IATA AirPharma Conference

29 – 31 October 2019, Amsterdam, Netherlands
IATA AirPharma Conference

29 – 31 October 2019, Amsterdam, Netherlands
Opening Day 2

Andrea Gruber
Head of Special Cargo
IATA
IATA Competition Law Compliance

Do not discuss:

• Pricing, including fares, service charges, commissions, etc.
• Bids on contracts or allocation of customers
• Geographic/Product market allocations and marketing plans, including
  – Expanding or withdrawing from markets
  – Group boycotts
  – Your commercial relations with agents, airlines or other third parties

Any discussion aimed at influencing the independent business decisions of your competitors

You will be asked to leave the meeting, and the meeting may be terminated, if the above-mentioned discussions occur.

Remember: All discussions count, even informal ones outside the meeting room!
Thank you to all our sponsors!
Welcome Back Day 2
Chairman Opening Remarks

Maarten van As
Managing Director
Air Cargo Netherlands (ACN)
Keynote Speech

Simone Kukenheim
Deputy Mayor
City of Amsterdam
Industry Outlook from the Airline Perspective

Enrica Calonghi
Director Verticals, Global Head Pharmaceutical Logistics
Air France KLM Cargo
The Airline Perspective

IATA Airpharma Conference
30 October 2019
Market development

The market will more and more be divided into

- **Generic pharma**
  Requiring low maintenance transportation or sea freight

- **Gene editing technologies**
  Requiring advanced cool chain solutions
Healthcare verticals
at Air France KLM Martinair Cargo

Our focus is to create value for our Customers
Transparency

**Challenges**

Create an ecosystem where we can all cooperate
Create value for all parties in the chain

**Initiatives**

of Air France KLM Martinair Cargo
IATA CEIV Certification

Air France KLM Martinair Cargo is the **first major group** to be IATA – CEIV re-certified

Is the effort valued by **our customers**?

**Six months study**
on value of the certification

**Conclusions**
Recognition  Enhancement
Engagement    Efficiency
Pharmaceutical logistics

Ultimately, the patient is our final Pharma Client
IATA CEIV Pharma
Leverage effect and benefits

Juerg Meier
Senior Vice President QSHE Security & DG HazMat
Kuehne & Nagel
Emerging market Asia will incrementally grow while Europe & North America remain dominant.
Quality Management
Pharma & healthcare requirements ensured in KN PharmaChain program

- Continuous improvement
- Employees
- Structure & system
- Processes
- Premises & equipment
- Risk management
- Business contingency
- Security
- Management of outsourced activities

Confidential and Proprietary
KN PharmaChain value
Quality and compliance perspective

Product integrity
Patient safety
Risk mitigation
IATA CEIV Pharma development is positive with CEIV Pharma 324 operations fit for the pharma industry

Based on IATA data distribution of Supply Chain companies are following:

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Handling Agencies</td>
<td>50</td>
<td>88</td>
</tr>
<tr>
<td>Freight Forwarders</td>
<td>153</td>
<td>193</td>
</tr>
<tr>
<td>Road Transport</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Airlines</td>
<td>16</td>
<td>21</td>
</tr>
</tbody>
</table>

2 30 October 2019  IATA Airpharma Conference Amsterdam
Success story between airfreight and quality
Collaborative planning, design and execution

- Standardisation
- 48 sites certified
- Air and Overland

- Quality Expert Team
- Qualified Pharma auditors
- Same processes across all modes

- WHO TR 957, EU GDP, FDA, MHRA
- All transport modes
- >170 sites certified

- Less lead-time risks
- Less deviations in the supply chain
- Better collaboration among partners

Kuehne + Nagel

GXP Audits

Customers

Regulators

Upto 2013

2014 - 2018

2019

30 October 2019 IATA Airpharma Conference Amsterdam
Quality management

Certification

- Kuehne + Nagel „Global GxP Policy Manual Pharma“: Global framework and basis for regional, national and local procedures
- Kuehne + Nagel global Pharma & Healthcare standard is based on WHO GDP (No.957, 2010 / Annex 5). Where applicable / in addition regional / national GDPs (like EU GDP, FDA) are applied
- Some operations GDP certified by external certification body
- Kuehne + Nagel airfreight network is worldwide “IATA CEIV Pharma certified”
- Working instructions or SOPs for specific operations
In three years we built our air pharma CEIV network
to 94 sites and 50 countries with great acceptance by the pharma industry
It’s all about reducing risk to CEIV pharma shipments... by controlling risk of...

- Physical damage
- Temperature
- Contamination
- Loss/Theft
- Authority findings
- Data breach
- Fines
- Public incidents
- Business Disruptions

... to build confidence and trust.
With IATA CEIV we improved our pharma performance

- Approx. 10% better performance (basis: reported NCRs)
- Overall better understanding through awareness & trainings
- Improved customer satisfaction
Networking break 10:30 – 11:00

Kindly sponsored by;

IATA AIRPHARMA CONFERENCE

Amsterdam, Netherlands
29-31 October 2019
How is improved technology benefiting supply chain logistics?

Ruud van der Geer
Assoc. Director Global Delivery Strategy Team,
EMEA Product Handling
MSD
Drones, we are Future Ready!

Michael Zahra
President & CEO
Drone Delivery Canada

Ameet Sareen
GM Canada Sales
Air Canada Cargo
Drones, We Are Future Ready!
AGENDA

AC – DDC Agreement

DDC Overview

Drone Applications

Launch Customers
AC – DDC Agreement
June 4, 2019 News Flash!!!

*Air Canada & Drone Delivery Canada Sign 10-Year Commercial Agreement

- One of its kind agreement globally
- Air Canada will undertake Sales & Marketing for DDC
- DDC benefits from AC Cargo’s global expertise
- National logistics network of up to 150,000 routes in Canada

• Agreement includes Canada with the potential to expand beyond Canada
VALUES SEEN BY AIR CANADA

#Leading Edge

#Vision

#Made in Canada

#time critical

#Brand Value

#Future

#cannabis

#Economic Value

#Out of the box

#Just do it

#Early Movers

#Across the street

#Why not?

#Buz Development

#New Revenue

#Across the pond

#Across the province

#Across Canada

#Endless opportunities

#innovation

#think big

#Social Value

#food

#Turnkey

#Global Potential

#yield

#Northern Canada

#speed

#pharma

#life science

#Future

#Low risk
DDC Overview
Drone Delivery Canada, based in Toronto, Canada, provides a complete turnkey logistics solution for delivering goods in **hard to access locations** and/or where **time is of the essence**.

**First to Market**
- Autonomous UAV Software
- Regulatory Compliant
- Patented System

**Multi-drone fleet**
- Fully Commercialized & Operational
- 24/7/365 Global Operations
## DRONE DELIVERY CANADA AT A GLANCE

### First Mover in North America

- **First B2B ecommerce** drone delivery in North America, over 3 years ago

- **Sparrow** deemed fully compliant in Dec 2017

- Federal license, **Compliant Operator Status Certificate**, awarded by Transport Canada Feb 2018

- Successful **BVLOS flights in active airspace** - Canada & USA

- **BVLOS flights with FAA** at Griffiss International Airport in New York, Mar 2018

### Strong Relationship with Transport Canada

- Started in collaboration with Canadian government on serving **remote Aboriginal communities** by drone

- We share our **testing data** and know-how to help establish regulations

- Experienced with TC’s processes to achieve **rapid approvals**

- **TC experience translatable to other global regulators**

### Commercialization Completed

- **Moose Cree First Nation** project finalized, starting late 2019 ($2.5M contract)

- **Actively signing customers** - implementations starting in 2019

- Advanced talks with over 50 **global accounts** - retailers, cargo networks, healthcare, pharmaceutical distributors, couriers, freight forwarders, port authorities, mail service providers, mines, oil & gas, etc

- Agreements with Toyota, Napa Auto Parts, Wolseley Canada, TECSYS, Peel Region Paramedics
FLYTE is DDC’s proprietary flight management software – delivering from depot-to-depot through a controlled, safe and secure autonomous process.
DDC provides a complete turnkey logistics solution: software, hardware, infrastructure setup, training.

### Operation Control Centre
- Centralized command centre for system monitoring and control
- Operators manage multiple drones, immediately scalable up to 1,500 total for the OCC
- Full monitoring & control over any UAV through FLYTE™ management system

### Proprietary Software
- FLYTE software dispatches drones and manages overall system
- Visibility on various external factors (air traffic, weather, security, etc)
- Completely autonomous but a monitoring Operator can take control if necessary
- Route planning, scheduling, billing, PODs, maintenance records, etc.

### Fleet
- Currently four DDC UAV models to service diverse payload and distance applications
- Sparrow, Robin, Falcon & Condor
- System is airframe agnostic with more UAV models coming
**DDC Sparrow**
- Deemed compliant by Transport Canada, Dec 2017 – fully operational
- 30 km distance, operating speed 70 km/h
- 4.5 kg payload, 310 mm x 201 mm x 140 mm (WDH)
- Suitable for letters, small parcels, medical tests, medicine, emergency kits

**DDC Robin**
- Expected entry into service early 2020.
- 40 km distance, operating speed 75 km/h
- 11.3 kg payload, 330 mm x 228.6 mm x 150 mm (WDH)
- Suitable for letters, small parcels, medical tests, medicine, emergency kits

**DDC Falcon**
- Expected entry into service date mid 2020
- 50 km distance, operating speed 75 km/h
- 30 kg payload

**DDC Condor**
- Expected entry into service date late 2020
- Gas powerplant, rotorcraft
- 200 km distance, operating speed 120 km/h
- 180 kg payload
**Business Opportunity**

A new way of getting supplies and equipment to your end user or within your operations

### Efficiency
- Transporting urgent supplies to where you need them, when you need them.
- Pre-determined direct flight paths – depot-to-depot.
- Freeing up manpower and resources.

### Cost Savings
- Significantly reduced maintenance and operational costs.
- Low operator and labour costs.
- Predictable, fixed monthly costs regardless of volume.

### Reliability
- Reliable equipment you can count on. Affordable back up equipment readily and quickly dispatched.
- Comprehensive maintenance and spares programs available.

### New revenue opportunities
- Capture new market share by expanding your service area to new regions or by improving SLAs.
- Target new industries by increasing your service offering (remote access, speed, consistency, premium services, etc).
Drone Applications
The DDC platform is perfectly suited to a wide range of applications globally…

<table>
<thead>
<tr>
<th>Vertical Market</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Remote Communities</td>
<td>~1000 remote communities in Canada, similar issues globally, move to suburban &amp; urban as regulations permit</td>
</tr>
<tr>
<td>Mining</td>
<td>Time sensitive industrial cargo – repair parts, core drilling samples, water testing samples, emergency supplies</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>Time sensitive industrial cargo, on land and at sea – repair parts, emergency supplies, general cargo</td>
</tr>
<tr>
<td>Last-Mile Courier Routes</td>
<td>1000’s of rural and suburban areas experiencing expensive and time-delayed delivery of general &amp; e-commerce goods</td>
</tr>
<tr>
<td>Medical / Pharmaceutical</td>
<td>AEDs, blood, medical tests, organs, prescriptions, emergency supplies, disaster relief, humanitarian aid</td>
</tr>
<tr>
<td>Shore-to-Ship Logistics</td>
<td>Port-to-ship movement of cargo – repair parts, emergency supplies, documents, general supplies</td>
</tr>
<tr>
<td>Construction / Forestry / Agriculture</td>
<td>Movement of cargo in any expansive operational area</td>
</tr>
</tbody>
</table>
Launch
Customers
Moose Cree First Nation (Rural/Remote Application)

About:
- Location: Northern Ontario
- Population: 5,000 people approximately
- Deal Value: $2.5M

Date announced: Dec 5, 2018
Start date: Q4 2019

Service:
- Mission: connect communities of Moose Factory and Moosonee flying over Moose River
- Value: (i) Huge social benefit, (ii) Accessibility of goods, (iii) Cost savings
- Drone type: Sparrow, 10lb of cargo payload
- Commodities include: medicine, postal, supplies, general necessities.
**Vision Profile (Suburban Application)**

**About:**
- Conglomerate focused on manufacturing building products
- Products: columns, decking, fencing, railings, patio doors, steel doors, etc
- Located: Vaughan, Ontario
- Population of Vaughan: 400,000 approximately

**Date announced:** Sep 10, 2019  
**Start date:** Nov 2019

**Service:**
- Mission: move commercial goods between different V facilities
- Value: (i) speed, (ii) cost savings
- Future potential: service over 20 Vision facilities
- Drone type: Sparrow application, 10lbs cargo capability
- Commodities: tools, parts, documents, general commodities
About:
• Global Transport and Logistics company
• Employee Strength: 60,000 employees in more than 90 countries globally
• Drone Site Location: Milton, Ontario, Canada
  o New DSV Canada Head office (Air & Sea, Solutions and Road divisions)
• Workforce: Approximately 1,100 FTEs in peak seasons

Date announced: Oct 23, 2019
Start date: Dec 2019 (early Jan 2020)

Service:
• Mission: First innovator in logistics industry to develop drone market
• Value: (i) Premium business development opportunity
  (ii) Speed of service
  (iii) Cost savings
• Drone Type: Sparrow application with 10lbs cargo capability
• Future Potential: Migrate to larger size drones (with increased capacity)
• Commodity: Time sensitive cargo across key verticals. Various commodities.
Edmonton International Airport (Urban/Airport Application)

About:
- Primary air passenger and air cargo facility in the Edmonton Metropolitan Region of the Canadian province of Alberta
- Edmonton is one of Canada’s youngest cities and the fastest growing
- Canada’s fifth busiest airport and largest major airport by land size
- One of the most progressive airports in Canada, and a leader in drone operations
- EIA is a founding member of the Alberta Aerospace & Technology Centre (AATC) - a center for research and innovation in aviation

Date announced: October 29, 2019
Start Date: Q1 2020

Service:
- Sparrow application, migration path to larger drones
- Goods up to 5 kg to be commercially transported between facilities, on and off airport
- Cargo: could include letters, documents, general parcels, parts, pharmaceuticals
Early adopter benefits – *because your competitors are moving forward*…

- Preparing to scale along with updated regulations
- Developing processes & SLAs
- Internal software integration
- PR value
- Established relationship with regulators
- Competitive advantage
- New market share
- Cost savings & efficiencies

**DRONE DELIVERY BENEFITS**

- Fast & efficient when time is off the essence
- Easy delivery to hard to access locations
- Secure & reliable
- Autonomous - low labour cost
WHAT TO LOOK FOR IN A DRONE LOGISTICS PARTNER?

✓ System approach – it’s not only about the drone
✓ Tested, proven, reliable & operational technology
✓ Full ownership of patented intellectual property
✓ Scalable in size & for global operations
✓ Multi-platform, airframe-agnostic technology for growth
✓ Fully operational, fully integrated SaaS system
✓ Approved by the Regulator to integrate into active airspace
✓ Secure, safe, disciplined and controlled operating environment
Contact Information:

**Ameet Sareen**
GM Cargo Sales Canada, Air Canada Cargo  
www.AirCanadaCargo.com  
ammeet.sareen@aircanada.ca

**Michael Zahra**
President & CEO, Drone Delivery Canada  
www.DroneDeliveryCanada.com  
michael.zahra@dronedeliverycanada.com
Networking Lunch 12:30 – 14:00

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iSHARE
Pharma digital is in fast-forward modus!
Has the industry the ability to change at the same pace?

Eddy Weygaerts
Transportation Manager
Pfizer
OUR PURPOSE

Breakthroughs that change patients’ lives
Pharma digital is in fast-forward modus!
Has the industry the ability to change at the same pace?

Eddy Weygaerts

October 30th, 2019
The simplicity of pharma

Product:
- Temperature
- Damage
- Integrity

Is our biggest complexity
Four Industrial Revolutions

1765
1st revolution
MECHANIZATION
led by the steam engine

1870
2nd revolution
MASS PRODUCTION
driven by electricity and oil-based power

1969
3rd revolution
AUTOMATED PRODUCTION
supported by electronics and information technologies

Today
4th revolution
NEW TECHNOLOGIES
Internet of Things (IoT), Artificial Intelligence (AI); Big Data, Cloud, Cyber-Physical Systems...

Sources: https://www.visiativ-industry.ch/industrie-4-0/
Accelerating Growth in Technology

(condensed)
Drawing in a cave
Current Temperature recording
Analyzing temperature excursions

Challenges

- Requires communication between multiple supply chain partners
- Complex contractual relationships make direct communication difficult
- Different types of information need to be exchanged
- Information is locked in operational silos or only available on paper
Test conclusions:

1/ Top of the iceberg

2/ Additional data is required

3/ More data means the need for **data management**
Control tower output:
- not just a system or a technological platform
- not limited to logistics
- It will not fix issues
RTM (product +05°C / shipping +20°C)

1. Truck temp at 11°C instead of 20°C – Malfunction

2. Shipments to be moved to 5°C storage after 120h

3. Airport to LSP Wrong Setpoint 5°C instead of 20°C
RTM Outside loggers 15-25°C shipment
WHY?

GLOBAL SUPPLY
Collaborative Supply Chain Visibility in Air Pharma

Frank van Gelder
Secretary General
Pharma.Aero

Paul Delbar
Solutions Architect
Nallian
COLLABORATIVE SUPPLY CHAIN VISIBILITY
Agenda

About Pharma.Aero

Project Digi 1.0 and Digi 2.0

The Global Pharma Tracker
Introduction to Pharma.Aero

A cross-industry collaboration for Pharma Shippers, CEIV-certified cargo communities, airport operators and other air cargo industry stakeholders to collaborate and enhance end to end air transportation of pharmaceuticals.
Our vision, mission and goals

**VISION**
Achieve excellence in reliable end-to-end air transportation for pharma shippers

**MISSION**
Foster collaboration between CEIV certified airport communities dedicated in developing and leading when it comes to handling pharmaceuticals

**GOALS**
- Advocate the best interests of the pharma industry
- Develop air cargo as a reliable transport mode for pharma
- Become leaders in developing cool chain solutions
- Grow the pharma business at our airports
Our timeline

Founded in 2016 with Initial members: Brussels Airport, Miami International Airport, Changi Airport, Singapore Airlines, Sharjah Airport, Brussels Airlines and Brinks Life Sciences

Completed and more ongoing Projects

Oct 2016

2017-2018

Present
Our current member base

**FOUNDING MEMBERS**
- Brussels Airport
- Changi Airport
- MVD Free Airport

**SPONSOR PARTNERS**
- Envirotainer<br>  The Active Cold Chain
- e-CARGOWARE
- DuPont™<br>  Tyvek®
- InnoLabel
- UNISYS
- Validaide
- V&Q-tec<br>  Always the Right Temperature

**STRATEGIC MEMBERS**
- Johnson & Johnson
- Pfizer
- MSD
- Zoetis
- Etihad Cargo
- AirBridgeCargo Airlines
- Cathay Pacific

**FULL MEMBERS**
- DHL<br>  Global Forwarding
- Expeditors
- KIX<br>  Kansai International Airport
- Düsseldorf Airport
- EuroAirport<br>  Basel Mulhouse Freiburg

www.pharma.aero

WE CONNECT PHARMA
Our accomplished projects

IATA CEIV SHIPPERS VALIDATION
Standardization & validation of the IATA CEIV Checklist by Pharma Shippers

AIRPORT AIRSIDE TRANSPORTATION SURVEY
A survey of common practices, measures and technological solutions in relation to the weakest link in the supply chain - the airside transport of pharmaceuticals

DIGI1.0: CERTIFICATION OF PHARMA AIR TRADE LANES THROUGH DIGITISATION
Conceptualisation and development of a logistics data-sharing platform for higher pharma supply chain transparency and performance

DIGI2.0: THE GLOBAL PHARMA TRACKER PROTOTYPE
Development of the Proof of Concept into a prototype – the Global Pharma Tracker (GPT)
Our ongoing projects

**AIRPORT TO AIRPORT PHARMA CORRIDOR**
Setting up pharma corridors between airports with cargo handling communities certified under the CEIV Pharma program

**SECURITY STANDARDS FOR AIRCARGO PHARMA**
Harmonisation of Security Standards concerning pharma air transportation

AND MORE.........
Agenda

About Pharma.Aero

Project Digi 1.0 and Digi 2.0

The Global Pharma Tracker
Digi 1.0: The Problem Statement

THE PROBLEM

Global pharma industry is booming – the market for temperature management services is estimated at US$8.36 billion in 2014 and is projected to rise to US$10.28 billion by 2018. However, the air cargo share of global pharma product transport has declined.

17% (2000)
11% (2013)

WHY?

A lack of compliance, standardization, accountability and transparency across the air transport supply chain.

THE CONSEQUENCE

Products are rendered worthless and harmful for patients due primarily to temperature deviations.

In fact, over 50% of all temperature excursions occur while products are in the hands of airlines and airports.

Annual product losses range between US$2.5-12.5 billion. Unacceptably high in a US$300 billion a year market.

INDUSTRY CHALLENGES
Temperature excursions are often first detected upon arrival – too late.

It can take 3 weeks or more to collect all the relevant data.

During this investigation, release into the market is delayed or refused.

Cold chain issues can create a modal shift in pharma logistics.

Digi 1.0: Critical issues raised by pharma shippers
Digi 1.0: Root causes

Requires communication between **multiple supply chain partners**

Complex **contractual relationships** make direct communication difficult

Different **types of information** need to be exchanged

Information is locked in **operational silos** or only available on **paper**
**Digi 1.0: Functional and System Requirements**

<table>
<thead>
<tr>
<th>FUNCTIONAL REQUIREMENTS</th>
<th>SYSTEM REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipment Data</td>
<td>Interoperability offers flexible integration with current and future operational systems</td>
</tr>
<tr>
<td>Status and Milestones</td>
<td>Immutability ensures data is not modified</td>
</tr>
<tr>
<td>Quality Data</td>
<td>Data Security gives data owners control over who sees their data and in which situation</td>
</tr>
<tr>
<td>Temperature Data</td>
<td>End-to-End Visibility provides stakeholders with enhanced visibility into the entire supply chain</td>
</tr>
</tbody>
</table>

- Better and faster visibility with less effort
- Single window to a single version of truth
- Capability to prevent rather than respond
- Happier customers!
## From Digi 1.0 to Digi 2.0

<table>
<thead>
<tr>
<th></th>
<th>DIGI 1.0</th>
<th>DIGI 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proof of Concept</strong></td>
<td>Dummy shipments based on realistic data samples.</td>
<td>Live data from 2 batches of in total 22 real shipments. Data was provided by multiple live systems from each stakeholder, integrated by using a set of adapters.</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Airport-to-airport</td>
<td>End-to-end: Shipper to Consignee</td>
</tr>
<tr>
<td><strong>Business Logic</strong></td>
<td>Limited: focused on reproducing the Cargo iQ milestones in a linear timeline and ingesting quality data</td>
<td>Extended: focused on building the enhanced data stream of the entire cold chain process and cargo flow processes. Tying together the MAWB to HAWB to shipment batch number and even down to the specific Purchase Order (PO) number to provide interpretation context.</td>
</tr>
<tr>
<td><strong>Data Exploitation</strong></td>
<td>Basic visualization</td>
<td>Additional functionality to enhance platform capabilities enabling prescriptive, and preventive actions by actors of the supply chain.</td>
</tr>
</tbody>
</table>
Digi 2.0: Prototype Lane
Digi 2.0: Project Scope

**Work Package 1**
**BUSINESS VALUE DRIVERS**
- Identifying business value drivers from each stakeholder’s point of view
- Review business value drivers from data perspective

**Work Package 2**
**TECHNICAL IMPLEMENTATION**
- Designing data architecture
- Platform configuration to integrate various types of data sources, defining the output required of the GPT platform and incorporate processing logic

**Work Package 3**
**PILOT ONBOARDING**
- Participation Note: outlines how different supply chain actors participate in the data-sharing platform

**Work Package 4**
**INFORMATION SYSTEM COMPLIANCE**
- System security
- Compliance with legislative and regulatory measures
Digi 2.0: Lessons Learnt

Balancing between perceived business value vs business risks

End-to-End supply chain visibility requires change management and paradigm shift in thinking

Stakeholder alignment is critical

Executive and management buy-in and support

Identification of Internal Sponsor to drive the participation
Agenda

About Pharma.Aero

Project Digi 1.0 and Digi 2.0

The Global Pharma Tracker
Global Pharma Tracker - Why

Global end-to-end logistics visibility
What if pharma shippers had end-to-end logistics visibility?

- tracking a shipment from distribution center to final customer
- always knowing who is currently in charge of the shipment
- immediately detecting when the package is in the wrong place
- immediately detecting when shipment temperature is not optimal
- being able to intervene when something is about to go wrong
Why is end-to-end logistics visibility so difficult to achieve?

To cover the entire logistics network, a shipper needs to:

- setup multiple integrations with supplier systems
- manually consult tracking websites
- employ people to call and email to collect and verify data
- resolve conflicting information from many sources

And every pharma shipper does the same thing with the same partners.
The business benefits of end-to-end logistics visibility

- **Simplified Excursion Analysis**
  - Complete and reliable information is available when it is needed
  - Less effort required to collect information on excursions
  - Faster product release by qualified person
  - Commercial value in faster delivery to customer / market

- **Real-time Information**
  - Key events and non-conformances are signaled automatically
  - Additional visibility allows stakeholders to synchronize operational processes
  - Ability to prevent issues from happening by preventive action
  - Avoid logistics cost for compromised shipments

- **Historical Performance Analysis**
  - Database of parameterized historical performance
  - Ability to leverage machine learning to predict risk
  - Avoid under/overpackaging and associated cost
  - Lane validation can be done based on data from all lane traffic, across multiple forwarders and shippers
  - Simplified performance evaluation of the logistics chain

* confirmed by a survey among Pharma.aero members
Global Pharma Tracker - How

Global end-to-end logistics visibility
an open and neutral platform
offering global end-to-end logistics visibility
for temperature-controlled pharma shipments

from factory to pharmacy
The Global Pharma Tracker Platform

GPT can combine data from all relevant sources:
- shipper ERP
- transport and storage logistics service providers
- from road carriers thru forwarders to ground handlers and carriers
- authorities
- cold chain service providers including real-time location and temperature trackers

developed using Nallian’s proven data sharing platform and leveraging its strong integration capabilities

2019 IATA AirPharma Conference | Global Pharma Tracker | 94
The Global Pharma Tracker Platform

provides information about customer order references, expected temperature regimen, product packaging and attached data loggers at house bill level

provides additional packaging information, aggregation into master airway bills, intermediate transport and storage conditions and additional data loggers

provide info on aggregation into ULD and flight manifest, storage, buildup/breakdown and transport conditions and timing as well as CEIV quality acceptance checks

provides ambient temperature, flight schedule and movement information, access to local cold chain service providers such as pharma dollies and storage facilities

provides flight schedules, master data on ground handler capabilities, access to operational messages around the physical and data flow surrounding shipments

provide real-time or batch sensor information including temperature, humidity, location, door open/close … for sensors linked to (part of) a shipment

developed using Nallian’s proven data sharing platform and leveraging its strong integration capabilities
The Global Pharma Tracker Platform

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provides ambient temperature, flight schedule and movement information, access to local cold chain service providers such as pharma dollies and storage facilities

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provide real-time or batch sensor information including temperature, humidity, location, door open/close — for sensors linked to (part of) a shipment

GPT’s output is an enhanced data stream, available to all logistic partners who are part of the shipment journey, which allows them to

- increase visibility
- optimize processes
- enhance service quality

developed using Nallian’s proven data sharing platform and leveraging its strong integration capabilities
The Global Pharma Tracker Platform

provides information about customer order references, expected temperature regimen, product packaging and attached data loggers at house bill level

provides additional packaging information, aggregation into master airway bills, intermediate transport and storage conditions and additional data loggers

provide info on aggregation into ULD and flight manifest, storage, buildup/break down and transport conditions and timing as well as CEIV quality acceptance checks

provides ambient temperature, flight schedule and movement information, access to local cold chain service providers such as pharma dollies and storage facilities

provides flight schedules, master data on ground handler capabilities, access to operational messages around the physical and data flow surrounding shipments

provide real-time or batch sensor information including temperature, humidity, location, door open/close … for sensors linked to (part of) a shipment

access to the enhanced data stream with data sharing rules applied, allowing systems and applications to augment their own data

easier access to operational and temperature data for increased visibility and the ability to respond faster and take preventive action

quick and easy search of GPT data and visualization of temperature data overlaid with the logistics timeline for faster analysis of excursions

shipment journey data can be extracted into a data lake for advanced analytics, machine learning and predictive modeling

developed using Nallian’s proven data sharing platform and leveraging its strong integration capabilities
Global Pharma Tracker turns data into information by aggregating, interpreting and structuring information from various sources.

To provide the enhanced data stream, GPT’s business logic uses:

- a structured network representation of the global pharma logistics grid
- an interpretation and representation model for the various important logistics milestones
- master data which can be used to correct, augment and validate information.

Making sense of shipping information can be complicated. Messages can be incorrectly formatted, received twice or not at all. Information can come in the wrong order, missing the necessary timestamps to correctly interpret them.

GPT’s intelligence combines data from multiple sources and multiple shipments to identify information that does not make sense and could lead to false tracking results.

- **GPT BUSINESS LOGIC**
  - the heart of Global Pharma Tracker, capable of handling complex situations such as rerouting, multi-model/multi-hop carriage, part shipment ...

- **GPT GLOBAL NETWORK MODEL**
  - a digital representation of the logistics grid used for pharma shipments and every connected logistics participant on the GPT network

- **GPT PHARMA MILESTONE MODEL**
  - a structured approach to interpreting the information for every shipment, leveraging Cargo iQ and augmenting it with events with a high relevance for pharma shipments

- **GPT MASTER DATA**
  - a catalog of capabilities for each participant in the supply chain: relations between carriers and ground handlers, airport layouts to help interpret geo-location data, cold chain capabilities ...

GPT allows tracking at every relevant aggregation level.
GPT Data Governance

- **GPT’s data sharing and governance rules are defined by its user community**
  - Building on the base framework established by Pharma.aero and its members during Digi 2.0

- **All data shared on the GPT platform is owned by its data provider**
  - The data owner decides on the data sharing and governance rules the platform enforces on their behalf

- **Shared data is used only for the purpose explicitly approved by its owner**
  - GPT will not sell, rent or otherwise exploit the data for any other purpose

- **GPT is an open, service-provider agnostic platform**
  - It is not tied to any particular shipper, forwarder, carrier or airport
Global Pharma Tracker

GPT Explorer example

<table>
<thead>
<tr>
<th>HAWB</th>
<th>MAWB</th>
<th>milestones recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>3APR493</td>
<td>BRU</td>
<td>Consignment picked up from consignor</td>
</tr>
<tr>
<td>618-65732273</td>
<td>BRU</td>
<td>Transport from consignor by forwarder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consignment delivered to ground handler at BRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preparation for export at BRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flight departed at BRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air carriage from BRU to SIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flight arrived at SIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transshipment at SIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flight departed at SIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air carriage from SIN to SYD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flight arrived at SYD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reception for import at SYD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consignment picked up from ground handler at SYD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deconsolidate</td>
</tr>
</tbody>
</table>

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Global Pharma Tracker

Shipment Details for HAWB 3APR493

- **HAWB**: 3APR493
- **Origin**: BRU
- **Destination**: SYD
- **Pieces**: 11
- **Weight**: 1462 kg

**Shipment Details**

- **HAWB**: 618-65732273
- **Origin**: BRU
- **Destination**: SYD
- **Pieces**: 1
- **Weight**: 1462 kg
- **Carrier**: Singapore Airlines Cargo

**Location**: SYD

Delivered to forwarder

**Milestone plan**

- Sensors
- Show all
- 2000E64C
- 10004C17
- 10004C1A
- 10004F8E
- All transactions
- API

**Temperature Data**

- **D2D events**
- **Real-time sensor**
  - **Product temperature**
- **Real-time sensor**
  - **External temperature**
- **Airport temperature**
- **A2A events**

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exposure to ambient temperature at dropoff

exposure on tarmac on arrival
Real-time data: the need for context

Where is my shipment – on the warehouse, on transport, on tarmac, in the plane?

Who is currently holding my shipment?

What is the capability of that party to intervene?

How should they react to this situation?

FACTS
- external temperature above range, internal temperature trending to upper limit

CONTEXT
- 15-25°C shipment under thermal jacket, shipment due to depart at 20:06, part of a single ULD, 2 sensors providing external temperature, 1 internal, on tarmac
## Integrating real-time data

<table>
<thead>
<tr>
<th>FACTS</th>
<th>CONTEXT</th>
<th>ACCESS</th>
<th>STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information needs to be provided in a reliable and <strong>automated</strong> way to minimize control tower workload. All information needs to be provided in a <strong>single, consolidated and coherent view</strong>. Additional digital signals need to be developed in the ‘hot zones’ (which is <strong>everywhere</strong>).</td>
<td>Information needs to be interpreted in <strong>context</strong> to resolve missing or contradictory information. A notion of <strong>criticality</strong> needs to be defined to prioritize the attention of the control tower. An extended model for <strong>product or shipment viability</strong> can use multiple inputs to assess the situation. Uses a <strong>milestone planning model</strong> to predict the future timeline (useful in case of delays).</td>
<td>Where possible, the platform needs to <strong>notify the appropriate parties</strong> without intervention of the control tower. <strong>Agreements</strong> need to be made to ensure that operational parties are able and willing to take action.</td>
<td><strong>Scenarios</strong> need to be defined on how to handle specific situations such as on-tarmac excursion, in-warehouse excursion, apparent rerouting of shipments ... These need to be in place and practiced prior to issues happening.</td>
</tr>
</tbody>
</table>
Global Pharma Tracker – Today

Global end-to-end logistics visibility
Participating in the Early Adopter Program

The Early Adopter Program is a unique opportunity for forward-thinking pharma shippers and logistics service providers to improve their logistics performance.

**EAP participants**
- will be able to define the initial pharma logistics grid to be covered by Global Pharma Tracker
- establish the first set of end-to-end lanes to take advantage of the augmented visibility offered
- drive roadmap priority to maximize return from their participation

**Global Pharma Tracker**

- provide your control tower with an end-to-end logistics view
- single platform to track all shipments across forwarders and carriers
- drastically reduce time spent researching temperature excursions
- allow Qualified Person to release shipments faster
- reduce temperature excursions by raising awareness
- easier access to milestone information to feed your control tower
- use the enhanced data stream to provide better track & trace
- resolve the 'black hole' visibility issue
- provide faster response to shipper information / CAPA requests
- demonstrate strong commitment to supply chain transparency
- improve your temperature-controlled logistics offering
- reduce administrative effort to respond to information requests
- support SLA and claims discussions with factual data
- leverage internal IT investments by sharing milestone data
- become more attractive to carriers with a strong cold chain portfolio
- substantiate cold chain capabilities with factual data
- provide cold chain carriers with GPT as ‘soft infrastructure’
- actively build cold chain corridors complete with end-to-end tracking
- promote local cold chain services such as pharma dollies
- leverage logistics data for local community process optimization
- improve your temperature-controlled logistics offering
- reduce administrative effort to respond to information requests
- participate in cold chain corridors complete with end-to-end tracking
- better understand actual KPI-related performance of partners
- become more attractive to pharma shippers and reduce modal shift
- promote your service offering to wider range of customers
- substantiate SLA and claims discussions with factual data
- reduce customers’ manual effort to integrate sensor data
- trackers: facilitate product adoption by providing unified integration
The Global Pharma Tracker Network

The GPT network is a **distributed model** for air cargo logistics, which maximally leverages any data already available in local airport communities.

The model **integrates all available data** to provide end-to-end visibility across the entire global air pharma logistics grid.

Nodes will start out with **basic visibility**, providing only high-level logistics and temperature information for simple tracking.

Gradually, GPT will work with airports and local partners to increase the available data depth to reach complete coverage.

During the **Early Adopter Program**, the priority for network development will be defined by the participating logistics partners.

Network nodes are added as airports, carriers and forwarders provide data on logistics events at these nodes.

The information creates **lanes** which make it possible to provide end-to-end shipment tracking.

---

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Selected participants will define the **initial pharma logistics grid** to be covered by Global Pharma Tracker, and will establish the first set of end-to-end lanes to take advantage of the augmented visibility offered. Pharma.aero members will profit from favorable conditions.

### Capabilities

- define and track shipments at house and master airway bill level, including by shipper / customer references
- provide milestone plan covering all key Cargo iQ milestones, supporting multi-hop and road feeder segments
- include CEIV Acceptance Check results
- support common temperature control SOPs including active containers
- overlay product temperature loggers (passive and active) with logistics milestones to identify location and custodian at every step of the flow
- flag temperature excursions and anomalies in data or logistics flow
- provide GPT Explorer as the basic interface to consult GPT data
- support a participant profile to identify commercial relations, agreed upon standard operating procedures and capabilities
- definition of data capability measures on nodes and lane segments to drive continuous extension of the network
- provide an open interface for sensor data integration to support an active ecosystem of cold chain service providers of passive / active sensors and pharma transport dollies

### Additional features may be suggested by Early Adopter Program participants

### 2019 - Early Adopter Program

### 2020 - General Availability

- Sign up additional airports and local partners to **increase the available data depth** to reach complete coverage

### Future

- In its first release, Global Pharma Tracker supports fine-grain, real-time shipment monitoring and tracking, to maximally reduce temperature excursions.
- In future releases, Global Pharma Tracker will support dynamic guidance of optimal packaging and lane selection, using a predictive model derived from anonymized historical data.
- We will continue to expand the reach of the Global Pharma Tracker Network to cover all relevant pharma air logistics lanes and destinations.

### Capabilities *

- additional milestones for regulatory and customs processes
- additional milestone granularity during build-up / break down of shipments and on-tarmac time
- milestone propagation and notification of missed or critical milestones
- advanced backend system integration using publish / subscribe mechanism to automatically receive updates
- support for ONE Record standard
- possibility to book cold chain services through the platform
- provide interoperability with other community systems and platforms

* Please note that the priority and timing of features on this roadmap is subject to Steering Committee decisions.
Global Pharma Tracker will be extended to cover other modalities such as ocean and regular road transport.
Global Pharma Tracker

Global end-to-end logistics visibility, from factory to pharmacy
Networking break 15:30 – 16:00

Kindly sponsored by;
Joint Session
Air Pharma and Air Cargo Operations

**Moderator:** Bart Pouwels, Head of Cargo, Amsterdam Airport Schiphol

**Panelists:**
- Fabrice Panza, Cool Chain Project & GDP/QA Pharma Manager, AFKLM Cargo
- Robert Fordree, Executive Vice President, Menzies Aviation
- Julian Wann, Global Category Leader, Procurement Freight & Logistics, AstraZeneca
- Olivier Simonnot, Senior Manager Strategic Marketing, Sensitech EMEA
- Lothar Moehle, Director AVSEC & Governance, DB Schenker
Joint Session

Air Pharma and Air Cargo Operations

Presentation

Fabrice Panza

Cool Chain Project & GDP/QA Pharma Manager

Air France KLM Cargo
Improve TRANSPARENCY and EFFICIENCY in the pharmaceutical air freight operations through INNOVATIVE and DIGITAL solutions.
AGENDA

Transparency
Collaboration
Communication
Challenges
Transparency: what kind of digital pharma services?

**Temp & Track:** Keep track of your Pharma shipments temperature

**Quote & Book:** Quote and Book your Pharma online

**Station Capabilities Tool:** Check and download all Pharma details station by station

**E-Pharma Acceptance:** digital acceptance by means of digital tablet

**E-CAPA:** full online CAPA report and process
E- Pharma acceptance & TEMP & TRACK

Flight schedule

BSL - MLH  ARIBIN 18:00 - 18:00  19:30  2 pcs  Confirmed
MLH - CDG  ARIBIN 19:30 - 18:00 N 06:50  2 pcs  Confirmed
CDG - EZE  ARIG228N 18:00 13:30 - 18:00 06:15  2 pcs  Confirmed
Estimated Pick up time: 19:00 10:15

Temperature

CDG

<table>
<thead>
<tr>
<th>Sensor ID</th>
<th>Set</th>
<th>Actual</th>
<th>Latest measurement</th>
<th>Temp. Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN125400I</td>
<td>5 °C</td>
<td>5.19 °C</td>
<td>2023-09-24 13:30</td>
<td>°C</td>
</tr>
</tbody>
</table>

If you need support, please contact our customer service office:
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Click here
Compliance bring lots of challenges…

IATA CEIV: What value does it bring?
…into innovative mode

11 audits in 6 months for 14 customers

1 audit with 5 customers at 1 time
(achieved in sep19 with collaborative PGA mindset)

Pre assessment online & on-site pre organized audits
AGENDA

Transparency
Collaboration
Communication
Challenges
How enhancing internal & external collaboration?

Cool Chain Program: 6 pillars + 1 global

- Infrastructure
- Data & IT
- Processes
- Monitoring
- Communication
- Compliance
AGENDA

Transparency
Collaboration
Communication
Challenges
How communicating?

La Cool Chain? Késako?

Le déroulement des tests:

1. Poser des capteurs d'état sur le palet
2. Poser des capteurs à 10 cm du palet
3. Poser des capteurs en équinoxe
4. Poser des capteurs dans le flux

Au total, 36 capteurs en placé à COOLIPEX, 36 à AIRFRANCE

Les tests d'efficacité des couvertures thermiques ont été réalisés les 19 juillet et 13 août à G1XL

Solutions
What challenges do we face?

• How IT can communicate through the full supply chain?

• What kind of data?

• What kind of tests?
Takeouts:

1. Set & entertain collaboration both internally and externally

2. Keep innovating and “POC” as much as possible

3. Keep Customer at center
Fabrice Panza
GDP/QA Pharma Manager AFKL
Cool Chain Program Manager AF
Joint Session

Improving transparency and efficiency in the pharmaceutical air freight operations through innovative and digital solutions

Moderator:  
Bart Pouwels, Head of Cargo, Amsterdam Airport Schiphol

Panelists:  
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Lothar Moehle, Director AVSEC & Governance, DB Schenker
Chairman Closing Remarks

Maarten van As
Managing Director
Air Cargo Netherlands (ACN)
IATA CARGO EVENTS

6 – 8 October 2020
Manchester, UK

Save the date!
Thank you to all our sponsors!