Opening Remarks

Jean-Christophe Rossand
Assistant Director Cargo Intelligence and Air Mail Settlement, IATA
## Air freight track - Agenda (1/2)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>14:30</td>
<td>Opening Remarks</td>
</tr>
<tr>
<td>14:35</td>
<td>E-commerce: A key opportunity with challenging requirements</td>
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<tr>
<td>14:50</td>
<td>E-commerce is a mix of Cargo &amp; Mail. How can you handle this challenge efficiently?</td>
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<tr>
<td>15:10</td>
<td>Reducing customer spent &amp; predicting arrival time leveraging data &amp; AI</td>
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<tr>
<td>15:30</td>
<td>Networking Break</td>
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## Air freight track - Agenda (2/2)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>16:00</td>
<td>From logistical chains to logistical networks:</td>
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<td>ONE Record vision &amp; roadmap of AF/KL</td>
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<td></td>
<td>TradeLens: An industry network</td>
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<td>Panel</td>
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<td>16:55</td>
<td>Leveraging IoT to reduce costs and improve value proposition:</td>
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<td></td>
<td>Is the dream of end to end visibility in air cargo becoming a reality?</td>
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<td>Blockchain puts the SMART into ULD</td>
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<tr>
<td>17:35</td>
<td>Tomorrow's data heroes</td>
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<tr>
<td>17:55</td>
<td>Closing</td>
</tr>
<tr>
<td>19:00</td>
<td>Networking Dinner</td>
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</table>
E-commerce: a key opportunity with challenging requirements

Dr. Ludwig Hausmann, Partner, McKinsey & Company
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?

2. What's in it for cargo airlines?

3. Where do cargo airlines stand today and where do they need to improve?
Cross-border e-commerce is expected to expand at an annual growth rate of 25% the incoming 5 years.
Why are consumers choosing to buy from non-domestic websites?
Number of customers citing respective reason for shopping cross-border

<table>
<thead>
<tr>
<th>Reason</th>
<th>Customers</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product availability</td>
<td>●●●●●●●●●●●</td>
<td>The only way to get this rugby gear to Australia is to ship it in from the UK</td>
</tr>
<tr>
<td>Lower price</td>
<td>●●●●●●●●●●●</td>
<td>Buying this camera gear straight from Japan saved me EUR 250</td>
</tr>
<tr>
<td>Greater selection</td>
<td>●●●●●●●●●●●</td>
<td>The only way to get the full lineup of my favorite cosmetics brand is to buy it directly from the US</td>
</tr>
<tr>
<td>Product quality</td>
<td>●●●●●●●●●●●</td>
<td>By buying this handbag straight from Italy, I could be sure I get the best product quality</td>
</tr>
</tbody>
</table>
Brands are “rising stars” – they expect even higher cross-border growth than other sellers.

<table>
<thead>
<tr>
<th>Share of respondents expecting growth of cross-border revenue share</th>
<th>Average cross-border share of total revenue, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-commerce giants</td>
<td>62%</td>
</tr>
<tr>
<td>Fashion e-tailers</td>
<td>78%</td>
</tr>
<tr>
<td>Non-fashion e-tailers</td>
<td>66%</td>
</tr>
<tr>
<td>Brick and mortars</td>
<td>67%</td>
</tr>
<tr>
<td>High-value brands</td>
<td>73%</td>
</tr>
<tr>
<td>Low-value brands</td>
<td>78%</td>
</tr>
</tbody>
</table>
Three 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?
~5bn shipments annually

South America
6%

Middle East
<1%

Europe (incl. Russia, Turkey)
12%

North America (incl. Mexico)
6%

APAC (incl. India)
21%

Middle East
<1%

South America
1%

North America (incl. Mexico)
4%

Europe (incl. Russia, Turkey)
12%

APAC (incl. India)
15%

Middle East
<1%

South America
1%

North America (incl. Mexico)
1%

Europe (incl. Russia, Turkey)
10%

APAC (incl. India)
15%

North America (incl. Mexico)
4%

Middle East
<1%

South America
1%

Europe (incl. Russia, Turkey)
15%

APAC (incl. India)
15%

>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.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Volume</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>~5 bn</td>
<td></td>
</tr>
<tr>
<td>Non-air</td>
<td></td>
<td>~15-20%</td>
</tr>
<tr>
<td>Other modes (regional road, sea)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express air (via integrators)</td>
<td>~5%</td>
<td></td>
</tr>
<tr>
<td>Postals (via airlines)</td>
<td>~70%</td>
<td></td>
</tr>
<tr>
<td>Others via airlines (CEPs, forwarders, airlines through own channels)</td>
<td>~10%</td>
<td></td>
</tr>
</tbody>
</table>
For air cargo, e-commerce accounts for over 10% of total air cargo volumes already - and the share will be growing.
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?
Speed trumps price, but faces greatest issues when shopping cross-border.
<table>
<thead>
<tr>
<th>Operational category</th>
<th>Delivery speed</th>
<th>Price</th>
<th>Reliability/quality</th>
<th>Integration/transparency</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>E+&gt;10 globally</td>
<td>EUR 50</td>
<td>Low</td>
<td>Low/fragmented</td>
<td>Excluded/expensive</td>
</tr>
<tr>
<td>Delivery price</td>
<td>E+1 globally</td>
<td>EUR 10</td>
<td>High</td>
<td>High/ end to end</td>
<td>Included/free</td>
</tr>
<tr>
<td>Share of undamaged deliveries</td>
<td>Low</td>
<td></td>
<td>Low (&lt;50%)</td>
<td>Low</td>
<td>Limited presence</td>
</tr>
<tr>
<td>Service level adherence</td>
<td>High (&gt;90%)</td>
<td></td>
<td></td>
<td></td>
<td>Global presence</td>
</tr>
<tr>
<td>Customs handling</td>
<td>Basic and optional</td>
<td></td>
<td>Integrated full service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparency/ tracking</td>
<td>Low</td>
<td></td>
<td>High/ end to end</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Returns handling</td>
<td>Slow and cumbersome</td>
<td></td>
<td>Fast and convenient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td>Excluded/expensive</td>
<td></td>
<td>Included/free</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global reach</td>
<td>Limited presence</td>
<td></td>
<td>Global presence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific requirements</td>
<td>Low customization</td>
<td></td>
<td>High customization</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Delivery Time</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same day</td>
<td>1</td>
</tr>
<tr>
<td>Next day</td>
<td>3</td>
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<tr>
<td>2-3 days</td>
<td>13</td>
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<tr>
<td>4-5 days</td>
<td>17</td>
</tr>
<tr>
<td>6-7 days</td>
<td>14</td>
</tr>
<tr>
<td>8+ days</td>
<td>52</td>
</tr>
</tbody>
</table>

### Shippers who perceive delivery as acceptable or fast

<table>
<thead>
<tr>
<th>Delivery Time</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same day</td>
<td>100</td>
</tr>
<tr>
<td>Next day</td>
<td>99</td>
</tr>
<tr>
<td>2-3 days</td>
<td>90</td>
</tr>
<tr>
<td>4-5 days</td>
<td>70</td>
</tr>
<tr>
<td>6-7 days</td>
<td>40</td>
</tr>
<tr>
<td>8+ days</td>
<td>&gt;10</td>
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</tbody>
</table>

**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

Express shipments account for <10% of volumes

Postal shipments account for >70% of volumes

Opportunity for hybrid product
Current inefficient cross-border shipment processes will have to be improved through automated data exchange and digitization

- 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 administrative costs

**Today**

- Exporter Authority
- Authority
- Forwarder
- Consignee
- Terminal

**Future**

**Global trade digitization**

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

<table>
<thead>
<tr>
<th></th>
<th>Shippers</th>
<th>Warehouse</th>
<th>First/Mid Mile</th>
<th>Customs</th>
<th>Airport</th>
<th>Air linehaul</th>
<th>Last Mile/ Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Std. electronic messages</td>
<td>Mobile computing</td>
<td>AutoID solutions</td>
<td>Std. electronic messages</td>
<td>Mobile computing</td>
<td>GPS enabled</td>
<td>Last Mile/ Returns</td>
</tr>
<tr>
<td></td>
<td>Regulated data exchange</td>
<td>Bar code scanning</td>
<td>RFIDs</td>
<td>Regulated data exchange</td>
<td>Bar code scanning</td>
<td>eProof of delivery</td>
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<td></td>
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<td>RFID</td>
<td>Mobile computing</td>
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<td>GPS Enabled</td>
<td>Track and trace</td>
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<td>Voice technology</td>
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<tr>
<td><strong>Source of data</strong></td>
<td>External online sources</td>
<td>Receiving/distribution</td>
<td>Contractors</td>
<td>Shipper data</td>
<td>Linehaul Management Zone (LMZ)</td>
<td>Shipper data</td>
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<td></td>
<td>Loyalty programs</td>
<td>Picking and shipping</td>
<td>External online sources</td>
<td>External online sources</td>
<td>Customers Delivery Requirement (CDR)</td>
<td>External online sources</td>
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<td></td>
<td>Call centers and surveys</td>
<td>Mobile inventory management</td>
<td>Call centers and surveys</td>
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<td>Call centers and surveys</td>
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<td>Cross docking</td>
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<td><strong>IT solutions</strong></td>
<td>IMS – Inventory Management Systems</td>
<td>WMS – Warehouse Management Systems</td>
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<td><strong>Visibility and performance management</strong></td>
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<td></td>
<td>Shipment track and trace</td>
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<td>Visibility and analytics</td>
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<tr>
<td><strong>Providers</strong></td>
<td>NetSuite ERP</td>
<td>NetSuite ERP</td>
<td>Mercury Gate</td>
<td>ATLAS</td>
<td>Electronic Cargo Handling &amp;Operating System (ECHOS)</td>
<td>Optym</td>
<td>LogiNext PostMates</td>
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<tr>
<td></td>
<td>SAP S/4 HANA</td>
<td>Oracle WMC</td>
<td>3PLink TMS</td>
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<td></td>
<td>IBM CMS</td>
<td>IBM Sterling WMS</td>
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</table>
Deep dive customs clearance: With increasing e-commerce volumes, customs has turned into a key issue for stakeholders

<table>
<thead>
<tr>
<th>Challenges of cross-border e-commerce</th>
<th>Impact on customs regimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buyers and sellers with <strong>limited knowledge</strong> of customs regulations</td>
<td>Distorted trade statistics and market transparency</td>
</tr>
<tr>
<td>Declared values for B2C shipments are often <strong>incomplete or inaccurate</strong></td>
<td>Large share of <strong>counterfeit products</strong> sent through parcel/postal products</td>
</tr>
<tr>
<td>Large share of shipments falling <strong>below the de minimis</strong> value threshold</td>
<td>Overstretched customs inspection capacities, <strong>delays in customs clearance</strong>, and trade disruptions</td>
</tr>
<tr>
<td><strong>Direct injection models</strong> and free trade transit zones misused for shipping non-declared, de-facto customizable goods, or <strong>counterfeits</strong></td>
<td></td>
</tr>
</tbody>
</table>
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)
- Data platform
  - Transparency
  - Compliance
  - Strategic focus
    - Trusted cross-organizational workflows
- Stakeholder collaboration
  - End to end digitization
- Integration across value chain
  - Platform business model
  - Process automation
- Governance
- Blockchain
- Startup joint ventures
  - Informed risk assessments
Thank you
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
Qatar Airways Cargo
How the rise of E-Commerce required us to re-think the way of doing business

Presented by:
Bernd Foerster
Senior Manager
E-Commerce Products

With the help of:
Jos Nuijten
Descartes
Air Product Strategy
Milestones in Qatar Airways Cargo

1997
Qatar Airways Cargo commences operations

2003
QR Cargo is officially launched

2011
The 100th destination is added to the route map

2013
QR becomes a oneworld member

2014
Hamad International Airport begins operations

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

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

April 2019
Daily Handling of ~140T Mail in DOH
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 an 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.
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

How is cargo driven by data?
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.

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

Adapted from: UPU, IATA, IPC. Post-Airline Supply Chain Integration EDI Guide (2017)
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%.
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.
Qatar Airways + Descartes vMail = End-to-End Mail Management Solutions

First airline to automate mail scanning between two data platforms

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

IATA-UPU Electronic Data Interchange initiative:
Fully compliant
CROAMIS & Descartes vMail Interface - Today

- 60 active scanning stations
- Real-time track and trace
- Target: 100% EDI driven
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

<table>
<thead>
<tr>
<th>Information</th>
<th>UPU</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consignment information</td>
<td>CARDIT</td>
<td>XFWB</td>
</tr>
<tr>
<td>Receptacle information</td>
<td>CARDIT</td>
<td>XFHL</td>
</tr>
<tr>
<td>Status information</td>
<td>RESDIT</td>
<td>XFSU</td>
</tr>
</tbody>
</table>

Mail integration

<table>
<thead>
<tr>
<th>Post</th>
<th>Mail Unit</th>
<th>Cargo Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARDIT</td>
<td>Scan Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mail System</td>
<td></td>
</tr>
<tr>
<td>RESDIT</td>
<td>AWB/ HWB</td>
<td>Cargo System</td>
</tr>
<tr>
<td></td>
<td>Status Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security Filings</td>
<td></td>
</tr>
</tbody>
</table>
How does data drive our bookings…

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

<table>
<thead>
<tr>
<th>Segment Arrival</th>
<th>Shipment</th>
<th>Customs Code</th>
<th>Status</th>
<th>Home Prc</th>
<th>Comm. Prc</th>
<th>Store Detail</th>
<th>SPL</th>
<th>LD</th>
<th>FBL</th>
<th>OutHand</th>
<th>PRE</th>
<th>MAN</th>
<th>Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVG 0100 - CN QAD044417915 DOH PVG</td>
<td>1/18 3K/0</td>
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</tbody>
</table>
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”

<table>
<thead>
<tr>
<th>Flight</th>
<th>IMPC Origin</th>
<th>IMPC Destination</th>
<th>Mail</th>
<th>Dispatch</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>QR 870</td>
<td>17.06.2019</td>
<td>DOH</td>
<td>PVG</td>
<td>0100</td>
<td>10.2 kg</td>
</tr>
<tr>
<td>QR 870</td>
<td>17.06.2019</td>
<td>DOH</td>
<td>PVG</td>
<td>0100</td>
<td>10.2 kg</td>
</tr>
</tbody>
</table>

The table above shows the details of outbound flights from DOH to PVG. The data collected helps drive our bookings by providing insights into the frequency, destinations, and weight of cargo transported.
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
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
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 career 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 manager, 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 Line founded with route between Asia and the United States

Maersk Oil produces first oil in North Sea

Maersk Drilling founded

First container vessel added to the fleet

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

DUC established, paving the way for oil & gas business

APM Terminals founded

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

Company founded in Denmark with one freighter

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

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

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

- 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%
- 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%
What problem does Harmony try to solve?
Typical End-to-End Lead Time

Is it really the case?

Most systems use average time to capture lead time
Actual End-to-End Lead Time

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

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
Lead-Time Variation – Where are the main issues?
What is the value for the customer?
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
Example - Total Cost Equation – Influence of Variation

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Cost/TUE ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2235</td>
</tr>
<tr>
<td>B</td>
<td>2155</td>
</tr>
<tr>
<td>C</td>
<td>2030</td>
</tr>
<tr>
<td>D</td>
<td>2380</td>
</tr>
</tbody>
</table>
Example - Total Cost Equation – Influence of Variation

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Cost/TUE ($)</th>
<th>Transit time (days) (miuL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2235</td>
<td>38</td>
</tr>
<tr>
<td>B</td>
<td>2155</td>
<td>34</td>
</tr>
<tr>
<td>C</td>
<td>2030</td>
<td>42</td>
</tr>
<tr>
<td>D</td>
<td>2380</td>
<td>39</td>
</tr>
</tbody>
</table>
## Example - Total Cost Equation – Influence of Variation

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Cost/TUE ($)</th>
<th>Transit time (days) (miuL)</th>
<th>Service accuracy (+- days from transit time) (sigmaL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2235</td>
<td>38</td>
<td>4.8</td>
</tr>
<tr>
<td>B</td>
<td>2155</td>
<td>34</td>
<td>14.6</td>
</tr>
<tr>
<td>C</td>
<td>2030</td>
<td>42</td>
<td>6.2</td>
</tr>
<tr>
<td>D</td>
<td>2380</td>
<td>39</td>
<td>6</td>
</tr>
</tbody>
</table>
### Example - Total Cost Equation – Influence of Variation

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</tr>
<tr>
<td>D</td>
<td>2380</td>
<td>39</td>
<td>6</td>
</tr>
</tbody>
</table>

**General information:**

- **Demand**: 4,500,000 units/year
  => TEUs per year: 1,500
  => muD = 4.29 TEU/day

- **SigmaD**: 540,000 units/year
  => Sigma of TEUs per year: 180
  => sigmaD = 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

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Purchase cost $</th>
<th>Ordering cost $</th>
<th>Cycle Stock cost $</th>
<th>Safety stock cost $</th>
<th>Pipeline inventory $</th>
<th>Total cost $</th>
<th>Logistic cost per item $</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>160,852,500</td>
<td>250,000</td>
<td>241,279</td>
<td>1,660,935</td>
<td>2,619,598</td>
<td>165,624,312</td>
<td>1.805</td>
</tr>
<tr>
<td>B</td>
<td>160,732,500</td>
<td>250,000</td>
<td>241,099</td>
<td>2,221,844</td>
<td>2,342,102</td>
<td>165,787,545</td>
<td>1.842</td>
</tr>
<tr>
<td>C</td>
<td>160,545,000</td>
<td>250,000</td>
<td>240,818</td>
<td>1,789,870</td>
<td>2,889,810</td>
<td>165,715,497</td>
<td>1.826</td>
</tr>
<tr>
<td>D</td>
<td>161,070,000</td>
<td>250,000</td>
<td>241,605</td>
<td>1,731,540</td>
<td>2,692,170</td>
<td>165,985,315</td>
<td>1.886</td>
</tr>
</tbody>
</table>
3. Using machine learning to predict cargo availability (work in progress)
HOW TO WIN SUPPLY CHAIN SNAKES AND LADDERS
Collect your prize here

We have been performing consolidation studies for over 40 years. Contact Maersk’s experts in supply chain development for consultative solutions and implementation.
Networking Break
ONE Record vision & roadmap
AF/KL

Thomas Moreau, IT Project Architect, AF/KL
Bilel Chakroun, Business Expert, AF/KL
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
ONE Record

Current situation & challenges
ONE Record
CURRENT SITUATION AND CHALLENGES

1. Shipment
15. Supply Chain actors
69. Exchanged messages

81 | June 25th, 2019
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 losing 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.
ONE Record

Vision & benefits
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.
# ONE Record

## APPROACH

<table>
<thead>
<tr>
<th>Everything is a URL</th>
<th>Modern data model</th>
<th>Simple web access protocols</th>
<th>Security and access control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Waybill, Flight Manifest, Package, Piece</td>
<td>Common data format</td>
<td>Common web API</td>
<td>Common security standard</td>
</tr>
<tr>
<td></td>
<td>RDF</td>
<td>REST</td>
<td>HTTPS</td>
</tr>
<tr>
<td></td>
<td>JSON-LD, Turtle</td>
<td>Publish and Subscribe,</td>
<td>Trust Network</td>
</tr>
<tr>
<td></td>
<td>Freight Ontology</td>
<td>Real-time notifications</td>
<td>Role Based Access Control</td>
</tr>
<tr>
<td></td>
<td>Online schema</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

https://<...>/<companyID>/<resourceID>

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

June 25th, 2019
<table>
<thead>
<tr>
<th>Transparency and visibility</th>
<th>Encourage innovation</th>
<th>Facilitate the communication between counterparties</th>
<th>Data quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Digital content identification</td>
<td>• Apps</td>
<td>• Handling instructions</td>
<td>• Discrepancies reduction</td>
</tr>
<tr>
<td>• Real-time tracking and monitoring</td>
<td>• New business models</td>
<td>• Customs status</td>
<td>• Better time to delivery when customs are involved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Shipment status</td>
<td></td>
</tr>
</tbody>
</table>

**June 25th, 2019**

**ONE Record**

**KEY BENEFITS**

- Transparency and visibility
- Encourage innovation
- Facilitate the communication between counterparties
- Data quality
ONE Record
ROADMAP

Develop ONE Record Standard

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

Testing

- Analysis
- Test system
- Hackathon

Deployment

- Business processes
- Pilot projects
- Expansion
- Implementation & guides

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?

2018

2019
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.

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

<table>
<thead>
<tr>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
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<tbody>
<tr>
<td></td>
<td>MS1</td>
<td></td>
<td></td>
<td>MS2</td>
<td></td>
<td></td>
<td>MS3</td>
<td></td>
<td></td>
<td>Completion &amp; Evaluation</td>
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<tr>
<td>Review</td>
<td></td>
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<td>Review</td>
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</tbody>
</table>
ONE Record – PILOT
GOVERNANCE AND TIMEPLAN

Stage gate process

• Stage gate milestone may be customized based on pilot definition

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

2019-03-18
Pilot kick off

2019 May (AY) / July (AF)
Ericsson Sweden publish to LDI
Air France and Finnair Publish & Subscribe to LDI
eCMR transformed to semantic schema

2019 May

2019-12
TBD

2019 Dec
Ospentos Publish & Subscribe to LDI
Cargonaut Publish & Subscribe to LDI
Project Completion and Evaluation
Pilot closure
ONE Record

Integration with AFKL Cargo IT systems
THANK YOU
TradeLens: an industry network

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

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

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

August 2018
TradeLens Limited Availability Release

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

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

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

Ocean carrier additions: ZIM joins

Ocean carrier additions: MSC and CMA join

Ocean carrier additions: Seaboard Marine and KMTC join

Ocean carrier additions: Nansung and Boluda join

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

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 INCREASES 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.
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.
SHIPPING MILESTONES AND SHIPMENT DATA*

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

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

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

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.

1 – 2 YEAR OUTLOOK (SUBJECT TO CHANGE)

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

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

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

2. Addressing Innovation in the Air Cargo Industry

3. Challenge of transparency and visibility in Air Cargo

4. Next steps
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
Airlines are looking to paint a live picture of complete aircraft operations, including cargo operations.
Challenge of transparency and visibility in Air Cargo

Challenges

>50% of products become worthless and harmful due to temperature excursion globally

Airlines have low visibility and increased liability

2.5B$ – 12.5 B$

of pharma products are lost globally per year

Expectations

“Transparency in transportation at all stages, as well as traceability are probably the most important pain points for the whole pharma supply chain, apart from, of course, execution of an unbroken temperature control logistics chain.”

Fedor Novikov, Global Director Pharma
Air Cargo Week
Addressing gaps in pharma logistics the key to growth

Copyright SITAONAIR 2019
Applying Aircraft Internet of Things

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

OnAsset:
- Aerospace certified
- Flexible and low cost
- BLE compatible

Air-to-Air:
- Bluetooth

Air-to-Ground:
- VHF/VDL
- SAT

✔ 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
Blockchain puts the SMART into ULD

BOB ROGERS
VP ULD CARE
ULD- who actually cares?

- ULD CARE cares...
  - Over 50 of the worlds ULD owning airlines
  - Operator of Interline ULD User Group system
“Dumb” ULD

- Item 1. A ULD
- Item 2. A UCR
- Item 3. A UCM
SMART ULD

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

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

- Know where:
  - The ULD is located
  - How long it's been there
  - Environmental conditions
SMART ULD

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

TIME TO TAKE ULD CARE
What’s driving SMART ULD

• E-commerce
  – Information expectations
  – Answer to the “where is my shipment” question
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

TIME TO TAKE ULD CARE
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
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?
Is SMART ULD the SOLUTION?
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
Setting the scene

Serge Hanssens
Partner PwC
Today, everything is **data, data and data**

- **2014**: 4.4 ZB
- **2019**: 33 ZB (7X increase)
- **2025**: 175 ZB (5X increase)
What is this data market value?

Data exchange
- a huge market only waiting to expand

1.7X

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2025</th>
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<tbody>
<tr>
<td>Value</td>
<td>$227bn</td>
<td>$400bn</td>
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</table>

Source: IDC’s Global DataSphere, Nov. 2018; IDC and Open Evidence’s “European Data Market Smart 2014/0063 Final Report”; Strategy& analysis
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.

Global average value
Europe average value
U.S. average value

Value of data per Internet user in 2018 (per month)
$1.18
$1.59
$4.91

Est. value of data per Internet user in 2025 (per month)
$2.36
$3.18
$9.82

2X

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  
4500 BC

Stock markets  
~1500 AD

Data markets  
2015+
How we make it happen: a 5-step approach!

**Data Mapping**
- What data (or information) existing or collectable, internal or acquired externally (free or paid)

**Client segmentation – use cases**
- Who will be interested?
- By which data?
- For which use cases?

**Business Model definition**
- Which data for direct and indirect monetization?
- Price per transaction and/or subscription

**Pricing policy definition**
- Which price ranges for which data or which services

**Business Plan**
- 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
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

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

(source: BCG)
Data Exchange Platform Implementation Scenarios

A platform that provides you with options while you evolve your data culture & business strategy

1. Manage data **circulation** across your organization
2. Organize your external data **sourcing**
3. Engage in external data sharing and **monetization**
4. Become the orchestrator of your data **ecosystem**
5. Extend your market to the global data marketplace
# Data Exchange Platform - use cases priority

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<thead>
<tr>
<th></th>
<th>INTERNAL</th>
<th></th>
<th>EXTERNAL</th>
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<tbody>
<tr>
<td></td>
<td>Business Units</td>
<td>Subsidiaries</td>
<td>Business Partners</td>
<td>Non Business Partners</td>
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<tr>
<td><strong>Sourcing</strong></td>
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<td><strong>Monetization</strong></td>
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<td>3</td>
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</tbody>
</table>

**Priority**

- 1
- 2
- 3

*Example:*

- **INTERNAL**: Business Units (1), Subsidiaries (1)
- **EXTERNAL**: Business Partners (1), Non Business Partners (3)

*Transfer price*
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.
Understanding available data

Samples
Generated by the platform and downloadable, they help understanding the data without having to download the whole file.

Data visualization tools
Understand the structure or density of a file and identify any discrepancies.

Formats
pdf, txt, csv, xls, json, geojson, xml...
Regulatory and contractual compliance

Features
Legal disclaimers
Mandatory declarations
Questionnaires
Access to licence contracts

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

Contractual compliance
Ensure that data usage complies with the license terms agreed with data providers
Full traceability of all interactions on the data marketplace

Inbox
Messages and status of transactions captured from initial contact until transactions

My data transactions
Data exchanges monitoring with drill-down features (links with data, conversations, contracts, ...)

Lucy Roger has written to you: Hello, as we have already discussed, we are interested in buying this dataset for our marketing strategy. Thank you.
08/22/2019
Networking Dinner

Buses depart from the Lobby area at 19:00 Sharp