EASA
European Aviation Safety Agency

CS-SIMD

eRules

Easy Access Rules for Simulator Data (CS-SIMD)

EASA eRules: aviation rules for the 21st century

Rules and regulations are the core of the European Union civil aviation system. The aim of the **EASA eRules** project is to make them **accessible** in an efficient and reliable way to stakeholders.

EASA eRules will be a comprehensive, single system for the drafting, sharing and storing of rules. It will be the single source for all aviation safety rules applicable to European airspace users. It will offer easy (online) access to all rules and regulations as well as new and innovative applications such as rulemaking process automation, stakeholder consultation, cross-referencing, and comparison with ICAO and third countries' standards.

To achieve these ambitious objectives, the **EASA eRules** project is structured in ten modules to cover all aviation rules and innovative functionalities.

The **EASA eRules** system is developed and implemented in close cooperation with Member States and aviation industry to ensure that all its capabilities are relevant and effective.

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[1] The published date represents the date when the consolidated version of the document was generated.

DISCLAIMER

This version is issued by the European Aviation Safety Agency (EASA) in order to provide its stakeholders with an updated and easy-to-read publication. It has been prepared by putting together the certification specifications with the related guidance material. However, this is not an official publication and EASA accepts no liability for damage of any kind resulting from the risks inherent in the use of this document.

NOTE FROM THE EDITOR

The content of this document is arranged as follows: the certification specifications (CS) are followed by the related guidance material (GM) paragraph(s).

All elements (i.e. CS and GM) are colour-coded and can be identified according to the illustration below. The EASA Executive Director (ED) decision through which the point or paragraph was introduced or last amended is indicated below the paragraph title(s) *in italics*.

Certification specification
ED decision

Guidance material
ED decision

The format of this document has been adjusted to make it user-friendly and for reference purposes. Any comments should be sent to erules@easa.europa.eu.

INCORPORATED AMENDMENTS

CS/GM (ED DECISIONS)

Incorporated ED Decision	CS/AMC Issue No, Amendment No	Applicability date
ED Decision 2014/033/R	CS-SIMD/ Initial issue	12/12/2014

Note: To access the official versions, please click on the hyperlinks provided above.

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SUBPART A — GENERAL

CS SIMD.100 Scope

ED Decision 2014/033/R

These Certification Specifications contain the specifications for the definition of scope of:

(a) validation source data to support the objective qualification of aeroplane full flight simulators associated to the pilot type rating training, or provisional validation source data to support their interim qualification, including additional features as requested by the applicant;

(b) validation source data to support the objective qualification of helicopter full flight simulators and flight training devices associated to the pilot type rating training, or provisional validation source data to support their interim qualification, including additional features as requested by the applicant.

GM1 SIMD.100 Scope

ED Decision 2014/033/R

(a) 'Additional features' as mentioned in CS SIMD.100 may be composed of the Operational Suitability Data (OSD) applicant's additional requirements to be added to the CS-FSTD requirements as Box 3 contents (see GM1 SIMD.120), such as additional tests to the required FSTD objective validation tests, to cope with, for instance:

– specific aircraft operations profiles (e.g. steep approaches); or

– validation source data from CS-FCD requirements related to Training Areas of Special Emphasis (TASE), impacting the simulator definition; or

– reference of actual pieces of equipment.

(b) The 'Scope' (of validation source data) shall be understood as 'Specification' (of validation source data).

This scope is to be included in the validation data roadmap (See GM4 SIMD.200), distributed under the box concept (GM1 SIMD.120).

CS SIMD.110 Applicability

ED Decision 2014/033/R

(a) These Certification Specifications apply to all aircraft type certificate applicants for which the pilot type rating training makes use of approved:

(1) Level B, C or D full flight simulators for aeroplanes; or

(2) Level B, C or D full flight simulators and Level 3 flight training devices for helicopters.

(b) These Certification Specifications apply also to applicants for the approval of changes to an already approved definition of scope of validation source data.

CS SIMD.120 Status of provided data

CS-SIMD specifies data provision which is required from the applicant, and data provided at the request of the applicant. Data provided by the applicant is presented as mandatory or non-mandatory (recommendations) for the end user.

GM1 SIMD.120 Status of provided data

OSD provided by the OSD applicant is presented as mandatory data or non-mandatory data (e.g. recommendation/having the AMC status) for the end user, according to the 4-box concept below:
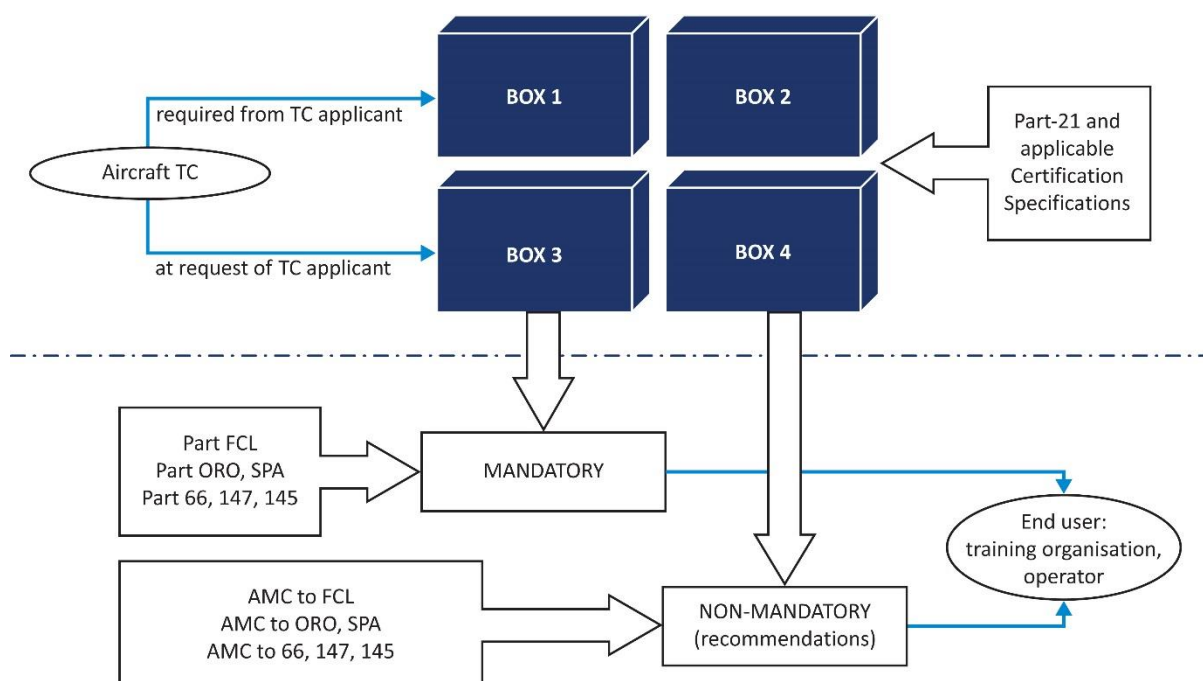
Box 1: Required from the applicant; mandatory for end users.

Box 2: required from the applicant; non-mandatory (recommendations) for end users.

Box 3: at the request of the applicant; mandatory for end users.

Box 4: at the request of the applicant; non-mandatory (recommendations) for end users.

CS SIMD.130 Terminology

For the purpose of these Certification Specifications, the following definition applies:

Validation source data: the aircraft reference data that are composed of ground and flight test data, as well as engineering data, which are used to objectively confirm that the flight simulator reflects the static as well as the dynamic performance characteristics of the aircraft and its relevant systems.

GM1 SIMD.130 Terminology

Additional terminology and abbreviations of terms may be found in CS FSTD(A/H).200 and associated AMC and in CS FCD.105.

SUBPART B — DETERMINATION OF SCOPE OF VALIDATION SOURCE DATA

## CS SIMD.200 Determination of scope of validation source data

ED Decision 2014/033/R

(a)   The determination of the scope of the validation source data is based on:

    (1)   certification specifications extracted from CS-FSTD(A)&(H) as applicable;

    (2)   any additional specification resulting from the additional features selected by the applicant.

(b)   The scope comprises the list of validation source data used as validation data in the qualification test guide, its related source and relevant justifications or rationales

GM1 SIMD.200 Determination of scope of validation source data

ED Decision 2014/033/R

(a)   The substantiation for the scope of the validation source data may be performed using different means, such as:

    (1)   through the use of a Master Qualification Test Guide (MQTG) and associated Full Flight Simulator/Flight Training Device (FFS/FTD) (this would be useful should they already be available from the FSTD operators);

    (2)   through the demonstration that the applicant has run a process, acceptable to the Agency, aiming to develop the scope of the validation source data;

    (3)   any other way that may be proposed by the applicant and agreed by Agency.

(b)   The diagram below shows in grey the scope of validation source data:
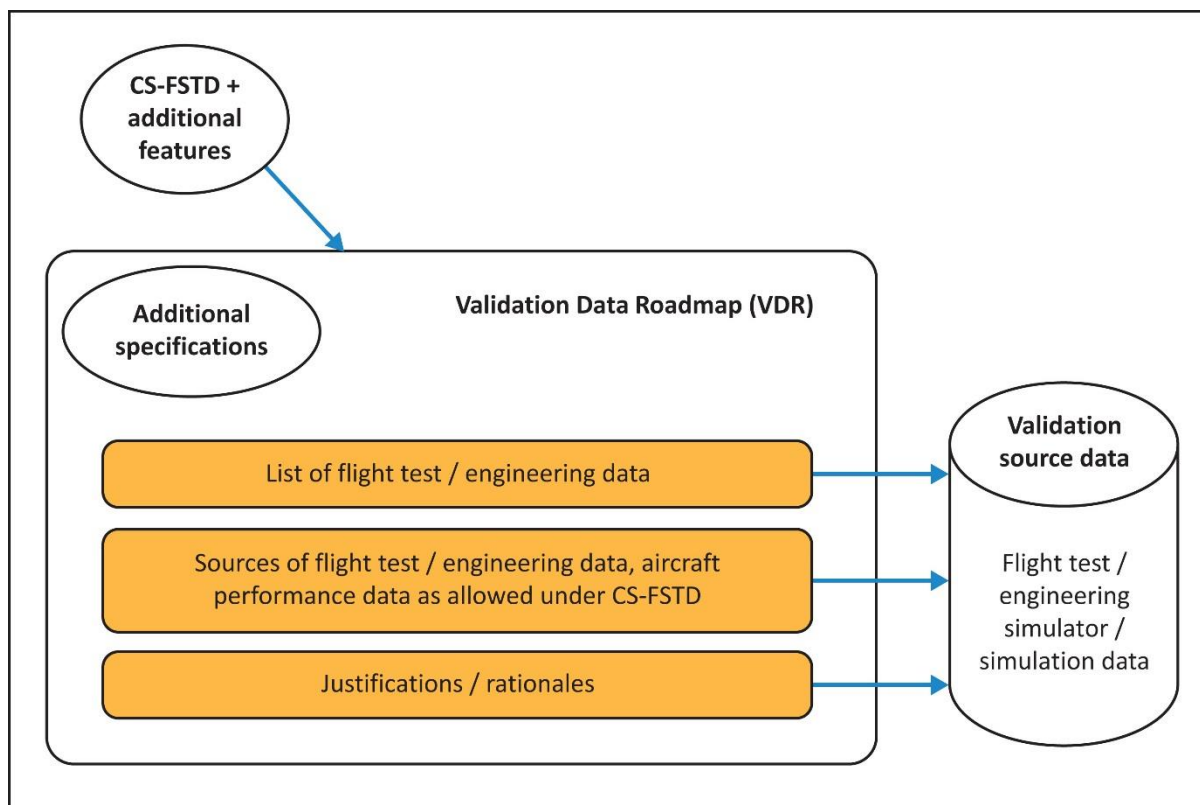
(c)   An additional set of validation tests may be specified in order to complement the minimum set of validation tests listed in the table under AMC1 CS-FSTD(A&H).300(b).

A typical illustration of such possible additional specifications could be:

'Behaviour of the aeroplane on ground at 95 % of maximum cross-wind shall be simulated with associated validation data. In this example the minimum would normally be 60 % of the Aeroplane Flight Manual (AFM) value'.

GM2 SIMD.200 Source of validation source data

ED Decision 2014/033/R

(a)   For initial qualification of full flight simulators, aeroplane Type Certicate (TC) applicant/holder's validation flight test data should be used. Data from other sources may be used, when properly justified.

(b)   For initial qualification of full flight simulators and flight training devices FTD level 3, helicopter TC applicant/holder's validation flight test data should be used. Data from other sources may be used, when properly justified.

(c)   The data, other than flight tests, should include an explanation of validity with respect to available flight test information.

(d)   In the case of a new aircraft type, the aircraft TC applicant/holder's engineering simulation/simulator data, partially validated by flight test data, may be used to support the interim qualification of the full flight simulator or flight training device.

GM3 SIMD.200 Engineering simulator/simulation validation data

ED Decision 2014/033/R

(a)   With the prior agreement of the Agency, an OSD applicant may choose to supply validation source data from an 'audited' engineering simulator/simulation to selectively supplement flight test data.

(b)   To be qualified to supply engineering simulator/simulation validation data, an applicant should:

  (1)   have a proven track record of developing successful data packages;

  (2)   have demonstrated high quality prediction methods through comparisons of predicted and flight test validated data;

  (3)   provide a demonstration of the engineering simulator/simulation fidelity to the aircraft. The use of the engineering simulator/simulation to support aircraft development and certification is an acceptable means of demonstration; and

  (4)   have an acceptable configuration control system in place covering the engineering simulator/simulation.

(c)   Applicants seeking to take advantage of this alternative arrangement should contact the Agency at their earliest convenience.

GM4 SIMD.200 Scope of validation source data

ED Decision 2014/033/R

(a)   The definition of the scope of validation source data to be used as validation data in the qualification test guide should be provided through a validation data roadmap (reference to Appendix 2 to AMC1 FSTD(A/H).300 Validation data roadmap).

(b)   The validation data road map should clearly identify the sources of data for all required tests. It should also provide information regarding the validity of these data for a specific engine type and thrust/power rating configuration and the revision levels of all avionics affecting aircraft handling qualities and performance. The document should include rationale or explanation in cases where data or parameters are missing, engineering simulation data are to be used, flight test methods require explanation, or other comparable cases, together with a brief narrative describing the cause/effect of any deviation from data requirements. It should identify the applicable aircraft configuration impacting the simulator definition.