# ISO/IEC JTC1/SC22/WG9 N 576

### Meeting Minutes

### Meeting #72 of ISO/IEC JTC 1/SC 22/WG 9

**Friday 16 June 2017 in Vienna, Austria**

Meeting #72 of WG 9 was held the morning of Friday 16 June 2017 in Vienna, Austria, in conjunction with [Ada](http://www.sigada.org/conf/hilt2016/) [Europe](https://www.auto.tuwien.ac.at/~blieb/AE2017/) 2017.

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* [SIGAda](#SIGAda): David Cook
* [WG 23](#WG23): Erhard Ploedereder
* [Fortran](#FORTRAN): Van Snyder

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[Project Editor Reports](#ProjectEd) (as needed)

* [IS 8652](#IS8652): Jeff Cousins, Ed Schonberg, and Randy Brukardt
* [IS 15291](#ISO15291): Bill Thomas and Greg Gicca
* [TR 15942](#TR15942): Ben Brosgol
* [IS 18009](#ISO18009): Erhard Ploedereder
* [TR 24772-2](#TR24772): Joyce Tokar

[Rapporteur Group Reports](#Rapporteurs) (as needed)

* [Report of Ada Rapporteur Group](#ARG): Jeff Cousins, Chair
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Recess

### Opening Orders

Call to Order

Appointment of Meeting Secretary

Welcome and Administrative Arrangements

Approval of the [Agenda](#Agenda)

Approval of [N5](#N562)70: Meeting #71 Minutes.

### Reports and Introductions

### Canada – Brad Moore (HOD)

### Italy – Tullio Vardanega (HOD)

### Portugal – Luis Miguel Pinho (HOD)

### Spain – Juan Antonio de la Puente (HOD)

A summary of the group activities was reported to the Spanish NMO SC22 mirror committee on February 20, 2017. The presentation included details on the WG9 work on the Ada standard, the Ada annex on the vulnerabilities technical report, and the high-integrity and Ravenscar TRs.

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

### Switzerland – Nicholas Kaethner (HOD)

### UK – Jeff Cousins (HOD)

Florian Schanda of Altran and the ARG, and Dene Brown (General Secretary of Ada-Europe), have joined the UK Ada panel, but most of the other members have now retired and activity has declined to just an occasional e-mail. Most of the other UK programming languages panels are in a similar situation, only the C and C++ ones appear to be thriving. The national panels had been a useful training ground for involvement in international standardisation work.

Due to the effects of “austerity” and “Brexit”, the UK NB’s grants towards attending international meetings have fallen to only around 40% of the actual costs, as compared to about 70% a few years ago, and employers are increasingly unwilling to make up the difference. Also, it is taking much longer for these grants to be approved.

Jeff Cousins’ article on “ARG Work in Progress” was published in the Ada User Journal.

The UK delegation is Jeff Cousins (HOD), John Barnes and Florian Schanda for this meeting of WG 9.

### USA – ? (HOD)

### Guests – ?

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### Liaison Reports and Introductions

**Ada Europe –** Dirk Craeynest

Ada-Europe Liaison Report to WG9 for meeting #72

Ada-Europe Liaison Representative, Dirk Craeynest

Ada-Europe would like to inform the WG9 convener that it will send a 2-person Ada-Europe liaison delegation to Meeting #72 in Vienna, Austria, on Friday 16 June 2017.

The delegation consists of:

* Erhard Ploedereder
* Dirk Craeynest (presenter)

The next Ada-Europe conference [1] will be held on June 18-22, 2018, in Lisbon, Portugal, and we reconfirm our usual hospitality agreement for WG9, ARG and HRG, as well as for WG23. The Preliminary Call for Papers is distributed at this conference.

[1] http://www.ada-europe.org/conference2018

We reconfirm our willingness to support the Ada standardization related activities.

Ada-Europe is happy to report a healthy situation with the Ada User Journal (AUJ) [2]. Four issues are published each year. A special mention to the publication of an article by Jeff Cousins, with a report on the work of the ARG. Reports on the Ada standardization process are planned to be periodic. The Journal continues printing material from the industrial track of the Ada-Europe conference, as well as reports of the International Real-Time Ada Workshops.

The Journal provided the proceedings of the Workshop on Challenges and New Approaches for Dependable and Cyber-Physical Systems Engineering (DeCPS 2016), co-located with Ada-Europe 2016. The AUJ also continues with its traditional Quarterly News Digest, Conference Calendar and Forthcoming Events sections.

[2] http://www.ada-europe.org/auj

**SIGAda –** David Cook

**WG 23 –** Erhard Ploedereder

Summary:

Since the last WG9 meeting in Pittsburgh, WG23 has met in four 2-hour teleconference and two face-to-face-meetings. The main subject of the work of WG23 over the past six months has been the progress on the C and Ada Parts of the Vulnerabilities document TR-24772. Also, minor fixes were made to contents and structure of Section 6 of the main document, e.g., the Vulnerability relating to Fault Tolerance was moved to Section 7 and hence out of the programming languages realm. Section 7 was significantly restructured. A C++ Part was started and the strategies laid out for the coming 12-18 months.

Details:

At the face-to-face meeting in Kissimmee, Florida, January 23rd + 24th, the structure of section 7 was discussed and, as a result of the meeting, rearranged for better coherence among the subsections. As mentioned above, Fault Tolerance (REU) was moved from section 6 to section 7. This is the only impact felt by WG9, since section 7 need no longer be responded to in the language-specific parts. With this change, the structure of TR24772, Part 1, was frozen. Contents may still be refined, particularly the Vulnerability on Generics and Templates to better match with C++ concepts. The Ada part was reviewed and HRG/WG9 was asked to add a list of “top-10” (or 12 or …) advice items in a newly introduced section 5.2. The list was since drafted by WG23 and sent to HRG.

Pressure from ISO was perceived that urged WG23 to turn the TRs into International Standards. Since then, this pressure has eased again. There also was discussion to initiate a project to collect the various advice items and turn them into an International Standard of guidelines, with the TR24772 series providing the respective rationale for each advice.

Particular interest was expressed by WG23 in an updated Spark Part and a C++ Part to be developed from scratch. Since then, an initial rough draft for the C++ Part has been created. The Spark Part, alas, is still “in limbo”.

The second face-to-face meeting took place in Toronto, Canada, April 6th and 7th, while snow storms threatened to close us down. The state of the Python and Fortran Parts was reviewed. The first cut at a C++ Part was reviewed and strategies were discussed to get WG21 to cooperate in the effort.

The four TeleCons served a pre- and post-meetings for the face-to-face meetings to provide the opportunity to remind about and discuss the assigned action items, their progress, and related technical issues and questions.

The next face-to-face meetings are scheduled for Vienna, June 20th and 21st, at Ada-Europe, and for London, August 17th and 18th, adjoining the SC22 meeting at BSI. As usual, these meetings will have pre- and post-TeleCons. Interested parties should contact Stephen Michell or Erhard Ploedereder.

WG23 hopes that during HRG, ARG and WG9 meetings in Vienna most if not all of the remaining work items for the Ada Part can be completed, so that the Part can be entered in the ISO process along with other finished parts. WG23 thanks WG9 for its efforts in updating the old Annex to become Part 2 of TR-24772.

WG23 also hopes that a path can be found to update the Spark Part and appreciates any active support by these groups in getting the work (re)started.

**Fortran, INCITS/PL22.3** – Van Snyder (apologies)

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### Convenor's Report Activities since the Last Session

The Convenor provided the INCITS Annual Report for: JTC 1 / SC 22 / WG 9. This document is available as [N5](#N564)72.

**Meeting Objectives**

Provide guidance to the ARG.

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### 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)

This has now been completed and a new version produced and reviewed. This new version is now with WG9 (document number n575).

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

The editor participated in meetings with WG 23 to move this document along in the standardization process. WG 23 has requested several updates to the TR24772-2 based on changes to the base document, TR24772-1. In particular, the following sections in TR24772-1:

* 5.4 Top Avoidance mechanisms
* 6.6 change Numeric Conversion Errors -> Conversion Errors (still [FLC])
* 6.37 has been deleted
* New 6.38 Deep vs Shallow Copying [YAN]
* 6.39 Memory Leaks ->   6.40 Memory Leaks and Heap Fragmentation
* 6.40 Templates & Generics and 6.41 Inheritance -> 6.41 & 6.42 with same names
	+ Meaning of the vulnerability has been changed. For example, Multiple Inheritance has been added.
* Add 6.43 Violations of the Liskov Principle or the Contract Model [BLP]
* Add 6.44 Redispatching [PPH]
* Add 6.45 Polymorphic Variables [BKK]
* 6.42 and up are incremented by 4 (i.e. 6.42 -> 6.46, etc)
* 6.61 -> 6.65 and changes name to Reliance on External Format Strings (code [SHL] unchanged)

The HRG is working on developing wording for the new sections. The editor has completed the editorial changes and will incorporate the new sections when they are available.

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### Rapporteur Group Reports (as needed)

**Rapporteur Report ARG**

The Ada 2012 standard has so far (posted by 24 May 2017) generated 229 Ada Issues (AIs).

The ARG met in Pittsburgh, USA in October 2016, following a WG 9 meeting which had approved thirteen AIs.

Two regular and five amendment AIs were not discussed as they were awaiting action completion, six amendment AIs were not discussed as we ran out of time, and 17 amendment AIs were not discussed as they were expected to end up as no action.

Nine regular AIs were approved (most with minor changes) and one (of low priority) just had its intent approved.

AI12-0125-3/08 “Add @ as an abbreviation for the LHS of an assignment” had been withdrawn from submission at the preceding WG 9 meeting. After a long discussion at the ARG meeting, it was decided that it was still our favourite option. It is intended that there will some publicity on a newsgroup so that it doesn’t come as too much of a shock to users, and that the AI will be re-submitted “as is” at the next WG 9 meeting, but with a recommendation that it should be voted on separately.

Three amendment AIs were approved (two with minor changes), three had their intent approved and three require further investigation.

Improving iteration over containers was again a major area of discussion. Proposals from the panel looking at parallelism were reviewed.

As of 24 May 2017, 134 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, 11 are binding interpretations and 37 are amendments. (There are also two AIs on presentation).

A number of AIs have completed editorial review and are be ready for approval by WG 9. The list follows. As usual, the full text of the AIs can be found at [www.ada-auth.org/ais.html](http://www.ada-auth.org/ais.html).

AI12-0004-1/06 2017-04-24 -- Normalization and allowed characters for identifiers

AI12-0058-1/07 2017-04-24 -- The Fortran Annex needs updating to support Fortran 2008

AI12-0125-3/08 2016-10-02 -- Add @ as an abbreviation for the LHS of an assignment

AI12-0164-1/05 2017-04-24 -- Max\_Entry\_Queue\_Length aspect for entries

AI12-0171-1/04 2017-04-24 -- Ambiguity in Synchronous\_Task\_Control semantics

AI12-0179-1/06 2017-04-24 -- Failure of postconditions of language-defined units

AI12-0186-1/06 2017-04-24 -- Profile freezing for the Access attribute

AI12-0193-1/04 2016-12-21 -- Postcondition failure for a task entry

AI12-0196-1/08 2017-04-24 -- Concurrent access to Ada container libraries

AI12-0199-1/05 2017-04-24 -- Abstract subprogram calls in class-wide invariant expressions

AI12-0200-1/05 2017-04-24 -- Improve reentrancy requirements for language-defined subprograms

AI12-0203-1/03 2017-04-25 -- Overriding a nonoverridable aspect

AI12-0204-1/03 2017-04-25 -- Renaming of a prefixed view

Work on the ASIS standard remains paused.

Future meetings are scheduled for 16-18 June 2017 in Vienna, Austria, in conjunction with the Ada-Europe 2017 conference, and provisionally for 13-15 October 2017 in NE USA.

**Rapporteur Report HRG**

The HRG has been involved in 3 activities.

1) An update of TR 24718 (the Ravenscar TR).

This has now been completed and a new version produced and reviewed. This new version is now with WG9.

2) An update of TR 15942 (the Ada High-Integrity TR).

Ben Brosgol is project editor for this revision. The current plan is for a first draft to be produced by May 2018.

3) Input into the WG23 Vulnerabilities report; i.e. assisting in the writing of the Ada Part. Joyce Tokar is acting as Editor for this activity. A number of inputs have been made and there are continuing issues to address as WG23 changes the main document, and Ada is updated.

A meeting of HRG is scheduled for Wednesday 14th June at Ada Europe.

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**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.

**Action Item 70-3**: Alan Burns and Tullio Vardenga will produce an update to TR 24718, Guide for the use of the Ada Ravenscar Profile in high integrity systems, for review at the WG 9 meeting #72 associated with Ada Europe 2017.

Status: available for review.

**Action Item 70-4**: Ben Brosgol will produce an initial draft update to TR 15942, Guide for the use of the Ada programming language in high integrity systems, for review at the WG 9 meeting #72 associated with Ada Europe 2017.

Status: first draft to be produced by May 2018.

**Action Item 70-5**: The Convenor will notify ISO/IEC JTC 1/SC 22 of the request to change the editor of TR 15942 from Brian Wichman to Ben Brosgol.

Status: Done.

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### Committee as a Whole

Progression of TR 24772-2 (Ada Part of the Vulnerabilities document): to be broadcast by email for review by Aug 31(AI-72-2-3).

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### Unfinished Business

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### New Business

INCITS will require use of their on-line meeting system, the “ISO Meetings” platform, including registration by all participants. The Convenor will send additional information.

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### Scheduling of Future Meetings

The next meeting of WG 9 will be held Friday, 13 Oct in Lexington (Boston), beginning at 9am.

The subsequent meeting will be after Ada Europe 2018, on 22 June in Lisbon, beginning at 9am.

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**Review of New Action Items**

**AI-72-1:** Tullio Vardanega to update TR 24718, Guide for the use of the Ada Ravenscar Profile in high integrity systems to reference “Ada 2012 TC1” rather than “Ada 2015” in the opening text. The updated document will be sent to the Convenor for submission to ISO SC 22 (see **AI-72-2**).

Status: Done.

**AI-72-2:** The Convenor will alert the SC 22 chair and secretary that we are updatingTR 24718 (with wording such that the document number does not change, thus either “revision” or “edition” in the notification).

**AI-72-3:** Joyce Tokar to distribute (email) TR 24772-2 for by WG 9, no later than 31 August 2017.

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**Final Consideration of Resolutions**

**Resolution 72-1:** The meeting minutes of meeting 71 are approved.

**Resolution 72-2**: The next meeting of WG 9 will be held at 9am the morning of 13 October in Lexington MA.

**Resolution 72-3**: The Ada Issues presented by the ARG, other than AI-125, are approved. (AI-125 was voted upon separately.)

**Resolution 72-4**: AI-125 is approved.

**Resolution 72-5**: The update to TR 24718, Guide for the use of the Ada Ravenscar Profile in high integrity systems is approved.

**Resolution 72-6:**

ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Prof. Alan Burns for his years of service in leading the Annex H Rapporteur Group.

**Resolution 72-7:**

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

Dr. Joyce Tokar is appointed the new 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.

**Resolution 72-8:**

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.

Jeff Cousins 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, 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.

**Resolution 72-9:**

ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Alok Srivastava for acting as secretary for Meeting #72.

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**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.