Official Opening

Joseph Suidan
Head of Ground Operations, IATA
Official Opening

John Boggs
IGHC 2019 Master of Ceremony
Welcome Address

Luis Gallego Martin
CEO, Iberia Airlines
Welcome Address

Javier Marin
Managing Director for Airports, AENA
Welcome Address

Nick Careen
Senior Vice President, IATA

IGHC 2019
IATA GROUND HANDLING CONFERENCE
MADRID, SPAIN | 26-29 MAY
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MADRID, SPAIN | 26-29 MAY
Ramp of the Future - Introduction

**Moderator:** Joseph Suidan, Head of Ground Operations, IATA

**Fabio Gamba,** Director General, Airport Services Association (ASA)

**Uschi Schulte-Sasse,** Senior Vice President, INFORM GmbH

**Dr. Harald Sieke,** Head of Departments, Aviation Logistics, Fraunhofer Institute
Eventually everything connects – people, ideas, objects. The quality of the connection is the key to quality per se. Charles Eames (1907-1978)
POWERS OF TEN
Network-wide Resource Optimization

- Network-wide transparency
- Delay propagation
- Proactive network balancing
- Multiple MRO stations
- Network-wide cost model
Traditional Decision Making
Hybrid Decision Making Approach

- Rulesets
- Conventional Logic
- Formulas
- Dynamic Profiling
- Travel Times

- Regression
- Clustering
- Neural Network
- Random Forest
- Naive Bayes
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Ramp Mobility & Smart Cargo Handling

IATA IGHC– Fraunhofer IML

Madrid, 2019/05/27
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.
AI and related Emerging Technology

- Autonomous vehicles
- Internet of things
- 3D printing
- Drones
- Augmented & virtual reality
- Blockchain
- Robots
Air Cargo
Picture of the Future - Ramp
Current Research
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)
Sneak Preview - Way to the future: AI and Augmented Reality in Air Cargo Handling

1. Training

2. Contour check

3. Build-Up
„We AR ready!“
CONTACT

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Ramp of the future

Human Factors

Fabio Gamba
Director General
Airport Services Association (ASA)
The Ramp of Today
IS MOSTLY MANUAL, SILOED AND LACKS INVESTMENT

- PAPER INTENSIVE
- POOR COMMUNICATION TOOLS
- LIMITED REALTIME INFORMATION
- OLD GSE DESIGN
- INADEQUATE INFRASTRUCTURE
The Ramp of Tomorrow

WILL BE AUTONOMOUS, CONNECTED AND OPTIMIZED

CONNECTED AIRCRAFTS

CONNECTED AIRPORTS

CONNECTED EMPLOYEES

AUTONOMOUS VEHICLES

ROBOTICS

AI & MACHINE LEARNING
Today’s HR challenges
ARE LACK OF RESOURCE AND HIGH TURNOVER

Job attractiveness
• Highly manual
• Operational and standardised
• Low salaries
• Lack of career path

Language challenges
Lack of equipment investment
Poor training

….and the rapid growth of the industry will result in an even greater lack of manpower
Current solutions can be costly

- Company culture
- Improved facilities and welfare
- Increased salaries
- Flexible working

Handlers, Airlines and Airports are showing signs of understanding, but there is still a relentless focus on price
Technology to the rescue?

- AI in recruitment & faster onboarding
- Faster and lesser training
- Information at our fingertips – Augmented reality, Smartwatches & headsets
- Translation software
- Robotics and autonomous vehicles
- Machine learning and AI
- Optimisation = less resources

But... These changes can be difficult for traditional employees and management to adopt
We must, and will, gradually adapt at all levels

Command and control management → Enablers, technologist, collaborators and complex problem solvers

Hands-on supervisors → Control centre operator, technicians & data scientists

Manual workers → Digital savvy operators, Proactive & informed hosts
A new challenge – the search for digital natives

- High cross industry demand for limited skills
- Ground handling perhaps not first choice
- Natural trend to embrace digital in daily lives – PDAs
- Embrace Digital
- Change recruitment and training approaches
- Learn new ways to manage millennials
- Partnerships
Ramp of the Future - Introduction

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Networking Break

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IGHC Innovator Competition

Florian Eggenschwiler, Head Innovation, Swissport International

Jose Luis Camara Palacios, CEO, International Boarding Solutions

Rob Schoenthaler, CEO and Founder, Atollogy, Inc

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LIFTSUIT
IMPROVING THE BAGGAGE HANDLER EMPLOYEE EXPERIENCE
MUSCULOSKELETAL INJURIES ARE THE #1 SOURCE OF INJURIES FOR BAGGAGE HANDLERS

1 IN 12 BAGGAGE HANDLERS EXPERIENCES BACK INJURIES
ON AVERAGE A BAGGAGE HANDLER LIFTS 4-5 TONS PER DAY, SOME DAYS UP TO 10 TONS.

AIRLINES ALLOW CHECKED BAGS UP TO 32KG.
AIRCRAFT BULK HOLD CEILING HEIGHT WILL CONTINUE TO BE LIMITED TO 1 METER IN HEIGHT FOR DECADES
IN COOPERATION WITH AUXIVO, SWISSSPORT HAS DEVELOPED A SOLUTION AND REDUCE MUSCULOSKELETAL
INTRODUCING THE LIFTSUIT

Fatigue, pain, injury

Reducing and rerouting the load
THE LIFT SUIT STORES ENERGY BENDING DOWN...

...AND USES THIS ENERGY TO PULL THE USER AND LOAD BACK UP
BENEFITS IN BOTH THE BAGGAGE HALL AND BULK LOADING

- Reduced fatigue
- Reduced injury rates
- Employee satisfaction and retention
TEST HAVE SHOWN THAT USING THE SUIT CAN REDUCE MUSCLE ACTIVITY UP TO 50%

- **M. erector spinae**: 15% reduction
- **M. Multifidi**: 30% reduction
- **M. glutaeus maximus**: >50% reduction
- **M. biceps femoris**: 10% reduction
A PRAGMATIC SOLUTION TO IMPROVE THE EMPLOYEE EXPERIENCE

COMFORT
Liftsuit is worn comfortably on the body and does not add heat

EASY
Barely any instructions are needed

QUICK
Worker can get in/out of the Liftsuit within seconds

EFFECTIVE
Low-tech solution that delivers results

LOW MAINTENANCE
No upgrades, updates or bug required

PRICE
Competitive unit cost to ensure it becomes part of standard Personal Protection Equipment
CONTACT US TO LEARN MORE

Florian Eggenschwiler  
Head of Innovation  
Swissport International  

Florian.Eggenschwiler@swissport.com
iboardings.com

We design solutions that will change airports and improve your passenger experience.

“LOST&FOUND CHECKER” by IBOARDINGS
We are a design and innovation startup based in Spain that provides technological solutions to improve the passenger experience and doing so, improve the airlines and airports operations.

Our products are based in images treatment and during 2018 our first product, the "Cabin Baggage Checker" was selected as one of the most innovative products.

IATA 2018 IGHC Innovator Competition Prize. Doha (Qatar)

IATA has chosen our “Cabin Baggage Checker” as a finalist to the IATA IGHC Innovator Prize during the Ground Handling Conference held in Doha (Qatar). May 2018

IATA 2018 GAPS Innovator Award

Our company was selected by the jury of the IATA 2018 GAPS Startup Innovation Awards as one of the three finalists to the IATA GAPS Innovator Award

INNOVATION Hub. Group Aéroports de Paris

Aéroport de Paris (ADP) has chosen our device to participate in their Innovation Hub

IATA 2019 IGHC Innovator Competition Prize. Madrid (Spain)

IATA has chosen our “Lost&Found Checker” as a finalist to the IATA IGHC Innovator Prize. 2019
Our Cabin Baggage Checker™ is an electronic sizer that using artificial intelligence analyze weight and size in relation with the airlines cabin baggage policies and doing so:

- Introduce innovation in an outdated process
- Solve one of the most important pain points for passengers, airports, airlines and Ground Handlers companies.
- One devices fits all the airlines hand baggage policies. Common use kiosk
- Help to charge the hand baggage fee if applicable and due to this help to increase revenues for airlines and airports.
THE PROBLEM THAT WE WANT TO SOLVE
THE CHAOS WITH LOST OBJECTS AT AIRPORTS

In an airport, many objects are lost daily by passengers. A good management of this activity, improves passenger service and optimizes the activity of the staff.

The lost and found process inside airports is like a “black hole”. No organization has analyzed as a friction element the process of objects lost at airports and how it influences the passenger experience:

- Generate dissatisfaction between passengers. The most of the times you need to write and email and arrange a visit to the lost objects office at the airport.
- Just 17.42% of the total objects lost by passengers was delivered to the owners who worried about calling to try to recover their belongings.
- There is no standardized process.
Even when technological solutions for the "passenger journey" are not considered, nobody takes into account the improvement of processes in this area.
OUR PROPOSAL THE NEW SOLUTION THAT WE LAUNCH AT IATA IGHC INNOVATION PRIZE 2019
ENHANCING THE PASSENGER EXPERIENCE THROUGH TECHNOLOGY.

The device that will solve and facilitate the process with the lost objects

Our proposal is a HARDWARE that along with the software and using artificial intelligence will help to automate the lost and found management process.

These devices using artificial intelligence will analyze the lost item and will get all the item’s characteristics without any human intervention and will send all this information to the cloud.

Once in the cloud, the software and a new algorithm design internally will develop the whole process, analyzing the object, keeping in contact with the customer, sending fake photos and confirmations and even send the item get back to them.
And the device will develop the process with the cutting edge technology:

**TOUCHLESS CAPTURING.** Optical sensors capture the real size and the characteristics of the object.

**SCALES INTEGRATED.** Weight of object precisely captured during sizing.

**STREAMLINING** and accelerating the handling process by reducing the problems.

**DIMINISH** the amount of claims.

**SPEED UP** the “return to passenger” process.

**FACILITATES** storage and claims for damages.

**PHOTO** Photo storage for several purposes,

**LABELLING** label printing for identification purposes.
BENEFITS OF USING OUR LOST & FOUND DEVICE

MANAGE_Help to manage one of the most disturbing process at the airports

INFORMATION_Help to deal with information when you need to describe the items lost. The process will be done automatically.

IMPROVE REFUND RATES_A great percentage of the non-get back object to the passengers are due to the bad description of the lost object

SAFE RESOURCES_Minimal human intervention

SAVE SPACE_due to you will be able to return the object faster

DIMINISH_the amount of claims.

SPEED UP_the passenger item recovery process.

FACILITATES_storage and claims for damage
HOW THE DEVICE AND SYSTEM OPERATE?

PROCESS

Introduce the object in the device

The device using artificial intelligence analyze all the possible characteristics of the object

The info obtained is sent to the cloud

Print tag with RFID

INFORMATION OBTAINED

Size → Material → Type → Date

Weight → Texture → Model → Etc

Shape → Colour → Photo

On the cloud it will have a line for each item

With the photo, use it to damage claims control

Search and get back the items easily

Identify easily the objects
Once the info is sent to the cloud and with minimal human intervention

The software itself will analyze the info that the passenger will introduce in the system by the airline/airport website

The system will develop the whole process

From passenger side

Send details through the web

Our algorithm will develop the whole process taking into account all possible variables

The system automatically will send an email with fakes and real photos prepared by the software with a 99% of accuracy

Passenger will choose between the objects

Objet is sent to the passenger

99% of accuracy

THE SOFTWARE AND THE CLOUD AS THE CORE OF THE SERVICE

MINIMAL HUMAN INTERVENTION

Print tag with RFID
SMART AVIATION
GROUND OPERATIONS

IATA Innovator Competition
Atollogy leverages Computer Vision & Artificial Intelligence to rapidly convert physical operations into actionable insights, transporting companies overnight to the modern world of smart operations.
Airline Industry Suffered $26B of delay costs in 2017, or $1.27 per Second of Delay...
Completes The Picture To Improve Ground Operations
HOW ATOLLOGY IS DIFFERENT

We instantly create Smart Operations for our customers by digitizing and balancing all of the three core physical operational elements:

1. People
2. Equipment & vehicles
3. Cargo & luggage

We let you manage by fact by turning passively observed activities into actionable data.
SUBSCRIPTION-BASED SOLUTION

Customer Facility

Physical Operations
- People
- Equipment & Vehicles
- Cargo & Baggage

No Interfaces Required

1. Self-Install (A Few Hours)

2. Generates Big Data

3. Turnkey HW & SW

Non-Intrusive = No Disruption or Risk to Operations

- Cameras
- Sensors
- Edge Compute
- Cellular

The ATOLLOGY Operations Cloud

- Tables
- Streams
- Models
- Time series
MANUFACTURING OPERATIONS

7.5% Points of Sustained Utilization:
Worth over $150,000 / year per Mill

2018-07-27
Stations: 3

Mill 11
Utilization: 2.5 hr, 60.1% (+47.2%)
Idle: 30.0 min (12.1%) Avg: 5.0 min
Running: 2.5 hr (60.1%) Avg: 6.2 min
Setup/load: 1.1 hr (27.8%) Avg: 2.9 min

Mill 13
Utilization: 2.1 hr, 51.2% (+36.3%)
Idle: 11.0 min (4.4%) Avg: 1.1 min
Idle: 13.0 min (5.2%) Avg: 3.3 min
Running: 2.1 hr (51.2%) Avg: 8.5 min
Setup/load: 23.0 min (9.3%) Avg: 3.3 min

Mill 14
Utilization: 2.0 hr, 48.8% (+12.1%)
Idle: 2.0 min (0.8%) Avg: 60.0 sec
Ignored: 1.3 hr (31.5%) Avg: 3.9 min
Setup/load: 47.0 min (19%) Avg: 2.9 min

Operator Location
Light Color
Door Position

9 minutes Idle at 9:08 am
6 minutes Ignored at 9:08 am
5 minutes Ignored at 9:08 am
YARD OPERATIONS

17% Reduction in Cycle Time Increases Both Facility Capacity & Customer Retention
ATOLLOGY SMART OPERATIONS CUSTOMERS

MANUFACTURING OPS

- South Bay Solutions
- lumenetix
- Schneider Electric
- TESLA
- GENERAL MILLS
- SCHAEFFLER GROUP
- BorgWarner
- connect-homes
- Wilsonart

YARD OPS

- CEMEX
- Trimac
- Lehigh Hanson
- HEIDELBERGCEMENT Group
- TITAN AMERICA
- TRUE LEAF FARMS
- MAI Dubai

GROUND OPS

- Tampa International Airport
- Gatwick London Airport
- CVG

Released 1st Product In January 2018
Live with 25+ Sites & 450+ Edge Devices
Using Computer Vision, actionable data can be captured in real time
TO ANSWER CHALLENGING QUESTIONS…

• What is the duration of each gate turn?
• How do cycle times vary by gate, airline and aircraft?
• Was the service equipment in place on time? Did they finish on time?
• What are the bottlenecks?
• How do we get alerted if a step isn’t getting completed on time?
• Where is the nearest fuel truck?
ATOLLOGY’S CURRENT SOLUTION:
APRON ACTIVITY MONITORING
THE APRON ACTIVITY IS ONLY PART OF THE PICTURE...

NEW INNOVATION:
JET BRIDGE ACTIVITY MONITORING
INTERIOR JET BRIDGE MONITORING

Door Open or Closed

Door Open

Cleaning Crews

Passengers Disembark and Boarding

Gate Checked Luggage

Passenger

Gate Check

Gate Check

Gate Check

Cleaner
Gate 210

Average Cycle Time: 1.2 hrs (+0%)
### Gate 210

**Average Cycle Time: 1.2 hrs (+0%)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td></td>
</tr>
<tr>
<td>Jetbridge</td>
<td></td>
</tr>
<tr>
<td>Door</td>
<td></td>
</tr>
<tr>
<td>Passengers</td>
<td></td>
</tr>
<tr>
<td>Servicing</td>
<td></td>
</tr>
<tr>
<td>Gate Check Baggage</td>
<td></td>
</tr>
</tbody>
</table>
Gate 210

Average Cycle Time: 1.2 hrs (+0%)

- Composite
- Jetbridge
- Door
- Passengers
- Servicing
- Gate Check Baggage

Gate 212
Comprehensive Gate Turn Management
Apron & Jet Bridge
Tail No: D-BCGD
Turn Time: 0:58:00
ETD: 15:48 pm

Current Activities and States

- Arrival Duration: 4 mins
- Wheels Chocked time left: 57 mins
- Jetway Connected Est time: 49 mins
- Passengers Departing Est time: 20 mins
- Cleaning Est time: 24 mins
- Cargo Unloading Est time: 22 mins
- Fueling Est time: 38 mins
- Catering Est time: 28 mins
REALIZE SIGNIFICANT BENEFITS

Reduce Delays
Increase Efficiency
Improve Customer Sat
Enhance Safety
atollogy.com
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IGHC Innovator Competition

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MADRID, SPAIN | 26-29 MAY
Looking Ahead

• 13:30 Getting to know your Airlines

• 13:30 Workshops Session in Paris – Toulouse

• 15:00 Networking Break sponsored by AVIAPARTNER

• 17:00 Cocktails with exhibitors

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Looking Ahead

• 12:00  Special Lunch Workshop in Bonn room sponsored by ZAFIRE

• 12:00  Networking Lunch in the Exhibition sponsored by Fraport

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Networking Lunch
Sponsored by Fraport

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Networking Luncheon
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