

Regional Seminar on MMEL/MEL and Special Operations

[Airbus Amber]

Organized by ICAO Regional Office for Western and Central Africa (WACAF)

Dakar - Senegal - from 30 june to 5 july 2025



EFB (Electronic Flight Bag)
EFB Definition & History

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AIRBUS

Agenda

- EFB Definition & Benefits
- EFB History
- Present & Future of the EFB

Agenda

- **EFB Definition & Benefits**
- EFB History
- Present & Future of the EFB

Electronic Flight Bag (EFB) - Definition

ICAO definition (Doc 10020):

An electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties.



EFB (Hardware)

Definition: an electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties

EASA's intent: any electronic device which is hosting an eligible EFB application (Type A or type B) is an EFB.



PEDs with non-EFB applications (internet browser, email,...) remain PEDs

Hardware:

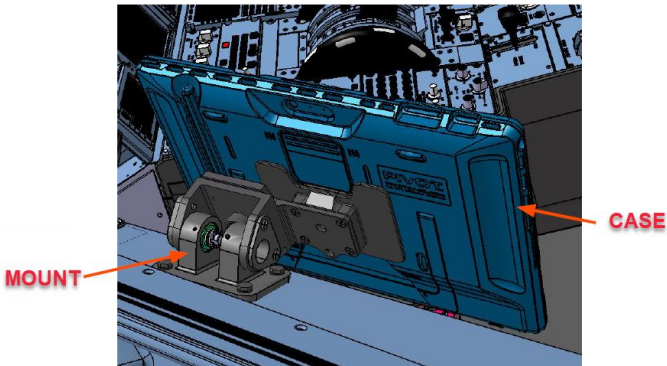
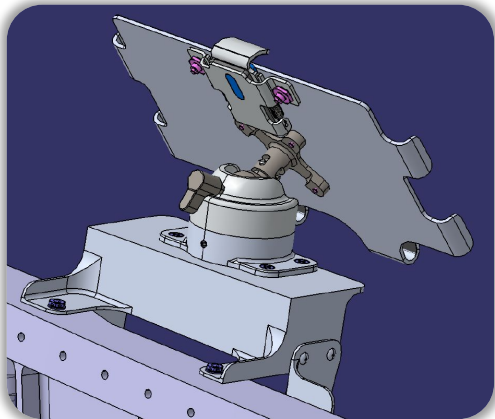
- Portable: not certified, may use installed resources (airworthiness certified)
- Installed: airworthiness certified

Software Applications:

- Type A application: non certified application with no safety effect
- Type B application: non certified application with failure condition limited to minor safety effect
- Other applications (which are not EFB applications)
 - Application ineligible as type A or B: failure condition more than minor
 - Certified applications
 - Miscellaneous application: not related to the flight operations

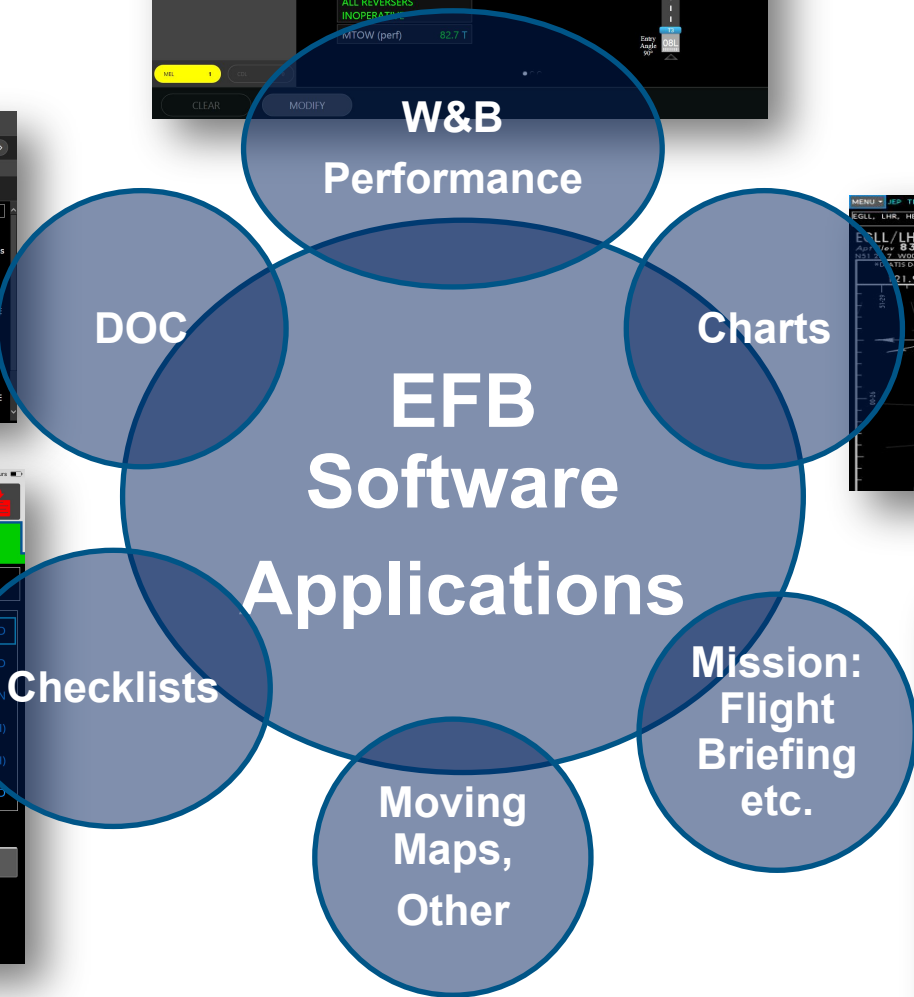
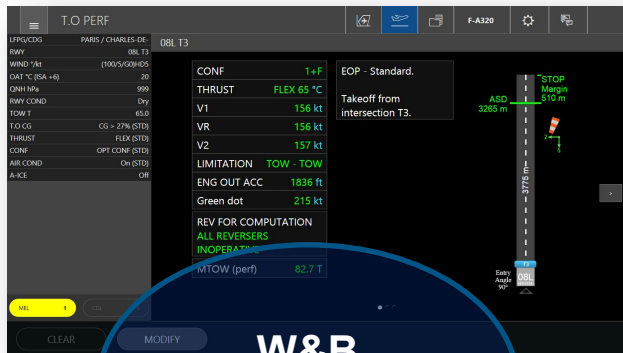
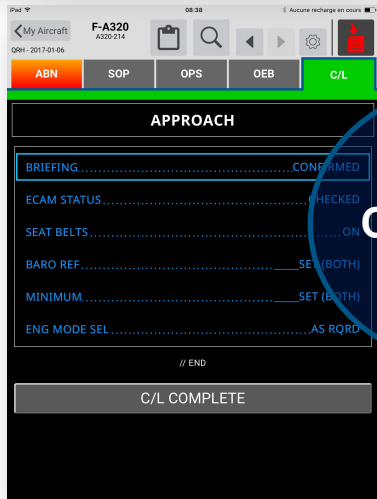
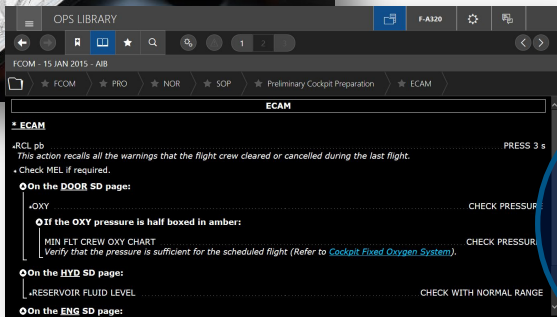
Electronic Flight Bag (EFB) - Hardware

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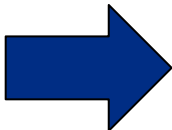
Electronic Flight Bag (EFB) – Software Applications

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Electronic Flight Bag (EFB) – Benefits

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Electronic Flight Bag (EFB) – Benefits

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Electronic Flight Bag (EFB) – Benefits

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Enhanced & Cost Effective Flight Operations

● Efficient Operations

- + Optimized performance, higher revenues
- + Faster and more efficient documentation management

● Reduced Cost

- + Engine maintenance costs
- + No paper management/Simplified ground processes

● Enhanced Safety

- + Less errors
- + Enhance situational awareness
- + Faster and more efficient access to information



Agenda

- EFB Definition & Benefits
- **EFB History**
- Present & Future of the EFB



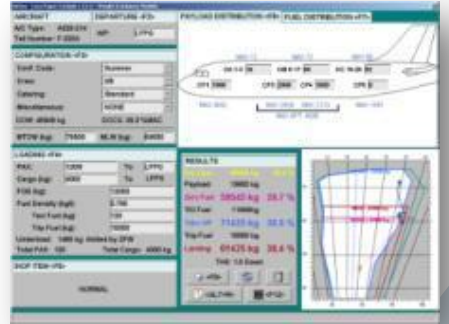
2010's

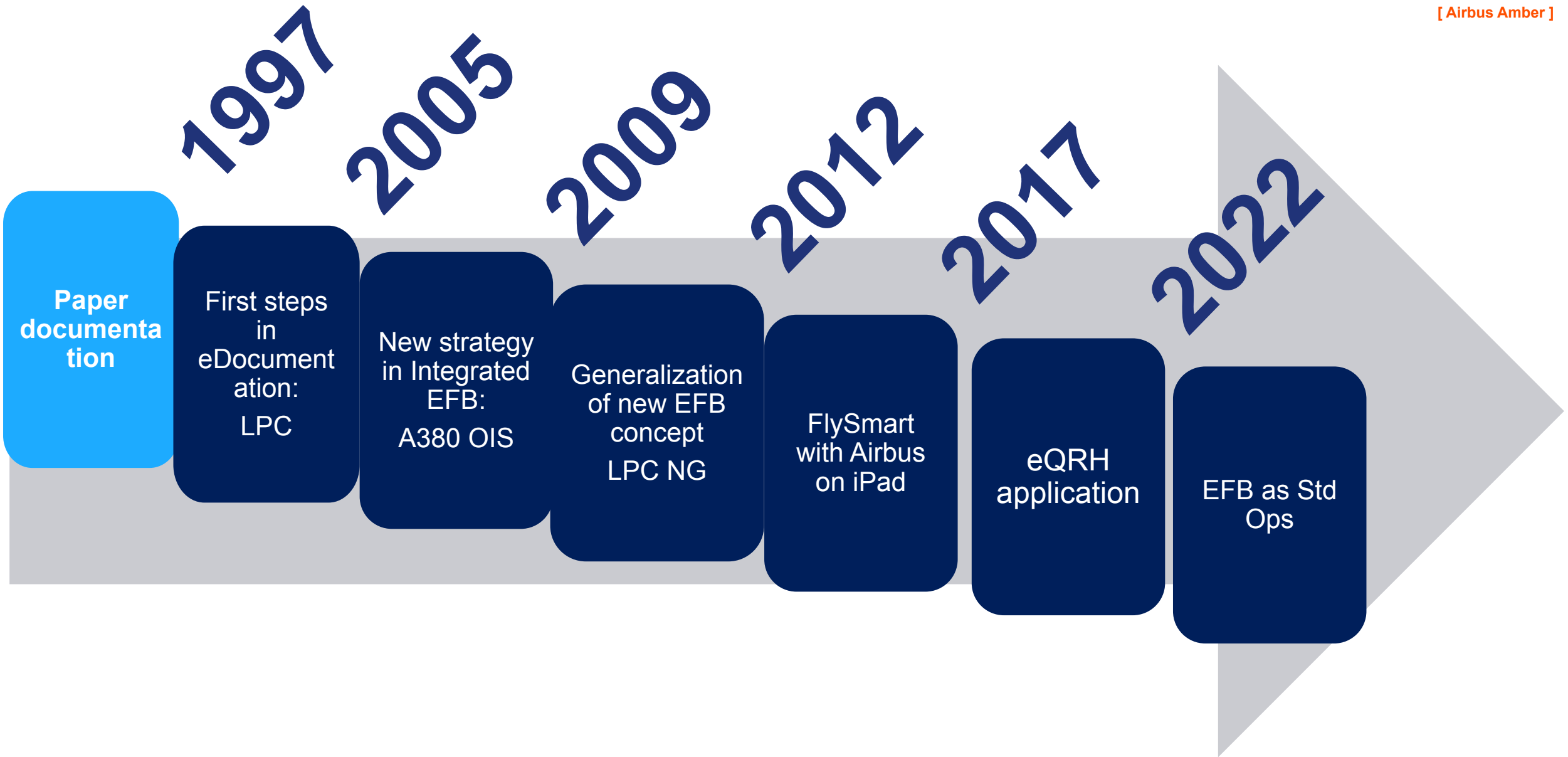


2000's



90's





EFB History – Before 1997: Paper Documentation



Cockpit Operations based on Paper

- **W&B and Performance Computation**
Performance tables or charts
- **Operational Documentation**
Paper QRH, FCOM, MEL ...
- **Mission Data**
Paper Flight Folder
- **Navigation Charts**
Paper En-Route and Terminal charts

1997

Paper
documentat
ion

2005

First steps
in
eDocument
ation:
LPC

2009

New strategy
in Integrated
EFB:
A380 OIS

2012

Generalization
of new EFB
concept
LPC NG

2017

FlySmart
with Airbus
on iPad

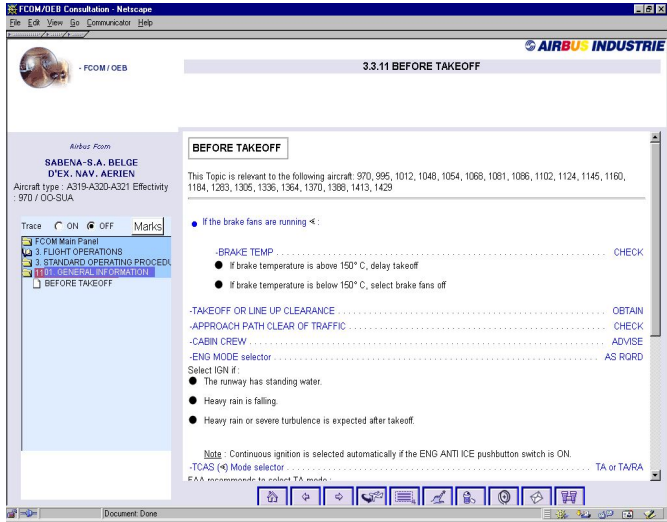
2022

eQRH
application

EFB as Std
Ops

EFB History – 1997: Less Paper Cockpit (LPC)

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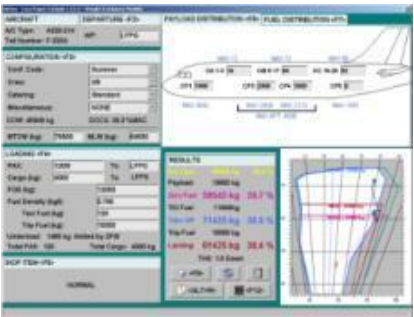
First Step of Electronic in the Cockpit

- **eDOC**

From paper to HTML

- **Electronic Performance**

Weight & Balance, Take-off, Landing



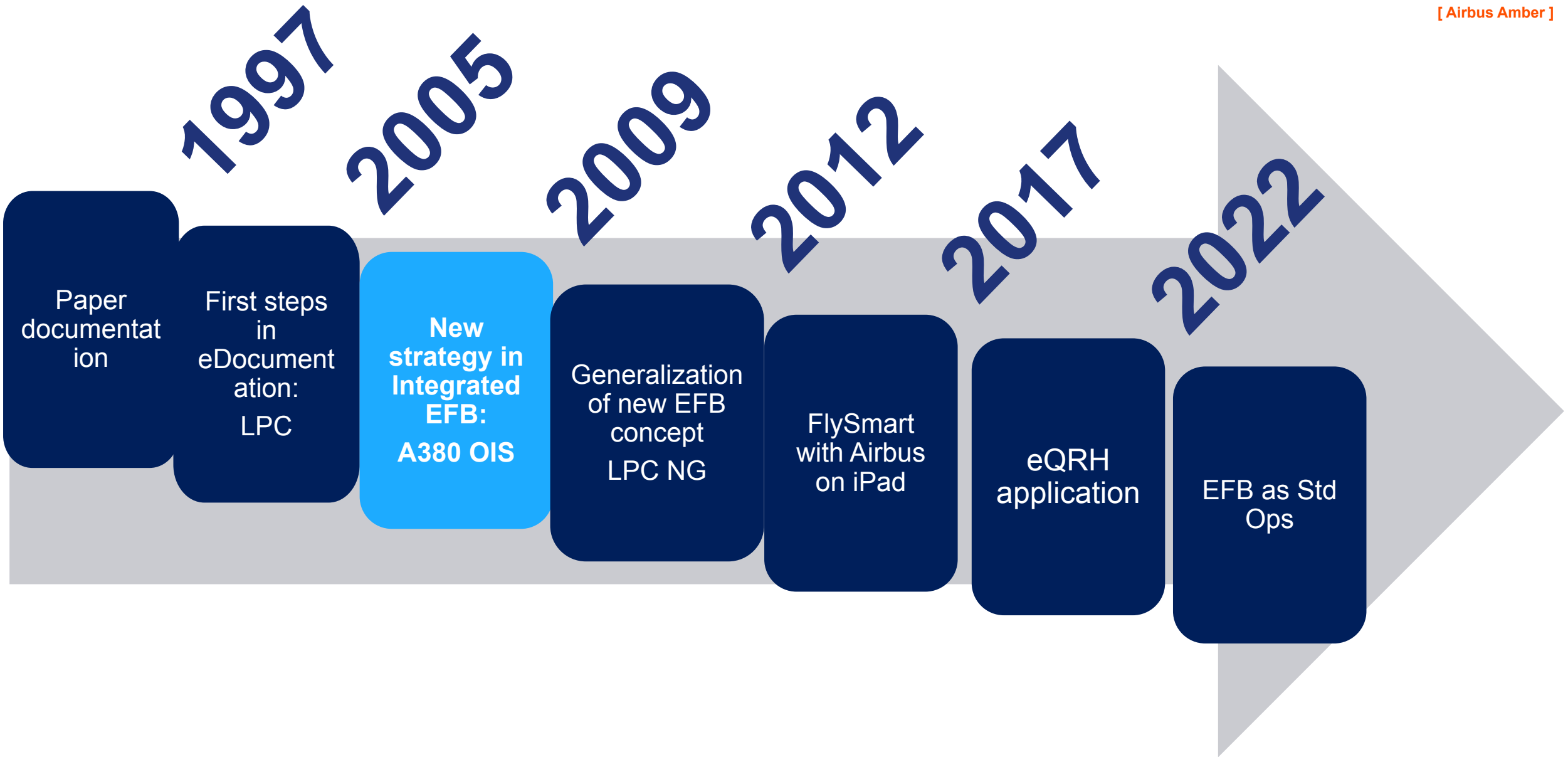
Weight and Balance module



Takeoff module



Landing module



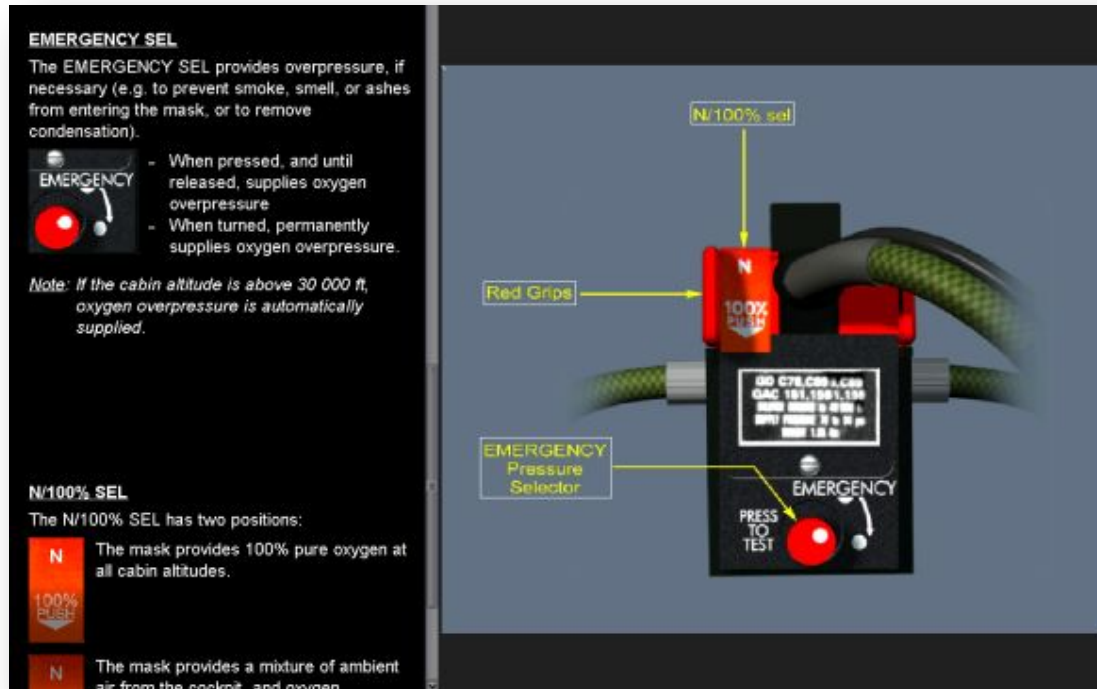
EFB History – 2005: A380 Integrated EFB



New Strategy: EFB Integrated in The Cockpit

- **First EFB certified hardware**
Dedicated screens and keyboards
- **Part of A380 cockpit design**
Fully compatible with Airbus Cockpit Philosophy
- **Connected with avionics**
Contextualization

EFB History – 2005: A380 Integrated EFB



New Documentation Format & Concept

● New Documentation Format

Multimedia content (text, illustration & videos)
Enhanced HTML

● Takes Full Benefit from Electronic display

Interactivity, Hyperlinks, Colors

EFB History – 2005: A380 Integrated EFB



Operations Standard based on EFB

● EFB Based Operations

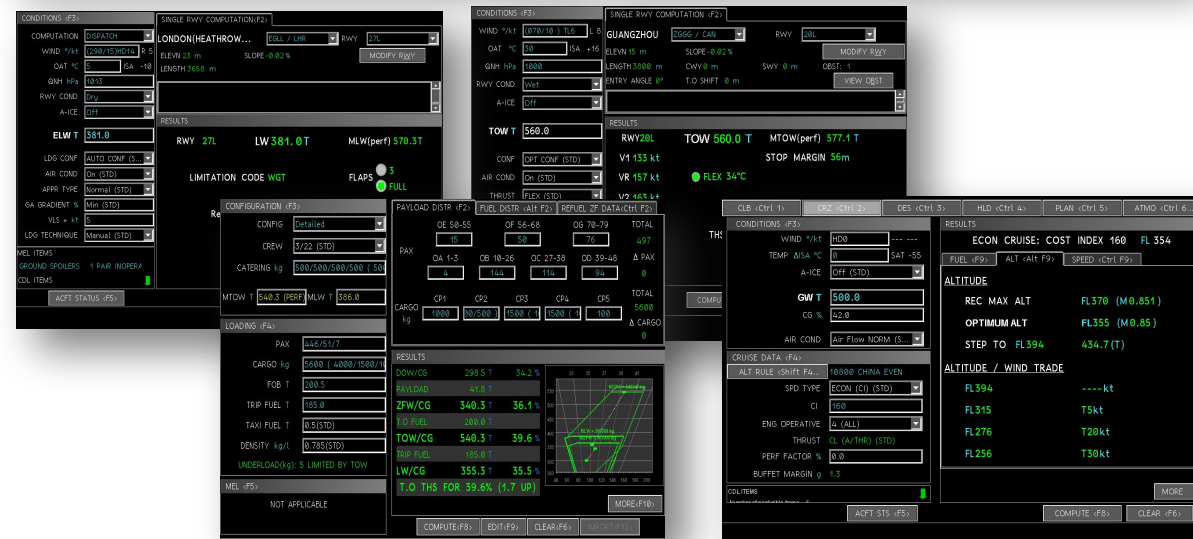
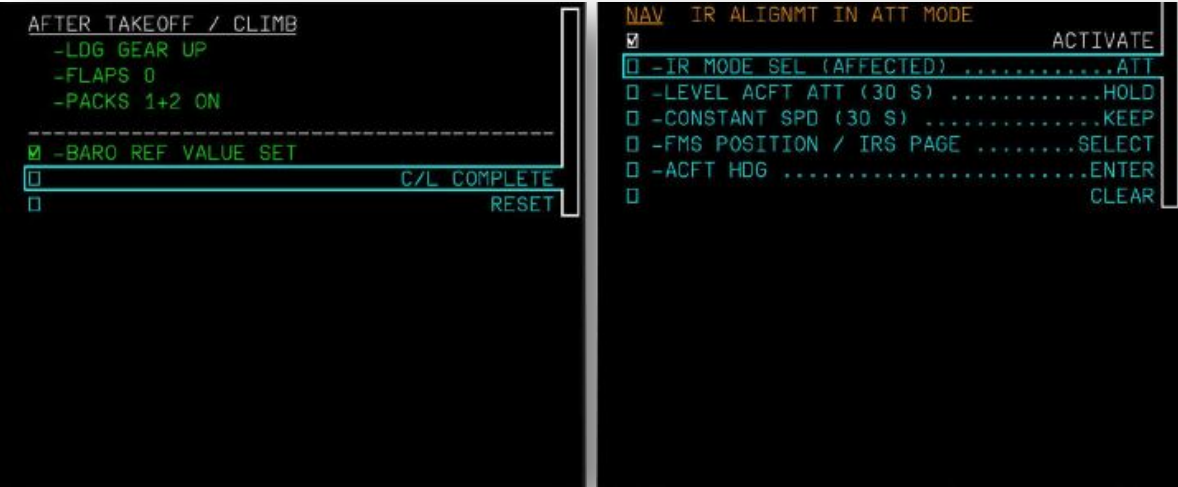
Standard Operating Procedures (SOP) based on EFB

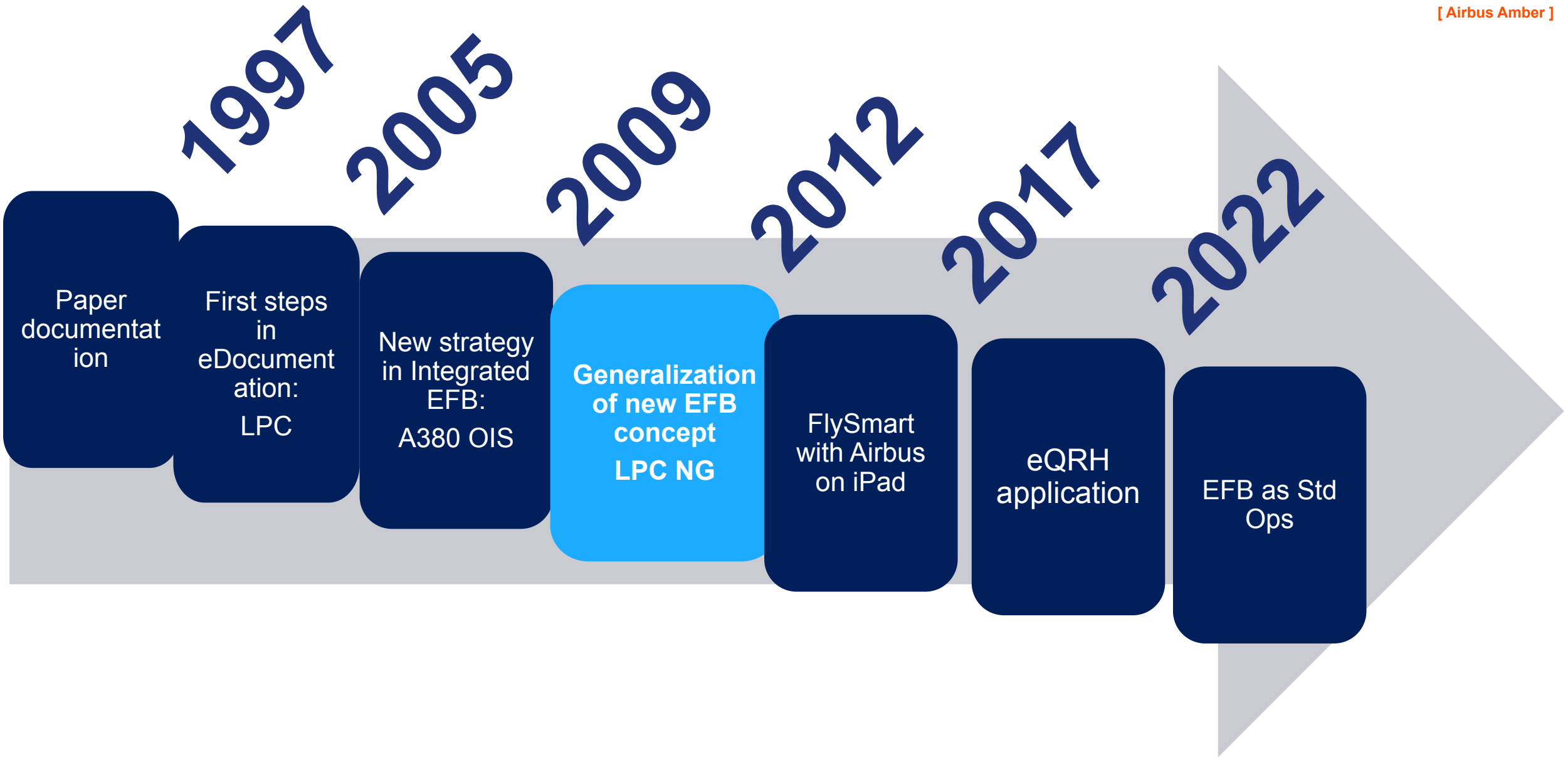
● No paper documentation

- FCOM, FCTM, MEL in the EFB
- Checklists and abnormal procedures in the ECAM

● Performance tables removed

Performance computed in the EFB





EFB History – 2009: Less Paper Cockpit –New Generation (LPC-NG)



**CLASS I
EFB Portable**

**CLASS II
EFB Portable with
installed resources**



Generalization LPC-NG on ALL Airbus Aircraft

- **LPC-NG also known as Flysmart**
- **Based on A380 EFB applications**
Benefit from A380 cockpit design
- **Two configurations available**
 - Standalone (EFB Portable)
 - Connected (EFB Portable with installed resources)



EFB History – 2012: FlySmart with Airbus on iPad

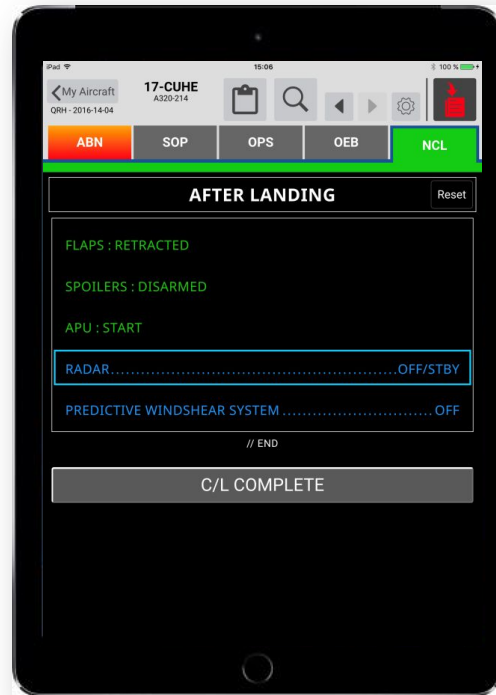
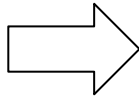
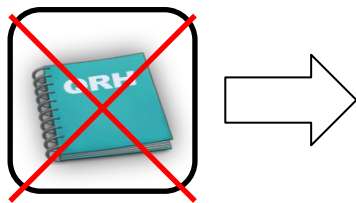
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Electronic QRH – A320/A330/A340 operations

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Possibility of EFB based operations on ALL Airbus Aircraft

- **Electronic QRH application**

Designed for flight crew in operations

Management of interactive Checklists and procedures

Immediate access to Emergency procedures

Easy review to OEB

- **QRH content**

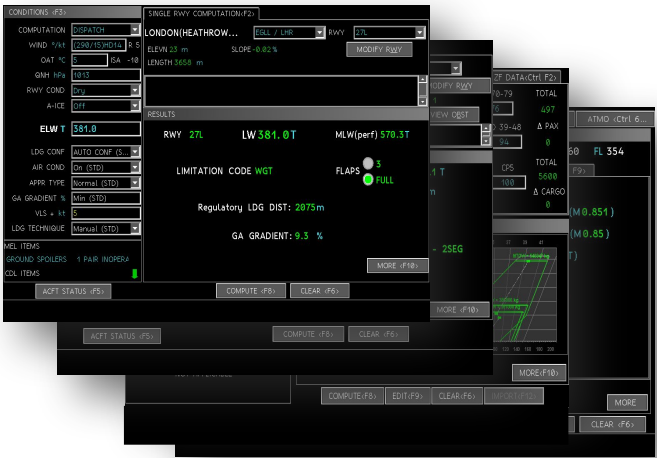
Layout enhancements

Reliability of the display

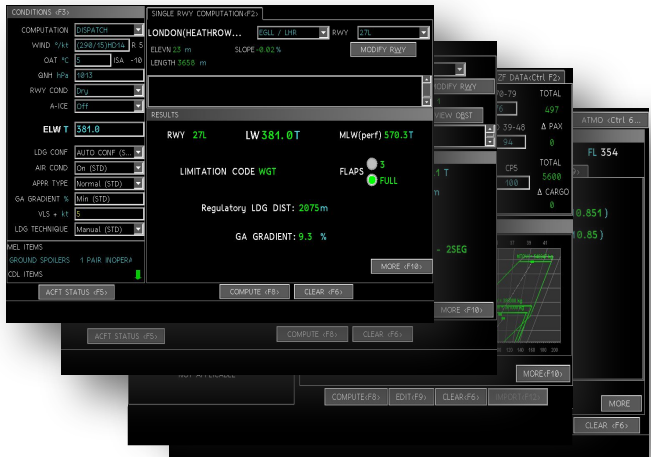
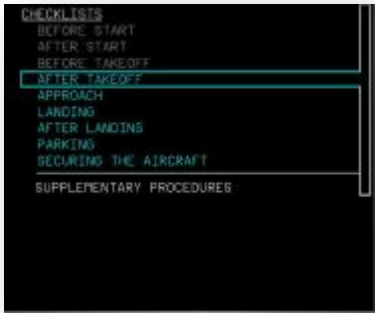
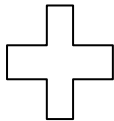


EFB based operations on All aircraft

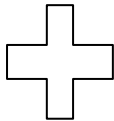
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ET



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eQRH



EFB based operations on All aircraft

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EFB based operations for A320/A330/A340: Consequences / impacts



- **Documentation updated in Nov 2021**

Performance data no more published in FCOM, QRH, MMEL, FCTM
(FCOM done end 2020)

- **EFB used for performance computations (Nov 2021)**

EFB should be approved by NAA (National Aviation Authority)

Agenda

- EFB Definition & Benefits
- EFB History
- **Present & Future of the EFB**



One application gathering all functions : Flight briefing, Enroute and Terminal charts, Airport moving map.

- Flight Briefing
- Charting
- Airport Moving Map
- Performance ...

Future of EFB

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Future functions in Mission+

- **FMS Connected EFB**
Avionics integration, data exchange (Flight plan, performance, Weather, etc.)
- **Vertical Display (VD)**
- **Integration with A350 cockpit**

Conclusion

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- **EFB benefits**

- ❑ Optimized performance
- ❑ Efficient documentation management
- ❑ Reduced costs (no paper)
- ❑ Enhanced safety (Less risks of errors, faster and efficient access to information)

- **Airbus standard operations based on EFB**

- **New generation of EFB application: Mission+**

Thank you

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