

DO-254/DO-178B Glossary of Terms and Acronyms

While not a comprehensive list, what follows are terms you may encounter as you begin to engage in DO-254 projects. A full listing of FAA acronyms can be found here: <http://www.gps.tc.faa.gov/glossary.html>

- **AC** – Advisory Circular, such as AC-152 which enforces DO-254 for “custom microcoded devices”
- **AC 20-152** – The Advisory Circular dated 6/30/05 that mandated the use of DO-254 on PLD/FPGA/ASIC components.
- **ACO** – Aircraft Certification Office, a local office of the FAA that assists with design approval and certificate management; US production approvals; engineering and analysis questions; investigating and reporting aircraft accidents, incidents, and service difficulties; DER oversight.
- **AIR** – AIRcraft certification service. There are various divisions of the FAA, such as AIR 120 and AIR 200, which are all involved in various aspects of aircraft certification.
- **AMOC** – Acceptable Means of Compliance, for example, code coverage is an AMOC for verification metrics
- **AOPA** – Aircraft Operators and Pilots Association
- **ARINC** – Aeronautical Radio Incorporated, a [company](#) that is the leading provider of transportation communications and systems engineering solutions for five major industries: aviation, airports, defense, government, and transportation, also synonymous with various ARINC parts such as the ARINC 429, a two-wire data bus that is application-specific for commercial and transport aircraft.
- **ARP** – Aerospace Recommended Practice, for example ARP 5754 “Guidance for Development Validation and Verification of Complex Aircraft Systems”
- **CAST** – Certification Authorities Software Team, an international group of participants from worldwide aviation certification authorities including the FAA, despite the name this group discusses complex electronic hardware issues also
- **CEH** – Complex Electronic Hardware, for the context of DO-254, this means custom microcoded devices (PLD, FPGA, ASIC)
- **CFAR** – Code of Federal Aviation Regulations
- **CFR** – Code of Federal Regulations, such as CFR § 183.29, which defines criteria for DERs
- **CRI** – Certification Review Item, as per EASA. Pronounced “Kree”, these are requirements above and beyond DO-254/ED-80, such as the CRIs for the Airbus 380 or A400M projects.
- **DAL** – Design Assurance Level, a safety criticality rating from level A-E, with level A/B being the most critical and requiring the most stringent DO-254/DO-178B process.
 - **Level A:** Where a software/hardware failure would cause and or contribute to a catastrophic failure of the aircraft flight control systems.
 - **Level B:** Where a software/hardware failure would cause and or contribute to a hazardous/severe failure condition in the flight control systems.

- **Level C:** Where a software/hardware failure would cause and or contribute to a major failure condition in the flight control systems.
- **Level D:** Where a software/hardware failure would cause and or contribute to a minor failure condition in the flight controls systems.
- **Level E:** Where a software/hardware failure would have no adverse effect on the aircraft or on pilot workload.
- **DER** – [Designated Engineering Representative](#), an individual, appointed by the FAA to approve or recommend approval of technical data to the FAA. These individuals can work for a specific company (such as Boeing) or be independent consultants and serve as DERs to many other companies.
- **DO** – Document, from RTCA
- **DO-178B** – Software Considerations in Airborne Systems and Equipment Certification, an aviation industry standard since 1992. A DO-178C standard is being worked on for release in 2009(?)
- **DO-254** – Design Assurance Guidance for Airborne Electronic Hardware, put into effect on FPGA/ASIC designs via AC 20-152 in 2005
- **DO-297** – Integrated Modular Avionics (IMA) Development Guidance and Certification Considerations
- **EASA** – European Aviation Safety Agency, EU counterpart of FAA, pronounced “ee ah sa”
- **ED-12** – EU equivalent of DO-178B
- **ED-80** – EU equivalent of RTCA/DO-254
- **EUROCAE** – European Organization for Civil Aviation Equipment, equivalent of RTCA in the US, pronounced “Euro Kay”
- **FAA** – Federal Aviation Administration, the US authority governing aviation
- **FAR** - Federal Aviation Regulation, a set of requirements (US) that determines airworthiness of an aircraft. For example, large aircraft are subject to FAR 25 certification. See also JAR.
- **HAS** – Hardware Accomplishment Summary. The document submitted at the final audit that reviews what was accomplished in the DO-254 project versus what was stated in the PHAC.
- **HDP** – Hardware Development Plan, one of the 5 plans required for DO-254
- **HVP** – Hardware Verification Plan, one of the 5 plans required for DO-254
- **IMA, IMS** – Integrated modular avionics, integrated modular systems, DO-297 deals with this level of design
- **IP** – besides the traditional meaning, can also mean Issue Paper, a paper supplementing an FAA standard to clarify a problem, solution or issue not well defined within a standard.
- **JAR** – Joint Airworthiness Requirements, a set of requirements (EU) that determines airworthiness of an aircraft. For example, large aircraft are subject to JAR 25 certification. See also FAR.
- **Job Aid** – A new tool FAA DERs can use to conduct their DO-254 audits. It’s useful for hardware applicants to review this document in preparation for the auditing process.

- **JPDO** – [Joint Planning and Development Office](#), established to facilitate NextGen (Next Generation Air Transportation System, refers to a wide-ranging initiative to transform the air traffic control system) activities. JPDO is working with the FAA, NASA, the Departments of Transportation, Defense, Homeland Security, Commerce, and the White House Office of Science and Technology Policy.
- **LOFI** – Level of FAA involvement example LOFI on CEH projects. This is a defined evaluation criteria for establishing how much FAA involvement there should be for a given software program (See Order 8110.49). There is currently no LOFI determination for CEH/DO-254, this may be part of the draft Order 8110.CEH currently being working on.
- **MASPS** – Minimum Aviation System Performance Specifications, for example an FAA MASPS specifies that weather information for the local region (50 miles radius or more) is continuously transmitted at least every five minutes
- **NASA** – National Aeronautics & Space Administration
- **NextGen** – NEXT GENERATION air transportation system, a project to integration aircraft, airports and air traffic control to accommodate much higher volumes of air travelers/traffic in the future.
- **ODA** – Organizational Delegation Authority, similar to an ACO but is an airworthiness office within a company (such as Boeing) that has delegation authority.
- **Order** – An Order is a way for the FAA to address regulatory concerns in a quick but global way. Regulatory changes to the CFARs (code of Federal Aviation Regulations) take a long time and have to go through lots of steps. An Order has a specific impact to a smaller audience and is used for changes to a technology area or specific topic. Example Order 8110.CEH.
- **PHAC** – Plan for Hardware Aspects of Certification, the main plan document required by DO-254. The other plans include Quality Assurance Plan, Configuration Management Plan, Hardware Development Plan, Hardware Verification Plan and Hardware Standards.
- **PSAC** – Plan for Software Aspects of Certification, the main plan document required by DO-178B.
- **PSSA** – Preliminary System Safety Assessment. See also SSA.
- **RMA** – Rate Monotonic Analysis, is a simple, practical mathematically sound way to guarantee schedulability in real-time systems
- **RTCA** – Radio Technical Committee on Aeronautics, a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues. RTCA functions as a Federal Advisory Committee. Its recommendations are used by the Federal Aviation Administration (FAA) as the basis for policy, program, and regulatory decisions and by the private sector as the basis for development, investment and other business decisions.
- **SAE** – Society of Automotive engineers, some subset of this group specializes in aeronautics
- **SARP** – Standards and Recommended Practices

- **SC** – Special Committee, anything that starts with SC is an industry working committee to discuss and resolve particular issues. Examples include SC-180 CEH (wrote the DO-254 standard), SC-200 integrated modular avionics, SC-205 software for aeronautical use. See also WG.
- **SOI 1-4** – Stage of Involvement, one of 4 required review points between a HW/SW vendor and certification authority during the DO-178B or DO-254 process.
- **SSA** – System Safety Assessment, the process run at a system level to determine the safety criticality level or design assurance level (A-E) or a system. A preliminary system safety assessment is the PSSA.
- **STC** – Supplemental Type Certificate, a document issued by the Federal Aviation Administration approving a product (aircraft, engine, or propeller) modification.
- **Time Partitioning** – using an operating system’s scheduler to ensure that selected tasks and processes have access to the CPU for a specified amount of time within a specific period
- **TC** – Type Certificat. Granted by the FAA to certify an entire aircraft. See also STC.
- **TSO** – Technical Standard Order, a minimum performance standard issued by the FAA for specified materials, parts, processes, and appliances used on civil aircraft
- **UAS** – Unmanned Aircraft Standards, DO-304, guidance just produced by SC-203 and being considered by FAA. Requires both DO-254 and DO-178B certification.
- **V&V** – Validation and Verification
- **WG** – Working Group from EuroCAE, the EU equivalent of the US-based SC (special committees, oftentimes linked directly to these activities, examples wG-72 is leading the effort on aeronautical systems security, WG-71 = SC-205
-