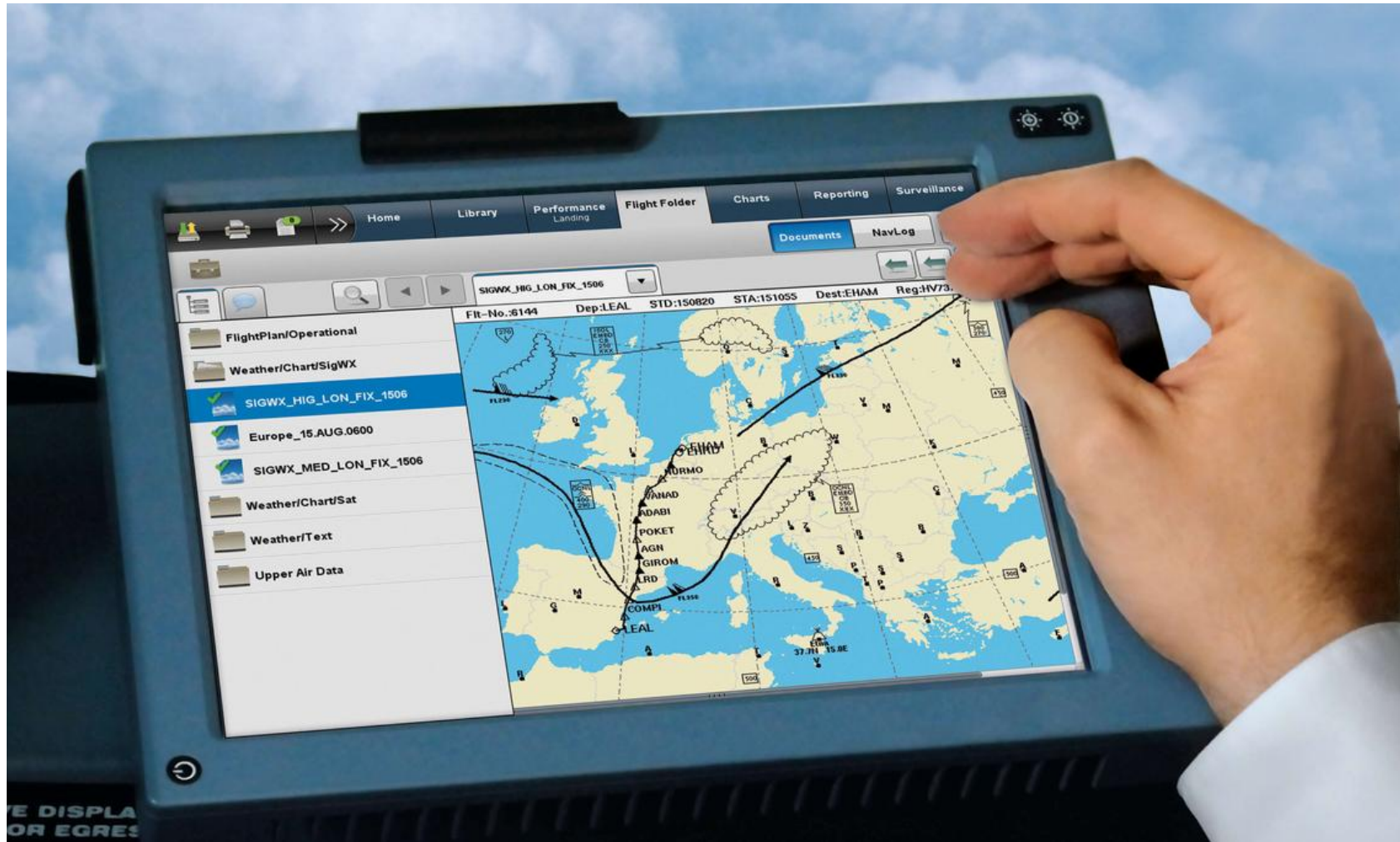


Lufthansa Systems' Lido/FlightBag



Welcome

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Project Manager

Electronic Flight Deck Solutions

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Phone: +49 151 58920044

Structure and service portfolio of our business divisions

Business divisions

Airline Management Solutions



- Network Planning & Scheduling
- Schedule Mgmt
- Crew Mgmt & Ops Control
- Revenue Mgmt & Pricing
- Marketing & Sales

Passenger Airline Solutions



- Passenger Core System
- Ground Solutions Platform
- LoadControl
- Revenue Integrity
- Payment Services
- PCI Compliance Engine
- Passenger Airline Competence Center

Airline Operations Solutions



- Electronic Flight Deck Solutions
- Navigation
- Performance Engineering
- Flight Planning

Industry Solutions/ERP Airline Solutions



- Maintenance Repair & Overhaul
- Cargo & Logistics
- Airline Financials
- Revenue Accounting
- Industry & Services

Infrastructure Services



- Communication
- Consulting
- Application
- Desktop
- Data Center

Global Sales

EMEA Central | EMEA South | Asia Pacific | Americas

Agenda

EFB Introduction

Lufthansa Systems' System Overview

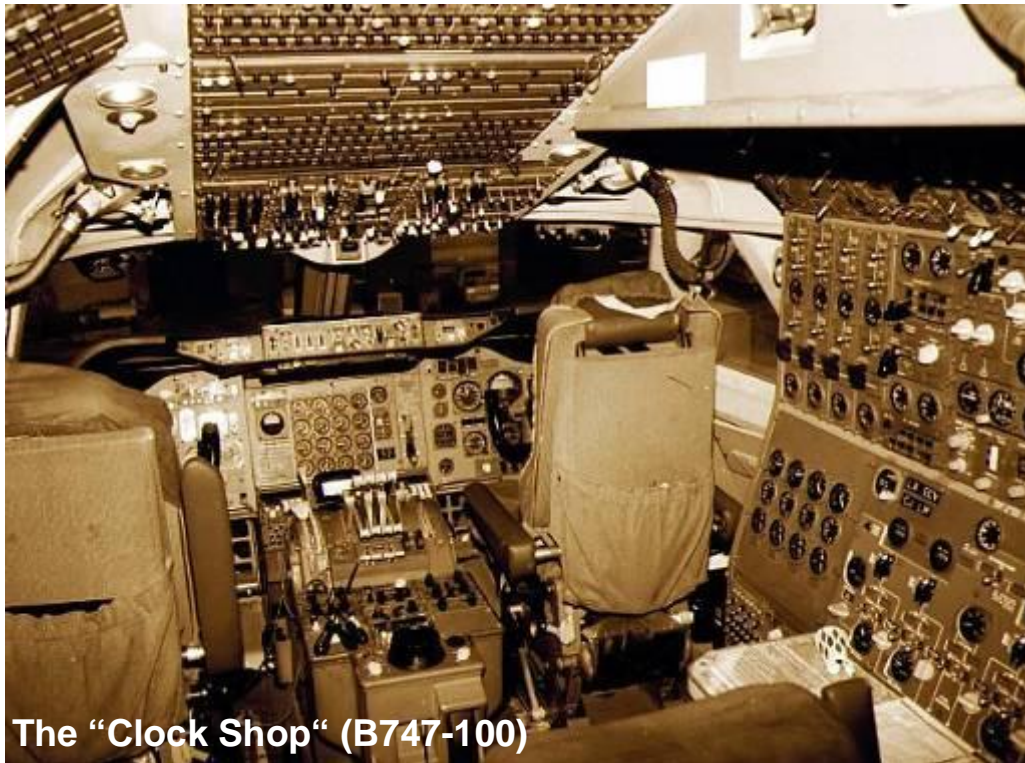
Lido/FlightBag Applications (Onboard Software Suite)

Lido/FlightBag Communication (Update Process)

Lido/FlightBag Ground (Portal)

EFB Introduction

It all started with a lot of clocks



Cockpit Systems & Avionics

- Manual instruments
- Papers Charts, NavKits & Manuals

Ground-Cockpit-Communication

- VHF-HF
- Analog

Ground Systems

- Independent processes & systems
- Pen & Paper

Hardware

EFB Introduction

Today most of the Clocks have disappeared



Cockpit Systems & Avionics

- Dedicated Displays
- Semi-integrated systems & data

Ground-Cockpit-Communication

- Digital / Satcom
- Limited data transfer during flight

Ground Systems

- Digital ground applications
- Semi-integrated systems & data

Software

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Lido/FlightBag – the integrated platform for a paperless cockpit

EFB Introduction

Historical Background

Many routine processes are historically evolved, still paper based, inefficient & expensive



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Lido/FlightBag – the integrated platform for a paperless cockpit



EFB Introduction

Potential EFB Business Case Drivers

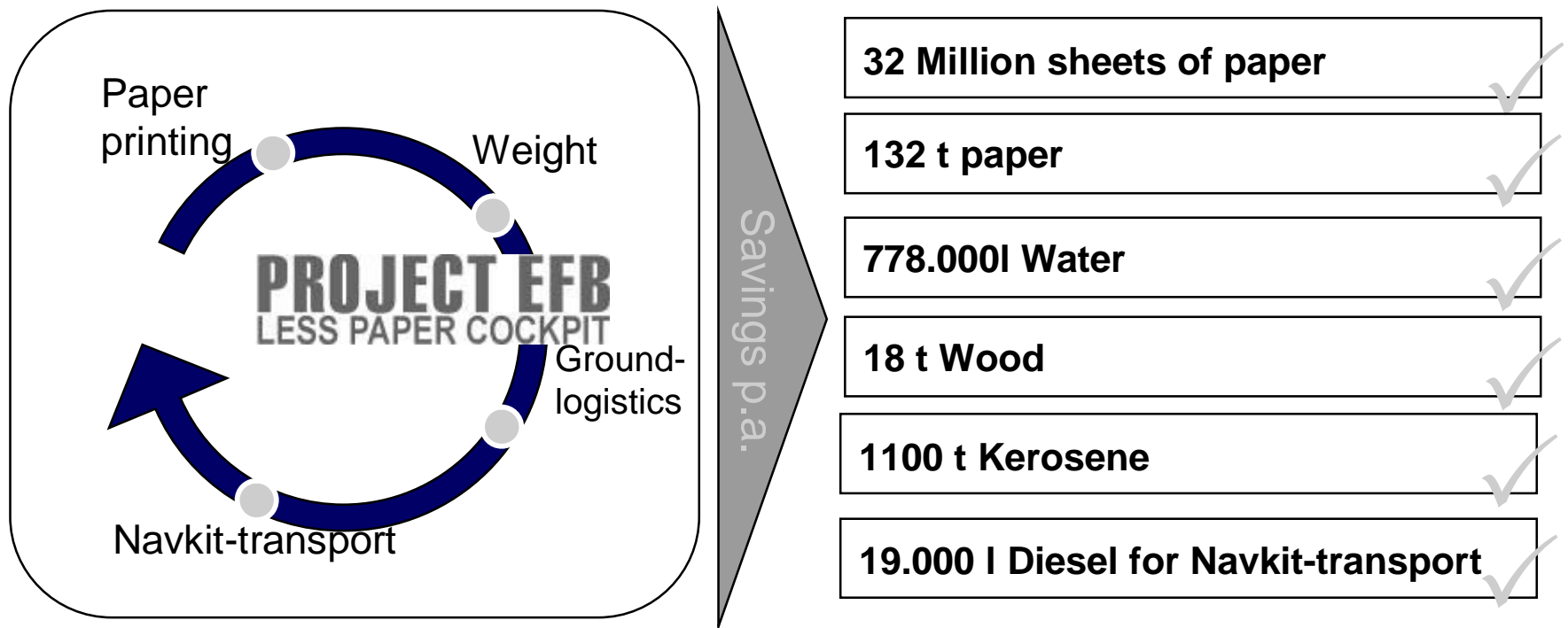


- Reduced paper, printing, logistic, revision and distribution costs
- Reduced costs for document handling and archiving
- Reduced workload for flight crews and ground staff
- Reduced maintenance costs and increased engine life by using accurate performance calculations
- Quicker incident handling by sending flight reports quickly and effectively
- Avoiding separate video display by integrating application

EFB Introduction

Ecological Benefits of EFBs

The LH „Electronic Flight Bag“ (EFB) has a positive effect on the operational side as well as on the environment.



EFB Introduction

Hardware Classes



Class 1

Off-the-shelf laptops, not mounted, aircraft or pilot specific

- **Pro :** pricing, additional business cases, personalization
- **Con:** communication to A/C, usage during T/O & landing

Class 2

Dedicated mounted 3rd Party HW, connected to A/C avionics

- **Pro :** Usable during all phases of flight, flexible update of SW&HW
- **Con:** Cockpit use only, certification required

Class 3

Aircraft OEMs, fixed installation integrated in avionics

- **Pro :** Usable during all phases of flight, highest level of integration
- **Con:** higher life-cycle costs, reduced flexibility, limited applications

EFB Introduction

Laptop or Tablet PC (Class I)



EFB Introduction

Goodrich Class II (A340)



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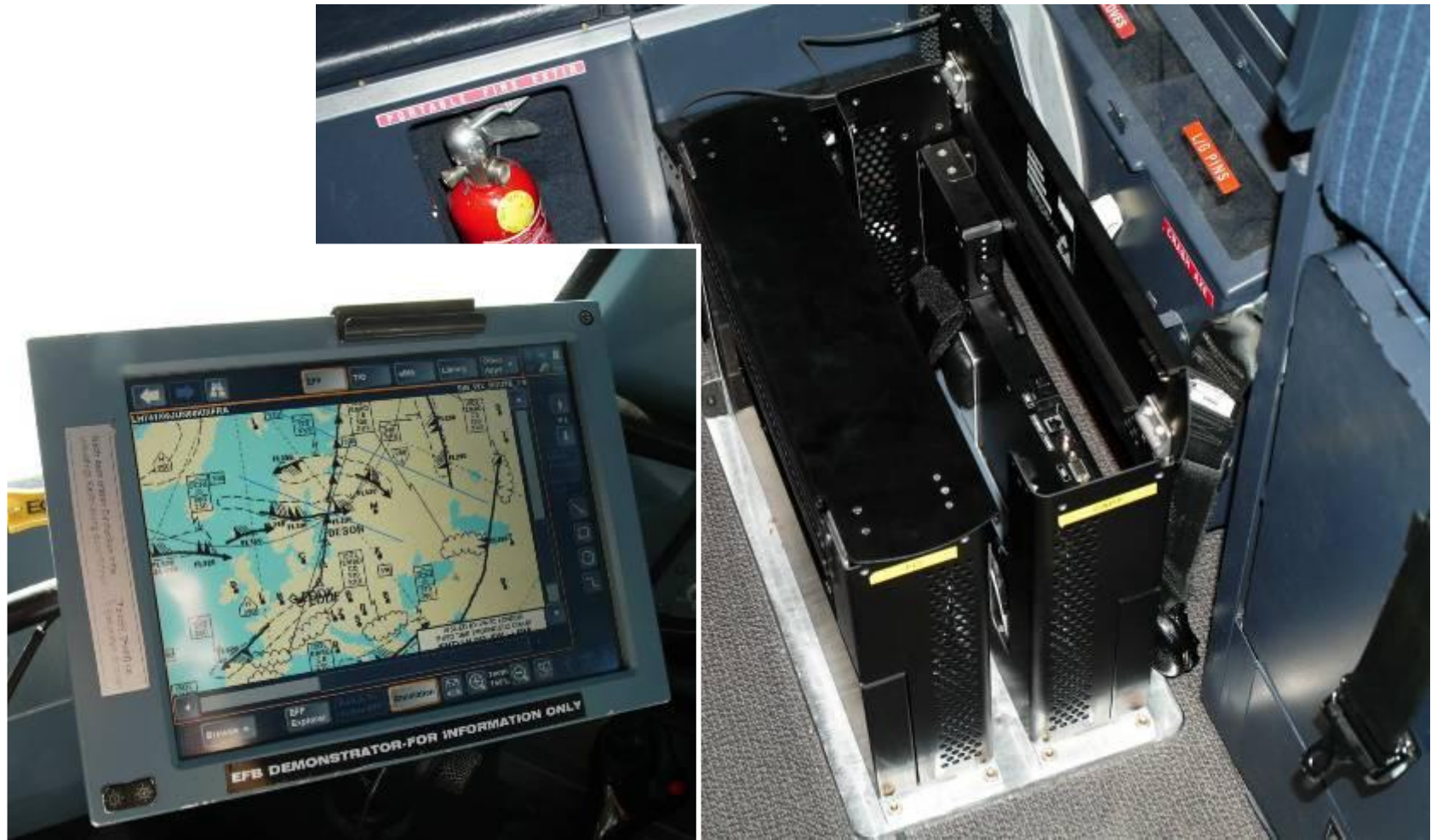
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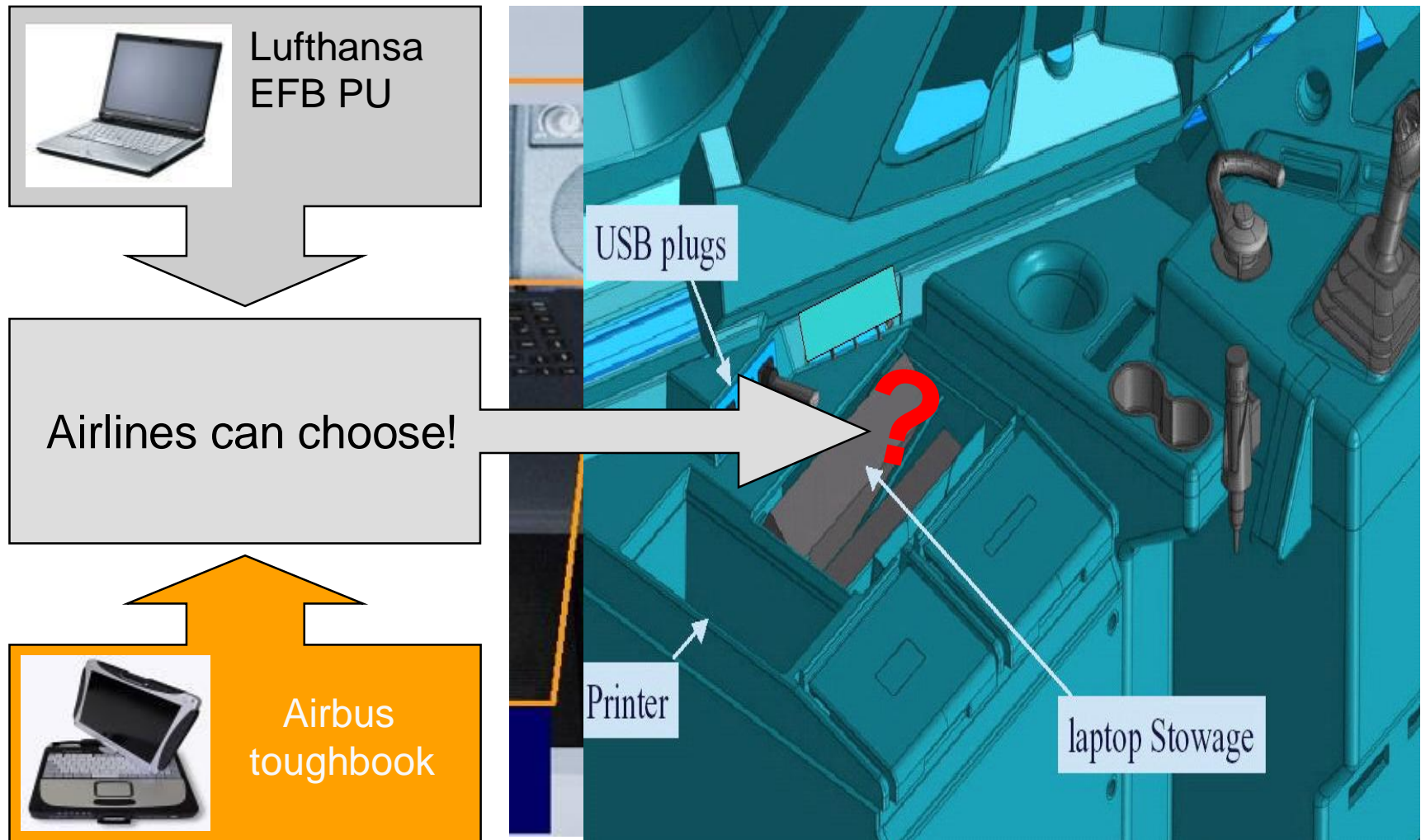
EFB Introduction

Goodrich 'LDS' Docking Station (Class II)



EFB Introduction

The Lufthansa Class II EFB solution



Agenda

EFB Introduction

Lufthansa Systems' System Overview

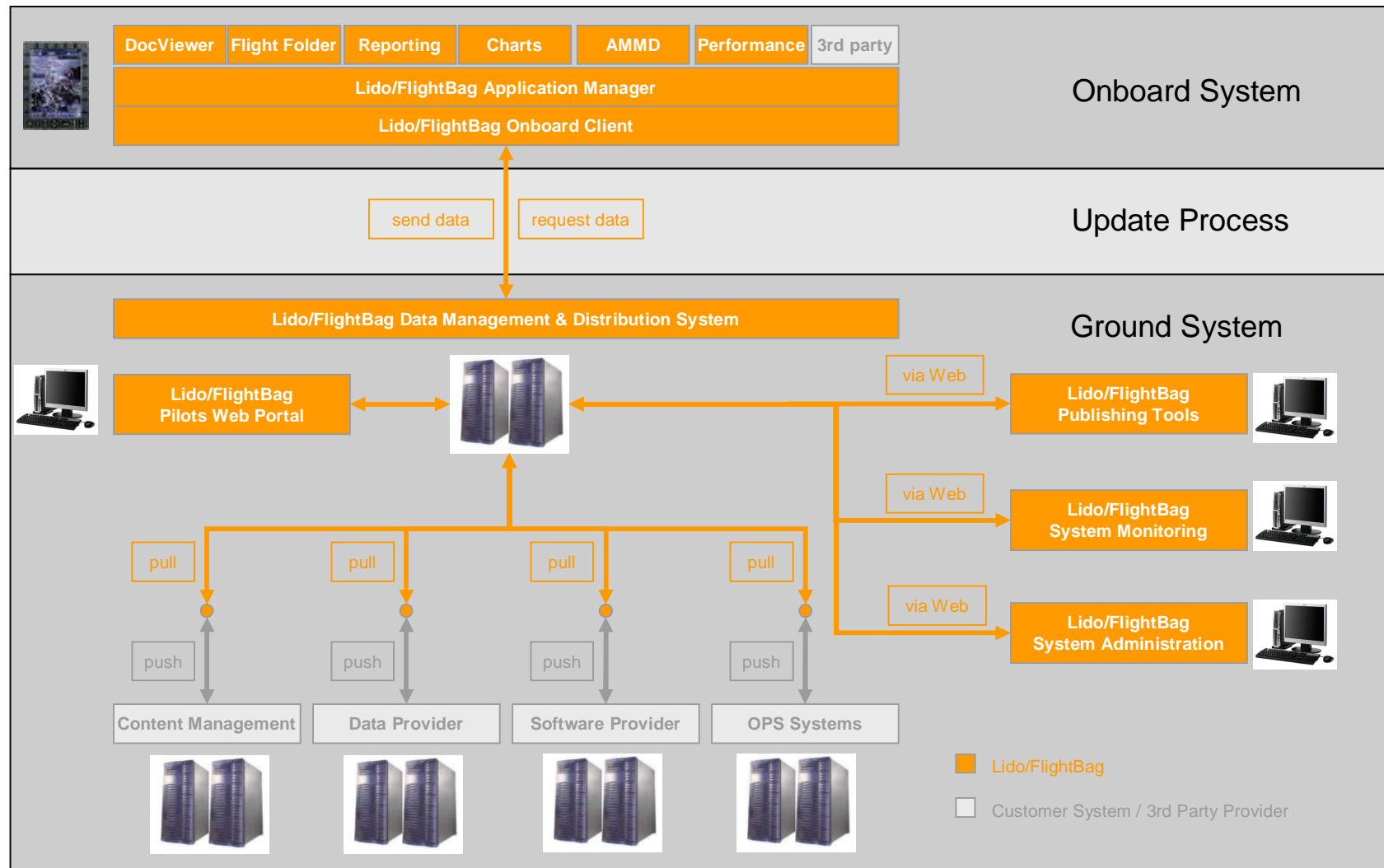
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Lido/FlightBag System Overview

System Architecture



Agenda

EFB Introduction

Lufthansa Systems' System Overview

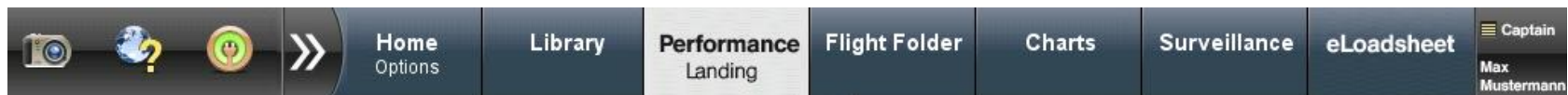
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Lido/FlightBag Applications

Onboard Software Suite



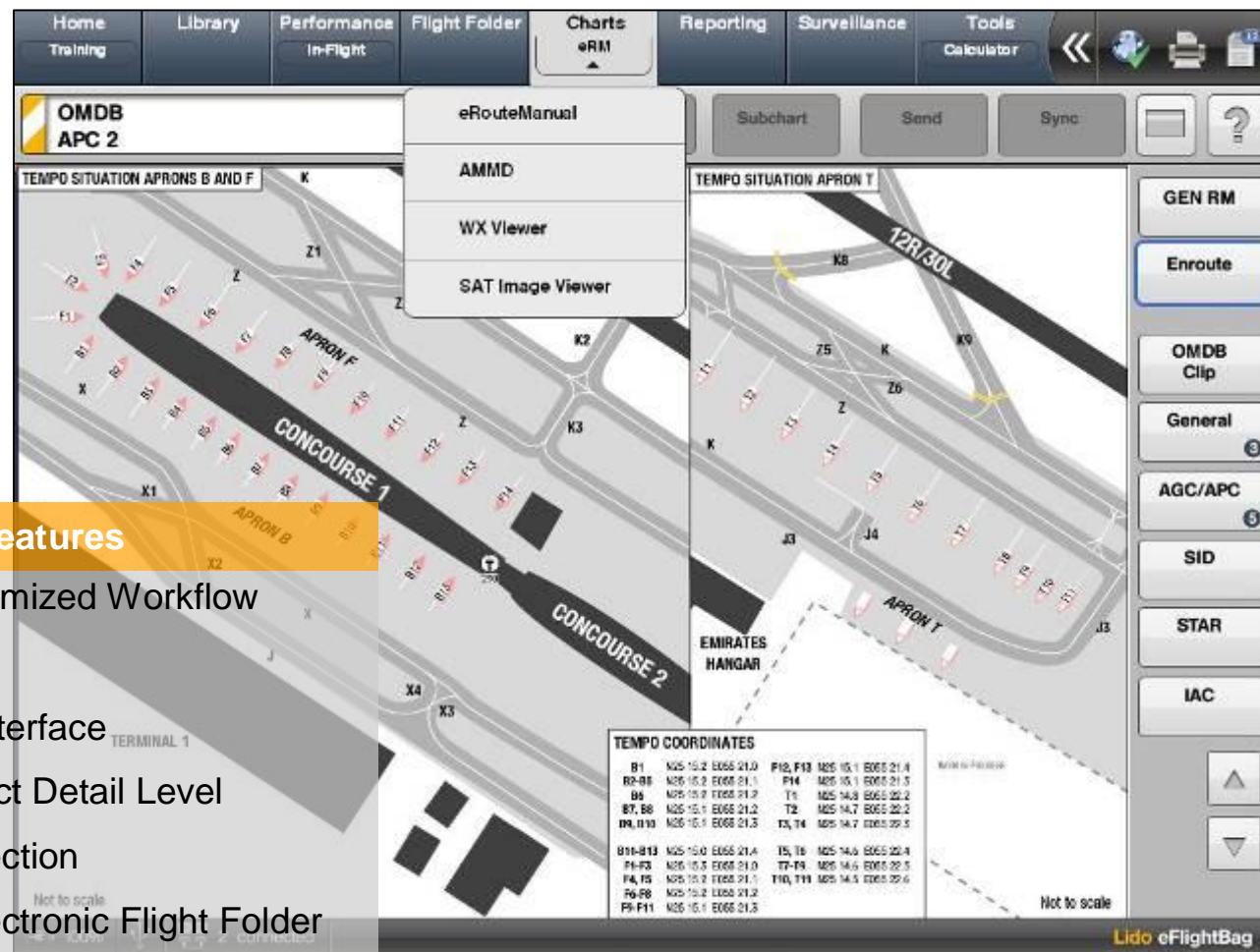
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Lido/FlightBag – the integrated platform for a paperless cockpit



Lido/FlightBag Applications

eRouteManual



Key Features

- Flight Process optimized Workflow
- Dynamic Charts
- Interactive User Interface
- Configurable Object Detail Level
- ARINC 429 Connection
- Integrated with Electronic Flight Folder

Lido/FlightBag Applications

TakeOff & Landing

Key Features

- Performance optimization
- Unified Look & Feel for different A/C types
- Sophisticated plausibility checks
- Based on manufacturer' SCAP modules
- Single point calculation
- Performance correction (MEL/CDL items)
- ARINC 429 connection
- X-Checks with Flight Data, Avionic Data and between Crew Members

Warning: Inactive Flight The Flight Leg Identifier does not comply with the active EFF flight

LAX - JFK 29JUN09
LH1234/LH7AB

Airport: FRA EDDF Frankfurt Rhein-Main 364 ft
 Registration: D-AIMA A/C Type: A340-600

Software Version: 04.00.01-01
 Database Version: 27NOV08

W/V: **CALM** kt
 OAT: **+15** °C
 QNH: **1013** hPA

A/I: **Auto**
 A/C: **Off**
 Alt CG: **STAN**

Rwy▲	Identifier	LDA	Slope	G/S	M/A
07L		4000	0.3	3.0	2.5
07R		4000	0.3	3.0	2.5
25L		4000	-0.3	3.0	2.5

Conf: **91/93**
 Reverser: **None**
 Ice: **No**

Actual LW: **500.0** t

Condition: **Dry**

Cont. Depth: **500.0** mm

Landing Type: **Auto**

VRef Inc: **5**

MEL/CDL/Specials:

FRANKFURT RHEIN-MAIN 07R

4000 500.0

G Weight / MALW
500.0

JAR LDG Field Length Req'd
3352

VTHR (VREF)
172

MLW: **558.0**

PLW: **588.8**

QTA: *****

Field Length: 598.7

APPR CLB Grad. 3.7 %

APPR CLB: 644.8

G CLB Grad. 3.7 %

G/A CLB: 650.0

LDG CLB: 650.0

Brake Energy: 588.8

Tire Speed: 650.0

Special EOSID: At 'FR' 297.0 RT to 'RID' 112.20 (220 INBD,RT)

Lido/FlightBag Applications

Electronic Flight Folder (EFF)



Key Features

- Compliant to ARINC 633 standards
- Integration with Crew Management System
- Integration with Flight Planning System
- Supporting XML, HTML, PDF, plain text, several graphic formats
- Configurable Download Priority
- Providing Data of active Flight to all Apps
- Digital Signature (Roadmap)

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Lido/FlightBag – the integrated platform for a paperless cockpit

Lido/FlightBag Applications

NavLog

Home Training		Library		Performance In-Flight		Flight Folder		Charts CRM		Reporting		Surveillance		Tools Calculator					
LAX - JFK LH1234/LH7AB				STD: 1250 STA: 1435	ETD: - ETA: 1431	ATD: 1249 ATA: XXXX	AD Elevation: 384 ft AD Elevation: 8 ft		Documents		NavLog		Close Flight						
Waypoints				Fuel Figures															
Route (All)										Time (30 min)				Fuel (FOB)				Notes	
Direct	Remind	Level	Name/Airway	Remaining	Estimated	Actual	Delta	Score	Planned	On Board	Delta	Score							
<input type="checkbox"/>	<input type="checkbox"/>	OFF	EnR A AWY 1	672	1321	1323	2	2	4.5	4.5	-0.2	-0.3							
					Distance 180	GS 350	EET 25	TEET 46	TAS 381	Wind 330/60	Temp P4								
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ATC	EnR B AWY 2	492	1348		-	-	3.8	-	-	-							
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ATC	EnR C AWY 3	327	1406		-	-	3.4	-	-	-							
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ATC	EnR D AWY 4	258	1425		-	-	3.2	-	-	-							
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ATC	EnR E AWY 5	225	1429		-	-	3.1	-	-	-							
<input type="checkbox"/>	<input type="checkbox"/>	ATC	EnR F AWY 6	204	1433		-	-	2.2	-	-	-							
ATIS BUD: ILS 13R/TL 110 120/15 OK 22/12 1014NS																			
<input type="button" value="Add Note"/>														<input checked="" type="button" value="Confirm"/>					

Key Features

- Compliant to ARINC 633 standards
- ARINC 429 connection
- Automatic Time & Fuel Checks
- Handling of ATC Clearing Messages
- Calculation Support for Fuel Correction
- Archiving of Flight Data
- Public annotations
- Integrated with Lido/eRouteManual

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Lido/FlightBag – the integrated platform for a paperless cockpit



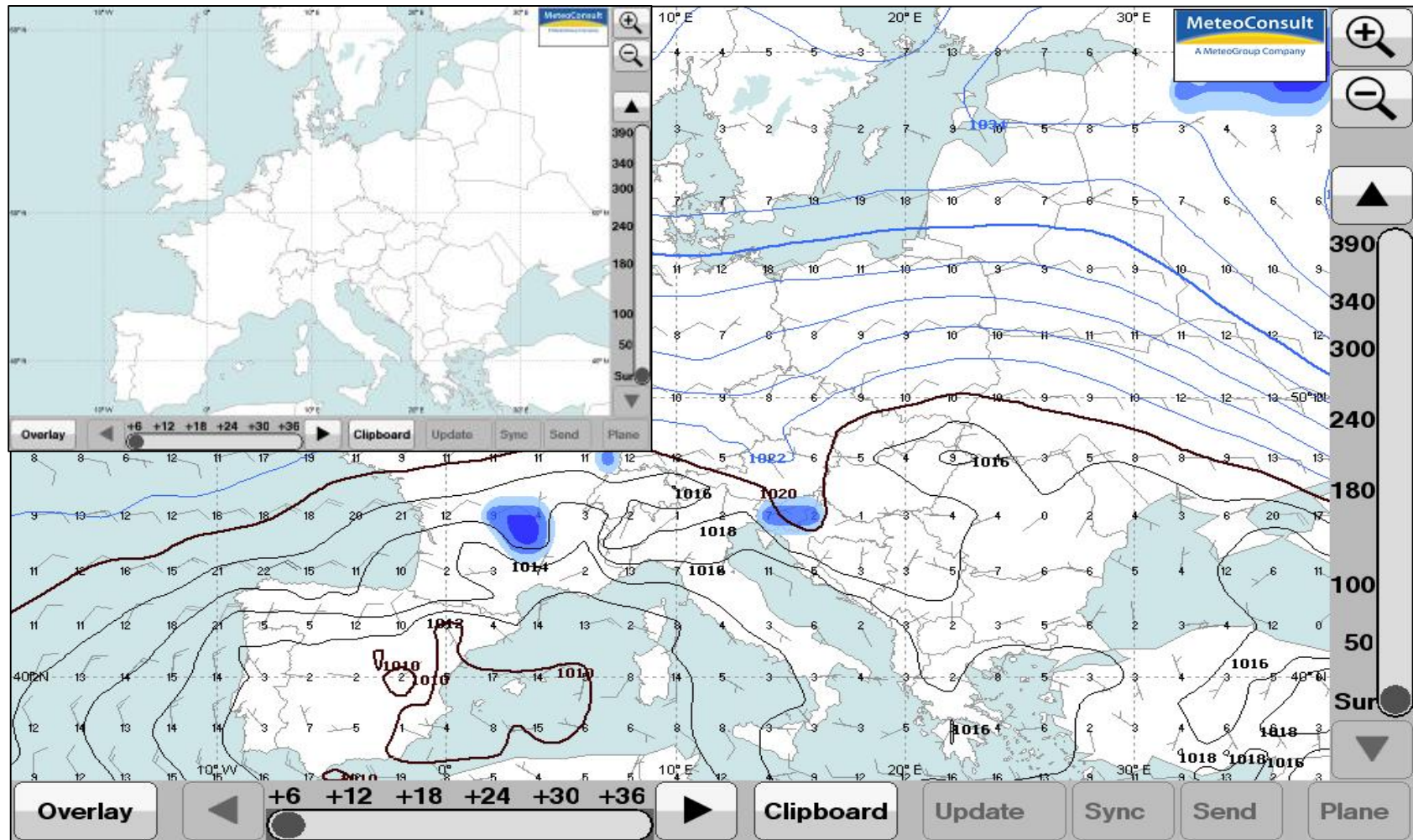
Lido/FlightBag Applications Library

Key Features

- Supporting XML, XHTML, PDF
- Highlighting of text
- Personalized Bookmarks and Annotations
- Revision Service
- Integrated Search Function
- Several Filter Options
- Compatible with new Airbus Standard
- Import/Export of MEL/CDL Items (A380)

Lido/FlightBag Applications

Weather Viewer



Lido/FlightBag Applications

Video Surveillance



Agenda

EFB Introduction

Lufthansa Systems' System Overview

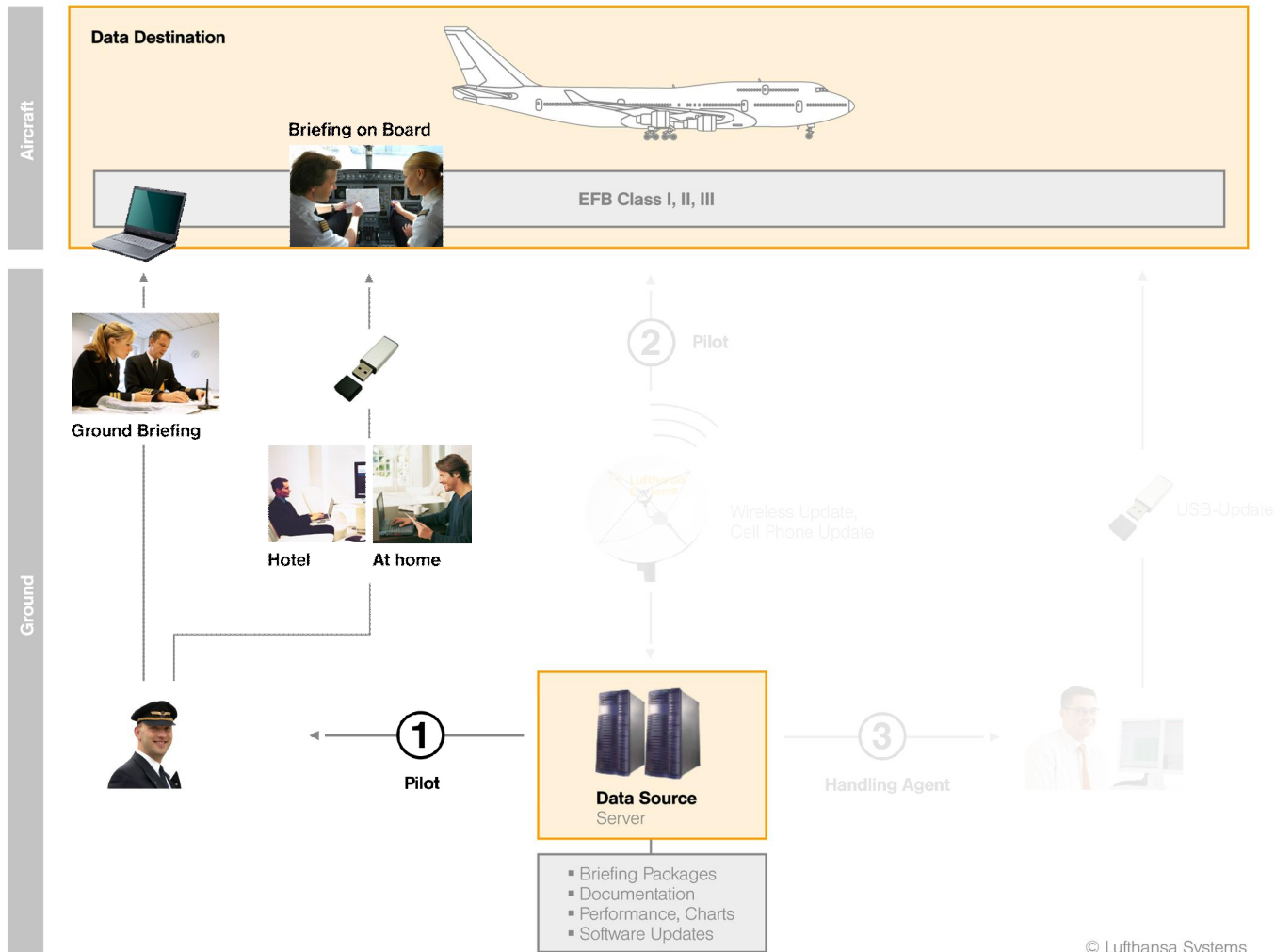
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Lido/FlightBag Communication

How to do an Update?



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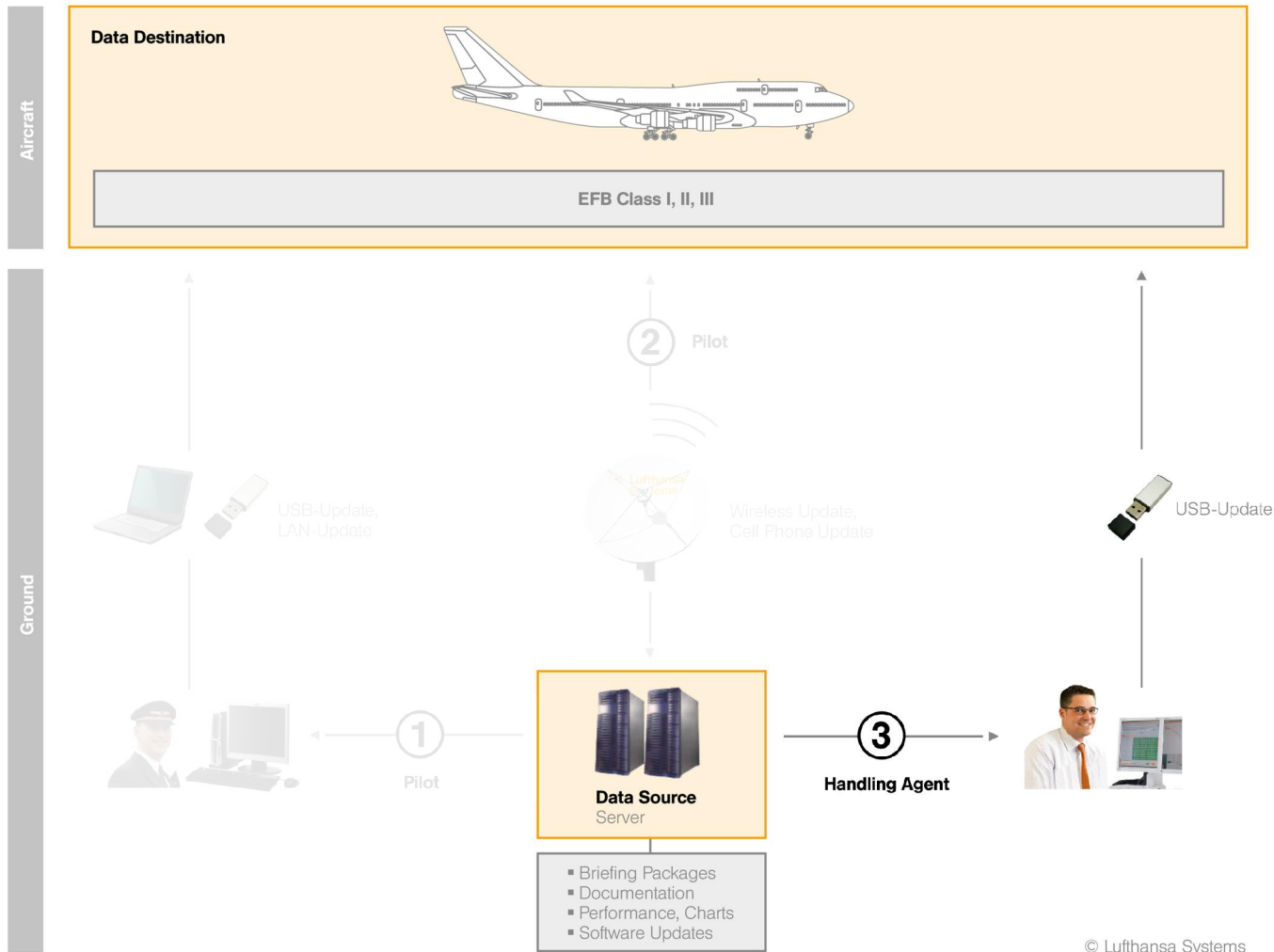
Lido/FlightBag Communication

How to do an Update?



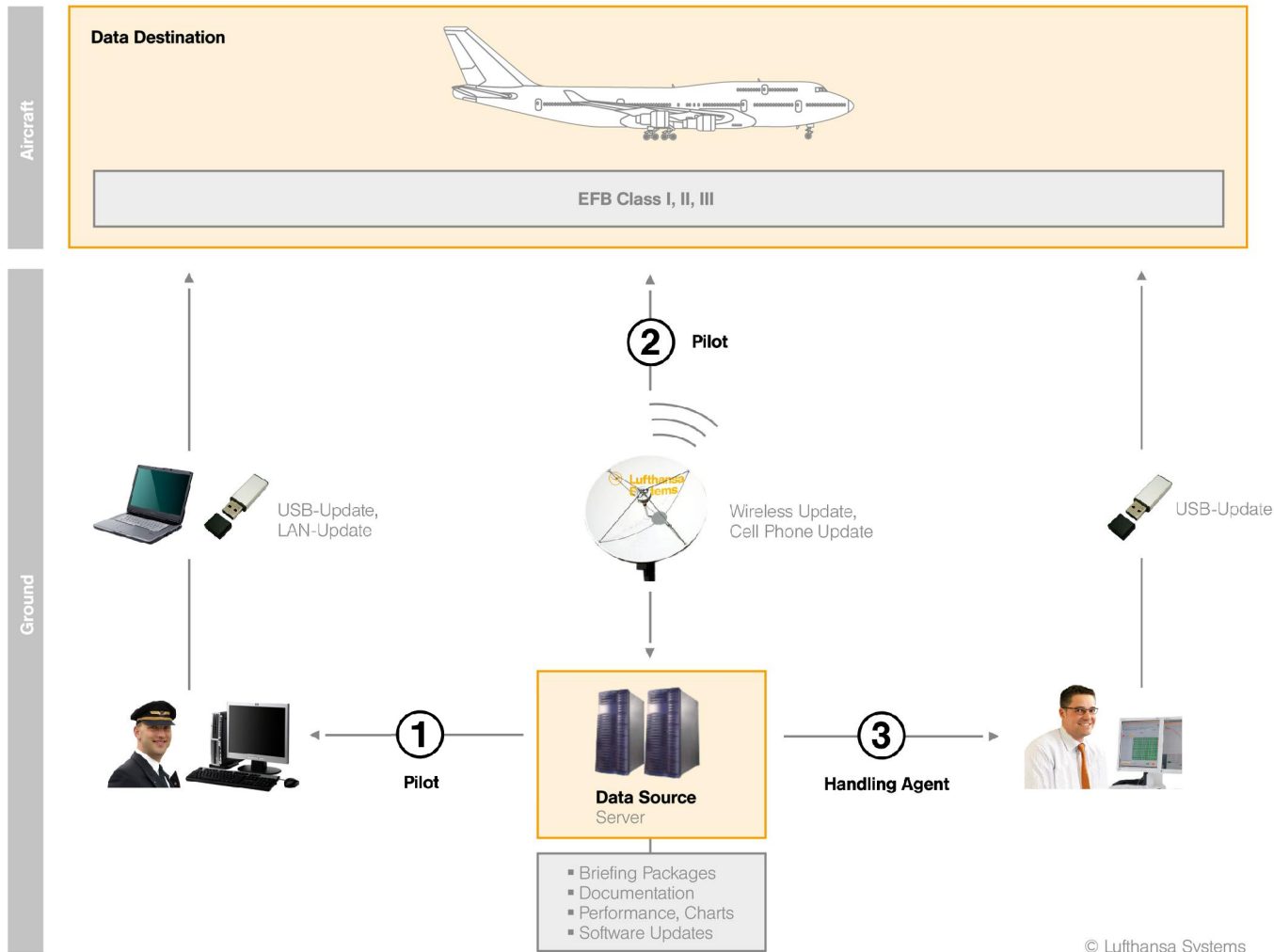
Lido/FlightBag Communication

How to do an Update?



Lido/FlightBag Communication

How to do an Update?



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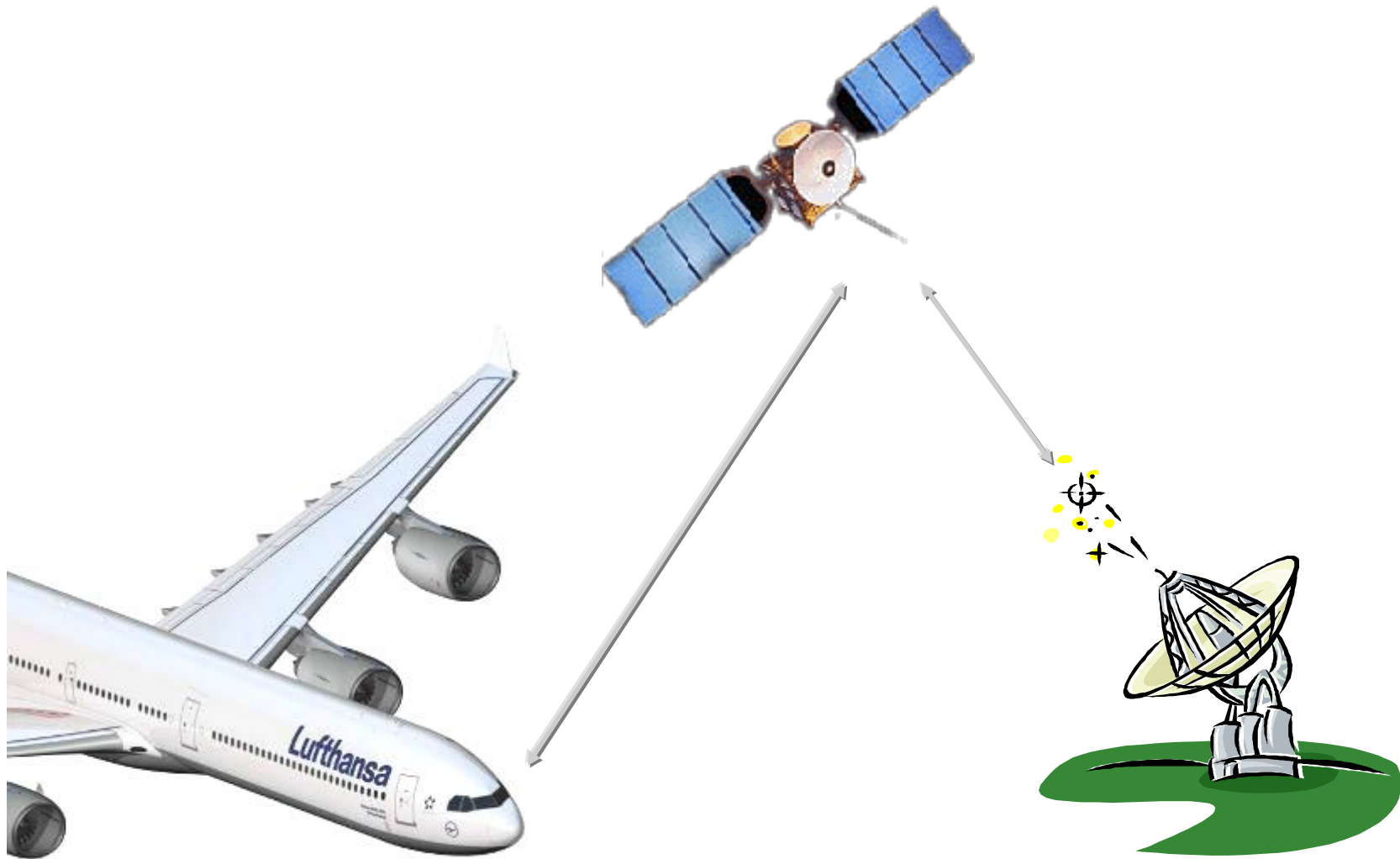
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Lido/FlightBag Communication

Future Steps

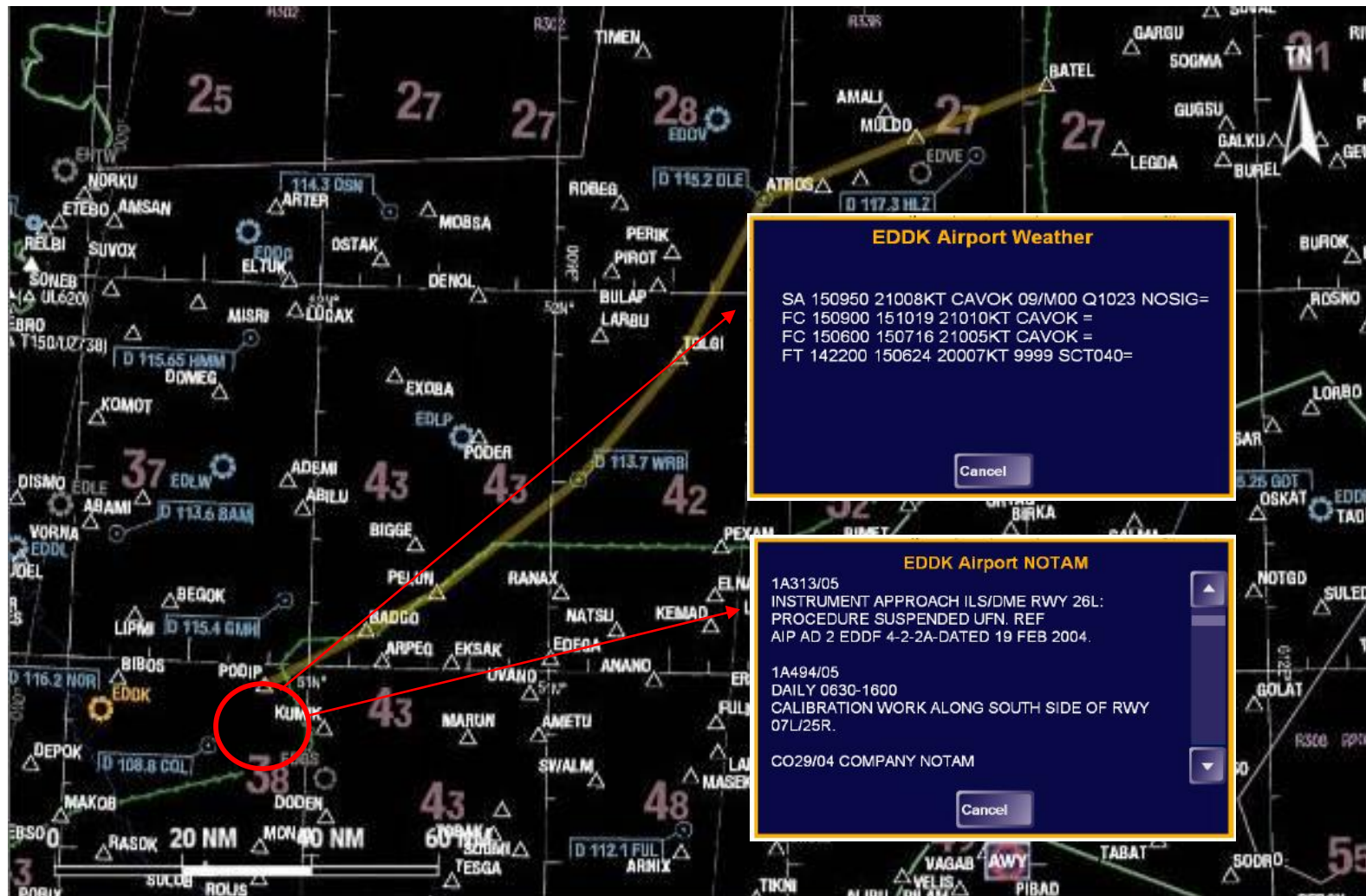


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Lido/FlightBag Communication

Future Steps



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Lido/FlightBag – the integrated platform for a paperless cockpit

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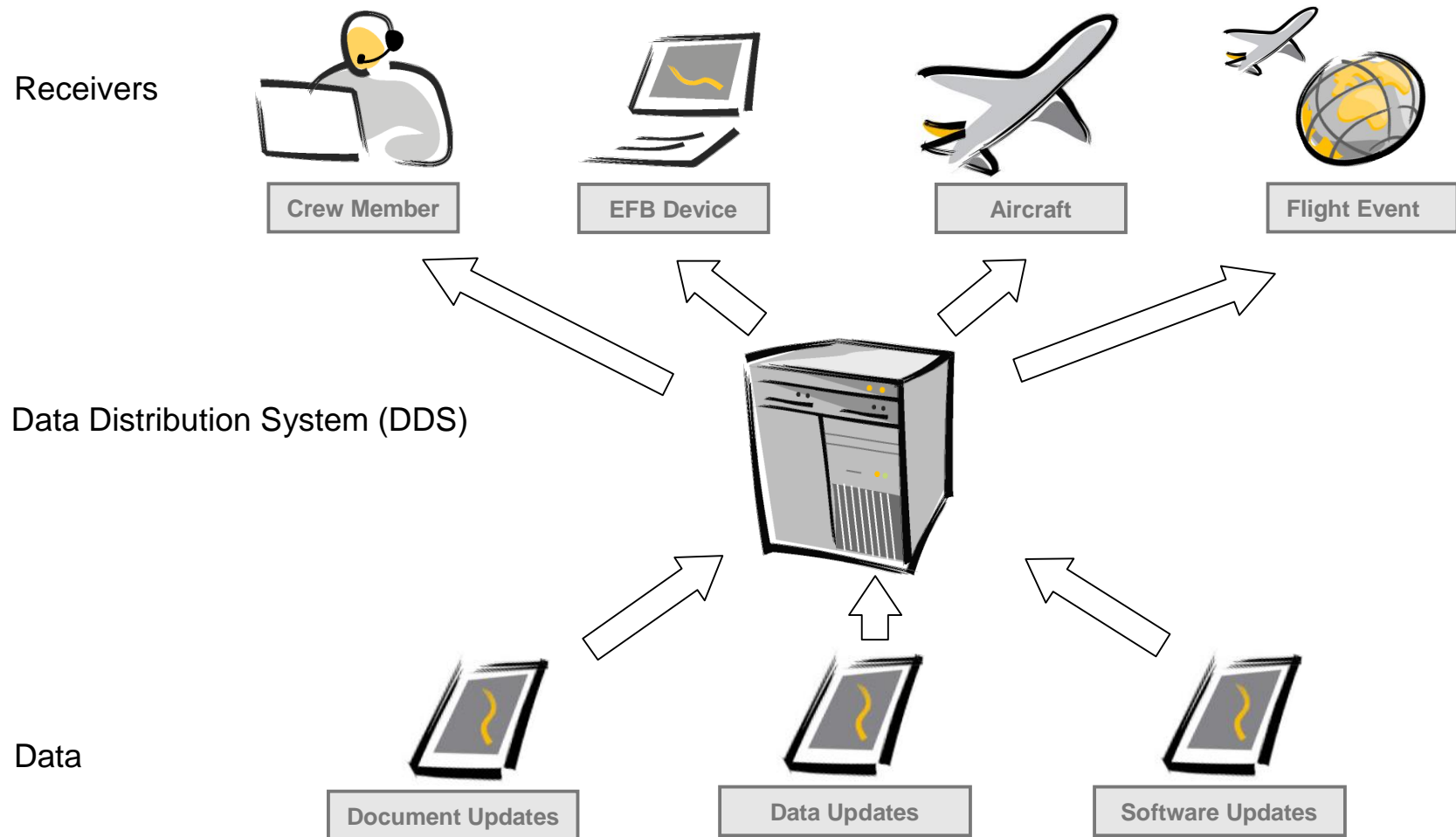
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Lido/FlightBag Ground

What is the Ground System for?



Lido/FlightBag Ground

Core Functions & Key Features

Dashboard

DMS

EFB-Management

Admin

AircraftManagement

EFB-Tracking

EFB-UpdateClient

EFF

▼ Preferences

Log out

Device Tracking

▼ FILTER Summary

Assignment Type

ALL

Assignee Groups

ALL

Assignees

ALL

Devices

ALL

Device Positions

ALL

Package Group

ALL

DocumentTypes

ALL

Package Group

Document Type

Tester

tschwab

sharmgardt

dhehrmann

YL6A002076

YL6A001839

YL6A001985

YL6A12345

EFB000002

YL6A003096

EFB000013

EFB000004

EFB000003

123456789

Ground

Rail

Holiday/fleet

Testfleet

System Administration & Monitoring

User Setup

Aircraft and EFB setup

Process and Roles Definition

Data and Information Management

Document & Data upload

Software Management

Revision and Update Handling

User / Pilots Portal

World wide access to all relevant data

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