

ICAO-IAC-IATA MOSCOW CBTA/EBT WEBINAR



CBTA/EBT Implementation

The Role of the Manufacturer (OEM)

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Expert Pilot Consultant



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Role of OEMs

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FCTS Document

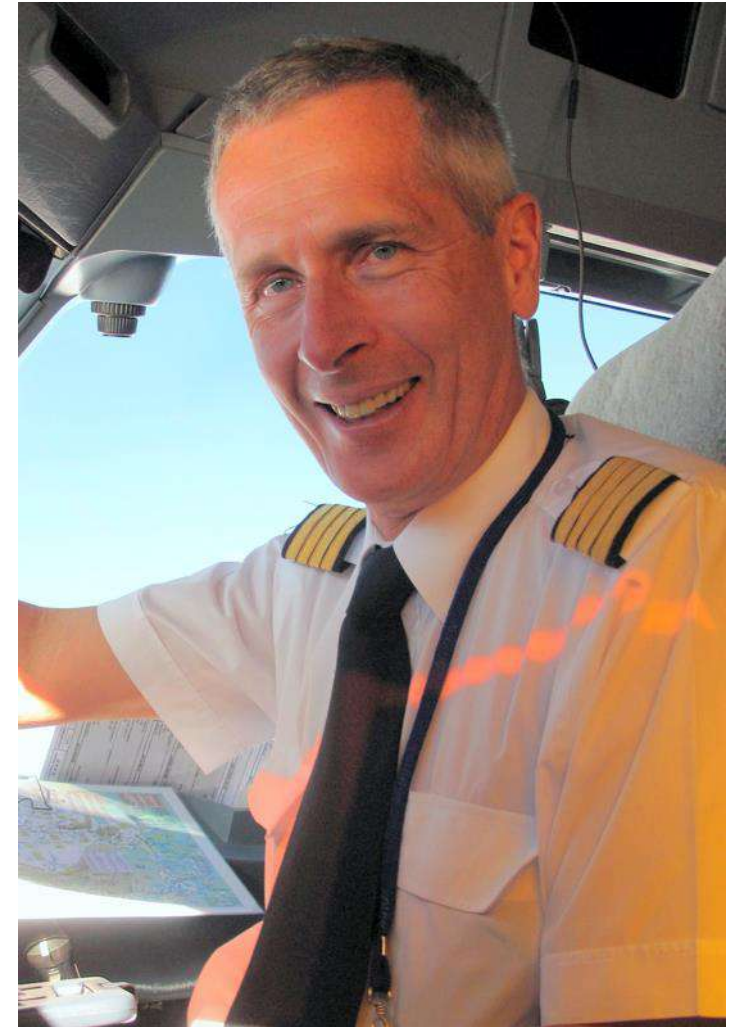
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Airbus ATOs

Capt. Christian NORDEN

Expert Pilot Consultant for Airbus

- Austrian citizen
- Since 1977 Airline Pilot, TRI/TRE, Airline Management
- 2009 – 2012 Airbus Representative in ITQI (EBT Design)
- Since 2014 Airbus Representative in ICAO (EBT Pilot Expert Group), EASA (ATPG), IATA (FOG)
- Part of EASAs Rulemaking Task Force RMT.0599 to create EBT rules in Europe



What is the Role of Aircraft Manufacturers in Pilot Training?



What is the role of Aircraft Manufacturers in Pilot Training?

- Aircraft Certification Standards to be observed by manufacturers (e.g. EASA CS-FCD) describe only a few rules for pilot training
- Operational Suitability Data (OSD), Operator Difference Requirements (ODR) and Training Areas of specific emphasis (TASE) are prepared in accordance with these (EASA) regulatory [aircraft certification rules](#)
- OSD, ODR and TASE are [minimum training](#) requirements



Manufacturers Role in Pilot Training

Pilot training is a key element for safe, effective and efficient aircraft operation

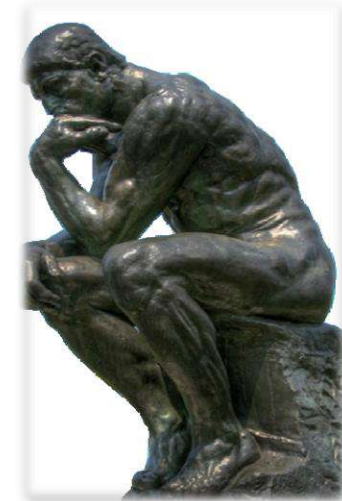
- Manufacturers are interested that their aircraft-types are operated **safely, effectively and efficiently**.
- **Qualitative pilot-training** supports safe, effective and efficient operation.
- Therefore, manufacturers usually **support their operators in qualitative pilot training**, even beyond technical certification standards.



Airbus and CBTA/EBT development

Strong support of CBTA rule-making and customer training since 2006

- **2006** Airbus proposes the re-thinking of the traditional task-based training paradigm
- **2007-2013** Airbus part of the IATA/ICAO ITQI task force that created EBT
- **2014** New A350 Typing following Competency Based Training principles
- **2014-2018** Airbus is part of RMT.0599 to implement EBT in EASA
- **2017-2020** Airbus is part of the ICAO Annex 1 revision Pilot Expert Group



Flight Crew Training Standards (FCTS)

« Toolbox » by Airbus to support Customers and ATO's in training design

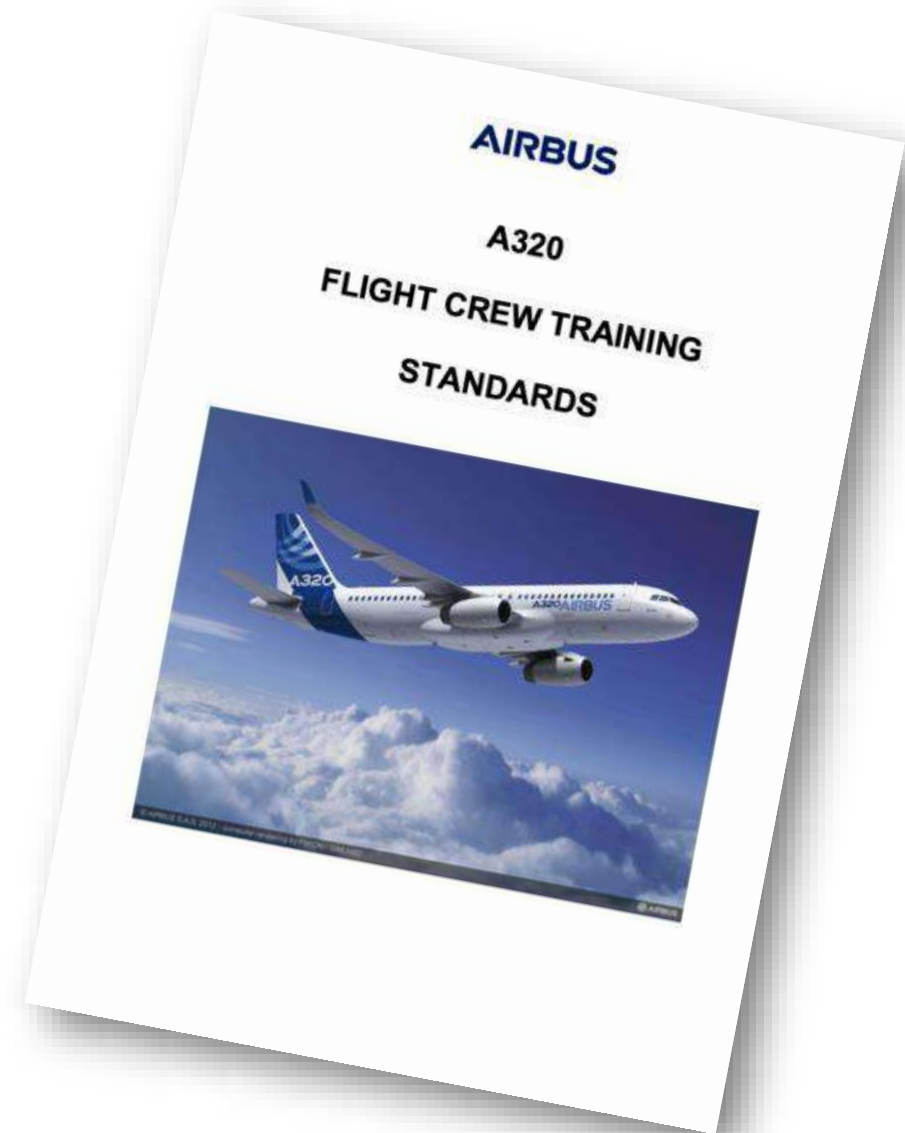
- Purpose: to support Operators and ATO's in **design and development of training courses** in particular Type Ratings Courses and Recurrent Training Programs.
- FCTS is available for A320, A330, A350 and A380
- **Content:** non-mandatory recommendations to training objectives and exercises, 200+ pages.
- Available **free of charge for download** on the Airbus World portal:
“*Content Library/Flight Operations/Manuals/FCTS*”



Does Airbus FCTS support CBTA/EBT?

Yes, FCTS recommends Competency-Based Training and Assessment programs:

- All course development, training and assessment should be based on the defined (EASA) competencies.
- **Progressive approach** for Competency Development in Type Rating:
 - ❖ **FIRST** acquire the basic knowledge and skills for operation of the aircraft;
 - ❖ **THEN** develop all other competencies; and
 - ❖ **FINALLY** consolidate all competencies in conditions as close as possible to the real environment, in real-time (scenario based training/line orientated simulations).



Type Rating design in FCTS

FCTS recommends competency-based training and assessment programs.

TRAINING OBJECTIVE =

- Training Item e.g.

PERFORM TAKE OFF

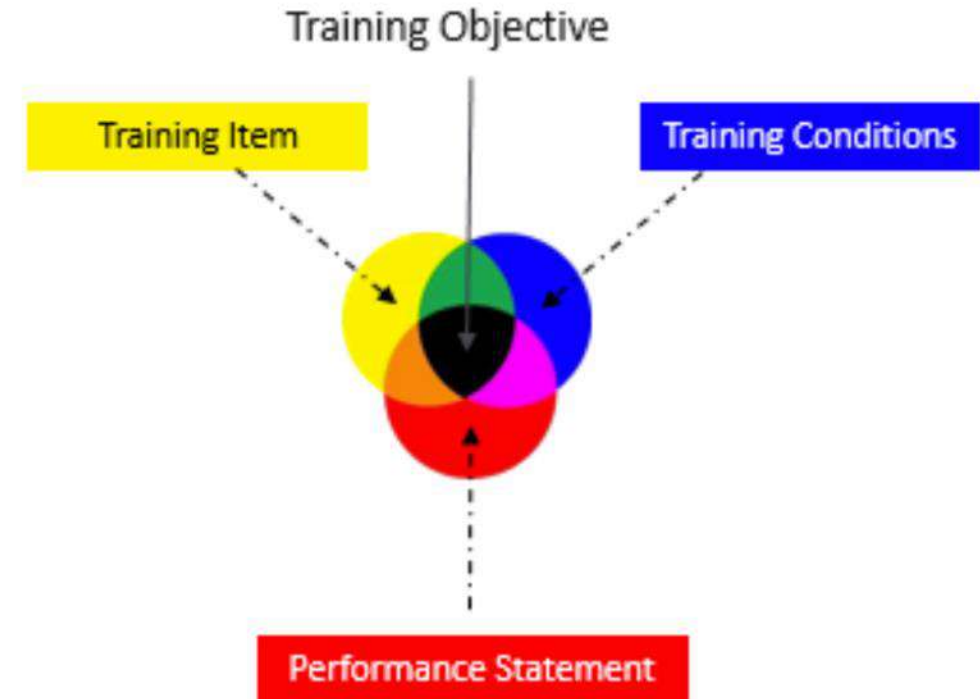
- Training Conditions e.g.

WITH 15 KNOTS CROSSWIND

- Performance Statement

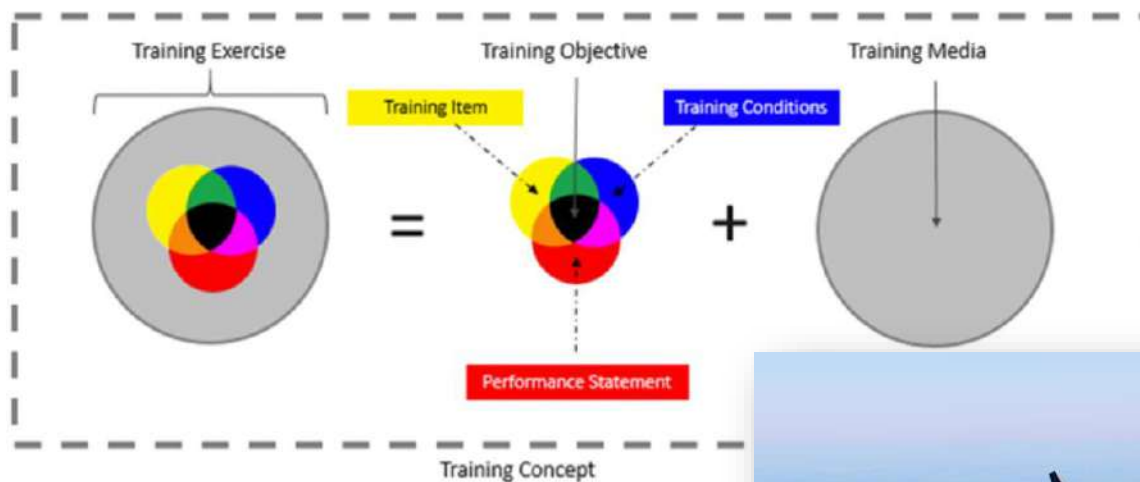
DISCOVER WITH ASSISTANCE

(i.e. instructor intervenes only when necessary to ensure achievement of the objectives and to minimise inefficiency.)



Type Rating design in FCTS


Correlation between Training Exercise, Training Objective and Training Media



The Training exercise drives the required Training Media not the opposite

First FFS Day 8

- Session starts in FL 100
- AP OFF
- FD OFF
- A/THR OFF
- "BIRD" OFF
- **First Landing after 40min**



Type Rating design in FCTS

Lists of recommended Training Topics including its purpose (reason for recommendation)

RECOMMENDED ABNORMAL AND EMERGENCY PROCEDURES	PURPOSE
[ADV] ECAM ADVISORY (FUEL: Differences between wing fuel quantities >1500 kg)	To identify and apply the recommended actions in the QRH
[MEM] LOSS OF BRAKING	To memorize and apply the memory items with the associated callout
[MEM] EMER DESCENT	To identify the memory items at the beginning of the procedure To identify the remaining items to be performed following the read and do principle To memorize and apply the memory items with the associated callout To apply the remaining items of the procedure when required following the read and do principle To reinforce the use of the oxygen mask
[MEM] STALL RECOVERY	To memorize and apply the memory items with the associated callout <i>(Refer to Appendix 3 – Chapter 7.2.7.4 for recommended stall exercises during the undesired aircraft states training)</i>
[MEM] UNRELIABLE SPEED INDICATION	To identify the memory items at the beginning of the procedure that will be performed “if the safe conduct of the flight is impacted” To identify the remaining items to be performed following the read and do principle To memorize and apply the memory items with the associated callout To apply the remaining items of the procedure when required following the read and do principle To identify the sequence of actions with the use of different supports (QRH, ECAM procedures) To fly the aircraft with the use of pitch and thrust tables To fly the aircraft with the Back Up Speed Scale (BUSS) <i>(Refer to Appendix 3 – Chapter 7.3.7 for recommended unreliable speed exercises)</i>
[MEM] EGPWS CAUTION	To memorize the memory items To apply the memory items with the associated callout when required
[MEM] EGPWS WARNING	To memorize and apply the memory items with the associated callout
[MEM] TCAS WARNINGS	To memorize the memory items To apply the memory items required by a traffic advisory alert with the associated callout

Type Rating design in FCTS

Support to Program design: Manufacturer Minimum Training Level (MMTL)

Airbus assigned minimum training levels to each documentary unit of the FCOM and the FCTM.

Minimum Training Levels:

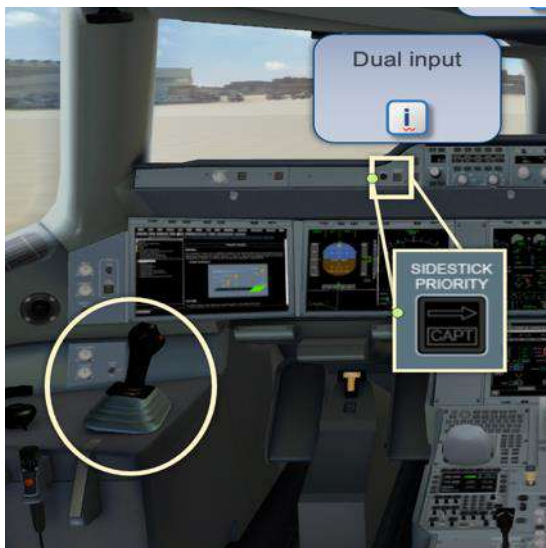
- A: no specific training media; self-study
- B: instructor, animated training media, video etc.
- C: interactive training device with functional fidelity
- D: interactive training device with functional and physical fidelity environment and with instructor guidance (e.g. FNPT2)
- E: training with a full crew, guided-instruction and a high-fidelity environment (FFS, aircraft)

A320/FCTM/ PROCEDURES/NORMAL PROCEDURES/STANDARD OPERATING PROCEDURES		Training Level
Issue Date: 04 SEP 2018 Training MSN 9791 Training reference standard 2.0.0		
Preliminary Cockpit Preparation		
	Objectives	B
	Oxygen	A
	Preliminary Takeoff Performance Computation	B
Exterior Walkaround		
	Exterior Walkaround	B
Cockpit Preparation		
	ADIRS Operations	B
	FMGS Preparation	C
	Takeoff Breifing	B
Before Pushback or Start		
	Takeoff Data	A
	Seating Position and Adjustment of Rudder Pedals	D
Taxi		
	Brakes	E
	Flight Controls	D
	Taxi Roll and Steering	E
	180 Degrees Turn on Runway	E
	Last Data Changes Before takeoff	A
	Takeoff Briefing Confirmation	A
	ADIRS Alignment	A
Before Takeoff		
	Packs	A

Type Rating design in FCTS

Detailed recommendation for training of certain topics

e.g. Sidestick Take Over Training



Further topics:

- ❖ Undesired Aircraft State
- ❖ Unreliable Speed Indication
- ❖ Pilot Monitoring Role

EXERCISE	AIM	DESCRIPTION
Takeover during approach.	To enable the PM to provide advice to correct/enhance PF handling and then to take over control of the aircraft.	<p><u>Instructor position</u>: In-seat instruction. Instructor initially as PF.</p> <p><u>Event</u>: Repositioning at 3 NM on final.</p> <p>The PF (instructor) demonstrates inconsistent handling and improper management of the trajectory. The PM (trainee) must provide verbal advice on how to correct/enhance. If the trajectory becomes destabilized, the PM must take over with the described technique.</p> <p>The instructor must randomly continue to interfere, in order to ensure that the trainee</p>

Recurrent Training in FCTS

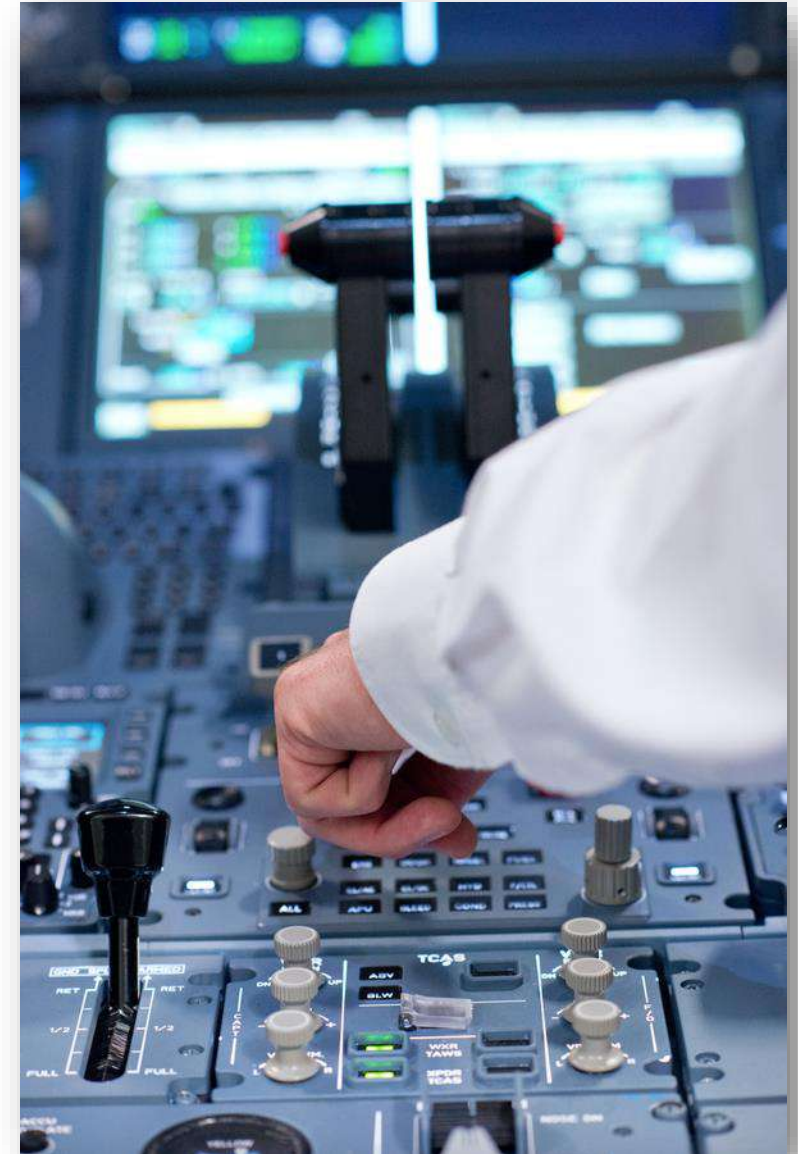
Airbus supports the design of Recurrent Training Programs

- Airbus recommends that Operators and ATOs follow the concept of **Evidence Based Training (EBT)**.
- In addition to the provisions set up by the rulemaking bodies Airbus provides in the FCTS some detailed additional training recommendations for:
 - ❖ **Undesired Aircraft State „Upset Recovery“**
 - ❖ **Unreliable Speed Indication**
 - ❖ **Pilot Monitoring Role**
 - ❖ **Sidestick Priority Logic and Takeover Technique**

Aircraft System Malfunctions

Airbus support for the design of EBT Programs

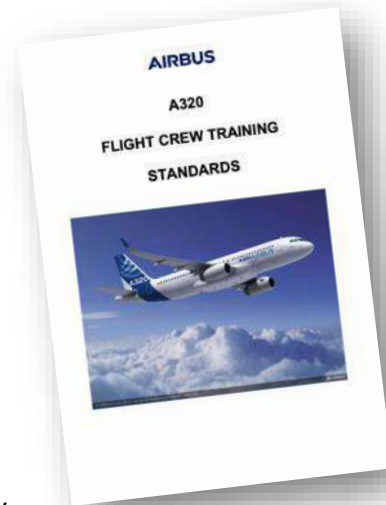
- EBT requires an „Equivalency of Malfunctions“ (EoM) analysis: The malfunctions to be trained are those that place a significant demand on a proficient flight crew.
- The selection of the malfunctions that place a significant demand on a proficient flight crew is the responsibility of the Operators and ATOs.
- To support operators and ATOs in analysing the EoM for their operation, the FCTS provides a „[Manufacturer Malfunctions & EBT Characteristics \(MMEC\)](#)“ table



Equivalency of Malfunctions Analysis

Manufacturer Malfunctions & EBT Characteristics (MMEC) table in the FCTS

The table provides the results of the Airbus analysis to identify what EBT characteristics are applicable to each emergency and abnormal procedure of the Airbus FCOM. Operators and ATOs can compare their analysis with the analysis performed by Airbus.



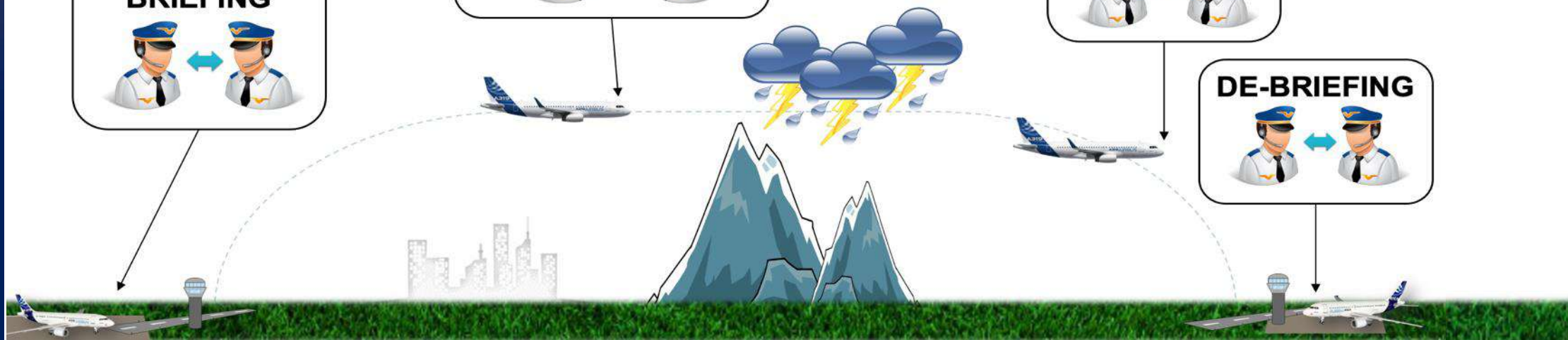
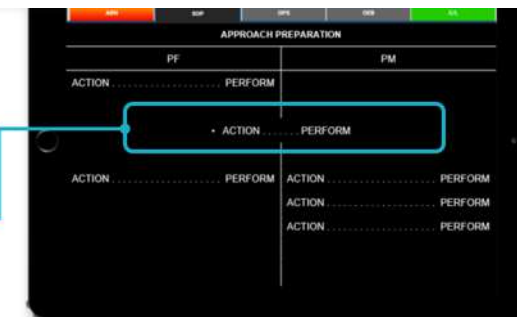
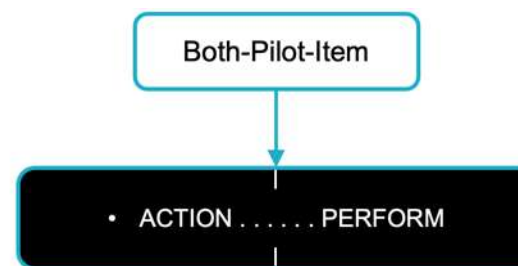
"I" = Immediacy
 "L" = Loss of instrumentation
 "D" = Degradation of aircraft control
 "M" = Management of consequences
 "C" = Complexity

A320/FCOM/PROCEDURES/ABNORMAL and EMERGENCY PROCEDURES		EBT Characteristics				
		I	L	D	M	C
Issue Date: 04 SEP 2018 Training MSN 9791 Training reference standard 2.0.0						
MISC	[MEM] EMER DESCENT	Y	N	N	Y	N
MISC	[MEM] STALL RECOVERY	Y	N	N	N	N
MISC	[MEM] STALL WARNING AT LIFT OFF	Y	N	N	N	N
MISC	[QRH] BOMB ON BOARD	N	N	N	Y	N
MISC	[QRH] COCKPIT WINDSHIELD / WINDOW ARCING	N	N	N	N	N
MISC	[QRH] COCKPIT WINDSHIELD / WINDOW CRACKED	N	N	N	Y	N
MISC	[QRH] DITCHING	Y	N	N	Y	N
MISC	[QRH] EMER EVAC	Y	N	N	Y	N
MISC	[QRH] EMER LANDING	Y	Y	Y	Y	Y
MISC	[QRH] FORCED LANDING	Y	N	N	Y	N
MISC	[QRH] OVERWEIGHT LANDING	N	N	N	Y	N
MISC	[QRH] SEVERE TURBULENCE	N	N	N	N	N
MISC	[QRH] TAILSTRIKE	N	N	N	Y	N
MISC	[QRH] VOLCANIC ASH ENCOUNTER	Y	Y	Y	Y	Y
NAV	[MEM] UNRELIABLE SPEED INDICATION	Y	Y	Y	Y	Y
NAV	[QRH] ADR CHECK PROC	Y	Y	Y	Y	Y
NAV	[QRH] ALL ADR OFF	Y	Y	Y	Y	Y
NAV	[QRH] IR ALIGNMENT IN ATT MODE	N	Y	N	Y	N
NAV	NAV (CAPT)(F/O)(CAPT+F/O) HUD FAULT	N	Y	N	N	N
NAV	NAV ADR 1(2)(3) FAULT	N	Y	N	N	N
NAV	NAV ADR 1+2(1+3)(2+3) FAULT	Y	Y	Y	Y	Y

CBTA and SOP Design

Airbus considers pilot competencies when designing new SOPs

Example: New TEM-based Departure and Arrival Briefing to be introduced by November 2021



Competency Based Training in the Airbus ATO

All Training in the Airbus ATOs follows CBTA

- 2006 First APIC Instructor Course
- 2014 New A350 Typing – following competency training principles
- 2014 Competency Based Grading System (model for EASA EBT regulation)
- 2020 All Type Rating courses are CBTA
- 2021 Latest version of APIC course is 100% CBTA



Summary – Airbus not only builds Airplanes

CBTA/EBT and Airbus

- Airbus is a strong supporter of CBTA/EBT since more than 10 years
- Airbus supports the CBTA-design in the «Flight Crew Training Standards» (FCTS) document
- Download of FCTS is free of charge in Airbus World
- Design of SOPs consider the expected pilot competencies
- All Airbus ATOs provide CBTA Type Rating Courses and Instructor Training Courses

