## Charter of the Ada High-Integrity Rapporteur Group (HRG)

High integrity software is software that must be trusted to work dependably in some critical function, and whose failure to do so may have catastrophic results, such as serious injury, loss of life or property, business failure or breach of security.[[1]](#footnote-1) The Ada Programming Language is ideally suited to develop high integrity software.

The HRG will synthesize the essential requirements of standards for high integrity applications which have a bearing on Ada and its supporting tools. Guidance will be developed for users, implementers, evaluators and certifiers. The guidance produced will be in a form suitable for reference in procurement.

Examples of high-integrity standards to be considered include[[2]](#footnote-2):

* RTCA DO-178C/ED-12 C Software Considerations for Airborne Systems and Equipment Certification, 2012 (Civil avionics)
* IEC 62304 Medical device software – Software life cycle processes, 2015 (Medical devices)
* IEC 61508 Functional safety of electrical/electronic/programmable electronic safety-related systems, 2010 (All systems)
* IEC 61511 Functional safety – safety instrumented systems for process industry sector, 2016 (Process Control)
* IEC 61513 Nuclear power plants – Instrumentation and control important to safety – General requirements for systems, 2011 (Nuclear power plants)
* DEFSTAN 00-56, Defense Standard 00-56, Safety management requirements for defense systems, 2014 (UK Defense)

The HRG will undertake the following activities:

#### Ada Language Issues

The HRG will produce and maintain an interpretations document.

The HRG will investigate pragma enhancement, such as additional parameters for restriction pragmas and additional pragmas.

The HRG will provide implementation advice, covering areas such as compilation and validation.

#### Taxonomy of Techniques

The HRG will produce a taxonomy of techniques for the construction and analysis of high integrity software, such as:

* The use of annotations and contracts in program construction
* Error detection by static analysis
* Design confirmation by static analysis
* Static timing analysis

#### Language Issues

The HRG will investigate the interaction of language issues with high integrity requirements, such as:

* Deterministic execution with compiler optimization and other property-based subsets
* Concurrency and Parallelism
* Software Vulnerabilities

#### Bindings and Interfaces

The HRG will support the interoperation of high integrity software and tools with other systems, such as:

* Ada compilers and run-time environments
* Information Technology — Programming languages — Guidance to avoiding vulnerabilities in programming language

1. High Integrity Software Standards and Guidelines, NIST Special Publication 500-204, September 1992. [↑](#footnote-ref-1)
2. This list represents a sampling of the high-integrity standards in use today that will affect the usage of the Ada programming language. [↑](#footnote-ref-2)