European Union Aviation Safety Agency

Explanatory Note to Decision 2022/003/R

Certification Specifications for Simulator Data (CS-SIMD)

RELATED NPA/CRD: 2021-03— RMT.0688

EXECUTIVE SUMMARY

The objective of this Decision is to improve existing requirements and guidance material for the definition of the scope of aircraft validation source data (VSD) to support the objective qualification of simulators. The initial Issue was published on 2 December 2014.

This Decision amends CS-SIMD to:

— extend the applicability of CS-SIMD to categories of aircraft other than aeroplanes and helicopters.

— clarify the responsibilities and tasks of the data provider vis-a-vis the European Union Aviation Safety Agency (EASA) in the context of validating data for flight simulator training devices (FSTDs).

— describe the different steps of the process to provide validation data (VD) for FSTDs.

— clarify the means for substantiating the scope of VSD.

— clarify the concept and differences between VD and VSD.

To this aim, the experience gained since the first implementation of the Certification Specifications and Guidance Material for Simulator Data (CS-SIMD) has been an essential element.

The amendment is expected to facilitate the compliance of applications with the operational suitability data (OSD) requirements for simulator data as well as to make the validation data approval process clearer and more streamlined.

Domain:	Design and production		
Related rules:	CS-SIMD, Regulation (EU) No 748/2012		
Affected stakeholders:	Applicants for aircraft type certificates for which the pilot type rating training makes use of approved full flight simulators (level B, C, D) or flight training devices for helicopters, and other applicants dealing with changes to an already approved definition of scope of validation source data		
Driver:	Efficiency/proportionality	**Rulemaking group:**	No
Impact assessment:	No	**Rulemaking Procedure:**	Standard

EASA rulemaking procedure milestones

Start Terms of Reference	**Public consultation** NPA 2021-03	**Decision** Certification specifications and guidance material
16.10.2019	2.3.2021	**15.2.2022**

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1. About this Decision

The European Union Aviation Safety Agency (EASA) developed Decision 2022/003/R in line with Regulation (EU) 2018/1139[1] (the 'Basic Regulation') and the Rulemaking Procedure[2].

This Rulemaking Task (RMT).0688 is included in Volume II of the European Plan for Aviation Safety (EPAS) for 2022-2026. The scope and timescales of the task were defined in the related Terms of Reference (ToR).

EASA developed the *draft* text of this Decision. All the interested parties were consulted through Notice of Proposed Amendment (NPA) 2021-03[3]. Overall, 81 comments were received from interested parties, including industry.

EASA reviewed the comments received during the public consultation (25 were accepted, 22 were partially accepted, 12 were noted, and 22 were not accepted).

The comments received and EASA's responses to them are presented in Comment-Response Document (CRD) 2021-03[4].

EASA developed the *final* text of this Decision with the certification specifications (CSs) and guidance material (GM) based on the input of the public consultation and published the Decision on the Official Publication[5] of EASA.

The major milestones of this RMT are presented on the cover page.

1 Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139).

2 EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure).

3 In accordance with Article 115 of Regulation (EU) 2018/1139 and Articles 6(3) and 7 of the Rulemaking Procedure.

4 https://www.easa.europa.eu/document-library/comment-response-documents

5 https://www.easa.europa.eu/official-publication

2. In summary — why and what

2.1. Why we need to amend the CSs — issue/rationale

The aviation industry is complex and rapidly evolving. Since the first issuance of the Certification Specifications and Guidance Material for Simulator Data (CS-SIMD) in February 2014, EASA has gained experience regarding its implementation.

The reasons to amend the initial issue of CS SIMD are summarised as follows:

— The current CS-SIMD is only applicable to either fixed-wing aeroplanes or helicopters. This excludes, for instance, tilt rotor aircraft or eVTOL aircraft. To cover all aircraft, the applicability of CS-SIMD is extended to 'other categories of aircraft'.

— To provide further guidance on the interaction between the data provider (aircraft type certificate (TC) applicant/holder) and EASA for determining the outcome of the operational suitability data (OSD) SIMD process.

— To describe the different processes for the approval of the validation data roadmap (VDR), and thereby identify the contributors to the approval as well as to clarify the responsibilities of the data provider and EASA. Furthermore, the objective is to illustrate the entire system for establishing a VDR, as well as to clarify the VDR approval process including the role of the FSTD qualification process.

— To clarify the means to substantiate the scope of VSD in terms of processes e.g. flight test data gathering process as well as further describing the characteristics of the supporting documentation to be presented to EASA.

— To define the VD and revise the VSD in the context of CS-SIMD for better clarity and understanding.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This Decision will contribute to achieving the overall objectives by addressing the issue(s) described in Section 2.1.

The specific objectives of this Decision are therefore to:

— facilitate the harmonisation of CS-SIMD 110 'Applicability' with other future revisions of CS-FSTD-(A) and CS-FCTD(H) as well as to extend the scope of its applicability (Subject 1);

— clarify the responsibilities of the data provider and EASA (Subject 2);

— describe in Issue 2, the entire VDR approval process of validation data (VD) for FSTDs for its better understanding (Subject 3);

— clarify the means for substantiating the scope of VSD, to facilitate that the processes and deliverables of applicants are compliant with the requirements of OSD for simulator data; lastly, the objective is in addition to make the evaluation data approval process more comprehensible (Subject 4); and

— clarify the concepts of VD and VSD (Subject 5).

2.3. How we want to achieve it — overview of the amendments

Subject 1: CS SIMD.110 'Applicability' was initially reviewed in the NPA in view of harmonising CS-SIMD with the next revision of CS-FSTD(A). Considering that since its publication, the update of FS-FSTD(A) has been postponed, the changes proposed for CS-SIMD needed to be revisited. With this aim, the current applicability has been reviewed to allow future independent revisions of CS-FSTD. Furthermore, the applicability to other categories of aircraft when special conditions are established has also been included. This will ensure harmonisation with Appendix 1 to GM1 to 21.A.15(d) (see AMC and GM to Part 21), in which the category of tilt rotor aircraft has been included.

Subject 2: CS-SIMD Issue 2 contains new diagrams describing the roles of all involved parties. The diagrams allow to visualise the different steps and flow of data until the determination of the final VD, as finally used in the master qualification test guide (MQTG) to validate the correct simulation of the aircraft.

The diagrams also identify:

- the data provider who is responsible for gathering and selecting suitable data and for providing the link to the data source;
- the FSTD manufacturer who uses this data to build and validate the simulation models; and
- the FSTD operator who uses this data within the MQTG to demonstrate that the performance and handling qualities of an FSTD are within the prescribed limits.

Subject 3: GM3 SIMD.200 'Process overview' was created to clarify the description of the approval process to be followed, as well as the links between the VDR and FSTD qualification processes. CS-SIMD details the different processes for the approval of the VDR, and thereby identifies the contributors to the approval.

Subject 4: a new GM1 SIMD.200 'Substantiation of the scope of VSD' has been produced to better describe the means for substantiation.

Subject 5: CS SIMD.120 'Terminology' has been updated. A new definition of VD has been provided aiming to facilitate the understanding of the difference between VSD and VD.

2.4. What are the stakeholders' views — outcome of the consultation

EASA consulted the public on a proposal for this Decision through NPA 2021-03. Most of them were supportive of this update and some proposed clarifications and improvements. A few comments were raised related to the initial intention to align CS-SIMD Issue 2 with the planned revision of CS-FSTD, and particularly with the updates on FSTD capability signature and the different levels of FSTD qualification and features. Following the publication of the NPA, the RMT to develop a new issue was suspended; therefore, the initial proposed description of the NPA was revisited to redefine the implied training devices.

Another comment related to the access to data for new market entrants. Currently, for new aircraft designs for which the definition of scope of the aircraft VSD has been approved by EASA as part of the OSD, data providers that are not TC holders can apply for the approval of the data. This possibility is not newly introduced in this revision but existed already in the initial issue of CS-SIMD and is further explained in the explanatory note to ED Decision 2014/033/R. Therefore, the rationale explaining the review of the dedicated GM (GM2 SIMD.200 'Sources of the validation source data') has been further detailed in the CRD and the EASA position has been maintained.

Full details about the comments received and EASA responses to them are provided in CRD 2021-03.

3. How we monitor and evaluate the amended CSs and GM

In the context of this RMT, no specific monitoring action is recommended. EASA will use the feedback gathered from certification projects in the next few years to assess the benefits gained through the revision of CS-SIMD as well as the possible need for improvements.

4. References

4.1. Related EU regulations

Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1)

4.2. Related EASA decisions

Executive Director Decision 2014/033/R of 2nd December 2014 adopting Certification Specifications and Guidance Material for Simulator Data 'CS-SIMD — Initial issue'

4.3. Other reference documents

— Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1)

— 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)

— Certification Specifications for Aeroplane Flight Simulation Training Devices 'CS-FSTD(A)'

— Certification Specifications for Helicopter Flight Simulation Training Devices 'CS-FSTD(H)'

— Certification Specifications and Guidance Material for Operational Suitability Data (OSD) Flight Crew Data 'CS-FCD'

— ICAO Document 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices, Vol I and II, Attachment D, (as amended)

— ARINC 450 'FLIGHT SIMULATOR DESIGN AND PERFORMANCE DATA', 10 September 2019

5. Related document

CRD 2021-03 ‘Regular update of CS-SIMD’.