Airborne critical system development with ARP4761 and ARP4754A

The problem

Translating the intended aircraft function into system requirements is a critical step towards capturing the intent that will flow down to the other steps of the development process (ARP4754A). This system level work needs to be backed up by a proper safety assessment (ARP4761).

Ensuring system requirements compliance with ARP4754A and ARP4761 provides the required confidence when presenting your system and software for government approved certification. Beyond the certification paper, applying ARP4754A and ARP4761 ensures a robust and sound system definition.

Our offering

CS Canada is a world class leader in developing critical systems in compliance with ARP4761 and ARP4754A. CS Canada can:

- Execute the various phases of the System Safety Assessment process
    - Functional Hazard Assessment (FHA) – Define Safety Objectives / Derive Requirements
        - Outputs: Failures conditions, classification of failure condition per severity, safety requirements
    - Preliminary System Safety Assessment (PSSA) – Validate Safety Objectives / Requirements
        - Fault Tree Analysis (FTA) of Failure conditions based on preliminary system architecture
        - Outputs: fault tree analysis, identification of maximum probability / rates of hardware systems, DAL allocation for software systems
    - System Safety Assessment (SSA) – Verify Safety Objectives / Requirements
        - FMEA, FMES to show that the implemented design meets the safety requirements
        - FTA updates based on implemented system
        - System integration cross-check
        - Outputs: certification maintenance requirements, compliance and traceability with FHA and PSSA requirements
- Perform various safety analysis techniques such as Fault Tree Analysis (FTA), Failure Mode and Effect Analysis (FMEA) and Common Cause Analysis (CCA)

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- Develop, review and approve compliance evidence with respect to ARP4754A
  - Develop requirement rationale – *why is the requirement needed?*
  - Determine the requirement grouping – *what level of evidence is required?*
  - Determine the validation method – *Are we building the right system?*
  - Determine the verification method – *Are we building the system right?*

- Perform the management of the system requirements and evidence
  - Build a database management system using tools such as DOORS and Rectify
  - Effectively document and track the required attributes
  - Link the proper validation evidence database (Functional Analysis module, Reliability and Safety module)

Benefits

Our customers within the aerospace industry can implement ARP4754A and ARP4761 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 ARP4754A and 4761 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
- Provided validation evidence for tens of thousands of requirements to render control software compliant to ARP4754A
- Provided requirement management expertise for large software-intensive systems (1 000s to 10 000s of requirements) for Avionic systems

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