Keynote: Logistics Emerging Trends

- Joost Van Doesburg
  - European and Dutch Shippers’ Council

- Patrick Renkert
  - Branch Manager Schenker AG, DB Schenker
IATA WCF: Logistic track

Joost J. van Doesburg
Air freight policy manager
European Shippers’ Council
Whom does ESC represent and work for

- Freight transport users, owners of the goods
- 100,000 + companies throughout Europe
- All modes of transport
- Hundreds of billions of Euros of purchased transport services
Members

ANTR | Romania
AUTF | France
CPC (AIP) | Portugal
EK | Finland
EVO | Netherlands
OTM | Belgium
SSC | Sweden
SSC | Switzerland
VÖVW | Austria
TRANSPRIME | Spain
ISC and MAI | Israel

CEFIC | European Chemical Industry
CEPI | European Paper Industries
EUROFER | European Steel Industry
AIM | European Branding Association
ETSA | European Textile Services Ass.

Corporate members LEGO, BASF, Siemens, Continental, Rockwool, Bacardi, Lanxess, Ferrero, ABB and more.

International Cooperation with Africa, Asia and Americas
Overview of the logistic track

Main focus: how can we anticipate and meet the wishes and requirements of the air cargo customers in a changing world?

Sub topics: optimal mix of transport modes, integration of security rules, investing and accounting in sustainability, and air cargo in 2050
The air cargo supply chain
Why air cargo?

- Main reason: to meet the needs and wishes of the customers

- Time & temperature, production/sales mistakes, interest on capital (0.5% volume; 37.5% value), spare parts, and no reason whatsoever

- Air cargo is a strategic mode of transport: fast, reliable, time and temperature controlled but only use it when necessary
Partnership within the supply chain

> Option A: a freight forwarder is the sales office of an airline?!

> Option B: a freight forwarder is a logistic expert who advices and presents the shippers in the air cargo industry?!
Partnership within the supply chain

> Optimal mix of:
  - Transport modalities
  - Inventory
  - Carbon footprint
  - Supply chain security vs. screening

> To meet wishes of the customers taking into account: the costs, service level, the product characteristics and society
E-solutions

> An unobstructed flow of goods should be combined with an unobstructed flow of E-information

> Shippers are mentally ready to book and send documents electronically (shippers declaration, invoice, packing list)

> Who will pave the way for the shipper?
Sustainability

> Priorities: 1 price, 2 service level, 3 sustainability

> CSR policy is moving from production (energy use/commodities) into additional activities like transport

> Transparency: opportunities and threats for the air cargo industry

> Deep sea shipping and rails will compete more
Security versus reliability

- A multiplicity of security rules:
  - Global level: WCO vs. ICAO
  - European level: AEO vs. KC/RA
  - Europe vs. VS (customs): AEO vs. C-TPAT
  - Europe vs. VS (security): KC vs. screening (also in third countries)
- Shippers want uniformity to improve the security level instead of an administrative burden
- Many shippers want to be in control of their supply chain
Case: radiopharmaceuticals

> Life saving medicines, to treat cancer or diagnose parkinson

> Must in time: a half-life of 24hr

> Heavily depending on air cargo industry
Questions?

> j.vandoesburg@europeanshippers.eu

> www.europeanshippers.eu
IATA – WCS 2013
Role of Air Cargo versus other Modes of Transport

Schenker Deutschland AG
Patrick Renkert
Branch Manager Freiburg
Bad Krozingen, March 11, 2013
DB Schenker is the transport & logistics division of Deutsche Bahn AG
Today around 95,000 employees represent DB Schenker worldwide in 130 countries.

DB Schenker locations and employees

Europe (incl. Russia)
approx. 71,500 employees

Asia
approx. 12,500 employees

Middle East/Africa
approx. 1,200 employees

America
approx. 9,200 employees

Employees according to BU

34%
DB Schenker Logistics

66%
DB Schenker Rail

Date: 31.12.2011, FTEs
Service Portfolio

- Land Transportation
- Air Freight
- Ocean Freight
- Contract Logistics/SCM
- Fairs/Special Services
- Rail Transportation
In our network we move tons of freight - worldwide, 24 hours a day

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Volume, p.a.</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail freight transport</td>
<td>412 m t</td>
<td>Twice as much as Germany’s coal production in 2010</td>
</tr>
<tr>
<td>Air freight</td>
<td>1.1 m t</td>
<td>Weight of 240,000 elephants</td>
</tr>
<tr>
<td>Ocean freight</td>
<td>1.8 m TEU</td>
<td>Length of a row of containers stretching from Hamburg to Shanghai</td>
</tr>
<tr>
<td>Land transport</td>
<td>95 m</td>
<td>2 shipments per second</td>
</tr>
<tr>
<td>Contract logistics</td>
<td>&gt; 6.0 m m²</td>
<td>1,100 football fields</td>
</tr>
</tbody>
</table>

Source: DB ML AG, figures rounded
1) Twenty-foot Equivalent Unit
RFQ of Endress + Hauser in 2010

Main Requirements

- Transportation Concept for all major Endress+Hauser Production Center
- Transparency and Visibility from door to door
- Reduction of Airfreight Volume
- Carbon Footprint (CO2 savings)
Transportation Concept for Endress + Hauser
Part 1: Local Consolidation (f.e. Europe)

= Production
= Center
= Branch/Hub
Transportation Concept for Endress + Hauser
Part 2: Global Distribution/Sourcing
Transportation Concept for Endress + Hauser
Part 3: CO₂ Impact

**AIR**
- Shanghai Warehouse → Shanghai Airport → FRA Airport → Reinach Warehouse
- Time: 3d, kg CO₂/t: 8.13

**OCEAN**
- Shanghai Warehouse → Shanghai Port → Hamburg Port → Reinach Warehouse
- Time: 30-33d, kg CO₂/t: 3.6

**SKYBRIDGE**
- Shanghai Warehouse → Shanghai Port → Dubai Port → Dubai Airport → FRA Airport → Reinach Warehouse
- Time: 18d, kg CO₂/t: 4.92
Transportation Concept for Customer E+H
Modes of Transport

Air Freight
- Distribution of finished goods to customers
- Distribution of urgent semi-finished goods
- Spare parts for production

Ocean Freight
- Distribution of semi-finished goods
- Machineries
- Move of Inventory
- Production Material
- Sourcing

Air-/Ocean Freight (DB SCHENKER skybridge)
- Sourcing (Fareast /India → Europe)

Land Transport
- Distribution within Europe

Rail Freight
- Pre-/Carriage for FCL ocean freight
Role of Air Freight (Forwarder’s View)

- Extremely reliable and flexible mode of transport
- “Supply Chain Adjuster”
- First choice for valuable freight
- Transparency due to high tracking standards
- Indicator for major economic developments
How do we increase our Air Freight volume?
Thank you for your attention!
Panel Discussion: Is the Role of Air Cargo Changing for Decision Makers?

Panelists

- Professor Nick Blake, BSL Business School Lausanne
- Luc Larrieu-Sans, Head of International Transport, La Poste
- Frank Saile, Project Manager Logistics, Endress + Hauser
- Patrick Renkert, Branch Manager Schenker AG, DB Schenker
Professor Nick Blake

Associate Professor
- Marketing Communications
- Marketing Strategy
- Supply Chain Management

IMAGINE|CARGO

Consulting practice specialising in technology, strategy, business process transformation, marketing, training & coaching
Express transportation and air cargo sector expertise
LA POSTE

The French designated postal operator

- Trust is essential. Trust is the engine of the individual and collective, social and economic success

- Enhance everyone’s potential through a trustful relationship

Luc LARRIEU-SANS
Head of the International Transport Department, based in Paris

Open mind
Respect
Accessibility
Proximity
Equity
Panel Discussion: Is the Role of Air Cargo Changing for Decision Makers?

Patrick Renkert, Branch Manager Schenker AG, DB Schenker
7th WORLD CARGO SYMPOSIUM
DOHA 12-14 MARCH 2013

Coffee Break Sponsored by
Keynote: How Customer Information Can Support the Right Decision for the Proper Mode of Transport?

区块Remo Eigenmann
区块Global Head of Airfreight, DAMCO
How customer information can support the right decision for the proper mode of transport?

IATA World Cargo Symposium
Doha, March 13th 2013
Agenda

Damco as part of the A.P. Moeller-Maersk Group

Damco Dynamic Flow Control™
Damco part of the A.P. Moeller-Maersk Group
The A.P. Moeller – Maersk Group

- 121,000 employees
- 130 countries
- 2012 turnover USD 59 bn
- 2012 net profit USD 4 bn

1. Maersk Line
2. Maersk Oil
3. Maersk Drilling
4. APM Terminals
5. Maersk Tankers
6. Maersk Supply Service
7. Maersk FPSOs
8. Svitzer
9. Damco
10. Maersk Container Industry
11. Dansk Supermarked
Damco’s Global Reach

We are a top 10 global logistics provider

- More than 100 years experience
- 10,800+ employees
- Over 300 owned offices in more than 90 countries
- Net turnover of over 3.2 billion USD
- Manages more than 2.5 million TEU
- 210,000 tonnes of air freight
- Operates more than 1.5 million m2 warehouses

*Graphic does not illustrate exact location, mode, corridor or lane*
Damco Airfreight 2009 – 2012

Export tonnage

- 2009
- 2010
- 2011
- 2012
WE WANT YOUR AIR CARGO, BECAUSE WE WANT TO HELP YOU REDUCE IT.

Include Damco in your next air cargo tender.
Email us at air@damco.com or visit www.damco.com/services for more information.
We Offer a Variety of Options…

From single shipment to supply chain management solutions

Forwarding
Ocean freight, air freight, landside services

Supply Chain
Supply chain solutions, warehousing and distribution, supply chain design and optimisation

Visibility
Systems providing visibility from single shipment to item level supply chain management

Process
Process and KPI management thought leading operational and unique IT infrastructure
Damco Supply Chain Development (SCD)
Value creation through solution design & innovation

- Dedicated global team, 50+ consultants
- $130 Million in identified customer value in 2011
- Supply chain optimisation (cost, service, carbon and risk)
- Advanced and accurate CO₂ calculator validated by MIT
- Forward thinking, innovative and customer focused

**Optimization**
- Inventory reduction
- Carbon Dashboards

**Mapping, analysis, design and ‘center of gravity’**
- End to end supply chain optimisation

**Inventory reduction**
- Factory
- Truck/Rail / Barge
- CFS Facilities
- Truck
- Load Port
- Ocean/ Air/ Truck
- Load Port
- Truck
- CFS/ EDC
- Truck
- Point of sale
Agenda

Damco as part of the A.P. Moeller-Maersk Group

Damco Dynamic Flow Control™
Damco Dynamic Flow Control™ does for supply chains what GPS did for navigation

Supply Chain **WITHOUT** Damco Dynamic Flow Control
- Human decision-making
- Less accurate as time passes
- Time consuming
- Potentially hazardous

Supply Chain **WITH** Damco Dynamic Flow Control
- Automated decision-making
- Accurate over time
- Less time consuming
- Safer
The principle behind Damco Dynamic Flow Control™ is the same as a GPS – dynamic re-calculation

**GPS**

- User preferences
  - Fastest route
  - Shortest route
  - Scenic route
- Route query
- Time to destination
- Re-routing if traffic jams

**Damco Dynamic Flow Control™**

- Business rules
  - Transportation mode & carrier
  - Delivery time
  - Cost
  - Carbon
- Shipment plan
- Time to destination
- Re-planning if demand/supply changes
Damco Dynamic Flow Control™ can help maintain the balance between under-/oversupply

Lost revenue, high cost of expedited fulfillment reduce profits

VS.

High inventory cost, clearance rebates and increased price pressure destroy profits
Optimizing supply chains based on pre-defined business rules...

<table>
<thead>
<tr>
<th>Supply Chain types</th>
<th>Business rules</th>
<th>Optimisation engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replenishment</td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Table" /></td>
</tr>
<tr>
<td>High Value</td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Table" /></td>
</tr>
</tbody>
</table>

### Table: Optimisation Engine

<table>
<thead>
<tr>
<th>Fm</th>
<th>To</th>
<th>Time</th>
<th>Cost</th>
<th>Carbon</th>
<th>Carrier &amp; mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>30 days</td>
<td>100</td>
<td>100</td>
<td>Sea 1</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>28 days</td>
<td>105</td>
<td>110</td>
<td>Sea 2</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>27 days</td>
<td>107</td>
<td>110</td>
<td>Sea 3</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>12 days</td>
<td>200</td>
<td>2500</td>
<td>Sea-Air 3</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>15 days</td>
<td>190</td>
<td>2600</td>
<td>Sea-Air 4</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>10 days</td>
<td>360</td>
<td>4600</td>
<td>Air 1</td>
</tr>
</tbody>
</table>
Improving performance while saving time and money

10% Improves delivery performance so you get your goods when needed

30% Automates your supply chain to make it easier to manage and reduce administration costs

20% Makes your supply chain more flexible to reduce transportation costs

10% Increases control and defers decisions so you can reduce buffers and origin lead times
Three components in one simple solution

**An automated planning engine**
Dynamically plans, re-plans and automatically executes at PO or SKU level using decision-tree methodology

**Supported by one global team**
Based on validated information backed by superior on-the-ground execution capabilities that take ownership

**With one interface across all 3PLs**
Implement changes immediately through a fully integrated application with a simple interface and unified process
Damco customers use airfreight for the right reasons
Panel Discussion:
Holding the Supply Chain Accountable for Sustainable Logistic

Panelists
- Remo Eigenmann, Global Head of Airfreight, DAMCO
- Mike Currah, Head of Supply Chain, Aggreko
- Luc Larrieu-Sans, Head of International Transport, La Poste
- Malik Zeniti, Business Development, Dupont
Panel Discussion: Holding the Supply Chain Accountable for Sustainable Logistic

Remo Eigenmann, Global Head of Airfreight, DAMCO
Who is Aggreko?

- Aggreko is the world leader in the supply of temporary power and temperature control solutions to companies around the world.

- We have approximately 5,000 permanent employees and 2,000 temporary staff operating from over 165 locations.

- We serve customers in about 100 countries, and have revenues of approximately USD 3 Billion.
LA POSTE

The French designated postal operator

- Trust is essential. Trust is the engine of the individual and collective, social and economic success

- Enhance everyone’s potential through a trustful relationship

Luc LARRIEU-SANS
Head of the International Transport Department, based in Paris
DuPont Protection Technologies

Think outside of the box:
DuPont™ Tyvek® air cargo cover offer additional protection for temperature sensitive air freight

DuPont Protection Technologies: How Air cargo covers maintain quality of temperatures sensitive shipments

Dipl.-Ing. Malik Zeniti
Business Development Manager
7th WORLD CARGO SYMPOSIUM
DOHA 12-14 MARCH 2013

Networking Luncheon Sponsored by
Keynote:
How a Clever Integration of the Security Rules Will Not Have a Negative Effect on the Reliability and Lead time of the Air Cargo Supply Chain?

Dominique Brun
Geneva Station Manager ICTS Security Consultants Ltd, ICTS Europe
“How a clever integration of the security rules will not have a negative effect on the reliability and lead time of the air cargo supply chain?”
We suggest to re-phrase the subject:

How to better integrate security processes in order to strengthen the supply chain?
Before we start, one remark:

*Air cargo security is not an option, it is a must.*

*It is a core element of the cargo supply chain, such as other regulations (e.g. customs)*

*No security = No flight!*
Agenda

• Need for security – Current situation
• Cargo screening – Challenges
• Explosive Detection Technologies
• Regulation
• Additional benefits of integrated screening
• Just one example
• Questions ?
Need for security
Current situation

• Threats to aviation (many examples) have triggered security regulation
• Security measures have been added for PAX first ...
  ... then, for CARGO
• Cargo screening takes place at airports
• Cargo handling is under pressure

In most airports, cargo screening is seen as a pain!
Cargo Screening - Challenges

- Unknown cargo must be screened before loading on board an aircraft (regulatory)
- Huge volumes of cargo to screen in a short timeframe
- Increasing volumes – Unexpected volumes
- Cargo comes in various sizes: some very small, some very big
- Cargo content varies: Opaque, dense, ...

Cargo screening at the airport creates bottlenecks!
Cargo Screening - Challenges

Only a limited volume of cargo can be screened at the last point of supply chain = the airport

Quantities

Short Overall Handling Time
Cargo Screening - Challenges

Need for better integration of cargo screening in the supply chain!

Shipper’s education ... !

Mass screening model (current)

Supply chain security model (target)

Shippers
Agents
Airlines

Known Consignors
Regulated Agents
Airlines
Cargo Screening - Challenges

Better integration of cargo screening in the supply chain

When? Where?

Processing flow

Screening method

How?

Optimized solution
Cargo Screening - Challenges

Processing flows can be improved by screening cargo ...

... upstream in the supply chain (by regulated agents), at earlier/planned time

... based on advanced data (risk assessment)

... closer to the shipper or freight-forwarder

... where more space is available

Screening should not be performed under high pressure!
Cargo Screening - Challenges

Key criteria for selecting a screening method:

• Cargo profile (type of goods)
• Screening capacity (volumes vs. time)
• High detection rate
• Cost-effectiveness!

Choosing the most appropriate solution(s) is a real challenge!
Above all, cargo screening is primarily about detecting explosives!
Explosive detection technologies

- Imaging (X-Ray, scanner)
- Trace detection
- Vapor detection
Explosive detection technologies

Printer cartridge with PETN

Empty

With PETN

Printer cartridge inside the printer and inside a box: Extensive image analysis required!
Explosive detection technologies

- **Trace Detection** –
  Analyzing the chemical profile of solid particles - *Shipments must be open*

- **Vapor Detection** –
  Analyzing volatized components defused in the air - *No need to open shipments*
Vapor detection in cargo screening:

- Cargo confined in closed areas such as trailers, containers, wrapped pallets etc.
  → Air sampling for remote analysis (dogs or systems)
- Loose cargo
  → Free running (dogs)
- In both cases, shipments are not open
  → Cost and time effectiveness
Explosive detection technologies

LVP + HVP = high scent

LVP only = low scent

Explosives molecules

Oils

Binders

Aluminium

HVP – High Vapor Pressure

LVP – Low Vapor Pressure

ICTS

EUROPE
## Explosive detection technologies

<table>
<thead>
<tr>
<th></th>
<th>Imaging</th>
<th>Trace detection</th>
<th>Vapor detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>High volumes &amp; short timeframe</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>High volumes &amp; long timeframe</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low volumes</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>High portion of dense/opaque</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>High portion of dangerous goods</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipments can be «easily» open</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Etc ...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
Regulation

According to the EU Regulation (185/2010)

• **Trace detectors** are allowed only if used in direct contact with the cargo (inside & outside swab)

• **Vapor detection** by explosive detection dogs is allowed as primary screening method

• **Vapor detection systems** are allowed as primary screening method
Additional benefits of integrated screening

• Higher quality of screening, due to less pressure (increased detection rate)
• Opportunity for combining other quality and compliance controls:
  ✓ Reweight (revenue protection)
  ✓ Packing/labeling (service failures prevention)
Just one example: Air France Cargo ®
Charles De Gaulle Airport - Paris
Air France Cargo: Background

• In 2001, the French regulator decided to tighten air cargo security checks

• Air France Cargo – 45% of goods exported ex CDG – was afraid of losing market shares to neighboring countries

• The RASCargO® vapor detection system was selected. It consists in air sampling and analysis by dogs.

Remote Air Sampling for Canine Olfaction
Air France Cargo: Outcome

- **Air France Cargo** can screen more cargo with less time
  - > 200 trucks average per day
  - > 100 m3 cargo per truck
  - < 45 minutes per truck
- **Air France Cargo** has upgraded security level
- **Air France Cargo** has acquired new customers
- **Air France Cargo** is saving money on cargo screening!
Similar *RASCargo* ® operations are implemented in:

- Lyon Airport – France
- Manchester Airport – UK
- Heathrow Airport – UK
- Schiphol Airport – NL
- Johannesburg O.R Tambo Airport – SA
Explosive detection technologies

<table>
<thead>
<tr>
<th>Technology</th>
<th>Throughput (Tons/HR)</th>
<th>Detection (%)</th>
<th>False Alarms (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RASCargO</td>
<td>1’000</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>X-Ray</td>
<td>200</td>
<td>65</td>
<td>3</td>
</tr>
<tr>
<td>Trace detectors</td>
<td>5 – 10</td>
<td>90</td>
<td>4</td>
</tr>
<tr>
<td>Hand search</td>
<td>????</td>
<td>90</td>
<td>0</td>
</tr>
</tbody>
</table>
Questions ?
Thank you!
Keynote: Optimized and Sustainable Supply Chains are Vital to 21st Century Trade

Professor Nick Blake

BSL Business School Lausanne
Optimised and sustainable supply chains are vital for 21st century trade

Nick Blake
Associate Professor
Sustainability vs. optimisation

ETS ... a wake-up call for the industry ... changing political and consumer needs
"Nobody in ... <insert name of country> ... cares about sustainability"
Politicians can be considered as marketeers ... they respond to changing customer needs
European ETS wouldn't have happened without at least a degree of **public acceptance**
EU urged to revive flagging emissions trading scheme

More than 30 large companies sign up to call for reforms ahead of key vote in European parliament next week.

Investors and a group of large businesses have urged the EU to revive its flagging emissions trading scheme (ETS), ahead of a key vote in the European parliament next week.

*guardian.co.uk, Friday 15 February 2013*
And customers (are starting to) care about the supply chains that bring them the products they need.
Sources of pressure

- Consumers: 28%
- Government: 22%
- General Public: 18%
- Activists: 16%
- Media: 8%
- Industry Peers: 4%
- Employees & Others: 3%
- Investors: 3%

IMAGINE|CARGO

Building sustainable global supply chains (systematic literature review), Network for Sustainability, 2011
Customers will take decisions based on their changing needs

Willingness to pay

Willingness to change behaviour
Willingness to pay for sustainability

Consumer Acceptance CSR Dimensions: Behavior-Based Studies

- Overall CSR: 0% (willingness to pay premium), 4% (willingness to change behavior)
- Consumer ethics: 0% (willingness to pay premium), 4% (willingness to change behavior)
- Animal rights: 0% (willingness to pay premium), 8% (willingness to change behavior)
- Other: 0% (willingness to pay premium), 8% (willingness to change behavior)
- Organic: 8% (willingness to pay premium), 8% (willingness to change behavior)
- Sourcing: 13% (willingness to pay premium), 13% (willingness to change behavior)
- Cause-related: 0% (willingness to pay premium), 0% (willingness to change behavior)
- Labor practices: 13% (willingness to pay premium), 17% (willingness to change behavior)
- Environment: 38% (willingness to pay premium), 17% (willingness to change behavior)

Source: Socially conscious consumerism (systematic literature review), Network for Business Sustainability, 2009
Likelihood of consumer punishment for perceived un-sustainability

There may be a greater discount demanded for ‘unsustainability’

Trudel and Cotte (2009), quoted in Socially Conscious Consumerism (systematic literature review), Network for Business Sustainability, 2009
Motivations for managing global supply chains sustainably

Building sustainable global supply chains (systematic literature review), Network for Business Sustainability, 2011
Sustainable global supply chains: Common “baseline” practices

Building sustainable global supply chains (systematic literature review), Network for Business Sustainability, 2011
If air cargo is perceived by (end) customers as being unsustainable they will demand change

...or will simply change their buying behaviour
Sustainability is about developing strategies we can operate successfully over the long term.
Sustainable supply chains

Economically viable
Socially viable
Environmentally viable
Efficiency vs. Responsiveness
Sustainability

Social
- Health & safety
- Noise
- Employees

Economic
- Quality
- Efficiency
- Responsiveness

Environmental
- Emissions
- Natural resources utilisation
- Waste & recycling

bestLog - Best Practice Logistics project, European Commission
The need for sustainable supply chain management, Cutherbertson, Springer-Verlag, Berlin
Long term profitability through sustainable competitive advantage

Taking account of changing customer needs
IMAGINE|CARGO
7th WORLD CARGO SYMPOSIUM
DOHA 12-14 MARCH 2013

Coffee Break Sponsored by
Air Cargo Can Still Innovate for Greener and Competitive Alternatives

Björn Hannapel

Senior Expert GoGreen Corporate Public Policy and Responsibility, DHL
Carbon Accounting & Controlling (CAC) at Deutsche Post DHL
Challenges and new approaches through industry cooperation

IATA 7th World Cargo Symposium
Björn Hannappel, Doha / Qatar, 13 March 2013
**Agenda**

*What are we talking about? – The challenges*
- How do we tackle these challenges? – DPDHL’s CAC approach
- How could the future look like? – Outlook on industry cooperation
We are a leading logistics company with worldwide presence

**We have** a truly global operation, with locations in **220** different countries and territories.

**We operate** a network with **120,000** destinations worldwide.

**We employ** about **470,000** employees, and are one of the top ten biggest employers worldwide.

**We manage** more than **1 million** customer interactions every hour.

Source: CAC program / GoGreen, Deutsche Post DHL
Some figures

We are a leading logistics company with worldwide presence

We have a truly global operation, with locations in 220 different countries and territories

We operate a network with more than 120,000 facilities in 220 countries and regions

We employ about 470,000 employees, and are one of the top ten biggest employers worldwide

With our fleet of over 80,000 vehicles, 155 jet aircraft and facilities in 220 countries and regions we do have a yearly consumption¹ of:

- 37 Mio. l gasoline
- 435 Mio. l diesel
- 1,019 Mio. kg kerosene
- 3,317 Mio. kWh energy consumption²

¹ status 2011, scope 1 & 2 as defined in Greenhouse Gas Protocol
² for buildings and facilities

Source: CAC program / GoGreen, Deutsche Post DHL
DAX30 & logistics companies’ CO₂ emissions 2011

<table>
<thead>
<tr>
<th>Company</th>
<th>CO₂ emissions (million tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.on</td>
<td>300.9a</td>
</tr>
<tr>
<td>RWE</td>
<td>287.2a</td>
</tr>
<tr>
<td>ThyssenKrupp</td>
<td>34.4c</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>28.4b</td>
</tr>
<tr>
<td>DHL</td>
<td>28.2a</td>
</tr>
<tr>
<td>BASF</td>
<td>25.8a</td>
</tr>
<tr>
<td>Linde</td>
<td>16.9c</td>
</tr>
<tr>
<td>DB</td>
<td>14.01.b</td>
</tr>
<tr>
<td>Bayer</td>
<td>8.5c</td>
</tr>
<tr>
<td>Volkswagen</td>
<td>8.4c</td>
</tr>
<tr>
<td>Siemens</td>
<td>3.6c</td>
</tr>
<tr>
<td>Daimler</td>
<td>3.5a</td>
</tr>
<tr>
<td>28.2</td>
<td>22.9</td>
</tr>
<tr>
<td>5.3</td>
<td>2011</td>
</tr>
</tbody>
</table>

1) 2010 value, else 2011
a) including Scopes 1-3, reporting the scopes separately
b) including Scopes 1-3, without reporting the scopes separately
c) excluding Scope 3

Source: Dep.026 GoGreen, 2012 Sustainability reports or internet, focus on DAX30 companies with external reporting
Climate change as an economic challenge

To stop the already visible climate change we have to act today – for ecological but as well for economical reasons

Comparing today’s costs for climate protection with the costs of a future without climate protection ¹), the results clearly show the more economical choice:

<table>
<thead>
<tr>
<th>Yearly costs with climate protection</th>
<th>Yearly costs without climate protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 1 % of worldwide GDP per annum</td>
<td>approx. 5 - 20 % of worldwide GDP per annum</td>
</tr>
</tbody>
</table>

¹) Subject to contributing factors selected


approx. 1 % of worldwide GDP per annum
DPDHL management confronted with increasing reporting needs

**Customers**
- Business customers increasingly ask for their carbon footprint
- e.g. H&M revenue of EUR 2.6mn at risk w/o customer carbon footprint

**Legislation**
- Increasing governmental regulations
  - e.g. EU Emissions Trading Scheme (EU ETS) to include air carrier operators from 2012 on

**Investors**
- Concern about possible financial impact of carbon legislation
  - 17.6% of the invested capital in Europe requires some form of environmental disclosure

**DPDHL Management**
- A target for carbon efficiency improvement per unit of 10% until 2012 and 30% until 2020 is set and published
- Reliable controlling mechanisms are required for the efficiency KPIs to track progress & assess measures at relevant level

**Competitors**
- Competition continuously improving carbon accounting approaches e.g.
  - TNT Express set efficiency target of 45% until 2020
  - TNT Express plans to connect carbon and ops systems

**Standard Setters**
- Develop reporting standards and influence legislation
  - e.g. Global Reporting Initiative, Green House Gas Protocol

**Initiatives and Syndicates**
- Foster industry cooperation and transparency on carbon reporting
  - e.g. SmartWay brand of US EPA for increase of fuel efficiency in US

Source: CAC Program; 1) European Social Investment Forum (Eurosif) bi-annually Report 2008; 2) Scope 1 & 2 only

Challenges of Carbon Accounting | Doha | 13 March 2013

Deutsche Post DHL | Page 7
What are we talking about? – The challenges

*How do we tackle these challenges? – DPDHL’s CAC approach*

How could the future look like? – Outlook on industry cooperation
Reaching goals through efficiency

Deutsche Post DHL was the first globally operating logistics company to set itself a concrete CO₂ efficiency target

DPDHL CO₂ Efficiency Target

– DPDHL CO₂ Index –

We aim to improve our CO₂ efficiency including subcontractors by 30% by the year 2020, compared to our 2007 baseline.

Source: GoGreen, Deutsche Post DHL

Environmental protection with Deutsche Post DHL
Leveraging the potential of DPDHL, GoGreen improves CO₂ efficiency and sets leading-edge standards in green logistics

**Our green dimensions**

I. **ACHIEVE TRANSPARENCY**
   - ...of our environmental impact, with a focus on our carbon footprint including subcontracted transportation

II. **IMPROVE EFFICIENCY**
   - ...and minimize our environmental impact with alternative technologies across all modes and optimizing our networks

III. **MOBILIZE EMPLOYEES**
    - ...in strengthening their environmental knowledge and helping them to engage in environmental protection

IV. **GENERATE VALUE**
    - ...in offering green solutions to our customers and helping them to achieve their environmental goals

V. **DEMONSTRATE LEADERSHIP**
    - ...in fostering green technologies, helping to shape political regulations and engaging with our key stakeholders

Source: GoGreen, Deutsche Post DHL
Measuring CO₂ emissions

Our Carbon Accounting & Controlling System ensures transparency on all relevant levels

**CARBON ACCOUNTING**
- Capture of CO₂ emissions and reference base

**CARBON CONTROLLING**
- Calculation of CO₂ emissions and carbon efficiency

**TRANSPARENCY**
1. Management at the relevant level
2. Transparency for the customer
3. Product transparency
4. Public reporting

Source: GoGreIn, Deutsche Post DHL
Measuring CO\(_2\) emissions

Our accounting systems were modified to record CO\(_2\) emissions for Scope 1 and Scope 2 emissions.

We’ve been tracking our own CO\(_2\) emissions (Scopes 1 & 2) through our accounting systems since 2009.

\( l \): fuel and energy consumption data relevant to CO\(_2\) (Scopes 1 and 2)

Source: GoGreen, Deutsche Post DHL
### DPDHL 2011 Development of Carbon Efficiency

With a two index-points improvement, we are well on the way towards our 2020 carbon efficiency target of 30% improvement.

<table>
<thead>
<tr>
<th>Index Points</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
<td>100</td>
<td>98</td>
<td>93</td>
<td>88</td>
<td>86</td>
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<tr>
<td><strong>Scope 1 and 2</strong></td>
<td>100</td>
<td>92</td>
<td>77</td>
<td>69</td>
<td>68</td>
</tr>
<tr>
<td><strong>Scope 3</strong></td>
<td>100</td>
<td>99</td>
<td>98</td>
<td>93</td>
<td>91</td>
</tr>
</tbody>
</table>

#### Divisions

<table>
<thead>
<tr>
<th>Division</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAIL(^1)</strong></td>
<td>100</td>
<td>84</td>
<td>90</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td><strong>EXPRESS(^2)</strong></td>
<td>100</td>
<td>92</td>
<td>80</td>
<td>74</td>
<td>72</td>
</tr>
<tr>
<td><strong>GLOBAL FORWARDING, FREIGHT(^3)</strong></td>
<td>100</td>
<td>100</td>
<td>98</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td><strong>SUPPLY CHAIN(^4)</strong></td>
<td>100</td>
<td>103</td>
<td>105</td>
<td>90</td>
<td>81</td>
</tr>
</tbody>
</table>

\(^1\) Main reference base: CO\(_2\) per letter/parcel.  
\(^2\) Main reference base: CO\(_2\) per tonne-km or tonnes of handled shipments.  
\(^3\) Main reference base: CO\(_2\) per tonne-km or TEU-km.  
\(^4\) Main reference base: CO\(_2\) by revenue after adjusting for inflation.

Source: DPDHL Corporate Responsibility Report 2011
Agenda

What are we talking about? – The challenges
How do we tackle these challenges? – DPDHL’s CAC approach

How could the future look like? – Outlook on industry cooperation
DPDHL is actively pursuing the standardization of subcontractor emission tracking

**Current situation:**
There is no standard process in place for the capture and calculation of subcontractor emissions.
Each individual logistics company must approach carriers independently and data is often inexact.

**Goal:**
Creation of an independent organization responsible for the collection, compilation and publication of this data using standardized processes.
This is a required first step toward “green” subcontractor management.

Source: GoGreen, Deutsche Post DHL
World map of 'green freight' initiatives

Airfreight Carbon Initiative (ACI)

Source: Green Freight Europe (GFE) / Green Freight Asia Network (GFAN)
Green Freight Europe (GFE) is the leading program for improving environmental performance of road freight transport in Europe.

**Vision:**

- The program drives reductions of carbon emissions by:
  1. Establishing a **platform** for monitoring and reporting of carbon emissions,
  2. Promoting **collaboration** between carriers and shippers in driving improvement actions and monitoring progress
  3. Establishing a **certification system** to reward shippers and carriers who fully participate in the program

**Components of the GFE Program:**

- Certification
- Carbon Monitoring & Reporting Tool
- Carrier Shop
- Verified Technologies
- Best Practice Sharing

**Members companies:**

Source: GoGreen, Deutsche Post DHL, www.greenfreighteurope.eu
Components of the Green Freight Europe program

Certification

Carrier Shop
- Financing Mechanism
- Insurances
- Products & Services

Verified Technologies

Carbon Monitoring & Reporting Tool

Best Practice Sharing

Source: Green Freight Europe
Green Freight Europe | Basel | 22 November 2012
Time for your questions!

Björn Hannappel
GoGreen
Corporate Communications and Responsibility
Deutsche Post DHL
bjorn.hannappel@dhl.com
Keynote:
Air Cargo Technology Road Map for 2050

Dr. Peter A. Meincke
Senior Researcher and Consultant, Institute of Air Transport and Airport Research Cologne, Germany
EU-CargoMap Project
- Definition of a Aircargo Technology Roadmap for 2050

Dr. Peter A. Meincke
DLR – German Aerospace Centre
Institute of Air Transport and Airport Research
Cologne / Germany
Outline of the Presentation

1. Description of Work and Project
2. Situation, Framework conditions and Trends for Air Cargo Operations
3. Air Cargo in Future
4. Examples for a CargoMap Analyses

**Excursus**
Vision or Fiction: What about LESS Air Cargo/Logistics in Future?
1. Description of Work and Project
## Consortium “CargoMap” as a whole

<table>
<thead>
<tr>
<th>Participant organisation name</th>
<th>Country</th>
<th>Activity/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot Consulting Ltd (SLOT) -</td>
<td>Hungary</td>
<td>Coordinator</td>
</tr>
<tr>
<td>(Coordinator)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German Aerospace Centre (DLR)</td>
<td>Germany</td>
<td>WP Leader</td>
</tr>
<tr>
<td>Gruppo Clas (Grup)</td>
<td>Italy</td>
<td>WP Leader</td>
</tr>
<tr>
<td>Ad Cuenta B.V (ADC)</td>
<td>Netherlands</td>
<td>Contributor</td>
</tr>
<tr>
<td>Delft University of Technology</td>
<td>Netherlands</td>
<td>Contributor</td>
</tr>
<tr>
<td>(TUoD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centro Italiano Ricerche</td>
<td>Italy</td>
<td>WP Leader</td>
</tr>
<tr>
<td>Aerospaziali (CIRA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institute of Aviation (ILOT)</td>
<td>Poland</td>
<td>Contributor</td>
</tr>
</tbody>
</table>

Source: CargoMap
7,500 employees across 32 institutes and facilities at 16 sites.

Task Fields:
- Regulatory Policy Aspects of Air Transportation
- Terminal-Simulation and Terminal-Management
- Analysis and Forecast of Airport and Airspace Capacities
  - Prognosis of Air Traffic
  - Air Transport Forecast
  - Analysis of Offer and Demand
  - Air Freight Analysis and Prognosis

Employees: 47
# Short Overview: CargoMap - Air Cargo Technology Road Map

<table>
<thead>
<tr>
<th>Proposal full title</th>
<th>Air Cargo Technology Road Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal acronym</td>
<td>CargoMap</td>
</tr>
<tr>
<td>Type of funding scheme</td>
<td>Coordination and Support Actions (Supporting)</td>
</tr>
<tr>
<td>Work programme topics addressed</td>
<td>AAT.2011.7-18. Assessing the role and needs of air freight in air transport</td>
</tr>
</tbody>
</table>

Source: CargoMap
How European Union-Project CargoMap works

Analysis of current situation and expected future bottlenecks/challenges

Synopsis and evaluation of possible improvements

Technology Roadmap

User’s requirements

User’s expertise

Source: CargoMap
2. Situation, Framework conditions and Trends for Air Cargo Operations
Classification of the Influencing Factors

- Overall Economic Development
- Regulatory and Infrastructure policy
- External shocks “Wild cards“
- Progress in Technology
- Influence on Air Freight Development
- Intermodal Competition
- Sales policy of Air Freight Companies

Figure: Areas influencing air freight development

Source: Horn, DLR
Influence of Wildcards

(1) “Oil price shocks” 1973, 1974 and 1979
(2) Second Gulf War
(3) Asia crisis
(4) Global recession (collapse of the “new economy”) and 911
(5) Financial crisis 2008/2009 resulting in global economic downturn

Data Basis: ICAO (various years)
Oil Price Developments

Figure: Long-term forecast for the development of oil prices

Source: Data Basis: EIA (Ed.) (2011)
Security Requirements in the Air Freight Transport Chain

EU should be considered in order to underpin the necessary security controls that already exist there. This will mitigate the risk of consignments arriving from external countries and will have minimal impact on transfer cargo handling at EU airports.

Source: European Commission and BBC News (4 November 2010)
Regulatory and infrastructure policy influences

Night flight restrictions

Figure: Night-flight restrictions at the world’s 30 largest airports in 2011

Source: Data Basis: ACI (Ed.) (2012), Boeing (Ed.) (2012), Avigation Networks (Ed.) (2012)
Regulatory and infrastructure policy influences 2

Environmental policy aspects – ETS (Emission Trading Schemes)

Impacts on Air Cargo Transport
Approaches for Freight Process Improvements e.g. E-Freight, Customs…

E-Freight Worldwide Status

Source: IATA 2011
New Business Models in Competition to AirCargo

[Map of EURO CAREX Cargo Rail Express with the text "Mise en service à partir de 2012"

[Image of Fastship Atlantic]

[Image of China Landbridge]

[Fujiitsu Siemens Computers Company Train]

French postal company La Poste’s express mail train with the text "http://www.payloadasia.com"

http://www.ihk-nuernberg.de
Change of the Trade Routes?

Source: agility logistics
3. Air Cargo in Future
Air Cargo Future

Fiction

Scenarios

2020

2030

2040

2050

Prognosis
Examples for possible technical solutions
Air Cargo in Future?

Whatever one can think of, new aircraft need to be:

- Green
  (emission, noise)
- Cost efficient
- Safe and secure
- Customer oriented
- Fitting in a multimodal transport chain

Source: CargoMap
Green Zeppelin

Source: CargoMap, CargoLifter etc.
Customer oriented
Fitting in a multimodal chain

Helicopters

Source: CargoMap
VTOL (Vertical take-off and landing)

✈ Customer oriented
✈ Fitting in a multimodal chain

Source: CargoMap
Autogyro Technology

Autogyro uses an unpowered rotor in autorotation to develop lift

Source: CargoMap
Ground Effect Aircraft

Ideas for a large slow turboprop powered ground effect aircraft are studied: The Boeing Pelican

An experimental concept aircraft
- proposed wingspan of 500 feet
- able to lift 1,400 tons of goods
- It is referred to as the Ultra Large Transport Aircraft

Source: Boeing
Customer oriented

Cruiser / Feeder concept

- There would be large platforms circling the globe
- Feeder aircraft would bring cargo to and from the cruisers
- The feeders could be VTOL to deliver door to door

Source: CargoMap
Customer oriented

Transport chain

Transport Process Optimization

Source: CargoMap
Blended wings (NACRE)

Cost efficient
Customer oriented

Source: DLR/NACRE
dlr-concept study: low noise aircraft

source: dlr
SOLARIMPUULSE

- Green
- Cost efficient

Source: DLR
UAV - Unmanned Aerial Vehicles

Source: US Navy
Customer oriented

Fitting in a multimodal transport chain

Urban Environment
Containers

- Cost efficient
- Customer oriented
- Fitting in a multimodal chain

Air cargo is not intermodal:
It requires a lot of repackaging
due to different containers

Containers in Lightweight Design

Reduction of weight by an increase of functionality

Source: DLR - Institute of Composite Structures and Adaptive Systems
Safe and secure

New Technologies - Security

Screening THz-Radiation

Adhesive tape  
Paper clip  
Button cell

Source: DLR - Institute of Planetary Research
4. Examples for a CargoMap Analyses
The need to look for novel Configurations and new Business Models

Source: CargoMap
Example for a CargoMap Thesis:
Most populated areas are near the shores or have easy access
Possibility to use shore based airports…

...would not occupy runway capacity at large airports
Floating Airports or docks

Source: CargoMap
Requirements for Future Cargo Solutions based on SWOT Analysis of Cargo Transport
<table>
<thead>
<tr>
<th></th>
<th>Positive factors</th>
<th>Negative factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal factors</strong></td>
<td><strong>STRENGTHS</strong></td>
<td><strong>WEAKNESSES</strong></td>
</tr>
<tr>
<td></td>
<td>• Speed</td>
<td>• Not price competitive</td>
</tr>
<tr>
<td></td>
<td>• Security and safety</td>
<td>• Not intermodal</td>
</tr>
<tr>
<td></td>
<td>• Reliability</td>
<td>• Spatial mismatch in the door-to-door chain</td>
</tr>
<tr>
<td></td>
<td>• No path congestion</td>
<td>• Weak economics of most carriers</td>
</tr>
<tr>
<td></td>
<td>• Low external costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Low land occupancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No competitor for high value goods in the long ranges</td>
<td></td>
</tr>
<tr>
<td><strong>External factors</strong></td>
<td><strong>OPPORTUNITIES</strong></td>
<td><strong>THREATS</strong></td>
</tr>
<tr>
<td></td>
<td>• Liberalisation of the market</td>
<td>• Fuel costs</td>
</tr>
<tr>
<td></td>
<td>• Growth of economy and trade</td>
<td>• External shocks</td>
</tr>
<tr>
<td></td>
<td>• Globalization of procurement, production and distribution</td>
<td>• Security issues and requirements</td>
</tr>
<tr>
<td></td>
<td>• New logistics concept</td>
<td>• Airport congestion</td>
</tr>
<tr>
<td></td>
<td>• Capacity increase in extra-European airports</td>
<td>• Night restrictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ground waiting times (clearance)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Under-representing of the Cargo sector in policy making processes</td>
</tr>
</tbody>
</table>
Possible Outcomes for Air Cargo
Strengths: Use them!

Speed
• Is an increase of speed desirable? Air Cargo has a remarkable advantage due to speed already, will increasing it bring much more to the table?
• Decrease of speed? If it brings fuel efficiency it may be desirable → Intercontinental “slow cost” connections
• Sometimes special consignments that need speed cannot be attracted to air cargo because of physical difficulties (too large and bulky).
• Can we think of a bigger aircraft able to carry HUGE things such as machinery/implants while keeping a favourable speed?

Reliability
• How can more reliability add to the competitiveness of air cargo? Is it enough to keep it at a high level? Can reliability win a higher share of transport?

No path congestion
• This strength is fundamental and it could lead to different step changes. It implies that air cargo can virtually reach everywhere. It opens the door to thinking about Urban Aircrafts, or any type of Aircraft that can eliminate the spatial mismatch between origin/destinations and terminals.

Source: CargoMap
Possible outcomes for Air Cargo

Weaknesses: Overcome them!

Costly
• What part of the Investment costs and Operating costs of air cargo can be drastically decreased thanks to technology?

Not intermodal
• What needs to be changed for airplanes to carry the most widespread intermodal loading unit (20” containers)? Novel configurations: Blended wings?

Spatial mismatch in the door-to-door chain
• See the “no path congestion” strength comments. Spatial mismatch can be eliminated by removing the need of using inland terminals at (at least) one end of the flight.
  → Removing the need of runways with VTOLs?
    Urban Aircraft – Autogyro – Airships? Can they become cost efficient?
  → Small aircraft that can takeoff/land using normal roads (“flying trucks”)?
    “Flying terminals” (cruiser/feeder concept) that can dynamically optimise their location depending on the network of operating carriers?

Source: CargoMap
Possible outcomes for Air Cargo
Opportunities: Exploit them!

Liberalisation of the market
• This element may pave the way to the realisation of “flying terminals”.
  No troubles with the freedoms of air for them!

Global growth of economy and trade / Globalisation of procurement, production and distribution
• These two opportunities may imply a case for intercontinental “slow cost” cargo connections. Is it technologically feasible?
• Also, shore terminals may turn efficient in such a scenario.

New logistics concepts
• Major modifications in the distribution paths of freight may lead to new needs and business cases for Urban Aircraft / smaller regional aircraft / “flying cranes”.

Capacity increase in many extra-european airports
• This opportunity may foster the use of smaller regional aircraft, to be used with higher frequencies with no congestion problem, for intra-regional transport. E.g. “pizza delivery” or Social Shopping distribution.

Source: CargoMap
Possible outcomes for Air Cargo Threats: Turn them into Opportunities!

Fuel costs
- New fuels – alternative ways of propulsion (solar energy, etc)
- Fuel efficient design/technology

External shocks
- The cruiser/feeder concept can avoid most problems due to natural causes (airport closures)

Airport congestion
- Floating terminals / shore terminals / flying terminals
- Door-to-door air cargo

Night restrictions
- Silent propulsion technologies

Source: CargoMap
European Union-Project: CargoMap

CargoMap is a research to analyze the role of air freight in the transportation system and the economy.

- **Analysis of current situation** with the involvement of the stakeholders in Europe among all actors

- **Expected future bottlenecks/challenges in air freight transport** and the identification of the corresponding requirements. The requirements will identify the technology, regulatory and operative issues to be addressed.

- **Synopsis and evaluation** of possible improvements related to future business models

- **Definition of a technology roadmap** to fill the technology, regulatory and operative gaps in order to fulfil the requirements considering the current capabilities.

Source: CargoMap
Vision or Fiction: What about LESS Air Cargo/Logistics in Future?

- Technology driven Scenarios
Which Products are Air Freight relevant?

Air Freight Commodities 2008 Total-Weight

- High Tech: 23%
- Capital goods/spare parts: 21%
- Fashion: 14%
- Pharma: 12%
- Automotive: 7%
- Mail and Express: 7%
- Perishables: 8%
- Live: 1%
- Valuables: 2%
- Other: 5%

SOURCE: MERGE GLOBAL, BCG 2008
Example: Mail, E-Mail and Short Message Service

3th of December 1992 the first message was „Merry Christmas“

20 years ago: Short Message Service (SMS)
Example: Music
Example: Newspapers
Example: Books
But what about the Hardware?

Solution: 3D – Printer?
3D printing is considered distinct from traditional subtractive processes which mostly rely on the removal of material by methods such as cutting and drilling.

Additive manufacturing or 3D printing is a process of making three dimensional solid objects from a digital model.
3D-Printed Products: Fashion and more

- At the moment too costly
- Mainly used to reproduce models and samples

SOURCE: KVBUSINESS.COM
Which Products are Air Freight relevant?

Air Freight Commodities 2008 Total-Weight

- High Tech 23%
- Capital goods/spare parts 21%
- Fashion 14%
- Pharma 12%
- Automotive 7%
- Mail and Express 7%
- Perishables 8%
- Live 1%
- Valuables 2%
- Other 5%

SOURCE: MERGE GLOBAL, BCG 2008
Audi used a 3D Printer to print the RSQ Prototype
3D Food Printer

Source: Fab@Home 3D printer, Choc Edge Company, CandyFab 6000
Pharmacy

- Chemist want to create a 3D printer which prints molecules. They decided to start with “relatively simple drugs”, such as ibuprofen.

- If they can establish the principles, then the potential is boundless.

**Source:** The Guardian and University of Glasgow
Tissue engineering: Using of a combination of cells, engineering and materials methods, and suitable biochemical and physio-chemical factors to improve or replace biological functions.
Different 3D Printer Sizes

SOURCE: ExOne, Objet Technologies
3D Printers capable of creating whole buildings

Source: Enrico Dini
Once upon a time it was Science Fiction...
Now some parts are already old-fashioned...
Other Ways of Transportation...

Example BEAMEN: Transfer of matter from one point to another, more or less instantaneously.

SOURCE: CBS CORPORATION – STAR TREK
Dr. Peter A. Meincke
DLR – German Aerospace Center
Institute of Air Transport and Airport Research
Cologne / Germany

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E-Mail: peter.meincke@dlr.de
Internet: http://www.dlr.de/fw
7th WORLD CARGO SYMPOSIUM
DOHA 12-14 MARCH 2013

Q&A
Gala Dinner

- Location and Details
  - The Ritz-Carlton Doha
    - 19:30 – 23:00
  - Dress code for this event is business casual attire.
  - Buses will begin departing the Sheraton Hotel at the Convention Center Entrance at 18:45 sharp for the Ritz-Carlton, Doha.
    - Buses will drop off at The Sheraton later in the evening.