- Improved Safety Stock
- Improved Supply Chain Reliability

- Reduction in Total Supply Chain Costs

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Lead-Time Variation – Where are the main issues?
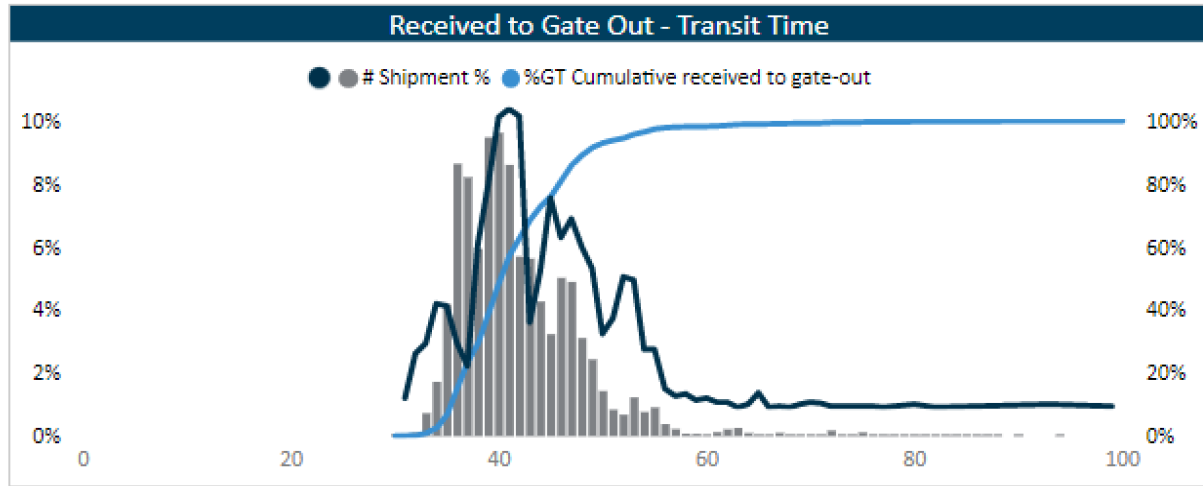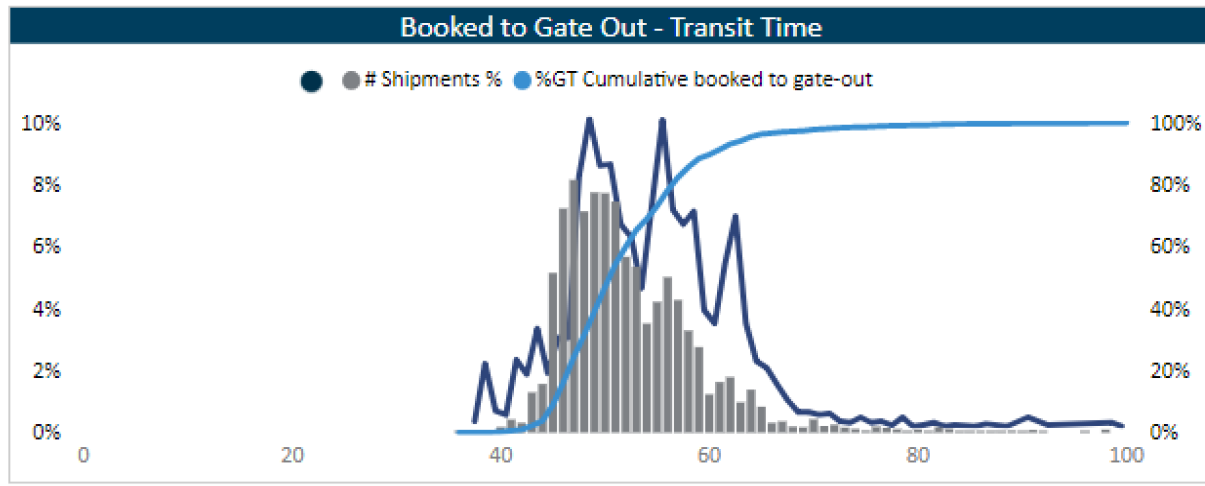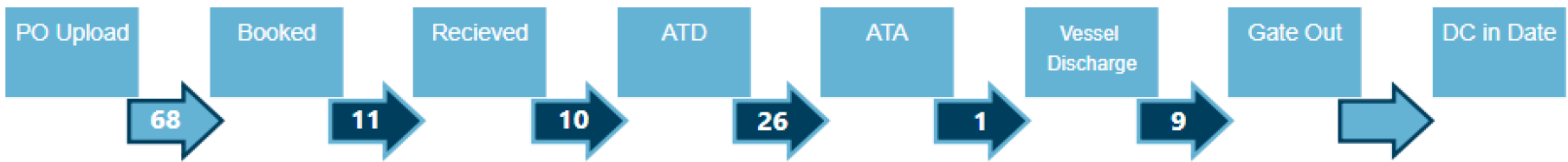
What is the value for the customer?

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Harmony Tool – What is the value?

1. Reduction of total cost of ownership

2. Ability to manage vendors and carriers

3. Using machine learning to improve transit time visibility & predict cargo availability

4. Improved carrier allocation mechanism

5. Market benchmarking

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Example - Total Cost Equation – Influence of Variation

Carrier	Cost/TUE ($)
A	2235
B	2155
C	2030
D	2380

Example - Total Cost Equation – Influence of Variation

Carrier	Cost/TUE ($)	Transit time (days) (miuL)
A	2235	38
B	2155	34
C	2030	42
D	2380	39

Example - Total Cost Equation – Influence of Variation

Carrier	Cost/TUE ($)	Transit time (days) (miuL)	Service accuracy (+- days from transit time) (sigmaL)
A	2235	38	4.8
B	2155	34	14.6
C	2030	42	6.2
D	2380	39	6

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Example - Total Cost Equation – Influence of Variation

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A	2235	38	4.8
B	2155	34	14.6
C	2030	42	6.2
D	2380	39	6

General information:

Demand	4,500,000 units/year	=> TEUs per year:	1,500	=> miuD=	4.29 TEU/day
SigmaD	540,000 units/year	=> Sigma of TEUs per year:	180	=> sigmD =	9.62 TEU/day
TEU can hold	3,000 units				
average Cost	35 $/unit	=> cost of product in 1 TEU = 3000x35 =	105,000 $		
Order cost Ct	5,000 $/order				
Holding cost h	15%				
CSL 95% =	0.95	=> k =	1.64		
Assuming	50 weeks/year or		350 days/year		

Carrier	Purchase cost $	Ordering cost $	Cycle Stock cost $	Safety stock cost $	Pipeline inventory $	Total cost $	Logistic cost per item $
A	160,852,500	250,000	241,279	1,660,935	2,619,598	165,624,312	1.805
B	160,732,500	250,000	241,099	2,221,844	2,342,102	165,787,545	1.842
C	160,545,000	250,000	240,818	1,789,870	2,889,810	165,715,497	1.826
D	161,070,000	250,000	241,605	1,731,540	2,692,170	165,985,315	1.886

MAERSK

Spyder (Python 3.7)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Erez\MIT\Capstone

Editor - C:\Erez\MIT\Capstone\scripts\predict_transit_time.py

temp.py   functions.py   predict_transit_time.py   setup_stats.py   train_final_model.py   train_models.py

```python
1  #!/usr/bin/env python3
2  # -*- coding: utf-8 -*-
3  """
4  Created on Thu Jan 10 13:40:18 2019
5
6  @author: Florian Krempl
7
8  Capstone Project Predict Transit time with machine learning
9  """
10
11 # import Libraries
12 import os
13 import numpy as np
14 import pandas as pd
15 import datetime
16 from sklearn.ensemble import RandomForestRegressor
17 from sklearn.externals import joblib
18 os.chdir('C:\Erez\MIT\Capstone')
19
20 # SETUP next 3 lines take some time...
21 # load functions
22 if 'stat' not in locals():
23     exec(open('scripts/functions.py').read())
24     # load carrier and port statistics
25     exec(open('scripts/setup_stats.py').read())
26
27 model_not_ready = True
28 while model_not_ready:
29     # load random forest
30     model = input('please
31     filename = 'data/model
32
33     rf = joblib.load(file
34
35     # read new customer d
36     customer_clean = pd.re
37     # get date format
38     date_columns = ['Expe
39                     'Lates
40
41     for column in date_co
42         print('start converting column', column, 'to datetime...')
43         customer_clean[column] = pd.to_datetime(customer_clean[column],
44                                  format = '%Y-%m-%d')
45
46     # load chinese new year dates
```

Variable explorer

Name	Type	Size	Value
filename	str	1	data/models/rand…
model	str	1	booked
model_not_ready	bool	1	False
new_transports	DataFrame	(6, 29)	Column names: cu…
results_booking	DataFrame	(174, 5)	Column names: Ca…
results_depart	DataFrame	(180, 5)	Column names: Ca…

Variable explorer   File explorer   Help

IPython console

Console 1/A

```
Shipper                                        ALLTRADE TOOLS LLC
Original Port Of Loading                                 YANTIAN
Final Port Of Discharge                              LOS ANGELES
earliest                                     2019-05-26 00:00:00
Container Unload From Vessel-Estimated       2019-05-30 00:00:00
latest                                       2019-06-03 00:00:00
Name: 2, dtype: object
Carrier                                                     OOLU
Shipper                                        ALLTRADE TOOLS LLC
```

```
Carrier                                     MAEU
Shipper                       ALLTRADE TOOLS LLC
Original Port Of Loading                 YANTIAN
Final Port Of Discharge              LOS ANGELES
earliest                     2019-06-24 00:00:00
Container Unload From Vessel-Estimated  2019-07-01 00:00:00
latest                       2019-07-04 00:00:00
```

```
                                           YANTIAN
                                        LONG BEACH
                                2019-05-26 00:00:00
mated                           2019-05-31 00:00:00
                                2019-06-03 00:00:00
                                              COSU
                                ALLTRADE TOOLS LLC
                                           YANTIAN
                                        LONG BEACH
                                2019-05-23 00:00:00
mated                           2019-05-31 00:00:00
                                2019-06-03 00:00:00
                                              APLU
Shipper                         ALLTRADE TOOLS LLC
Original Port Of Loading                   YANTIAN
Final Port Of Discharge                 LONG BEACH
earliest                        2019-05-29 00:00:00
Container Unload From Vessel-Estimated  2019-05-31 00:00:00
```
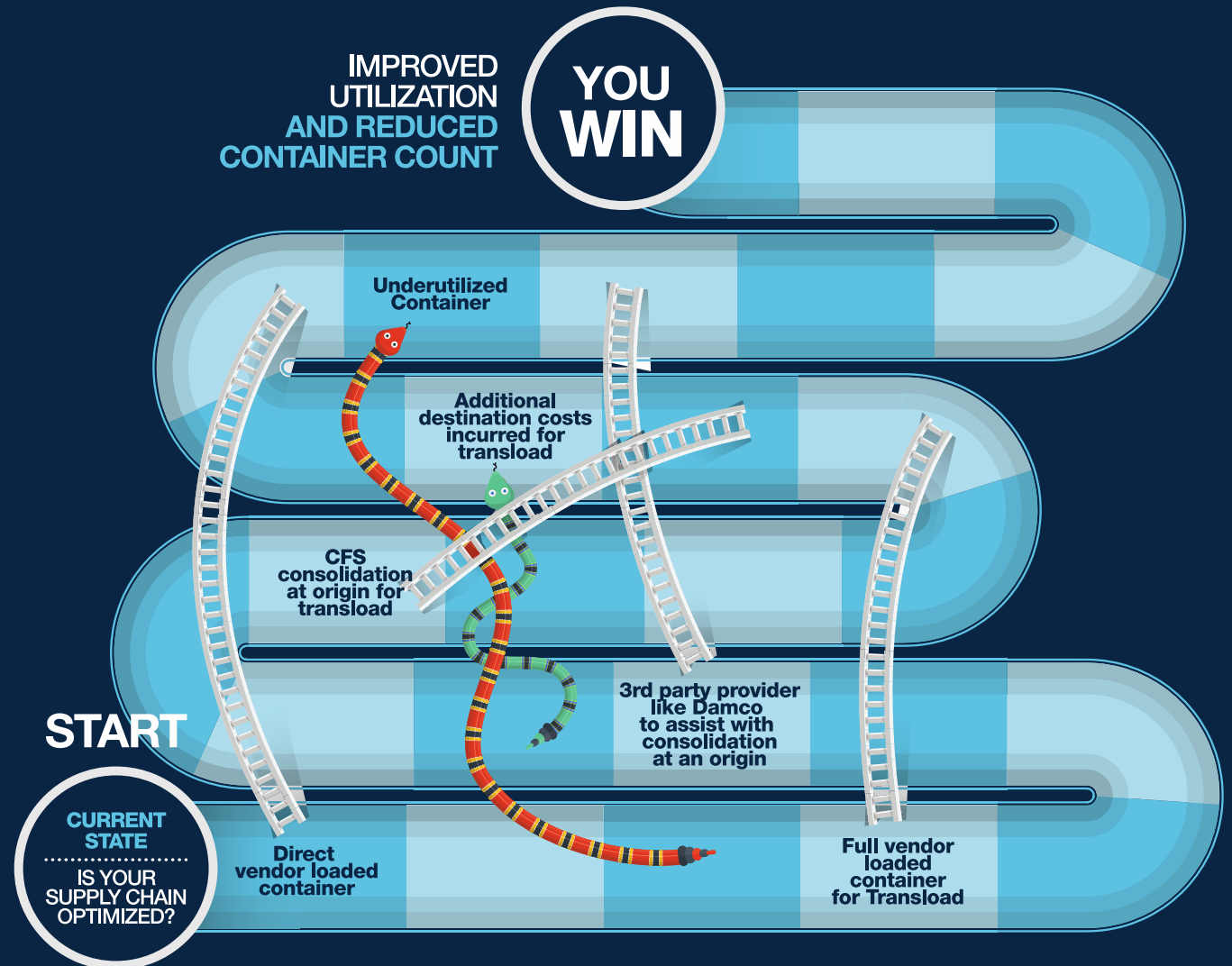
IPython console   History log

Permissions: RW   End-of-lines: LF   Encoding: UTF-8   Line: 18   Column: 14   Memory: 40 %

Type here to search

2:33 PM
4/27/2019

MAERSK

HOW TO WIN
**SUPPLY CHAIN
SNAKES
AND LADDERS**

IMPROVED
UTILIZATION
AND REDUCED
CONTAINER COUNT

YOU
WIN

Underutilized
Container

Additional
destination costs
incurred for
transload

CFS
consolidation
at origin for
transload

3rd party provider
like Damco
to assist with
consolidation
at an origin

START

CURRENT
STATE
·····················
IS YOUR
SUPPLY CHAIN
OPTIMIZED?

Direct
vendor loaded
container

Full vendor
loaded
container
for Transload

Questions?

MAERSK

Networking Break

ONE Record vision & roadmap AF/KL

Thomas Moreau, IT Project Architect, AF/KL

Bilel Chakroun, Business Expert, AF/KL

IATA
AVIATION
DATA
SYMPOSIUM

ATHENS, GREECE   25 – 27 JUNE 2019

AIR FREIGHT

IATA

ONE Record

Vision, current status & roadmap

Athens IATA Data Symposium - June 25th, 2019

Bilel Chakroun   Digital Cargo Operations Project Manager

Thomas Moreau   IT Solution Architect

Bilel Chakroun

Digital Cargo Operations
Project Manager

Air France KLM Cargo, Paris
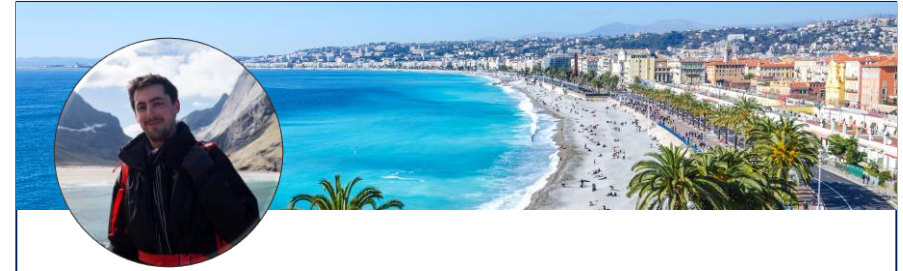
Thomas Moreau

IT Solution Architect

Air France KLM Cargo, Valbonne

AIRFRANCEKLM
GROUP

ONE Record

Current situation & challenges

AIRFRANCE**KLM**
GROUP

ONE Record
CURRENT SITUATION AND CHALLENGES
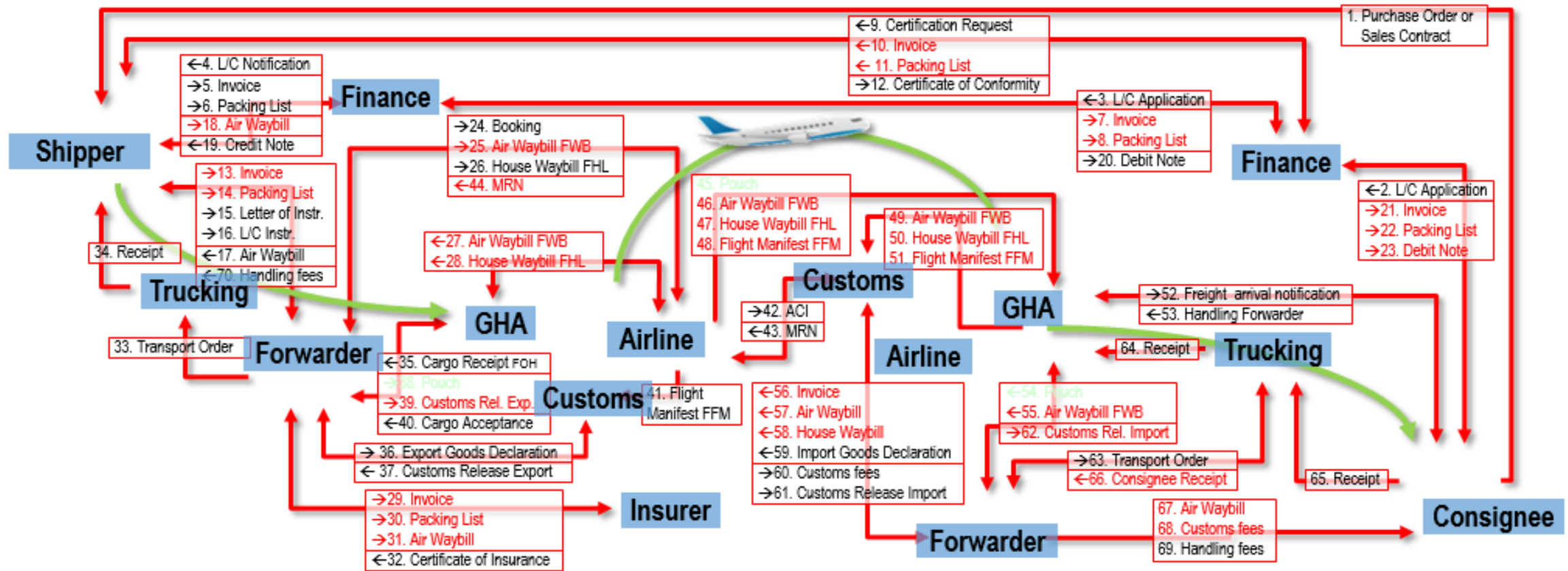
1 Shipment   **15** Supply Chain actors   **69** Exchanged messages

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ONE Record
CURRENT SITUATION AND CHALLENGES

One to One messaging exchange : create a new link at every step of the process
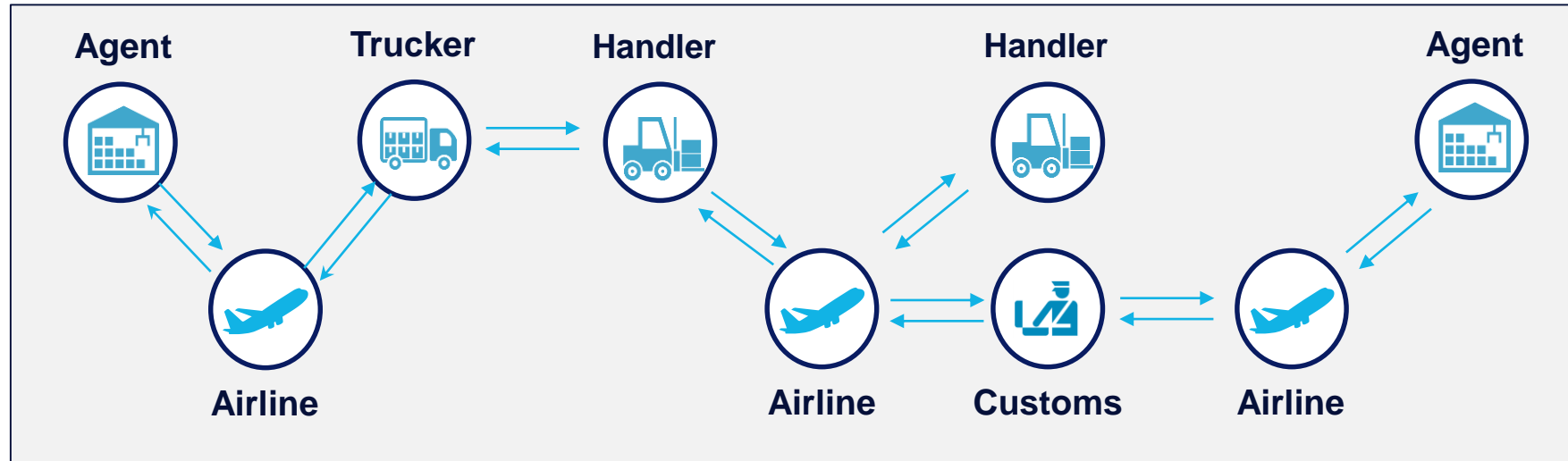
Use of different standards (CIMP, CXML…)

Sequential data exchange

Data limited to a specific chain node
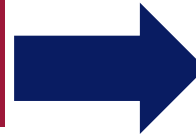
- Data transformation (Entreprise format, CIMP, CXML) can lead to partly loosing the information.
- Data is duplicated, updated and stored and not distributed to every actor in the same level
- Subscription rules maintenance
- Complexity to comply with authorities rules and restrictions. Airlines are the only responsible parties of the completeness and correctness of the data

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ONE Record

Vision & benefits

ONE Record
IATA VISION

An end-to-end digital logistics and transport supply chain where data is easily and transparently exchanged in a digital ecosystem of air cargo stakeholders, communities and data platforms.

The essence of ONE Record is to move from a peer-to-peer messaging model to a data sharing model relying on a virtual single record and data owners.

VIRTUAL SHIPMENT RECORD

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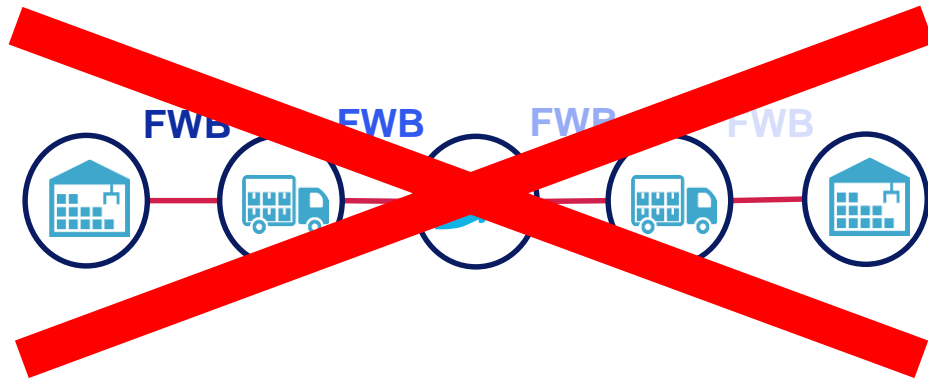
ONE Record
APPROACH

Everything is a URL	Modern data model	Simple web access protocols	Security and access control

- Air Waybill, Flight Manifest, Package, Piece

https://<...>/<companyID>/<resourceID>
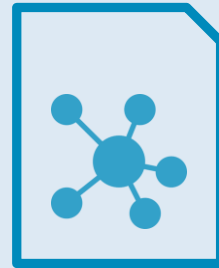
- Common data format
- RDF
  - JSON-LD, Turtle
- Freight Ontology
- Online schema

https://github.com/IATA-Cargo/ONE-Record

- Common web API
- REST
- Publish and Subscribe, Real-time notifications

- Common security standard
- HTTPS
- Trust Network
- Role Based Access Control

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ONE Record
CONNECTED COMPANIES
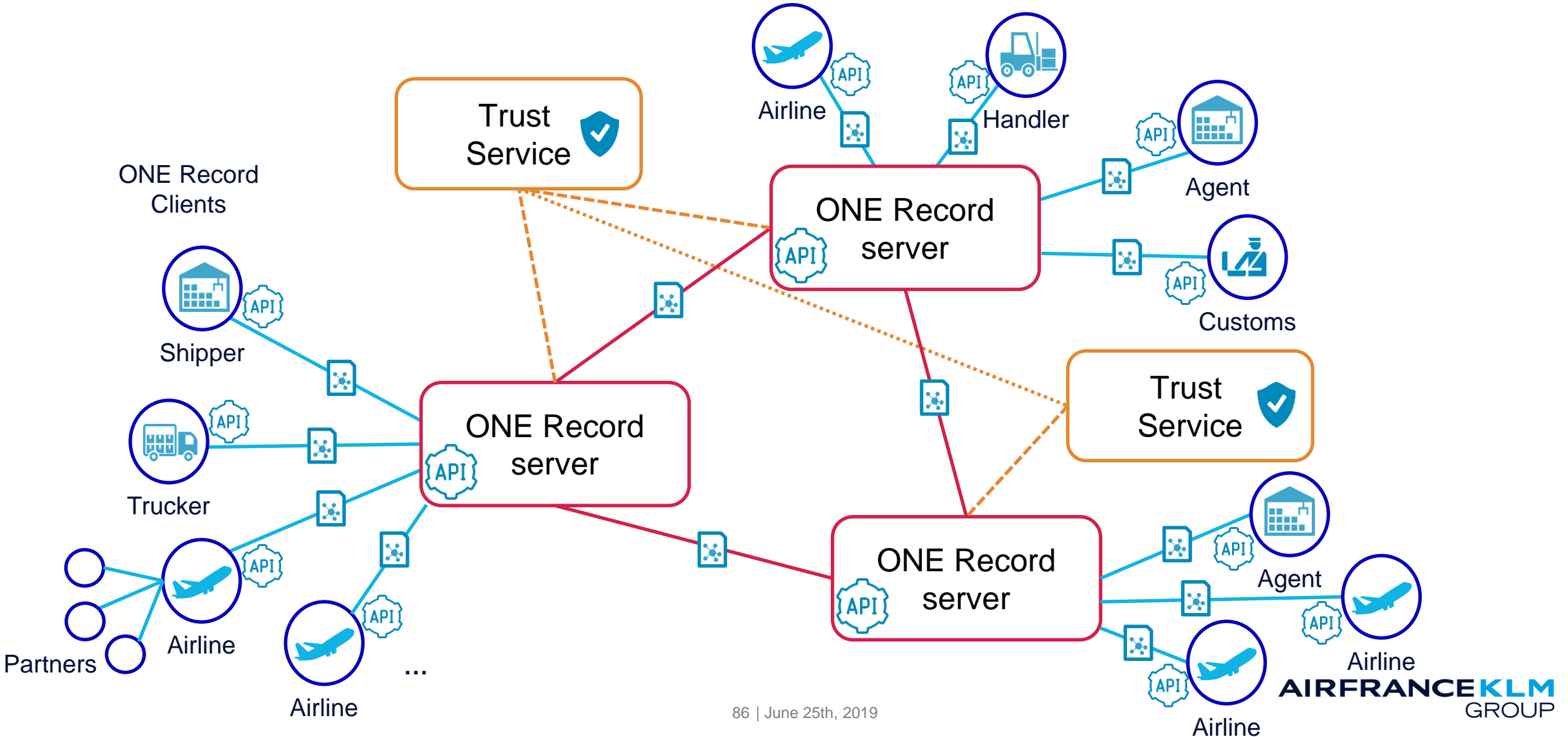
ONE Record
KEY BENEFITS

Transparency and visibility	Encourage innovation	Facilitate the communication between counterparties	Data quality
• Digital content identification • Real-time tracking and monitoring	• Apps • New business models	• Handling instructions • Customs status • Shipment status	• Discrepancies reduction • Better time to delivery when customs are involved

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ONE Record
ROADMAP

V0 Submission to the CSC
Data schema's and API's standard
14/12/2018

V1 Submission to the CSC
Data schema's, API's and Security standard
?

Develop ONE Record Standard

- Data schema's
- Web API's
- Security

Testing

- Analysis
- Test system
- Hackathon

Deployment

- Business processes
- Pilot projects
- Expansion
  Implementation & guides

2018

2019

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ONE Record

Pilot Project

ONE Record – PILOT
DEFINITION

Scope

- From shipment created by shipper to arrival at final destination using at least road and air transport.
- This would encompass P01 to P19 but do not include all sub-processes, for instance Customs and Security steps.

- Reference: https://www.iata.org/whatwedo/cargo/cargoiq/Documents/cargoiq-industry-mop.pdf

Deliverables

- Verification and identified opportunities for improvement of ONE Record standard.
- 1st draft of a similar standard for Road transport
- Proven road-air transport execution end-to-end using Internet of Logistics as collaboration platform.
- Project Report including do's and don't when implementing ONE Record standard

Stakeholders

- Ericsson
- Air France / KLM
- Finnair
- Ospentos
- Cargonaut

Timeline

February	March	April	May	June	July	August	September	October	November	December
	★			★			★			★
	MS1 Review			MS2 Review			MS3 Review			Completion & Evaluation
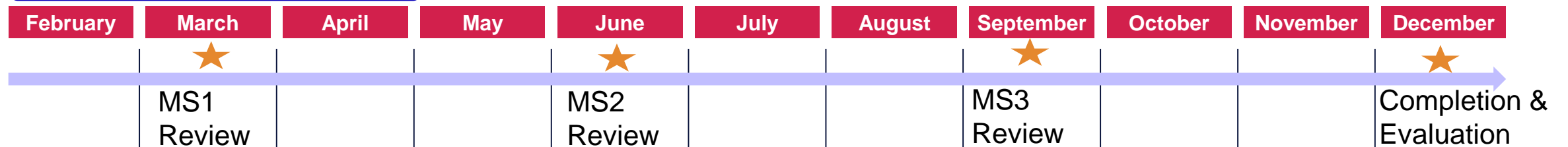
ONE Record – PILOT
GOVERNANCE AND TIMEPLAN

Stage gate process

• Stage gate milestone may be customized based on pilot definition

2019-03-18	2019 May (AY) / July (AF)	2019 May

Pilot kick off — **Ericsson Sweden publish to LDI** — **Air France and Finnair Publish & Subscribe to LDI** — **eCMR transformed to semantic schema**

2019 May	TBD	2019 Dec

Ospentos Publish & Subscribe to LDI — **Cargonaut Publish & Subscribe to LDI** — **Project Completion and Evaluation** — **Pilot closure**
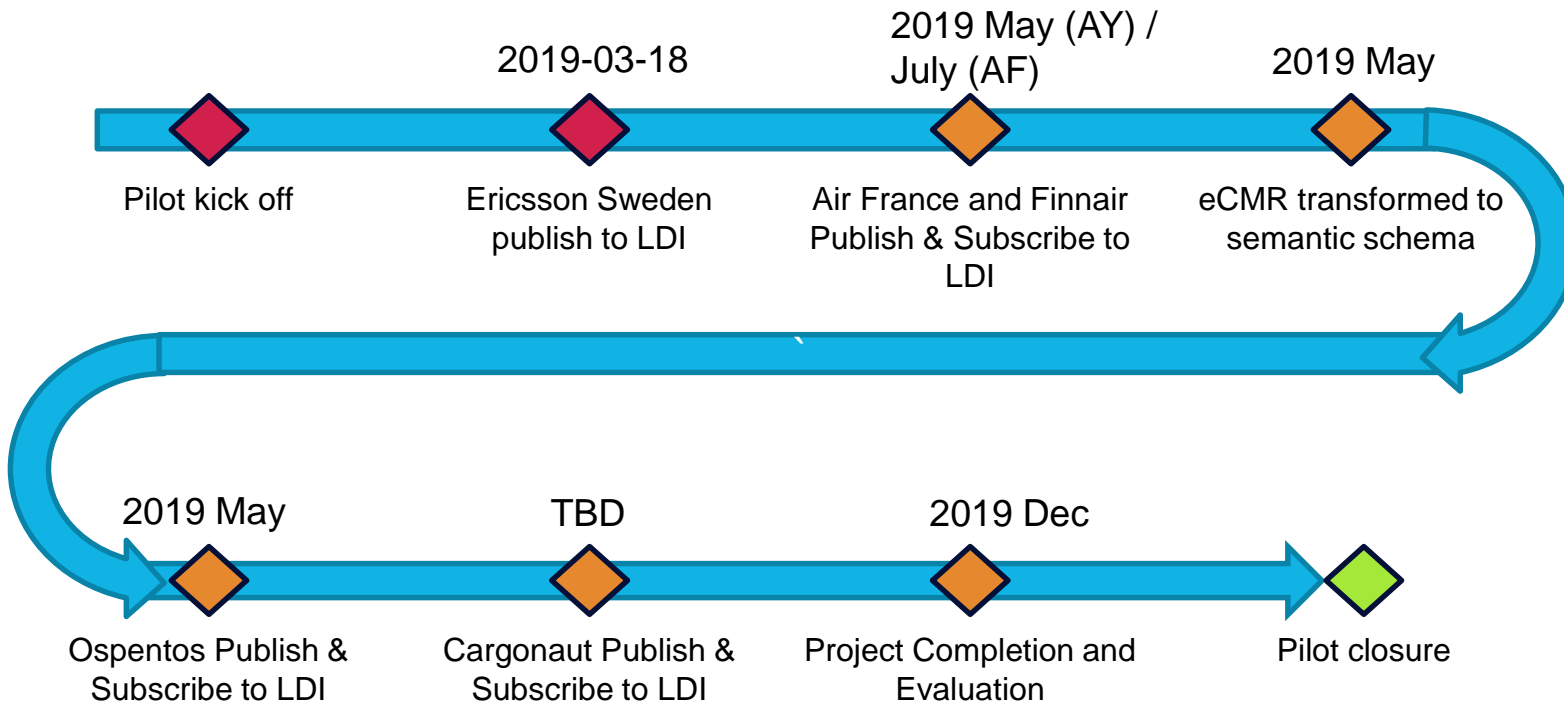
Project committee

• Weekly project meetings with all

• Quarterly Steering Meetings with Steering Group

KPIs

• Number of real shipments executed using LDI
• Messages replaced

Next steps

• Finalize Finnair integration
• Finalize Air France Integration
• Technical Workshops
• Integrate Ospentos
• Participate to IATA ONE Record Task Force
  • Data Model specification
  • API & Security specification
  • Collaborative elaboration and review

ONE Record - PILOT
DCF TEAM

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ONE Record

Integration with AFKL Cargo IT systems

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ONE Record - INTEGRATION
HIGH-LEVEL ARCHITECTURE

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GROUP

THANK YOU

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GROUP
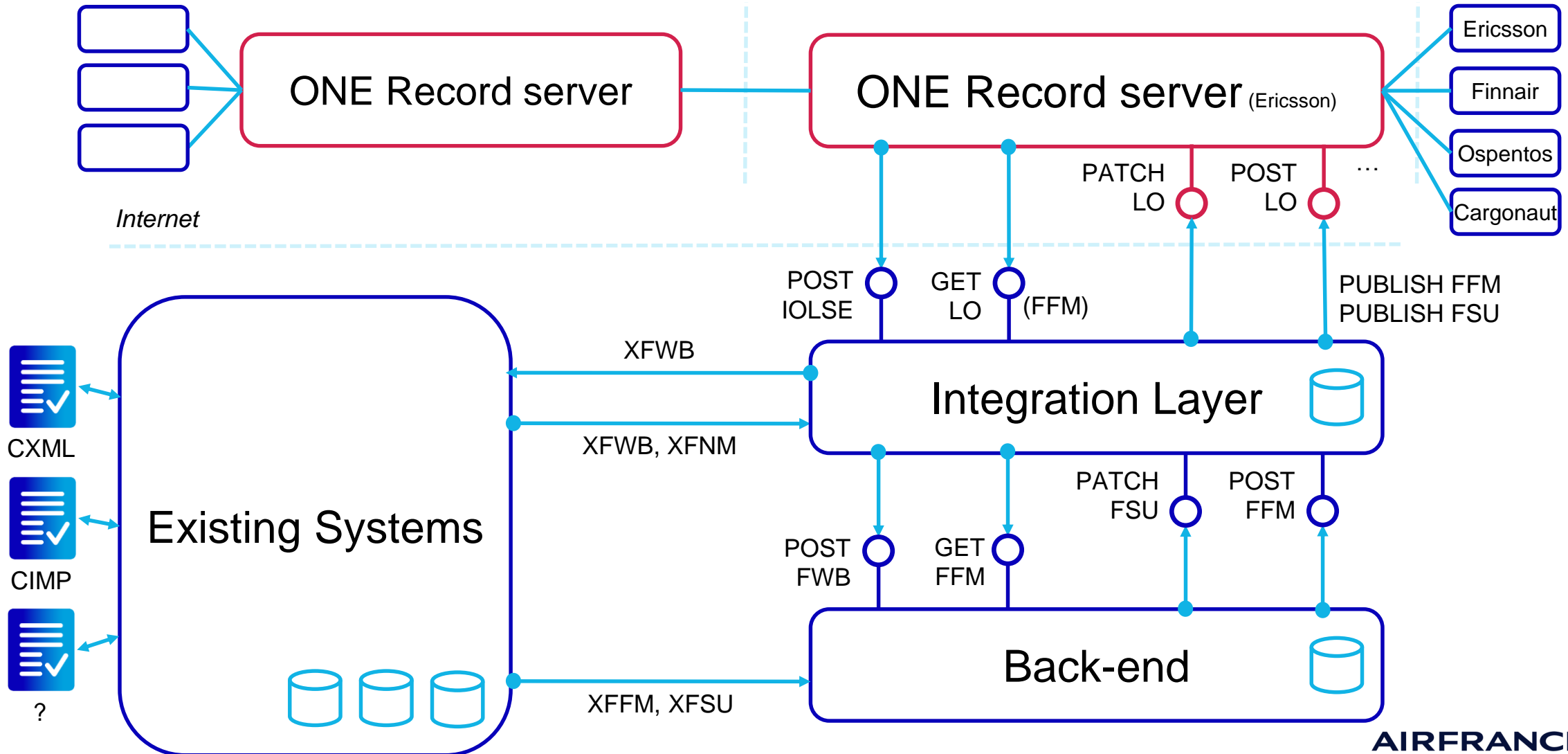
TradeLens:
an industry network

Juanjo Ruiz

Head of Strategy and Business Development, TradeLens, IBM Industry Platforms

TradeLens: An Industry Network

Juan Ruiz

Head Of Strategy and Operations

TRADELENS

THE TRADELENS JOURNEY

+ Driven by a broad collaboration of industry players under the leadership of IBM and Maersk

Ocean carrier additions:
ZIM joins

May 2019
CMA and MSC agree to join TradeLens; accounting for nearly 50% of global container volume

Ocean carrier additions:
Seaboard Marine and KMTC join

Ocean carrier additions:
Namsung and Boluda join

December 2018
TradeLens Commercial Release; 1.5 million events per day published to the platform; working with more than 100 ecosystem participants

Ocean carrier additions:
PIL joins

September 2018
TradeLens Limited Availability Release

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

August 2018
Formal launch of the TradeLens

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

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 ~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 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.
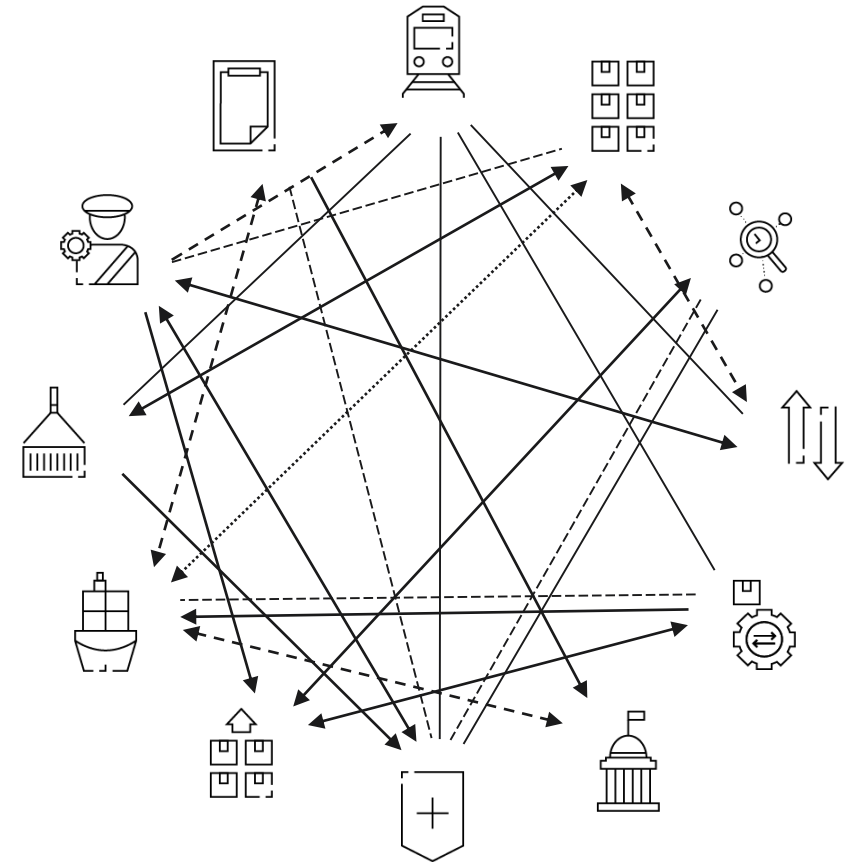
OUR MISSION

DIGITIZE THE GLOBAL SUPPLY CHAIN

+ Connect the ecosystem
Bring together all parties in the supply chain - including traders, 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 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

TRADELENS IS BUILT ON AN OPEN TECHNOLOGY STACK AND IS UNDERPINNED BY BLOCKCHAIN TECHNOLOGY

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.

APPLICATION 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.

BLOCKCHAIN

The TradeLens blockchain is a shared, immutable ledger that records transactions and tracks assets— tangible (a shipping container) or intangible (a commercial invoice). 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 the secure distribution and storage of the vital information that is 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.
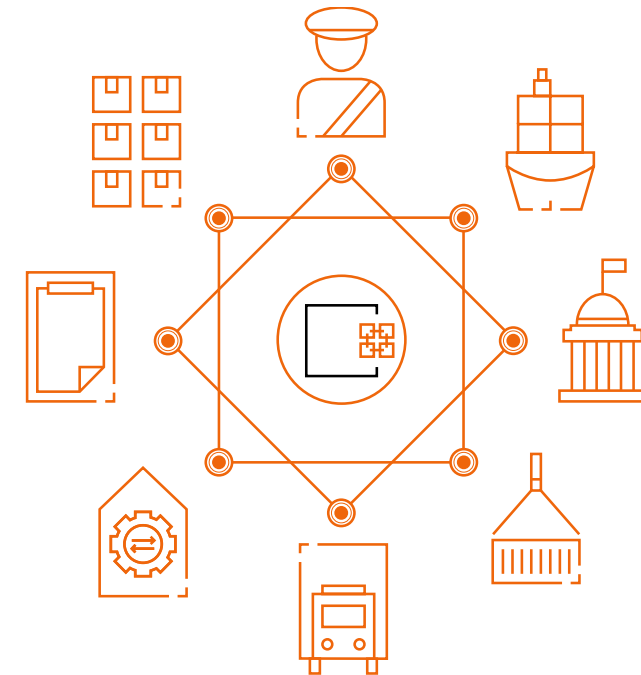
How the TradeLens blockchain connects the ecosystem:

+ **Tamper-proof recording** and **non- repudiation** for all data submitted to the solution. All data is signed by the submitter and recorded in the ledgers of the Trust Anchors.

+ **Verifiability** of data against the recorded proof of submission on the blockchain. Every piece of data can be verified against a **hash** of its original submitted content.

+ **Recoverability** of the solution from the data recorded on the blockchain. All data is distributed and replicated across the ledgers of the Trust Anchors.

+ **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. Only registered entities with Certificates can access the ledger. Channel Level Control Application Level Access Control.

BCO | 3PL | Intermodal | Customs & Authorities | Ports & Terminals | Carriers | Ports & Terminals | Customs & Authorities | Intermodal | 3PL | BCO

SHIPPING MILESTONES AND SHIPMENT DATA*

- Start consignment tracking (booking confirmed)
- Empty container Gate-Out from depot
- Container stuffing completed at inland location
- Gate-in Full at export terminal (planned/estimated/actual)
- Container selected for inspection
- Customer Release
- Container Loaded onboard on Vessel
- Vessel departure (planned/estimated/actual)
- Vessel arrival (planned/estimated/actual)
- Discharged at import terminal (planned/estimated/actual)
- Carrier release
- Import Customs release
- Gate Out full container planned/estimated/actual)
- Discharged from Truck planned/estimated/actual)
- Container stripped
- Empty container Gate-in at destination terminal

STRUCTURED AND UNSTRUCTURED DOCUMENTS*

Packing List | Commercial Invoice | Pro-Forma Invoice | Booking Request | Booking Confirmation | Certificate of Origin | Shipping Instructions | Bill of Lading | Cargo Specific Certificates | Arrival Notice | Dangerous Goods Declaration | Export Declaration | Import Declaration

TRADELENS BLOCKCHAIN BUSINESS NETWORK

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

STANDARDS + SECURITY

TradeLens is a neutral platform that is available to participants of any party to a shipment, anywhere in the world. The platform provides a way for all major logistics and permissioned participants to immediately contribute to and extract value from the TradeLens network.

TradeLens is committed to the promotion and adoption of standards and interoperability of platforms.

+ **Information standardization**

TradeLens will work closely with the advisory board, ecosystem members and standards bodies to help the industry develop and adopt standard codes and data models. The TradeLens data model and access control scheme aligns with UN/CEFACT.

+ **Interface standards**

TradeLens is committed to openness, with all functionality surfaced via non-proprietary, publicly available APIs that are designed specifically for ease of integration.

+ **Blockchain interoperability**

The TradeLens platform has full intentions to follow blockchain-based standards evolving in the industry, inclusive of cross-ledger namespace and transfers or information between ledgers.

TradeLens leverages the comprehensive security capabilities embedded in numerous mission critical platforms that IBM manages for many of its Fortune 500 clients

Secure Development, Deployment and Operations

+ **Secure development** processes followed; includes source code review for security flaws, industry standard encryption algorithms, vulnerability management, and penetration testing.

+ **Invite only** system with authentication and authorization of all users and access.

+ **Granular permissions** to documents according to participant Role on consignment

+ **IBM IT Security Standards** are aligned with ISO27001

Built on Enterprise IBM Blockchain Platform and IBM Cloud

+ Provides **protection against ransomware** since there is no capability to access system root, and back ups are not accessible via TradeLens interface.

+ **Permissioned ledger** with immutability, access control and data segregation by channel

+ **Encryption** in firmware, keys protected by hardware

+ PII and other **sensitive data is not stored** on chain (only hashes)

+ Leverages fully managed **IBM Kubernetes** Service for run-time components.
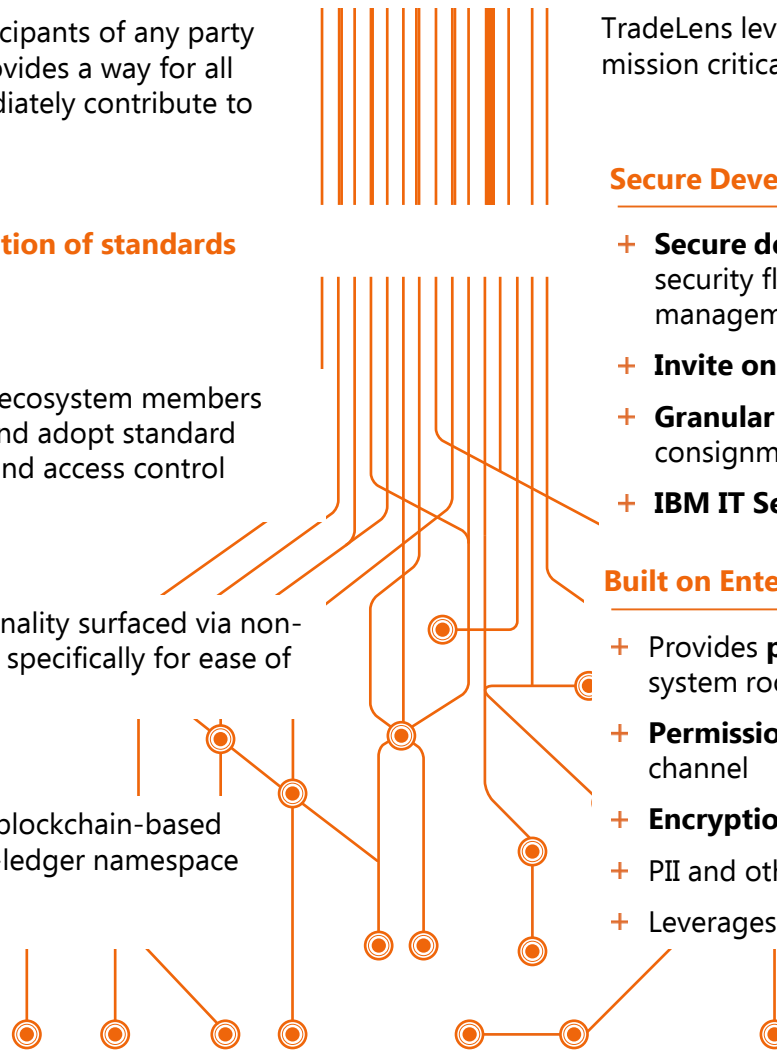
THE TRADELENS NETWORK TODAY

+ Working with authorities from 10+ countries to deliver better information sharing, less manual paperwork, and easier connections to national single window platforms

+ Coverage across 6 continents
+ Data from up to 600 ports and terminals captured by existing TradeLens members
+ 61 ports and terminals directly integrated in to TradeLens

+ Partnerships with 13 global ocean carriers representing data on 48% of global container shipping volume

+ Maximizing the value of logistics firms (3PL and Intermodal) by improving collaboration via open global standards around commercial, documentary, and operational elements
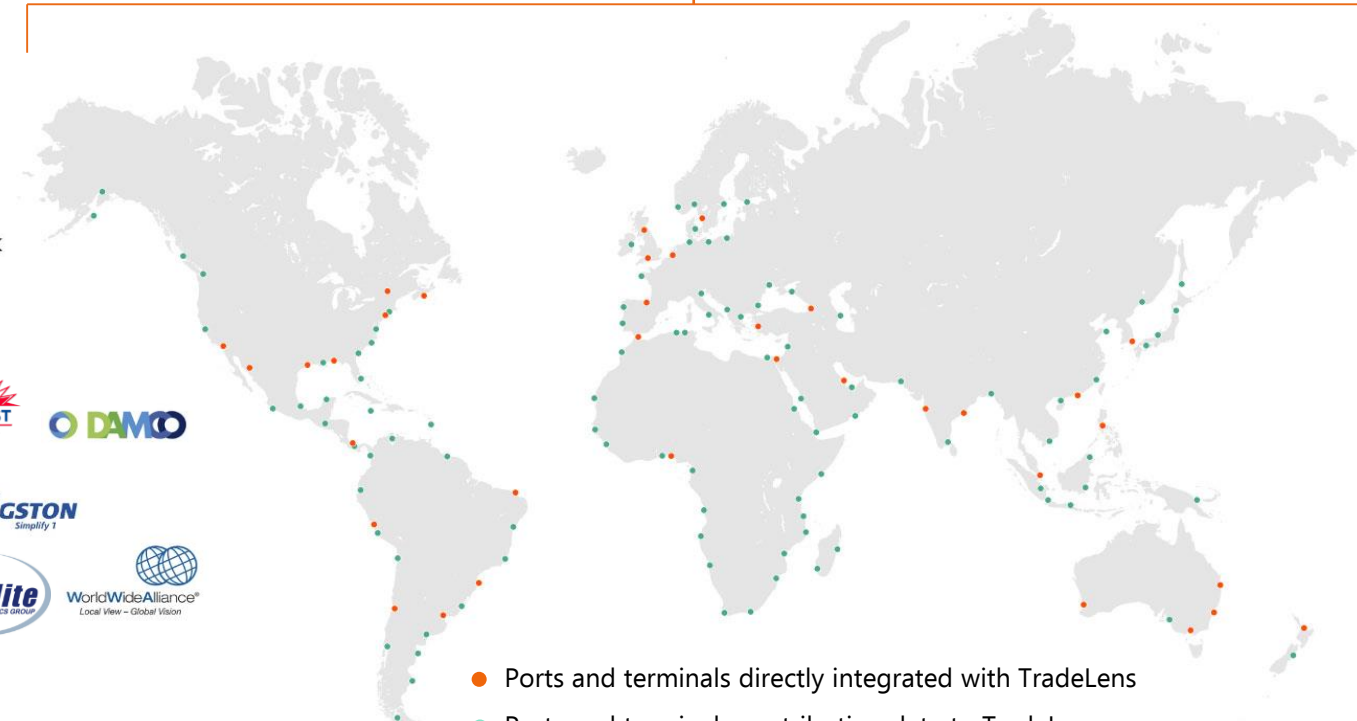
- Ports and terminals directly integrated with TradeLens
- Ports and terminals contributing data to TradeLens

Interactive map of TradeLens network: www.tradelens.com/ecosystem/

TRADELENS FUTURE

1 – 2 YEAR OUTLOOK (SUBJECT TO CHANGE)

The TradeLens platform is developed using an Agile methodology and will continue to expand and improve over time. Our roadmaps are subject to change based on market feedback, input from participants, and validated learning.

Current Annual Volumes

500M Events

20M Containers

5M Documents

These numbers are estimated to double with the recent addition of new global ocean carriers to the network

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

PLATFORM

+ Network Expansion
Continue to expand the network of ocean carriers, ports / terminals, intermodal, 3PL, and government authorities who are connected to the platform

+ Structured Document Catalog
Support for an expanding set of structured document types following UN/CEFACT and industry-defined standards

+ Flexible Shipment Arrangements
Consignment hierarchies (subcontracted transport), linking inland consignments, incoterms support, LCL and HBL shipments

+ Clear Way
Blockchain-based workflow enabling a range of documentation use cases across ecosystem participants

+ Ongoing Enhancements
UI improvements, configurable notifications and alerts, IoT / GPS device support, and other ecosystem-requested enhancements

APPLICATIONS

+ Booking & Shipping Instructions
Book freight and send shipping instructions direct from the platform and benefit from tight integration with visibility and document sharing

+ Cross-mode Dangerous Goods
Simplified, consistent, and auditable means to share dangerous goods documentation across all modes of transport

+ Negotiable e-Bill of Lading
Paperless transfer of ownership and cargo release on TradeLens member carriers

+ Financial Services
Marketplace offerings from leading trade finance and cargo insurance providers, as well as applications and services for financial services

+ Additional Applications
Advance Ship Notification (ASN) automation, AI logistics insights, interoperability with leading blockchain solutions aligned with market needs, and more

THANK YOU

Juan Ruiz, Head Of Strategy & Operations - j.ruiz@ibm.com

TradeLens news: https://www.tradelens.com/news/

TradeLens documentation: https://docs.tradelens.com/

TradeLens use cases: https://www.tradelens.com/news/

From logistical chains to logistical networks

Moderator: **Jean-Christophe Rossand,** Assistant Director Cargo Intelligence and Air Mail Settlement, IATA

Thomas Moreau, IT Project Architect, AF/KL

Bilel Chakroun, Business Expert, AF/KL

Juanjo Ruiz, Head of Strategy and Business Development, TradeLens, IBM Industry Platforms

Remi Lammertin, IT Cargo Operation Carrier, AF/KL

AIR FREIGHT

Is the dream of end to end visibility in air cargo becoming a reality?

Pierre-Stephane Maurice
Product Manager Aircraft IoT Strategy & Marketing, SITAONAIR

IATA
AVIATION
DATA
SYMPOSIUM

ATHENS, GREECE   25 – 27 JUNE 2019

AIR FREIGHT

IATA

SITAONAIR

Aircraft Internet of Things

Is the dream of end-to-end visibility in air cargo becoming a reality?

IATA Aviation Data Symposium
Tuesday 25th June
Athens

Pierre-Stéphane Maurice

SITAONAIR Is the **Aircraft Business Unit** of **SITA** Group

1,600
daily connected
cabin flights

More than 2,000
VHF ground stations around
the world in over 160 countries

60,000
daily internet
sessions

80%
of airlines using our ATC
and safety services

More than 250
airlines using AIRCOM® services

13,500
air transport site connections
in more than **220** countries

Aircraft IoT – what do we mean?

Unlocking connected aircraft value – turning the *"Aircraft as a Sensor"*

1 Connecting **Cabin** ✓

2 Connecting **Aircraft Data, Cockpit Apps & Flight Crew** ✓

3 Connecting the Aircraft **"Things"** with IoT

Innovation in the Air Cargo Industry

Applying Aircraft Internet of Things

SITAONAIR CargoTab prototype

Lower deck

Containers
Front

SVO → HKG
RU 139

Front
Middle
Rear

no. 1 ✓ 34°
no. 2 22°
no. 3 32°
no. 4 ---
no. 5 ---
no. 6 24°
no. 7 ---
no. 8 ---

no. 1
Container

GENERAL   SENSORS

Samsung Inc.
Owner

123456
ULD ID

31
Pieces

112
Weight (kg)

Swissport
Handling
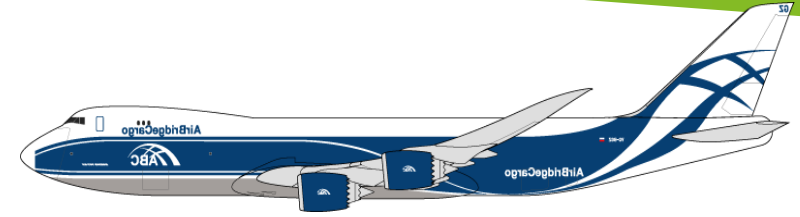
RU 139

SVO → HKG
AC REG: VPBBY

STD	18.05.2018, 10:35
ETD	18.05.2018, 10:35
ATD	18.05.2018, 10:35
STA	18.05.2018, 10:35
ETA	18.05.2018, 10:35
ATA	18.05.2018, 10:35
DELAY	2h 45mins

Upper deck   DETAILS
22 Containers

Front
Middle
Rear

Lower deck   DETAILS
10 Containers

Front
Middle
Rear

HOW
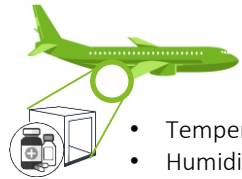
By capturing	through the deployment of	connected via	enriched by	consumed as
• Temperature • Humidity • Lights • Motion & Shock	**OnAsset sensors:** • Aero certified • Flexible and low cost • BLE compatible **Aircraft Interface Device:** • Onboard aggregation & communication routing	**Air-to-Air:** Bluetooth 5 **Air-to-Ground:** VHF/VDL SAT	SITAONAIR	✓ APIs ✓ Web Dashboard

The learnings & next steps

Fostering the collaboration with all stakeholders

Demanding market vs enabling technologies

Discussion

Blockchain puts the SMART into ULD

Calvin Hui, eCargo & Digital Enablement Manager, Cathay Pacific Cargo

Sandy Tsang, CX Solution Lead, Cathay Pacific Cargo

Bob Rogers, VP Nordisk Aviation Products

ULD- who actually cares?

- ULD CARE cares…
  - Over 50 of the worlds ULD owning airlines
  - Operator of Interline ULD User Group system

ULDCARE

" Dumb" ULD

- Item 1.A ULD

- Item 2.A UCR

- Item 3.A UCM


```
QD YMQFFXB
.FRAUSXH 20600
MUC
SEQ940
PMC14834AA/27MAY2019/1503/EK/AA/LHR/001-07474312/XXX/SER
PMC16314AA/27MAY2019/1503/QR/AA/LHR/001-27474241/XXX/SER
PMC17309AA/27MAY2019/1503/QR/AA/LHR/001-07474241/XXX/SER
PMC19065AA/27MAY2019/1503/QR/AA/LHR/001-17474241/XXX/SER
PMC17526AA/28MAY2019/0534/QF/AA/SYD/001-07474743/XXX/SER
TTL005
```

ULDCARE

SMART ULD

- Know where:
  - The ULD is located
  - How long its been there
  - Environmental conditions

ULDCARE

SMART ULD

- Know where:
  - The ULD is located
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ULDCARE

SMART ULD

- Know where:
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  - How long its been there
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ULDCARE

SMART ULD

- Know where:
  - The ULD is located
  - How long its been there
  - Environmental conditions

Equip. Type	Equip. No.	Tag	Serviceable	Severity	Last Seen	Dwell
AKE	AKE40021DL	103919	✓		03/06/2019 00:54	0d 00:00
AKE	AKE40023DL	104014	✓		03/06/2019 00:35	0d 00:00
AKE	AKE40121DL	103634	✓		03/06/2019 00:56	0d 04:12
AKE	AKE40140DL	103672	✓		03/06/2019 00:54	0d 04:06
AKE	AKE40143DL	103758	✓		03/06/2019 00:56	0d 04:10
AKE	AKE40147DL	104009	✓		03/06/2019 00:56	0d 01:03
AKE	AKE40001DL	103783	✓		03/06/2019 00:36	0d 00:13
AKE	AKE40115DL	103809	✓		02/06/2019 12:08	0d 00:00
AKE	AKE40102DL	103709	✓		02/06/2019 13:03	0d 00:00
AKE	AKE40099DL	103236	✓		02/06/2019	0d 00:00

ULDCARE

What's driving SMART ULD

- E-commerce
  - Information expectations
  - Answer to the "where is my shipment" question

Thursday, September 19, 2013		Location	Time	
19	Delivered - Signed for by : NICHOLAS	SG-	8:25 PM	
18	With delivery courier	SINGAPORE - SINGAPORE	7:27 PM	
17	Scheduled for delivery	SINGAPORE - SINGAPORE	5:48 PM	
16	Arrived at Delivery Facility in SINGAPORE - SINGAPORE	SINGAPORE - SINGAPORE	7:27 AM	
15	Departed Facility in SINGAPORE - SINGAPORE	SINGAPORE - SINGAPORE	7:05 AM	
14	Processed at SINGAPORE - SINGAPORE	SINGAPORE - SINGAPORE	6:15 AM	
Wednesday, September 18, 2013		Location	Time	
13	Arrived at Sort Facility SINGAPORE - SINGAPORE	SINGAPORE - SINGAPORE	10:48 PM	
12	Customs status updated	SINGAPORE - SINGAPORE	4:38 PM	
11	Departed Facility in INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH K.)	INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH K.)	1:16 PM	
10	Processed at INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH K.)	INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH K.)	12:16 PM	
9	Arrived at Sort Facility INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH	INCHEON OUTSKIRT OF SEOUL - KOREA, REPUBLIC OF (SOUTH K.)	12:11 PM	

ULDCARE

Not so SMART

- We still don't know:
  - Is that ULD serviceable or damaged?
  - Does it have a net and/or other accessories?
  - Which airline is it working for
    - Interlines
    - Rental pallets

ULDCARE

The really SMART ULD

- Tagged

- App based recording of transfers

- Data system that
  - Handles real world names and addresses
  - Knows the current custodian of the ULD
  - Real time
  - Immutable

ULDCARE

Blockchain puts the SMART into ULD

Cathay Pacific's App backed by Blockchain

Calvin Hui
Cathay Pacific Cargo

The Problem

- Approx. **20,000** Unit Load Device (ULD) in circulation within the network

- Approx. **7.5%** (1500 ULD per day) are held at Cargo Agents as overdue

- Around **USD11,600** per day on demurrage caused by overdue ULD

- It is not about $

- We need these empty ULD back in the network especially for cargo peak

What is causing the problem?
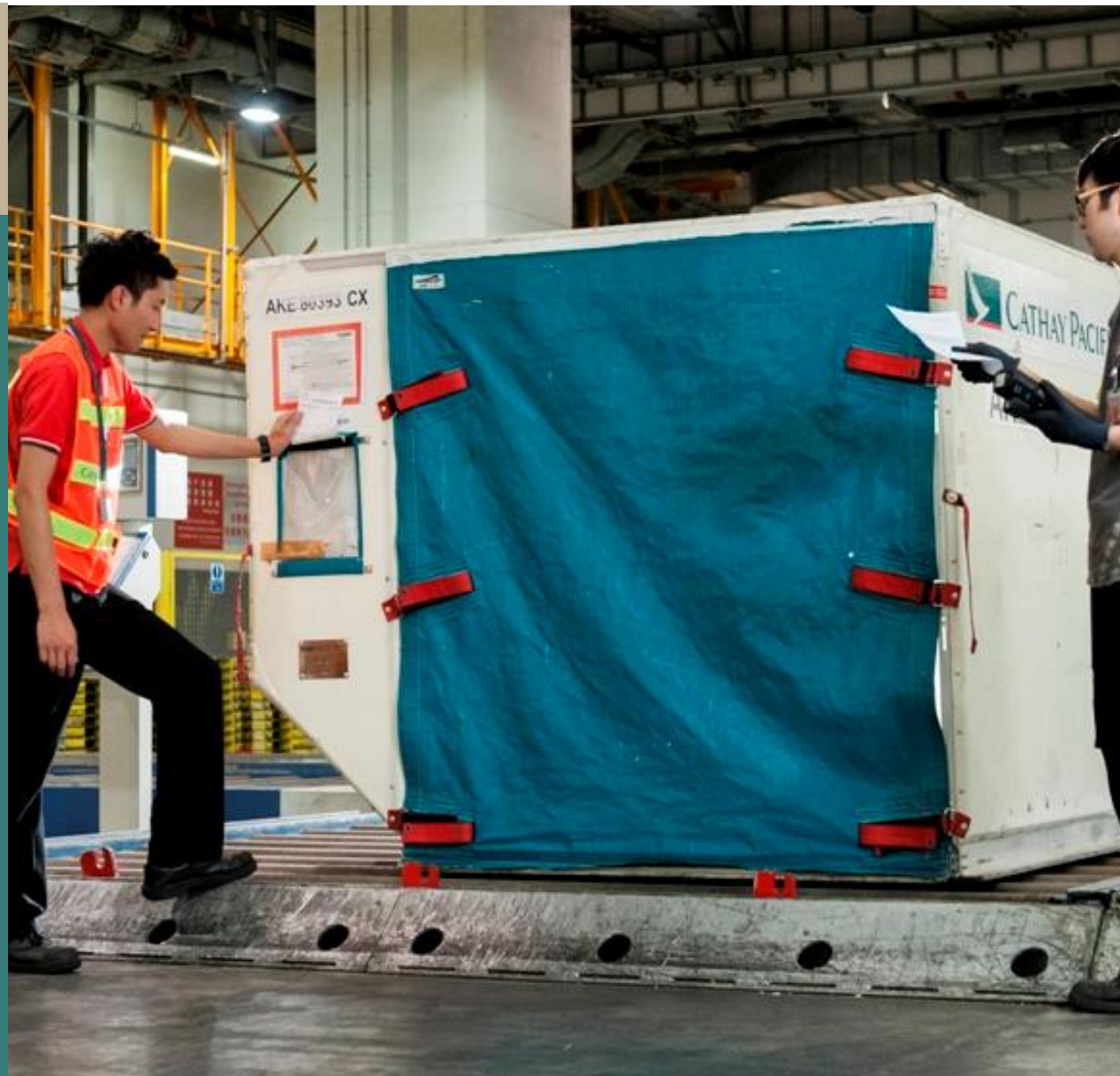
Why Blockchain?

Smart Contract
Transfer of custody

Immutable Data
ULD life cycle
serviceability

Data Sharing
Agents
Airlines
CTO

**Data
Standardization**

New ULD Transfer Process

Next Step: Proofing and Amplifying Benefit

Internal Use Case

Proof of Technology
(2018)

→

Pilot:
CX selected ports
(2019-20)

Industry

Working with the industry
ULDCARE, BiTA, Airlines,
Unilode
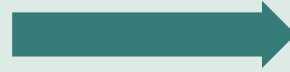
Tomorrow's data heroes

Didier Navez, VP Strategy & Alliances, Dawex

Serge Hanssens, Partner, PwC

Tomorrow's data heroes!

Presentation by
Serge Hanssens, Partner, PwC
Didier Navez, VP Strategy & Alliances, Dawex
June 2019

#DataExchange #DataMonetization #DataEconomy #Smartidentity

1

Setting the scene

Serge Hanssens
Partner PwC

Today, everything is **data, data and data**

2014 | 4.4 ZB

7X

2019 | 33 ZB

5X

2025 | 175 ZB
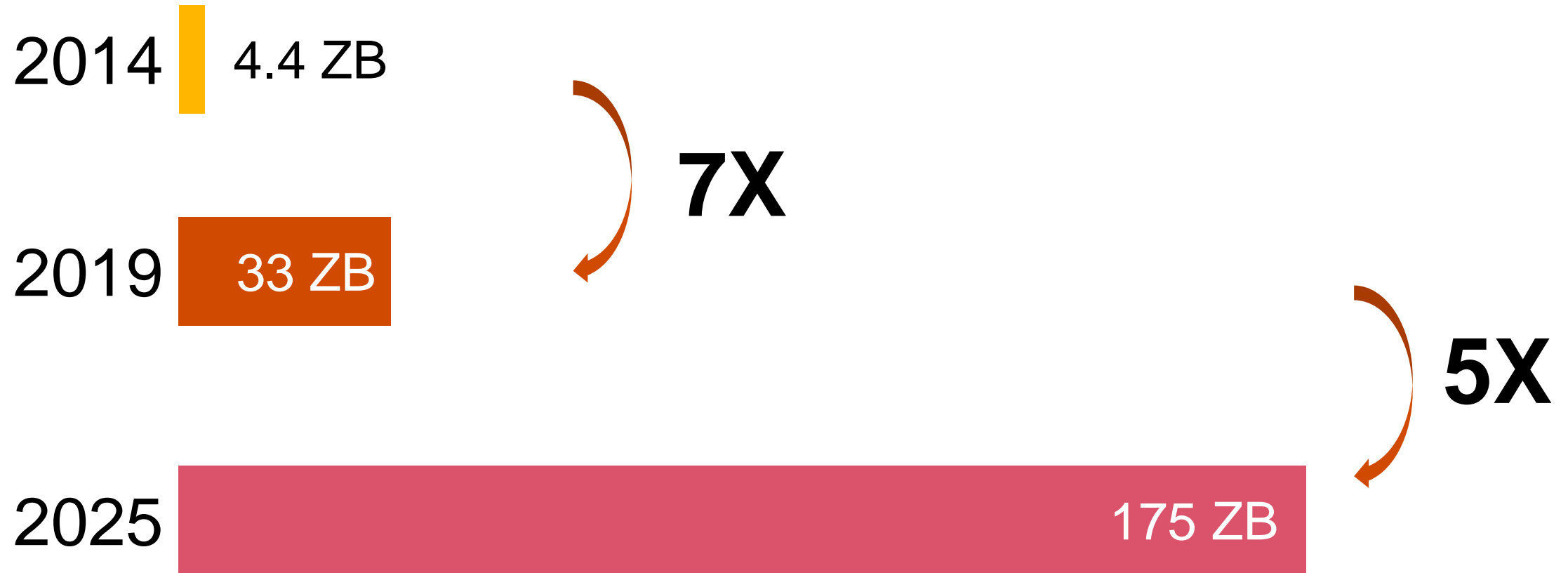
What is this data **market value**?

**Data exchange
- a huge market only waiting to expand**

1.7X

$400bn

$227bn

2018

2025

What is the **value per user** ?

The Future Value of Your Data

The monetary value of information about a single person's online and offline activity may reach $10 a month by 2025 in the U.S. — and could be much higher if direct sales to data-enabled services (not shown here) are included.

2X

- ▇ Global average value
- ▇ Europe average value
- ▇ U.S. average value

$4.91

$1.18 $1.59

$9.82

$2.36 $3.18

Value of data per Internet user
in 2018 (per month)

Est. value of data per Internet user
in 2025 (per month)
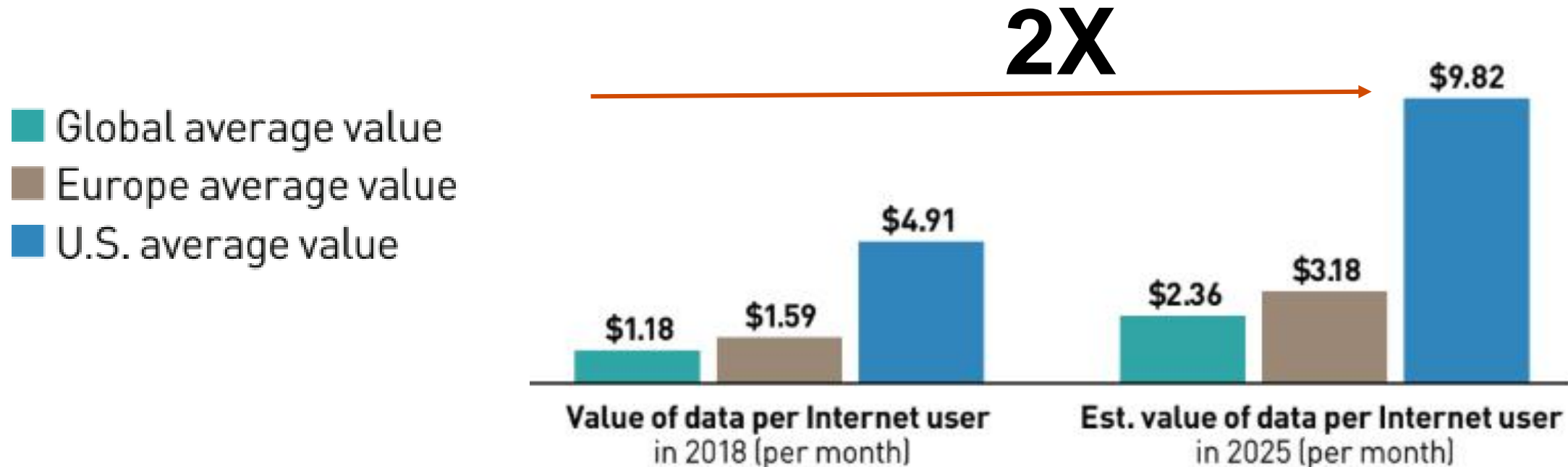
Source: IDC's *Global DataSphere*, Nov. 2018; "Facebook Annual Report 2017"; Strategy& analysis

Today, it is all about **Advertising!**

Tomorrow the growth will come from enterprises

WHY ? It will essential to improve their sales and operations

Sell, buy, trade and profit from data

Why is this crucial ? Because buying and selling data will become a **necessity to operate and be successful**.

By 2020
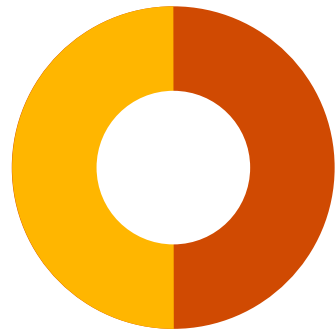
50% **will monetize their data** *(source: IDC)*
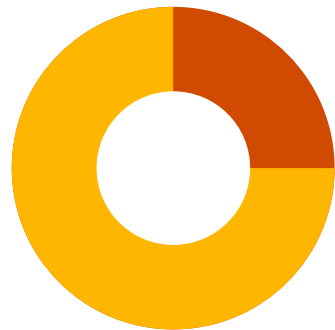
25% **will use data market places** *(source: Gartner)*

Data Exchange has become the third global marketplace.

Commodity markets	Stock markets	Data markets

4500 BC

~1500 AD

2015+

How we make it happen: a **5-step approach!**

Data *Mapping*	Client segmentation – *use cases*	*Business Model* definition	*Pricing* policy definition	*Business Plan*
• **What data** (or information) existing or collectable, internal or acquired externally (free or paid)	• **Who** will be interested? • By **which data?** • For **which use cases?**	• Which data for **direct** and **indirect monetization?** • **Price per transaction** and/or **subscription**	• Which **price ranges** for which data or which services	• **Revenue** estimates • **Costs** estimates • **Roadmap**

Which data to share and monetize, to whom and why? → **How to value my data assets and my ecosystem?** → **For which benefits?**

What are today's **key concerns?**

Pricing

Samples

Legal - contracts

Data privacy /GDPR

Infrastructure
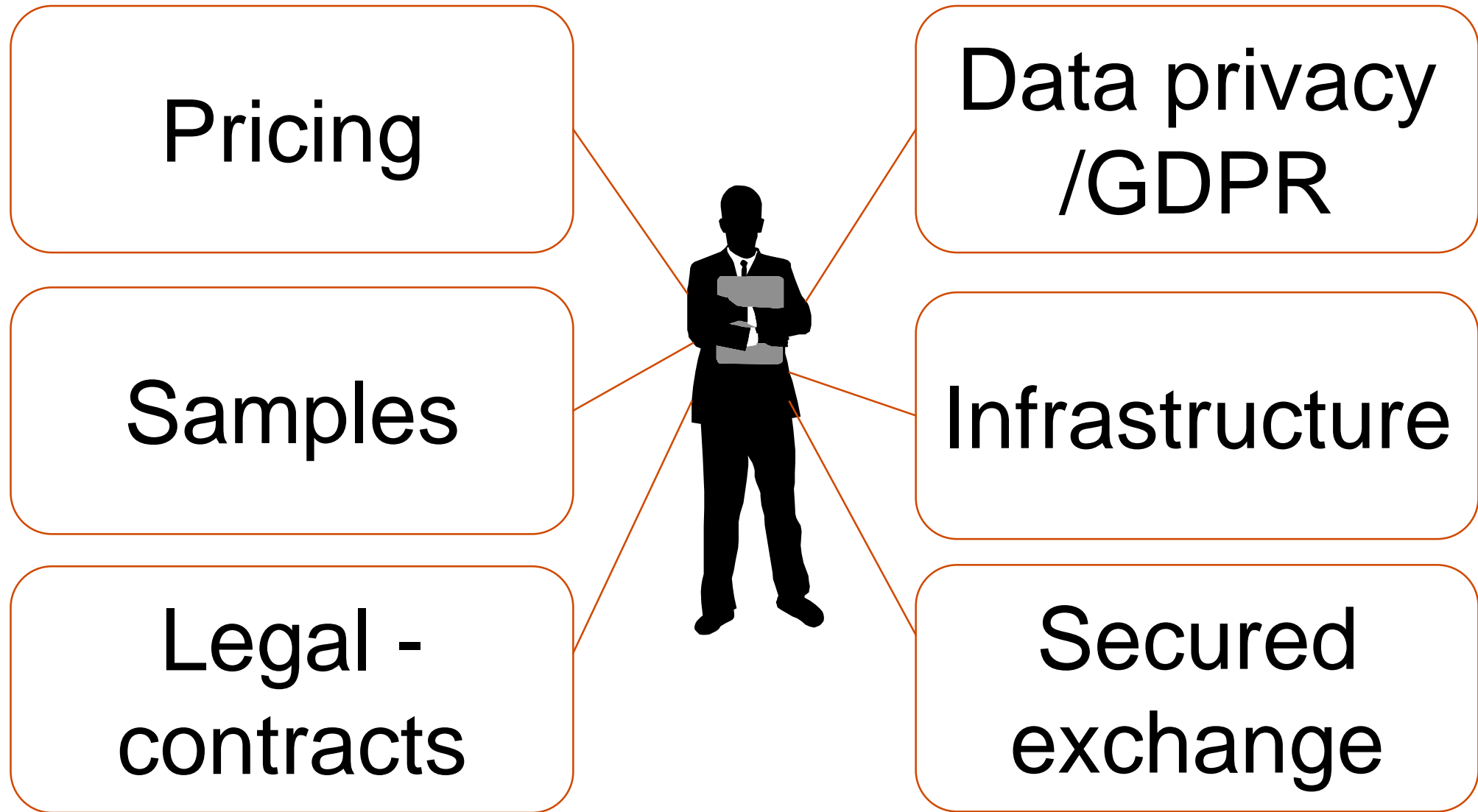
Secured exchange

2

DAWEX

SELL BUY SHARE DATA

Making data exchanges accessible and secure

dawex.com   @DawexData

#DataExchange #DataMonetization #DataEconomy

Generating 1% of incremental revenue through data could result in an earnings increase of 10% and a (company) valuation increase of more than 25%

How IoT Data Ecosystems Will Transform B2B Competition - BCG - July 2018

Data monetization : a strategic challenge

Data marketplace, the ultimate step of digital transformation

Important

Through data ecosystems orchestration, enterprises create strong competitive advantages:

1. Development of a new asset: data
2. Implementing entry barriers
3. Gain influence amongst partners

Data ecosystems orchestration

VALUE

Data Monetization internally (smart data)

Data monetization externally

Digital capabilities foundations

Continuous digital transformation digitale

Low

Low

COMPLEXITY

Important
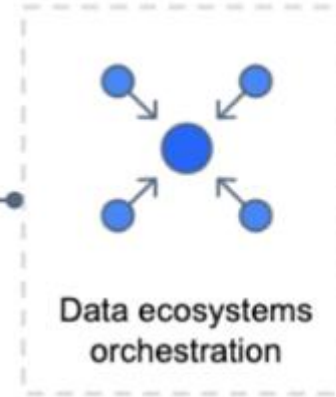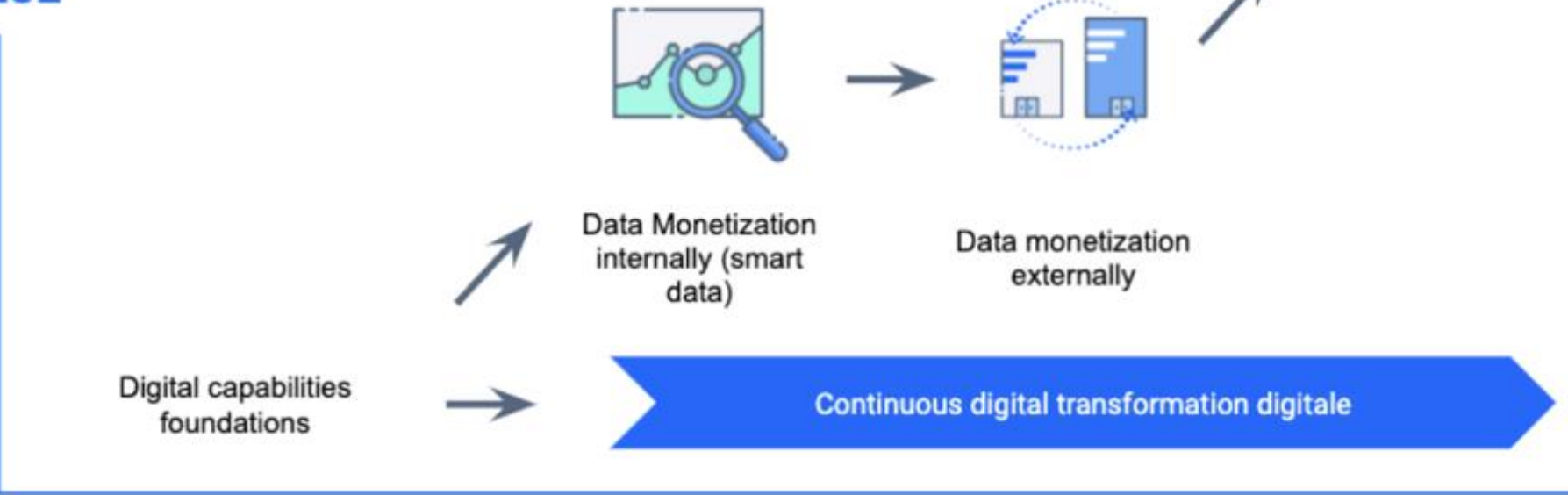
(source: BCG)

Data Exchange Platform Implementation Scenarios

A platform that provides you with options while you evolve your data culture & business strategy
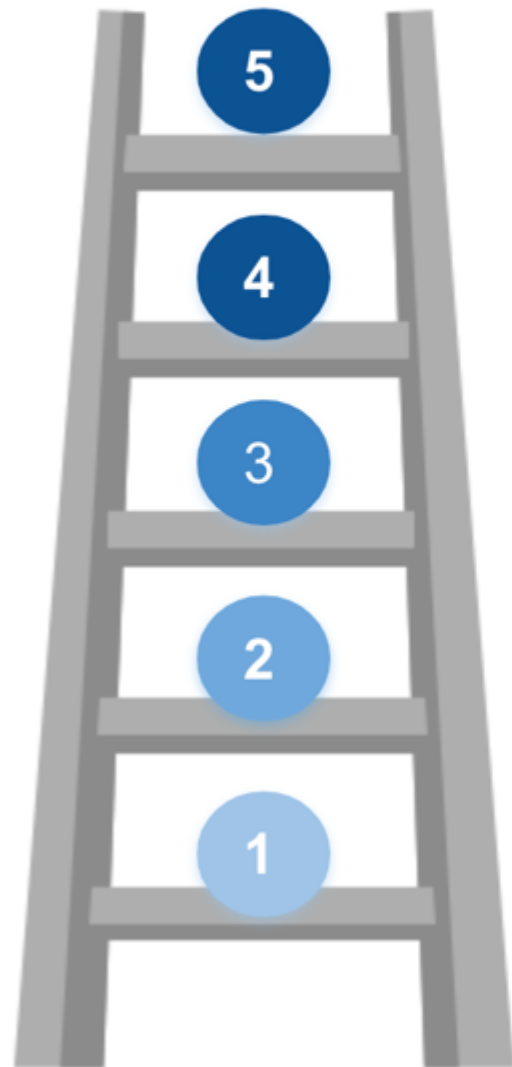
5 — Extend your market to the global data marketplace

4 — Become the orchestrator of your data **ecosystem**

3 — Engage in external data sharing and **monetization**

2 — Organize your external data **sourcing**

1 — Manage data **circulation** across your organization

Data Exchange Platform - use cases priority

EXAMPLE

	INTERNAL		EXTERNAL	
	Business Units	Subsidiaries	Business Partners	Non Business Partners
Sourcing			3	
Sharing	1	1	1	
Monetization		1 *Transfer price*	2	3

Priorité 1 2 3

Aviation data use case

Aviation data is of high value to new types of buyers

Data Supply

Specialized Data Vendors
Private jet flight data

Use Case
Identifying future corporate transactions based on corporate flight activity

Example
Uncovering meetings between Amazon & Whole Foods that occurred before their $13.7 billion deal was announced.

Data Exchange Platform

Raw data, insights
API, files, subscriptions

Data products packaging
Search, discovery & assessment
Licensing & pricing
Secure data exchange & payment

Decentralized blockchain-based data exchange and transactions

New type of Data Demand

Quantitative Hedge Funds

Fundamental Hedge Funds

Private Equity firms

Other buy-side financial institutions

Use case Manufacturer

A worldwide Electronic goods manufacturer

Main objectives
- Generate revenue from millions of IoT devices

Type of data distributed
- Customer behaviour
- Market trends
- No personal data

Use case
European Retailer

A major European Retailer in electronic goods

Main objectives
- Bring additional revenue between €8M to €10M / year
- Accelerate internal data sharing
- Take the lead of its ecosystem through data distribution

Type of data distributed
- Marketing & Commercial data
- Logistic & Product after sales data
- Customer behaviour
- Market trends
- No personal data

Grow and manage your Data Exchange Platform

The Data Exchange Platform solution enables 360° Data Exchange Management

Onboarding process

Data Marketplace
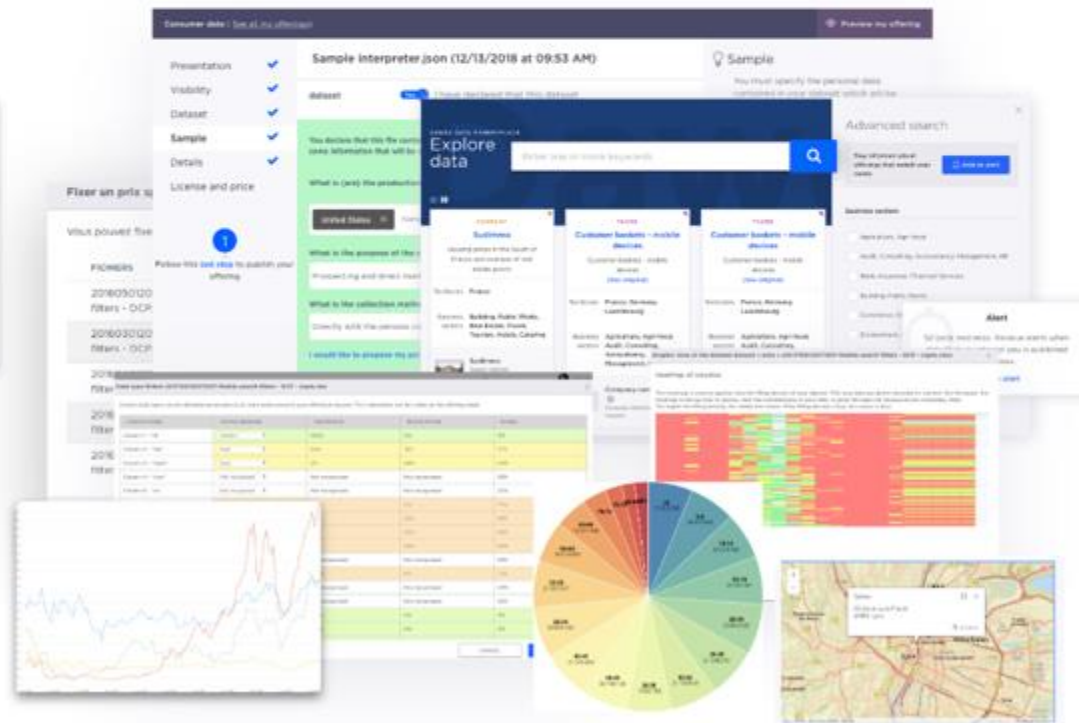
Administration Console
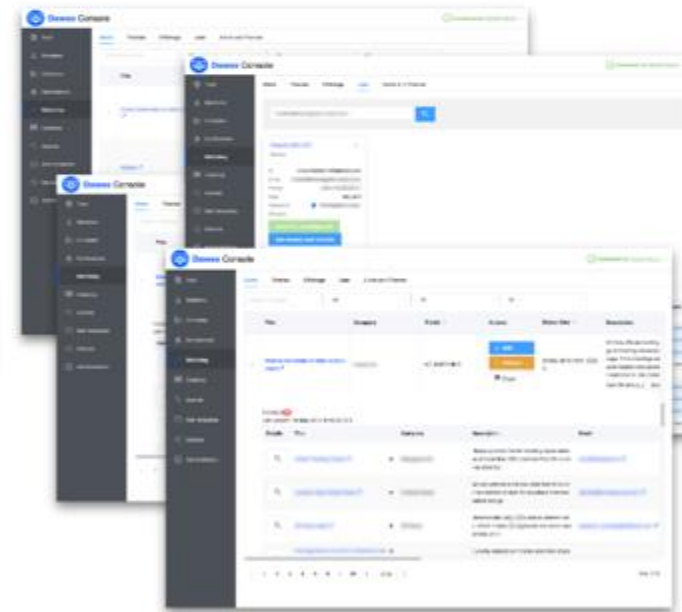
Identifying new data sources in the data catalog

Search engine

Multicriteria & multilingual
Keywords & filters
Elasticsearch
Linguistic analysis
Scoring & Boost

Alerts creation

Matching algorithm: inform requestors about data availability matching requirements,

Understanding the needs of Business Units team thanks to alerts centralization and analysis.

Regulatory and contractual compliance

Features

Legal disclaimers

Mandatory declarations

Questionnaires

Access to licence contrats

Regulatory compliance

Raise awareness amongst staff & users about regulatory constraints when publishing and using data

Contractual compliance

Insure that data usage complies with the license terms agreed with data providers

Full traceability of all interactions on the data marketplace

Inbox

Messages et status of transactions captured from initial contact until transactions

My data transactions

Data exchanges monitoring with drill-drow features (links with data, conversations, contracts, ...)

DAWEX

SELL BUY SHARE DATA

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#DataExchange #DataMonetization #DataEconomy

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