AFI Flight Operations Safety Awareness Seminar (FOSAS)

EFB, FlySmart and eQRH

ICAO/Airbus
Nairobi, 19-21 Sep. 2017

AIRBUS

Introduction

EFB, what is it ?

How to implement EFB ?

Next steps

AIRBUS

Introduction

Situation we want to avoid…

What is in a pilot's flight bag ?

Flight Crew uses a lot of paper:

- Aircraft documentation
- Data for loading the aircraft (Weight & Balance)
- Aircraft data for performance determination
- Navigation charts
- In-flight data logging
- Airline documentation, security forms
- Logbook

Digitalization: EFB Solution

Introduction

EFB, what is it ?

How to implement EFB ?

Next steps

AIRBUS

What is an EFB?

EFB

Electronic Flight Bag

A set of hardware and software applications enabling **paper elimination** and **improving cockpit operations**.

- Optimized flight preparation and operations
- Optimized aircraft computations
- Reduced aircraft weight and costs
- Enabled transition to full digital operations

Traditional paper

Less Paper in Cockpit (LPC)

FlySmart

with Airbus

EFB Hardware

ex-class 1

« Portable device »

A320 A330 A350 A380

ex-class 2

« Portable mounted devices »

A320 A350

ex-class 3

« Aircraft installed Devices »

A380 A330

Flight Operations solutions *for Flight Crew*

Ground Applications *for customization and administration*

Maintenance solutions: *A380, A350 XWB & A330/340*

Cabin solutions*: A380, A350 XWB*

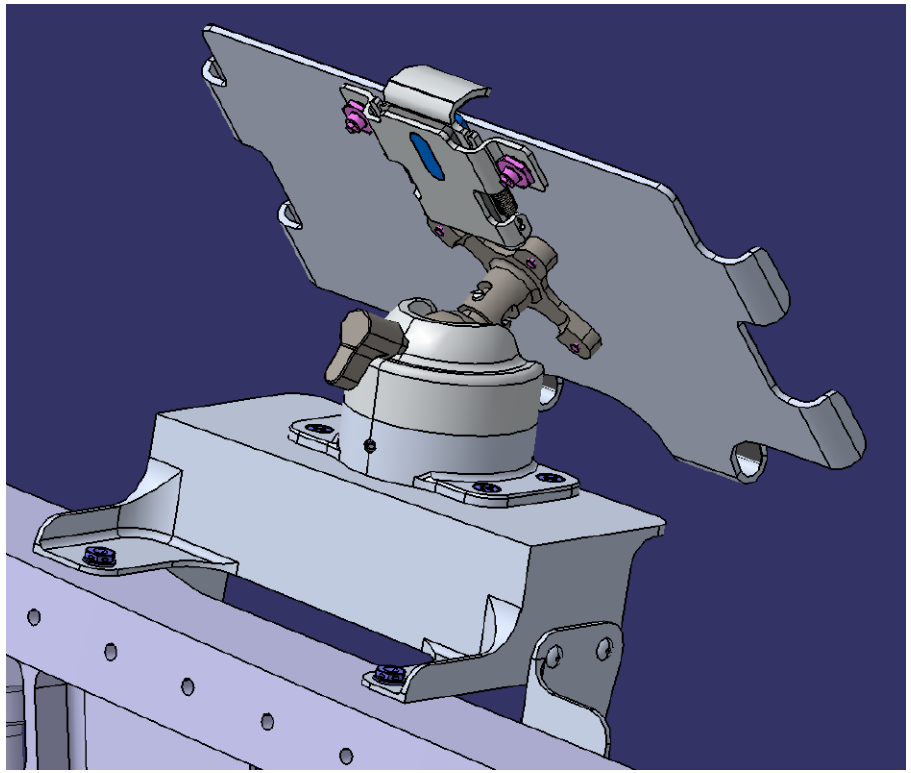
EFB Hardware

ex-class 1

A320 A330 A350 A380

EFB Hardware

Mount designed for iPads
2 / 3 / 4 / Air / Air 2 / Pro 9.7”



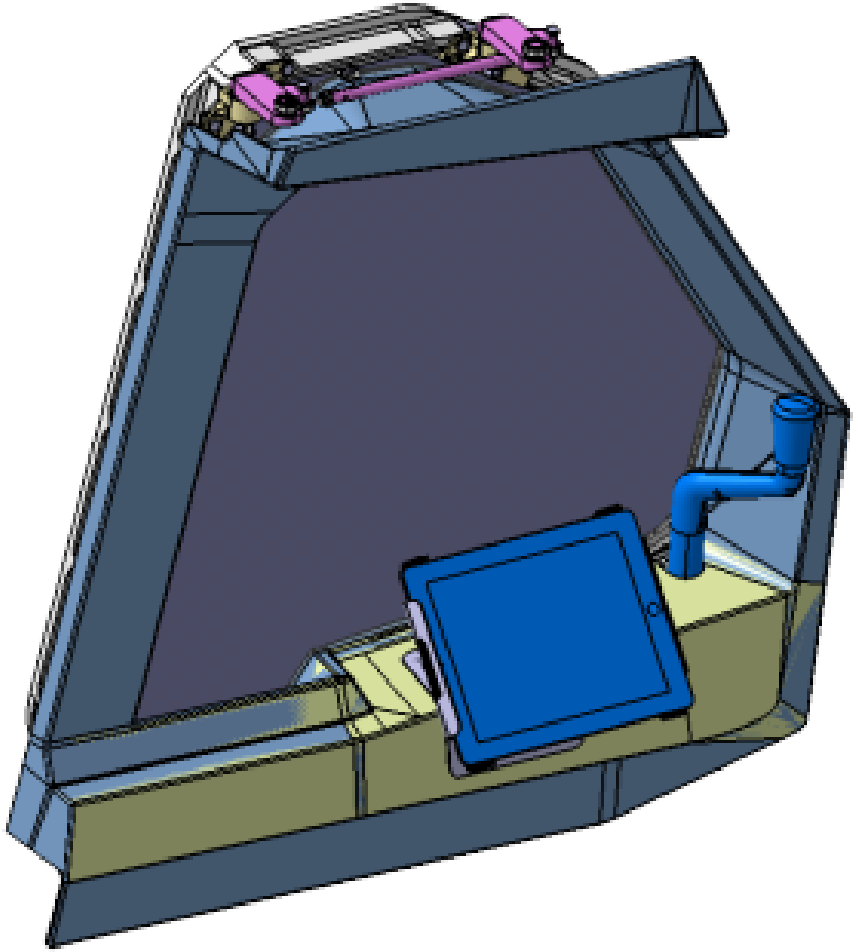
EFB usable all flight phases

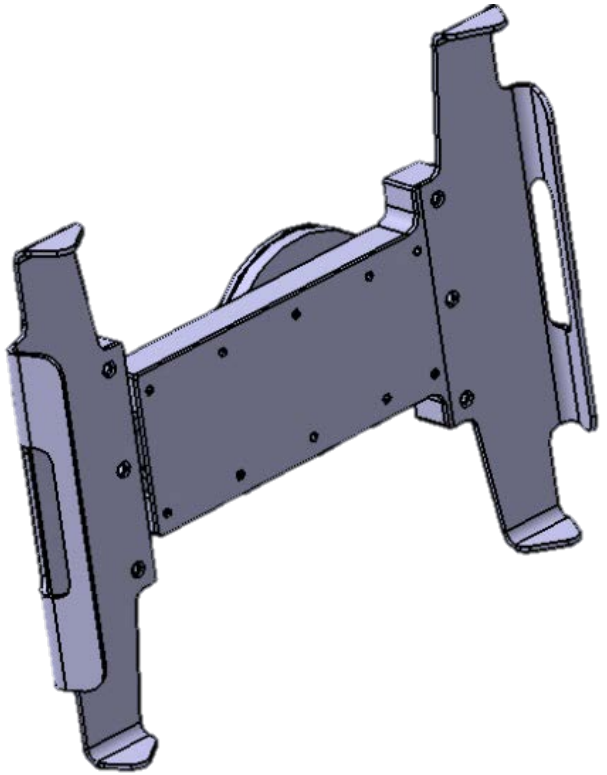
Power supply through USB plug (5Vdc/12.5 W)

Certified

<u>Modular SBs</u>
Mount and/or
Power Supply

EFB Hardware





EFB usable in all flight phases

Power Supply with Cockpit Power Outlet

Certified

EFB Hardware

ex-class 2

A320 A350

EFB Hardware

ex-class 2

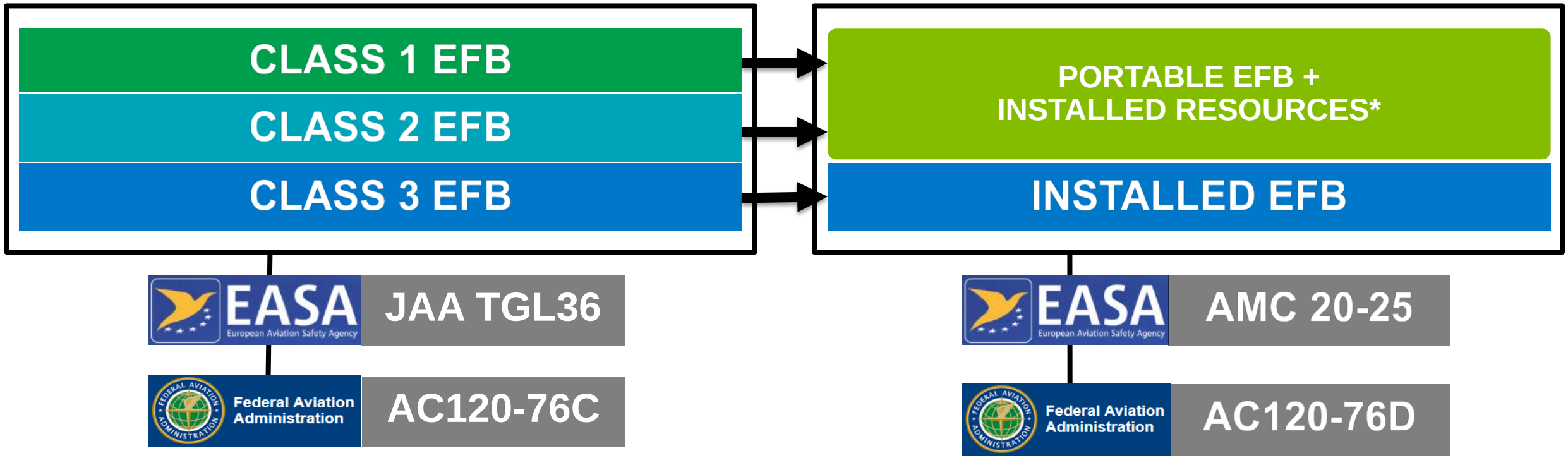
A320

EFB Hardware

ex-class 3

A380 A330

EFB Hardware



***Installed resources are optional**

AIRBUS

EFB Software

2 Platforms

EFB software

FlySmart with AIRBUS

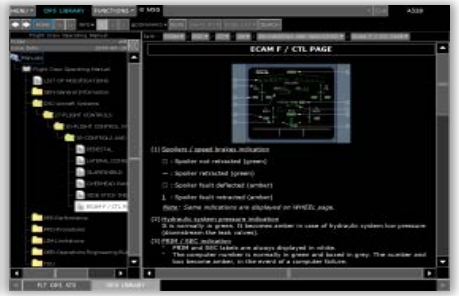
Common to all Airbus aircraft / EFB

LOADSHEET

TAKE-OFF PERF

LANDING PERF

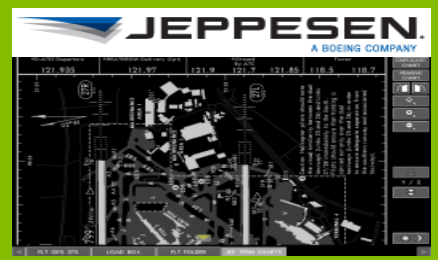
IN-FLIGHT PERF



Ops Lib BROWSER

e FLIGHT FOLDER

Optional modules

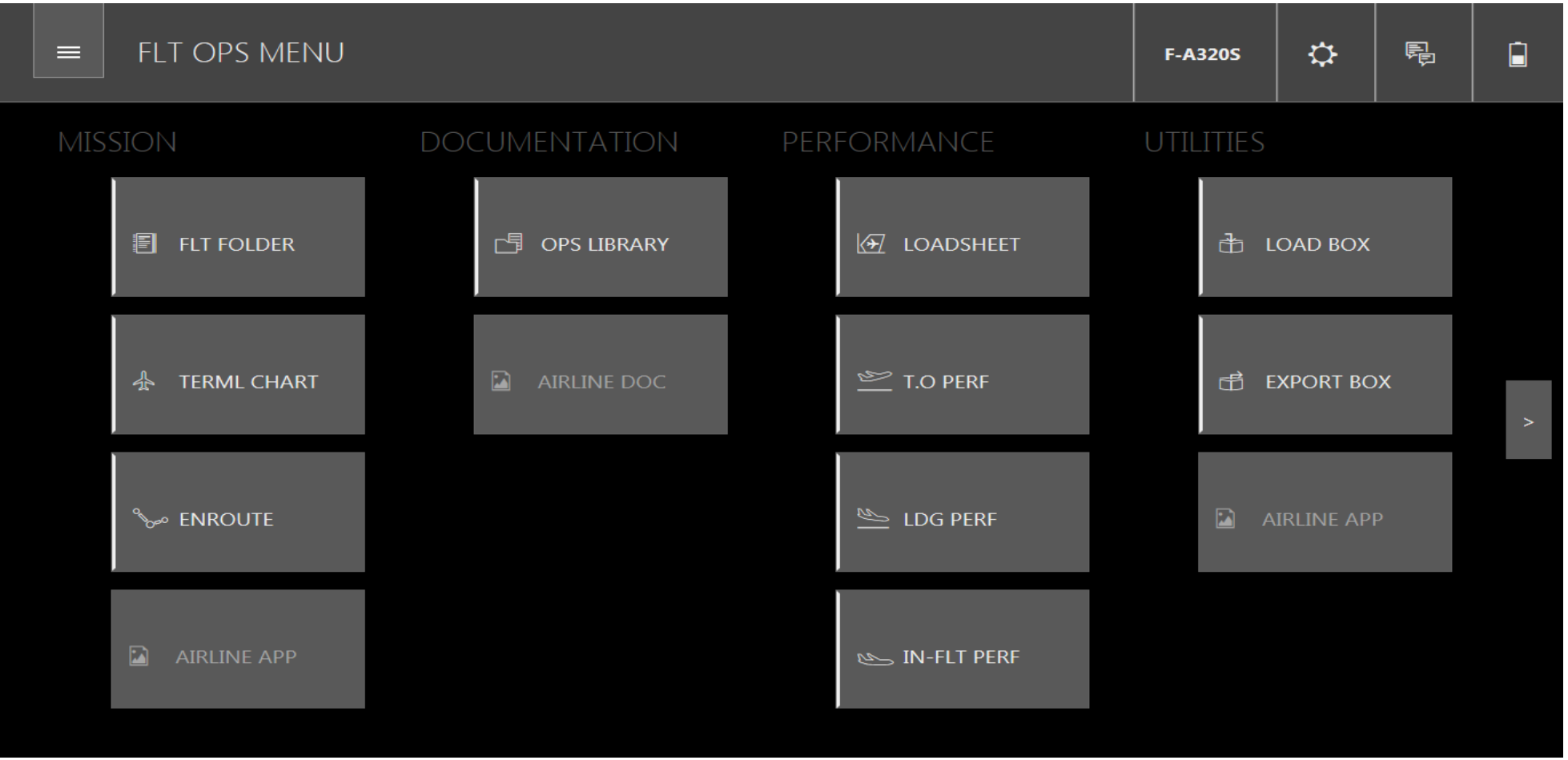


Hosting Capability (contract with third party)

AIRBUS

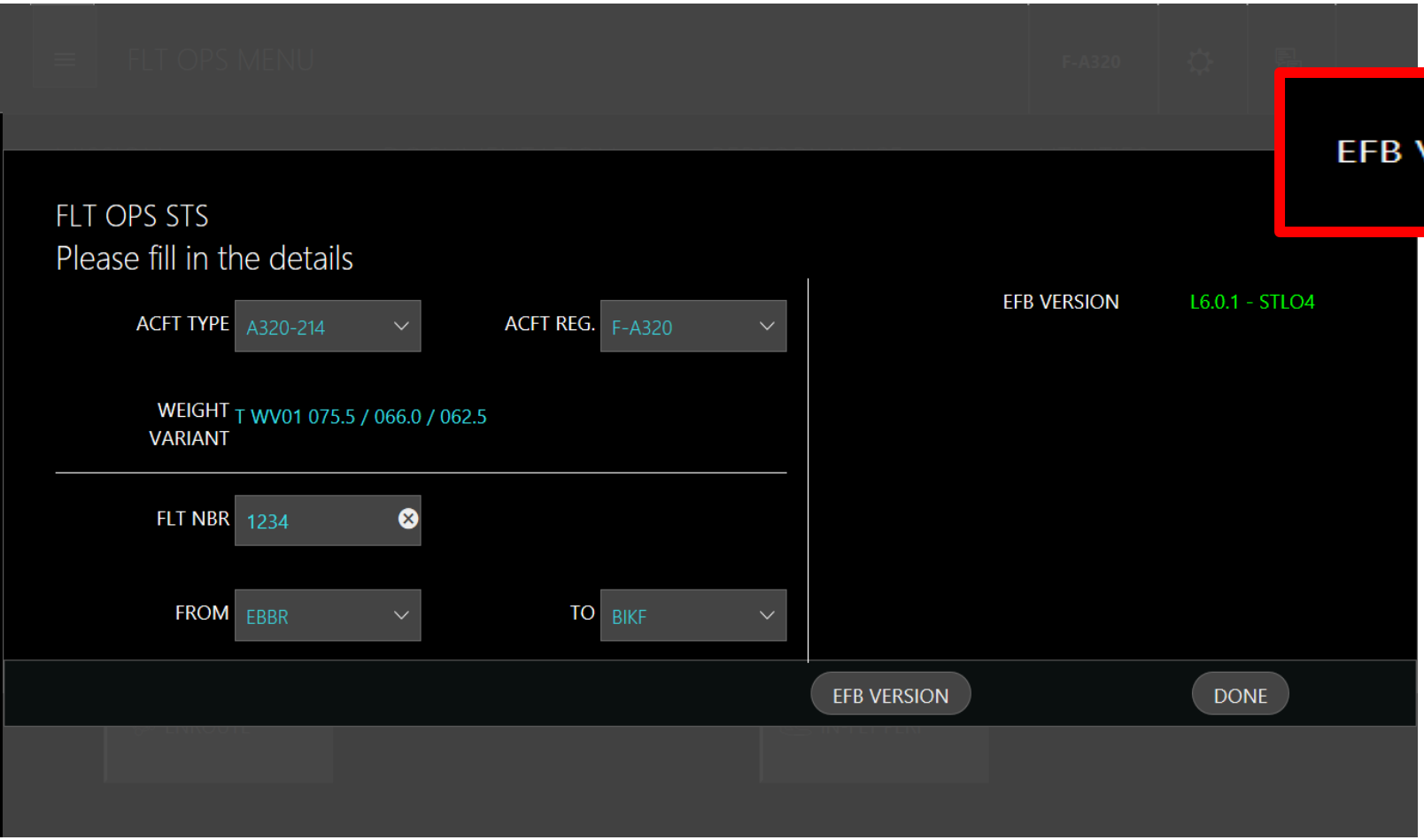
EFB main menu

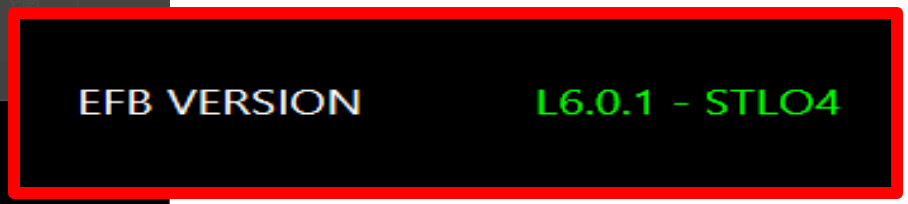
Fully customizable menu



EFB Status page

Allows checking the validity of EFB version

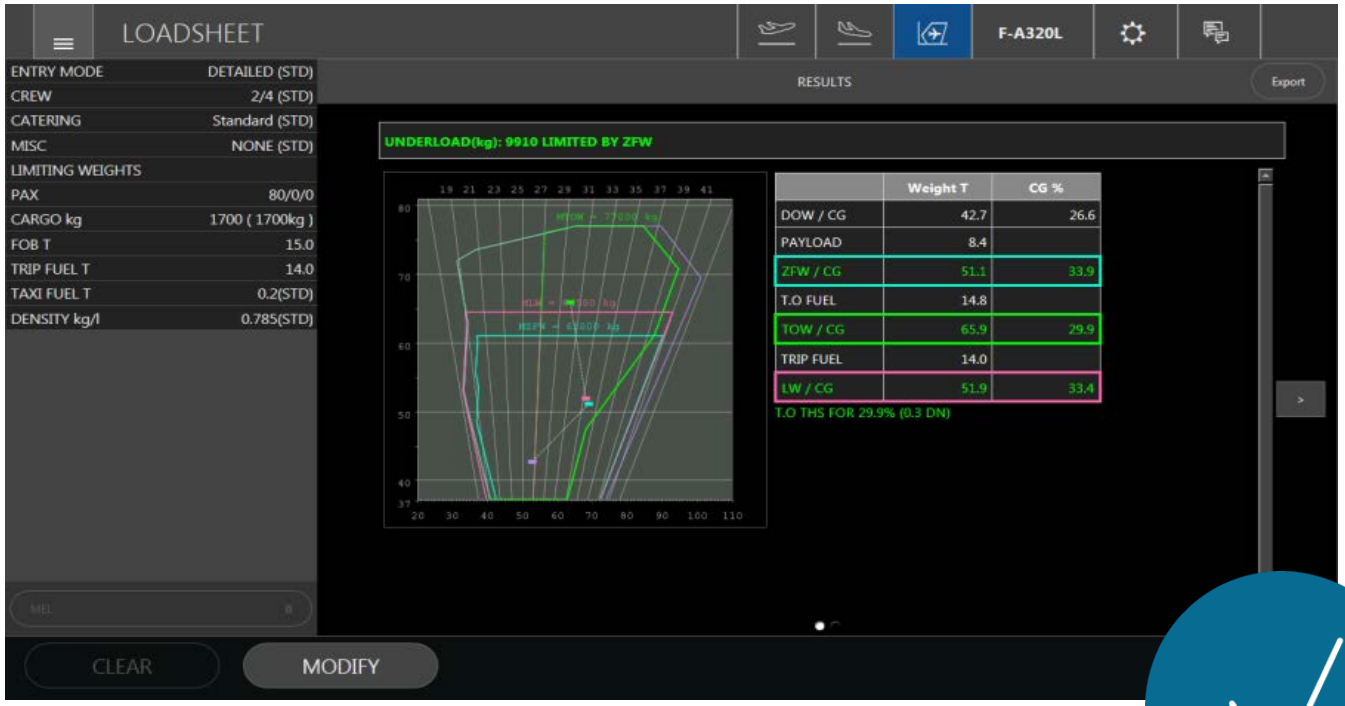




Loadsheet

Remove Trim Sheet paper processes

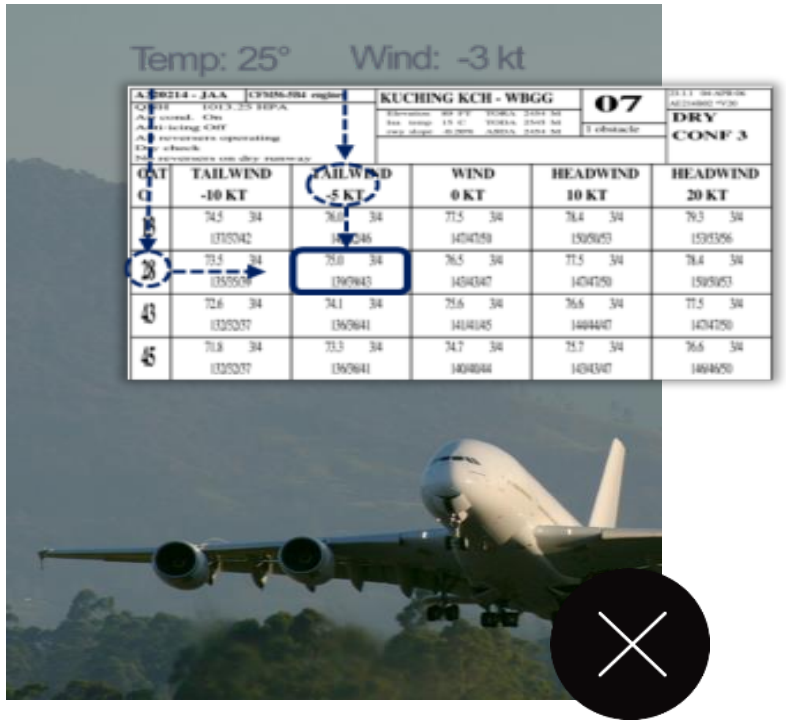
- Non accurate
- Paper processes
- Non easy LMC

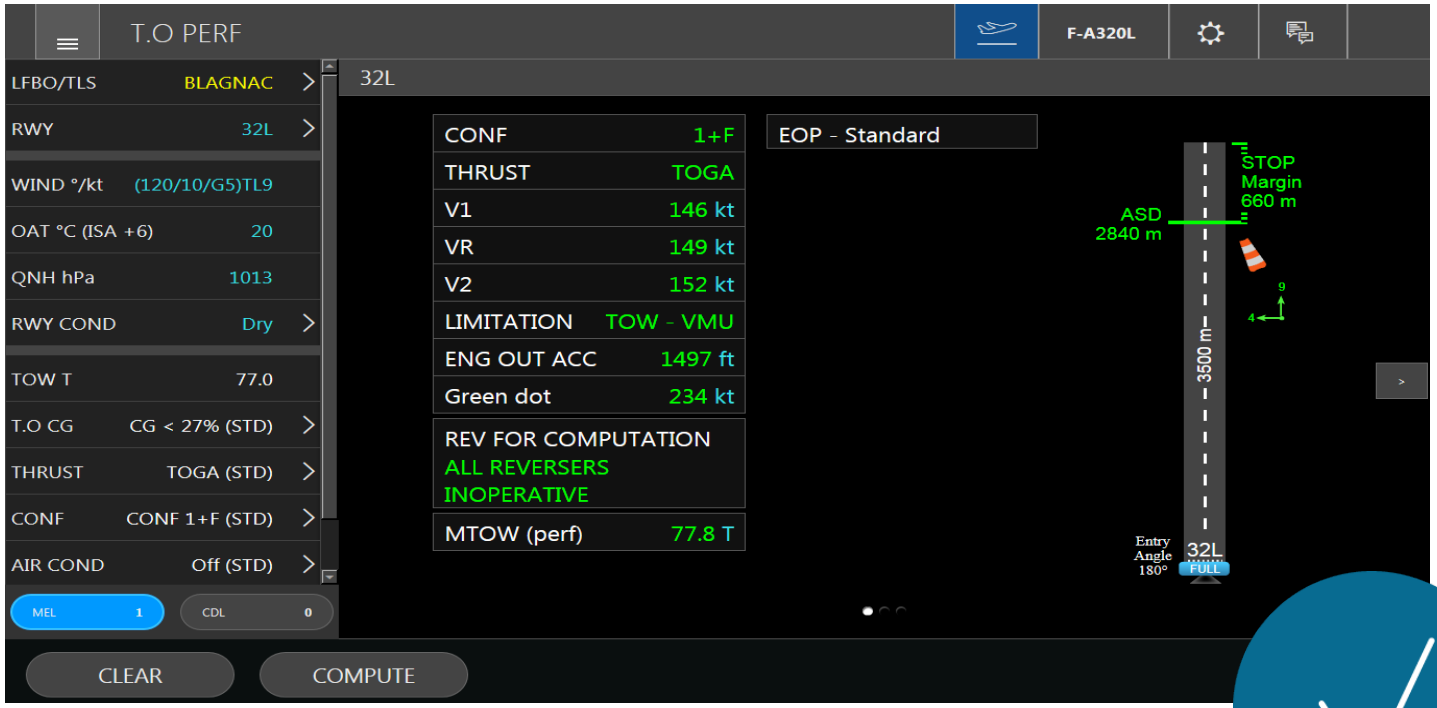


+ Accurate
+ LTS paper processes removal
+ Very easy LMC consideration

Take-off

Remove Takeoff charts paper processes





- Conservative paper corrections
  - Non optimized computations
    - Loss of revenue

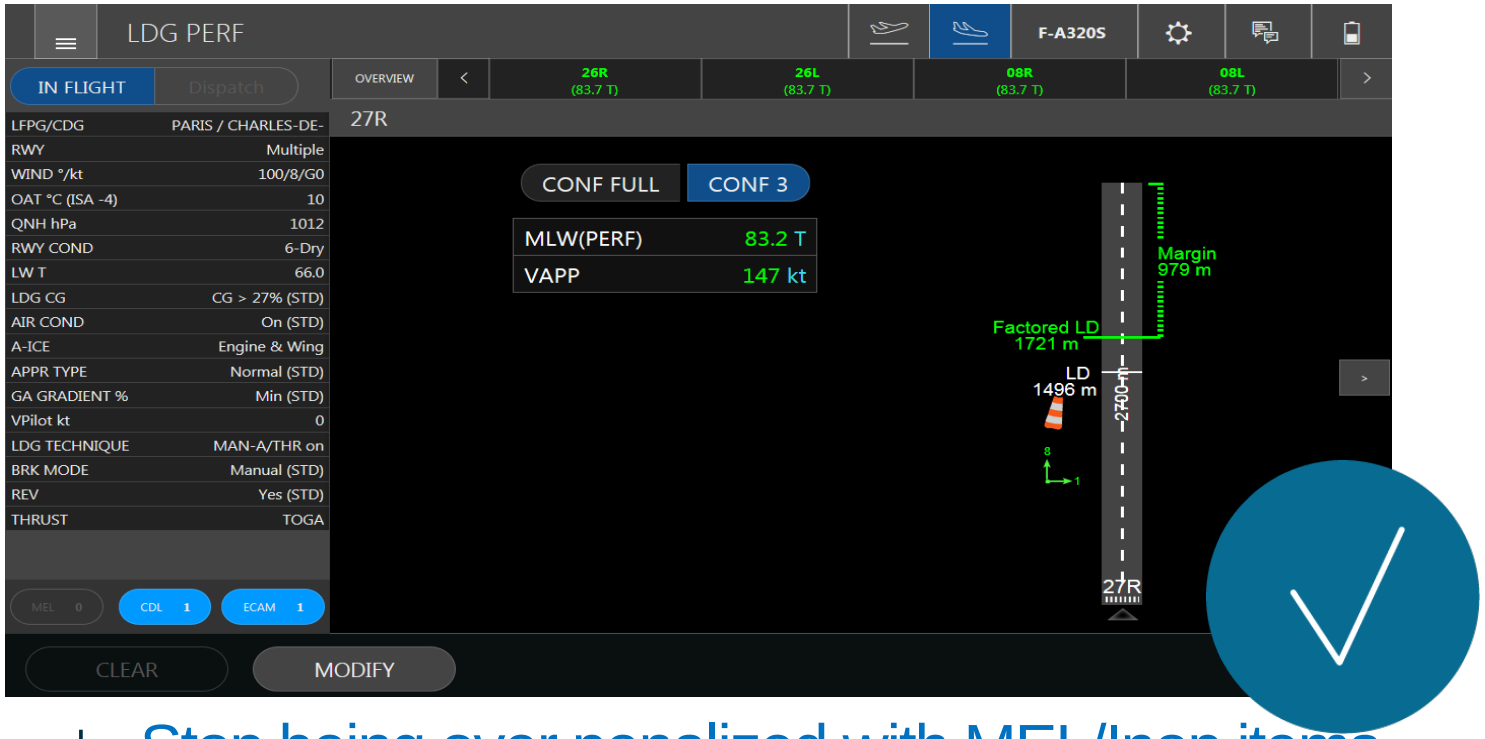
\+ 300kg to 1200kg additional payload

\+ Flex Temp increase by 3°

\+ Increase your revenues

Landing (including In flight landing distances with failures)

Remove Landing charts paper processes



- Conservative paper corrections
- May lead to be over penalized
  - Loss of revenue

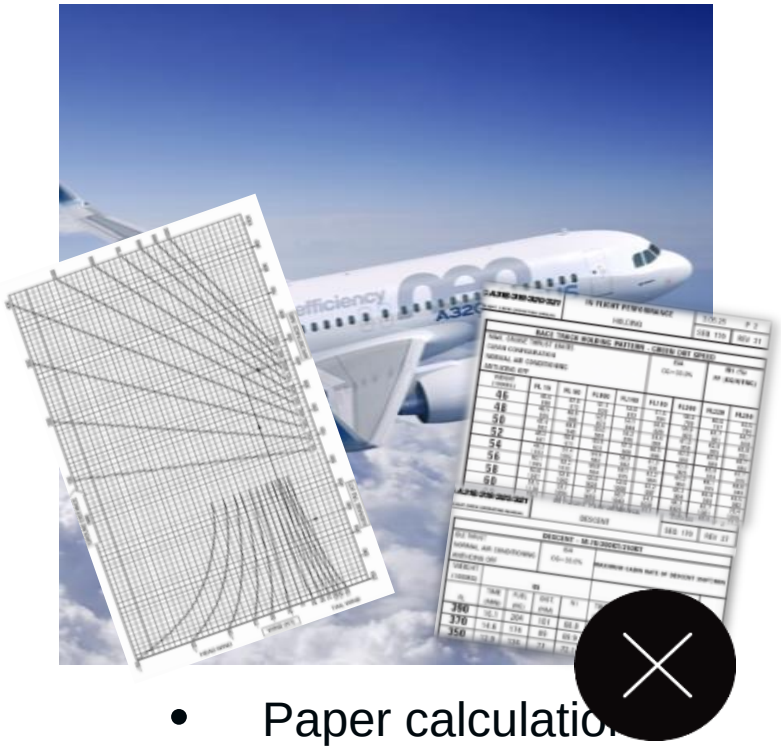
+ Stop being over penalized with MEL/Inop items

+ Dispatch / In Flight Landing perf. calculations

+ Accurate consideration of MEL/Inop item

In flight

Remove In Flight charts paper processes



- Paper calculation
- High workload: risk of errors
  - Not optimized

+ Easy and accurate computations
+ Climb, Cruise, Plan, Descent, Holding, Atmos.
+ Risk of errors and workload reduced

Ops Library Browser

FCOM. MEL. AFM. CDL. CCOM. FCTM.

+ Enhanced consultation of operational manuals provided in XML format:

3 information layers

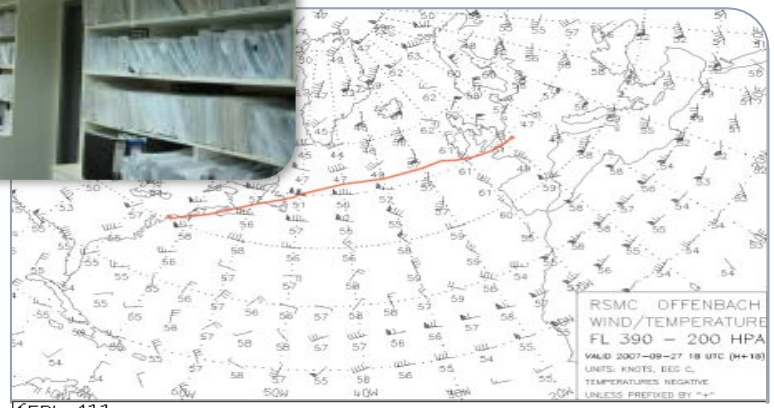
ECAM and word search

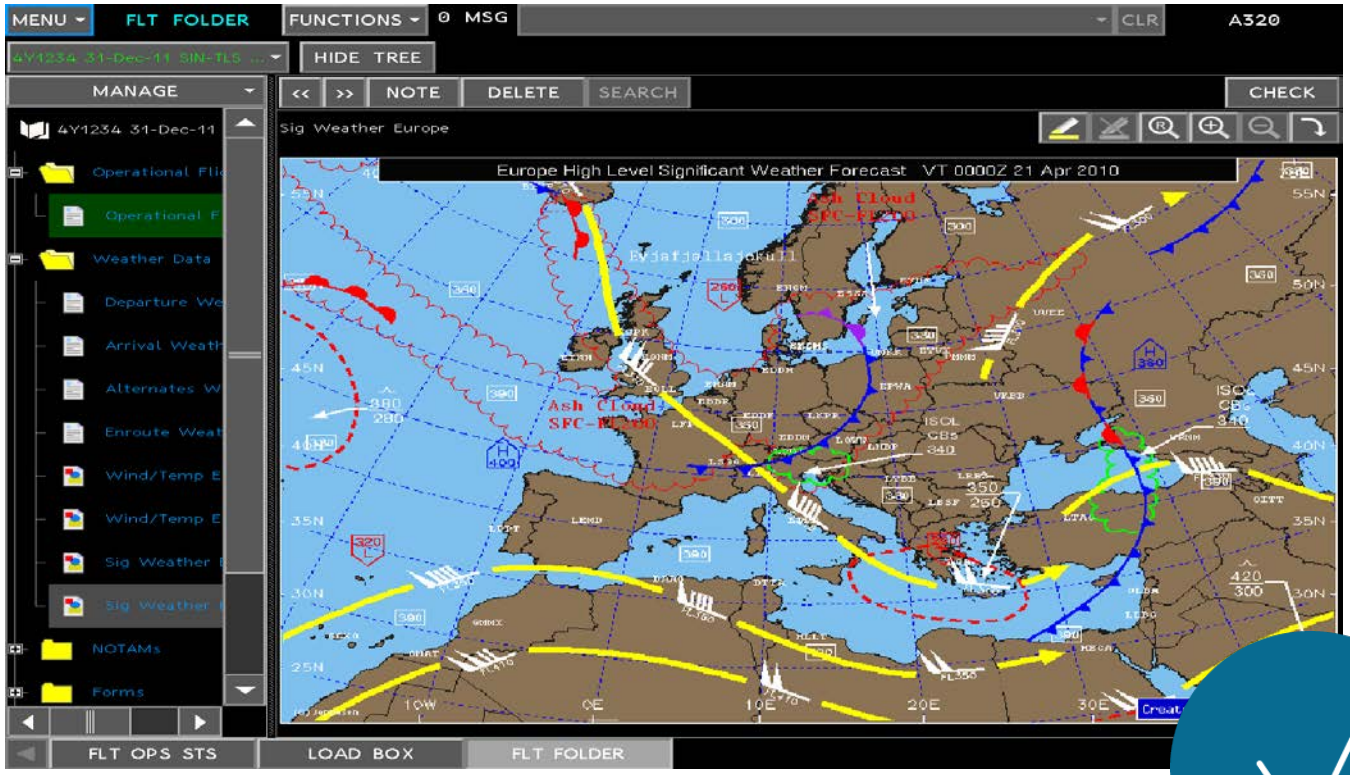
Web-like consultation

+ Links between Manuals and Performance applications

+ Optimized Flight Ops Manuals data management thanks to the association with Airbus ground tools

eFlight Folder





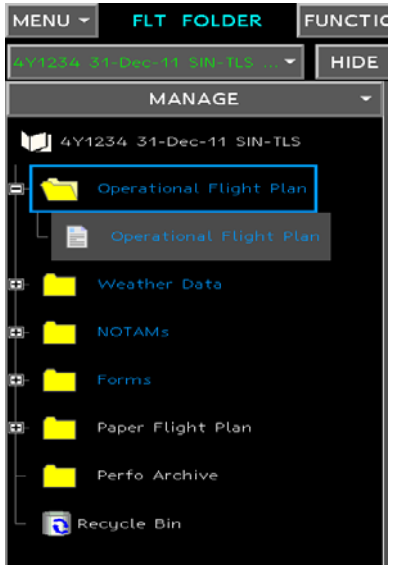
Traditional paper flight folder:

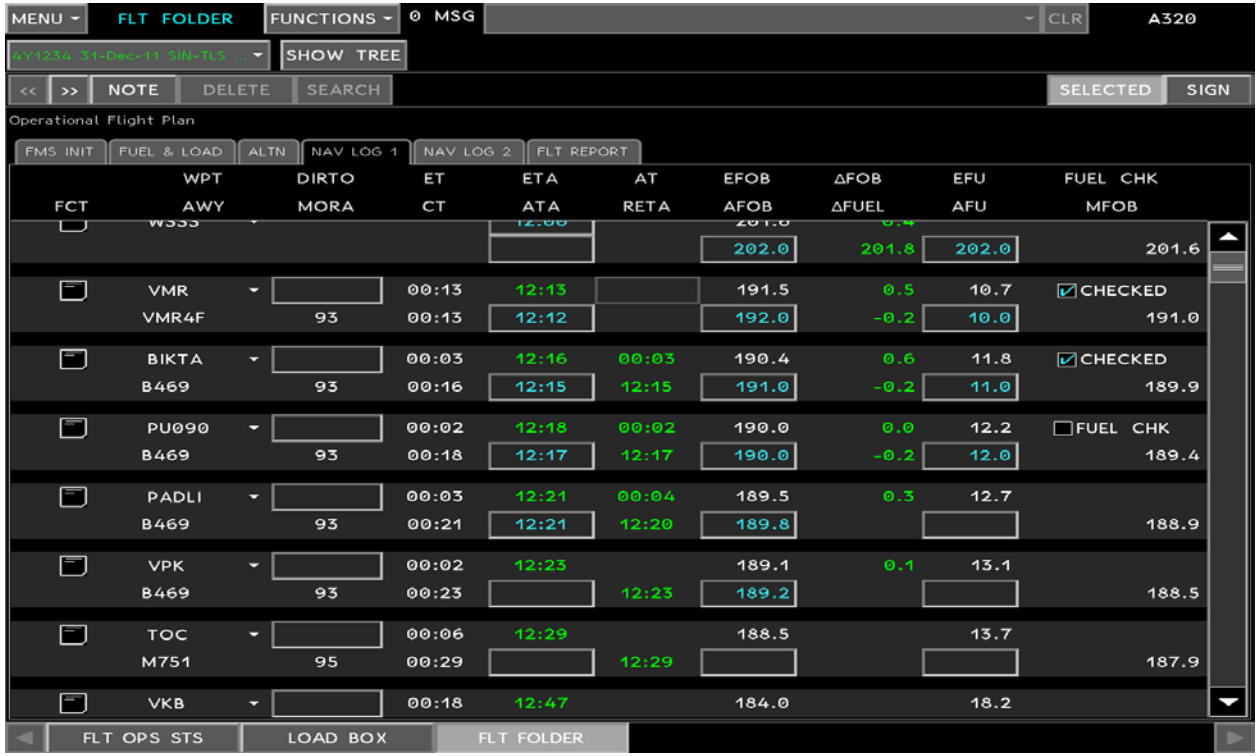
- Lot of paper to manage
- Huge and costly processes
- Non optimized operations

All flight briefing packages in electronic format: weathe
data, NOTAMS(Highlighting, Note & Edit tools),
electronic forms such as Air safety reports, Journey log
(XML customizable)

eFlight Folder

Automatically filled in with Airbus class 2 and class 3



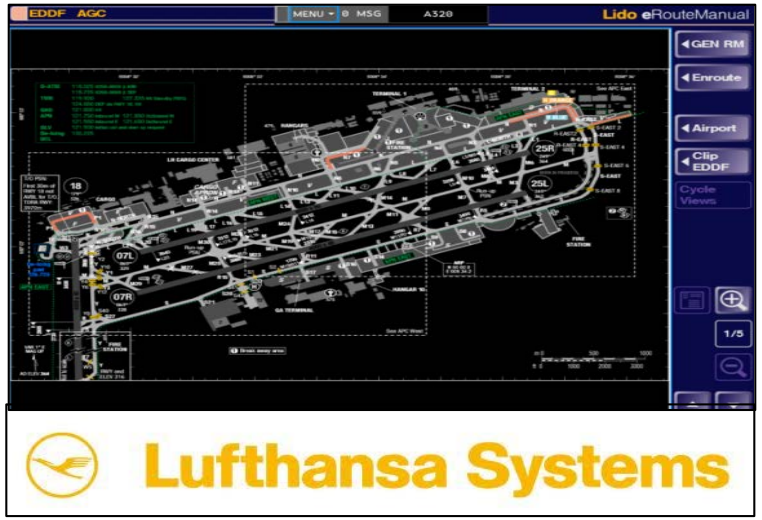


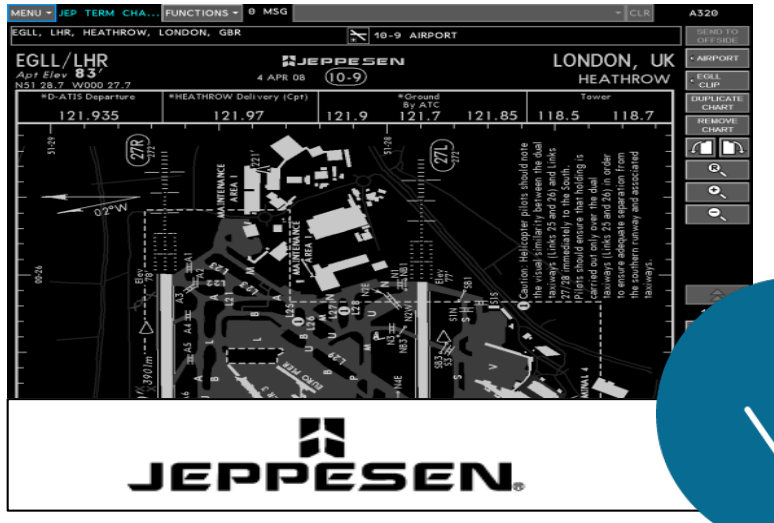
Operational Flight Plan

+ FMS init
+ Fuel & Load revision
+ Fuel/time follow-up
+ Signature
+ XML customizable

e-Charts hosting capability

Integrated in partnership with…





+ Integrated in Airbus EFB, run as others EFB soft.

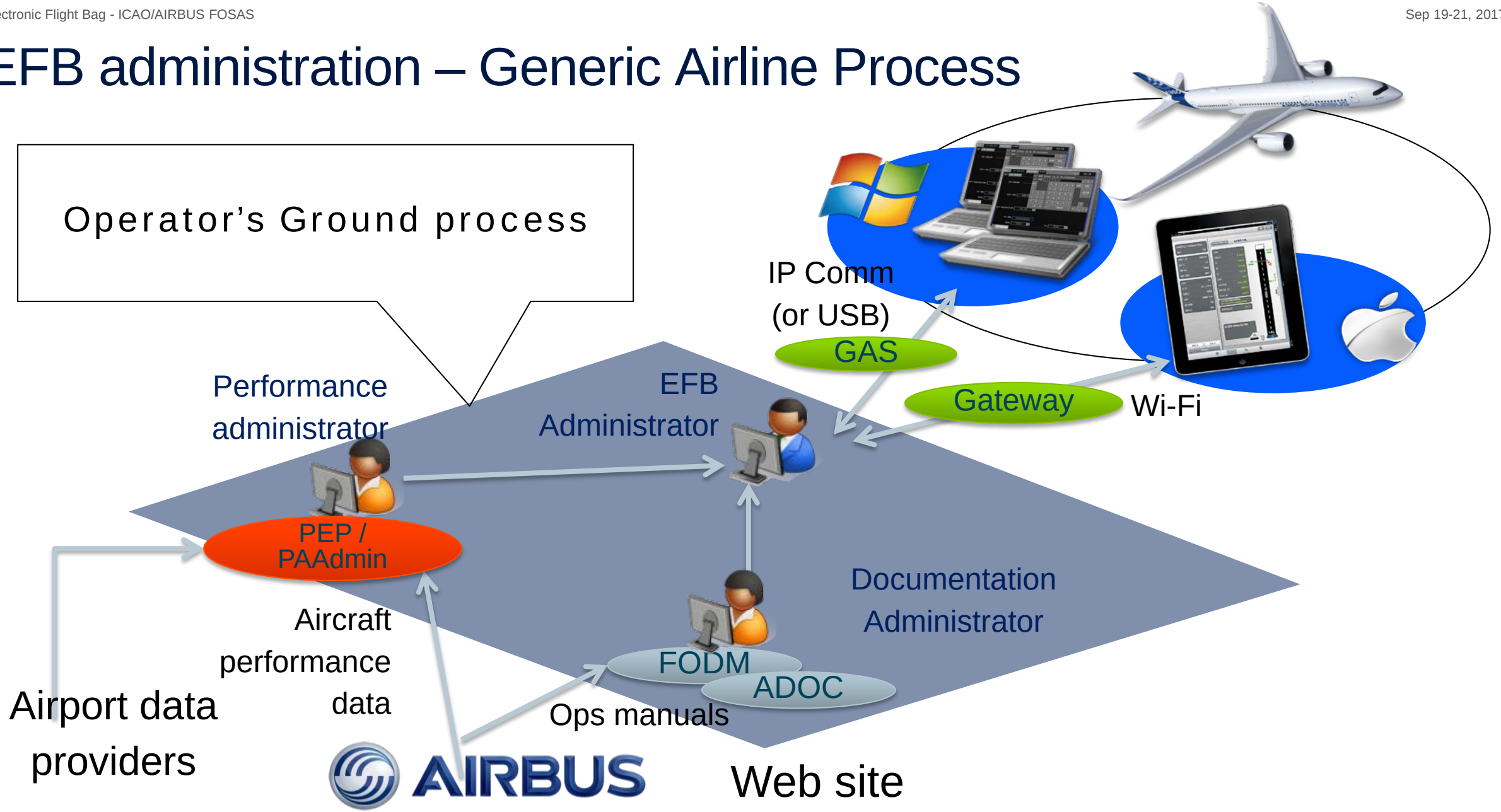
+ Quickly download & revise your charts

+ Easily zoom in & out

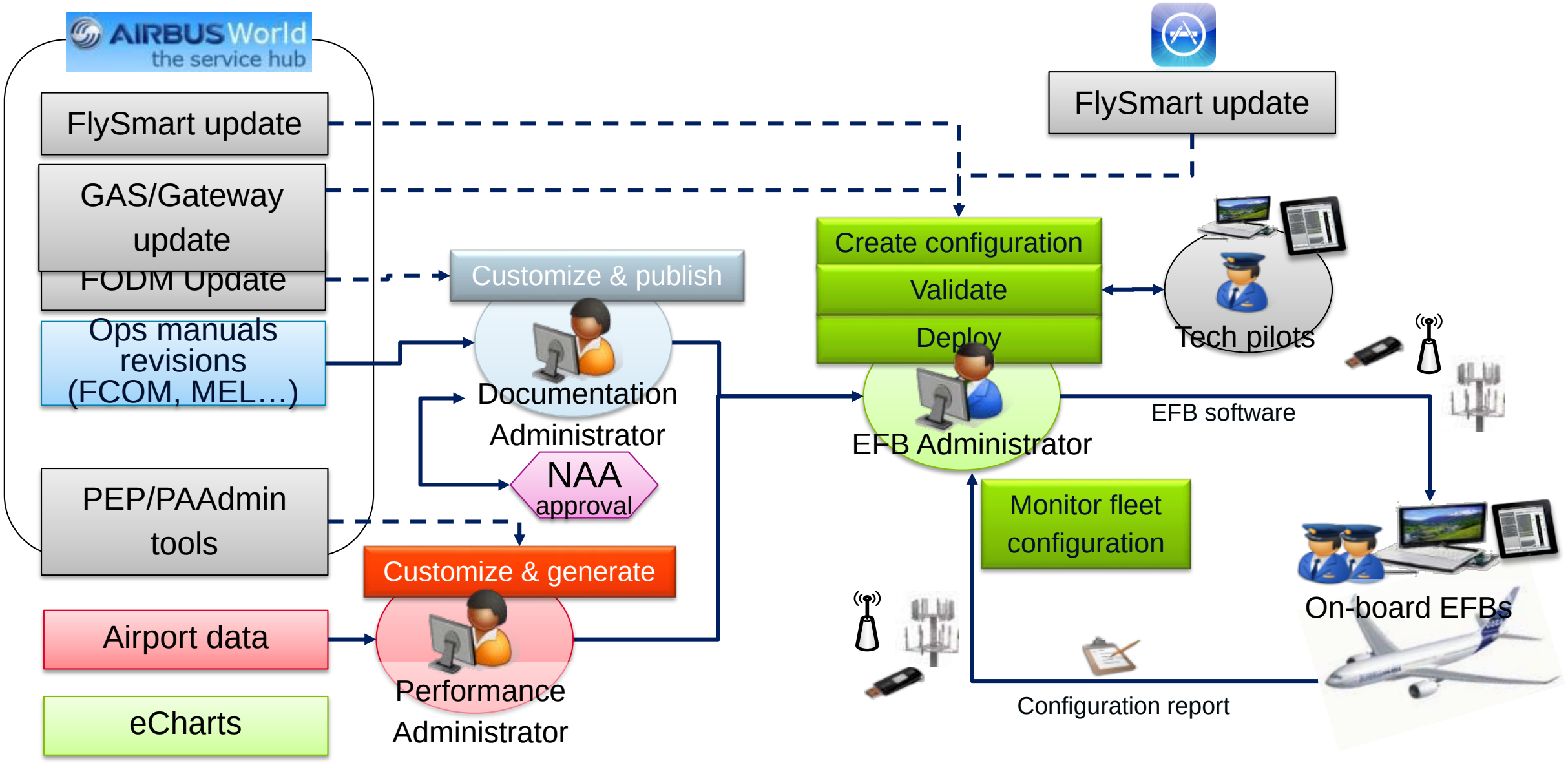
+ Remove paper charts processes

+ Reduce your costs

EFB administration – Generic Airline Process



EFB administration – Generic Airline Process



Introduction

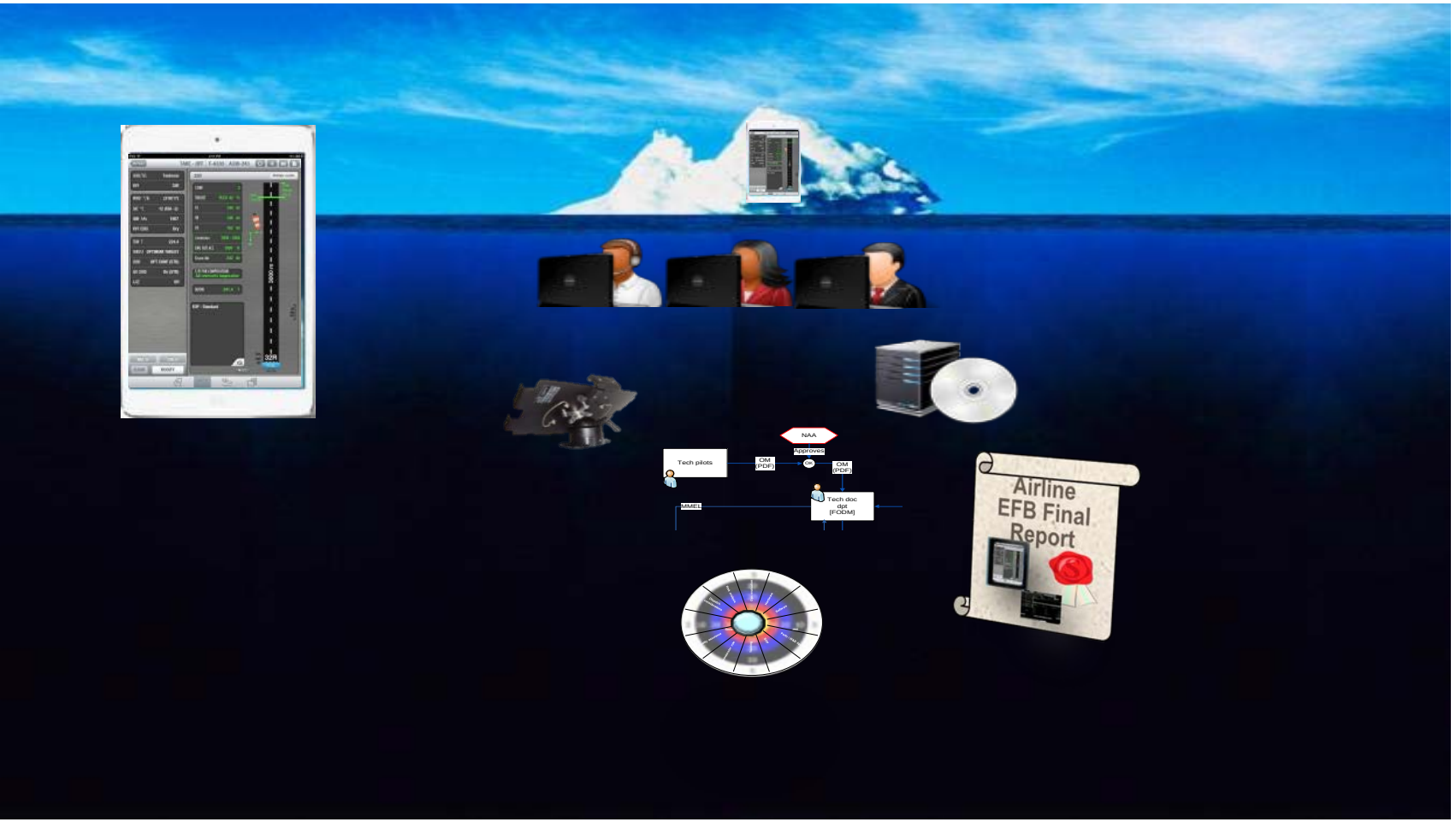
EFB, what is it ?

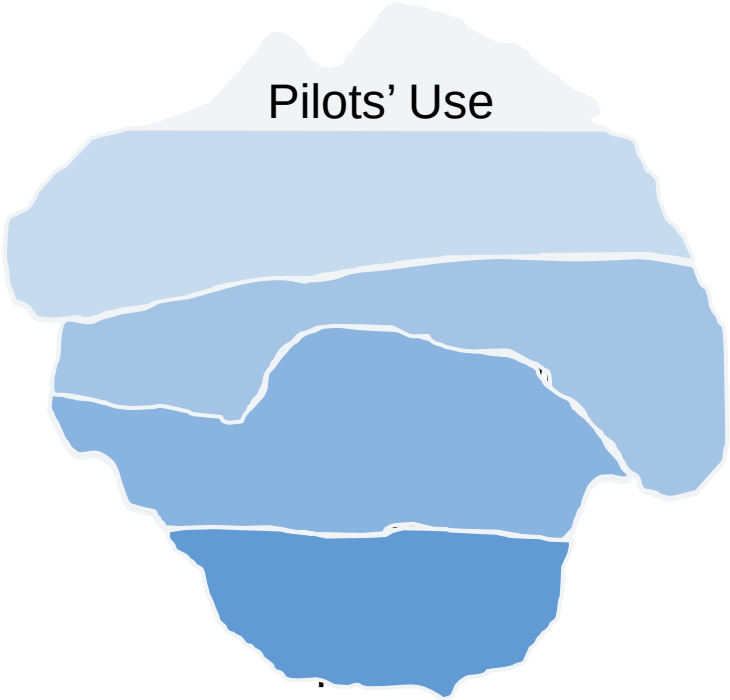
How to implement EFB ?

Next steps

AIRBUS

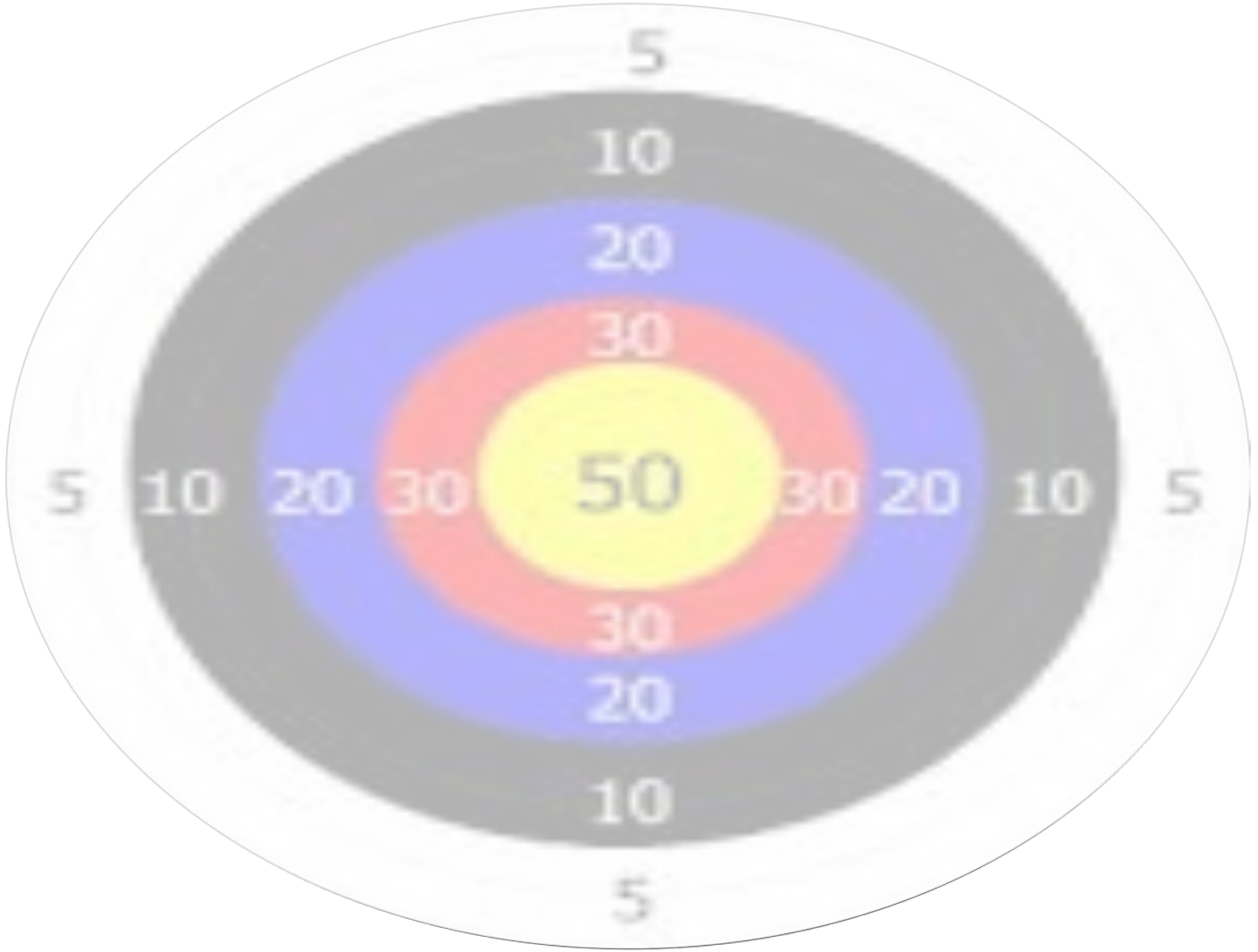
What needs to be implemented





EFB operations are governed by National Authorities

The Authorities requirements



The Authorities requirements

AMC 20-25

AC 120-76C

The Authorities requirements

Hardware

Portable? Mounting device? Mounted?

Power supply?

Electro Magnetic Interferences?

Depressurization?

Software

Type A: Certificates, Crew rest calculation

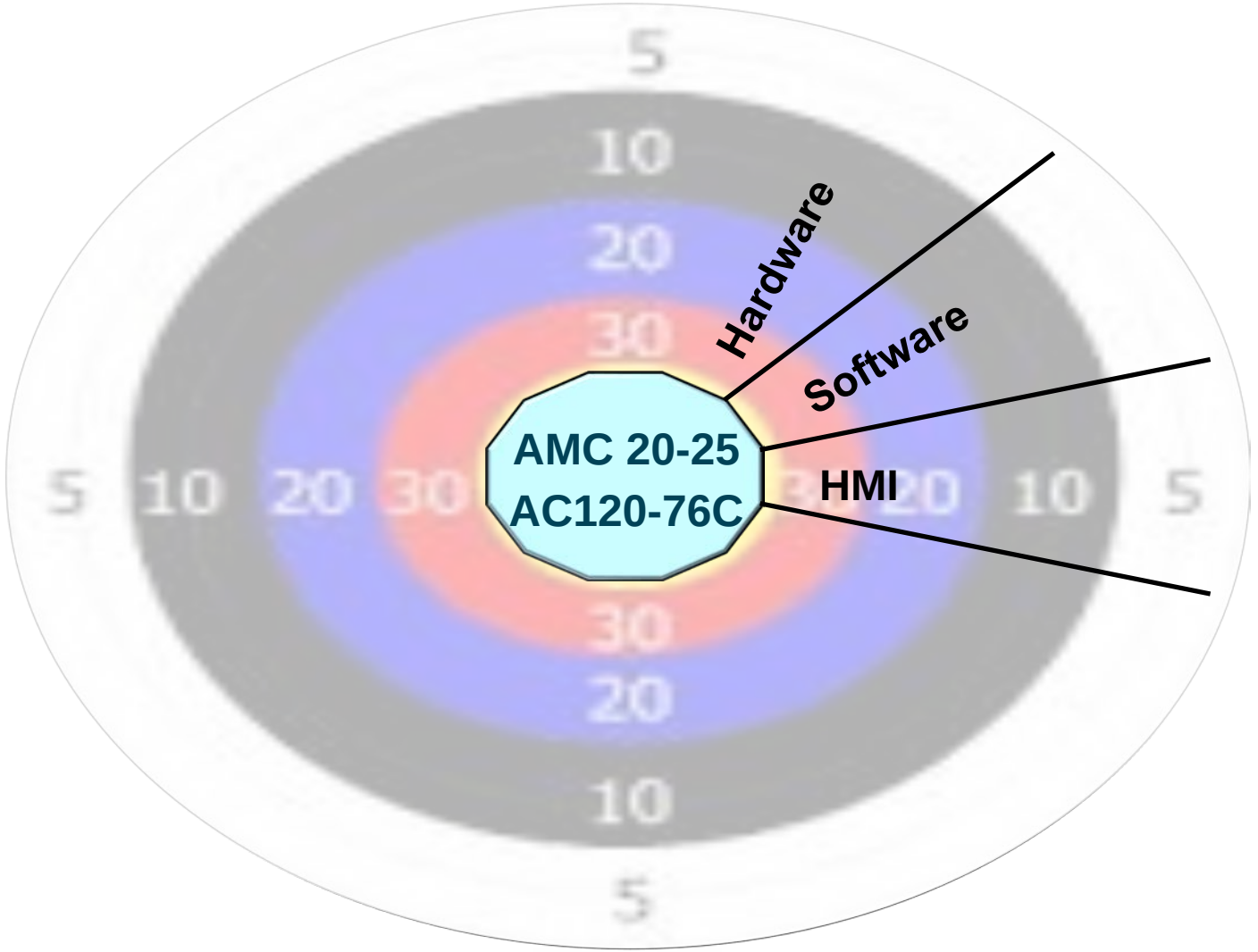
Type B: Ops Library Browser, Charts, Perfo and W&B application

HMI (Human Machine Interface)

Consistent and intuitive interface

Use of colors

System error messages…



The Authorities requirements

Perfo / W&B Apps

Separation of inputs/outputs

Display of critical assumptions

Clear of outdated data

Robust validation

SOP

Implementation of EFB use in SOP

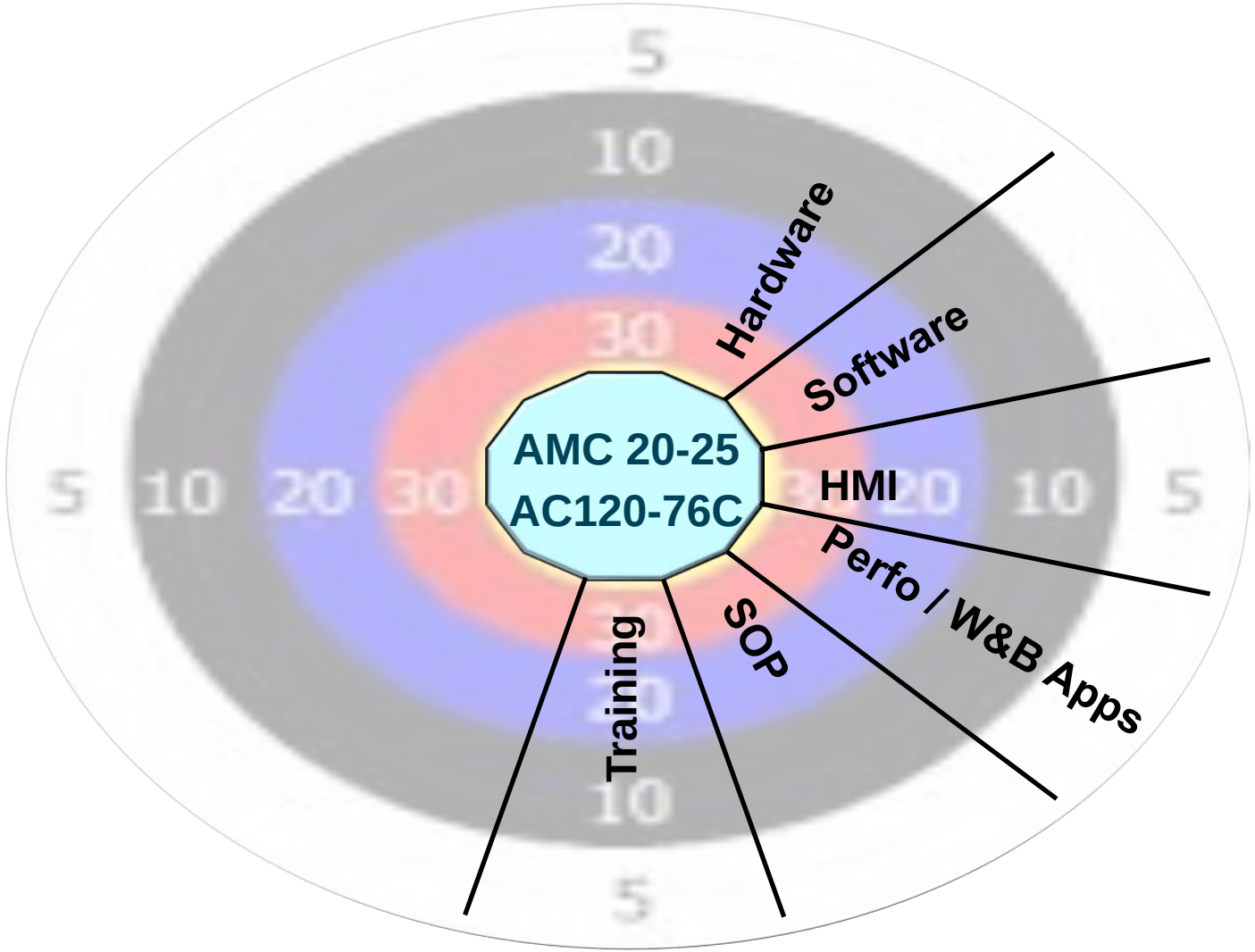
Flight crew task sharing and workload

Flight crew vs dispatch responsibility

Flight crew awareness of EFB version

Training

- On each application
- On system architecture
- On back-up procedures



A320 A330

The Authorities requirements

Perfo / W&B Apps

Separation of inputs/outputs

Display of critical assumptions

Clear of outdated data

Robust validation

SOP

Implementation of EFB use in SOP

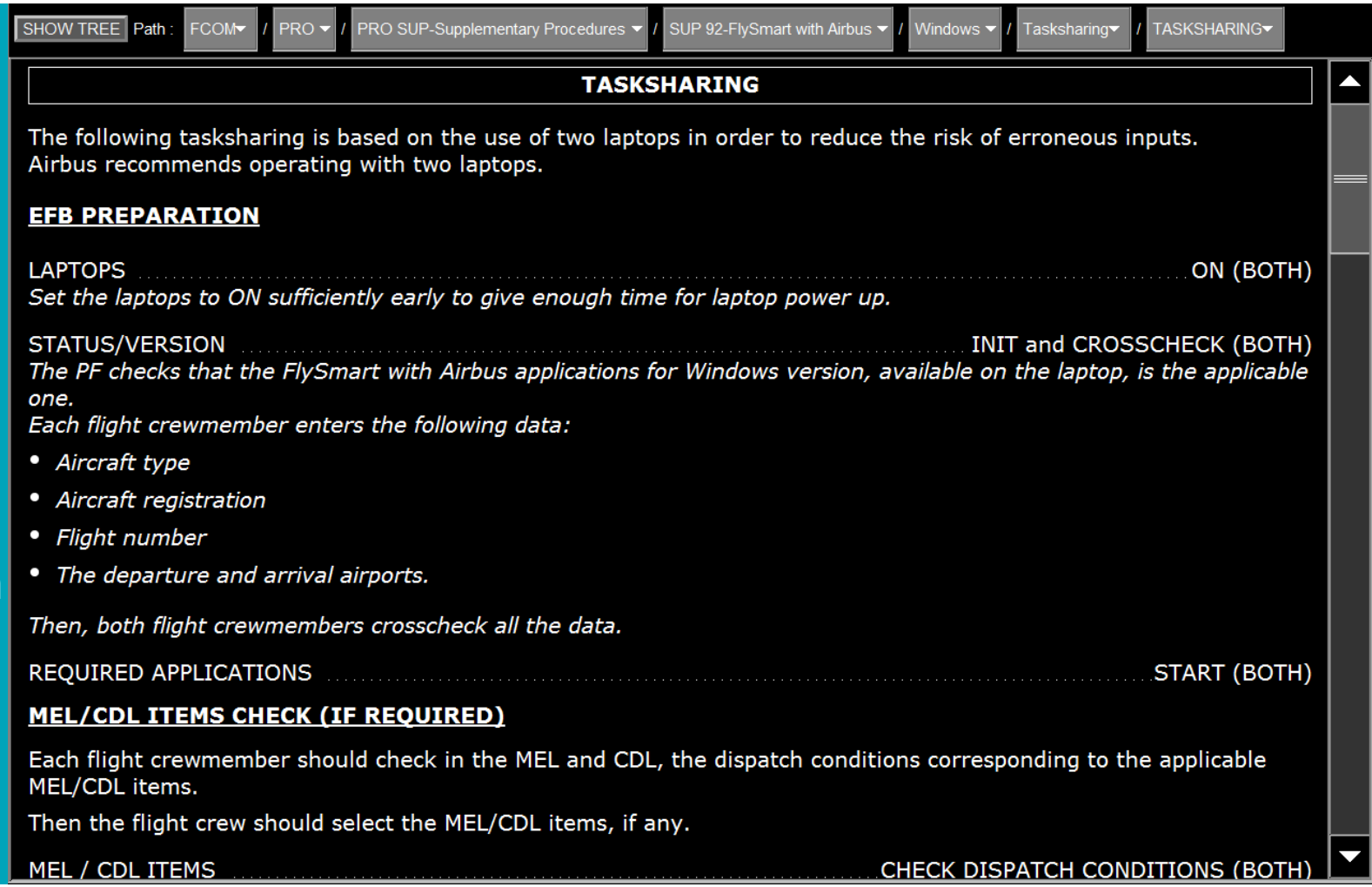
Flight crew task sharing and workload

Flight crew vs dispatch responsibility

Flight crew awareness of EFB version

Training

- On each application
- On system architecture
- On back-up procedures



SHOW TREE Path : FCOM / PRO / PRO SUP-Supplementary Procedures / SUP 92-FlySmart with Airbus / Windows / Tasksharing / TASKSHARING

TASKSHARING

The following tasksharing is based on the use of two laptops in order to reduce the risk of erroneous inputs.
Airbus recommends operating with two laptops.

EFB PREPARATION

LAPTOPS ..... ON (BOTH)
Set the laptops to ON sufficiently early to give enough time for laptop power up.

STATUS/VERSION ..... INIT and CROSSCHECK (BOTH)
The PF checks that the FlySmart with Airbus applications for Windows version, available on the laptop, is the applicable one.
Each flight crewmember enters the following data:

- *Aircraft type*
- *Aircraft registration*
- *Flight number*
- *The departure and arrival airports.*

Then, both flight crewmembers crosscheck all the data.

REQUIRED APPLICATIONS ..... START (BOTH)

MEL/CDL ITEMS CHECK (IF REQUIRED)

Each flight crewmember should check in the MEL and CDL, the dispatch conditions corresponding to the applicable MEL/CDL items.

Then the flight crew should select the MEL/CDL items, if any.

MEL / CDL ITEMS ..... CHECK DISPATCH CONDITIONS (BOTH)

A350 A380

The Authorities requirements

Perfo / W&B Apps

Separation of inputs/outputs

Display of critical assumptions

Clear of outdated data

Robust validation

SOP

Implementation of EFB use in SOP

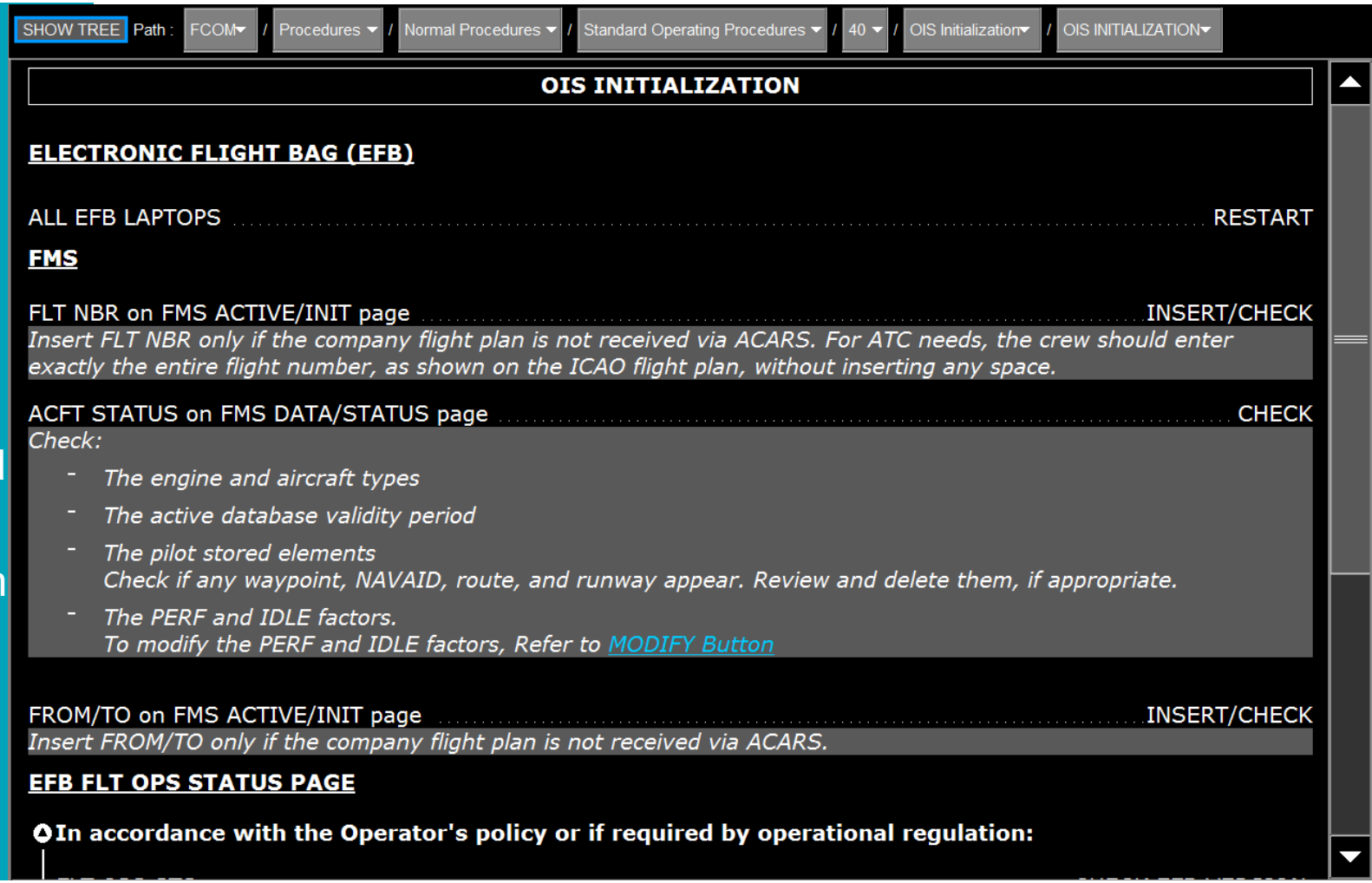
Flight crew task sharing and workload

Flight crew vs dispatch responsibility

Flight crew awareness of EFB version

Training

- On each application
- On system architecture
- On back-up procedures



The Authorities requirements

Administrator role

Responsible of the EFB system with appropriate authority

- EFB updates scheduling and dispatch
- Responsible for EFB security and integrity

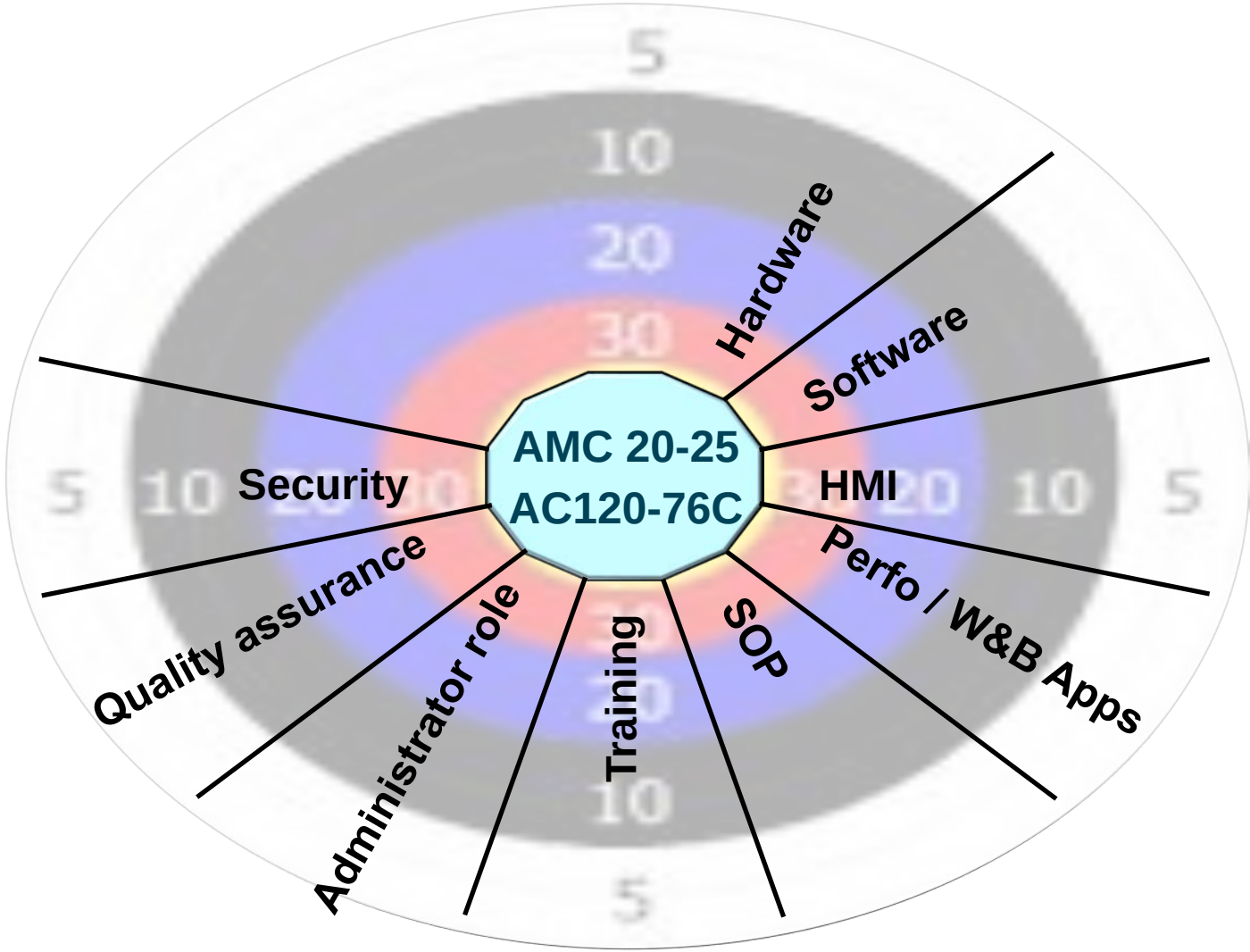
Quality assurance

EFB policy and processes

Included in Ops Manual or EFB Manual

Security

- At software level
- At hardware level



The Authorities requirements

Dispatch considerations

Definition of crew actions in the event of any EFB system deficiency.

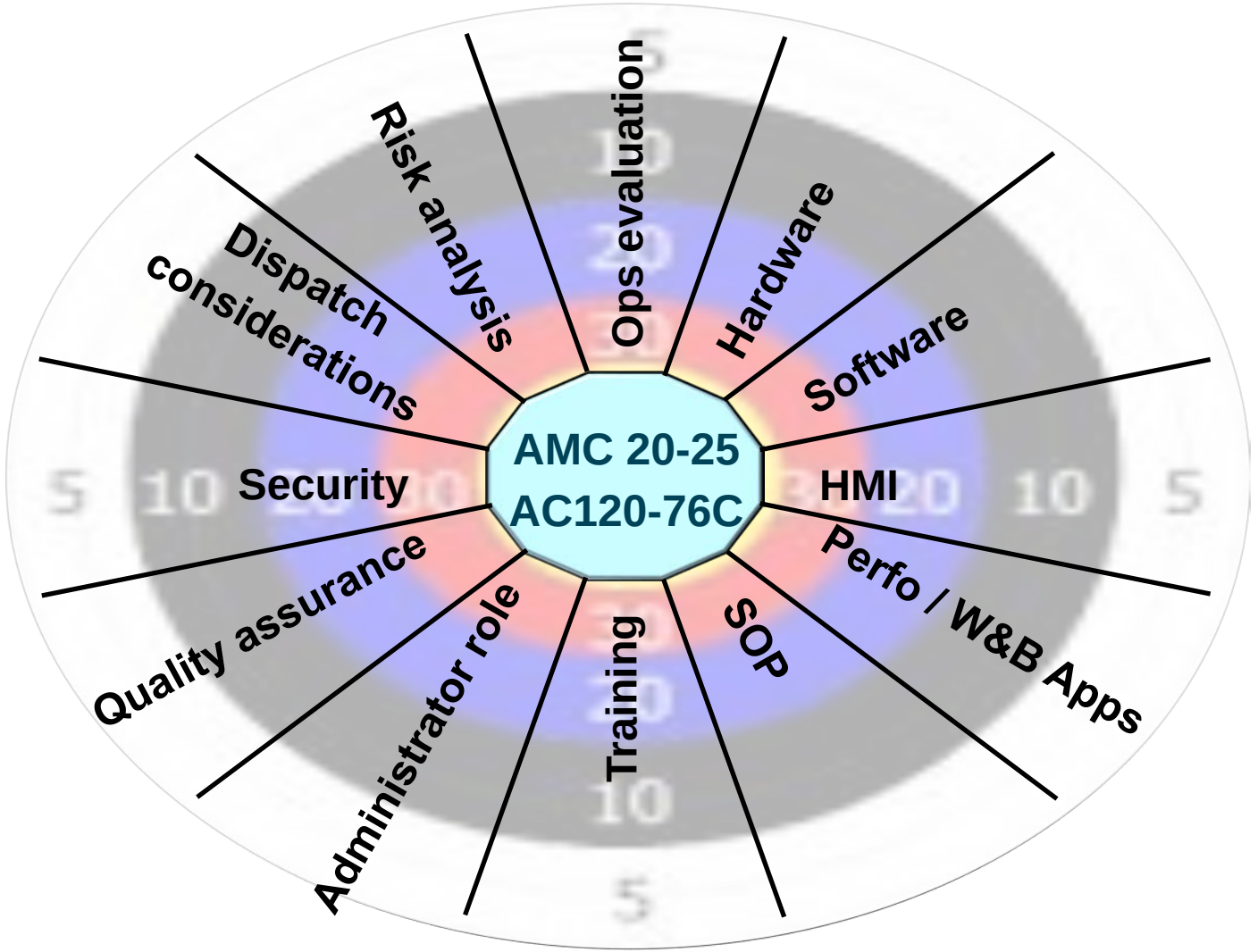
MEL to be updated

Risk analysis

Evaluation of the risks associated with the use o each EFB function

- Identification of potential losses
- Analysis of operational consequences
- Mitigating measures

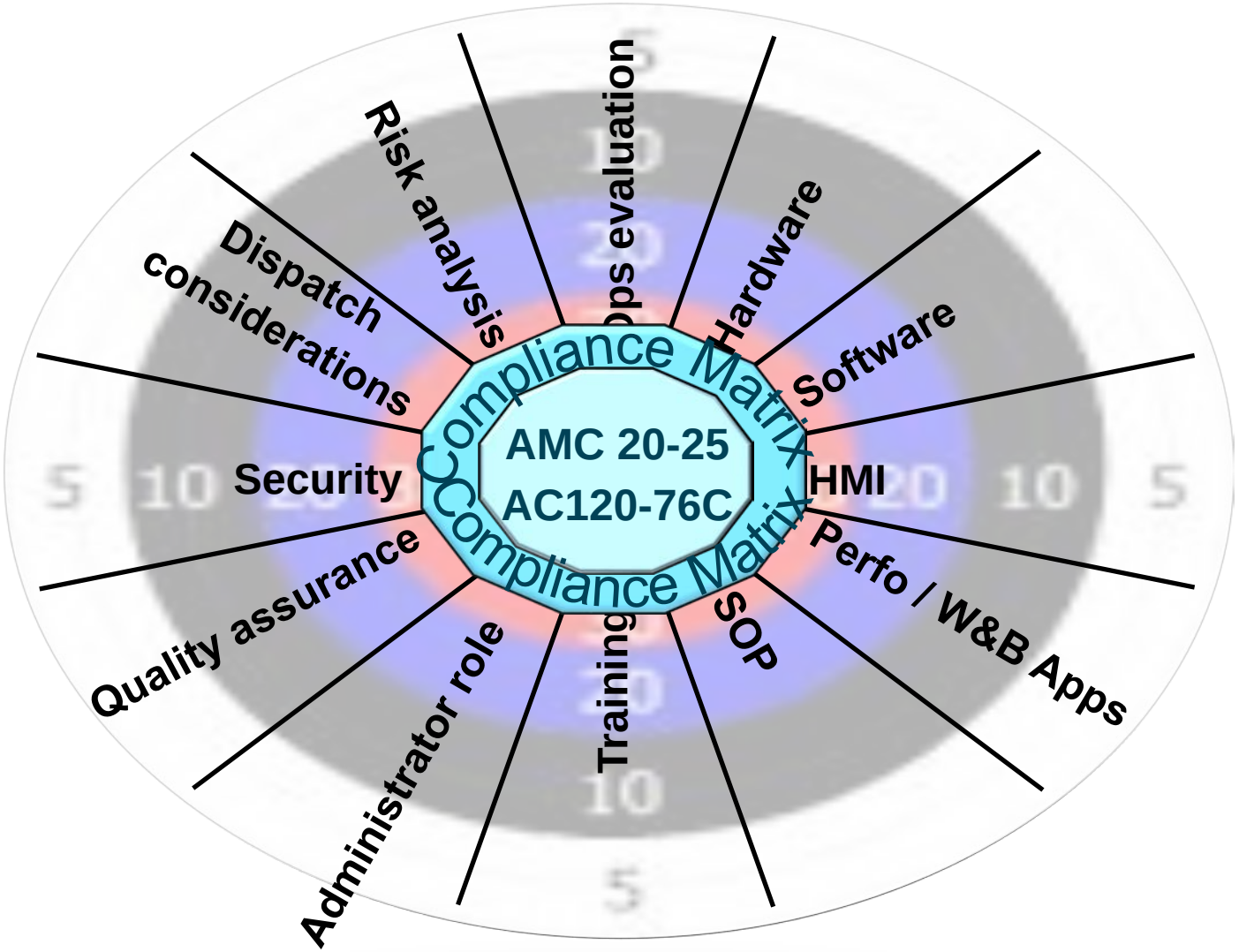
Ops evaluation



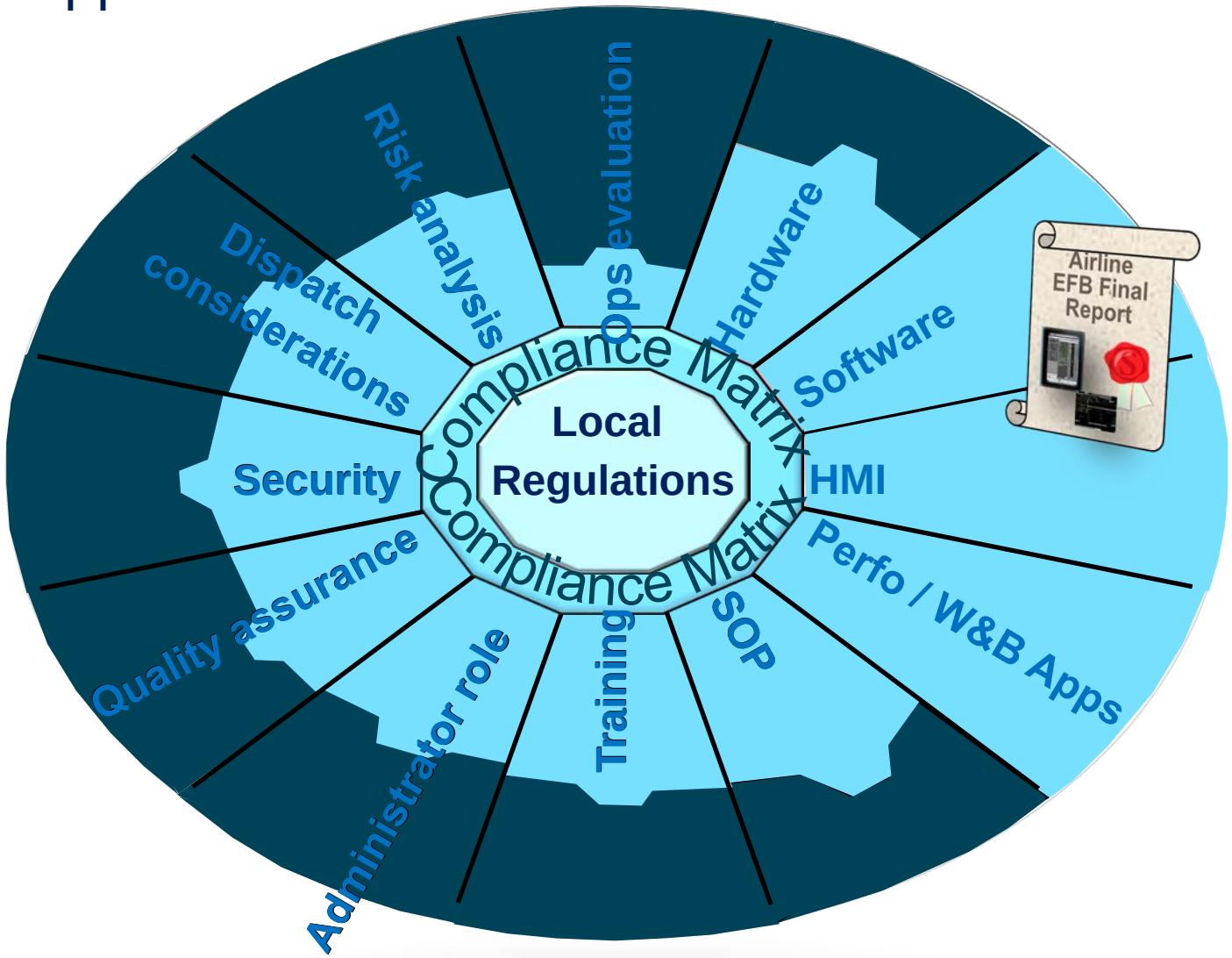
Airbus support for Operation Approval

- Generic Compliance Dossier
= Set of documents agreed with EASA and FAA
- Compliance Matrix

➢ Delivered to all our FlySmart *with Airbus* Customers



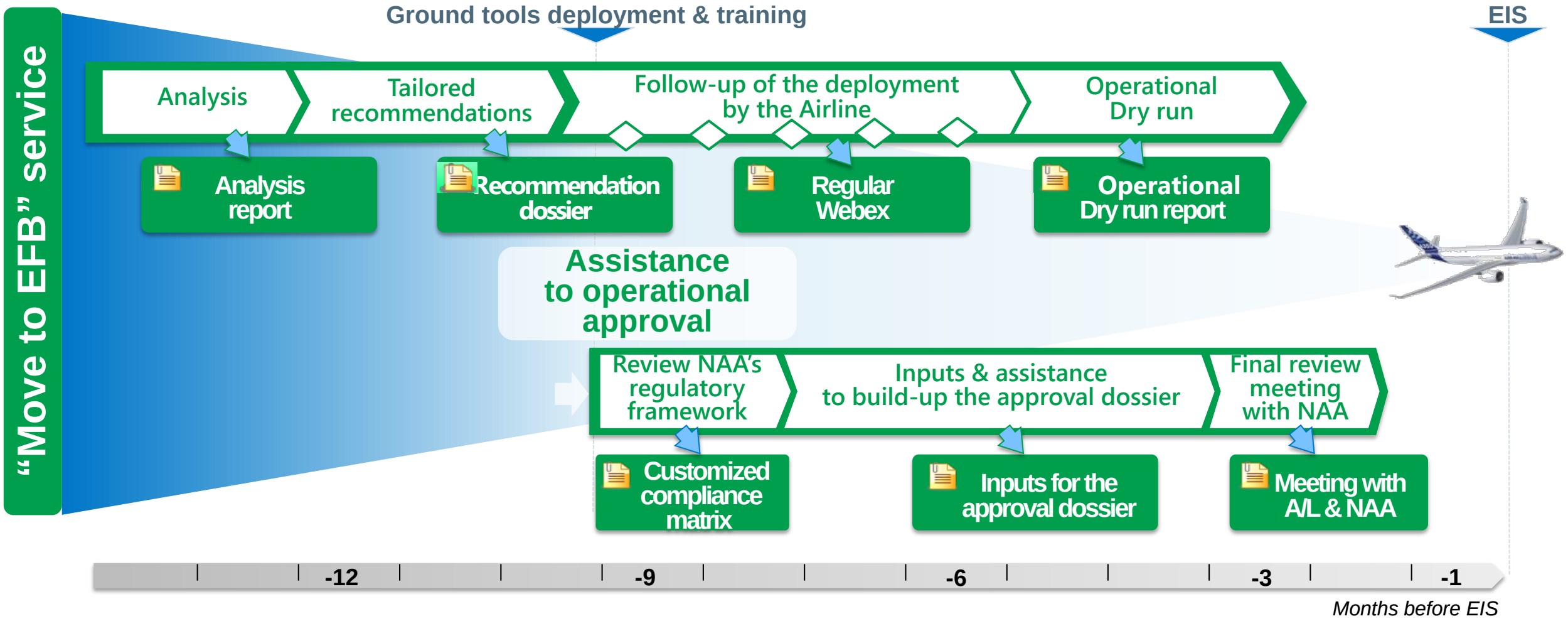
Airbus support and airline's effort for approval



Airbus material
Airline adaptation

AIRBUS

EFB Ops Approval – Project Roadmap



AIRBUS

Introduction

EFB, what is it ?

How to implement EFB ?

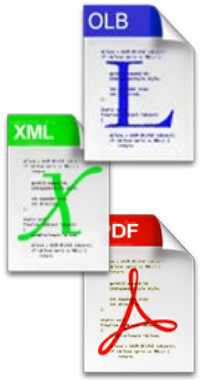
Next steps

AIRBUS

EFB / Non-EFB Customers

AIRBUSWorld

FCOM & QRH



WITH

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT - IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 55000 KG
PACK FLOW HI
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

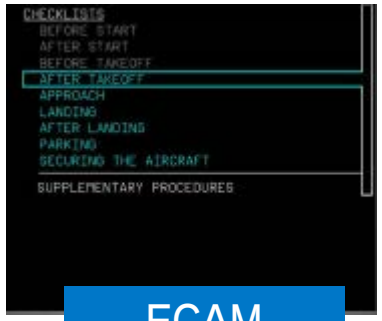
AIR DIST. (NM)	FLIGHT LEVEL 100	150	200	220	240	250	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL200 FL220	FL240 FL250
200	1357 0.47	1198 0.45	1075 0.42	1030 0.42	997 0.41	974 0.41	10	8	8
300	2031 1.08	1828 1.05	1669 1.00	1609 1.00	1571 0.58	1544 0.58	17	16	16
400	2701 1.29	2454 1.24	2259 1.18	2185 1.17	2140 1.15	2110 1.15	24	23	25
500	3366 1.50	3075 1.44	2845 1.36	2756 1.35	2704 1.33	2673 1.32	31	30	33
600	4026 2.11	3691 2.04	3427 1.54	3323 1.53	3262 1.51	3234 1.49	38	38	41

PERFORMANCE TABLES

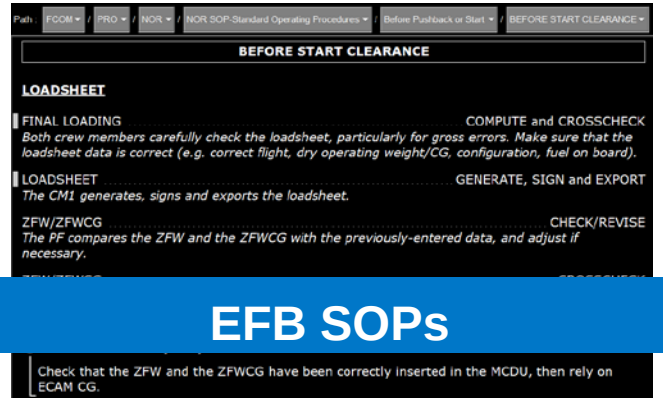
AIRBUS

Today’s Flight Operations – A380 & A350

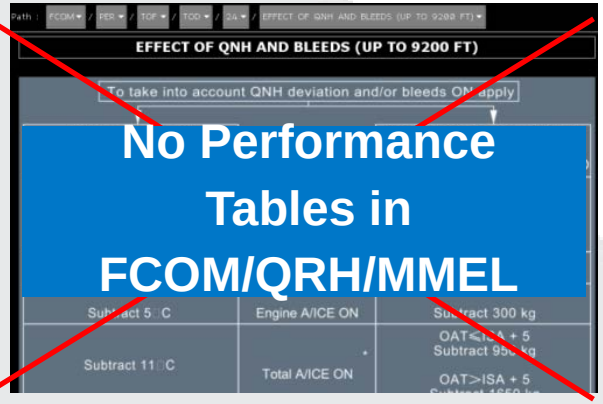
Limited Paper QRH (SMOKE & EMER EVAC)



ECAM



EFB SOPs

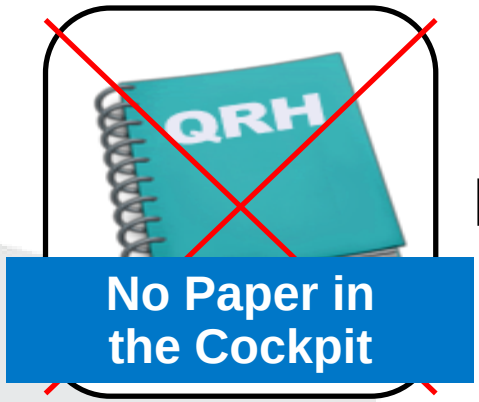


No Performance Tables in FCOM/QRH/MMEL

Optimized Performance Computations

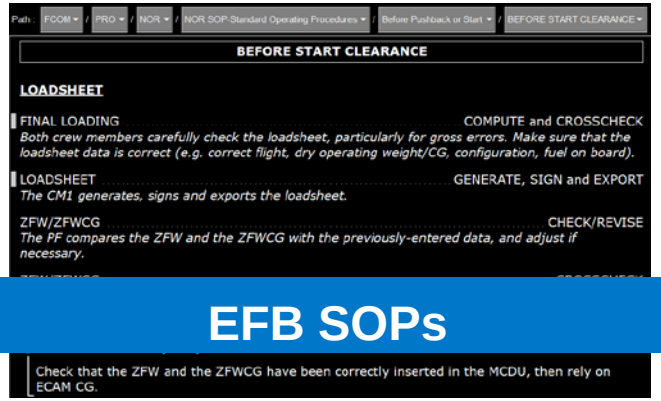
TAKEOFF | LANDING | LOADSHEET | IN FLIGHT

Tomorrow’s Fight Operations – A320, A330 and A340

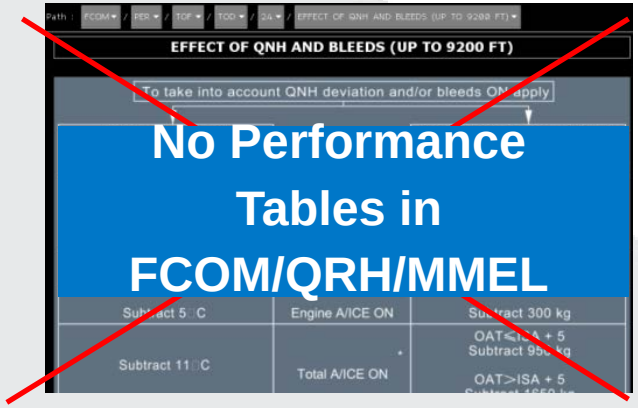


No Paper in the Cockpit

eQRH



EFB SOPs



No Performance Tables in FCOM/QRH/MMEL

Optimized Performance Computations

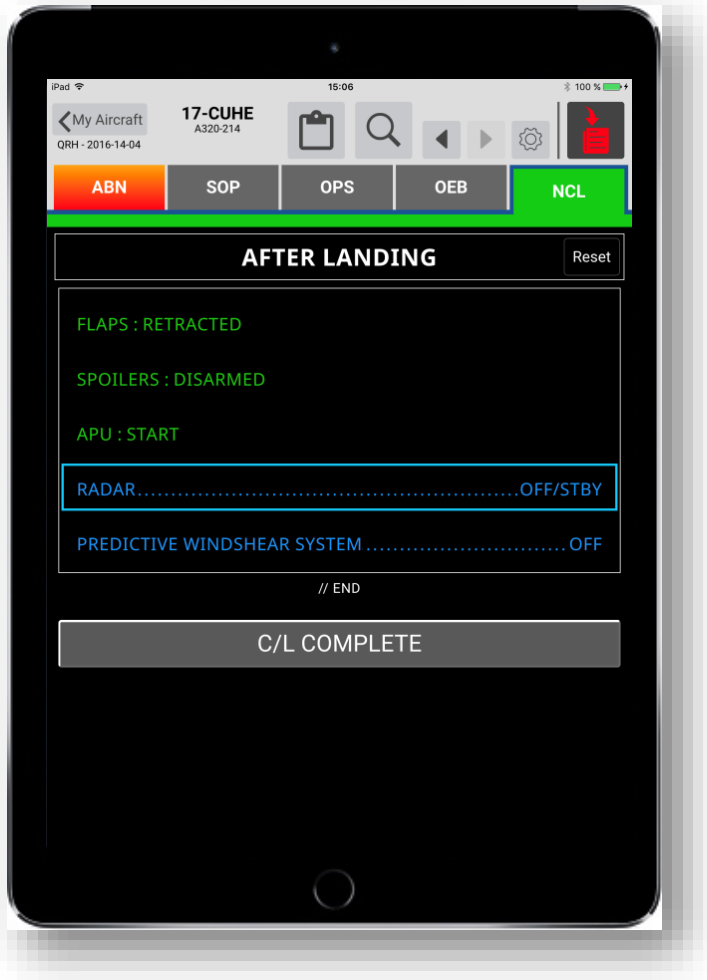
TAKEOFF | LANDING | LOADSHEET | IN FLIGHT

eQRH workshop

Workshop Outcomes:

- Not on Dedicated Platform
- Not PDF like
- Interactive Checklist
- Removal of Performance Tables
- Generic Operational Approval

Electronic QRH on A320/A330/A340 Families



EFB Based Operations & First Paperless Cockpit

+ **Electronic QRH**

Checklists & Procedures management

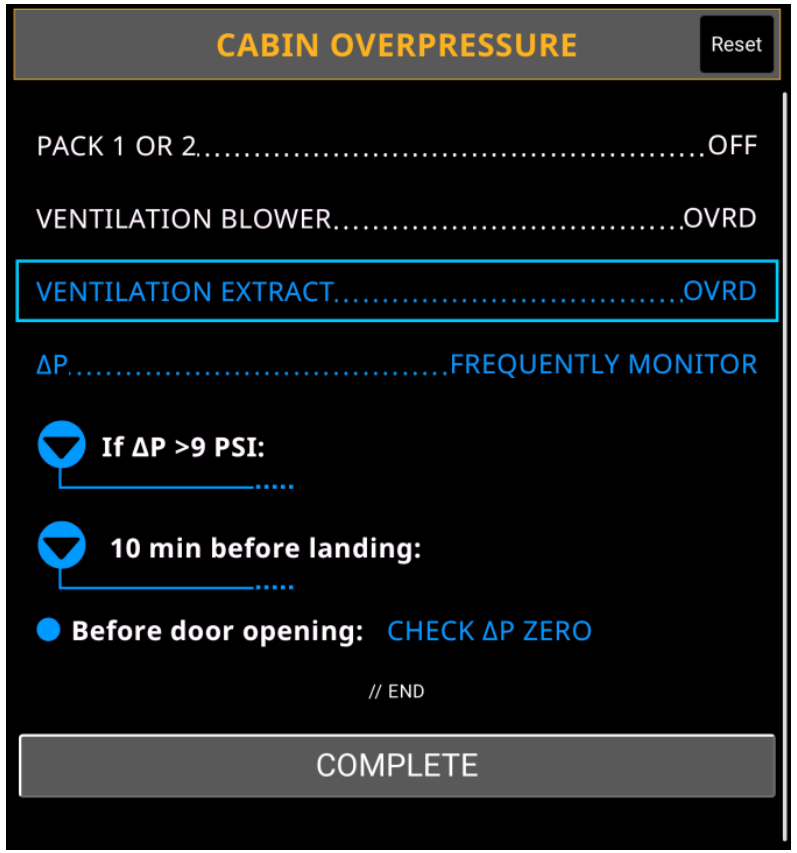
+ **QRH Content**

QRH layout enhancement

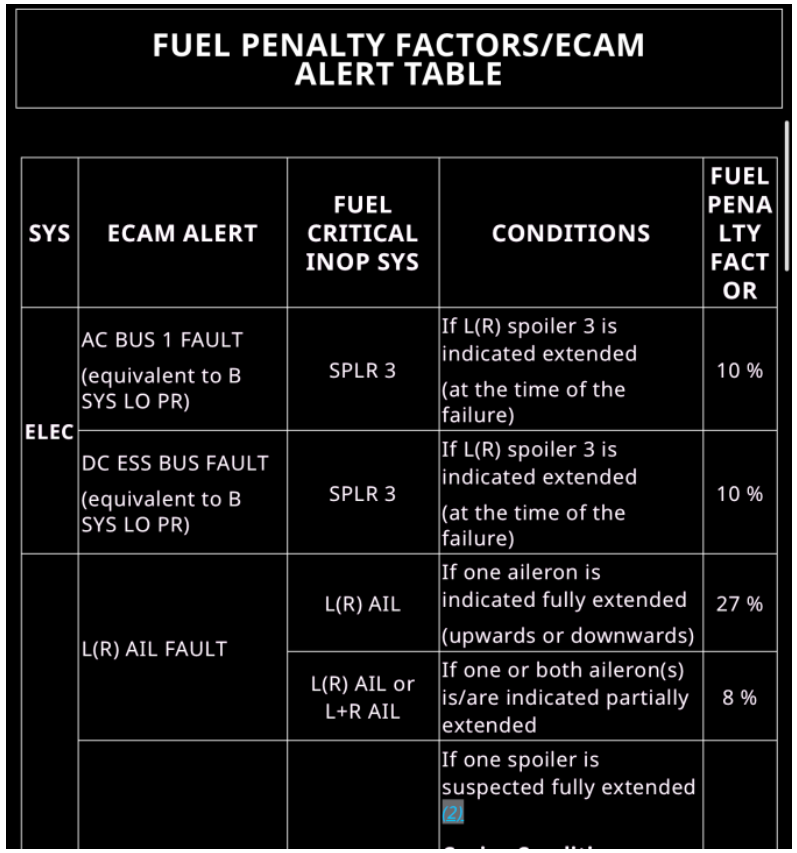
Electronic QRH – eQRH Functions*

+ Management of Normal Checklists

+ Management of Abnormal Procedures



+ Display of Operational Data



FUEL PENALTY FACTORS/ECAM ALERT TABLE

SYS	ECAM ALERT	FUEL CRITICAL INOP SYS	CONDITIONS	FUEL PENALTY FACTOR
ELEC	AC BUS 1 FAULT (equivalent to B SYS LO PR)	SPLR 3	If L(R) spoiler 3 is indicated extended (at the time of the failure)	10 %
	DC ESS BUS FAULT (equivalent to B SYS LO PR)	SPLR 3	If L(R) spoiler 3 is indicated extended (at the time of the failure)	10 %
	L(R) AIL FAULT	L(R) AIL	If one aileron is indicated fully extended (upwards or downwards)	27 %
		L(R) AIL or L+R AIL	If one or both aileron(s) is/are indicated partially extended	8 %
			If one spoiler is suspected fully extended [2]	

* Refer to the eQRH demo and presentations in Airbus World for more details

AIRBUS

Electronic QRH – QRH Content Enhancement

+ Enhanced Content and Display

AIRBUS
A318/A319/A320/A321
QUICK REFERENCE HANDBOOK

ABNORMAL AND EMERGENCY PROCEDURES

21.02A
10 SEP 14

TOO HOT/COLD COCKPIT AND CABIN TEMPERATURE IN FLIGHT

Ident.: ABN-21-00010789.0001001 / 08 FEB 13
Applicable to: MSN 0029-0362, 0366-0383, 0386-0512, 0517-0520, 0523, 0525, 0527-0528, 0530-0531

Apply the procedure if the cockpit and cabin temperature become too hot or too cold with the temperature selector at its maximum cold or hot selection :

PACKS OUTLET TEMP (ON ECAM BLEED PAGE).....CHECK

■ **If difference between both packs is below 10 °C:**

AIR COND HOT AIR switch.....OFF

A difference between both packs lower than 10 °C may reflect a mixer temperature sensor failure. Switching OFF the HOT AIR results in the use of the duct temperature sensors only and no longer in the use of the mixer temperature sensors. A normal cabin and cockpit temperature will be recovered.

■ **If difference between both packs is at or above 10 °C:**

PACK (WITH THE HIGHEST OUTLET TEMP).....OFF

A difference between both packs of 10 °C or greater than 10 °C may reflect a contamination of packs resulting in too hot cabin and cockpit air temperature. The situation may be alleviated by switching OFF the pack discharging the hottest air.

TOO HOT / COLD COCKPIT AND CABIN TEMPERATURE IN FLIGHT

PACKS OUTLET TEMP [BLEED SD PAGE].....CHECK

If difference between both packs below 10 °C:

AIR COND HOT AIR.....OFF

If difference between both packs at or above 10 °C:

PACK WITH THE HIGHEST OUTLET TEMP.....OFF

//END

AIRBUS

eQRH Concept

eQRH hosted on EFB

QRH

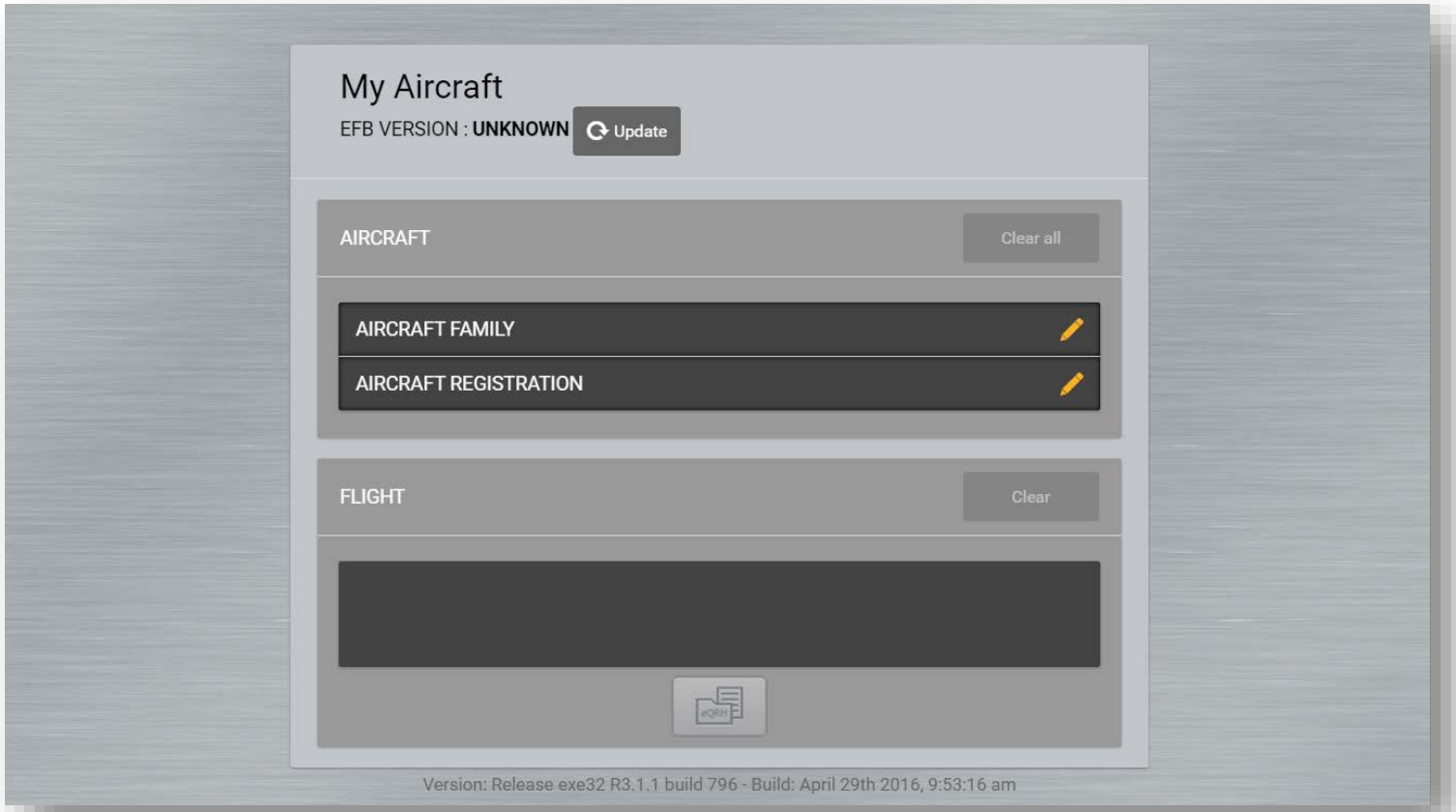
eQRH Improvements

Initialization

Normal Operations

Abnormal Operations

Additional features



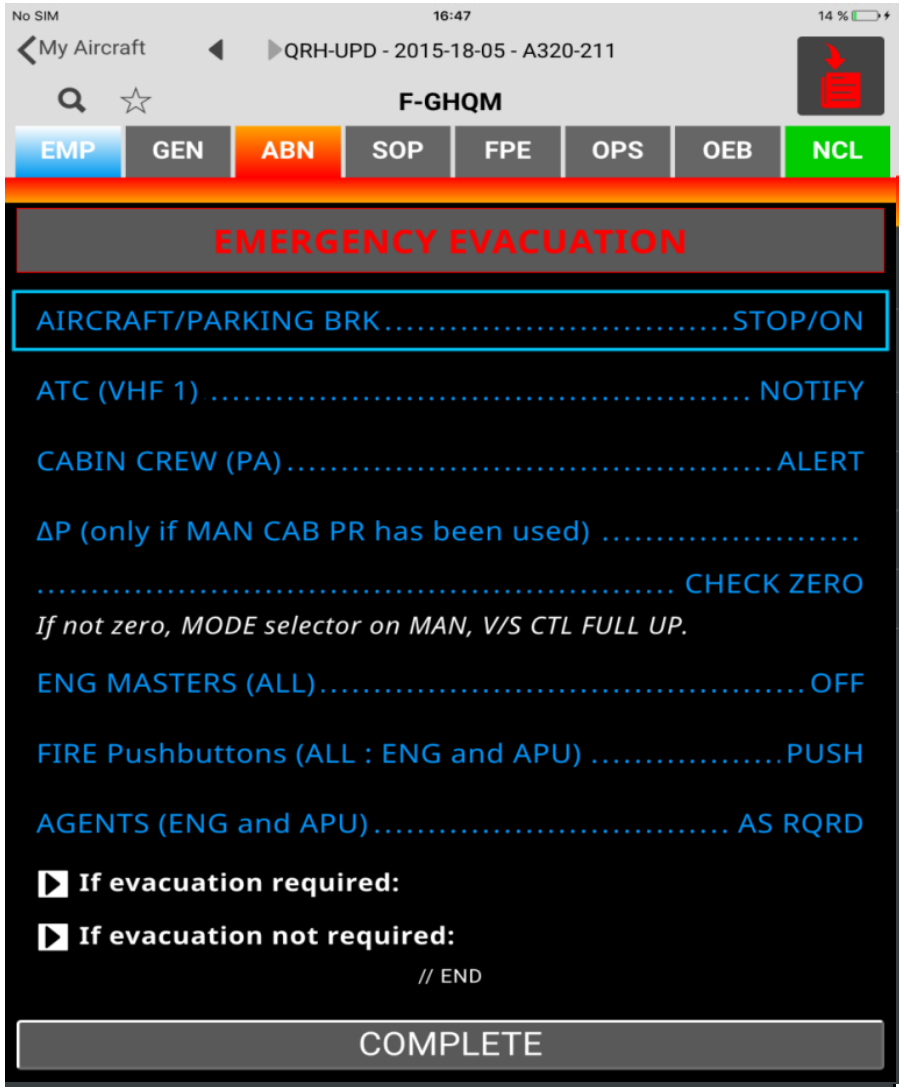
eQRH – Design Assumptions

- HMI :

+ **Common HMI on iOS and Windows**

+ **Airbus cockpit colour philosophy**
  - FlySmart colour coding
  - A350 ECAM Checklists and Procedures Colour coding

+ **The HMI reflects the data content and eQRH configuration**
  - Tab panels = PSLs in the QRH order
  - OEB panel created if no OEB
  - NCL page = list of NORMAL PROC + LIST of other items
  - List of procedures = Procedures in the PSL
  - Procedure content = XML data content



AIRBUS

eQRH – ABN procedures adaptation to electronic display

Adaptation of the QRH content & layout to electronic display

+ Enhanced Content

- ABN procedures reviewed :
  - Mains steps visible immediately
  - Procedure structure visible immediately

AIRBUS
A318/A319/A320/A321
QUICK REFERENCE HANDBOOK

ABNORMAL AND
EMERGENCY PROCEDURES

21.02A
10 SEP 14

TOO HOT/COLD COCKPIT AND CABIN TEMPERATURE IN FLIGHT

Ident.: ABN-21-00010789.0001001 / 08 FEB 13
Applicable to: MSN 0029-0382, 0386-0383, 0386-0512, 0517-0520, 0523, 0525, 0527-0528, 0530-0531

Apply the procedure if the cockpit and cabin temperature become too hot or too cold with the temperature selector at its maximum cold or hot selection :

PACKS OUTLET TEMP (ON ECAM BLEED PAGE).....CHECK

■ **If difference between both packs is below 10 °C:**

AIR COND HOT AIR switch.....OFF

A difference between both packs lower than 10 °C may reflect a mixer temperature sensor failure. Switching OFF the HOT AIR results in the use of the duct temperature sensors only and no longer in the use of the mixer temperature sensors. A normal cabin and cockpit temperature will be recovered.

■ **If difference between both packs is at or above 10 °C:**

PACK (WITH THE HIGHEST OUTLET TEMP)..... OFF

A difference between both packs of 10 °C or greater than 10 °C may reflect a contamination of packs resulting in too hot cabin and cockpit air temperature. The situation may be alleviated by switching OFF the pack discharging the hottest air.

TOO HOT/COLD COCKPIT AND CABIN TEMPERATURE IN FLIGHT

PACKS OUTLET TEMP [BLEED SD PAGE] ..... CHECK

If difference between both packs is below 10 °C:

AIR COND HOT AIR ..... OFF

If difference between both packs is at or above 10 °C:

PACK WITH THE HIGHEST OUTLET TEMP ..... OFF

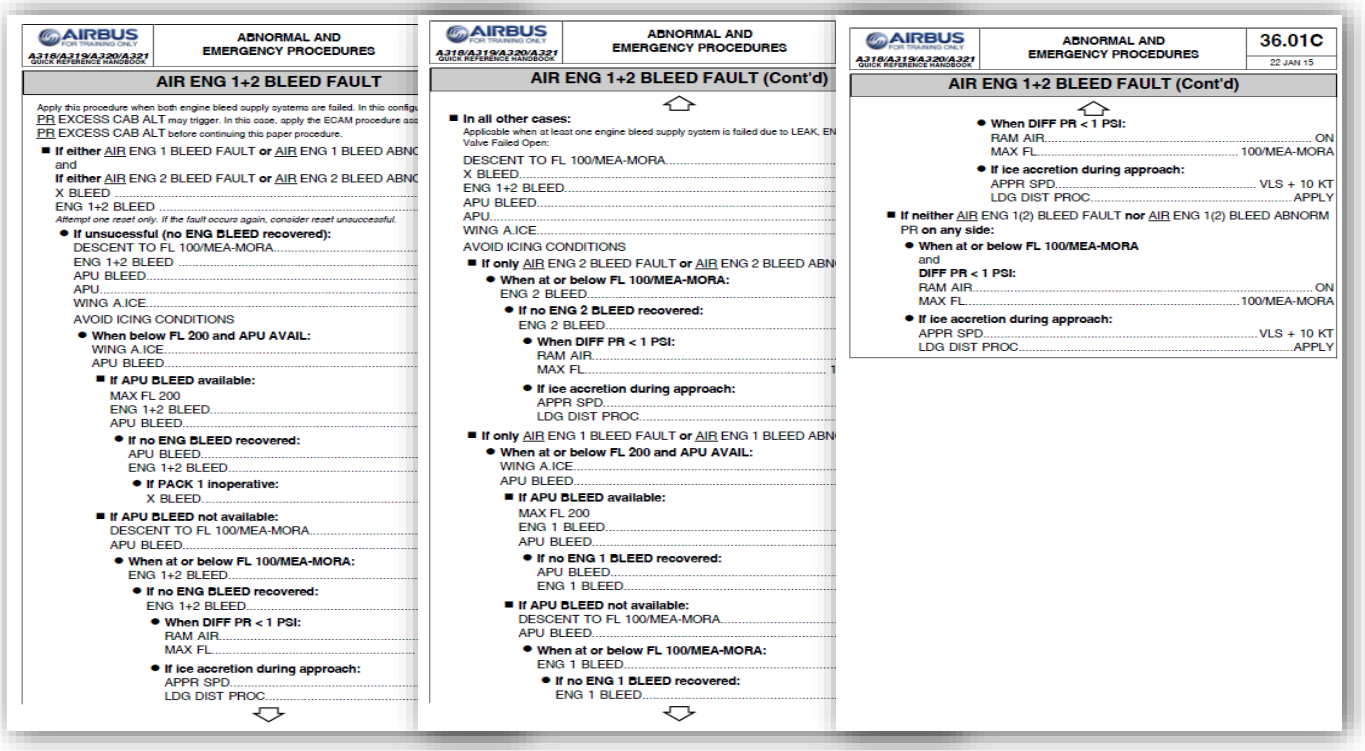
// END

AIRBUS

eQRH – ABN procedures adaptation to electronic display

Adaptation of the QRH content & layout to electronic display

+ Enhanced Display



AIRBUS — A318/A319/A320/A321 QUICK REFERENCE HANDBOOK

ABNORMAL AND EMERGENCY PROCEDURES

AIR ENG 1+2 BLEED FAULT

Apply this procedure when both engine bleed supply systems are failed. In this configu
PR EXCESS CAB ALT may trigger. In this case, apply the ECAM procedure ass
PR EXCESS CAB ALT before continuing this paper procedure.

■ **If either** AIR ENG 1 BLEED FAULT **or** AIR ENG 1 BLEED ABNC
and
If either AIR ENG 2 BLEED FAULT **or** AIR ENG 2 BLEED ABNC
X BLEED
ENG 1+2 BLEED
Attempt one reset only. If the fault occurs again, consider reset unsuccessful.
● **If unsuccessful (no ENG BLEED recovered):**
DESCENT TO FL 100/MEA-MORA
ENG 1+2 BLEED
APU BLEED
APU
WING A.ICE
AVOID ICING CONDITIONS
● **When below FL 200 and APU AVAIL:**
WING A.ICE
APU BLEED
■ **If APU BLEED available:**
MAX FL 200
ENG 1+2 BLEED
APU BLEED
● **If no ENG BLEED recovered:**
APU BLEED
ENG 1+2 BLEED
● **If PACK 1 inoperative:**
X BLEED
■ **If APU BLEED not available:**
DESCENT TO FL 100/MEA-MORA
APU BLEED
● **When at or below FL 100/MEA-MORA:**
ENG 1+2 BLEED
● **If no ENG BLEED recovered:**
ENG 1+2 BLEED
● **When DIFF PR < 1 PSI:**
RAM AIR
MAX FL
● **If ice accretion during approach:**
APPR SPD
LDG DIST PROC

AIRBUS — A318/A319/A320/A321 QUICK REFERENCE HANDBOOK

ABNORMAL AND EMERGENCY PROCEDURES

AIR ENG 1+2 BLEED FAULT (Cont'd)

■ **In all other cases:**
Applicable when at least one engine bleed supply system is failed due to LEAK, EN
Valve Failed Open:
DESCENT TO FL 100/MEA-MORA
X BLEED
ENG 1+2 BLEED
APU BLEED
APU
WING A.ICE
AVOID ICING CONDITIONS
■ **If only** AIR ENG 2 BLEED FAULT **or** AIR ENG 2 BLEED ABN
● **When at or below FL 100/MEA-MORA:**
ENG 2 BLEED
● **If no ENG 2 BLEED recovered:**
ENG 2 BLEED
● **When DIFF PR < 1 PSI:**
RAM AIR
MAX FL
● **If ice accretion during approach:**
APPR SPD
LDG DIST PROC
■ **If only** AIR ENG 1 BLEED FAULT **or** AIR ENG 1 BLEED ABN
● **When at or below FL 200 and APU AVAIL:**
WING A.ICE
APU BLEED
■ **If APU BLEED available:**
MAX FL 200
ENG 1 BLEED
APU BLEED
● **If no ENG 1 BLEED recovered:**
APU BLEED
ENG 1 BLEED
■ **If APU BLEED not available:**
DESCENT TO FL 100/MEA-MORA
APU BLEED
● **When at or below FL 100/MEA-MORA:**
ENG 1 BLEED
● **If no ENG 1 BLEED recovered:**
ENG 1 BLEED

AIRBUS — A318/A319/A320/A321 QUICK REFERENCE HANDBOOK

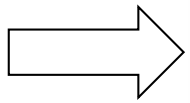
ABNORMAL AND EMERGENCY PROCEDURES

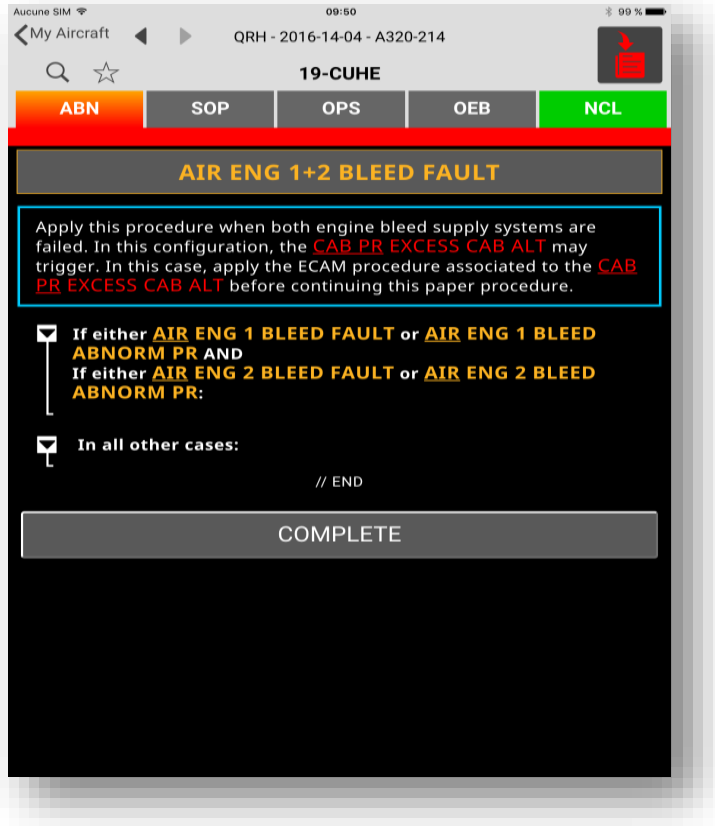
36.01C

22 JAN 15

AIR ENG 1+2 BLEED FAULT (Cont'd)

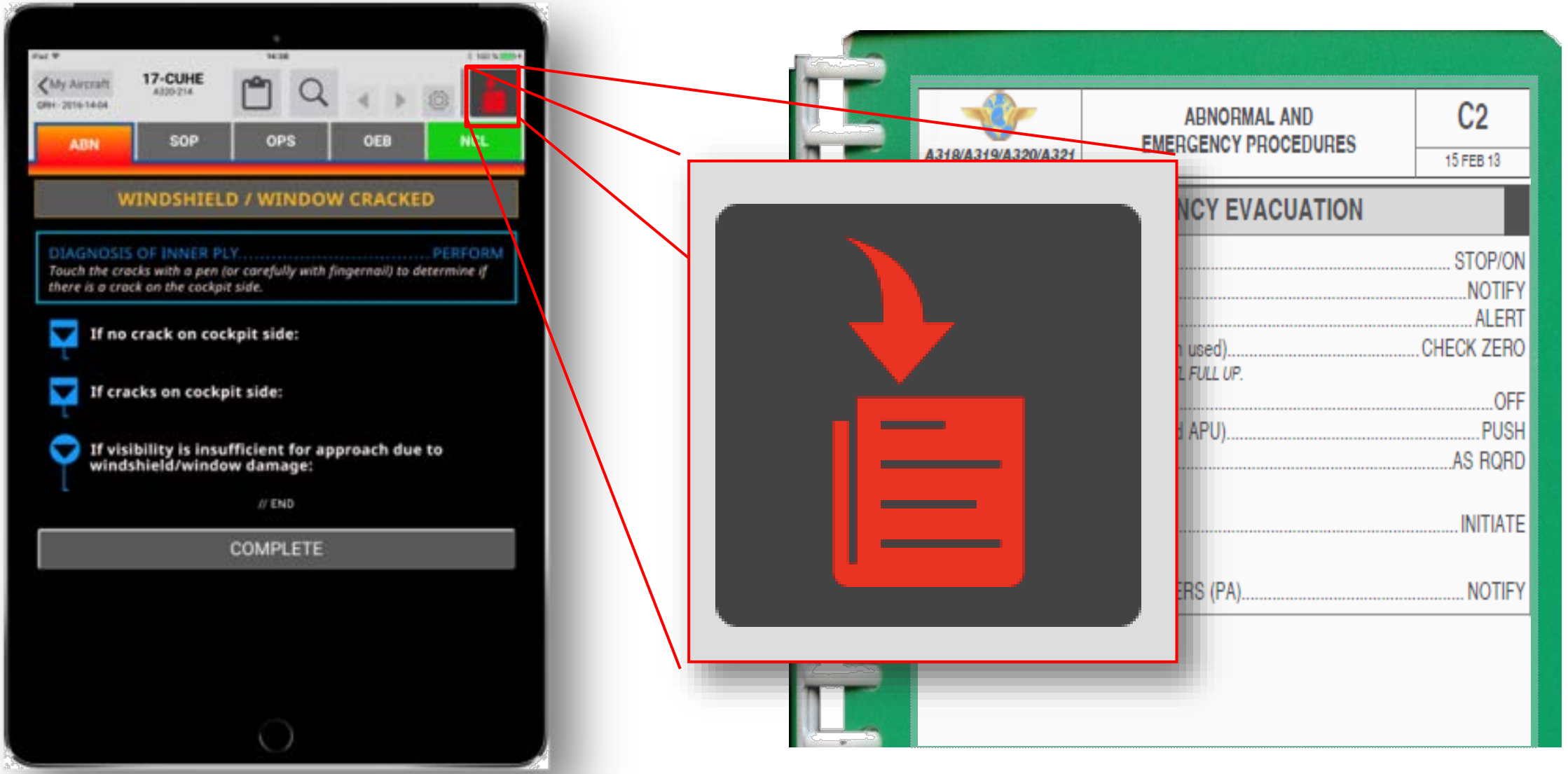
● **When DIFF PR < 1 PSI:**
RAM AIR ON
MAX FL 100/MEA-MORA
● **If ice accretion during approach:**
APPR SPD VLS + 10 KT
LDG DIST PROC APPLY
■ **If neither** AIR ENG 1(2) BLEED FAULT **nor** AIR ENG 1(2) BLEED ABNORM PR **on any side:**
● **When at or below FL 100/MEA-MORA**
and
DIFF PR < 1 PSI:
RAM AIR ON
MAX FL 100/MEA-MORA
● **If ice accretion during approach:**
APPR SPD VLS + 10 KT
LDG DIST PROC APPLY





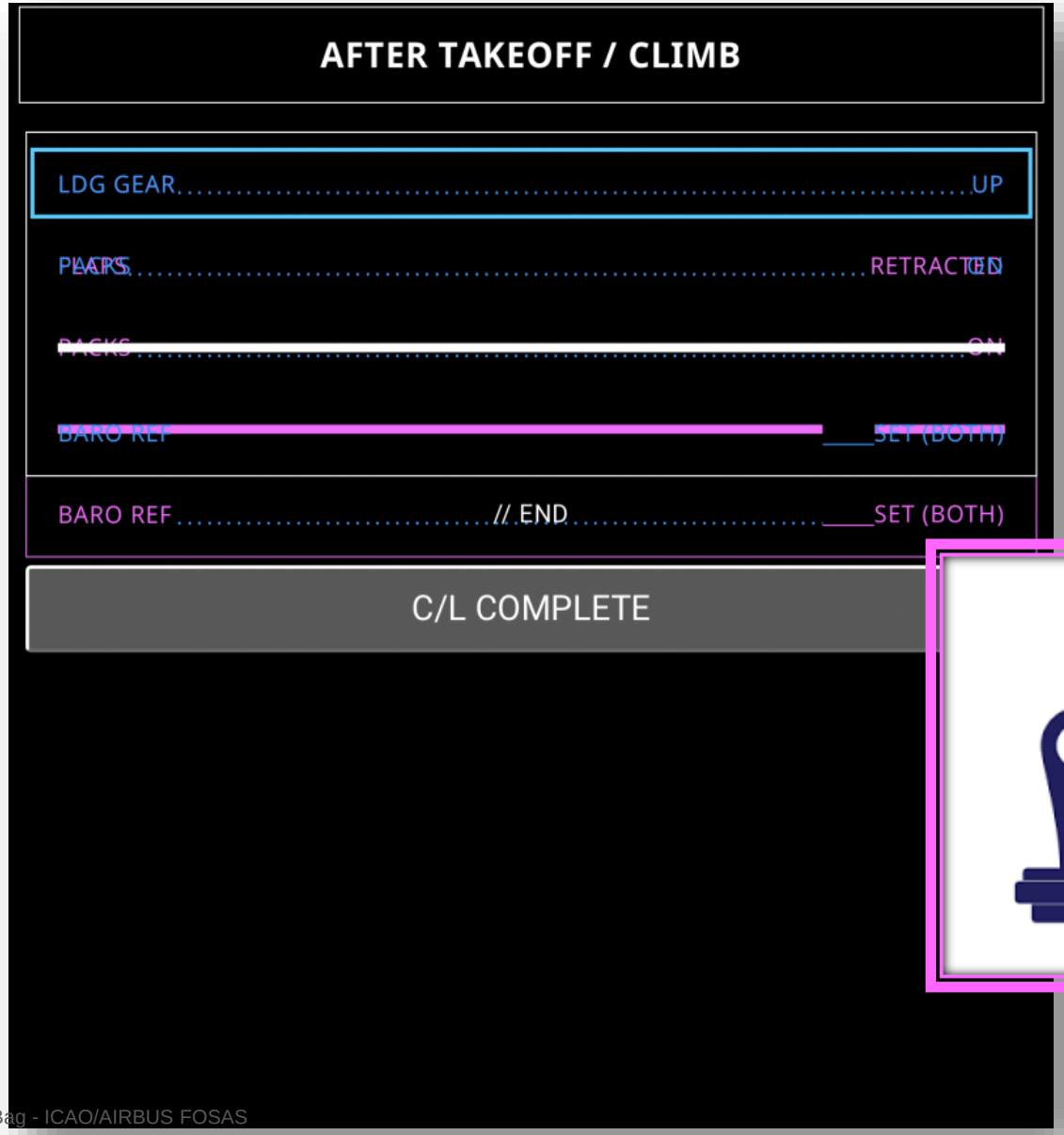
AIRBUS

eQRH – Quick Access



AIRBUS

eQRH – computation/display issue mitigated



AIRBUS

eQRH evaluations

brussels airlines

easyJet

EASA

AIRBUS

Airbus Evaluations

brussels airlines

easyJet

SMARTLYNX

South African Airways

In-House Evaluations

Operational and Human Factor evaluations conducted

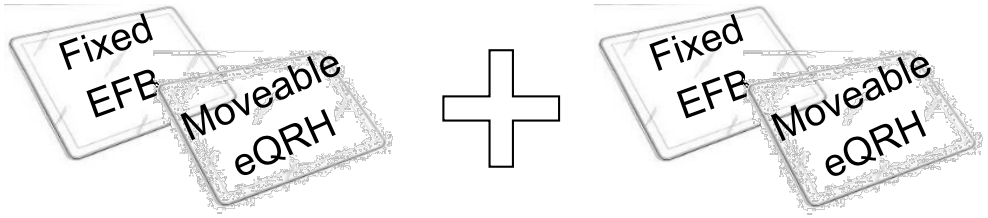
+ Human Factor involvement agreed with EASA
+ Evaluation scenarios agreed with EASA
+ 4 Airlines involved

Faster and more efficient operations compared to paper

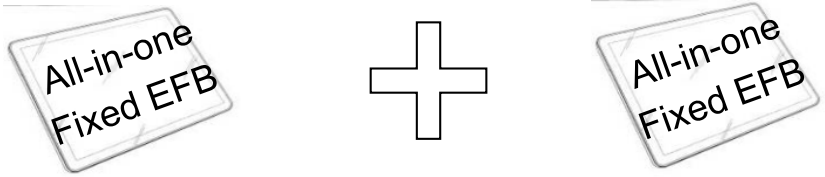
Brilliant and very intuitive. very simple to use.

eQRH Evaluation – eQRH Cockpit Configurations

Several Cockpit Configurations evaluated



OR



eQRH Evaluation – Operational Suitability

EASA

Colin Hancock
STCs & Special Projects Section Manager
EASA - Certification Directorate

Eric Lesage
Product Integrity - Operational Suitability (EIAV)
Airbus S.A.S.
1, Rond-Point Maurice Bellonte
31707 Blagnac Cedex
France

2017(D) 50992
CHA/aco/CT.1.4
Cologne, 22 February 2017

Via Email

Subject: Airbus – eQRH version 1.0 (Stand-alone)

Dear Eric,

Airbus has applied to EASA in October 2015 for an operational evaluation of the eQRH software application for Windows and iOS (iPad).

eQRH is a single software application for the Windows and iPad devices, enabling the display of, and interaction with, the operator's QRH manual.

EASA evaluation was based on compliance data provided by Airbus, limited functional tests on sample EFB host platforms and flight simulators trials. The requirements contained in Commission Regulation (EU) N° 965/2012 of 5 October 2012 (Air Operations Rules) have been considered together with AMC 20-25 (Airworthiness and Operational considerations for Electronic Flight Bags).

The main objective of the evaluation was to assess compliance with the applicable guidance, evaluate the associated compliance dossier proposed by Airbus and agree on recommendations to the operators in terms of EFB training, procedures, and administration.

eQRH is an application enabling new way of interactions with aircraft procedures and checklists, including for abnormal and emergency cases. Electronic Checklists are not listed in AMC 20-25 Appendix A and Appendix B, and therefore not allowable by default on EFBs. In accordance with AMC 20-25 Appendix C, a particular attention was therefore dedicated to the risk assessment of the eQRH, with a focus on the failure conditions leading to erroneous display of procedures content, and the mitigations thereof.

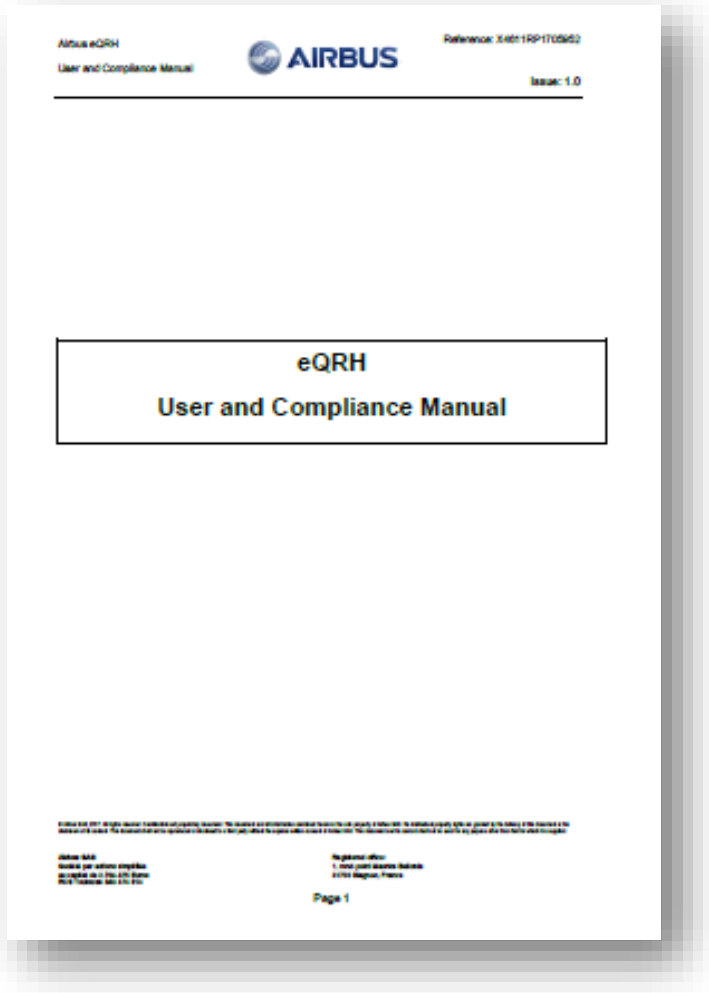
Two important measures have been taken into account in the risk assessment to substantiate that the erroneous display will be correctly mitigated:

- Airbus has included several verification steps in the process of eQRH data production, in particular tests on the target application. The eQRH data should have been delivered by Airbus in accordance with this process at the time of the eQRH entry into service.

First **Paperless** Cockpit worldwide

+ EASA & FAA evaluation in 2016
+ EASA and FAA Operational Suitability Letters (OSL) issued in 2017
+ "**eQRH User and Compliance Manual**" validated by EASA and FAA
+ CAAC validation planned in Q2 2017

Support for implementation – eQRH User and Compliance Manual



Generic Compliance Manual to help for the eQRH Approval

+ Specific eQRH considerations identified by Airbus, the EASA, and the FAA

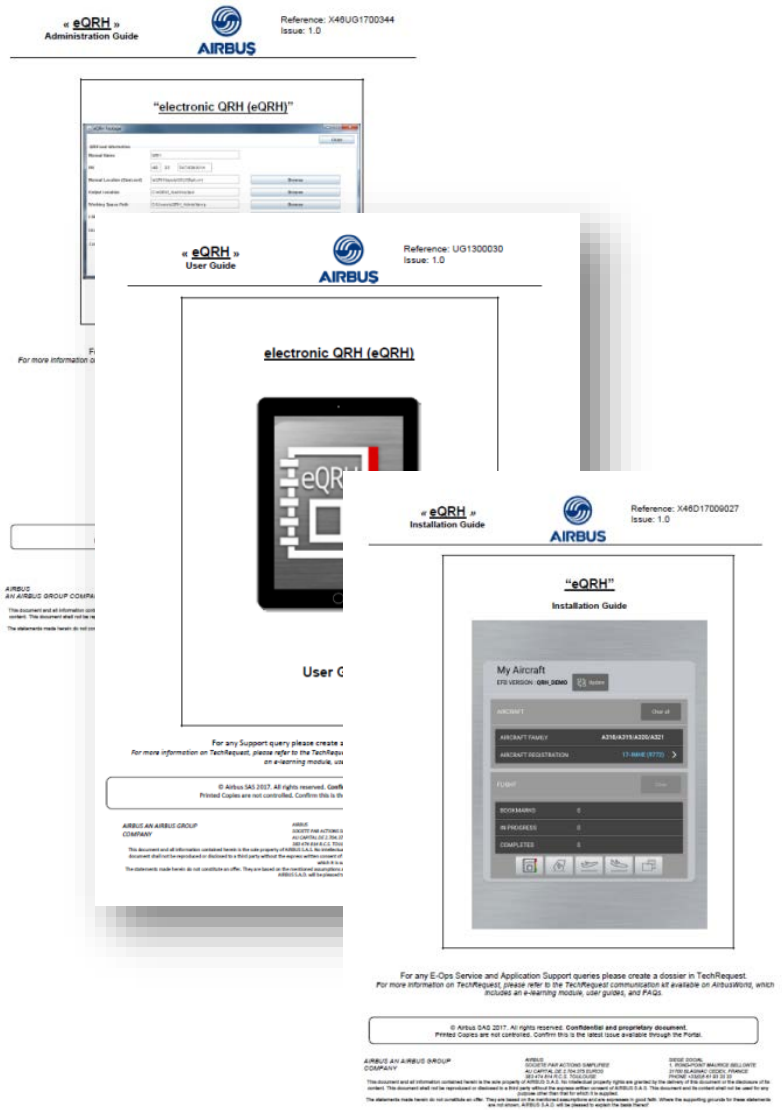
+ Validated by the EASA and FAA in the corresponding Operational suitability Letters

+ To be tailored and completed by the Operator in accordance with the applicable local regulation

+ Delivered with the eQRH application

AIRBUS

Support for implementation – Installation, Administration, and User Guides



Useful information to implement the eQRH

+ Provides useful information to install, administrate and use the eQRH application

+ Compatible Operating Systems and Hardware

+ Delivered with the eQRH application

Support for implementation – eQRH eLearning

Dedicated Flight Crew eLearning

+ Flight Crew eLearning covering the training items of the eQRH User and Compliance Manual

+ Validated by the EASA and FAA in the corresponding Operational suitability Letters

+ Delivered with the eQRH application (standalone version)

+ Available in Airbus LMS with additional functions

eQRH Roadmap

Entry into service

+ **Available since March 2017 on Windows**
+ **Available from May 2017 on iPad**
+ EFB operators (FlySmart & Third Party EFBs)
+ Paper QRH printing stoppage by end 2017

(FOT 999.0088/16 Rev 02 dated 29-MAR-2017)

iOS Windows

Electronic QRH – Communication

AIRBUS/NAVBLUE communication to Operators

+ **Worldwide FOT** announced the eQRH EIS end of March
+ **Worldwide "Keynote"** event in April
+ "Flight Ops and Training" **Worldwide Web Conferences** planned beginning of May
+ Communication and workshops planned in the **"Flight Ops and Training" seminars** from June

CONCLUSION

AIRBUS

Conclusion

✈ Benefits of operating with an Electronic Flight Bag

Remove paper processes:
Takeoff charts, Flt Ops manuals, charts, Flight briefing data…

Improves airline operations' efficiency

Reduces costs:
- Reduce Engine Maintenance costs
- Remove paper management
- Simplify ground processes

Ease Flight Crew duty and enhance safety

Improves airline's reactivity

Ops approval framework based on international rules (EASA/FAA)

Conclusion

To implement EFB => Consider complete approval process

Any questions?

Thank you

AIRBUS