Airborne critical system development with DO-178C

The problem

Flight is one of humanity's greatest achievements. With over 8 million people flying every day, safety is the number one priority. DO-178C is a time tested and state of the art standard. It is the de facto standard recognized by worldwide government bodies such as Transport Canada, the Federal Aviation Administration and the European Aviation Safety Agency.

Implementing the compliance scheme required by DO-178C and obtaining a government approved certification can be a time and cost consuming endeavour.

Our offering

CS Canada is a world class leader in developing critical software in compliance with DO-178C. CS Canada has been a partner with the largest OEMs and Tier 1 suppliers with over 20 years of experience on the certification of FADEC and avionics products.

CS Canada has the expertise to develop, verify, document and take certification leadership during the Stage of Involvements. CS Canada has also developed state of the art tools and processes that takes your software and system many steps further than the competition.

CS Canada can:

- Develop the plans and standards
  - CS Canada has a collection of proven plans and standard templates
    - Plans: PSAC, PMP, SVP, SDP, SCMP, SQAP
    - Standards: SSS, SDS, SCS, Development and Verification Checklists
- Perform the system and software development
  - Model based design in SCADE or MATLAB/Simulink
  - Manual code in C, ADA, C++ or other
  - Lead an efficient design review process (Preliminary to Critical Design Reviews)
  - Prototyping and simulation
  - Build and integration – automation (Jenkins)
  - Requirement development and traceability (DOORS, MagicDraw)
  - Bug tracking and resolution (Mantis, JIRA)
- Perform the system and software verification
  - Multiple test platforms for the best cost-effective testing strategy
    - Test benches, closed/open loop configuration, development boards, sandbox environments
  - Software Integrated Tests, Unit Tests, White/Black box testing
  - Structural coverage analysis, MC/DC dead code, deactivated code

- Perform the required configuration management
    - Experience with Subversion and git and integration with bug tracking and requirement management tools
- Perform quality assurance with a dedicated experienced SQA Team
- Perform the certification support with a dedicated certification office
- Manage the life cycle data
    - Experience with multi-configuration builds, branching, merging, version management for documents, source code and other critical artefacts
- Go beyond the application of DO-178C
    - CS Canada has developed state of the art Formal Methods techniques (DO-333)
    - Build automation (Jenkins)
    - Use of automated test execution
- Accomplish the independence requirement
    - Have peace of mind and outsource the independence requirement to CS Canada

Benefits

Our customers within the aerospace industry can implement DO-178C rapidly and efficiently, thanks to our support, and therefore insure that their systems will be safe, and that people's life within and around aircrafts will be safeguarded.

Why CS Canada?

To meet the DO-178C challenges, CS Canada has assembled a highly skilled team with substantial experience in critical real-time software development and V&V, along with a senior dedicated certification office. This team has:

- Experience dealing with US, Canada and European government certification bodies
- Completed, in 2017 alone, 12 Safety of Flight and Certification campaigns with 100% On Time Delivery
- Generated over 5% Supplier Savings (700k$ in 2017) generated to customers with the implementation of innovations in process and testing (Automated testing tools, qualifications, process and productivity improvement…)
- Experience with all types of testing environments to fully and efficiently cover the DO-178C verification objectives: Software prototyping integration, Closed-Loop dynamic behavior, FMED and EMI testing, Timing margin, WCET, Hardware Testing
- Experience going beyond DO-178C and integrating the requirements of the complementary standards such as ARP4761, ARP4754A, DO-333, DO-326A and others