ISO/IEC JTC1/SC22/WG9 N595

Meeting Minutes

Meeting #75 of ISO/IEC JTC 1/SC 22/WG 9

Monday 22 October 2018 in Lexington, Massachusetts

In accordance with Resolution 74-2, meeting #75 was held the morning of Monday, 22 October 2018 in Lexington, Massachusetts, at the AdaCore offices. The meeting started at 09:13 (Eastern).

The detailed agenda was distributed as N594.

Remote access to the conference was available via WebEx.

AGENDA

Opening Orders, Meeting Convenor

HOD Reports

Liaison Reports and Introductions

- Ada Europe: Dirk Craeynest
- SIGAda: Drew Hamilton
- WG 23:   Erhard Ploedereder
- Fortran: Van Snyder

Convenor's Report

Project Editor Reports (as needed)

- IS 8652:   Jeff Cousins, Ed Schonberg, and Randy Brukardt
- IS 15291:   Bill Thomas and Greg Gicca
- TR 15942:   Ben Brosgol
- IS 18009:   Erhard Ploedereder
- TR 24772-2: Joyce Tokar

Rapporteur Group Reports (as needed)

- Report of Ada Rapporteur Group: Steve Baird, Chair
- Report of Annex H Rapporteur Group: Joyce Tokar, Chair

Review of Open Action Items and Unimplemented Resolutions

Committee as a Whole

Recess

Opening Orders

Call to Order

Attendance List

- Steve Baird
- Randy Brukardt
- Jeff Cousins (remote)
- Juan Antonio de la Puente (remote)
- Brad Moore
- Miguel Pinho (remote)
- Pat Rogers
- Alok Srivastava
- Tucker Taft
- Joyce Tokar (remote)
- Tullio Vardanega (remote)

Appointment of Meeting Secretary

Welcome and Administrative Arrangements

Approval of the [Agenda](#)

Approval of [N591](#): Meeting #74 Minutes.

HOD Reports

Canada – Brad Moore (HOD)

Italy – Tullio Vardanega (HOD)

Portugal – Luis Miguel Pinho (HOD)

Spain – Juan Antonio de la Puente (HOD)

There is nothing to report since the last WG 9 meeting.

The Spanish delegation for this meeting of WG 9 is Juan Antonio de la Puente (HOD), participating by WebEx.

Switzerland – Nicholas Kaethner (HOD)

UK – Jeff Cousins (HOD)

Activity of the UK NB's Ada Panel remains at a low ebb, almost all of its members having retired, and no discernible interest being shown in the Ada standardization process by its major UK industrial users.

Jeff Cousins' article on "ARG Work in Progress II" has been submitted to the Ada User Journal. It is hoped that once Ada 2020 is published, the UK can produce the Rationale.

The UK delegation is Jeff Cousins (electronically) for this meeting of WG 9.

USA – Tucker Taft (HOD)

Guests – ?

AGENDA

Liaison Reports and Introductions

Ada Europe – Dirk Craeynest

Ada-Europe would like to inform the WG9 convener that it is unable to send a liaison delegation to Meeting #75 in Lexington, Massachusetts, USA, on Monday 22 October 2018, neither IRL nor via WebEx.

For now, we mainly want to remind everyone that the next Ada-Europe conference will be held on June 10-14, 2018, in Warsaw, Poland, and we reconfirm our usual hospitality agreement for WG9, ARG and HRG, as well as for WG23. The Preliminary Call for Papers was distributed at the Lisbon conference in June 2018, is available on the event's web site [1], and the full CfP will be distributed shortly via various channels.

The 2019 edition of our conference will see a major revamp in the registration fees, redesigned to extend participation, equally from industry and academia, and to reward contributors, especially but not solely, students and post-doc researchers.

[1] http://www.ada-europe.org/conference2019

We will submit a more complete report for meeting #76 in June 2019.

SIGAda – Drew Hamilton

WG 23 – Erhard Ploedereder

After another internal review round, WG23 has submitted Parts 1, 2, and 3 of TR 24772 to SC 22 for further processing. The three documents are now being balloted under the status of draft technical report. This ballot ends on November 24th.

Please review this document in conjunction with your ISO national body and ensure that your comments and, in particular, votes by your SC 22 members on these three documents are entered.

Once Part 1 of TR 24772 passes all ballots on its route to an International TR, the previous version, including all its annexes, will be taken off the list of active ISO documents. This means that the annexes for Python, Ruby, PHP, and Spark will be removed.
It is therefore important to get the SPARK Part updated before this event in order to keep it on the list of active documents. WG23 in looking towards WG9 helping in organizing the writing of the SPARK Part of the TR.

Any help or advice that WG9 can give in helping to update the other existing Annexes would be greatly appreciated. WG23 meanwhile is working mainly on getting the C++ Part written by WG21, Subgroup 12.

Since the last WG9 meeting, WG23 had a regular two-hours Telecon on July 30th, and a two-day, eight-hours phone conference on August 27th and 28th to put final editorial touches on the three documents prior to submitting them to SC 22. The next WG23 meeting is a face-to-face meeting on November 8th and 9th in San Diego, jointly with WG21. The meeting thereafter (21+22.Feb.2019) will again be with SC21 in Kona, Hawaii.

My apologies for not attending this WG9 meeting. Other travel and its flight schedules made it impossible to reach Lexington in time for the meeting.

Fortran, INCITS/PL22.3 – Van Snyder

The INCITS PL22.3 Fortran committee fall meeting is in Las Vegas 15-19 October 2018.
Fortran 2018 is currently under ballot. Requirements for the next revision are under consideration.

AGENDA

Convenor's Report
Activities since the Last Session

The Convenor attended the SC 22 Plenary in Toronto and provided an overview of the yearly report (N592).

The project to reformat **TR 24718** according to ISO standard formats was changed to a 48-month project.

The tentative schedule for publishing the next Ada revision was presented. We need to explain the previous approach to the SC 22 Chair and Secretariat.

Meeting Objectives

The major objectives for this meeting are:

1. Approval of AIs
2. Ada 2020 Preliminary Scope approval
3. WG 9 Meetings
4. Develop Technical Reports or Standards improving the Ada libraries

Project Editor Reports (as needed)

IS 8652 (Information Technology--Programming Languages - Ada) (Jeff Cousins, Randy Brukardt)

IS 15291 (ASIS) (Bill Thomas, Greg Gicca)

TR 15942 (Guidance for the Use of Ada in High Integrity Systems) (Ben Brosgol)

IS 18009 (Conformity Assessment of an Ada Language Processor) (Erhard Ploedereder)

IS 18009 project editor report: No activities to be reported.

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

TR 24772-2 (Guidance to avoiding vulnerabilities in programming languages – Vulnerability descriptions for the programming language Ada) (Joyce Tokar)

The editor forwarded the document to WG 23 in June.

A slightly edited version of TR 24772-2 is being reviewed as the final version by WG 23.

Here are the substantive changes (some of these we saw in June):
Section 6.6.2

- Always respect the implied unit systems, when converting explicitly from one numeric type to another.

This was added to Part 1, and removed from Part 2.

Section 6.13.2

- ~~Write explicit checks for null values to avoid exceptions being raised.~~

This item was replaced with

- Use non-null access types where possible.

Section 6.25.2

- Follow the mitigation mechanisms of subclause 6.25.5 of TR 24772-1.

This was added as the first bullet of this section.

Section 6.31.2

- ~~Minimize the use of **goto**, **loop exit** statements, **return** statements in **procedure**s and more than one **return** statement in a **function.**~~
- ~~Use multiple exit points only if it makes the code of the exited construct significantly clearer.~~

These were replaced with:

- Follow the mitigation mechanisms of subclause 6.31.5 of TR 24772-1.

Section 6.35.2

- Alternatively, monitor the depth of the recursion such as by passing a recursion depth value that is incremented for each level of recursion, and use a subtype constraint or explicit comparison against a maximum depth limit to trigger handling of the situation.

This was added to Part 1, and removed from Part 2.

Section 6.44.2

- Preceed downcasts by a class-wide membership test as needed to avoid possible exceptions.
- Use type invariants where allowed to detect semantic violations caused by upcasts.

These were added to Part 1, and removed from Part 2.

Section 6.52.2

- Do not suppress language defined checks.
- If language-defined checks must be suppressed, use static analysis to prove that the code is correct for all combinations of inputs.
- If language-defined checks must be suppressed, use explicit checks at appropriate places in the code to ensure that errors are detected before any processing that relies on the correct values.

Now in Part 1, and removed from Part 2.

Section 6.55.2

- For situation where order of evaluation or number of evaluations is unspecified, use only operations with no side-effects, or idempotent behaviour, to avoid the vulnerability.

Now in Part 1, and removed from Part 2.

Section 6.60.2

- do not use forced termination (**abort**), or

This was added to Part 1, and Part 2 was modified.

Section 6.62.2

- do not use the abort feature, or

This was added to Part 1, and Part 2 was modified.

Section 6.63.2

- ; on a single processor using a scheduling regime based on ceiling protocols, this is guaranteed to be deadlock free (if the tasks and protected objects are assigned the correct priorities – a static property that can be checked offline).
- For multicore, consider assigning all interacting tasks to the same CPU then treat each such group as a separate independent entity.
- Minimize the use of dynamic priorities and dynamic ceiling priorities (so that the static values can be verified).

This was added to Part 1, and removed from Part 2.

See the WG 23 Liaison Report for the status of the final revision of this document.

Rapporteur Group Reports (as needed)

Rapporteur Report ARG

The Ada 2012 standard has so far (posted by 10 Oct 2018) generated 289 Ada Issues (AIs).

The ARG met in Lisbon, Portugal in June 2018, following a WG 9 meeting which had approved 20 AIs.

10 amendment AIs were approved (one of those, AI12-0237, was subsequently modified via a letter ballot), as were 2 binding interpretation AIs and one presentation AI.

The 13 AIs that have completed ARG editorial review and are being submitted for approval by WG9 are:

```
AI12-0119-1/12  2018-07-13 --  Parallel operations
AI12-0183-1/06  2018-06-28 --  Presentation errors in Ada 2012 post Corrigendum 1
AI12-0189-1/06  2018-07-06 --  loop-body as anonymous procedure
AI12-0226-1/03  2018-06-10 --  Make objects more consistent
AI12-0237-1/01  2018-08-13 --  Getting enumeration value's representation
AI12-0256-1/03  2018-07-21 --  Aspect No_Controlled_Parts
AI12-0263-1/02  2018-07-05 --  Update references to ISO/IEC 10646
AI12-0272-1/02  2018-07-11 --  Contracts for generic formal parameters
AI12-0275-1/02  2018-06-14 --  Make subtype_mark optional in object renames
AI12-0277-1/02  2018-06-29 --  "accessibility level of the body of F"
AI12-0278-1/02  2018-07-05 --  Implicit conversions of anonymous return types
AI12-0283-1/02  2018-07-12 --  Nonblocking and remote calls
AI12-0285-1/02  2018-07-12 --  Syntax for Stable_Properties aspects
```

As always, you can find these AIs on www.ada-auth.org.

Intent was approved for 11 AIs and 2 others were discussed and assigned to an editor. Three AIs were voted No Action (that is, they were rejected) and one was placed into Hold status.

The approval of AI12-0119 (Parallel Loops and Parallel Blocks) seems particularly significant.

As of 10 Oct 2018, 178 AIs had been approved by WG 9 (100 having already made it into the Corrigendum), 13 by the ARG but not yet by WG 9, and 48 are work items for discussion at the ARG. Of the 48, 5 are binding interpretations and 43 are amendments.

Work on the ASIS standard remains paused.

The next meeting is scheduled for Oct 21-23 in Lexington MA. Electronic meetings are tentatively planned for December, January, February, and March. A face-to-face meeting is planned to coincide with Ada-Europe in June 2019 in Warsaw, Poland.

Rapporteur Report HRG

The revision to TR 24772-2, Vulnerabilities Ada Part, was approved by WG 9 and forwarded to WG 23 for publication.

Open Action Items and Unimplemented Resolutions

This is the "To Do" list for WG 9. Some are informal action items assigned to various participants. Some are formal resolutions, which are not yet implemented. Some items are simply in suspense awaiting action by other groups.

AI-73-8: Pat to reformat TR 24718 with the required changes per ISO.

Status: Ongoing.

AI-74-1: Pat to contact relevant parties within AdaCore re: SPARK part of TR 24772-2.

Status: Discussion is stalled but not abandoned.

AI-74-2: Pat to follow up with AdaCore for a person re: AI-70-4 to act as leader of revision of TR 15942. Ada Europe is willing to partially fund it.

Status: Discussion within AdaCore is on-going.

AI-74-3: Pat to submit the AIs for the proposed Ravenscar extended profile.

Status: Done

AI-74-4: Tucker to contact Florian regarding his future availability.

Status: Open

Committee as a Whole

Preliminary Scope for Ada 2020

Current SC 22 vote on ASIS (ISO/IEC 15291:1999, v3)

Unfinished Business

New Business

[AGENDA](#)

Scheduling of Future Meetings

[AGENDA](#)

Meeting #76 will be held in conjunction with the [24th International Conference on Reliable Software Technologies Ada-Europe 2019](#), on the morning of Friday, 14 June 2019 in Warsaw, Poland.

Meeting #77 will be held in late Fall, possibly in Lexington, MA again.

Review of New Action Items

AI-75-1: Joyce will try to find ISO contact re: Fast Track process.

[AGENDA](#)

Final Consideration of Resolutions

[AGENDA](#)

Resolution 75-1: The meeting minutes of meeting 74 contained in document [N591](#) are approved.

This resolution passed unanimously.

Resolution 75-2:

ISO/IEC JTC 1/SC 22/WG 9 schedules future meetings as follows:

Meeting #76 will be held in conjunction with the [24th International Conference on Reliable Software Technologies Ada-Europe 2019](#), on the morning of Friday, 14 June 2019 in Warsaw, Poland.

Meeting #77 will be held in the late Fall, possibly in the AdaCore offices in Lexington, MA.

This resolution passed unanimously.

Resolution 75-3: The editorial changes to TR 24772-2 are approved.

This resolution passed unanimously.

Resolution 75-4: Justin Squirek is added to the ARG membership.

This resolution passed unanimously.

Resolution 75-5: The Proposed Scope for Ada 2020 is approved.

This resolution passed unanimously.

Resolution 75-6: The following AIs are hereby approved by WG9.

```
AI12-0119-1/12  2018-07-13 --  Parallel operations
AI12-0183-1/06  2018-06-28 --  Presentation errors in Ada 2012 post Corrigendum 1
AI12-0189-1/06  2018-07-06 --  loop-body as anonymous procedure
AI12-0226-1/03  2018-06-10 --  Make objects more consistent
AI12-0237-1/01  2018-08-13 --  Getting enumeration value's representation
AI12-0256-1/03  2018-07-21 --  Aspect No_Controlled_Parts
AI12-0263-1/02  2018-07-05 --  Update references to ISO/IEC 10646
AI12-0272-1/02  2018-07-11 --  Contracts for generic formal parameters
AI12-0275-1/02  2018-06-14 --  Make subtype_mark optional in object renames
AI12-0277-1/02  2018-06-29 --  "accessibility level of the body of F"
AI12-0278-1/02  2018-07-05 --  Implicit conversions of anonymous return types
AI12-0283-1/02  2018-07-12 --  Nonblocking and remote calls
AI12-0285-1/02  2018-07-12 --  Syntax for Stable_Properties aspects
```

This resolution passed unanimously.

Resolution 75-7:

ISO/IEC JTC 1/SC 22/WG 9 continues the Ada High-Integrity Rapporteur Group (HRG) until the next plenary meeting and expresses its grateful appreciation to the Rapporteur and the members for their continuing service.

Joyce Tokar is continued as Rapporteur.

The membership of the HRG is designated to be: Steve Baird, John Barnes, Ben Brosgol, Alan Burns, Rod Chapman, Gary Dismukes, Bob Duff, Michael Gonzalez Harbour, Stephen Michell, Brad Moore, Miguel Pinho, Erhard Ploedereder, Juan Antonio de la Puente, George Romanski, Jean-Pierre Rosen, S. Tucker Taft, Joyce Tokar, and Tullio Vardanega.

The Convenor of WG 9 is authorized to act for WG 9 between meetings in appointing additional members of the HRG. In doing so, he shall consult with the Rapporteur and the National Body or Liaison Organization nominating the member.

Rapporteurs are permitted to allow other individuals to observe the deliberations of the Rapporteur Group. The admission of observers and the extent of participation permitted to observers are at the discretion of the Rapporteur with the concurrence of the membership of the Rapporteur Group.

This resolution passed unanimously.

Resolution 75-8:

ISO/IEC JTC 1/SC 22/WG 9 continues its Ada Issues Rapporteur Group (ARG) until the next plenary meeting and expresses its grateful appreciation to the Rapporteur and the members for their continuing service.

Steve Baird is continued as Rapporteur.

The membership of the ARG is designated to be: Raphaël Amiard, Steve Baird, John Barnes, Randy Brukardt, Alan Burns, Jeff Cousins, Gary Dismukes, Robert Duff, Pascal Leroy, Brad Moore, Erhard Ploedereder, Jean-Pierre Rosen, Florian Schanda, Ed Schonberg, Justin Squirek, Tucker Taft, and Tullio Vardanega.

The Convenor of WG 9 is authorized to act for WG 9 between meetings in appointing additional members of the ARG. In doing so, he shall consult with the Rapporteur and the National Body or Liaison Organization nominating the member.

Rapporteurs are permitted to allow other individuals to observe the deliberations of the Rapporteur Group. The admission of observers and the extent of participation permitted to observers are at the discretion of the Rapporteur with the concurrence of the membership of the Rapporteur Group.

This resolution passed unanimously.

Resolution 75-9: ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Alok Srivastava for acting as secretary for Meeting #75.

This resolution passed unanimously.

Resolution 75-10: ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to AdaCore for hosting meeting #75.

This resolution passed unanimously.

Resolution 75-11: ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Clyde Roby for maintaining the document list page.

This resolution passed unanimously.

RECESS

AGENDA

The meeting ended at 10:05am. The Convenor recessed the meeting subject to a call to resume.

References

See http://www.open-std.org/jtc1/sc22/wg9/documents.htm for the WG 9 Document Log, including the ability to download the documents.