



EASA
European Aviation Safety Agency

RMT.0599 Update of ORO.FC:

Evidence-Based Training

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2021

Your safety is our mission.

An agency of the European Union 

Felicidades: Iberia, Líneas Aéreas de España, S.A. Operadora y AESA-Agencia Estatal de Seguridad Aérea



1st EBT baseline Airline approved in accordance with Regulation (EU) 2020/2036 and Regulation (EU) 2020/2193.



Do this aircraft look the same?...

Lockheed C-121C Super Constellation





Do this aircraft look the same?...

Douglas DC-9- serie 32 P&W JT8D

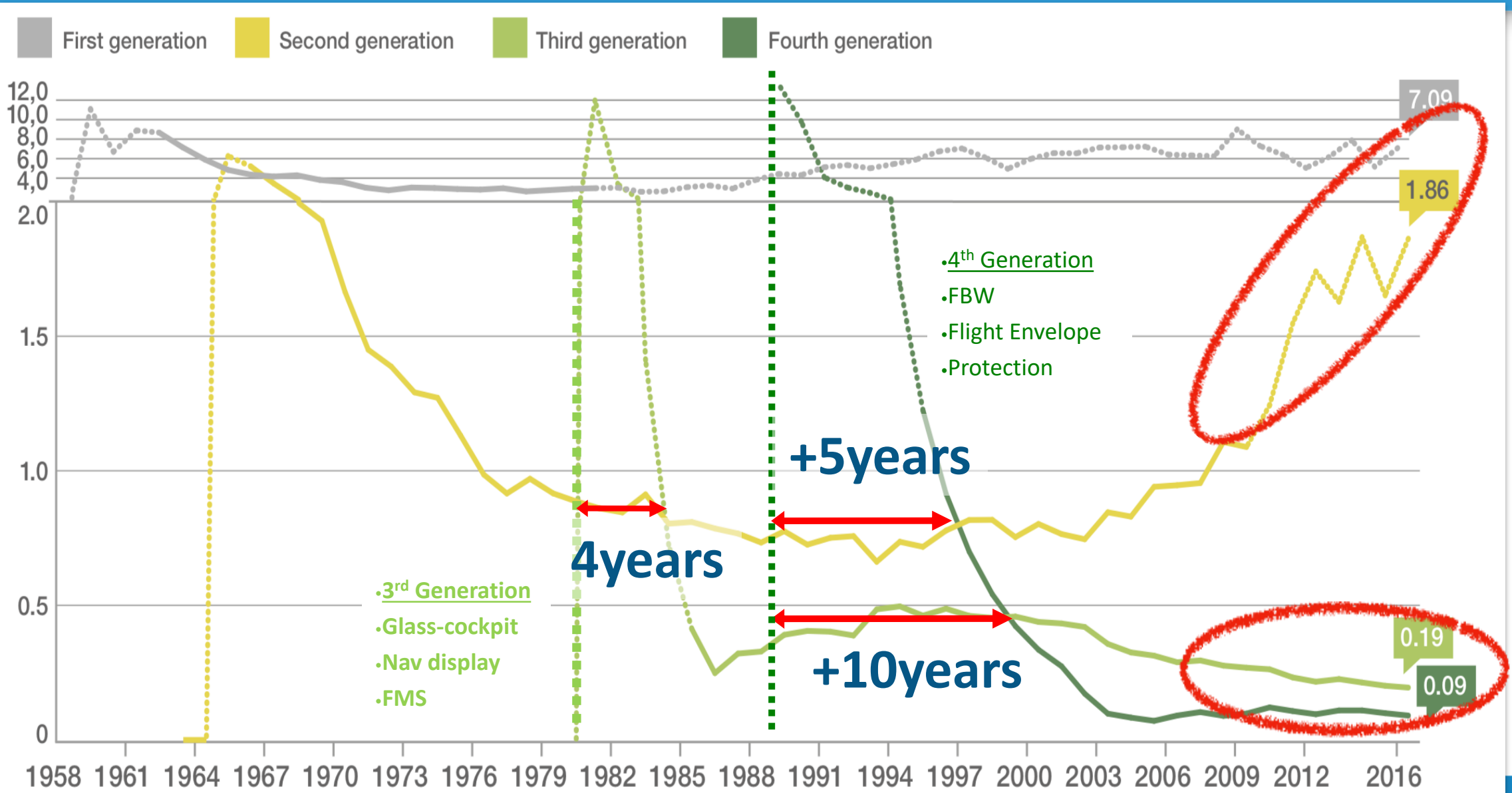


Airbus 350 XWB

So..., why do we train and check our pilots in the same way?

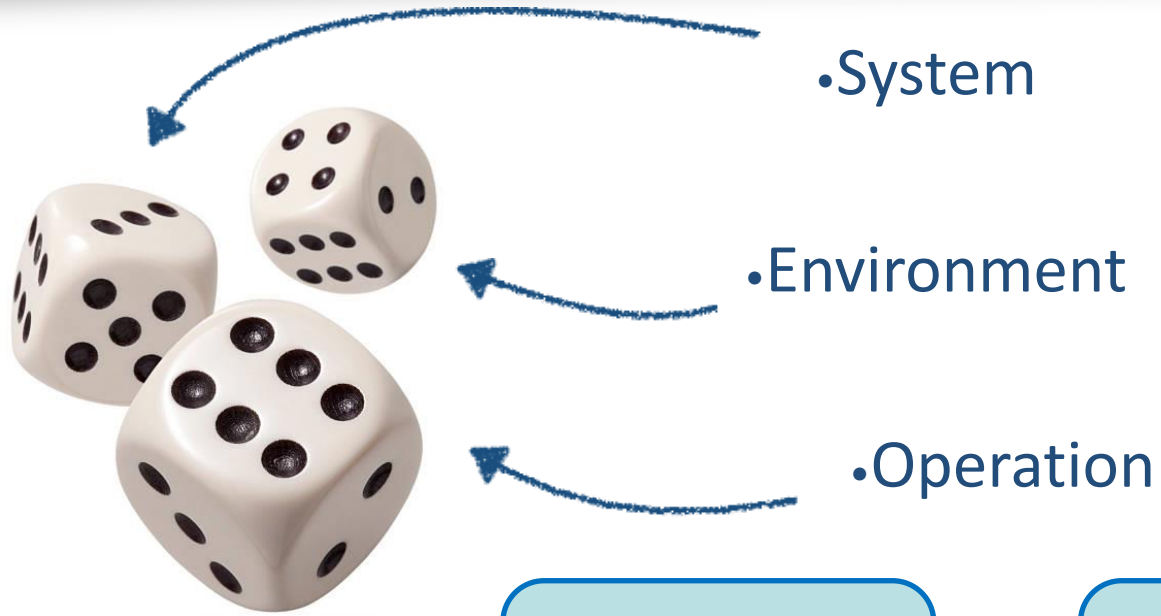


Evidence: Fatal accidents per million hours per generation





In the good old times.... GENERATION 1 & 2



•Repetitive & foreseeable

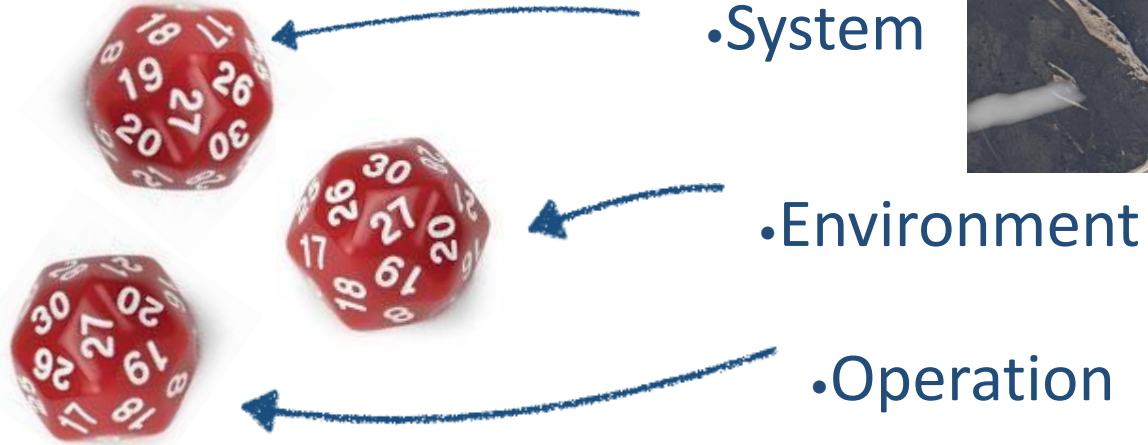
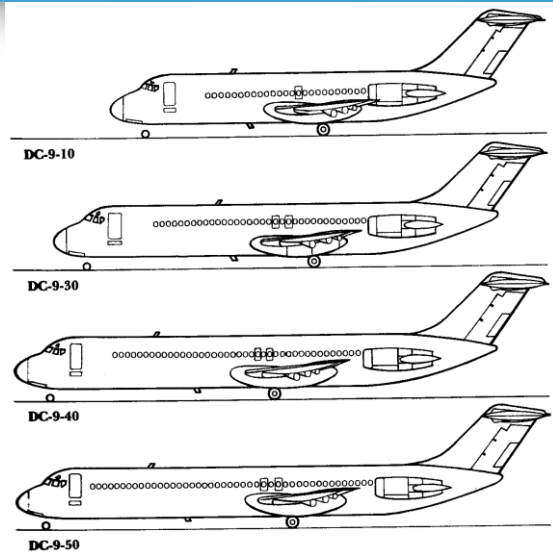
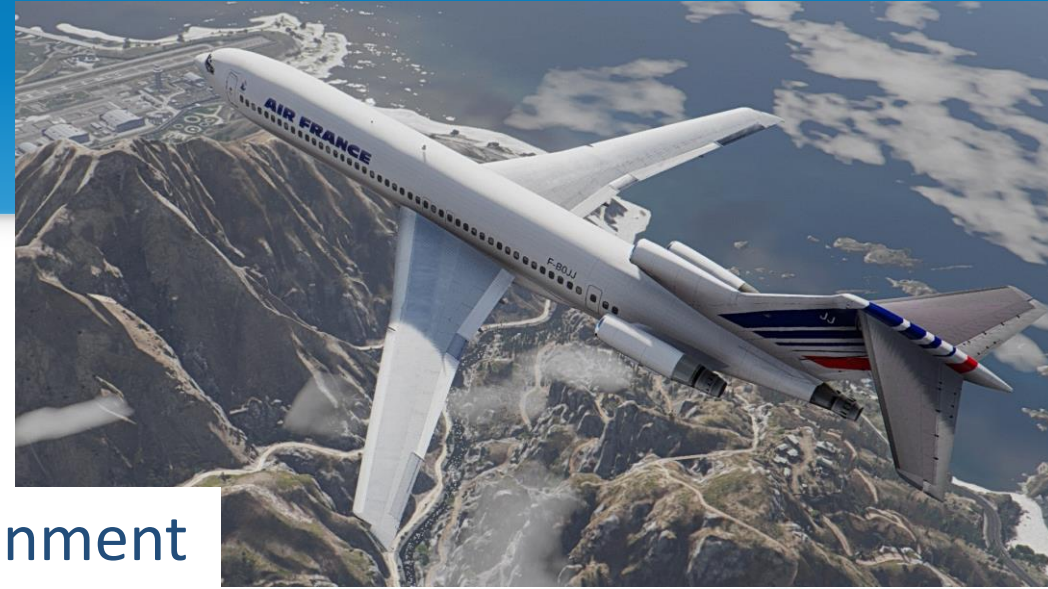
•Evidence

•What we know





GENERATION 2 & 3



•Repetitive & foreseeable

•Evidence

•What we know





Regulator Paradox



•System



•Environment



•Operation



•Unique & unforeseeable



•No Evidence



•We don't know

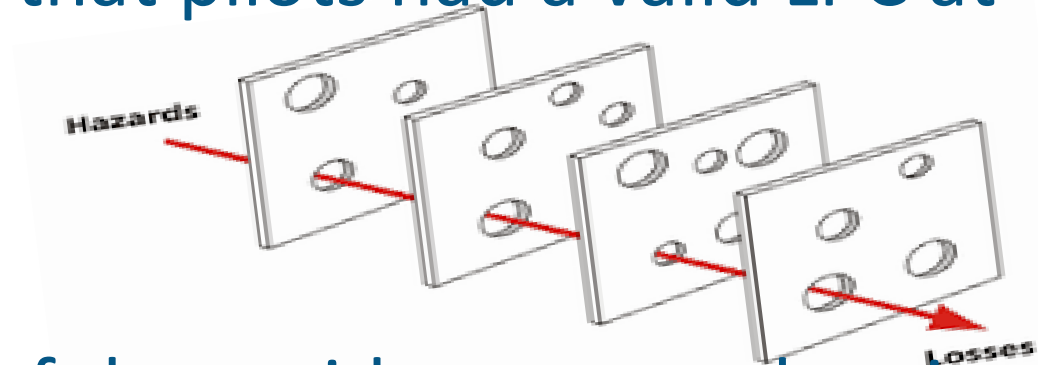




Why EASA introduced EBT for Recurrent training?

➤ Accidents/incidents investigations show that pilots had a valid LPC at the time of the accident.

➤ We need to improve – Reduce the wholes



➤ One of the contributing factors in most of the accidents nowadays is deficiencies in NON-TECH competencies

➤ More than 50 % of fatal aircraft accidents worldwide accidents have a causal factor action of the flight crew

➤ flight crew handling skills were a factor in 14 %

➤ non-technical skills were a factor in more than twice (32 %)

Source: (UK, CAA)





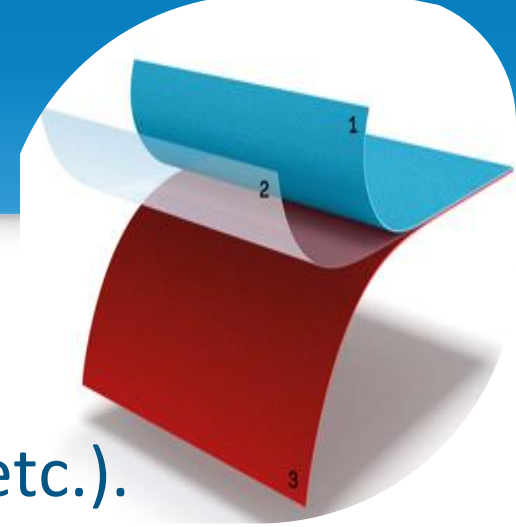
More details of the reasons to move to EBT

- Traditional recurrent training
 - has not kept up with development and new challenges
 - does not reflect the operational risks of today's technology and environment.
- Improve efficiency and effectiveness.
- We need data driven training systems
 - Meaningful data! – standardise training data collection.
 - Note: ensuring just culture and data protection.





EBT: 3 layers of DATA



1. Regulator: accidents, studies, surveys,...etc.
 - ❑ Data report for Evidence-based training (IATA/ICAO/EASA...etc.).
2. Operator: operators operational data + training data
 - ❑ Recurrent training and checking programme.
3. Instructor: assessment of crew competencies and behaviour indicators
 - ❑ Tailored training





World wide
DATA report



Generic program:
Training topics frequency
A,B,C (6months,1,3 years).



Operator's EBT
program
(airline specific)



Operator's
data (training,
SMS etc)



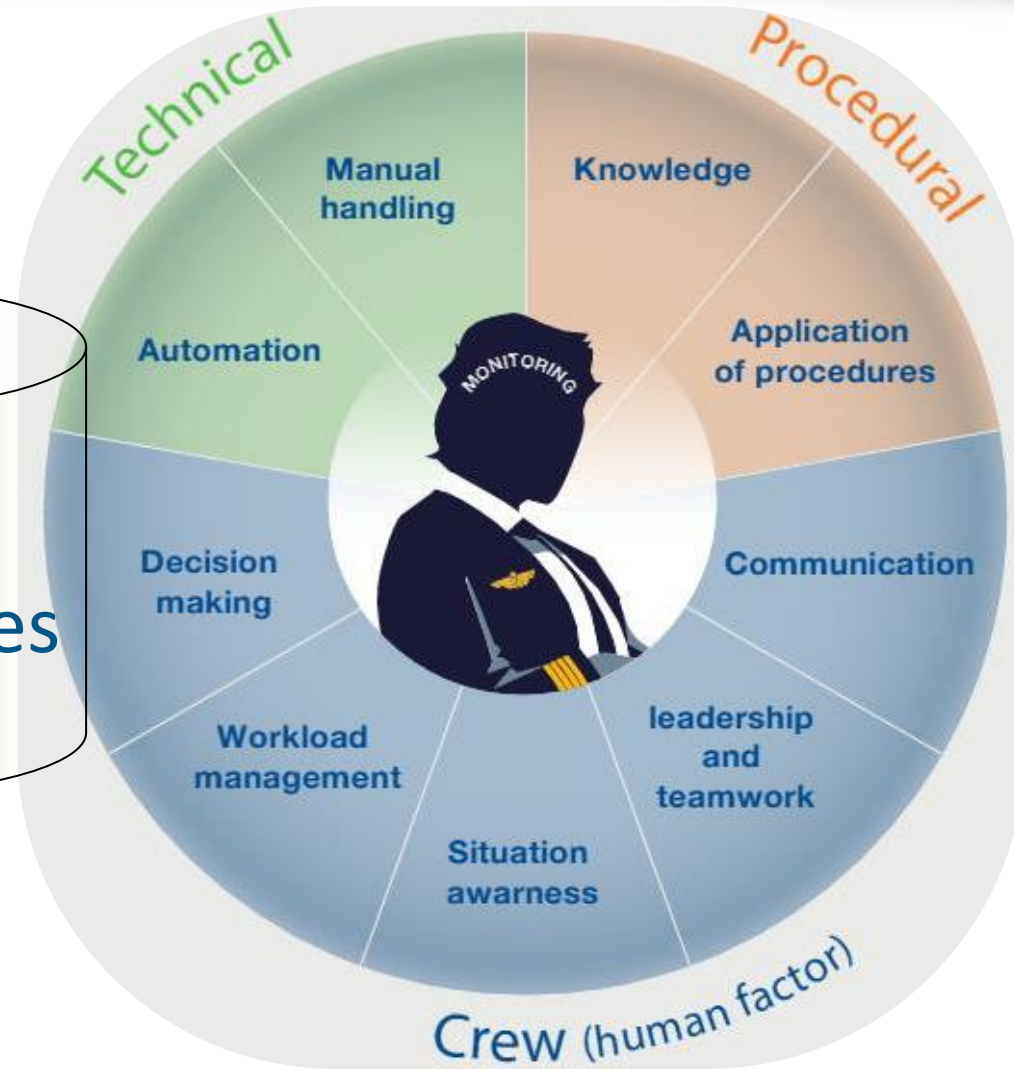
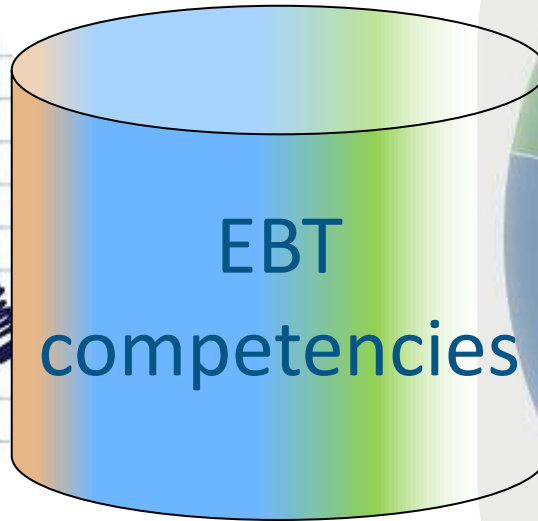
Evaluation
FSTD session



Training
adapted to a
particular crew



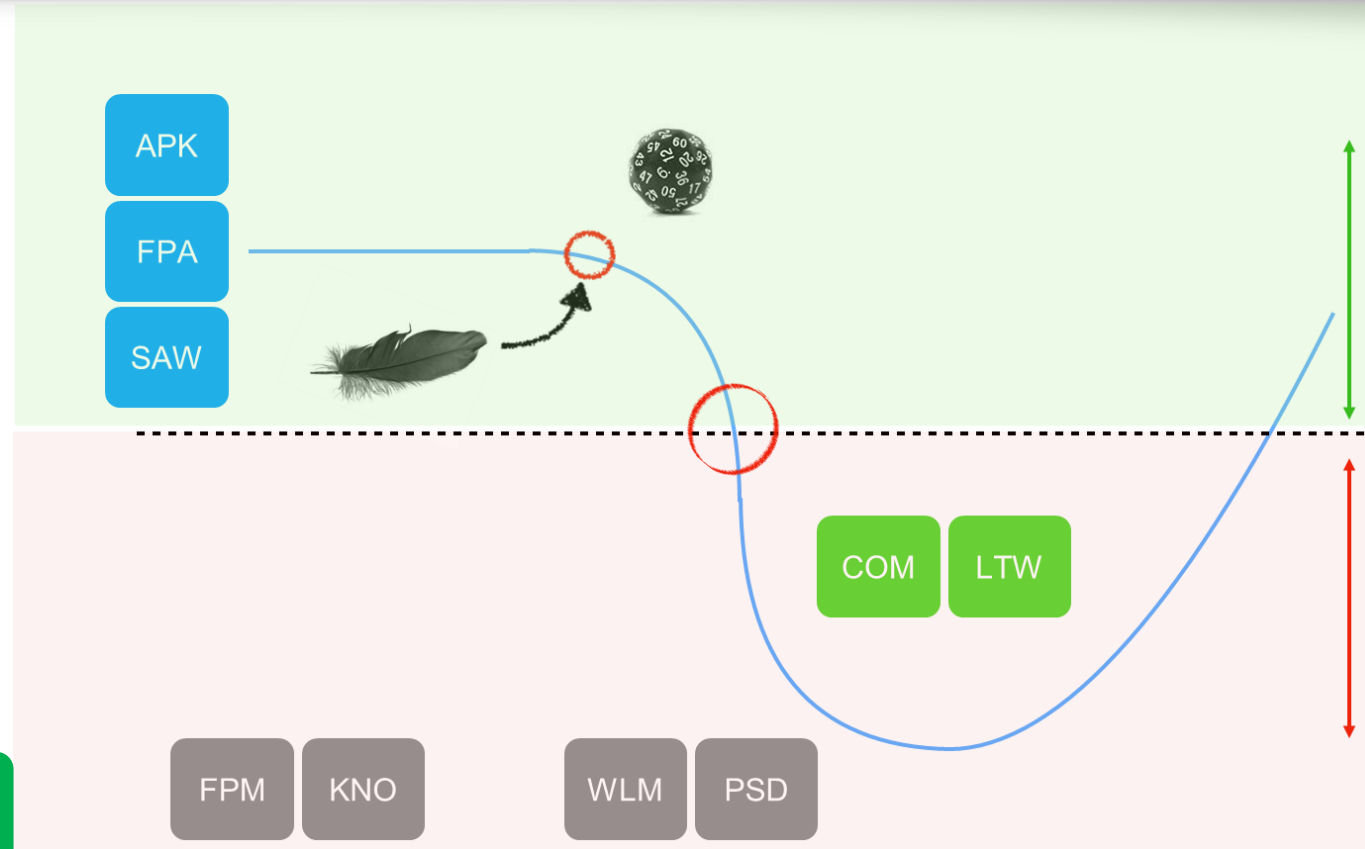
Building blocks. EBT components





EBT competencies

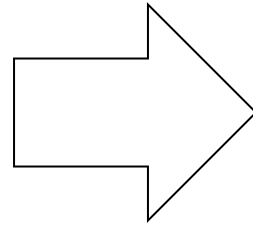
- Resilience Tool Kit
- CORDIS MAN4GEN



Competencies – Research MAN4GEN



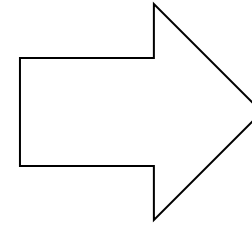
Scenario 1



•Can I predict successful outcome or unsuccessful outcome upfront?



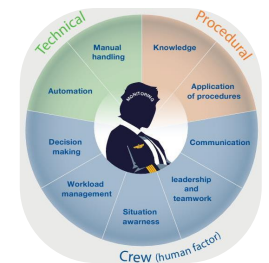
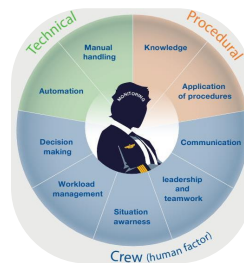
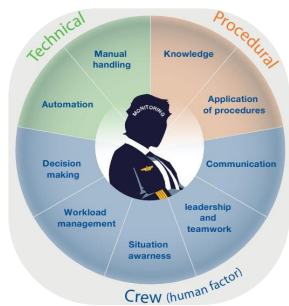
Scenario 2



Scenario 3

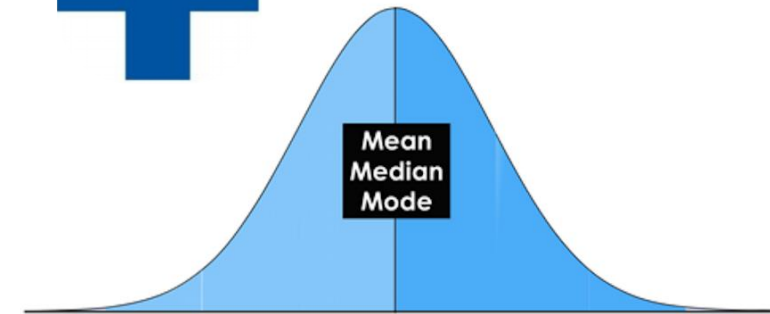
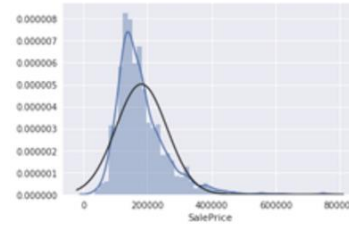
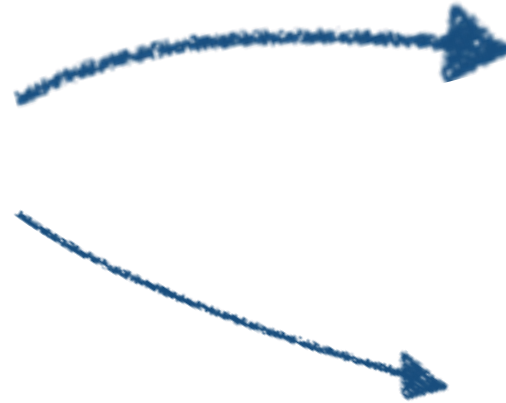
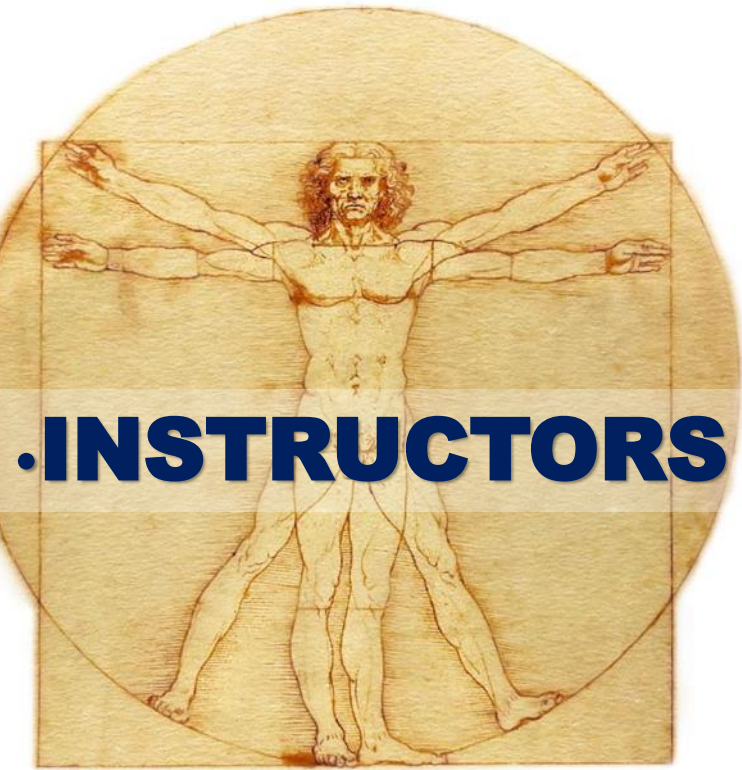


•GRADE Pilots





Instructors (ensure facilitation debriefings).



.CONCORDANCE



Inspector Training – AMC1 ARO.OPS.226(a).

► In addition to their regular inspector training:



- Mirror of AMC1 ORO.FC.146.
- Can be done in an airline.

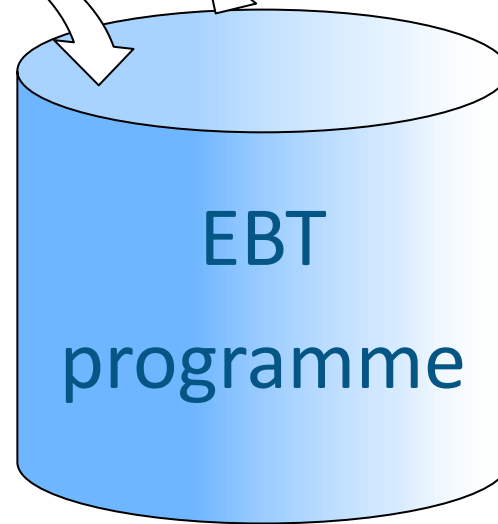


Operator's EBT programme

- Training data:
 - 9 competencies
 - Grading 1 to 5
- by standardised instructors (concordance)

• Operational data: to contextualised the example scenario elements:

- SMS
- FDM...etc.



• **Generic program:** Training topics. ICAO Appendix II Doc9995 or EASA AMC2 to AMC7 ORO.FC.232



EBT programme

Regulation (EU) No 2020/2036 - ORO.FC.231 (a)

1. Take AMC2 to AMC7 ORO.FC.232
2. Select your aircraft generation (e.g A320 Generation 4)
3. Take the training topics with the correct frequency (e.g. A every 6 months, B every 1 year, C every 3 years)
4. For each training topic, choose the example scenario element
5. Contextualised you scenario with your operational data

EBT programme - UPRT

Regulation (EU) No 2020/2036 - ORO.FC.232

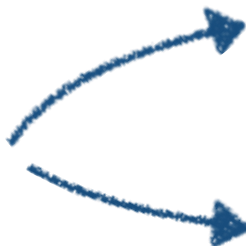
□ Integrated into the EBT programme through the Asses&Trg topics:

- ❖ Upset prevention freq. B
- ❖ Upset recovery freq. C

Note: covering one component satisfies the requirement to cover the whole element.

“One number covers the letter”.

Elements and components		Ground training	FSTD/ Aeroplane training
8.	Mach effects (if applicable to the aeroplane type)	•	•
9.	Aeroplane stability	•	•
10.	Control surface fundamentals	•	•
11.	Use of trims	•	•
12.	Icing and contamination effects	•	•
13.	Propeller slipstream (as applicable)	•	•
B.	Causes of and contributing factors to upsets		
1.	Environmental	•	
2.	Pilot-induced	•	
3.	Mechanical (aeroplane systems)	•	
C.	Safety review of accidents and incidents relating to aeroplane upsets		
1.	Safety review of accidents and incidents relating to aeroplane upsets	•	
D.	g-load awareness and management		
1.	Positive/negative/increasing/decreasing g-loads	•	•
2.	Lateral g awareness (sideslip)	•	•
3.	g-load management	•	•
E.	Energy management		
1.	Kinetic energy vs potential energy vs chemical energy (power)	•	•
F.	Flight path management		
1.	Relationship between pitch, power and performance	•	•
2.	Performance and effects of differing power plants (if applicable)	•	•
3.	Manual and automation inputs for guidance and control	•	•
4.	Type-specific characteristics	•	•
5.	Management of go-arounds from various stages during the approach	•	•
6.	Automation management	•	•
7.	Proper use of rudder	•	•



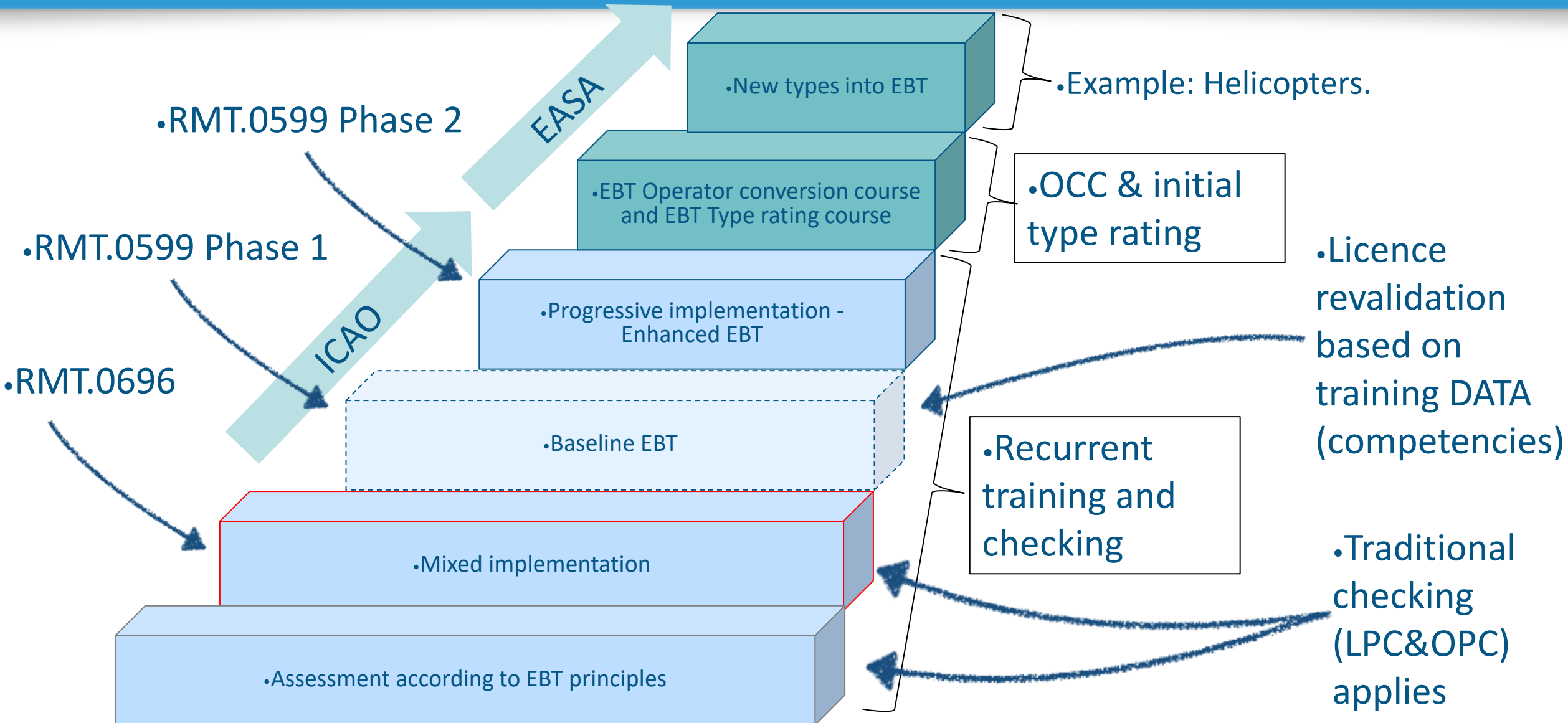


Advice to stakeholders

- Follow the official documentation of your regulator, ICAO and EASA.
- If you use private consultants contact reliable organisations such as: IATA or the NLR.
- EBT is a worldwide global initiative that was created and developed by many organisations. No single organisation or person can claim the original idea or ownership of EBT and its principles.
- EBT is long journey: 1-2 years of EBT principles and 2-3 of EBT mixed.
 - Instructor training (emphasis on facilitation).
 - Instructor concordance.
 - Feedback loop.



EBT implementation. (Phases).





International cooperation EASA

- During 2020 EASA cooperated with Aeronautica Civil Colombia to implement EBT mixed.
- EASA delivered online webinars to AeroCivil on the 2Q2020.
- EASA assisted Aero Civil on the 3Q 2020 to introduce EBT mixed into the RAC 121 Appendix T. Followed in 4Q2020 with the Advisory circular to the Appendix T to further explain and facilitate the implementation of EBT mixed.
- <https://www.aerocivil.gov.co/normatividad/RAC/RAC%20%20129%20-%20Operaciones%20de%20Explotadores%20%20Extranjeros.pdf>



AERONÁUTICA CIVIL
UNIDAD ADMINISTRATIVA ESPECIAL



Documentation. Primary legislation and references:

- EASA Mixed EBT checklist: Oversight guidance for the transition to Mixed EBT
 - <https://www.easa.europa.eu/sites/default/files/dfu/EBT%20Checklist%203.2%20date%2023.03.2021%20Clean%20ready%20to%20publish.pdf>
- ED Decision 2015/027/R Implementation of evidence-based training (EBT) within the European regulatory framework <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015027r>.
 - Annex I to ED decision 2015/027/R: **GM1 ORO.FC.230 (a); (b); (f). Recurrent training and checking** to Part-ORO – Issue 2, Amendment 4; and
 - Explanatory Note to the ED Decision 2015/027/R.
- Regulation (EU) 2020/2036 of 9 December 2020 amending Regulation (EU) 965/2012.
 - <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R2036&qid=1607691853186>
- Regulation (EU) 2020/2193 of 16 December 2020 amending Regulation (EU) 1178/2011.
 - <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R2193>
- ED Decision 2021/002/R ‘Update of the AMC & GM to Subpart FC of Part-ORO (evidence -based training (EBT))’
 - <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2021002r>
- Explanatory notes and Explanatory note to the ED Decision 2021/002/R and Regulation (EU) 2020/2036 and Regulation (EU) 2020/2193 and Safety promotion material (included in the Explanatory note).
 - https://www.easa.europa.eu/sites/default/files/dfu/explanatory_note_to_ed_decision_2021-002-r.pdf



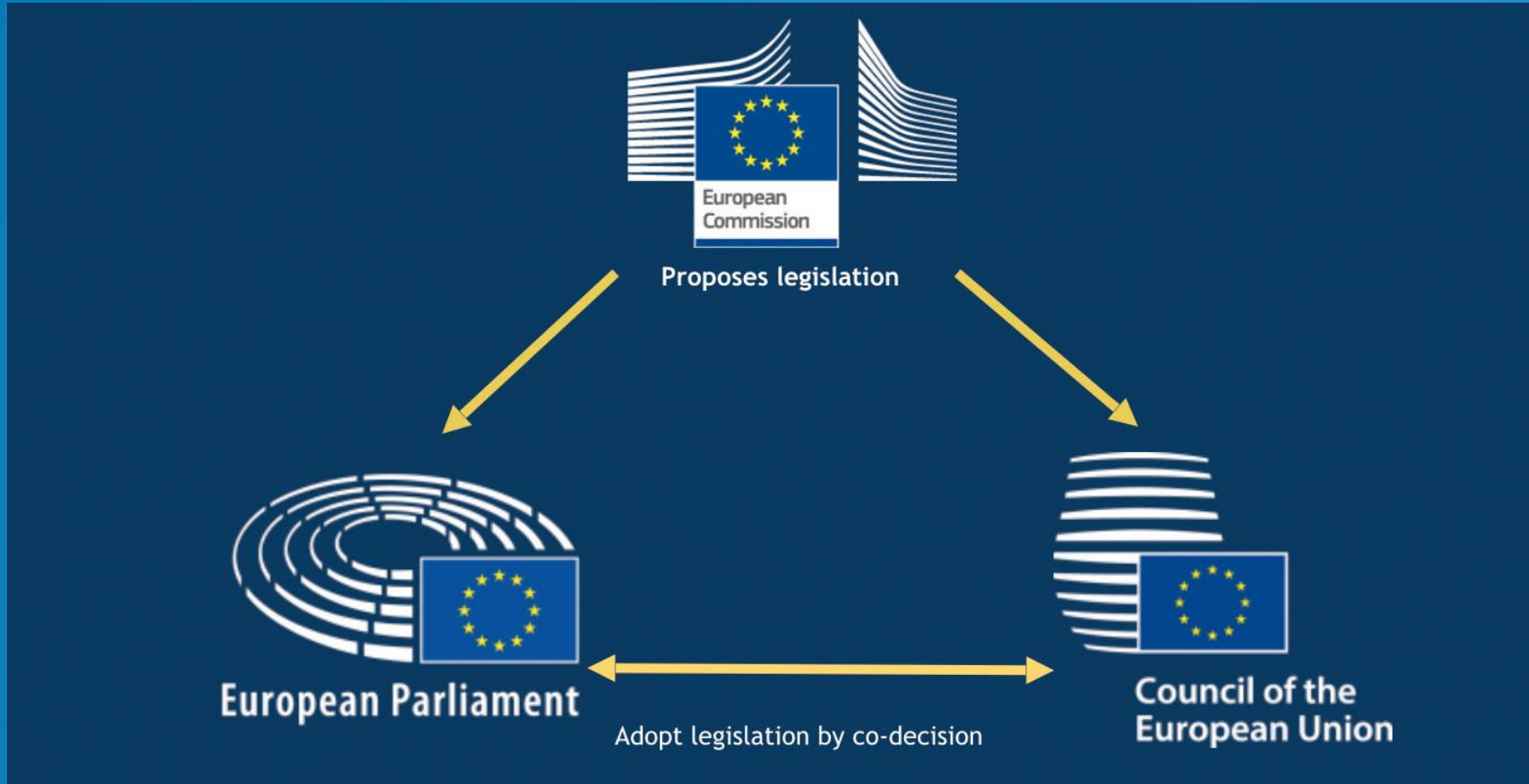
Documentation. For info:

- ICAO Doc 9995 AN/497 Manual of Evidence-based Training First Edition – 2013.
- EASA Opinion 08/2019 Evidence-based training
 - <https://www.easa.europa.eu/document-library/opinions/opinion-082019-b>
- [EASA Notice of proposed of Amendment 2018-07\(B\) and 2018-07\(A\)](#).
- ToR RMT.0696 Implementation of Evidence-Based Training within the European regulatory framework
 - <https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0696>.
- ToR (+ Concept Paper) RMT.0599 Evidence-based and competency-based training
 - <https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-concept-paper-rmt0599>.
- IATA Data Report for Evidence-Based Training August 2014 1st edition.
- ICAO PANS Training DOC 9868.
- IATA Evidence-Based Training Implementation Guide July 2013.



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