



Terms of reference

for a rulemaking task

Evidence-based and competency-based training

RMT.0599 — ISSUE 1 — 5.2.2016

	Applicability	Process map
Affected regulations and decisions:	Commission Regulation (EU) No 965/2012 and related AMC/GM; Commission Regulation (EU) No 1178/2011 and related AMC/GM; Commission Regulation (EU) No 748/2012 and related AMC/GM	Concept paper: Yes Rulemaking group: Yes RIA type: Full Technical consultation during NPA drafting: TBD Publication dates of the NPAs: 2017/Q1 (only for EBT) 2019/Q1
Affected stakeholders:	Air operators; approved training organisations (ATOs) for aircrew; national aviation authorities (NAAs); pilots; instructors; examiners	Duration of NPA consultations: 2–3 months Review group: TBD Focused consultation: Yes
Driver/origin:	Safety (recommendations)	Publication dates of the Opinions: 2017/Q4 (only for EBT) 2019/Q4
Reference:	FRAN-2013-017; FRAN-2013-018; FRAN-2013-022; FRAN-2013-033; FRAN-2013-035; FRAN-2014-005 FRAN-2015-062; NETH-2014-005; SWED-2012-006; UNKG-2007-062; FRAN-2009-007; FRAN-2013-52; GERF-2009-025; IRLD-2014-003; SPAN-2004-030; SPAN-2012-066; SWED-2011-004; UNKG-2006-102	Publication dates of the Decisions: 2018/Q4 (only for EBT) 2020/Q4



1. Issue and reasoning for regulatory change

Please also refer to concept paper RMT.0599.

1.1. Introduction

An analysis of fatal aircraft accidents worldwide for the period 2010–2011 shows that in more than 50 % of these accidents the actions of the flight crew were the primary causal factor (UK CAA, 2013). This analysis shows that flight crew handling skills were a factor in 14 % of the accidents whereas flight crew non-technical skills were a factor in more than twice as many (32 %). It is generally accepted that further improvements in flight safety require a comprehensive review of pilot training (IATA, 2013), and the accident statistics show that the emphasis of this training should be placed on developing the non-technical as well as technical pilot skills.

Traditional recurrent training requirements for pilots operating with airlines have not kept up with the development of the operating environment. The present requirements are largely based on the evidence of accidents involving early-generation jet aircraft (IATA, 2013), and do not reflect the risks of the present operating environment.

Operators and industry bodies have recognised that the traditional training processes do not guarantee that the trained pilots are competent, or they do not adequately address ‘human factors’ issues (IATA, 2013).

For that reason, at European level, the European Aviation Safety Agency (EASA) (hereinafter referred to as the ‘Agency’) stated¹ in the [European Aviation Safety Plan \(EASp\) 2014-2017](#) the need for personnel to have the right competencies by adapting the training methods. The future EASp, as of now called European Plan for Aviation Safety (EPAS)² 2016–2020, also identified as one of the two most significant systemic issues the need to make sure that aviation personnel have the right competencies and training methods to cope with new challenges.

The safety priorities identified in EPAS are addressed by specific actions in the Agency’s rulemaking or safety promotion programmes. According to this rationale, the Agency decided that the introduction of evidence-based training (EBT) and competency-based training (CBT) was necessary in the field of training and checking. Having in mind that EBT is a competency-based training programme³, the Agency planned two separate rulemaking tasks: RMT.0696 ‘Implementation of evidence-based training within the European regulatory framework’ (see the related [ToR RMT.0696 — Issue 1](#) of 3 September 2015), and the current RMT.0599 ‘Evidence-based and competency-based training’ (review of ORO.FC).

1.2. EPAS

The driver of the future EPAS is the commitment to improve safety. EPAS is the documented output of an evidence-based, proactive approach to safety risks, and provides the reader with a risk picture of the aviation safety system in Europe. Therefore, the EPAS identifies the risks and establishes the priorities

¹ ‘Having the right competencies and adapting training methods is recognised as a key area in the EASp, hence a new systemic threat was created last year to tackle such issues like the increasing pilot reliance on automation, the modernisation of training provisions or the differences in training implementation among States.’ (European Aviation Safety Plan 2014–2017)

² The ‘European Aviation Safety Plan’ (EASp) will be called from 2016 onwards ‘European Plan for Aviation Safety’ (EPAS).

³ As stated in ICAO Doc 9995 — Manual of Evidence-based Training, Chapter 6.2 ‘Instructors — General’.



for the European region. It supports the management of safety at European level by complementing existing safety regulations and investigations.

For commercial air transport (CAT) by aeroplanes, both EASp 2014–2017 and EPAS 2016–2020 establish actions to mitigate safety issues. For helicopters and General Aviation (GA) operations, only the future EPAS 2016–2020 will define actions to mitigate safety issues.

Competencies of personnel in EASp/EPAS

*Systemic issue No 5 — Competency of personnel: The demand for aviation professionals may exceed supply and aviation personnel may have to cope with new procedures and increasingly complex technologies.*⁴

As new technologies emerge and the complexity of the aviation system increases, it is of key importance for pilots to be equipped with a complete and relevant set of competencies to operate safely, effectively and efficiently in a CAT environment, and to adapt their training methods in order to manage events unable to be foreseen through reactive analyses. To ensure continuous improvement of pilots' competencies, a new process and methodology was developed and should be applied. It is also important to recognise that addressing human factors will bring safety improvements across all operational, systemic and emerging issues.

Ensuring the continuous improvement of the competencies of aviation personnel and adapting training methods are recognised as key areas in the EASp 2014–2017 and will remain in EPAS 2016–2020. The previous plan focused on modernising training methods and competency provisions, including the need to develop pilot competencies to compensate for the degradation of manual flying skills. Safety information bulletins (SIBs) were published to address manual flight training, mode awareness and energy state management. The Agency intends to contribute to the development of regulations which ensure that pilot training and checking is adequate to provide a pilot with the necessary knowledge, skills and attitude to recognise and manage unexpected and unusual situations.

In order to promote safety by developing risk awareness, the EASp also includes actions intended to promote that flight data monitoring (FDM) programmes' priorities incorporate (as a powerful tool for monitoring operational safety) common operational issues identified at the European and national levels. The use of the resulting data may create more opportunities to improve training such as EBT.

Therefore, the established actions for pilot competencies development in the present EASp are to:

- 'contribute to the development of regulations which ensure that initial and recurrent pilot training and checking is adequate to provide a pilot with the necessary knowledge, skills and attitude to be competent';
- 'evaluate new training methods, such as CBT, EBT and distance learning'; and
- 'adapt, as necessary, training standards and rules to ensure that the level of safety can only be positively affected'.

⁴ EASp 2014-2017, Systemic issue No 5, SYS.5.1 — Human factor and performance, Competence of personnel.



1.3. ICAO amendments

Following the work initiated by the Flight Crew Licensing and Training Panel (FCLTP) in 2006 (starting 19 December 2003 in Montreal), the International Civil Aviation Organization (ICAO) published Doc 9868 'Procedures for Air Navigation Services — Training (PANS-TRG)' — a document that contains procedures for the development and implementation of a CBT programme to support its Annex 1 requirements. This was followed in 2013 by an amendment of the aforementioned document for the introduction of evidence-based training, which was accompanied by Doc 9995 'Manual of Evidence-based Training', intended to provide guidance to civil aviation authorities (CAAs), operators and approved training organisations on the recurrent assessment and training of pilots referred to in ICAO Annex 6 'Operation of Aircraft' and ICAO Annex 1 'Personnel Licensing', 1.2.5 'Validity of licenses'. Finally, Amendment 2 to 'Procedures for Air Navigation Services' — Training (PANS-TRG)⁵ was also issued in 2013, where procedures for evidence-based training were introduced intended as a means of assessing and training key areas of flight crew performance in a recurrent training system. In addition, qualifications of the instructor were expanded.

1.4. Related safety recommendations

The following safety recommendations, amongst others⁶, are derived from specific accident/incident contexts. RMT.0599 will ensure that they are taken into account in the scope of the recurrent EBT and checking, either as regards training events during the recurrent training, i.e. 'equivalence of malfunctions', or enhancing training for a specific core competency:

FRAN-2013-017	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities ensure that go-around training integrates instruction explaining the methodology for monitoring primary flight parameters, in particular pitch, thrust then speed.
FRAN-2013-018	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that during recurrent periodic training, training organizations and operators give greater importance to the assessment and maintenance of the monitoring capabilities of public transport pilots.
FRAN-2013-022	The French Accident Investigation Board recommends that EASA review regulatory requirements for initial and periodic training in order to ensure that go-arounds with all engines operating are performed sufficiently frequently during training.
FRAN-2013-033	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation

⁵ Extracted from ICAO State Letter 071e — Approval of Amendment 4 to the PANS-TRG: 'There is industry-wide consensus that, in order to reduce aircraft hull loss and fatal accident rates, a strategic review of recurrent training for airline pilots is necessary. Consequently, (EBT), developed by the IATA Training and Qualifications Initiative, were introduced in Amendment 2 to the PANS-TRG issued in 2013 and are intended as a means of assessing and training key areas of flight crew performance in a recurrent training system. In addition, qualifications of the instructor were expanded.'

⁶ New safety recommendations related to this task can be added after the publication of this ToR, if appropriate.



	authorities, ensure that the risks associated with dispersion and/or channelized attention during the go-around, to the detriment of the primary flight parameters, be taught to crews.
FRAN-2013-035	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities, study whether to extend these measures to other procedures requiring high workload in a short time frame.
FRAN-2014-005	The French Accident Investigation Board recommends that EASA, in coordination with national authorities, make changes to the training requirements for pilots so as to include periodic reminders on the effects of contaminants such as ice on stall and loss of control on takeoff.
FRAN-2015-062	[unofficial translation]: EASA should define the terms on how an operator can set up a risk based training as described in ICAO Doc 9995. [French] [original text] - L'AESA définit les modalités permettant à un exploitant de mettre en oeuvre la formation basée sur les risques telle que précisée dans le doc OACI 9995 de l'OACI. [Recommandation 2015-062]
NETH-2014-005	To the regulators involved in with the manufacturing of transport category aircraft, European Aviation Safety Agency (Europe), Federal Aviation Administration (FAA), Agencia Nacional de Aviacao (Brasil), Civil Aviation Administration of China, Federal Air Transport Agency (Russian Federation), Japan Civil Aviation Bureau, and Transport Canada. Review the applicable regulations on initial and recurrent flight training to assess whether they adequately address the potential degradation of situational awareness (basic pilot skills) and flight path management due to increased reliance on aircraft automation by flight crews.
SWED-2012-006	EASA is recommended to ensure that initial and recurrent pilot training includes mandatory rejected takeoff exercises that cover events of a sudden loss of engine thrust below VMCG. (RL 2012:21 R6)
UNKG-2007-062	It is recommended that the European Aviation Safety Agency should, in consultation with other National Airworthiness Authorities outside Europe, consider requiring training for flight by sole reference to standby instruments to pilots during initial and recurrent training courses.

The following safety recommendations, amongst others, are applicable to the broader review of ORO.FC, as set out in RMT.0599:

FRAN-2009-007	The French Accident Investigation Board recommends that EASA to study the broadening of the conditions requiring the presence of a crew of two pilots in public transport.
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FRAN-2013-52	The French Accident Investigation Board recommends that EASA take priority action to modify the regulations to make mandatory the presence of a two-pilot crew for medical evacuation flights.
GERF-2009-025	The European Safety Agency (EASA) should regulate to require that 'Single-Pilot Aircraft' engaged in EU-OPS 1.940 flights made in accordance with Instrument Flight Rules and at night, must have a minimum crew of two pilots, and that their training is in accordance with JAR-FCL including Multi-Crew-concept (MCC) training.
IRLD-2014-003	The European Safety Agency should review Council Regulation (EEC) No 3922/91 as amended by Commission Regulation (EC) 859/2008, to ensure that it contains a comprehensive syllabus for appointment to commander and that an appropriate level of command training and checking is carried out.
SPAN-2004-030	It is recommended to EASA that they evaluate the possibility of making mandatory requirements to train flight crew in go-around manoeuvres even from below the decision height, with the aim of reducing the response time when faced with unforeseen events.
SPAN-2012-066	It is recommended that the European Aviation Safety Agency (EASA), in the requirements for the issue of authorizations to aerial work operators, include specifically crews training on the spatial disorientation phenomenon and, particularly to those operators intending to perform activities in periodically or permanent snowed mountains, training on 'whiteout' phenomenon.
SWED-2011-004	It is recommended that EASA: ensure that safe methods to identify and abort an unsafe visual approach, at an earlier stage (ie 300 feet) than that provided in appendix 9, part 4 of the proposed PART – FCL, be included in future training plans for flight training.
UNKG-2006-102	Considering the circumstances of air ambulance flights, the Civil Aviation Authority in conjunction the JAA should review the circumstances in which a second pilot is required for public transport flights operating air ambulance services.

1.5. RMT.0696 'Implementation of evidence-based training within the European regulatory framework'

ED Decision 2015/027/R was issued in December 2015 providing GM1 ORO.FC.230 and GM1 ORO.FC.A.245 to Annex III (Part-ORO) to Regulation (EU) No 965/2012⁷ (hereinafter referred to as the 'Air OPS Regulation'), and precisely to Subpart FC — Flight Crew, Section 2 — Additional

⁷ Commission Regulation (EU) No 965/2012 of 28 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EU) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).



requirements for commercial air transport operations, and, if required, to Regulation (EU) No 1178/2011⁸ (hereinafter referred to as the 'Aircrew Regulation').

The GM developed under RMT.0696 was an interim step to enable the deployment of EBT to the maximum extent possible within the European aviation regulatory framework, therefore, only the implementation⁹ of a mixed EBT programme was achieved. RMT.0599 is intended to facilitate the full deployment of EBT according to ICAO Doc 9995, and is therefore, a logical extension of RMT.0696.

1.6. Harmonisation

The FAA supports the full range of EBT concepts. The FAA participated in the development of the programme and encourages its own operators to integrate EBT into their training and checking activities, wherever practical, especially those operators attending the FAA's 'Advanced Qualification Program' (AQP). Additionally, the Civil Aviation Safety Authority (CASA) of Australia is developing new regulations¹⁰ that will enable EBT.

1.7. Other drivers

Several SIBs address this task:

- EASA SIB 2014-17, Aeroplane Mode Awareness During Final Approach, 10 June 2014;
- EASA SIB 2013-05, Manual Flight Training and Operations, 23 April 2013; and
- EASA SIB 2010-33, Flight Deck Automation Policy — Mode Awareness and Energy State Management, 18 November 2010.

2. Objectives

The objectives of the European Union (EU) in the field of civil aviation are defined in Article 2 of Regulation (EC) No 216/2008¹¹. This RMT will contribute to the achievement of these objectives by addressing the issues outlined above.

The specific objectives of this rulemaking task are, therefore:

- (a) to maintain the high aviation safety level by:
 - (1) ensuring that initial and recurrent pilot training and checking is adequate to provide a pilot with the necessary knowledge, skills and attitude to be competent — pursuant to this objective, the Agency intends to:
 - (i) implement EBT as a first step towards the full implementation of CBT across Subpart FC of Part-ORO;

⁸ Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1).

⁹ Implementation of a mixed EBT programme means that only some portion of the recurrent assessment and training is dedicated to the application of EBT.

¹⁰ Civil Aviation Safety Regulation (CASR) Part 121.

¹¹ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).



- (ii) implement an alternative training and qualification programme (ATQP) taking into account experience gained in CAT aeroplane operations and extend its implementation to CAT helicopter operations (for the latter, former RMT.0386/0387); and
 - (iii) evaluate new training methods, such as distance learning; and
- (2) addressing safety recommendations outlined in Chapter 1.4 'Related safety recommendations' of this ToR; and
- (3) examining a possible transposition to the applicable rules of the Air OPS Regulation the content of SIB 2014-17, 2013-05 and 2010-33;
- (b) to remain in compliance with ICAO by ensuring that the European rules are in compliance with the latest amendments outlined in Chapter 1.3 'ICAO amendments' of this ToR, especially with regard to the evidence-based training taking into account the aforementioned ICAO amendments;
- (c) to contribute to the production of efficient regulations by adapting the necessary training standards and rules to ensure that the level of safety can only be positively affected by:
 - (1) introducing performance-based regulation principles;
 - (2) clarifying the current applicable rules of Subpart FC — Flight Crew of Annex III (Part-ORO) to the Air OPS Regulation and when applicable, of the Aircrew Regulation, due to the numerous interfaces between those two Regulations;
 - (3) ensuring consistency of training-related rules across the applicable parts of Annex III (Part-ORO) to Air OPS Regulation and Annex I (Part-FCL) to the Aircrew Regulation;
 - (4) ensuring the correct balance between implementing rules (IRs) and acceptable means of compliance (AMC)/guidance material (GM) on the subject issue; and
 - (5) developing, only if applicable, additional AMC/GM for non-commercial and specialised operations.

3. Activities

RMT.0599 activities will be split in:

- (a) a main task, addressing issues described in this ToR, but not related to EBT or helicopters;
- (b) a subtask on EBT-related issues; and
- (c) a subtask on all helicopter training-related issues, including EBT and extension of ATQP to helicopters.

The Agency's activities will include, amongst others:

- reviewing the safety recommendations¹² addressing this task, taking into consideration future safety recommendations related to training, which will be published during this task, as appropriate, and determining if rule changes are necessary;

¹² New safety recommendations related to this task can be added after the publication of this ToR, if appropriate.



- reviewing and when appropriate incorporating into the regulatory framework the recommendations of the SIBs related to this task;
- reviewing the consistency of training-related rules across and when appropriate, amending the Air OPS Regulation and the Aircrew Regulation;
- evaluating ICAO Doc 9995 ‘Manual of Evidence-based Training’ compared against the existing European regulatory framework;
- identifying which EBT concepts would require an amendment of the existing European regulatory framework;
- addressing any editorial errors or implementation¹³ issues on the training-related rules of Air OPS Regulation and the Aircrew Regulation, brought to the attention of the Agency;
- developing a Concept Paper (CP) for the extension of CBT to all licences and ratings, as well as the extension of the threat and error management (TEM) principles to all licences and ratings;
- ensuring that the regulation provides enough clarity to allow a standardised implementation of EBT in all Member States (MSs); a focused consultation is foreseen to be performed for this rulemaking activity (on the full scope of the task or parts of it);
- developing a notice of proposed amendment (NPA) including an explanatory note, amendments, as appropriate, to the Air OPS Regulation and related AMC/GM, as well as a regulatory impact assessment (RIA); and
- developing monitoring indicators to evaluate the efficiency and effectiveness of the actions proposed in this RMT.

4. Deliverables

For the EBT subtask, the deliverables are as follows:

- a notice of proposed amendment (NPA) on EBT (2017/Q1);
- a comment-response document (CRD) to NPA (2017/Q4);
- an opinion with a draft IR (2017/Q4); and
- an ED decision (2018/Q4).

For the main task and the helicopter subtask, the deliverables are:

First part:

- an NPA (2018/Q1);
- a CRD to NPA (2018/Q4);
- an opinion with a draft IR (2018/Q4); and
- an ED decision (2019/Q4).

Second part:

¹³ This includes implementation of NCC rules, foreseen for August 2016.



- an NPA (2019/Q1);
- a CRD to NPA (2019/Q4);
- an opinion with a draft IR (2019/Q4); and
- an ED decision (2020/Q4).

5. Interface issues

Possible interface issues between this RMT and the following ones:

- (a) RMT.0194 'Extension of competency-based training to all licences and ratings and extension of TEM principle to all licences and ratings'.

Coordination was established to ensure a coherent cooperation between both tasks.

- (b) RMT.0596 'Review of provisions for examiners and instructors (Subparts J & K of Part-FCL)'.

Complete review of the Subparts of Annex I (Part-FCL) to the Aircrew Regulation, containing provisions for examiners and instructors. Coordination was established to ensure a coherent cooperation between both tasks.

- (c) RMT.0379 'All weather operations'.

Coordination was established to ensure a coherent cooperation between both tasks.

6. Focused consultation

A focused consultation is foreseen for this task.

7. Profile and contribution of the rulemaking group

The profile of the rulemaking group and its members should consist of the following:

- initial pilot training and checking experience at commercial pilot licence (CPL), multi-crew pilot licence (MPL) and type rating training level;
- recurrent pilot training and checking experience;
- ATO management experience at licensing and recurrent level;
- performance-based risk management experience;
- experience in/knowledge of the oversight of air operator training;
- competent authority (CA) oversight experience;
- experience in the oversight of performance-based training regulation;
- extensive knowledge of the ICAO Standards and Recommended Practices (SARPs) and EU regulatory framework;
- experience in the performance-based regulatory framework;
- experience in risk assessment and knowledge of the related methodology;



- experience in training for operations of offshore helicopters and in the operations themselves; and
- experience in the oversight of training for offshore helicopter operations.

Specifically for the EBT related activities, the rulemaking group should have:

- expert knowledge in the development of EBT and in the drafting of ICAO Doc 9995 (operator, aircraft manufacturer, pilot representative, CA or regulatory authority);
- substantial knowledge of the European regulatory system;
- experience in the development of EBT GM as part of RMT.0696. Participation in the EBT task force created by the Agency or alternately, participation in the focussed consultation for RMT.0696 held in September 2015; and
- substantial experience in the implementation of operator EBT programmes¹⁴ according to ICAO Doc 9995.

Note 1: The group should have an appropriate balanced representation of regulators, operators, pilot associations members and aircraft original equipment manufacturers (OEMs).

Note 2: 'Ad hoc technical advisors' — due to the wide scope of the task, the Agency will involve ad hoc technical experts for a limited number of rulemaking group meetings, in order for them to provide specific technical advice to the rulemaking group.

8. Annex I: Reference documents

8.1. Affected regulations

- Commission Regulation (EU) No 965/2012 of 28 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EU) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1), as last amended
- Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1), as last amended

8.2. Affected decisions

Air OPS Regulation

- Decision N° 2013/017/Directorate R of the Executive Director of the Agency of 23 August 2013 on amending Decision No 2012/015/R of the Executive Director of the European Aviation Safety Agency of 24 October 2012 on Acceptable Means of Compliance and Guidance Material to Annex I — Definitions (Amendment 1)', as last amended
- Decision 2014/025/R of the Executive Director of the Agency of 28 July 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ARO of Regulation (EU) No 965/2012 and

¹⁴ This might require to include non-European stakeholders in the rulemaking group as EBT is indeed a new concept for Europe and the rest of the world.



repealing Decision 2014/014/R of the Executive Director of the Agency of 24 April 2014 'AMC and GM to Part-ARO — Issue 3', as last amended

- Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 'AMC and GM to Part-ORO — Issue 2', as last amended
- Decision 2014/015/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-CAT of Regulation (EU) No 965/2012 and repealing Decision 2012/018/R of the Executive Director of the Agency of 24 October 2012 'AMC and GM to Part-CAT — Issue 2', as last amended
- Decision N° 2013/021/Directorate R of the Executive Director of the Agency of 23 August 2013 on adopting Acceptable Means of Compliance and Guidance Material for Non-commercial operations with complex motor-powered aircraft (Part-NCC), as last amended
- Decision 2014/016/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-NCO of Regulation (EU) No 965/2012 and repealing Decision 2013/022/R of the Executive Director of the Agency of 23 August 2013 'AMC and GM to Part-NCO — Issue 2', as last amended
- Decision 2014/018/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-SPO of Regulation (EU) No 965/2012 'AMC and GM to Part-SPO', as last amended

Aircrew Regulation

- Decision N° 2012/006/Directorate R of the Executive Director of the Agency of 19th April 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council 'Acceptable Means of Compliance and Guidance Material to Part-ARA', as last amended
- Decision N° 2012/007/Directorate R of the Executive Director of the Agency of 19th April 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council ('Acceptable Means of Compliance and Guidance Material to Part-ORA'), as last amended
- Decision N° 2011/016/R of the Executive Director of the European Aviation Safety Agency of 15 December 2011 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council 'Acceptable Means of Compliance and Guidance Material to Part-FCL', as last amended



8.3. Reference documents

- Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1)
- ICAO Doc 9995 'Manual of Evidence-based Training'
- IATA, IFALPA and ICAO 'Evidence-Based Training Implementation Guide'
- ICAO Annex 1 (Personnel Licensing) to the Chicago Convention on International Civil Aviation, signed at Chicago on 7 December 1944
- ICAO Annex 6 (Operation of Aircraft) to the Chicago Convention on International Civil Aviation, signed at Chicago on 7 December 1944
- ICAO Doc 9841 'Manual on the Approval of Training Organizations'
- ICAO Doc 9868 'Procedures for Air Navigation Services — Training (PANS-TRG)', Chapters 5 & 6
- IATA 'Data Report for Evidence-Based Training'
- ICAO Doc 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices', Volume 1 — Aeroplanes

Other reference documents used in the development of this ToR:

- IATA. (2011). *Guidance Material and Best Practices for MPL Implementation*. Montreal: International Air Transport Association
- IATA. (2013). *Evidence Based Training Implementation Guide*. Montreal: International Air Transport Association
- IATA. (2013). *IATA Training and Qualification Initiative (ITQI)*. Retrieved April 22, 2014, from International Airline Transport Association (<https://www.iata.org/whatwedo/ops-infra/itqi/Documents/itqi-brochure.pdf>)
- ICAO. (2005). *Human Factors Training Manual*. Montreal: International Civil Aviation Organization
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- UK CAA. (2008). *CAP 776 Global Fatal Accident Review 1997-2006*. Crawley: United Kingdom Civil Aviation Authority
- UK CAA. (2013). *CAP 1036, Global Fatal Accidnet Review 2002 to 2011*. Crawley: United Kingdom Civil Aviation Authority





European Aviation Safety Agency

CONCEPT PAPER

FOR THE SUBTASK OF EVIDENCE-BASED TRAINING

OF

RMT.0599

'Evidence-based and competency-based training'



EXECUTIVE SUMMARY

This concept paper (CP) proposes a way forward for the implementation of evidence-based training (EBT), considering different options with regard to RMT.0599 — therefore, this document precedes the terms of reference (ToR) Issue 1 for this rulemaking task.

The aim of an EBT programme is to identify, develop and evaluate the core competencies required by pilots to operate safely, effectively and efficiently in a commercial air transport (CAT) environment by managing the most relevant threats and errors based on evidence collected in operations and training. EBT arose from the need to develop a new paradigm of competency-based training (CBT) and assessment of airline pilots based on evidence. Over the last 20 years the availability of data covering both flight operations and training activities has improved substantially, has established the need for the EBT effort and has supported the definition of the resulting training concept and curriculum. The outcome was the publication of International Civil Aviation Organization (ICAO) Doc 9868 'Procedures for Air Navigation Services — Training' (PANS-TRG), Chapter 5 and 6, and ICAO Doc 9995, 'Manual of Evidence-based Training'.

Data analyses undertaken for the EBT project corroborate independent evidence from multiple sources, including normal operations monitoring (line operations safety audit (LOSA)), flight data analysis, reporting programmes and a statistical treatment of factors based on an extensive database of aircraft accident reports. Both process and results of these analyses were peer-reviewed by experts in pilot training selected from airline operators, pilot associations, civil aviation authorities (CAAs) and aircraft original equipment manufacturers (OEMs) so as to provide transparency and to create a practical and qualitative perspective. During this review, critical core competencies were examined, in technical and non-technical areas, providing the opportunity to train and assess flight crews according to a defined, useful and comprehensive set of measurement criteria.

EBT is intended to enhance the confidence and capability of flight crews to operate the aircraft in all regimes of flight, and to recognise and manage unexpected situations. EBT is focused on developing and evaluating the key pilot competencies required by pilots to operate safely and efficiently in a CAT environment.

The development of non-technical performance is an integral part of an EBT programme, and the data analyses revealed the significance of certain non-technical competencies in reducing risk during operations. The implementation of EBT will enhance situation awareness in a highly automated and highly reliable system, through more effective training and exposure to rapidly developing and dynamic situations.

Data from the EBT project indicate the need for pilots to be exposed to the unexpected in a learning environment, and be more challenged and immersed in dealing with complex situations, rather than repetitively being tested in the execution of specific predefined manoeuvres.

Data analyses undertaken for the EBT project indicate significant differences across all three generations of jet transport aircraft and two generations of turboprop aircraft. While overlap in training clearly exists, there are quite distinct generational differences in patterns of existing risks that should be addressed during recurrent training and checking to ensure that they are relevant for the target audience.

EBT identifies areas for improvement, providing a prioritisation of critical and relevant training topics as a guidance for the creation of suitable EBT programmes.

The Agency supports the implementation of such changes in both the affected regulations and the development of recurrent training and checking for CAT pilots.



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1. Rationale

The European Aviation Safety Agency (EASA) (hereinafter referred to as the 'Agency') stated¹⁵ in the [European Aviation Safety Plan \(EASp\) 2014-2017](#) the need for personnel to have the right competencies by adapting the training methods. The future EASp, as of now called European Plan for Aviation Safety (EPAS), 2016-2020, also identified as one of the two most significant systemic issues the need to make sure that aviation personnel have the right competencies and training methods to cope with new challenges.

The safety priorities identified in the EPAS are addressed by specific actions¹⁶ in the Agency's rulemaking or safety promotion programmes. Following this rationale, the Agency decided that the introduction of EBT and CBT was necessary¹⁷ in the field of recurrent training and checking. Having in mind that EBT is a CBT programme¹⁸, the Agency planned two separate rulemaking tasks, RMT.0696 'Implementation of Evidence-based Training within the European regulatory framework', and RMT.0599 'Evidence-based and competency-based training' (review of ORO.FC). The links and different scopes of the two RMTs are explained in this document.

Furthermore, in 2015, in the context of RMT.0696, the Agency agreed that air operator certificate (AOC) holders within their Member State (MS) wishing to implement EBT in accordance with ICAO Doc 9995 should be able to do so.

1.1. Scope

The EBT integration into the European aviation regulatory framework relates to:

- operators of aeroplanes with a certified seating capacity of 50 or more passengers for turbojet aeroplanes, and 30 or more for turboprop aeroplanes; and
- training and checking of their flight crews conducted in flight simulator training devices (FSTDs).

Both of the above are considered to be within the immediate scope of EBT.

The availability of data (evidences), the required analysis, and the methodology that needed to be followed to produce ICAO Doc 9995 limited the scope of EBT to the one described above. However, it is envisaged that this scope could be widened, as indicated in Chapters 3.6 and 3.7 of this CP, to include operators engaged in the training and checking of flight crew conducting CAT operations outside the original scope of ICAO Doc 9995. This can be achieved only when following the related methodology and only when it is demonstrated by the interested stakeholder.

¹⁵ 'Having the right competencies and adapting training methods is recognised as a key area in the EASp, hence a new systemic threat was created last year to tackle such issues like the increasing pilot reliance on automation, the modernisation of training provisions or the differences in training implementation among States.' (European Aviation Safety Plan 2014-2017)

¹⁶ SYS5.1 and SYS5.3. 'Two actions (...) focus on modernising training methods and competency provisions across several domains: flight crew licensing, operations, maintenance and ATM/ANS. New training methods like competence based training (CBT), Evidence-based Training (EBT) and distance learning are being evaluated, and training standards will be adapted in the coming years as necessary.' (European Aviation Safety Plan 2014-2017)

¹⁷ Objective of RMT.0599: a complete review of the provisions contained in ORO.FC. It will also include the review of alternative training and qualification programmes (ATQPs) and the introduction of EBT and CBT in the field of recurrent training.

¹⁸ See ICAO Doc 9995 'Manual of Evidence-based Training', Chapter 6.2 'Instructors — General'.



2. Introduction and background

2.1. Introduction to the CP

In the context of RMT.0599, this CP proposes a way forward for the implementation of EBT under the scope described above, considering different options, and taking into account ICAO recommendations, several safety recommendations, industry expertise as well as the various documents¹⁹ produced by the Agency — including the difficulties and inconsistencies revealed during RMT.0696 that need to be addressed through RMT.0599. In fact, this CP was developed by the Agency and the EBT Task Force in order to complete RMT.0696.

Therefore, this CP is restricted to CBT elements relevant for the EBT. Consequently, it does not intend to describe or evaluate other CBT programmes, or the extension of CBT to other licences not strictly covered under Chapter 1.1 ‘Scope’.

2.2. Background

The Agency started in September 2015 RMT.0696 ‘Implementation of Evidence-based Training within the European regulatory framework’ (related [ToR](#)) and created an EBT Task Force, to develop interim guidance material (GM) in order to promote a standardised and consistent means for the implementation of EBT within the existing rule structure. This first step was completed with the publication of the ED Decision 2015/027/R, containing a GM1 to ORO.FC.230 and GM1 to ORO.FC.A.245, published in December 2015. RMT.0696 followed an accelerated process within the existing regulatory system to bring forward the safety benefits of EBT, by maintaining the existing implementing rules (IRs) and acceptable means of compliance (AMC), in order to provide a robust safety net until more experience in the EBT concept is gained.

RMT.0696 was planned as an interim step preceding RMT.0599 to gain implementation experience in the EBT concept, and to identify some difficulties and inconsistencies that will need to be addressed through RMT.0599 ‘Evidence-based and competency-based training’ (review of ORO.FC)²⁰.

2.3. Introduction to the EBT concept

2.3.1. EBT — General

The aim of an EBT programme is to identify, develop and evaluate the core competencies required by pilots to operate safely, effectively and efficiently in a CAT environment by managing the most relevant threats and errors based on evidence collected in operations and training. EBT arose from the need to develop a new paradigm for competency-based training and assessment of airline pilots, based on evidence.

EBT has been designed as an off-the-shelf ‘baseline’ programme based on the analysis of multi-source data gathered in operations worldwide. Having the relevant experience and the capability to analyse data effectively, operators can create an ‘Enhanced Programme’ where defined differences in training criticality are established.

¹⁹ European Aviation Safety Plan 2014-2017 and 2016-2020, Pre-regulatory impact assessments (Pre-RIAs) FCL006, OPS.012, OPS.018, and OPS.088.

²⁰ A more detailed list of the type of issues covered by RMT.0599 is provided in Chapter 3.5 below.



2.3.2. The application of CBT²¹

Rapid technological changes and a diverse, dynamic and competitive operating environment create a need for effective and efficient training aligned with the needs of the job. CBT has been successfully used across many industries. This is based on an understanding of how people learn, and a job-related performance that encompasses technical task-related skills, and non-technical performance, both being increasingly important for maximising functionality in the automation and information rich cockpits of today. The EBT approach to CBT is to ensure that the job performance of flight crews is captured across a range of observable behavioural indicators, thus guaranteeing that what is trained and checked is relevant to the job.

Traditional approaches to training development involve the decomposition of jobs into elements or tasks. For each task/element, there is a related objective, an assessment, and associated elements in a training plan. A limitation of this approach is that each task/element must be taught and assessed. In complex systems or when jobs evolve rapidly, it may not be possible to accommodate all these elements. Moreover, learners may demonstrate the ability to perform any number of tasks, without being competent in their job.

In the design of a CBT programme, a smaller number of competencies are defined. Competencies are stable characteristics of individuals that allow to reliably predict successful job performance. Typically, an activity will involve several competencies, and competencies apply across a variety of activities and contexts. In the design of training, tasks and activities are incorporated because they are good candidates for facilitating or developing a competency or for assessing a competency/competencies.

In addition, EBT is focused on the deployment of core competencies, and on the process of using them to mitigate challenging situations, rather than on the measurement of simple outcomes in the performance of standard manoeuvres. Therefore, 'competency-based training is the approach used to deliver the content of EBT programmes' (ICAO Doc 9995, Chapter 7).

The EBT concept is designed to maximise learning and minimise formal checking. Where checking is required, it should evolve towards measuring the process of managing situations rather than only the outcome of this process. This will lead to a substantial change towards providing more learning opportunities, by recognising the expectation that professionals should continuously strive to learn and develop their capabilities, rather than only being focussed on demonstrating performance according to minimum regulatory standards.

Taking into account relevant threats based on operational data, and identifying relevant observable behaviours enables the transfer of knowledge, skills and attitudes necessary for a safe, effective and efficient job performance.

2.3.3. EBT criticality & data analysis

The data analyses undertaken to create EBT were very substantial, integrating results from wide-ranging multi-source data. Some very strong conclusions were drawn showing powerful convergence in certain areas. The most important outcome was the prioritisation of results and their classification in training topics to be used in the FSTD-based EBT programme. This is a key part in the process of translating data

²¹ 'Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement and the development of training to the specified performance standards.' (ICAO DOC 9995 Definitions)



into useful events and scenarios to assess and develop pilot performance in recurrent training programmes. This result is the first rigorous attempt to rank parameters such as threats, errors and competencies, along with factors affecting accidents and serious incidents, in order to systematically formulate a recurrent training programme from multiple data sources.

The EBT criticality and data analysis shows the feasibility of collecting an adequate set of operational and training data, and developing the necessary methods to analyse that data, while corroborating results to produce a criticality ranking of training topics. The prioritisation process takes place for each of the six generations of aircraft using critical parameters to highlight differences and commonalities. The process has the sufficient flexibility to allow enhancement²² according to the mission, culture and type of aircraft. The data in the process are also used as material to create scenarios applicable to recurrent training and checking conducted in an FSTD qualified for the purpose according to the Doc 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices', Volume I — Aeroplanes.

This process is transparent and repeatable and results in a unique prioritisation according to each aircraft generation. Three levels of priority, A, B and C, were used to determine the frequency of pilot exposure to the defined training topics within a three-year rolling recurrent training programme.

Most of the data referred to in the 'Data Report for Evidence-based Training'²³ has been analysed and is contained in the 'Evidence Table', and the 'EBT Accident and Incident Study'. The 'Evidence Table' consists of data from multiple sources and has the capability to sort as well as corroborate analytical results. It represents a robust set of evidence and it is a primary tool used in determining results. The 'EBT Accident and Incident Study' contains 3045 reports feeding the analysis, and making it comprehensive as well as sensitive to developing prioritisation of results and able to discriminate by aircraft generation. Prioritisation of training topics by generation uses both of these tools. In some cases, depending on the data, the assessment and training topics are drawn from both sources, or from the 'Evidence Table' or the 'EBT Accident and Incident Study' alone, while the prioritisation itself results from an algorithmic process. All analytical results were provided to the EBT Project Group comprising training experts and professionals working on training scenarios creation; their utilisation of the results served as an experiential validation.

Any set of historical data is necessarily finite. When using that data, a large set of experience will have a strong predictive validity even though the environment constantly changes. These challenges were accepted because statistical and quality control principles were adhered to and, more importantly, because the results from data analysis were applied in the context of professional experience and expertise.

For the creation of the recurrent EBT programme defined in ICAO Doc 9995, a cautious approach was taken, and the suggested frequency of training is higher than the results indicate unless the corroborating data is very strong. An example of this could be illustrated in the 'EBT Accident and Incident Study', where the data implies different training frequency in adjacent generations. If the data is quite strong regarding the generation that demands more training, the training category in the adjacent generation is also upgraded.

²² Enhanced EBT programmes can be found in ICAO Doc 9995.

²³ IATA, Data Report for Evidence-based Training, First Edition, August 2014.



Operational and training data from multiple sources indicates that pilots operating more modern-generation aircraft take less time to achieve competency in the performance of certain manoeuvres. Modern-generation aircraft are also more complex, and pilots have more to learn in order to achieve a defined level of operational competency. While the number of assessment and training topics is slightly smaller in early aircraft generations, the training time in the FSTD should be largely the same.

Reference: International Air Transport Association (IATA), Data Report for Evidence-based Training, 2013.

2.3.4. Resilience

Data analyses reveal the difficulties encountered by pilots when faced with surprising or unexpected situations. The commercial aviation system has a high level of safety reliability, but there remains a resistant rate of serious and fatal accidents. The availability of substantial data allows a systemic improvement, mostly through reactive redesign, improved operations, training and maintenance/airworthiness activities. This means that within a given rate, more serious events will become less predictable over time. Since these events defy the explanatory power of even complex linear models, alternative explanations are needed.

They can be seen as due to an unexpected combination or aggregation of conditions or events. A practical term for this is concurrence, meaning the occurrence of two (or more) things happening at the same time, and thereby affecting each other.

They can therefore be considered as non-linear phenomena that emerge in a complex system.

This view recognises that complex system performance is always variable, both because of the variability of the environment and of the constituent subsystems.

The subsystems' variability is to a large extent attributable to the people in the system, either as individuals and/or groups. This should nevertheless not be considered to imply that human performance is wrong or erroneous in any way.

On the contrary, performance variability is necessary if a joint cognitive system, meaning a human-machine system or a socio-technical system, is successful in coping with the complexity of the real world.

The following four points describe the essence of the systemic view:

Normal performance and failures are emergent phenomena. None of them can therefore be attributed to or explained by referring to the functions of specific components or parts. Normal performance, furthermore, differs from normative performance: it is not what is prescribed by rules and regulations but rather what takes place as a result of the adjustments required by a partly unpredictable environment. Technically speaking, normal performance represents the equilibrium reflecting the regularity of the work environment.

The outcomes of actions may sometimes differ from what was intended, expected or required. When this happens, it is more often due to the variability of the context and conditions than to the failures of actions (or the failure of components or functions). At the level of individual human performance, local optimisation or adjustment is the norm rather than the exception, as shown by the numerous shortcuts and heuristics that one relies on in their work.

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The adaptability and flexibility of human work is the reason for its efficiency. Normal actions are successful because people adjust to local conditions, to shortcomings or quirks of technology and to predictable changes in resources and demands. In particular, people quickly learn correctly to anticipate recurring variations; this enables them to be proactive, hence to save the time otherwise needed to assess a situation.

The adaptability and flexibility of human work, however, is also the reason for the failures that occur, although it is rarely the actual cause behind those failures. Actions and responses are almost always based on a limited rather than complete analysis of the current conditions, i.e. a trade-off between thoroughness and efficiency. Still, since this is the normal mode of acting, normal actions can, by definition, not be wrong. Failures occur when this adjustment goes awry, but both the actions and the principles of adjustment are technically correct.

When failures occur, any actions/adjustments are the natural response of the individuals and/or organisations to recover from their consequences, in order to regain stability and efficiency. This response is called resilience.

Resilience should not be limited to adaptability, but include the capacity to handle disruptions and changes that fall outside of the boundaries set by the operations model. Depending on various factors such as education, competency, quality of means available, the resilience capacity and efficiency may change significantly.

Resilience engineering is a paradigm of safety management that focuses on how to help people cope with complexity under pressure to achieve success.

The continuous development of pilot core competencies is seen as an effective means to address what will be unexpected and ultimately unforeseeable, the so-called 'black swan' events. One of the key facets of EBT is learning enabled through exposure to unexpected, dynamic and challenging situations. Exposure during training to variable and dynamic threat conditions should help pilots develop and improve their processes of handling unpredictable events. With variability of exposure, confidence should be developed through the repetitive deployment of core competencies under many different conditions and across the aircraft flight envelope.

References:

- Erik Hollnagel, David D Woods, Nancy Leveson, *Resilience engineering: concepts and precepts*, Ashgate, 2006; and
- Sidney Dekker, *Drift into failure — from hunting broken components to understanding complex systems*, Ashgate, 2011.

2.3.5. Personnel providing training and checking for EBT — The instructor and examiner roles

Given the paradigm shift proposed by competency-based programmes like EBT, one of the principle challenges for implementation is the adaptation of the current instructor and examiner population to the concept. With this in mind, national aviation authorities (NAAs) and operators implementing EBT



should focus on the development of instructor and examiner competencies. Standardisation activities should ensure the consistency of assessment through inter-rater reliability²⁴ training

Over time, and as CBT programmes are used more widely, there may be a need to address certain training needs as part of a licence certificate qualification, the more operator-specific needs still being addressed according to the defined programmes of the operator.

3. Description of the issue

3.1. Introduction

An analysis of fatal aircraft accidents worldwide for the period 2001–2011 shows that in more than 50 % of these accidents the action of the flight crew was the primary causal factor (CAA UK, 2013). This analysis shows that flight crew handling skills were a factor in 14 % of the accidents whereas flight crew non-technical skills were a factor in more than twice as many (32 %). It is generally accepted that further improvements in flight safety require a comprehensive review of pilot training (IATA, 2013), and the accident statistics show that the emphasis of this training should be placed on developing the non-technical as well as technical pilot skills.

Traditional recurrent training requirements for pilots operating with airlines are, to a large extent, not relevant to the operation of modern multi-crew transport category aeroplanes (IATA, 2011) and have not kept up with the development of the operating environment. The present requirements are largely based on the evidence of accidents involving early-generation jet aircraft (IATA, 2013) and do not reflect the risks of the present operating environment.

Operators and industry bodies have recognised that the traditional training processes do not guarantee that the trained pilots are competent, or they do not adequately address ‘human factors’ issues (IATA, 2013).

Therefore, the implementation of EBT should be a first step towards the full implementation of a CBT framework in all aspects of flight crew training and licensing.

3.2. Identification of the issue

Presently, EASA MSs (and other NAAs that have elected to adhere to the European aviation IRs) do not have a regulatory framework that lends itself to the full implementation of EBT. In fact, within the current regulatory framework, it is only possible to achieve a mixed implementation of EBT.

Note: implementation of a mixed EBT programme means that only some portion of the recurrent assessment and training is dedicated to the application of EBT. Mixed implementation was addressed in the current regulatory framework as explained in Chapter 2.2 above.

²⁴ In statistics, inter-rater reliability, or concordance, is the degree of agreement among raters. It gives a score of how much homogeneity, or consensus, there is in the ratings given by different instructors. It is useful in refining the tools given to human instructors, for example by determining if a particular scale is appropriate for measuring a particular variable. If various raters do not agree, either the scale is defective or the raters (instructors) need to be retrained.



3.3. Current regulatory status/current legislation applicable

The changes necessary represent a paradigm shift in the training and checking methods and, as such, will require a thorough review of the regulations related to training and checking of CAT crews. The changes to the regulations will facilitate operators to adopt the recommendations of ICAO Doc 9995 and incorporate them into their recurrent training and checking programmes. ICAO Doc 9995 limits the scope of EBT to recurrent training and checking in FSTDs. The impact of the EBT philosophy is far more wide-ranging, and should influence the complete spectrum of flight crew training.

As previously indicated, the current European regulatory system does not allow a full implementation of EBT. The implementation of EBT within the European aviation regulatory framework is a paradigm shift, assessing crew performance across a range of core competencies, rather than checking performance in managing prescribed events. Training topics drawn from comparative risk analyses are used as a vehicle for developing and assessing core competencies. Therefore, within the implementation of EBT, it is also necessary to review the regulations relating to training and standardisation of instructors and examiners.

3.4. Steps to amend the current regulatory framework

It is proposed to amend the following regulations in order to allow a full deployment of EBT:

- Regulation (EU) No 965/2012 (the 'Air OPS regulation'); and
- Regulation (EU) No 1178/2011 (the 'Aircrew regulation').

Note: The necessary changes involve amendments at IR as well as AMC and GM level.

This CP identifies the necessary changes to adapt the European aviation regulatory framework in order to integrate EBT:

- The first step is to address the recurrent training and checking requirements for flight crews engaged in CAT operations, covered in ORO.FC.230 of Annex III (Part-ORO) to Regulation (EU) No 965/2012, including licence proficiency check in Regulation (EU) No 1178/2011. Validity periods and recent experience may also require amendments.
- In order to provide a coherent and integrated flight crew recurrent training and checking programme for the operator, a review should also include other requirements that affect this programme. Examples include the requirements of Annex V (Part-SPA — Specific Approvals) to Regulation (EU) No 965/2012 (e.g. low visibility, etc.), and pilot qualification to operate in either pilot's seat.
- As a second step, other elements of the operator training and checking programmes should also be adapted in order to enable the implementation of a single philosophy of training and checking by extending the concepts to e.g. the command course, operator conversion course²⁵, specific training and/or checking for route and aerodrome knowledge (e.g. CAT C airports, etc.), and to the operation of more than one type or variants (e.g. cross-crew qualification (CCQ), mixed fleet flying (MFF)).

²⁵ This will require amendments to the current type rating training in order to ensure a coherent training philosophy when type ratings are performed in combination with the operator conversion course (OCC).



- In parallel, and when appropriate, it will be necessary to adapt the regulatory framework relating to training, checking and standardisation of instructors and examiners, as well as competent authority (CA) requirements²⁶ (especially inspectors' qualification), following the steps above.
- As a third step, and only when capability is demonstrated by the interested stakeholder, EBT may be extended to CAT Operations for helicopters and other types of aeroplane not covered by ICAO Doc 9995. This will bring benefits in terms of training harmonisation and will provide a level playing field for all actors in the internal aviation market.

3.4.1. Regulatory road map for EBT

Following the steps described above, the suggested sequence of possible actions to be taken in the European regulatory system for the adoption of EBT is as follows:

First step:

- amend Appendix 9 to Annex I (Part-FCL) to Regulation (EU) No 1178/2011, and ORO.FC.230 and ORO.FC.145 of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012, as regards EBT for recurrent training and checking;
- amend Annex V (Part-SPA — Specific Approvals) to Regulation (EU) No 965/2012, and especially Subpart E — LOW VISIBILITY OPERATIONS (LVO) (SPA.LVO.120 — Flight crew training and qualifications);
- amend ORO.FC.235 — Pilot qualification to operate in either pilot's seat of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012; and
- amend any other applicable regulation.

Second step:

- amend ORO.FC.220 — Operator conversion and checking of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012²⁷ when the operator's conversion is not combined with a new type/class rating training, as required by Regulation (EU) No 1178/2011;
- amend ORO.FC.205 — Command course of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012²⁸;
- amend ORO.FC.A.201 — In-flight relief of flight crew members of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012;
- amend ORO.FC.240 — Operation on more than one type or variant of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012; and
- amend any other applicable regulation.

²⁶ Annex II (Part ARO) to Regulation (EU) No 965/2012 and Annex VI (Part ARA) to Regulation (EU) No 1178/2011.

²⁷ ORO.FC.215 — Initial operator's crew resource management (CRM) training will be assessed in order to ensure a coherent training and checking for both parts.

²⁸ This would take into account also ORO.FC.105 — Designation as pilot-in-command/commander, including route/area and aerodrome knowledge for commercial operations.



In parallel:

- amend ORO.FC.220 — Operator conversion training and checking of Subpart FC — Flight Crew of Annex III (Part-ORO) to Regulation (EU) No 965/2012 when the operator's conversion is combined with a new type/class rating training, as required by Regulation (EU) No 1178/2011;
- amend FCL.725 — Requirements for the issue of class and type ratings of Subpart H — CLASS AND TYPE RATINGS of Annex I (Part-FCL) to Regulation (EU) No 1178/2011 (application of EBT for issuing a type rating);
- amend Subpart J — INSTRUCTORS and Subpart K — EXAMINERS of Annex I (Part-FCL) to Regulation (EU) No 1178/2011 (personnel providing training and checking for EBT);
- amend Annex III (Part-ORO) to Regulation (EU) No 965/2012 and Annex VI (Part ARA) to Regulation (EU) No 1178/2011; and
- any other applicable regulation.

Third step: perform the application described in Chapters 3.6 and 3.7 below.

3.5. Elements of EBT

Following the EBT road map described in Chapter 3.4.1 above, the elements that should be considered when drafting the new rules or amendments thereto on recurrent training and checking (first step) are:

- (a) development of core competencies;
- (b) development of a grading and assessment system;
- (c) checking according to competencies, and replacement of ORO.FC.230 of Appendix 9 to Annex I (Part-FCL) to Regulation (EU) No 1178/2011:
 - (1) equivalent level of safety (outcomes versus root cause),
 - (2) core competencies,
 - (3) means of assessment, and
 - (4) means of demonstration (flight phases, operations, events);
- (d) equivalence of malfunctions:
 - (1) operator responsibility,
 - (2) availability of FSTD malfunctions, and
 - (3) process of clustering;
- (e) equivalence of approach types/Annex V (Part-SPA) to Regulation (EU) No 965/2012 — alleviations with EBT approval:
 - (1) LVO,
 - (2) performance-based navigation (PBN), and
 - (3) precision runway monitoring (PRM);
- (f) alleviations for operators holding an EBT approval:

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- (1) extended range operations with twin-engined aeroplanes (ETOPS/EDTO)
- (2) operations with specified minimum navigation performance (MNPS), and
- (3) operations in airspace with reduced vertical separation minima (RVSM);
- (g) programme development;
- (h) instructor training & qualification:
 - (1) operator responsibilities,
 - (2) conduct of EBT by instructors and/or examiners,
 - (3) instructor competencies,
 - (4) learning objectives (LOs), and
 - (5) integration of EBT for instructors/examiners into type rating instructor (TRI)/synthetic flight instructor (SFI) and type rating examiner (TRE)/synthetic flight examiner (SFE) training;
- (i) instructor standardisation: means of achieving inter-rater reliability;
- (j) instructor competency assessment:
 - (1) nominated person, and
 - (2) type of activity (EBT, CBT);
- (k) oversight over the application for approval; and
- (l) continuing oversight (programmes and continuous development).

3.5.1. Personnel providing EBT and evidence-based checking

THE INSTRUCTOR AND EXAMINER ROLES

When developing the elements of EBT with regard to instructors (see Points (h) to (j) of Chapter 3.5 above), the following, amongst others, should be considered:

- (a) the operator should demonstrate to the CA and be responsible for the appropriate training and qualification of personnel engaged in the conduct of EBT;
- (b) the operator should ensure that training is provided in accordance with the applicable regulations, as amended to reflect the instructor training requirements set out in Chapter 6 of ICAO Doc 9995;
- (c) RMT.0599 should consider that ICAO Doc 9995 refers only to instructors for the conduct of EBT. Annex I (Part-FCL) to Regulation (EU) No 1178/2011 and Annex III (Part-ORO) to Regulation (EU) No 965/2012 require checks to be conducted by an examiner (TRE or SFE), and other phases of the programme by an instructor (TRI or SFI);
- (d) RMT.0599 should consider the required instructor and/or examiner qualification appropriate for personnel to conduct EBT, whilst assuring compliance with ICAO Annex 1 and Regulation (EC) No 216/2008 (hereinafter referred to as the 'Basic Regulation'); and



- (e) RMT.0599 should consider whether personnel providing EBT and evidence-based checking will require a specific certificate, rather than a qualification under the supervision of the operator.

3.6. Application to helicopter CAT operations

Whilst helicopters were outside the scope of the original EBT development plan and are not referenced in ICAO Doc 9995 or the 'IATA EBT Implementation Manual', the offshore helicopter community operating multi-pilot, instrument flight rules (IFR) aircraft, increasingly equipped with cockpits equivalent to 'Generation 3', expressed the need to have access to EBT. The developmental activity of RMT.0599 should therefore include a demonstration of this need, and provide an evidence-based framework equivalent to that for CAT aeroplanes, consisting of:

- (a) an offshore helicopter accident data analysis;
- (b) a helicopter pilot survey;
- (c) normal operations monitoring data;
- (d) a definition of a helicopter 'cockpit generation' framework;
- (e) an extension of the EBT competency framework to cover helicopter operations; and
- (f) the creation of a baseline EBT programme for helicopters, including:
 - (1) development of an assessment matrix for evaluation and scenario phases;
 - (2) development of a malfunction-clustering matrix; and
 - (3) adaptation of the existing manoeuvre phase framework to include helicopter-specific manoeuvres.

Note: Although the above refers only to offshore operations, it does not restrict RMT.0599 to evaluate and introduce amendment to the European rules in order to include a larger scope of EBT for helicopters.

3.7. Other aeroplanes CAT operations

ICAO Doc 9995 enables the application of the EBT concept and programme to the recurrent training and checking of crews operating large turbojet aeroplanes in accordance with Part II — International General Aviation — Aeroplanes of ICAO Annex 6. The potential to apply EBT in the first instance to other aeroplanes CAT operations for should be considered, notwithstanding the current lack of data analysis to support such provisions. Consideration during RMT.0599 should be given to the creation of an equivalence basis for provisions to support training for these aircraft, taking into account the work being undertaken by the industry which is similar to that undertaken by the offshore helicopter group. This should include the following:

- (a) an other aeroplanes CAT operations accident data analysis;
- (b) an other aeroplanes CAT operations pilot survey;
- (c) normal operations monitoring data;
- (d) a definition of an aircraft 'cockpit generation' framework;



- (e) an extension of the EBT competency framework, if necessary, to cover other aeroplanes CAT operations; and
- (f) the creation of a baseline EBT programme for other aeroplanes including:
 - (1) development of an assessment matrix for evaluation and scenario phases;
 - (2) development of a malfunction-clustering matrix; and
 - (3) adaptation of the existing manoeuvre phase framework to include other-aeroplane-specific manoeuvres.

4. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. The specific objectives of the proposed approach are:

- to ensure that MSs, industry and the Agency develop harmonised concepts and rules for addressing the identified safety risk and regulatory-coordination issues in order to achieve and maintain a high and uniform safety level for commercial and non-commercial operations; and
- to assist MSs in fulfilling their obligations under the Convention on International Civil Aviation (the ‘Chicago Convention’), by providing a basis for a common interpretation and uniform implementation of its provisions, and by ensuring that its provisions are duly taken into account during the development of rules.

5. Identification of the possible options

Table 1: Possible options

Option	Description	Notes
1	Baseline scenario — Minimum changes	Implement minimal changes to the current regulations. Mixed implementation of EBT where only some portion of the recurrent assessment and training is dedicated to the application of EBT. Note 1: this option was already developed under RMT.0696. Note 2: this option implies that RMT.0599 will only address minimal shortcomings identified during and after RMT.0696, without implementing a new and complete training methodology.
2	Allow for the implementation of a competency-based EBT solution to cover the complete spectrum of flight crew	Allow a full deployment of EBT for AOC holders as a competency-based training <u>option</u> (alongside existing ‘prescriptive’ requirements and the alternative training and qualification programme (ATQP)), including the harmonisation of methodology between initial (type rating) and recurrent flight crew training and checking (operator proficiency check (OPC) and licence proficiency check (LPC)). This option should also include other training requirements which impact



	training in FSTDs for all AOC holders (recommended).	<p>the operator's training programmes (eg. LVO, ETOPS, etc.) in order to allow the operator to provide all their training under the same philosophy.</p> <p>As implementing EBT will be voluntary for the operator, when possible, promote its implementation by:</p> <ul style="list-style-type: none"> — developing a guidance framework to assist NAAs in the oversight and standardisation of EBT; and — evaluating possible alleviations for those AOC holders that implement EBT, e.g. those alleviation already available under ATQP.
3	Mandate CBT	Implementation of mandatory use of CBT in all flight crew training performed by an AOC holder. Furthermore, for those type of aircraft subject to EBT (see Appendix 2 of ICAO Doc 9995), its implementation would be mandatory, by removing the current prescriptive rules, thus making EBT the only alternative to ATQP.

5.1. Analysis of impacts for the possible options

5.1.1. Safety impact

The safety benefit of EBT should be demonstrated over time by continually improving a system targeted at focused learning. Implementation of the programme should ensure a level of safety equivalent to that provided by compliance with ORO.FC.230 of and Appendix 9 to Annex I (Part-FCL) to Regulation (EU) No 1178/2011, by continuing to focus on legacy items of check, albeit within a different structure. Safety benefits should be expected through a more qualitative approach, using core competencies to develop resilience by exposure to challenging situations.

Reference: IATA, Data Report for Evidence-based Training, 2013.

There have been several safety recommendations relating to flight crew training that could be in support of this CP:

- (a) The following should be taken into account in the scope of general training issues and in view of CBT. Please note that EBT is a CBT programme, and for this reason, certain safety recommendations are included in this CP. These recommendations may not be part of RMT.0599, but are listed below with a view to evaluating the EBT concept.

FRAN-2012-039	EASA to ensure the integration, in type rating and recurrent training programmes, of exercises that take into account all of the reconfiguration laws. The objective sought is to make its recognition and understanding easier for crews especially when dealing with the level of protection available and the possible differences in handling characteristics, including at the limits of the flight envelope.
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FRAN-2012-040	EASA to ensure that type rating and recurrent training programmes take into account the specificities of the aircraft for which they are designed.
FRAN-2012-041	EASA to define recurrent training programme requirements to make sure, through practical exercises, that the theoretical knowledge, particularly on flight mechanics, is well understood.
FRAN-2012-042	EASA to review the requirements for initial, recurrent and type rating training for pilots in order to develop and maintain a capacity to manage crew resources when faced with the surprise generated by unexpected situations.
FRAN-2012-043	EASA to ensure that operators reinforce CRM training to enable acquisition and maintenance of adequate behavioural automatic responses in unexpected and unusual situations with a highly charged emotional factor.
FRAN-2012-044	EASA to define criteria for selection and recurrent training among instructors that would allow a high and standardized level of instruction to be reached.
FRAN-2012-046	EASA to ensure the introduction into the training scenarios of the effects of surprise in order to train pilots to face these phenomena and to work in situations with a highly charged emotional factor.
FRAN-2012-052	EASA to improve the feedback process by making mandatory the operational and human factors analysis of in-service events in order to improve procedures and the content of training programmes.
GERF-25-2009	The European Aviation Safety Agency (EASA) should regulate to require that single-pilot aircraft engaged in EU-OPS 1.940 flights made in accordance with instrument flight rules at night must have a minimum crew of two pilots and that their training is in accordance with JAR-FCL including Multi-Crew concept (MCC) training.
UNKG-2006-102	Considering the unique circumstances of air ambulance flights, the Civil Aviation Authority, in conjunction with the Joint Aviation Authorities should review the circumstances in which a second pilot is required for public transport flights operating air ambulance services.

- (b) The following safety recommendations are derived from specific accident/incident contexts. They should be taken into account in the scope of the recurrent EBT, either in having a balanced representation of training events during the recurrent training, in the 'equivalence of malfunctions' or in enhancing training for a specific core competency. Please note that these safety recommendation will be considered as part of RMT.0599.

FRAN-2013-017	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European
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	aviation authorities ensure that go-around training integrates instruction explaining the methodology for monitoring primary flight parameters, in particular pitch, thrust then speed.
FRAN-2013-018	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that during recurrent periodic training, training organizations and operators give greater importance to the assessment and maintenance of the monitoring capabilities of public transport pilots.
FRAN-2013-022	The French Accident Investigation Board recommends that EASA review regulatory requirements for initial and periodic training in order to ensure that go-arounds with all engines operating are performed sufficiently frequently during training.
FRAN-2013-033	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that the risks associated with dispersion and/or channelized attention during the go-around, to the detriment of the primary flight parameters, be taught to crews.
FRAN-2013-035	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities, study whether to extend these measures to other procedures requiring high workload in a short time frame.
FRAN-2014-005	The French Accident Investigation Board recommends that EASA, in coordination with national authorities, make changes to the training requirements for pilots so as to include periodic reminders on the effects of contaminants such as ice on stall and loss of control on takeoff.
FRAN-2015-062	[unofficial translation]: EASA should define the terms on how an operator can set up a risk based training as described in ICAO Doc 9995. [French] [original text] - L'AESA définit les modalités permettant à un exploitant de mettre en oeuvre la formation basée sur les risques telle que précisée dans le doc OACI 9995 de l'OACI. [Recommandation 2015-062]
FRAN-2015-063	[unofficial translation]: EASA promotes commercial air transport operators to consider issues related to CRM and wind shear in the Evidence Based Training (EBT) scenario. [French] [original text] - L'AESA incite les exploitants de transport aérien commercial à prendre en compte des problématiques relatives au CRM et au cisaillement de vent dans la conception des scénarii EBT. [Recommandation



	2015-063]
NETH-2014-005	To the regulators involved in with the manufacturing of transport category aircraft, European Aviation Safety Agency (Europe), Federal Aviation Administration (FAA), Agencia Nacional de Aviacao (Brasil), Civil Aviation Administration of China, Federal Air Transport Agency (Russian Federation), Japan Civil Aviation Bureau, and Transport Canada. Review the applicable regulations on initial and recurrent flight training to assess whether they adequately address the potential degradation of situational awareness (basic pilot skills) and flight path management due to increased reliance on aircraft automation by flight crews.
SWED-2012-006	EASA is recommended to ensure that initial and recurrent pilot training includes mandatory rejected takeoff exercises that cover events of a sudden loss of engine thrust below VMCG. (RL 2012:21 R6)
UNKG-2007-062	It is recommended that the European Aviation Safety Agency should, in consultation with other National Airworthiness Authorities outside Europe, consider requiring training for flight by sole reference to standby instruments to pilots during initial and recurrent training courses.

Following the safety recommendations described above and the safety priorities identified in the EASp, a first analysis of the options shows the following:

- Option 1 — Minimum change: it could result in a safety improvement for commercial operations. The already published ED Decision 2015/027/R 'Implementation of evidence-based training within the European regulatory framework' will allow some operators a mixed implementation of EBT, making these training methodologies more accessible to aircraft operators. An increased take-up of these methodologies, if properly implemented, should result in improved training for the pilots involved and in a lower flight-crew-related accident rate in the future.
- Option 2 — Allow a full implementation of EBT: this Option should have the potential to deliver a significant improvement in safety. In addition to the improvement from an increased take-up of EBT, aircraft operators would be able to develop less complex training programmes, tailored to the identified risks, and to implement the principles of CBT in all training programmes. The harmonisation of requirements between initial type rating and recurrent training would make such training more effective. The overall result should be better training for the pilots involved and a lower flight-crew-related accident rate in the future. With this option, the implementation of EBT is voluntary, but if EBT is correctly promoted, it can be implemented by most operators.
- Option 3 — Mandate CBT: this Option would provide the highest level of safety as it would ensure that all flight crew training for AOC holders is conducted in a competency-based framework tailored to the risks identified in operations.



5.1.2. Social impact

No social impact is anticipated from the adoption of Option 1.

Option 2 could have positive direct and indirect social impacts as:

- a number of consultancies and companies with EBT expertise could expand their business and increase the number of employees (many aircraft operators would need to develop/improve expertise and strengthen knowledge in the field). Positive effects could be generated by the need to have training developers and trainings providers;
- the level of education and training of personnel of AOC holders could be strengthened and improved thanks to EBT (this could also have a potential positive effect on their career development).

Option 3, although the positive effects described above for Option 2 are also applicable to this Option, would however potentially limit the accessibility to the market to many AOCs, specially the smallest ones and those starting in business, as many AOC holders would not have the competence and financial capability to implement CBT in general or EBT, thus there would be an overall negative impact on the medium-low to low end of the aviation community.

5.1.3. Economic impact

There are commercial barriers to the adoption of CBT and EBT, especially with regard to the resources required to change the whole prescriptive training programme into a CBT. This relates mainly to the training and standardisation of the instructors, to the redevelopment of the operators' training programme, to the approval of and oversight over this programme, and consequently to the training of NAA inspectors for EBT. This may result in some adverse consequences during the initial stages of implementation, including increased check failures.

- Option 1 — Minimum Change: this Option **may not bring any economic benefit nor any increased cost** to the industry. Only those operators wishing to implement EBT will incur the costs described above. With this Option, EBT does not provide alleviations as only a mixed implementation is possible. Only those AOC holders implementing EBT and ATQP together will be able to benefit from the alleviations currently available under ATQP. Those NAAs wishing to approve an EBT programme will incur the costs related to staff training for approval of and oversight over the programmes.
- Option 2 — Allow a full voluntary implementation of EBT: this Option may offer economic benefits. Some airlines may choose to adopt EBT and although initially they will incur some costs, the alleviations provided will bring economic benefits. Currently, the ATQP programme and its alleviations bring a return on investment in a period of about seven years²⁹. The cost of EBT is estimated to be significantly lower than the current ATQP and subject to any permitted alleviations, and the return on investment may be higher. Furthermore, although the responsibility for the training programme lies with the AOC holder, following ORO.GEN.205 — Contracted activities of Annex III (Part-ORO) to Regulation (EU) No 965/2012, some ATOs may identify commercial opportunities through the adoption of CBT and EBT. This argument may also

²⁹ The return on investment varies depending on the complexity of the operation, types of aircraft, approval process, etc.



apply to training consultants. The requirement for inspectors to be competent in the approval of and oversight over EBT programmes would result in increased NAA costs for staff training in the short term (same as Option 1), but as this Option 2 offers a greater take-up of the EBT programmes by AOC holders, the relative cost for the NAA will decrease. **Therefore, this Option is considered to have a positive economic impact.**

- Option 3 — Mandate CBT: all airlines would need to invest in the development of CBT and/or EBT programmes. Despite the potential benefits identified in terms of safety, there would be a negative impact on airlines that did not have the resources or expertise to develop CBT and/or EBT. This impact would be most significant on smaller operators and, particularly, on business jet operators and the General Aviation (GA) community. It is expected that this Option could undermine the commercial viability of many small airlines and air taxi operators. **Overall, Option 3 is considered to have a negative economic impact.**
- **The positive safety impact of implementing EBT may, in the long term, result in positive economic impact – amongst others, by accident cost avoidance and potentially decreased insurance costs. This argument was taking into account for options 2 and 3.**

5.1.4. Proportionality issues

Neither Option 1 nor 2 would have any effect on organisations that would prefer to continue with training in accordance with traditional ‘prescriptive’ requirements.

Option 3 — Mandate CBT would have a negative impact on those organisations that would prefer to continue with training in accordance with traditional ‘prescriptive’ requirements. Small airlines and air taxi operators are likely to fall into this category. The adoption of Option 3 would therefore have a disproportionate effect on the small-business community.

5.1.5. Impact on regulatory coordination and harmonisation

Option 1 — Minimum Change would maintain the current situation.

Options 2 and 3 represent an improvement of the existing regulations, which is likely to encourage smaller countries, for example the countries of the Gulf Cooperation Council (GCC), to adapt their national regulations in order to achieve better harmonisation with the European Union (EU) regulations. Furthermore, adopting legislation for the implementation of EBT according to Chapters 5 and 6 of ICAO Doc 9868, and ICAO Doc 9995 allows the EU to harmonise with other states in the consistent application of the concept (FAA, Civil Aviation Safety Authority (CASA), Transport Canada).

5.1.6. Impact on existing organisations including the Agency

For the three options described above, there is a need for a guidance framework within the EU to assist NAA’s in the oversight over and standardisation of EBT in accordance with a consistent process monitored by the Agency. For this reason, the Agency already prepared and presented a first draft of reference material in the ‘14th Air Operations Standardisation Meeting’ (8 October 2015).

It is likely that NAAs will need to invest time and money in the training of inspectors, and possibly in the recruitment of new inspectors with different skills or qualifications to those currently overseeing pilot training. This impact increases moving from Option 1 to 3.



Options 2 and 3 have the potential to positively impact the regulatory activities of the Agency as they should address the difficulties and inconsistencies identified under related tasks, as well as contribute to integrating these tasks with RMT.0599:

- Interface issue between this task and RMT.0194 — Extension of competency-based training to all licences and ratings and extension of TEM principles to all licences and ratings (task included in EASp 2014-2017, for flight crew licensing: based on the agreed prioritisation of tasks, it was decided to initiate rulemaking task FCL.006 in 2014/Q4, entitled ‘Extension of competency-based training to all licences and ratings and extension of TEM principles to all licences and ratings’. The related EASA opinion is planned to be published in 2017/Q1 and the related AMC/GM in 2018/Q1. The task has been renamed RMT.0194, with no additional changes.
- Interface issue between this task and RMT.0596 — Review provisions for examiners and instructors of Subpart J & K in Part-FCL: this is a complete review of Part-FCL Subparts K and J, containing the provisions for examiners and instructors. Industry and MS experts requested this task as an urgent correction and alignment of the rules in place. It will also address some of the elements proposed by the Agency’s examiner/inspector task force.

6. Conclusion

Based on the balance between safety and costs, **Option 2 — Allow the implementation of an EBT-based solution to cover the complete spectrum of flight crew training in FSTDs for all AOC holders is recommended.** This Option has the potential to deliver significant improvements in safety without any major commercial or operational impact on those organisations that choose not to implement the new methodology. The chosen option will lead to changes in rules for initial and recurrent pilot training, and training for instructors and inspectors.

Furthermore, based on the work undertaken by the EBT Task Force under RMT.0696, as well as on GM1 ORO.FC.230 and GM1 to ORO.FC.A.245 published in December 2015, this Task Force has made the following recommendations for RMT.0599 with respect to EBT:

6.1. Initial recommendations

- (a) Develop a regulatory framework for the full implementation of EBT according to ICAO Doc 9995.
- (b) Develop a methodology consistent with EBT according to ICAO Doc 9995 for the conduct of checks in order to revalidate and renew professional pilot licences based on the evaluation of pilot core competencies.
- (c) Evaluate and sustain the alleviations available under ATQP, whilst enabling transitions to EBT without prejudice.
- (d) Evaluate the provision of incentives for operators who have not yet considered EBT to implement the programme.
- (e) Provide a means whereby operators ensure that training and checking personnel conducting EBT will be competent in its execution.
- (f) Provide the flexibility for future adjustments to the baseline programme based on feedback from the analysis of global data.



- (g) Provide a framework enabling operators to further develop EBT into an enhanced EBT programme.
- (h) Provide guidance for a framework within the EU to assist NAAs in the oversight over and standardisation of EBT according to a consistent process monitored by the Agency.
- (i) Enable the development of EBT for complex motor-powered helicopters not listed in ICAO Doc 9995 and undertaking CAT operations.

6.2. Further actions

- (a) Provide the means whereby EBT concepts may be used to drive initial and type rating programmes.
- (b) Enable the future development of EBT for complex and non-complex motor-powered aeroplanes not listed in the ICAO Doc 9995 and undertaking multi-pilot CAT operations.
- (c) Develop monitoring indicators to continuously evaluate the efficiency and effectiveness of EBT.

6.3. Further considerations

Enable information sharing between EBT operators.

7. References

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