EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
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Part 21
Design Organisation Approval (DOA)
Implementation Workshop

Industry

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Background (1/2)

- Context:
  - Always more complex design in the Large Aircrafts and Engines fields.

  - Constant increase of use of "glass cockpit" in General Aviation airplanes.

- Potential risk:
  - Not sufficient control in the development or in the installation of Software (SW) and Airborne Electronic Hardware (AEH).

Background (2/2)

➤ Two main questions raised:

1. Are Design Organisations capable and sufficiently aware of the SW and/or AEH related requirements when exercising their DOA privileges?

2. Are DOA Team Leaders capable and sufficiently aware when assessing Design Organisations:
   » developing SW and/or AEH,
   » or installing equipment containing SW and/or AEH?

DO Working Group No. S21/2010-01

➤ Subject:
  ➤ Assessment of DOA in the field of software and complex electronic hardware.

➤ Objectives:
  ➤ Define a <u>work instruction</u> for the initial investigation and continued surveillance of DOA capability in the field of software and airborne electronic hardware, <u>to ensure consistent and harmonized approach</u>.

  ➤ Define a way to perform an <u>initial assessment</u> of existing DOAs in order to update, if necessary, the surveillance plan with this topic.

DOA Work Instruction - Status

» DOA internal Work Instruction is approved.

» Initial assessment has started. DOAs will be approached by the DOA Team Leaders to obtain related information:

  » Procedures

  » Design Changes (statistical data).

➤ **In the case of DO developing SW/CEH, several subjects will be reviewed, for instance:**

1. Organisational structure, including subcontractors, and definition of responsibilities
2. Related procedures and resources
3. Development, Certification and Quality processes
   - Requirement management, safety assessment, tools, configuration management, …
4. SW/CEH CVE function
5. Change process
   - Classification criteria, …
6. Occurrence Reporting
   - Open problem reports, …

- Following the initial assessment, specific procedures reviews, sampling or audits may be organised.

- This assessment could result in:
  - update to existing procedures,
  - additional training to CVEs and/or SW Quality Assurance staff,
  - modifications of the Terms of Approval, for instance by the introduction of limitations.

- An example of limitation could be:

  "The development of software is limited to
  - *Software Level D or E."*

➤ **In the case of DO installing ETSO articles, procedures related to system integration issues will be reviewed, e.g.:**

1. The determination of the level of the SW/AEH contained in the ETSO equipment being installed, as part of the showing of compliance with CS-xx.1309.

2. The verification that the Development Assurance Level of the ETSO article declared in the DDP is in line with the level of the SW/AEH (determined as per point 1).

3. The assessment of the agreed deviations as a result of the ETSO qualification.

Avionics examples

➤ In the case of DO **installing non-ETSO articles**, procedures related to system integration issues will be reviewed, e.g.:

1. The determination of the level of the SW/AEH contained in the non-ETSO equipment being installed by the Design Organisation, as part of the showing of compliance with CS-xx.1309.

2. The endorsement by a SW/AEH CVE of the CS-xx.1309 compliance documents to be provided by the equipment supplier and proving that the SW/AEH was developed according to the level of the SW/AEH determined as per point 1.

- Following the initial assessment, specific procedures reviews, sampling or audits may be organised.

- This assessment could result in actions for the DO holder, for instance:
  - update to existing procedures,
  - additional training to CVEs.