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European Aviation Safety Agency

RMT.0599 Observable Behaviours and Grading

Francisco Arenas Alvariño
Air crew expert and Senior expert Ops.

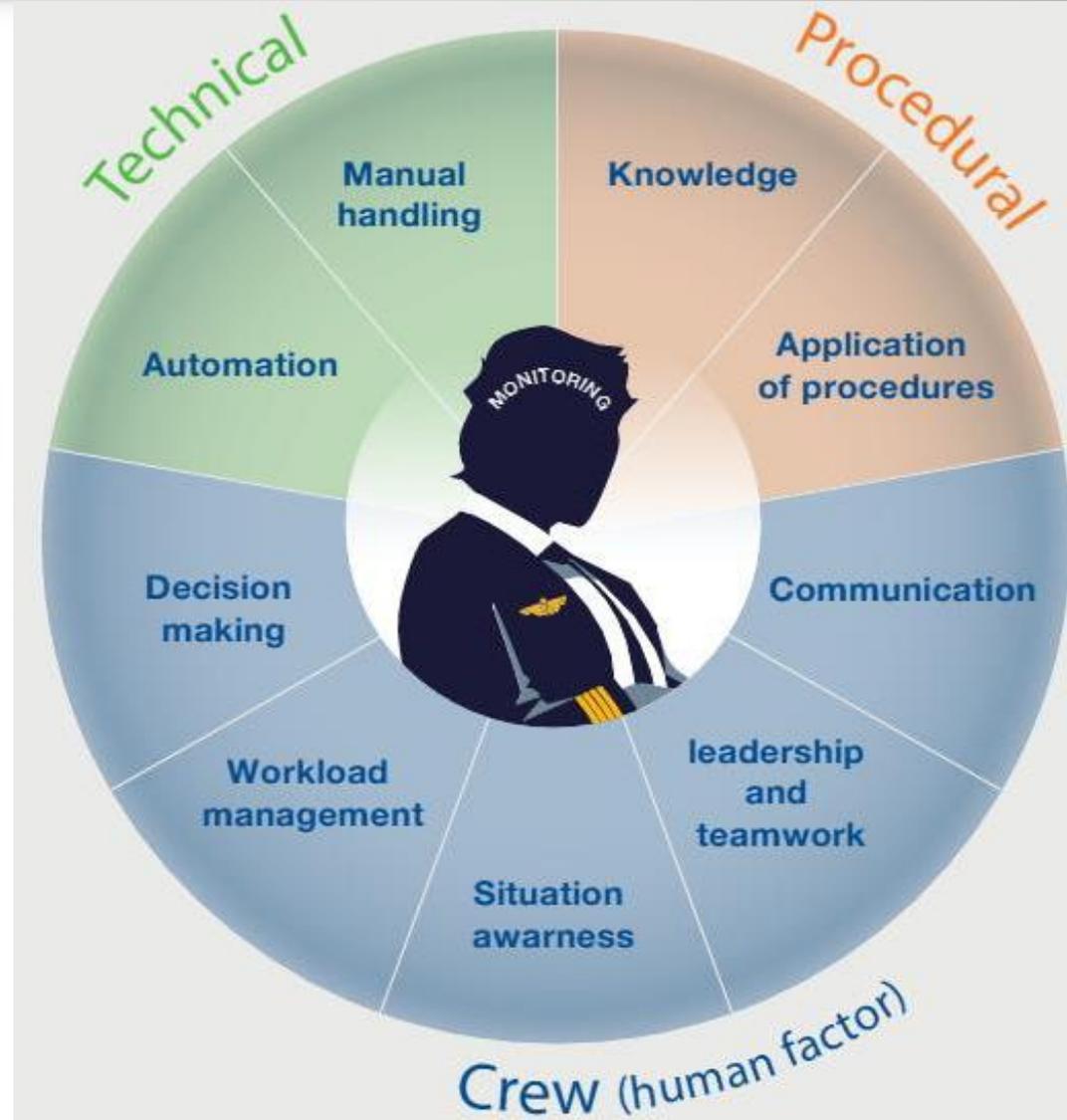
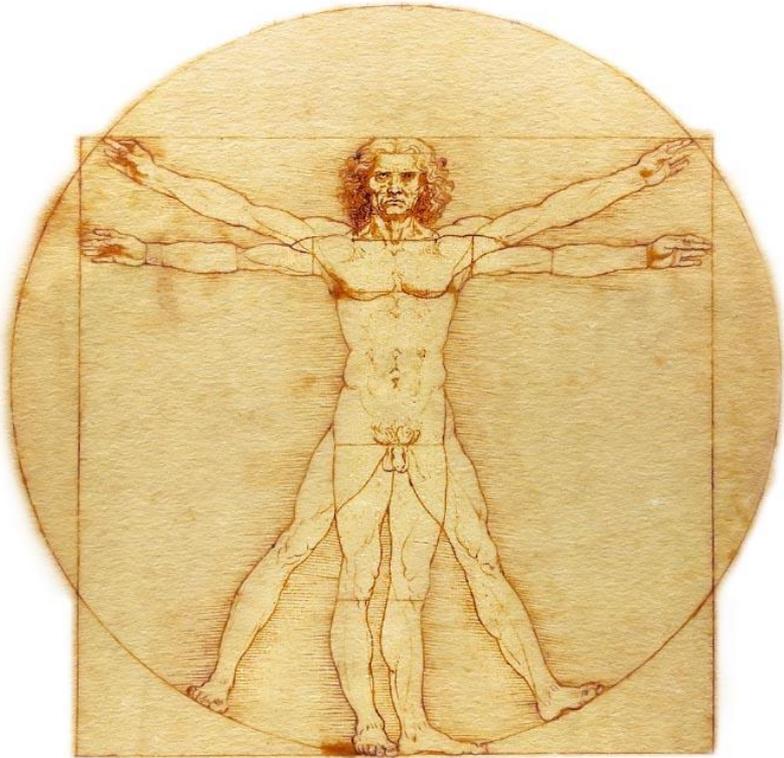
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Competencies





Competencies are made of

- **Behaviour.** The way a person responds, either overtly or covertly, to a specific set of conditions, and which is capable of being measured.
- **Observable behaviour (OB).** A single role-related behaviour that can be observed and may or may not be measurable.
- ICAO has changed some OBs: applicable Nov 2020.
 - EASA will align the competency framework (8 ICAO competencies + KNO).



EASA recommended grading – LEVEL 1

- NPA 2018 – 07B: ORO.FC.231(d)
- AMC1 ORO.FC.231(d)(1) + GMs





Level 1 - VENN – System - Competencies

- Significantly enhanced safety ...
- Enhanced Safety
- Resulted in a safe operation
- Did not result in unsafe situation
- Unsafe situation

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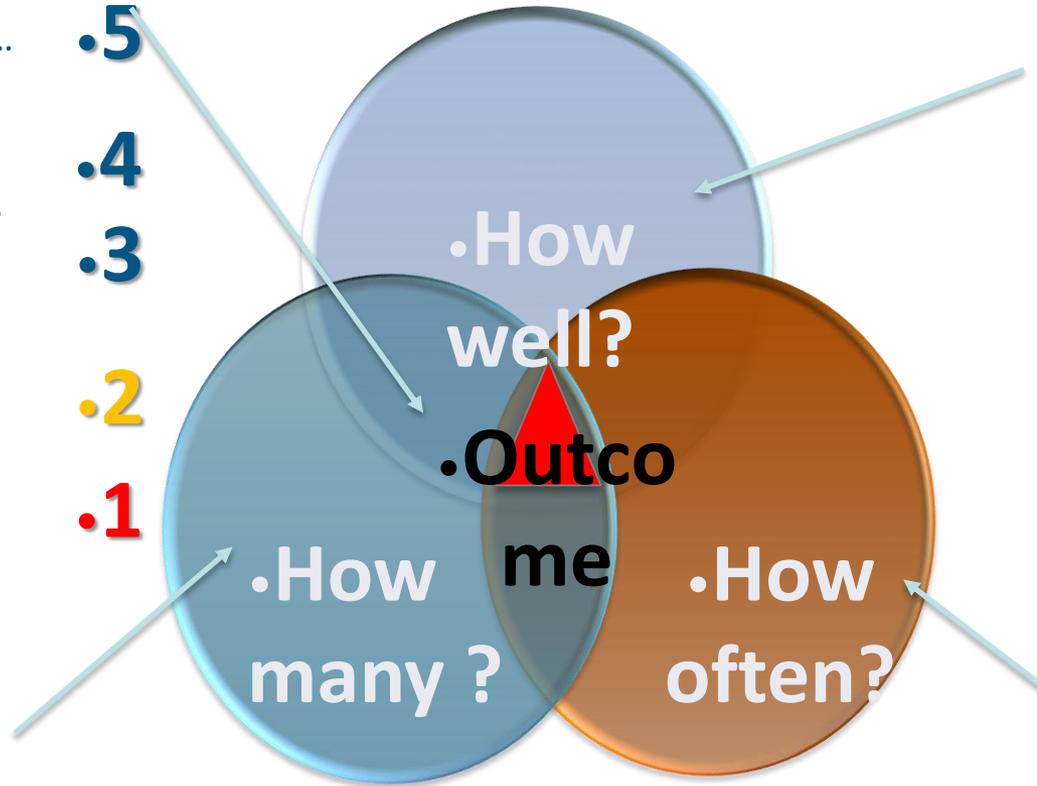
.4

.3

.2

.1

- All
- All
- Most
- Some
- Any



- Exemplary
- Effectively
- Adequately
- Minimum Acceptable
- Not Effectively

- Always
- Regularly
- Regularly
- Occasionally
- Rarely



Alternative grading – Level 1

- NPA 2018 – 07B: ORO.FC.231(d)
- AMC2 ORO.FC.231(d)(1) + GMs

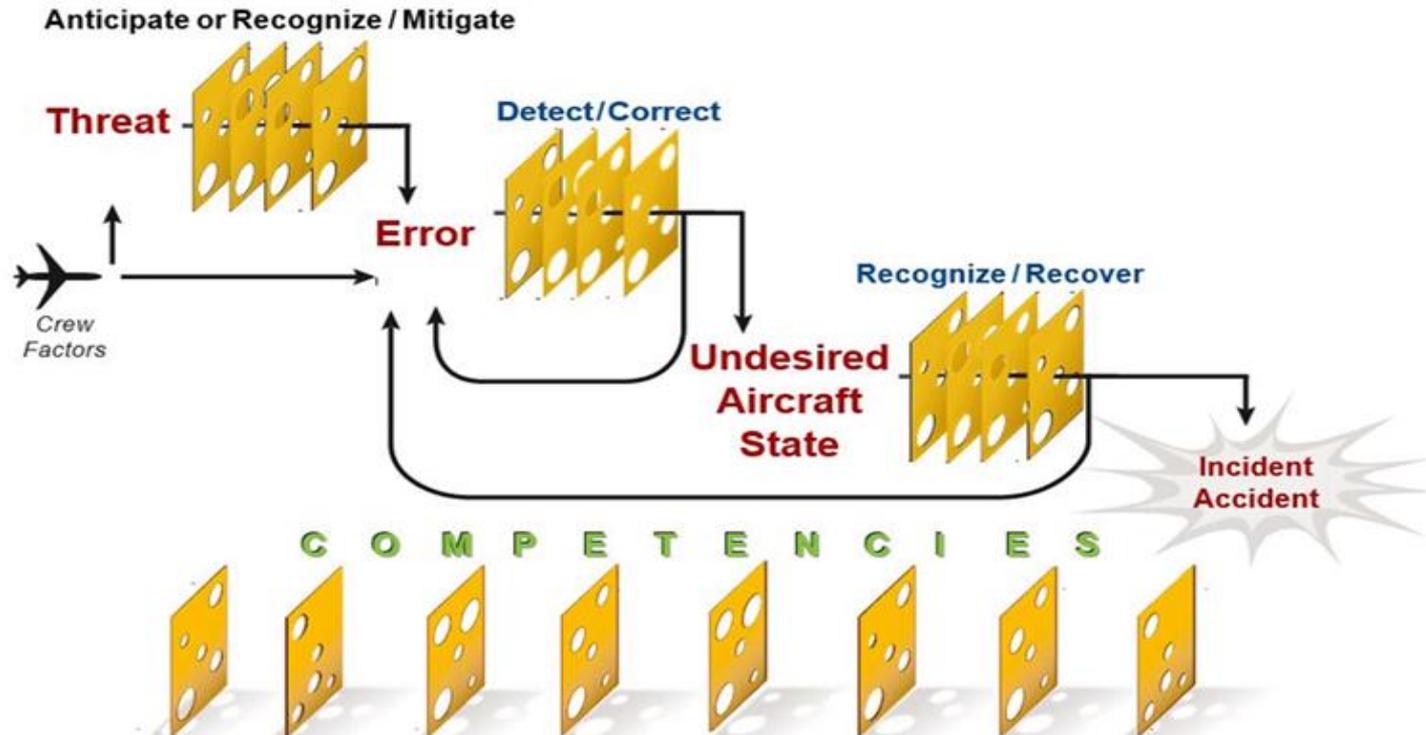




Level 2 Guidance for Grading.

- ▶ The operator should develop further guidance to allow instructors to determine the grading level.
 - ▶ SPT.012 proposes to use the threat and error management model

Threat and Error Management (TEM)



The Competencies are the Individual and Team Counter Measures

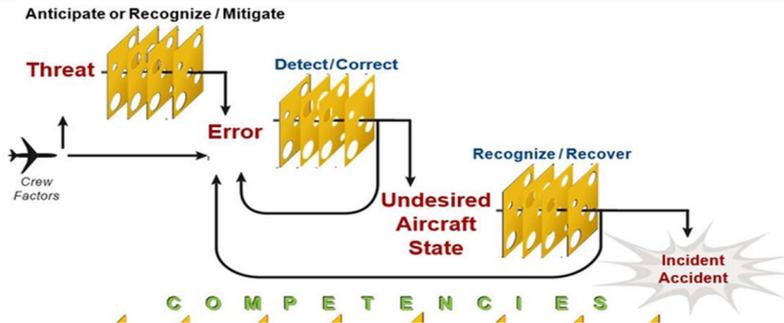


TEM model for grading - guidance.

- Non-intentional non-compliance without consequences — trap error.
 - Reference grading 3.
 - Scale from 2 to 4.



Threat and Error Management (TEM)





TEM model for grading - guidance.

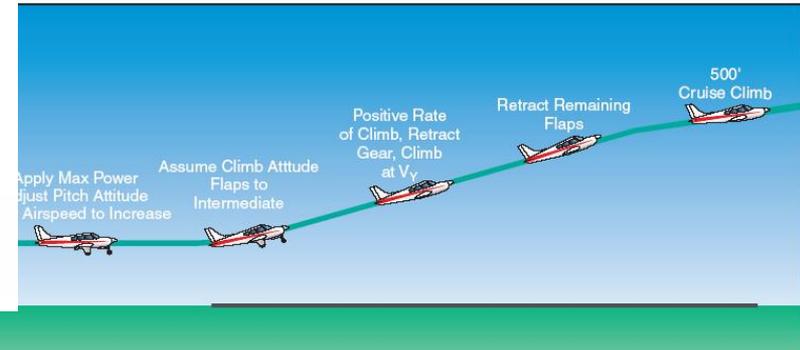
- Non-intentional non-compliance with consequences and provided the consequences were mitigated in a timely manner.





TEM model for grading - guidance.

► Intentional non-compliance but recognised and corrected in a timely manner with a safe outcome.





TEM model for grading - guidance.

- Intentional non-compliance not corrected and continued to the end state





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Level 1 Grading – VENN-Competencies

- In EBT mixed is required to have a grading system
- In EBT baseline is required to have a grading system and EASA specified how this grading should be.
- Level 2 grading is NOT required in EBT mixed or EBT baseline.
- However if you need more data. Is recommended to use the level 2 data described before.



Level 2 – grading data

- Take an example scenario element
- Ask your instructors:
 - Is one particular OB displayed by the crew?
 - Yes/no
- Do not overload the instructor.
- The instructor should not be heads down.





An example

<i>Competency</i>	<i>Competency description</i>	<i>Behavioural indicator</i>
Application of Procedures	Identifies and applies procedures in accordance with published operating instructions and applicable regulations, using the appropriate knowledge.	Identifies the source of operating instructions Follows SOPs unless a higher degree of safety dictates an appropriate deviation Identifies and follows all operating instructions in a timely manner Correctly operates aircraft systems and associated equipment Complies with applicable regulations. Applies relevant procedural knowledge



Another example

<p>Situation Awareness</p>	<p>Perceives and comprehends all of the relevant information available and anticipates what could happen that may affect the operation.</p>	<p>Identifies and assesses accurately the state of the aircraft and its systems</p> <p>Identifies and assesses accurately the aircraft's vertical and lateral position, and its anticipated flight path.</p> <p>Identifies and assesses accurately the general environment as it may affect the operation</p> <p>Keeps track of time and fuel</p> <p>Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected</p> <p>Anticipates accurately what could happen, plans and stays ahead of the situation</p> <p>Develops effective contingency plans based upon potential threats</p> <p>Identifies and manages threats to the safety of the aircraft and people.</p> <p>Recognizes and effectively responds to indications of reduced situation awareness.</p>
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How we came up with this B.Indicators?

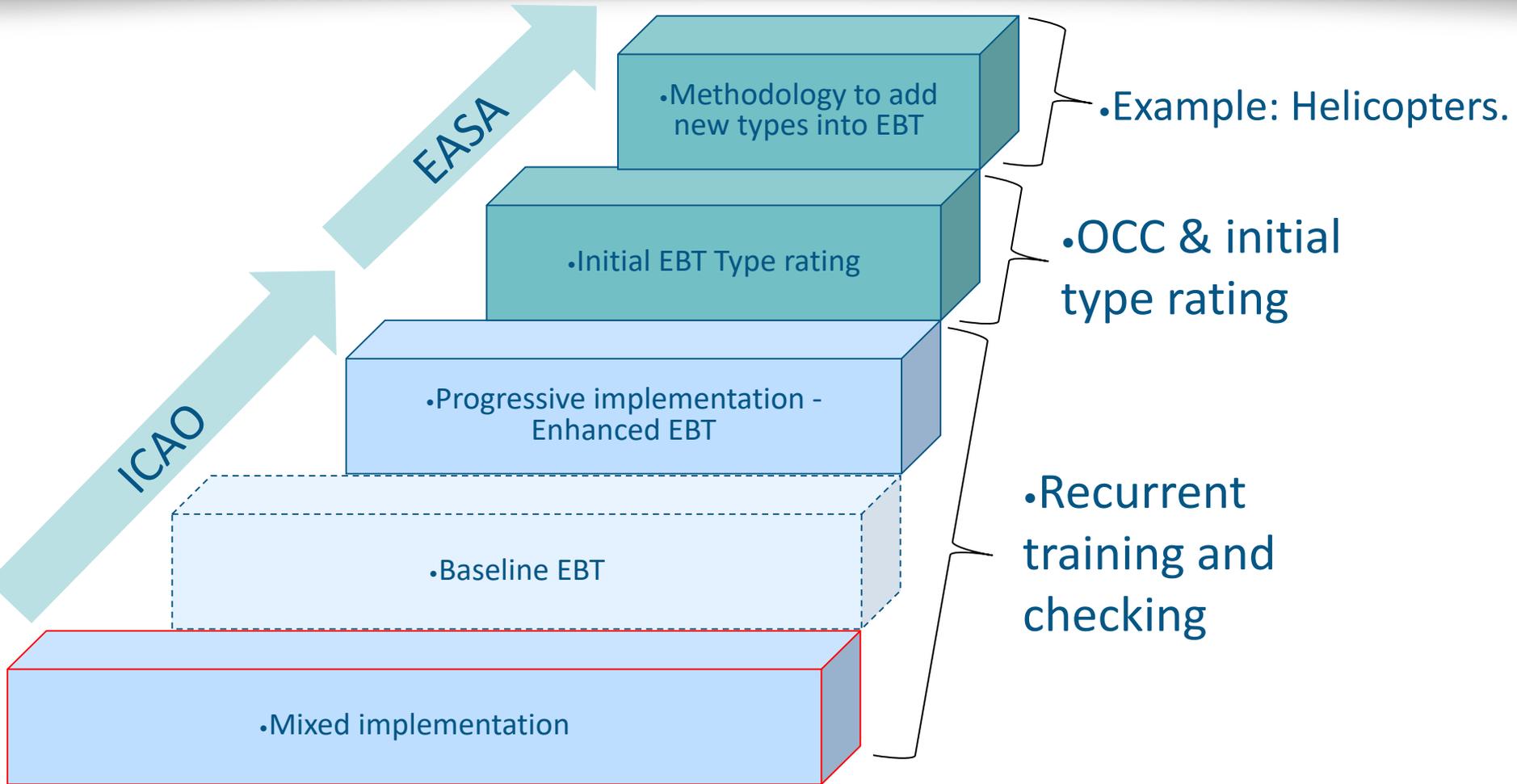
- How it looks like a good pilot?
 - How it looks like a bad pilot?
-



- Pilot survey
- Training criticality survey (TRI/TRE, training managers)
- Incident/accident review
- ***Behaviour.*** The way a person responds, either overtly or covertly, to a specific set of conditions, and **which is capable of being measured.**



What next?





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Regulatory overview Mixed EBT Legacy training Airline.

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Project management RMT0696 & RMT0599 EBT
Regulation Officer Air Crew and Air Ops
01-02-2017

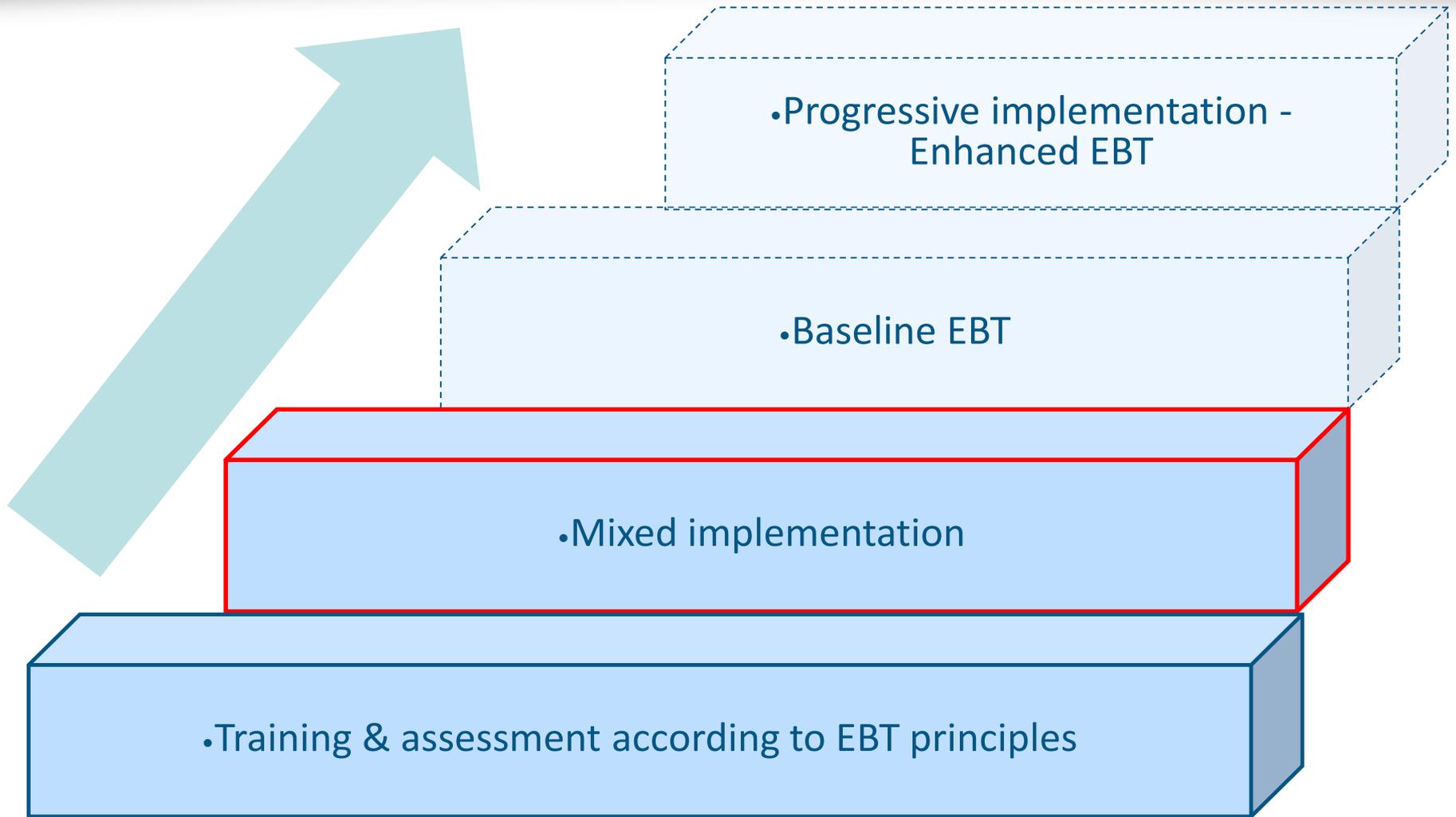
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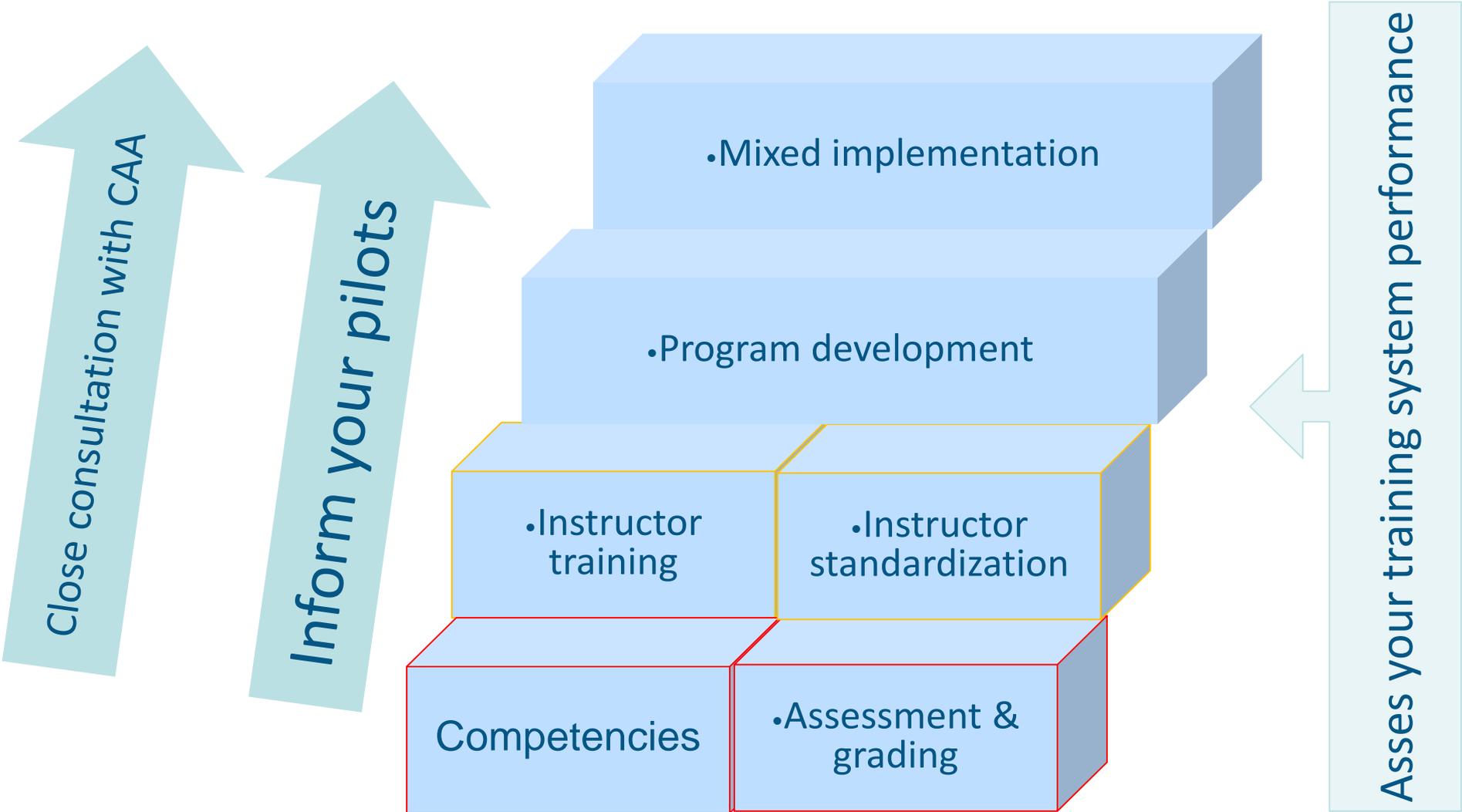


Transition to EBT. Doc 9995 ICAO.



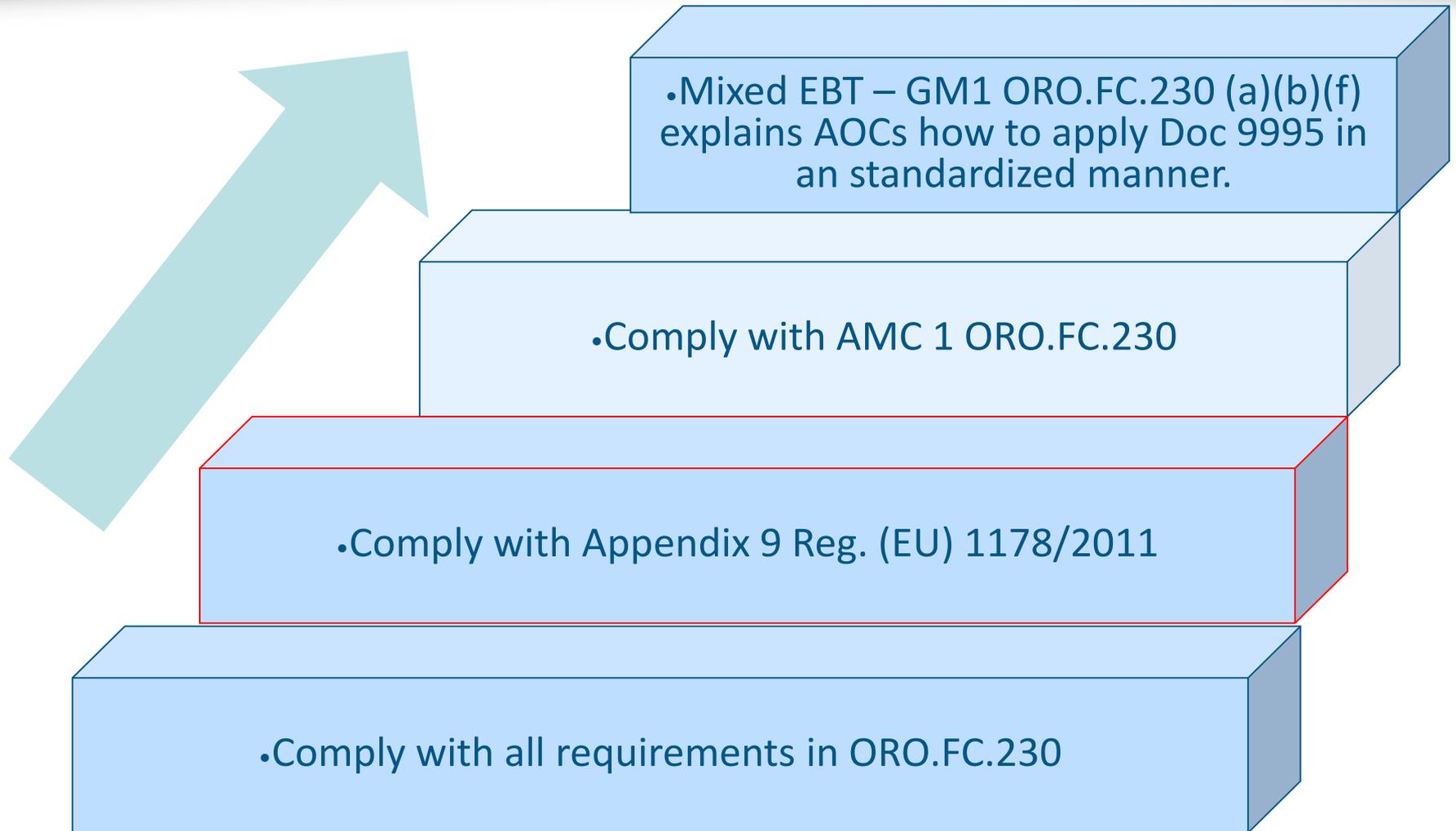


Steps to Mixed implementation Doc9995





Mixed implementation EBT in Europe





Does one size fit all?





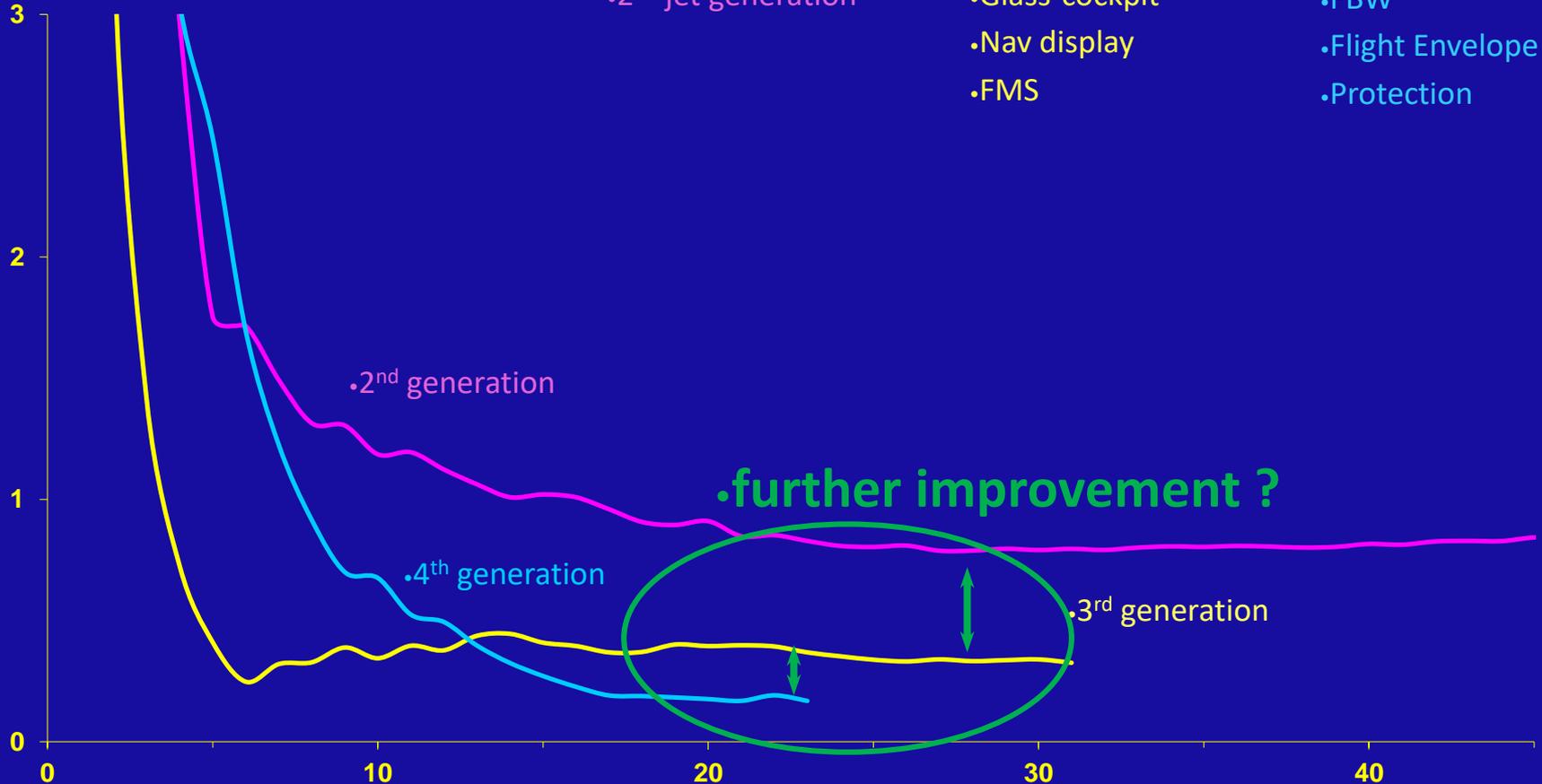
Evidence

•Fatal accident per million departures

•2nd generation:
•2nd jet generation

•3rd generation:
•Glass-cockpit
•Nav display
•FMS

•4th generation:
•FBW
•Flight Envelope
•Protection



•Sources: Ascend, Airbus

•Years of operation

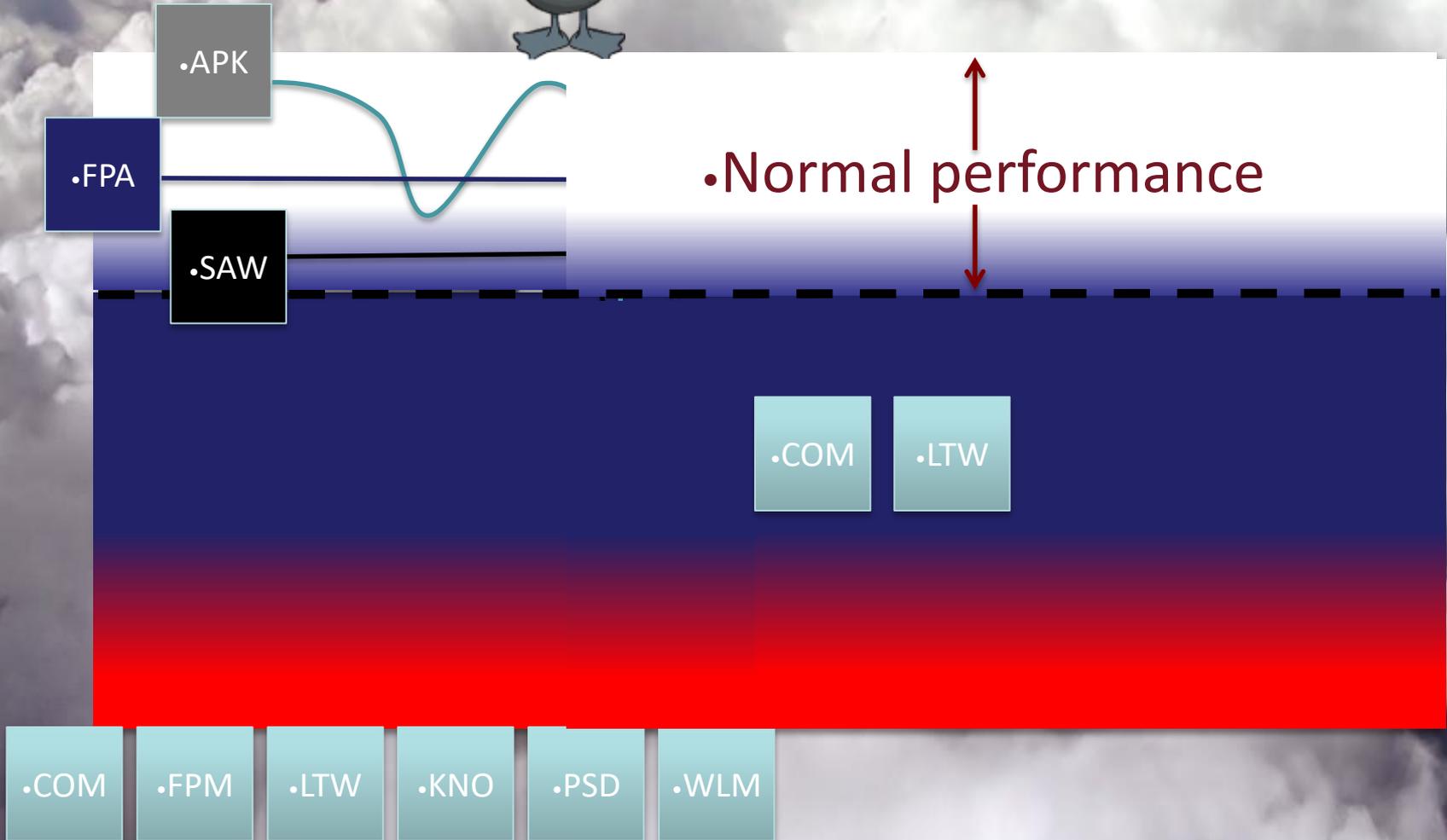


To train the operational risks.



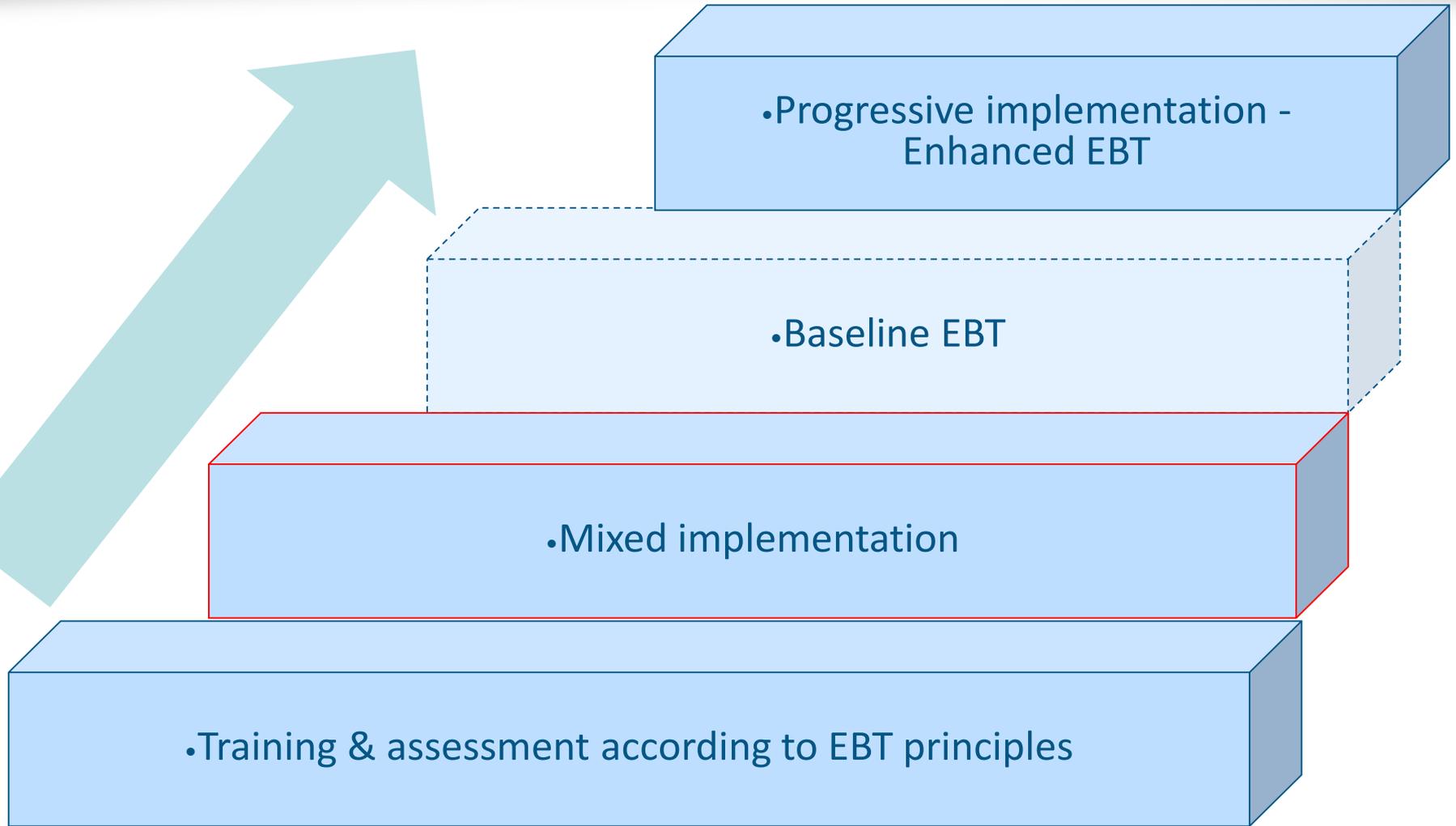
**ENSURE COMPETENCY TO MANAGE BOTH
FORESEEN AND UNFORESEEN EVENTS**

Resilience



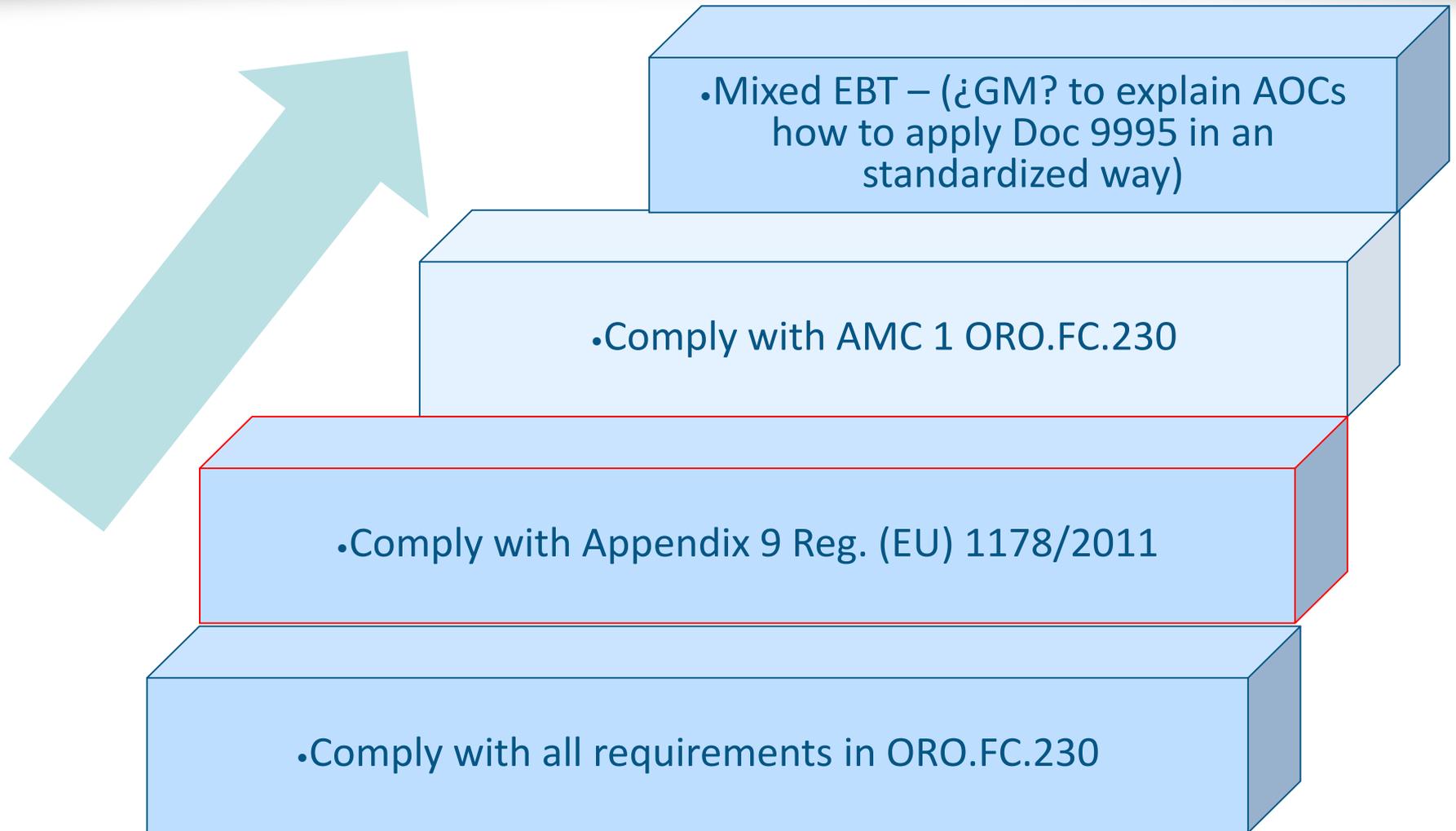


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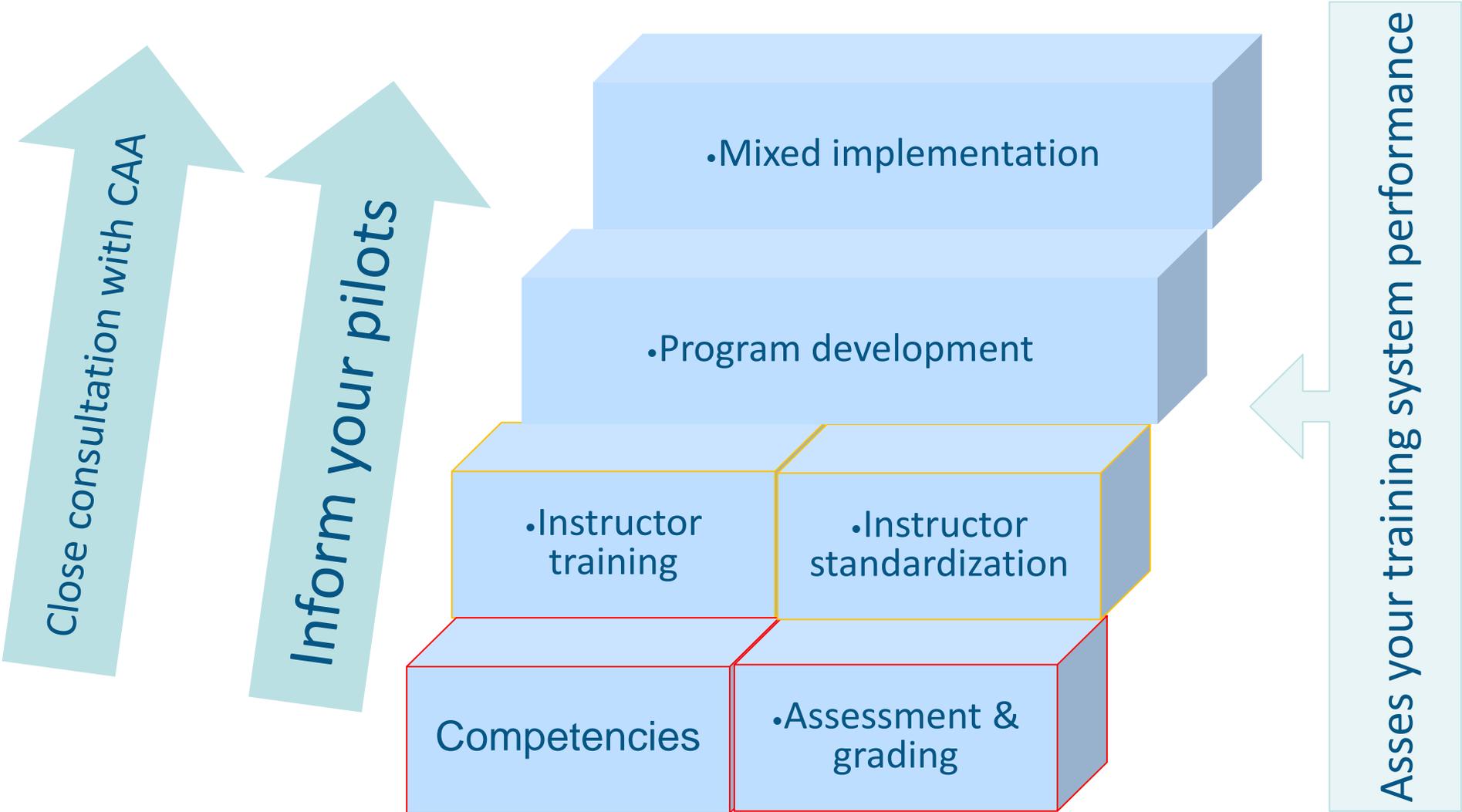


Mixed implementation EBT



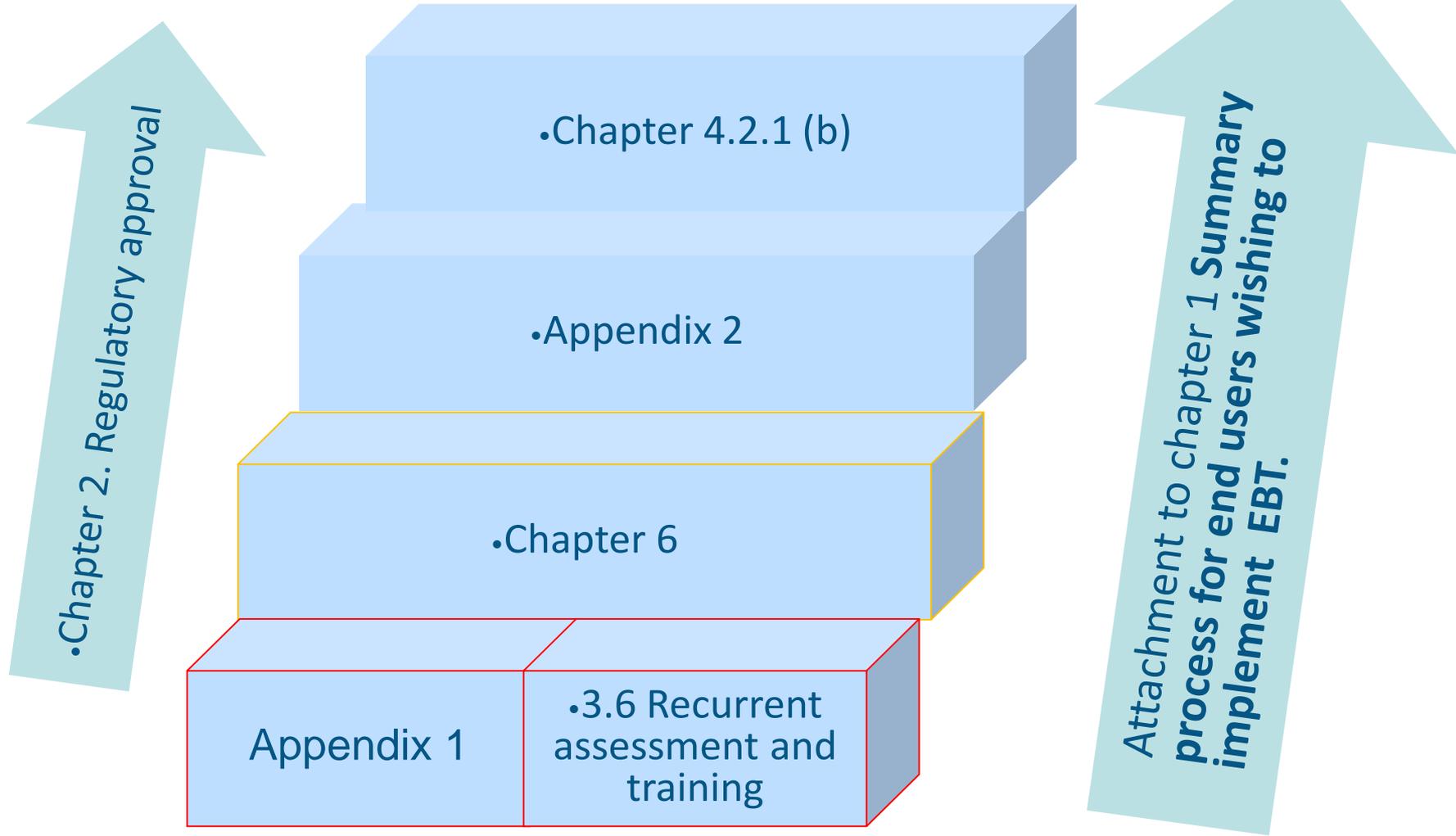


Steps to Mixed implementation



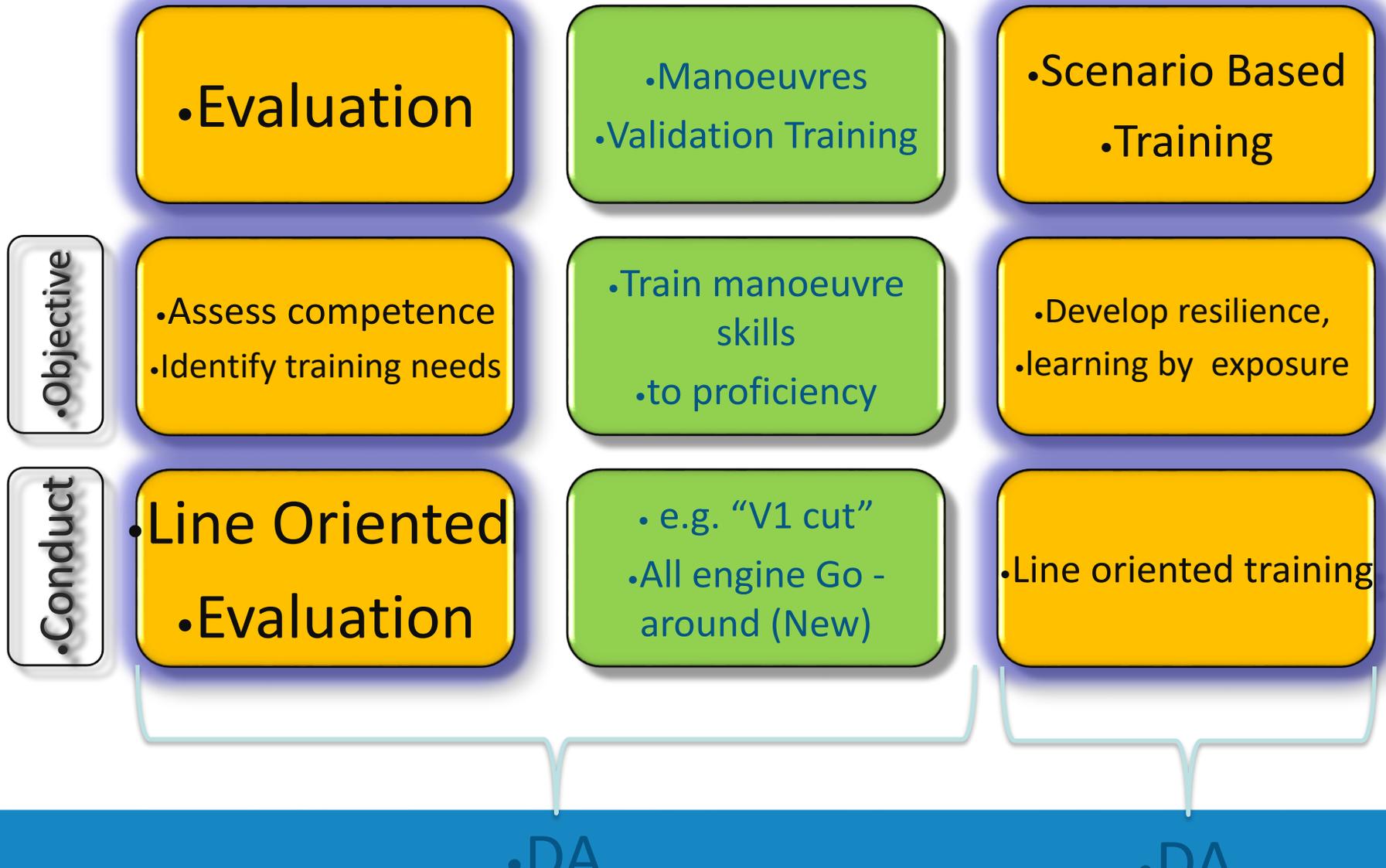


Steps to Mixed implementation Doc 9995.





EBT training phases





PART I. EVIDENCE-BASED TRAINING DEVELOPMENT AND PROGRAMME OUTLINE

- Chapter 1. Background .
- Chapter 2. Applicability and aims
- Chapter 3. Principles and Programme Philosophy
- Chapter 4. Implementation of the baseline EBT programme
- Chapter 5. Implementation of the enhanced EBT programme
- Chapter 6. Pilots and instructors
- Chapter 7. Conduct of EBT

PART II. EVIDENCE-BASED TRAINING PROGRAMME

- Chapter 1. Description of the process for developing an EBT recurrent training programme
- Attachment to Chapter 1. Summary process for end users wishing to implement the baseline EBT programme
- Chapter 2. Regulatory approval

- Appendix 1. Core competencies and behavioural indicators**
- Appendix 2. Training programme development guidance — Generation 4 (jet)**



ORO.FC. (training & checking)

• **2 OPC a year: ORO.FC.230(b)(3):** The validity period of the operator proficiency check shall be 6 calendar months.

• **Content AMC1 ORO.FC.230 (b)(1)(i):**

•(A) rejected take-off when an FSTD is available to represent that specific aeroplane, otherwise touch drills only;

•(B) take-off with engine failure between V1 and V2 or, if carried out in an aeroplane, at a safe speed above V2;

•(C) precision instrument approach to minima with, in the case of multi-engine aeroplanes, one-engine-inoperative;

•(D) non-precision approach to minima;

•(E) missed approach on instruments from minima with, in the case of multi-engined aeroplanes, one-engine-inoperative;

•(F) landing with one-engine-inoperative. For single-engine aeroplanes a practice forced landing is required.

• **Combined OPC/LPC: AMC1 ORO.FC.230 (b)(1)(iii):** Once every 12 months the checks prescribed in (b)(1) may be combined with the proficiency check for revalidation or renewal of the aircraft type rating. [old appendix 1 to OPS 1.965 (b)(1)(iii)]

• **1 sim session a year of training ORO.FC.230(f):** Each flight crew member shall undergo ground training and flight training in an FSTD or an aircraft, or a combination of FSTD and aircraft training, at least every 12 calendar months.

• **Content AMC1 ORO.FC.230 (a)(4)(i)(A):** The aircraft/FSTD training programme should be established in a way that all major failures of aircraft systems and associated procedures will have been covered in the preceding 3 year period.

• **Combined checking and training:** AMC1 ORO.FC.230 (a)(4)(i)(C): Aircraft/FSTD training may be combined with the operator proficiency check.



•1 LPC a year

•Content: Appendix 9 items marked with a “M”, essentially an OPC:

2.5.2* between V1 and V2
2.6 Rejected take-off at a reasonable speed before reaching V1

Normal and abnormal operations of following systems:

A mandatory minimum of 3 abnormal shall be selected from 3.4.0 to 3.4.14 inclusive

3.6 Abnormal and emergency procedures:

A mandatory minimum of three items shall be selected from 3.6.1 to 3.6.9 inclusive

•Training AMC1 ORO.FC.230 (a)(4)(i)(A)

•AMC1 ORO.FC.230 (b)(1)(i)A&B

3.9.3* Precision approaches down to a decision height (DH) not less than 60 m (200 ft)

3.9.3.4* manually, with one engine simulated inoperative; engine failure has to be simulated during final approach before passing the outer marker (OM) until touchdown or through the complete missed approach procedure

•AMC1 ORO.FC.230 (b)(1)(i) C

5.5 Landing with critical engine simulated inoperative

•AMC1 ORO.FC.230 (b)(1)(i) F

5.6 Landing with two engines inoperative

3.9.3.1* manually, without flight director

3.9.4* Non-precision approach down to the MDH/A

•AMC1 ORO.FC.230 (b)(1)(i) D

4.3* Manual go-around with the critical engine simulated inoperative after an instrument approach on reaching DH, MDH or MAPt

•AMC1 ORO.FC.230 (b)(1)(i) E



ED Decision 2015/027/R (Annex 1 + Explanatory note)

• We performed the 480 PC/LS/PC3 in these (4 simulation year), as
although 3 sim/year may be allowed
the evaluation is a LOFT and must start prior



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Review of ED Decision 2015/027/R

- Annex 1 + explanatory note
- <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015027r>

• Guidance for the Transition to EBT.

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Guidance for the Transition to EBT.

Version 2

Legislation and references:

Primary legislation and references:

- ED Decision 2015/027/Implementation of evidence-based training (EBT) within the European regulatory framework
- <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015027r>
- ED Decision 2013/027/R Explanatory note to the ED Decision 2015/027/R
- ICAD Doc 9953 ANWP Manual of Evidence-Based Training First Edition – 2013
- IATA Evidence-Based Training Implementation Guide July 2013

For info:

- IATA EBT 2016 Implementation of Evidence-Based Training within the European regulatory framework
- <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015027r>
- IATA Concept Paper's EBT 2016 Evidence-based and competency based training
- <https://www.easa.europa.eu/document-library/terms-of-reference-and-issues-identification-for-concept-paper-201606>
- IATA Data Report for Evidence-Based Training August 2014 1st edition
- ICAD PANS Training DOC 9858



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EBT competencies and Behaviour indicators

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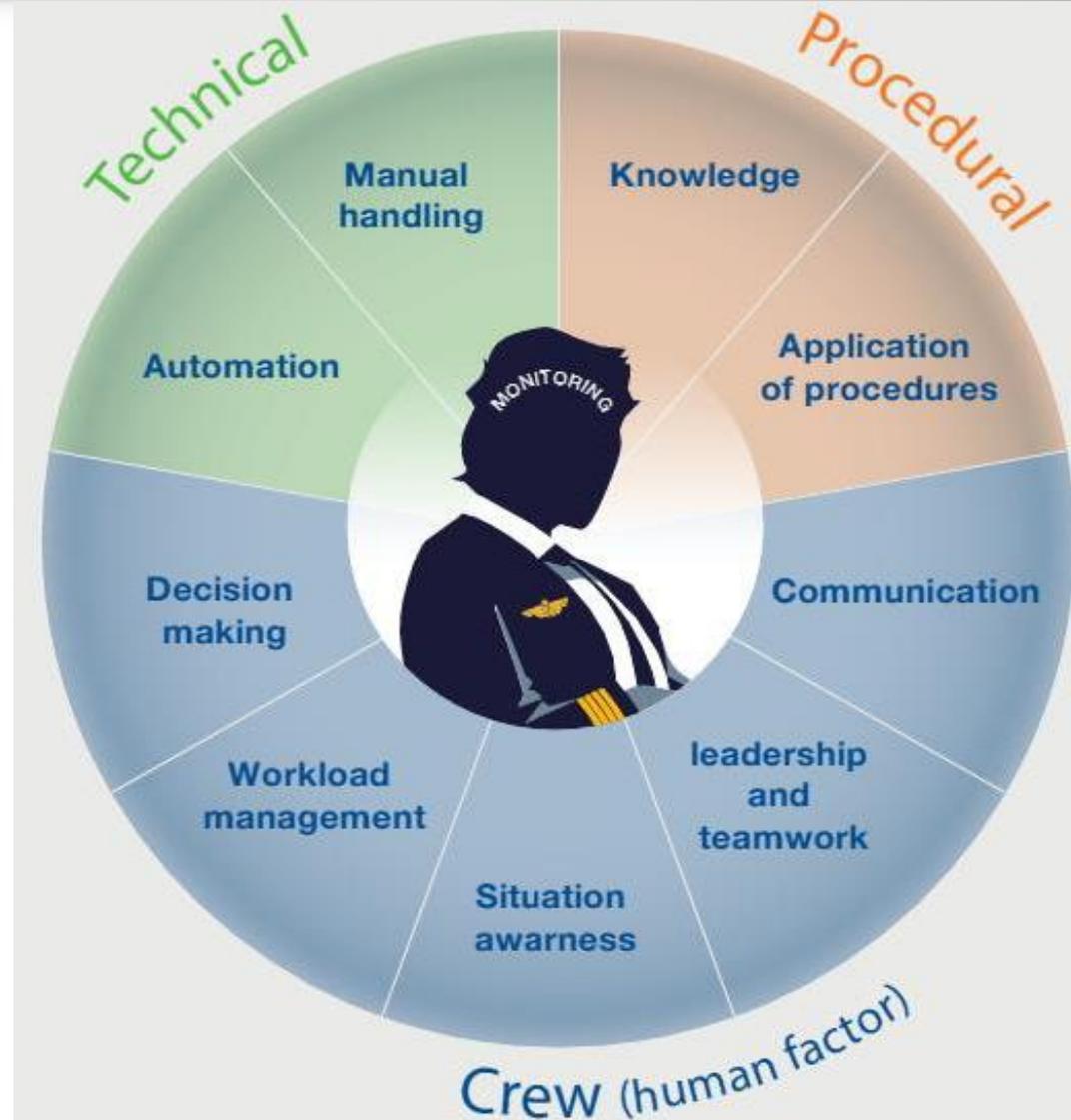
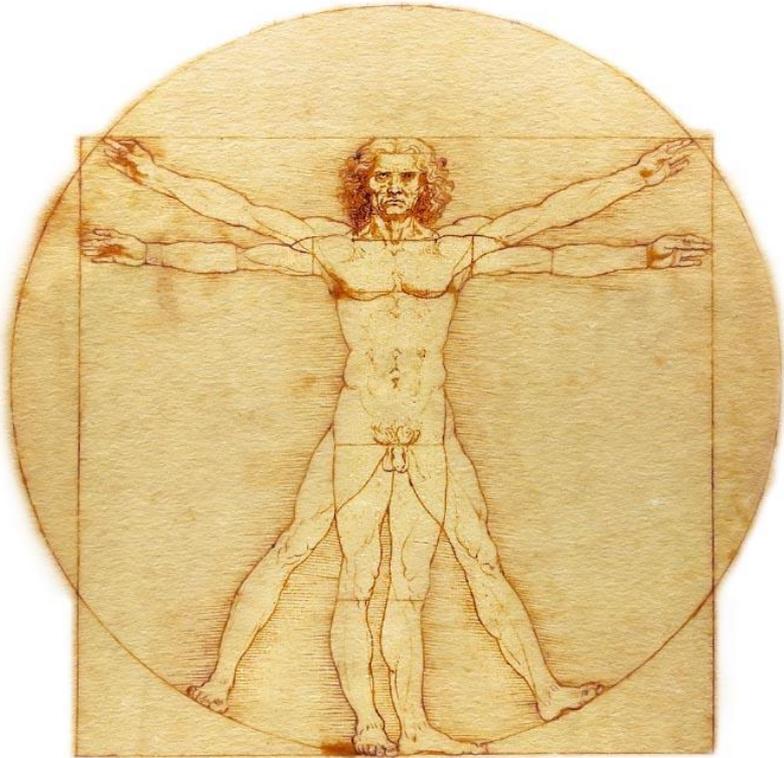
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Competencies





Competencies are made of

- ***Behaviour.*** The way a person responds, either overtly or covertly, to a specific set of conditions, and which is capable of being measured.
- ***Behavioural indicator.*** An overt action performed or statement made by any flight crew member that indicates how the crew is handling the event.



An example

<i>Competency</i>	<i>Competency description</i>	<i>Behavioural indicator</i>
Application of Procedures	Identifies and applies procedures in accordance with published operating instructions and applicable regulations, using the appropriate knowledge.	Identifies the source of operating instructions Follows SOPs unless a higher degree of safety dictates an appropriate deviation Identifies and follows all operating instructions in a timely manner Correctly operates aircraft systems and associated equipment Complies with applicable regulations. Applies relevant procedural knowledge



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How we came up with this B.Indicators?

- How it looks like a good pilot?
 - How it looks like a bad pilot?
-



- Pilot survey
- Training criticality survey (TRI/TRE, training managers)
- Incident/accident review
- ***Behaviour.*** The way a person responds, either overtly or covertly, to a specific set of conditions, and **which is capable of being measured.**



VENN – System

•Significantly enhanced safety ...

•Enhanced Safety

•Resulted in a safe operation

•Did not result in unsafe situation

•Unsafe situation

.5

.4

.3

.2

.1

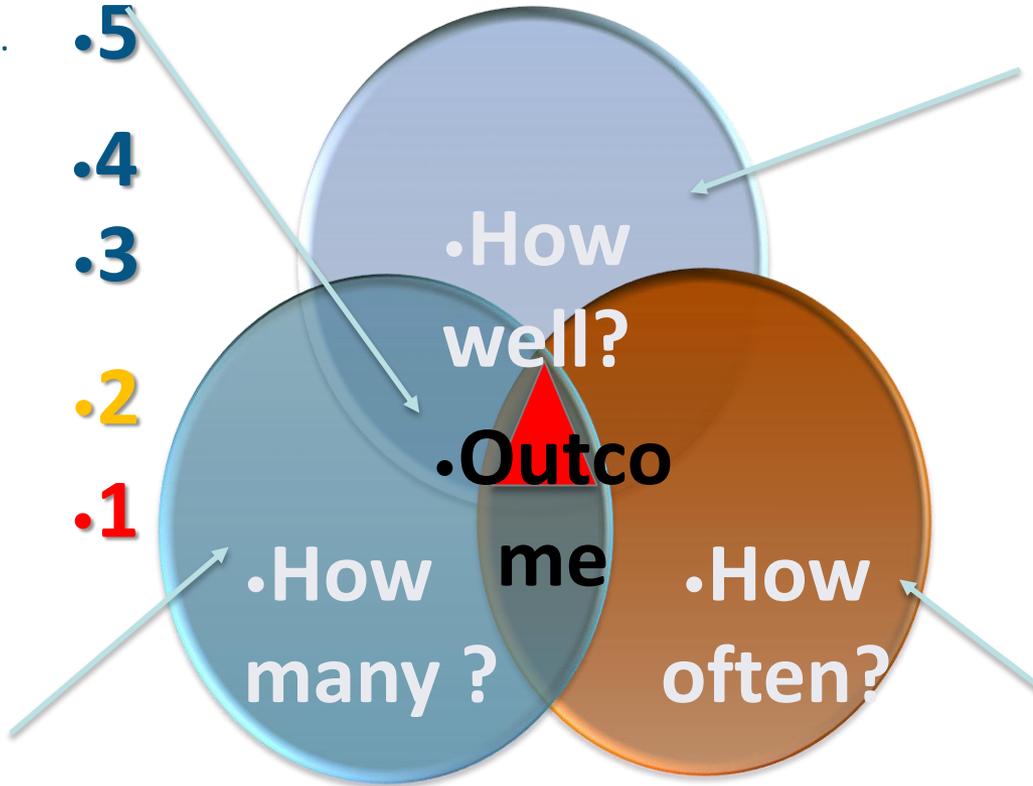
•All

•All

•Most

•Some

•Any



•Exemplary

•Effectively

•Adequately

•Minimum Acceptable

•Not Effectively

•Always

•Regularly

•Regularly

•Occasionally

•Rarely



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ATQP and EBT

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Regulation Officer
Sep-2015

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EBT vs ATQP in a nutshell

- ATQP is task based and subsequently requires a pretty rigorous task analysis to develop the training programmes.
- EBT is competency based.
- The EBT programme has, in effect already been developed whereas ATQP requires specific operator development.



- Review of the current regulation for ATQP
- Go to word file Reg ORO located in focus consultation folder

- The program has to be determined by the Task Analysis and the Training Need Analysis.
- ATQP normally is a task driven program. **Evaluation can be made by grading the good realisation of the exercises, (pass or fail)** as you can do with PART FCL and PART OPS.
- Every company wanted to apply ATQP has to prove his capacity to deal with its own data and the consequences of its own choices.
- A Safety Case has to be provided to the Authority.
- ATQP is only about OPS so you still have to respect all the EASA PART FCL constraints.

Remark: if you do all the process of implementing an ATQP, your triennial plan will “try” to find a solution and gain some room in your training programs, that's when you will have to look to EBT to use competencies and being able to restraint the number of situations you will have to expose your crews.



EBT base line :

- EBT is more generic and independent.
- Its main concept is to train crews to be able to face the **present threats** determine by the industry.
- **EBT Base Line is an industry threats determined program.**
- So regarding PART FCL and PART OPS an EBT program have the same characteristics. PART OPS and PART FCL programs tried to cover the known threats when these programs were conceived, EBT base line do the same with the present known threats for our planes generation. Both of them have a triennial program defined by some body outside the company, so your programs still depend of something external to your company.
- **Evaluation now has to be done by using competencies, so to evaluate somebody you can restraint the number of situation to be graded (these situations are just tool to evaluate the pilot competencies). But you still have to respect the EASA PART OPS and FCL.**



Extended EBT

- That's EBT with a flavour of ATQP.
- If you are able to define your own threats (and to balance them against the ones defined by the industry) and if you manage effectively the competencies, you should be able to implement this version of EBT.
- First of all, you will have to be able to demonstrate to the Authority your capacity and ability :
 - to define the right exercises to cover your own threats (normally very close to the ones defined by the industry)
 - to manage the consequences of your own choice
 - to manage all this new system and to correct it if necessary.
- Currently you still have to respect the EASA ORO.FC and FCL.



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