FAS Topic Paper (FTP)

TITLE	REVISION	REVISION DATE
FTP1004 Clarification of developer-TOR	2	16Feb2018

ABSTRACT/PURPOSE:

This FTP clarifies the role and purpose of the developer-TOR (Tool Operational Requirements) and the final TOR as discussed in subsection 11.3 of DO-330/ED-215.

RELATED DO/ED DOCUMENTS:

____ DO-178C/ED-12C: SW Airborne Sys & Equip
____ DO-278A/ED-109A:SW (CNS/ATM) Systems
____ DO-248C/ED-94C: Supporting Information
_**X**__DO-330/ED-215: Software Tool Qualification Considerations
____ DO-331/ED-218: Model Based Development & Verification Supplement
____ DO-332/ED-217: OO Technology and Related Techniques Supplement
____ DO-333/ED-216: Formal Methods Supplement
____ Other

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FAS Team Definition and Goals:

The FAS user group monitors and exchanges information on the application of the following "software document suite" that was developed by joint RTCA/EUROCAE committee SC-205/WG-71:

- DO-178C/ED-12C - Software Considerations in Airborne Systems and Equipment Certification
- DO-278A/ED-109A - Software Integrity Assurance Considerations for Communication, Navigation, Surveillance and Air Traffic Management (CNS/ATM) Systems
- DO-248C/ED-94C - Supporting Information
- DO-330/ED-215 - Software Tool Qualification Considerations
- DO-331/ ED-218 - Model Based Development & Verification Supplement
- DO-332/ED-217 - Object Oriented Technology and Related Techniques Supplement
- DO-333/ ED-216 - Formal Methods Supplement

The goals of the FAS user group are as follows:

1. To share lessons learned in the use of the RTCA/EUROCAE "software document suite" and to encourage good practices and promote the effective use of RTCA's and EUROCAE's publications.
2. To develop FAS Topics Papers (FTPs) relative to RTCA's and EUROCAE's publications or other related aeronautical software industry topics. These FTPs may include clarification to the "software document suite" or a discussion on a new topic.
3. To identify and record any issues or errata showing the need for clarifications or the need for modifications to the "software document suite".

The FAS user group does not have the authority to change the content of any approved RTCA/EUROCAE documents. Any publications of the FAS user group may be taken into consideration by a future RTCA/EUROCAE working group.

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Abstract / Purpose of the FAS Topic Paper:

This FTP clarifies the role and purpose of the developer-TOR (Tool Operational Requirements) and the final TOR as discussed in subsection 11.3 of DO-330/ED-215.

FTP Discussion:

Question from Industry:

Regarding Tool Operational Requirements (TOR), what are the respective roles of the developer-TOR and the final TOR for a commercial-off-the-shelf (COTS) tool?

Answer from FAS:

Subsection 11.3 of DO-330/ED-215 defines a relevant approach to address tool qualification for tools that have been developed without knowledge of the needs of a specific user. This is exactly what is done by COTS tool vendors; that is, COTS tools are developed based on assumptions about the functional needs of potential users.

Accordingly, subsection 11.3 (Qualifying COTS Tools) proposes the following approach:

- A pre-qualification is performed by the tool vendor. The "assumptions" are identified and then documented in a developer-TOR.

- Each user undertakes final qualification, produces their own (final) TOR after they assess the developer-TOR, and performs the "validation" activities based on additional information as described in subparagraph 11.3.3.1.

The developer-TOR is used for tool development and verification. Verification of the developer-TOR is performed to assess its completeness, accuracy, verifiability, and consistency (see DO-330/ED-215, Table T-0, objective 4). This developer-TOR is then used during the verification of the compliance and the traceability of tool requirements (see Table T-3, objectives 1 and 8).

The (final) TOR is not used for tool development. In fact, it may be produced a long time after the tool was developed. The final TOR is used only for validation (see Table T-0, objective 6). The final TOR references or includes the developer-TOR and provides the necessary complementary data. Subparagraph 11.3.3.1 explains that the additional information provided in the TOR by the user is not another level of requirements: it is additional requirements as necessary and a "description of the operational inputs" that are the set of representative use cases to validate the tool (for Table T-0, objective 7). This use cases definition is the input to the development of the tool operational validation cases. They contain all key issues for the user to validate the tool in the operational environment such as correctness of translation of some specific

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features, elements, or constructions; performance of generated code; interfaces with other pieces of code; etc.

There is no duplication or redundancy between the data provided by the user in the TOR and the developer-TOR. The TOR references or includes the developer-TOR and adds user information necessary for validation of the tool in the operational environment.
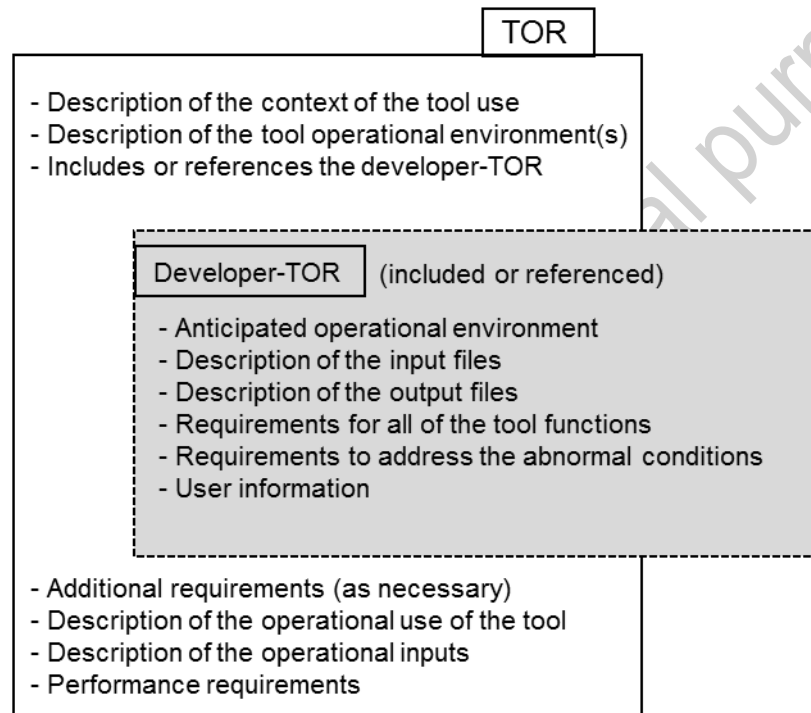
Figure 1 shows the typical organization of the TOR.

FIGURE 1 TYPICAL ORGANIZATION OF A TOR DOCUMENT