ONE Record
One step closer to digital cargo

David Sauv
Manager, Digital Cargo
Context
International trade is about moving goods.
International trade is about moving goods. But also is about information sharing.
Each year, more than 7'800 tons of paper documents are processed. It’s the equivalent of 80 Boeing 747 freighters filled with paper.
A legacy peer to peer messaging model
International trade is about moving goods. But also about sharing information. Each year, more than 7,800 tons of paper documents are processed, the equivalent of 80 Boeing 747 freighters filled with paper. Capitalize on Internet technologies.
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
transparency

End-to-end data visibility

For authorized parties

- API Standard
- Ontology Standard
- Security Standard
open innovation

Open standards – free license

Open and cooperative development

GitHub

Ontology Editor(s)

Open Governance
beyond cargo

Data sharing & open access is not only a transport & logistics challenged

Share and learn from the best

EU Multimodal
Semantic web
EDI3, ISO, Ports
Legacy technology is hard
New tech is easy
We need to look forward

- Backward integration
- Open software
- 90 day ROI devs
plug & play

Plug = connecting systems without integration

Play = creative use of new data from partners

ONE Record standard

Digital Partners

Data as a Service
Digital twin of logistics & transport networks

New technologies: AI, ML, DLT, QC

- Ontology networks
- Micro services
- Analytics & Services
Intelligent transport

Automated transport chains

Interactive cargo

Flow optimization

Real Time

IoT
a new generation

Digital Natives will be leading our companies within 10 years

Their agenda:
- Digital only
- Delegate to AI
- ...
Digital Natives will be leading our companies within 10 years

Their agenda:
- Digital only
- Delegate to AI
- …
ONE Record

Concept
The essence of the ONE Record is to move from a peer-to-peer messaging model to a data sharing model relying on a Virtual Shipment Record.
The ONE Record concept is based on 3 pillars enabling to define: WHAT, HOW, with WHOM data can be shared.
An airline wants to have access to the shipment record of a particular AWB.

GET www.forwarder.com/awb/123-142635123
ONE Record Data Model: the ambition

- Shipper’s Letter of Instruction
- Cargo Distribution
- CO2 Emission
- ULD Tracking
- Interactive Cargo
- Dangerous Goods / Pharma
- Customs (PLACI, ICS2)
- Ground Handling

Airline Core Ontology
ONE Record Data Model: the ambition

Airline Core Ontology
- Minimal requirements for the transport of general cargo
- Detailed and extensive enough to enable piece-level management and tracking

Add-ons
- Sets of data elements required to handle specificities of certain shipments (e.g. Dangerous Goods, Pharmaceutical) and/or operations (e.g. ULD tracking, Interactive Cargo)
The security of ONE Record relies on 3 components:

**IDENTIFICATION**
Who are you?

**AUTHENTICATION**
Are you who you claim to be?

**AUTHORIZATION**
Do you have the right credentials?
The security of ONE Record is managed through a Trust Network.
The security of ONE Record is managed through a Trust Network

- **IDENTIFICATION**
  - Register the ONE Record participant through a dedicated accreditation process
  - Issue a ONE Record certificate as an identifier

- **AUTHENTICATION**
  - Verify the validity of the ONE Record certificate

- **AUTHORIZATION**
  - Managed by the data owners. Can grant access to specific companies or groups of companies
ONE Record is a data-centric model and NOT a document-centric model.
Industry benefits
Industry benefits

Data quality and control
- Data shared by data owner
- Full control of data
- Data stays at the source
- Owner determines data access

Visibility and transparency
- End-to-end transportation chain
- Share data of the shipment with relevant parties
- Enhanced visibility and transparency

Plug & Play Connectivity
- Facilitate the direct connectivity between all the stakeholders
- Use of web API
- New cooperative IT solutions and innovation

Future of digital cargo
- Foundation for true digital air cargo
- Develop collaborative and automated digital services

Welcome a new generation
- Technology platform that is ready for a new generation of digital natives
Key points
Key points

DIGITALIZATION

• Complete digitalization of the global supply chain will happen
• The Internet of Logistics is a likely scenario

AGILE SUPPLY CHAIN

• This will lead to new and dynamic supply chain configurations
• Speed and agility is key

REGULATORS & AUTHORITIES

• Regulators and authorities will get high visibility and transparency
• The focus will shift to intelligence & collaboration
ONE Record

{progress status;}
ONE Record Task Force (ORTF) kicked off in June 2018

The Task Force is established under the Cargo Operations and Technology Board (COTB)
Objectives

To provide the air cargo industry with a standard for data sharing

- Data model specification
- API specification
- Security specification
~60 participants from all the areas of the air cargo industry

- Shipper
- Freight Forwarder
- GSA
- Airline
- Ground Handler
- Association
- Customs
- IT Provider
- CCS
Achievements

**Data model specification:** provides the air cargo industry with a standard data structure for data exchange using JSON-LD that facilitates data integration with existing and new data services;

**API specification:** specifies the interface and interaction of the web API or Application Programming Interface that allows airlines and their partners to connect their system directly using best in class web technologies;

**Security specification:** uses an industrywide and federated trust network to manage identification and authentication of data sharing systems and ensures data privacy and confidentiality for all parties.

https://github.com/IATA-Cargo/ONE-Record
ONE Record 2020
ONE Record

Objectives for 2020
Validate the ONE Record standard through pilot projects and speed up its adoption with industry tools and support while continuously add data elements and features to the standard.

Drive pilot projects with industry stakeholders

Enhance the ONE Record standard

Develop a ONE Record Garage to host tools and support to accelerate the standard adoption.
### Activities for 2020

#### Data Model
- **1.** Finalize the core airline ontology
- **2.** Expand the data model

#### API
- **1.** Develop “Experimental” API features to the “Proposed” stage
- **2.** Deploy “Proposed” API features into pilot projects and drive to “Verified” stage
- **3.** Document “Verified” API feature and drive to “Approved” stage
- **4.** Identify and qualify new API feature to “Experimental” stage

#### Security
- **1.** Agree on the security requirements
- **2.** Deliver PoC and make it available for pilot projects

#### Pilot projects
- **1.** Wrap up 2019 pilot projects and document take away and lessons learned
- **2.** Identify and agree on use cases for 2020 pilot projects
- **3.** Identify required data elements and API features
- **4.** Call for pilot project teams

#### Developer Portal
- **1.** Developer Portal
- **2.** ONE Record Compliance Checker
- **3.** ONE Record Ontology tool
- **4.** ONE Record Demonstrator
- **5.** ONE Record Tool Shed
- **6.** ONE Record Security Portal
Data model
ONE Record Data Model: the ambition

Shipper’s Letter of Instruction

Cargo Distribution

CO2 Emission

ULD Tracking

Interactive Cargo

Dangerous Goods / Pharma

Customs (PLACI, ICS2)

Ground Handling

Airline Core Ontology
Data Model: Standard components

To support the deployment and the adoption of the ONE Record Data Model, IATA published a set of specification, guidance materials and tools.

Design Principles
Conceptual Data Model
Logical Data Model
Use Cases
Ontology

Design Principles

One essential element of the cargo supply chain is logistic objects, such as digital twins, transport movements, etc.

What is a logistic object?

"An essential element of the cargo supply chain, e.g. digital twins, transport movements, etc."
Logical Data Model
1. Select a task from the Master Operating Plan (MOP)

2. The stakeholder presented below is the one accountable to make the data available. However, other parties (not specified here) can be designated to perform this action (e.g., GHA on behalf of the airline)

3. The below sections presents the Logistic/Common object to be created and a description of what needs to be done during this specific task:

- **Logistic Object**
- **Common Object**
- **Action / Comment**

<table>
<thead>
<tr>
<th>Logistic Object</th>
<th>Common Object</th>
<th>Action / Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
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<td>Customs Info</td>
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<tr>
<td>Country</td>
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<tr>
<td>Dangerous Goods</td>
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<tr>
<td>Dimensions</td>
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<tr>
<td>Piece</td>
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<tr>
<td>Product</td>
<td></td>
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<tr>
<td>Reason For Security Status</td>
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<tr>
<td>Person</td>
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<tr>
<td>Value</td>
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<tr>
<td>Security Status</td>
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<td>Volumetric Weight</td>
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<td>Service Request</td>
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<tr>
<td>Additional Info</td>
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</tbody>
</table>

- **Additional Info**

The booking is made between the shipper and the forwarder, at this stage the booking is not in the scope of the data model.

The shipper ensures that the following LO are created or updated for the shipment: Product, Item, Piece, Dangerous Goods, Transport Segment (Origin and Destination, reference to the pieces), ULD if relevant (creating/updating if he is the owner, linking to existing ULD object otherwise), Security Status, Customs information, Service Request.

In this list the following are optional objects that are not mandatory at this stage: Item, ULD, Security Status, Customs Information.

If there is no Item, the Product is directly linked to the Piece.
Ontology

Developed by the Stanford Center for Biomedical Informatics Research at the Stanford University School of Medicine, Protégé tool is one of the oldest and most widely deployed ontology modelling tools. It was originally conceived as a frame-based modelling tool for rich ontologies following the Open Knowledge Base Connectivity protocol. Later iterations of Protégé have expanded to include a plug-in that is now widely used for OWL and RDF modelling.

https://protege.stanford.edu/
API & Security
ONE Record pilots
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<thead>
<tr>
<th>Company Name</th>
<th>Logo</th>
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<td><img src="image2" alt="Air Canada Cargo Logo" /></td>
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<td>Air France KLM Martinair Cargo</td>
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<td>IAG Cargo</td>
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<tr>
<td>Virgin Atlantic</td>
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</tr>
</tbody>
</table>

**40+ companies involved in ONE Record**
Industry engagement & communication

- Standard Development Bootcamp
- ONE Record Webinars
- Digital Cargo Conference 2020
- Cargo Hackathon
- ONE Record Insights
- Digital Cargo Conference
- ONE Record website and GitHub repository

[Further details and images related to the events and initiatives mentioned above]
ONE Record Insights

**Episode 2**
The data model: a digital twin of the air cargo industry
Tuesday, 30th June 11:00 – 12:30 (CEST)

**Episode 3**
Crafting ontologies: from physical freight to machine readable data
Tuesday, 7th July 11:00 – 12:30 (CEST)

**Episode 4**
The ONE Record API: an overview of the key features
Tuesday, 14th July 11:00 – 12:30 (CEST)

**Episode 5**
Data security: securing the Internet of Logistics
Tuesday, 21st July 11:00 – 12:30 (CEST)

**Episode 6**
Pilot testing: engaging with the cargo community
Tuesday, 28th July 11:00 – 12:30 (CEST)
ONE Record

One step closer to digital cargo

The vision for ONE Record is 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.

Background
The e-freight program has set the foundation for the digitalization of the Air Cargo industry and the e-AWB is now used for more than 2 out of 3 shipments. This is a signal that the industry is ready to take digitalization to the next level and go beyond EDI and messaging technologies.

Data sharing standard
ONE Record is a standard for data sharing and creates a single record view of the shipment. This standard defines a common data model for the data that is shared via standardized and secured web API.

The standard is based on mature but progressive data sharing technologies that are well aligned with the best practices used by leading airlines. This makes it directly accessible to IT teams and service providers.

The standard specifies:
- Data model specification: provides the air cargo industry with a standard data structure for data exchange using JSON-LD that facilitates data integration with existing and new data services;
- API specification: specifies the interface and interaction of the web API or Application Programming Interface that allows airlines and their partners to connect their system directly using best-in-class web technologies.

http://iata.org/one-record
ONE Record White Papers

Don’t miss our series of three white papers coming this summer!

- ONE Record Data Model
- ONE Record API
- ONE Record Security

https://www.iata.org/one-record/#tab-2
This repository contains the data model for the ONE Record specification.

- 323 commits
- 1 branch
- 0 packages
- 0 releases
- 5 contributors
- MIT

Branch: master

Latest commit a51e262 22 days ago

- CSC_adopted_March_2019
  - Remove piece_grouping_totals
  - 11 months ago

- March-2020-standard-for-COTB-endorsement
  - Revised version
  - last month

- working_draft
  - Add memento models
  - 22 days ago

- .gitignore
  - Add SHA1 version of the ontology
  - 6 months ago

- LICENSE
  - Create LICENSE
  - 9 months ago

- README.md
  - Add working draft folder
  - 11 months ago

http://github.com/IATA-Cargo/ONE-Record
Thank You

More info

www.iata.org/one-record