



TERMS OF REFERENCE

- Task No:** RMT.0462
- Issue:** 1
- Date:** 06 July 2012
- Regulatory references:**
- AMC 20-115B: Recognition of EUROCAE ED-12B/RTCA DO-178B;
 - AMC 20-1: Certification of aircraft propulsion systems equipped with electronic controls;
 - AMC 20-2: Certification of essential APU equipped with electronic controls;
 - AMC 20-3: Certification of engines equipped with electronic engine control systems;
 - AMC 20-4: Airworthiness approval and operational criteria for the use of navigation systems in European airspace designated for basic RNAV operations;
 - AMC 20-27: Airworthiness approval and operational criteria for RNP APPROACH (RNP APCH) operations including APV BAROVNAV;
 - CS-25 'Book 2': Certification Specifications, including Airworthiness Codes and Acceptable Means of Compliance, for large aeroplanes and in particular AMC 25-11 (electronic flight deck displays), AMC 25.703 (take-off configuration warning systems), AMC 25.729 (retracting mechanism), AMC 25.735 (brakes and braking systems certification tests and analysis), AMC 25.1309 (system design and analysis), AMC No 1 to CS 25.1329 (flight guidance systems), Appendix 1 to AMC 25.1581 (computerised aeroplane flight manual).
- Reference documents:**
- EUROCAE ED-12C: Software considerations in airborne systems and equipment certification (January 2012);
 - RTCA Inc. DO-178C: Software considerations in airborne systems and equipment certification (December 2011).

1. Subject: Software considerations for airborne systems and equipment

2. Problem/statement of the issue and justification; reason for regulatory evolution (regulatory tasks):

With the Decision 2003/12/RM of 5 November 2003 the Agency adopted AMC 20-115B on the recognition of EUROCAE ED-12B/RTCA DO-178B. This Acceptable Means of

Compliance draws attention to the European Organisation for Civil Aviation Equipment's (EUROCAE) document ED-12B 'Software Consideration in Airborne Systems and Equipment Certification', issued in December 1992. The EUROCAE document ED-12B was technically equivalent to RTCA Inc. document DO-178B.

About 20 years of concrete experience gained by industry have demonstrated that ED-12B needed some modernisation. Therefore, EUROCAE published in January 2012 the revised ED-12C guidance document. In parallel, RTCA issued revision C of their DO-178.

The primary purposes of the revision of the ED-12B are:

- to continue to promote the safe implementation of aviation software without changing the consolidated approach and taxonomy for Software Development Assurance (SW-DAL);
- to provide clearer and more consistent relationships to the systems development processes and safety assessment processes;
- to address emerging trends and technologies in software development; and
- to provide an approach that is flexible and allows for changes in technology.

Furthermore, ED-12C is now supplemented by additional documents which extend the guidance to cover specific techniques. These supplements are:

- the ED-94C 'Supporting Information for ED-12C and ED-109A' document;
- the ED-215 'Software Tool Qualification Considerations' document;
- the ED-218 'Model-based Development and Verification Supplement to ED-12C and ED-109A' document;
- the ED-217 'Object-Oriented Technology and Related Techniques Supplement to ED-12C and ED-109A' document; and
- the ED-216 'Formal Methods Supplement to ED-12C and ED-109A' document.

Hence the Agency needs to urgently issue a revised 'C' version of AMC 20-115 in order to align its material with the latest industry developments.

3. Objective:

To continue to ensure safety of the processes related to airborne software development assurance level (SW-DAL) taking into account the latest industry developments, as contained in ED-12C/DO-178C.

4. Specific tasks and interface issues (deliverables):

Task/deliverable:

To produce a Decision amending AMC 20-115 from version 'B' to 'C', as well as AMC 20-1, AMC 20-2, AMC 20-3, AMC 20-4 and AMC 20-27.

In all AMC listed above, ED-12/DO-178 are explicitly mentioned.

Interface issues:

- The existing references to ED-12/DO-178 will be removed and replaced by a reference to AMC 20-115 in amendment 12 of CS-25 (planned by June 2012);
- ED-12 and/or RTCA DO-178 are also mentioned in a number of ETSOs. Their amendment is, however, out of the scope of the present ToR for RMT.0462. This activity will be carried out at a later stage, in the context of RMT.0206 (ETSO.011) on the routine update of ETSOs, planned to be initiated in 2013.

5. Working methods (in addition to the applicable Agency procedures):

- Agency
- Light Regulatory Impact Assessment

6. Timescale, milestones:

- Publication of the NPA in 2012/Q3;
- Publication of the CRD in 2013/Q1;
- Decision on amending AMC in 2013/Q3.