Cargo Operations Track

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ACL AIRSHOP
CARGO OPERATIONS TRACK

CUSTOM ULD SOLUTIONS™

Steve Townes
CEO, ACL Airshop
Founder, Ranger Aerospace
CHAIRMAN’S OVERVIEW

Digital Shift is Accelerating in Air Cargo

What Are the Players All Doing?

What Are the “Technology Promises” for Customers?

What Will It All Look Like in 5 to 10 Years?
The Digital Shift is Accelerating

And what are all the players doing?

- Airlines
- Integrators
- Tech Companies
- Service Providers
- GHA’s
- Shippers
- Forwarders
“Technology’s Promise” for Customers

- Cheaper
- Faster
- Better
- Big Data
- Analytics
- Efficiency
Wild Card Factors

“In 5 to 10 Years?”

- Strategic role of Airlines vs Integrators
- Speed of technology implementation & upgrades. 5.0 6.0 7.0
- Regulatory hurdles to Digitization? Govt. slow....Industry fast.
- The growing global power of Amazon and other technology-driven giants
- Drones in the future of Air Cargo. And not just “Last Mile”
- What else?
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Implementing Standards Successfully
Operational Impact of Digitization Automation
Opportunities & Operational Efficiency
Augmented Reality & AI in Air Cargo
Is implementing standards and adopting them delivering on the stated benefits?
Ms. Linda Ng, Senior Manager, Operations Development & Quality, SATS, Ms. Sharon Yin Fun Ng, VP Operations & Services, Singapore Airlines, and Bala Subramanian, Founder & CEO ACCIS

With all these new technologies, enhanced data, advanced processing, what is the impact on the operation itself?
Mr. Arnoud Wink, Manager Compliance & Safety Execution, KLM

Exploring specific use cases in automation, including the use of IoT and their impact on operational efficiency.
Dr.-Ing. Harald Sieke, Fraunhofer-Institut

This session will showcase the recent proof of concept done on AR in air cargo.
Brendan Sullivan, Head, E-Commerce and Cargo Operations, IATA
Implementing Standards Successfully

Moderator:
Mr. P. Balasubramanian (Bala), Founder & CEO, Air Cargo Consultancy International Services (ACCIS)

Panelists:
Ms. Linda Ng, Senior Manager, Operations Development & Quality, SATS
Ms. Sharon Yin Fun Ng, VP Operations & Services, Singapore Airlines
Implementing Standards Successfully

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Operational Impact of Digitization Automation

Mr. Arnoud Wink
Manager Compliance & Safety Execution
KLM
Networking Break

15:30 to 16:15 in Roselle Simpor Ballroom

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AIRBRIDGECARGO
Automation Opportunities & Operational Efficiency in Air Cargo powered by AI & AR

IATA WCS – Fraunhofer IML

Singapore, 2019/03/13
Fraunhofer-Gesellschaft and Fraunhofer IML

More than 25,000 employees

72 institutes and research institutions

2.3 billion research volume

Fraunhofer IML, Dortmund

290 employees

250 post grad students and student assistants

30.7 million turnover, 50% of which from industry and commerce

Development investment and defence research
German federal and state government base funding
Contracts with industry and publically financed research projects
How we work

We do research…
... in-house and industrial contract research

We support…
... companies of all sizes and from all industries

We develop…
... e.g. for the LHC accelerator at CERN, Geneva
Fraunhofer IML - Aviation Logistics Frankfurt

- **Aircraft**
  - (Dis-) Embarkation
- **Apron**
  - Passenger transport
  - Baggage handling
- **Terminal**
  - Passenger handling
  - Baggage handling
- **Pre-/ on carriage**
  - Passenger transport
  - Baggage transport

- **PAX**
- **Luggage**
  - (un-)loading & servicing
- **Cargo**
  - (un-)loading & servicing
- **Others**
  - Groundhandling
  - Security, infrastructure, customs, IT, VAS, ...

© Fraunhofer - Slide 4
We experience the dawn of AI

With the digitization of everything and artificial intelligence in everything, everything will change.
This change will be irreversible.
We will never return to the largely analogue world of today after the introduction of Artificial Intelligence.
The unthinkable becomes conceivable - by artificial intelligence.
Expected Impact of AI

AI will have a larger impact than the internet

- Global: 42% Agree, 21% Strongly Agree
- Middle East: 60% Agree, 18% Strongly Agree
- Asia-Pacific: 45% Agree, 27% Strongly Agree
- CEE: 49% Agree, 16% Strongly Agree
- Latin America: 46% Agree, 19% Strongly Agree
- Africa: 28% Agree, 31% Strongly Agree
- Western Europe: 38% Agree, 18% Strongly Agree
- North America: 34% Agree, 10% Strongly Agree
AI and related Emerging Technology
Air Cargo

Aircraft

(Dis-) Embarkation
(Dis-) loading & servicing

Apron

Passenger- transport
Baggagehandling

Terminal

Passenger-handling
Baggagehandling

Pre-/ on carriage

Passenger-transport
Baggage transport

PAX

Luggage

(Dis-) loading & servicing
Baggagehandling

Cargo

(un-)loading & servicing
Cargo- & Airmailhandling

Others

Ground handling

Security, infrastructure, customs, IT, VAS, ...
Picture of the Future - Air Cargo
Current Research Projects
eFTS – Automated Ground Service Equipment

Motivation
- Determine the potential of electronic transport AGVs on the apron

Key - Findings:
- Transport processes have a higher potential
  - No Airframe contact
  - Independent from A/C Type & Size
  - Only dependent on apron traffic rules

- Service processes are more challenging
  - Airframe contact
  - Usually include manual handles
Smart ULD and Cargo Shipment Tracking via NB-IoT

Intelligent air cargo container:
- monitors environmental influences by using sensors
- locates itself independently (tracking)
- communicates with surrounding objects and control center
- regularly reports status, location and alarm data

New usable data sources are created:
- Additional information increases service level (sales)
- Improved localization in the warehouse (production)
- Improved performance evaluation (after-sales)
Way to the future - Augmented Reality in Air Cargo Handling

1. Teaching
   - Contour
   - pile factor
   - mixed-load prohibition
   - Pallet weight and balance

2. Contour check
   - Database for contours

3. Build-Up
   - 3D scan of pieces
   - Software

Source: ASFS/ Fraunhofer IML
Stowage pattern optimization

**Packing pattern software Puzzle**
1. Pre-calculation and optimization in load planning
2. Exercise tool for the qualification of specialists
3. Visual support of manual activities
4. Automation: Packing pattern optimization for robots

**Features in preparation:**
- Use of 3D scanners for individual contour detection of an article
- Optimization for containers and other load carriers

**Effects of AR on the ULD Build-Up:**
- Faster contour check via AR
- Faster assembly of ULDs via AR

Pictures: Fraunhofer IML
Industrial apps in Air Cargo Handling
„We AR ready!"
CONTACT

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Augmented Reality in Air Cargo

Brendan Sullivan
Head, E-Commerce and Cargo Operations
IATA
Augmented Reality in Air Cargo

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Head, E-Commerce & Cargo Operations

8 March 2019
Cargo Facility of the Future

Brendan Sullivan
Head, E-Commerce & Cargo Operations

13 March 2019
Case for Change

• Industry set to double in size by 2035
• Strong E-Commerce growth (20-25% per year)
• E-Commerce, Drones, Automation, AR/AI all driving process change
• Ongoing regulatory demands and complex changes
• Organizational capability
• Labor constraints
• Training and competencies
What is an air cargo facility used for and why does it need to be different in the future?
Is there only **ONE** cargo facility of the future?
One Size Fits All?
Where do Technology Innovation and Operations intersect?
How do we automate air cargo flows?
“smart, connected, green, safe and secure, and fit for purpose in size, location and for the people who use it.”
6 technology trends

- Augmented Reality & Wearables
- Robotics & Automated Systems
- IoT, Connected Cargo & Devices
- Drones & Autonomous Vehicles
- Big Data / Predictive / AI / Deep Learning
- Green, sustainable, net zero buildings
Augmented Reality in Air Cargo
Methodology

T
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Runs

E
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Errors

Runs

User Satisfaction
Key Findings

- It Works
- Integration
- Speed
- Error Rate
Key Findings

- It Works … Today!
- Speed: 30% Improvement
- Integration: gives increased performance
- Error Rate: 90% Improvement
Thank you

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CARGO OPERATIONS TRACK

CUSTOM ULD SOLUTIONS™

Steve Townes
CEO, ACL Airshop
Founder, Ranger Aerospace
Wrapping Up

- Global standards among Airlines and Ground Handling Agents
- Operational Impact of Digitization
- Internet of Things and the impact on Operational Efficiency
- Augmented Reality & Artificial Intelligence? In 5-10 years?
- Define and quantify the value to the Customer
- What are the WILD CARDS?
Wild Cards Abound!

February 2019
speech at
The Wings Club

Change and Acceleration
All of us here today should adhere to the ULD Care Code of Conduct. See ACL Airshop’s associates here for your own copy of the booklet “ULD Explained.”

All of us as Company Leaders are also Safety Leaders.

Safety Culture starts at the top.

1. Handle and operate ULD in a responsible manner.
2. Only perform those tasks for which they are currently qualified.
3. Respect that ULD are aircraft equipment providing flight safety cargo restraint in flight.
4. Store ULD in a damage free manner and appropriate environment.
5. Move and transport ULD using damage free methods.
6. Only use ULD that have been serviceability checked before use.
7. Build stable loads observing all aircraft and ULD limitations.
8. Report transfers and stocks of ULD consistent with the policies of the owner airline.
9. Treat ULD accessories with proper care and attention.
10. Study OEM instructions and/or follow specialist training course before working with these types of cargo.
BOLD PREDICTIONS

Digitization will accelerate and compound
Speed, efficiency, cost savings will result

$$Billions will be removed from global costs in
the air cargo ecosystem

Market leaders must also be Technology leaders

Drones are coming eventually to the air
cargo sector. Large Haul, plus Last Mile.

Winners and Losers – **Look back in 5 years**
Thank You!  Let’s stay in touch.

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