RTCA Special Committee 240 (SC-240)
EUROCAE Working Group 117 (WG-117)

Topics on Software Advancement
• Development of UAS regulatory framework at AAs level

• Internal eurocae/rtca report on the applicability of the ED-12C/DO-178C related set of software documents for the development of UAS Software. (FAS / UAS Ad-hoc group 25/02/2019).

Eurocae WG-117 / Rtca SC-240

• Low Risk Applications, e.g. UAS, GA

• Integration of COTS, Open Source and Service History into Software.
WG 117 /SC-240 Scoping

Performance based, risk-based & operation centric regulation

Certification of UAS

Perspective on SG1 scope

Perspective on SG2

This approach should be valid for COTS and Open Source. EASA believe that both topics should be tackled simultaneously.
## Schedule and deliverables

<table>
<thead>
<tr>
<th>Deliverable title</th>
<th>Purpose and justification of the proposal</th>
<th>Committee approved target date</th>
<th>Publication target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 001 ED-xxx Software Considerations in Low Risk Applications, Equipment Certifications and Approvals</td>
<td>This document is expected to be completed by a group of stakeholders that include developers of UAS who are targeting the EASA specific category for certification combined with experts in software development processes. This should not be a prescriptive document but instead establish the framework for the minimum required development process and verification boundaries. Moreover, it is considered that certain applications, eg. by the general aviation (GA) and VTOL communities might benefit from a simplified software development methodology. Cyber security aspects should be considered as appropriate.</td>
<td>March 2021</td>
<td>June 2021</td>
</tr>
<tr>
<td>DP 002 ED-xxx Integration of COTS, Open Source and Service History into Software</td>
<td>This document is expected to function as additional consideration for manufacturers of software for any system to integrate and use COTS, Open Source and Service history following the ED-12C/DO-178C, ED-109A/DO-278A and supplements and/or the new guidance defined by the Lower Risk Applications.</td>
<td>June 2021</td>
<td>Sept 2021</td>
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</table>
• Off-The-Shelf Software (OTS) include
  – Commercial Off-The-Shelf (COTS) software components
  – Open-Source Software (OSS) components

• Proposed approaches are inspired from COTS guidance in ED-109A/DO-278A as well as from COTS IP and COTS electronic components guidance in A(M)C 20-152A:
  – OTS technical assessment based upon OTS design data to master OTS functions and integration on the SW
  – Evaluation of the OTS supplier (or project for OSS)
  – Refine safety analysis considering OTS potential failures and their effects on the SW loss of function and erroneous behaviour (can be completed by monitoring / recovery mechanisms)
**Document structure**

- **OTS Incorporation**
  - Development
    - Requirements Capture
    - Design
  - Verification
- Configuration Management
- Quality Assurance
- Certification/Acceptance Liaison

- **OTS Acceptance**
  - Technical assessment
  - Availability of OTS Design Data
  - OTS Supplier Assessment
  - OTS Additional Testing
  - OTS Configuration Management
  - OTS Failure Mode Effect Analysis
  - OTS Failure Modes Mitigation
  - OTS Service History
  - OTS Management Process
**OTS objectives proposal**

**OTS incorporation processes**
(Additional activities to achieve core standard objectives)

<table>
<thead>
<tr>
<th>Planning</th>
<th>Development</th>
<th>Verification</th>
<th>Configuration management</th>
<th>Quality assurance management</th>
<th>Assurance liaison process</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 11 activities</td>
<td>• SRA : 6 activities • Design : 9 activities • Coding : none • Integration : none</td>
<td>• Requirement : 1 activity • Design : 1 activity • Code : none • Integration : 1 activity • Testing : None</td>
<td>• 8 activities</td>
<td>• 1 activity</td>
<td>• none</td>
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</table>

**OTS acceptance processes**
(Alternative objectives dedicated to OTS)

<table>
<thead>
<tr>
<th>Technical assessment</th>
<th>Availability of OTS Design Data</th>
<th>OTS Supplier Assessment</th>
<th>OTS Additional Testing</th>
<th>OTS Configuration Management</th>
<th>OTS Failure Mode Effect Analysis</th>
<th>OTS Failure Modes Mitigation</th>
<th>OTS Service History</th>
<th>OTS Management Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 7 objectives</td>
<td>• 2 objectives</td>
<td>• 7 objectives</td>
<td>• 2 objectives</td>
<td>• 8 objectives</td>
<td>• TBD</td>
<td>• TBD</td>
<td>• TBD</td>
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Q & A session

Any Questions?