ISO/IEC JTC 1/SC 22/WG 9 N640

Convenor's Report, 2022-2023, ISO/IEC JTC 1/SC 22/WG 9 (Ada)

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Business Plan for JTC 1/SC 22/WG 9 (Ada)

Period Covered:

1 July 2022 - 1 July 2023

Submitted By:

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1   MANAGEMENT SUMMARY

The focus of WG 9 over the year was to conduct the various items of work, with the following priorities:

1. (Highest priority) Respond to Defect Reports submitted on ISO/IEC 8652.
2. Complete the work leading to the publication of the next edition of ISO/IEC 8652.
3. Develop Technical Reports or Standards improving the Ada libraries.
4. Move WG documents to ISO Documents.

1.1 JTC 1/SC 22/WG 9 Statement of Scope

JTC 1/SC 22 WG 9 is responsible for the development and coordination of ISO standards and Technical Reports for the Programming Language Ada.

1.2 Project Report

1.2.1   Completed Projects

ISO/IEC 8652:2023 (Ed 4), Information technology – Programming languages – Ada.

The fourth edition of the Ada standard has been published. In addition, the correct process was identified so that all questions of copyright ownership and free access for the contributing party were resolved. (Special thanks to David Keaton and Bill Ash for their support.)

1.2.2   Projects Underway

ISO/IEC AWI TS 24718 (Ed 1), Guidance for the use of the Ada Ravenscar Profile in high integrity systems.

We updated ISO/IEC TR 24718:2005 to the latest revision of Ada and converted it to a Technical Specification, which will allow the document to remain freely available. The project is currently in the Preparatory stage, about to be sent for DTS. (Special thanks to Bill Ash for his help.)

Update to TR 15942:2000 Guidance for the use of the Ada Programming Language in High Integrity Systems.

The volunteer editor for this project has made no progress. We hope to make progress possible by finding a mentor to answer blocking conceptual questions (but not write any text themselves). The search for this mentor has recently begun.

1.2.3   Projects Withdrawn

None in this period.

1.2.4   Standards and Technical Reports Withdrawn

None in this period.

1.2.5   Cooperation and Competition

There are two major professional societies in this area: Ada-Europe and the Special Interest Group on Ada (SIGAda) of the Association for Computing Machinery (ACM). The semi-annual meetings of WG 9 are typically scheduled to coincide with the conferences and workshops organized by these two groups. Officials of both organizations are active participants in the work of WG 9. Both groups have the status of Category C liaison with WG 9.

There is one major vendor consortium, the Ada Resource Association (ARA). Informal liaison with ARA is maintained via the US TAG.

As previously requested by SC 22, WG 9 has designated a liaison to SC 22/WG 23, Erhard Ploedereder, former president of Ada-Europe, and has invited WG 23 to collocate meetings with WG 9.

WG 9 has a liaison with Fortran, INCITS PL/22.3, Van Snyder (Caltech Jet Propulsion Laboratory (JPL)) is the representative from INCITS PL/22.3. JPL is an FFRDC.

2   PERIOD REVIEW

2.1   Market Requirements

Ada is the language of choice for important parts of the real-time, embedded systems community as well as aerospace and defense segments. For example, Ada is used extensively in commercial airplanes and regional airspace control. Ada is also being used in other market segments, such as railway and banking. WG 9 has completed the update to the language standard by means of a Revision to meet the needs of the current market.

2.2   Achievements

1) Successfully published the fourth edition of ISO/IEC 8652, the Ada Standard.
2) Worked on Defect Reports on ISO/IEC 8652.

3) Completed the Ada Part and SPARK Part of WG 23's TR 24227, since published.
4) Initiated project for ISO/IEC AWI TS 24718 (Ed 1), *Guidance for the use of the Ada Ravenscar Profile in high integrity systems*, currently in Preparatory stage. This is a conversion of a TR to a TS.

2.3 Resources

Given the guidance provided in the ISO directives, National Bodies designate experts to participate in WG 9. WG 9 has representatives from Canada, Finland, Italy, Spain, Switzerland, Portugal, UK, and US.

Implementation of the Category C Liaisons with Ada-Europe and ACM SIGAda has broadened the base of technical review and support for language standardization. Similar results have occurred due to the liaison with the Fortran Working Group.

All new work item suggestions are screened by the requirement for active support from five national bodies. This has worked well, resulting in explicit commitments from national bodies supporting a possible project.

WG 9 uses Rapporteur Groups to perform the drafting of its technical documents. This allows WG 9 itself to meet only twice per year – for approximately one-half-day at each meeting. When appropriate, WG 9 delegates initial drafting to members working with Rapporteur Groups. (For example, the US contributed the draft of the revision to ISO/IEC 8652.)

WG 9 continues to use Web conferencing capabilities to make access to our meetings available to those members that are unable to attend our meetings in person.

2.4 Environmental Issues

(Not applicable)

2.5 Participation Metrics

Seven to eight national bodies regularly send designated experts to participate in the work of WG 9; most of them regularly attend meetings. Each of the experts typically vote at the WG 9 level. Those that are P-members of SC 22 typically vote at that level.

3 FOCUS NEXT WORK PERIOD

3.1 Deliverables

The following deliverables are anticipated during the next 12 months:

- Resolutions to Ada Defect Reports, as they are received.
- Progress towards ISO/IEC AWI TS 24718 (Ed 1) final publication.
- Once the public access issues are resolved we will begin moving our documents to the ISO Documents online repository.

3.2 Strategies

We delegate technical work to the Rapporteur Groups. We collaborate with professional societies via liaison relationships. We achieve full consensus within Rapporteur Groups prior to initiating formal balloting.

3.2.1 Risks

- Unexpected technical comment at the SC 22 level has the potential to delay the work of WG 9. WG 9 mitigates this risk by providing mechanisms for full treatment of NB technical concerns at the RG and WG level. Although we observe all requirements of the directives, we view SC 22 and JTC1 level balloting as approval of documents that have already been completed.

- The UK National Body no longer provides funding for travel by the WG 9 members (or any other national body members) but they attend the WG 9 meetings remotely via teleconference.

3.2.2 Opportunities

With the increased interest and concern with software and systems safety, WG 9 intends to continue working with WG 23 on the development of guidance for the prevention of software vulnerabilities.

3.3 Work Program Priorities

- (Highest) Address Ada Defect Reports.
- Develop Technical Reports or Standards improving the Ada libraries.
- Identify the technical directions for the Ada language.

4 Other Items

4.1 Possible SC 22 Plenary Actions Related to WG 9

None.

5 ADMINISTRATIVE INFORMATION

5.1 Project Editors

5.1.1 IS 8652 (Information Technology--Programming Languages—Ada)
Randy Brukardt

5.1.2 IS 15291 (ASIS Standard)
Bill Thomas and Greg Gicca

5.1.3 TR 15942 (Guidance for the Use of Ada in High Integrity Systems)
Alejandro Mosteo.

5.1.4 ISO/IEC 18009 (Conformity Assessment of an Ada Language Processor)

Erhard Ploedereder

5.1.5 TR 24718 (Guide for the Use of the Ravenscar Profile in High Integrity Systems)

Alan Burns

5.1.6 ISO/IEC TR 24772-2:201X(E) (Information Technology — Programming languages — Guidance to avoiding vulnerabilities in programming languages – Vulnerability descriptions for the programming language Ada)

Joyce Tokar

5.2 WG 9 Liaisons

WG 9 has two Category C liaison relationships.

5.2.1 Category C Liaison with ACM SIGAda

SIGAda is a Special Interest Group of the Association for Computing Machinery (ACM). Its 80,000 members make ACM one of the world's premier technical professional organizations related to computing.

SIGAda is one of the world's largest organizations serving the needs of professionals interested in the Ada language. SIGAda is a powerful resource for the software community's ongoing technical and scientific activities concerning the usage, education, standardization, and implementations of the Ada language and related Ada technologies.

In the past, SIGAda members have played an important, but individual, role in the standardization work of SC 22/WG 9. For example, ISO/IEC 15291 is largely based upon technical material originally developed by individuals acting under the auspices of SIGAda. SIGAda has also played an important role for Ada language improvements in the areas of performance, real-time, numerics, and distribution.

5.2.2 Category C Liaison with Ada-Europe

Ada-Europe is an international organization, set up to promote the use and knowledge of Ada, and to promote its introduction into industrial, academic, and research establishments. It aims to spread the use and the knowledge of Ada and to promote its introduction into academic and research establishments. Above all, Ada-Europe intends to represent European interests in Ada and Ada-related matters.

In its current form, Ada-Europe was established in 1988. Because there is no European legal framework to govern such organizations, it was established according to Belgian Law. Currently, national member organizations are: Ada-Belgium, Ada-Denmark, Ada-Deutschland, Ada-France, Ada-Spain, Ada in Sweden, and Ada in Switzerland. Individual members of these organizations can become indirect members of Ada-Europe. Direct membership is available to individuals in countries without national member organization.

The best-known of Ada-Europe's activities is its annual conference, first held in 1994, which provides an international forum for researchers and users of Ada and other technologies geared towards reliable systems (see http://www.ada-europe.org/conf/ae). Ada-Europe publishes the

Ada User Journal quarterly magazine to keep its members and others abreast of the latest developments related to Ada.

In the past, Ada-Europe members have played an important, but individual, role in the standardization work of SC 22/WG 9. For example, ISO/IEC 18009 and ISO/IEC TR 24772-1 and -2 incorporate technical material provided by Ada-Europe members.

5.2.3   Liaison with WG 23

The main work of WG 23 is to identify vulnerabilities in programming languages. For language addressed, the WG focuses on how those vulnerabilities are to be handled specifically for that language. WG 9 maintains a liaison relationship with WG 23 to stay apprised of the findings of WG 23 and how they apply to Ada.

5.2.4   Liaison with Fortran INCITS PL/22.3

The main work of Fortran INCITS PL/22.3 is on the programming language Fortran. The liaison relationship with WG 9 is to ensure that the content of the Ada Standard section on interfacing with Fortran is correct and to coordinate efforts on parallel programming.

5.3   Meetings of WG 9

5.3.1   Future Meetings

- Meeting #86 will be held October 2023, exact date and location to be determined. The meeting will be virtual.
- Meeting #87 will be held in mid-June 2024, in conjunction with the 28th International Conference on Reliable Software Technologies Ada-Europe 2024 in Barcelona Spain. The meeting will be hybrid, i.e., with both in-person and remote attendance.

5.3.2   Recent Meetings

- Meeting #85 of WG 9 held in conjunction with the 27th International Conference on Reliable Software Technologies Ada-Europe 2023, the afternoon of Tuesday, 13 June 2023 in Lisbon, Portugal. The meeting was hybrid, i.e., with both in-person and remote attendance.
- Meeting #84 of WG 9 held (virtually) 18 October 2022.
- Meeting #83 of WG 9 held (virtually) 22 June 2022.
- Meeting #82 of WG 9 held (virtually) 20 September 2021.
- Meeting #81 of WG 9 held (virtually) the morning of Tuesday, 29 June 2021.
- Meeting #80 of WG 9 held (virtually) the morning of Monday, 19 April 2021.
- Meeting #79 of WG 9 held (virtually) the morning of Monday, 11 January 2021.
- Meeting #78 of WG 9 held (virtually) the morning of Friday 12 June 2020.
- Meeting #77 of WG 9 held the morning of Saturday, 5 Oct 2019 in Lexington, Massachusetts.
- Meeting #76 of WG 9, held in conjunction with the 24th International Conference on Reliable Software Technologies Ada-Europe 2019, the morning of Friday, 14 June 2019 in Warsaw, Poland.