OPERATIONAL EFFICIENCY FUELED BY HYPER-AUTOMATION
DIGI X AUTOMATION
#DIGIFRIDAYS
#DIGIFRIDAYS

DIGI x ESG  
June 2\(^{nd}\)  
@15.00 CEST

DIGI x E-commerce  
June 16\(^{th}\)  
@15.00 CEST

DIGI x Automation  
June 9\(^{th}\)  
@15.00 CEST

DIGI x CX  
June 23\(^{rd}\)  
@15.00 CEST
Digi x Automation
Operational Efficiency Fueled by Hyper-Automation

Thorsten Kranz
Head of Data Science Implementation
DPDHL Group

Robotics: Accelerated Digitalization Program at DSC

Sally Miller
Global Digital Transformation Officer & Chief Information Officer North America
DHL Supply Chain

Group-Wide IoT (Internet of Things) solutions

Axel Wiebracht
VP, Head of IoT Center of Excellence
DPDHL Group

EVO and RAPTOR: Automation & AI at Road Freight

Stefano Arganese
Chief Transformation Officer
DHL Freight

DigiFridays | Deutsche Post DHL Group Investor Relations | June 2023
OPERATIONAL EFFICIENCY FUELED BY HYPER-AUTOMATION

DIGI X AUTOMATION

THORSTEN KRANZ
HEAD OF DATA SCIENCE IMPLEMENTATION
DPDHL GROUP
Digitalization and Automation are key enablers for logistics, as our profitable core.

- **Physical Automation** in our facilities
- **Asset Tracking** for efficiency & resilience
- **Automated Routing** for our transportations
- **Digital Touchpoints** for End Customers
- **Artificial Intelligence** in our backoffice processes
We incubate innovation in our Group Centers of Excellence

**Data Analytics**
Scalable Artificial Intelligence, Machine Learning (ML) and Optimization solutions for the Group

**APIs**
Shared platform for internal and customer-facing APIs, e.g., for harmonized tracking and location finding

**Blockchain**
Multi-industry Blockchain platform for DPDHL as a backbone for functionalities and use cases

**Internet of Things**
X-divisional scalable core operations solutions for asset tracking, shipment tracking & condition monitoring

**Data Solutions**
Scalable Data & ML platforms to enable Advanced Analytics and Artificial Intelligence

**Automation of Operations**
Support testing and integration of robotics and computer vision technology for our operations

in close practical interaction with our divisions
Advanced Analytics and Artificial Intelligence – taken to the next level

DHL Data & Analytics

- Transitioned from **Centers of Excellence** to a **Service Line** in Global Business Service
- **Constant growth** of footprint and headcount
- Implementing **high-impact AI Use Cases** with all divisions
- Providing **platforms** and **value add services** across the group
Automating customs processes → AI-based prediction of commodity codes

- Acceleration of processes
- Supporting Customs Audit
- Improve Master Data Quality

PCT
Product Classification Tool
Advanced Analytics and Artificial Intelligence on a next level
Invoice Overdue Risk

Supporting accounts receivable processes

Predicting invoices with high risk of delayed payment

High impact on Free Cash Flow
Increased AR efficiency
Improved interactions

IOR
Invoice Overdue Risk
Advanced Analytics and Artificial Intelligence on a next level
Tour Routing with Experience

Learning from courier behaviour
Better tours with higher loyalty
Enabling digital features
Increasing efficiency

TREx
TourRoutingwithExperience
We are adopting Generative AI at Deutsche Post DHL Group

- Providing secure access to Generative AI tools to our workforce
- Push awareness & enablement across the Group
- Driving Governance & Strategy for Generative AI
- Implementation of high-impact use cases, e.g.,
  - Supporting digital customer touchpoints
  - Automating text-centric processes
  - Leveraging internal knowledge repositories via chatbots

Cross-functional GAIA Squad established
Robotics: Accelerated Digitalization Program at DSC
Sally Miller

Group-Wide IoT solutions
Axel Wiebracht

EVO & RAPTOR at DHL Freight
Stefano Arganese

Physical Automation
Asset Tracking
Automated Routing & Tasks
ACCELERATED DIGITALIZATION @DSC
ALL IN ON INNOVATION.
FUTURE OF SUPPLY CHAIN IS ALREADY HERE
SALLY MILLER
GLOBAL DIGITAL TRANSFORMATION OFFICER
CHIEF INFORMATION OFFICER NORTH AMERICA
DHL SUPPLY CHAIN
We are the size of our closest competitors and the only one being able to scale globally.

DHL Supply Chain

#1 contract logistics player worldwide

50+ countries covered worldwide

Contract logistics players (Market shares based on 2021¹)

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share</th>
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<tbody>
<tr>
<td>DHL Supply Chain</td>
<td>6.0%</td>
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<tr>
<td>#2</td>
<td>2.9%</td>
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<tr>
<td>#3</td>
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<td>#4</td>
<td>1.7%</td>
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<td>#8</td>
<td>1.3%</td>
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<td>#9</td>
<td>1.2%</td>
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<td>#10</td>
<td>1.1%</td>
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¹) market shares are calculated based on companies’ respective contract logistics revenues. Source: DPDHL estimates.
Our unique ecosystem of integrated IT solutions, robotics and data analytics applications maximize value for us and our customers.

**Focus technologies** identified along entire logistics process

- Assisted Picking Robots
- (un)Loading Technologies
- Intelligent Process Automation
- Goods-to-Person Robots
- Data Analytics
- Sortation Technologies
- Packaging Technologies
- Smart Operations
- Supporting Robots
- Indoor Robotic Transport
- Wearable Devices
- Asset Tracking & Monitoring

90%+ of our sites implemented at least one focus technology already today. **100%** by end of the year.

# of digitalization projects live

<table>
<thead>
<tr>
<th>Year</th>
<th>~300</th>
<th>~500</th>
<th>~600</th>
<th>~2,000</th>
<th>~3,700</th>
<th>~5,800</th>
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<tbody>
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<td>Today</td>
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IT IS FAR ADVANCED AND INDUSTRY-LEADING

We bring key digital technologies to a wider number of operations through our focused digital funnel

IDEAS
100+ PARTNERS ENGAGED

RESEARCH AND PROOF OF CONCEPT

PRODUCTIZATION

12 FOCUS TECHNOLOGIES DEFINED

COMMERCIALIZATION AND INDUSTRIALIZATION

5800+ GO-LIVES
After successful PoCs and a first deployment, Boston Dynamics Stretch will soon be a product to scale across the globe.

**Case unloading**  
Use case: 
# units live (06/23): 1  
Geographies covered: North America
20 Fox Robotics autonomous pallet unloaders; We are partnering with Fox to bring pallet unloading to other regions.
2,500+ assisted picking robots are deployed across all geographies; Continued focus on operational efficiency gains.

Each picking
Use case

2,500+
# units live (06/23)

Global
Geographies covered
Applying our funnel approach for data analytics / AI to maximize the impact of our scale advantage

- Warehousing and transport safety
- Inventory accuracy
- Generative AI for back-office tasks (and much more)
- Vision & sensing technology for robots

2000+ facilities worldwide

1 unique logistics data pool

...and much more
We are best in ORCHESTRATING multiple vendors of IT solutions, robotics and AI/analytics into our ecosystem.
EXPERIENCE
IOT @DPDHL

DIGITAL TRACKING OF PHYSICAL ASSETS

AXEL WIEBRACHT
VP, HEAD OF IOT CENTER OF EXCELLENCE
DPDHL GROUP
High Impact
Revolutionary applications that are potentially disruptive.

Low Impact
Evolutionary changes with incremental improvements.

Realization
The common way of operating and doing business in logistics.

TRENDS CLUSTER
INTERNET OF THINGS
Where do we use IoT in Logistics?

SMART OPERATIONS

SHIPMENTS & CUSTOMER INTERACTION

DIGITALIZATION OF OPERATIONAL ASSETS

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Digitalization of Assets – Real-time tracking of critical assets improves asset utilization and increases operational efficiency

Returnable Transport Units, Support Equipment, Containers
IoT-enabled trackers at DHL Express Hub Leipzig

Trackers for Ground Support Equipment (GSE)

GSE is constantly in motion and can thus be challenging to track & locate

IoT-enabled GPS tracker help us to find available GSE for loading and unloading an aircraft

Sensors then sent to Group IoT platform
The DHL IoT Platform provides real-time transparency on critical assets, equipment and shipments across all use cases.
GET TO KNOW EVO AND RAPTOR

HOW AUTOMATION AND ARTIFICIAL INTELLIGENCE DRIVE OPERATIONAL EFFICIENCIES AT DHL FREIGHT

STEFANO ARGANESE
Chief Transformation Officer
DHL FREIGHT
Automation and AI at DHL Freight, our leading asset-light road freight business

**Automation Key Aspects**

- Harmonized Process
- Unified Data
- Rules & Algorithm

**Today’s Automation Showcases**
“EVO” creates a harmonize data basis and enables automation of multiple tasks in our value chain

One system, one database, full transparency
Automation speeds up operational tasks & reduces administrative tasks
By DHL Freight, for DHL Freight
A specific road freight solution fitting our business

DHL FREIGHT TRANSPORT MANAGEMENT SYSTEM

29 Countries
5 K Users
14 M Orders
With EVO we see very positive results and are targeting to finish the rollout next year.

- Quality: Less mistakes
- Automated invoicing: ~27%p increase
- %EDI* auto-confirmed: ~10%p increase
- DSO reduced

*EDI: Electronic Data Interchange

Complete roll-out expected in 2024
Routing Algorithm for Planning Transportation

**RAPTOR**

Help dispatchers assigning hundreds of orders to delivery vehicles daily using AI

Integration into dispatcher’s standard work environment
Close feedback loops continuously improving results

**PLANNING PROBLEM**

- Operational
- Tactical
- Strategic

**Dispatching**

- Fleet sizing
- Cost simulation

Network design analysis (number and location of hubs)

**RAPTOR DECISION SUPPORT SYSTEM**

- Load capacities
- ~1000 shipments daily
- Driving regulations
- Varying size & weight
- 3 Transportation modes
- # of locations
- # of vehicles

Dispatcher

RaptOR request

Instant delivery schedules

RaptOR Algorithm
Routing Algorithm for Planning Transportation
Achieving cost reductions and operational efficiencies via AI

-92%
Less time spend for dispatching

Driving Distance
decreased

Load Factor
optimized

-8%
Reduced CO2 emission

3D Load Pattern
Weight distribution
OPERATIONAL EFFICIENCY FUELED BY HYPER-AUTOMATION
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