# ISO/IEC JTC1/SC22/WG9 N553

### Meeting Minutes

*Revision 2 21 July 2015*

### Meeting #68 of ISO/IEC JTC1/SC22/WG9

**Friday 26 June 2015**

In accordance with Resolution 67-4, the next meeting, meeting #68, will be held in conjunction with [20th International Conference on Reliable Software Technologies Ada-Europe 2015](https://ae2015.dit.upm.es/index.html) Friday 26 June 2015, at 9:38 am in Madrid Spain.

The detailed agenda for this meeting was circulated as [N552](#N552).

### AGENDA

[Opening Orders](#Opening)

[Introductions](#_National_Body_Reports)

[Liaison Reports and Introductions](#LiasonReports)

* Ada Europe: Dirk Craeynest
* SIGAda: David Cook
* WG 23: Erhard Ploedereder
* Fortran, INCITS/PL22.3: Van Snyder

[Convenor's Report](#Convener)

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

* IS 8652: Jeff Cousins, Ed Schonberg and Randy Brukardt
* IS 15291: Bill Thomas and Greg Gicca
* TR 15942: Brian Wichmann
* IS 18009: Erhard Ploedereder
* TR 24718: Alan Burns

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

* Report of Ada Rapporteur Group: Jeff Cousins, Chair
* Report of Annex H Rapporteur Group: Alan Burns, Chair

[Review of Open Action Items and Unimplemented Resolutions](#OpenAIs)

[Committee as a Whole](#CAAW)

* Ballot of the draft Technical Corrigendum for Ada 2012, [N551](#N551)
* WG 23 cooperation and objectives
* Update of the High Integrity Ada Technical Reports ([TR 15942](http://standards.iso.org/ittf/PubliclyAvailableStandards/) & [TR 24718](http://standards.iso.org/ittf/PubliclyAvailableStandards/))

[Unfinished Business](#UBiz)

[New Business](#NBiz)

[Scheduling of Future Meetings](#NextMeet)

* Fall 2015 meeting
* Future meetings

[Administrative Actions](#Admin)

[Review of New Action Items](#NewActions)

[Review of New Resolutions](#NewResolutions)

[Final Consideration of Resolutions](#final)

[Recess](#recess)

### Opening Orders, Joyce Tokar, Meeting Convenor

* Call to Order
* Appointment of Meeting Secretary
* Welcome and Administrative Arrangements
* Approval of the [Agenda](#Agenda)
* Approval of [N548](#N548): Meeting #67 Minutes. Resolution [68-1](#r1).

[AGENDA](#A1)

**Introductions**

### Canada – Brad Moore (HoD), Stephen Michell

### Italy – Tullio Vardanega

**Portugal –** Luis Miguel Pinho

**Spain –** Juan Antonio de la Puente (HoD), Jose Maria Martinez, Santiago Uruena

### Switzerland – Patrick Gautschi (apologies)

### UK – Jeff Cousins (HoD), John Barnes, Alan Burns

The UK panel conducts its business mostly by e-mail, but held a meeting in May 2015. Members were refreshed on what had happened in Ada 2012, and updated on the most significant Corrigendum tweaks. The response was very positive; “I wish we’d had that earlier” was a common response.

**USA –** Tucker Taft, Randy Brukardt

**Liaisons –** Dirk Craeynest, Erhard Ploedereder

**Guests –**

JP Rosen

Nick Kaethner

**Liaison Reports**

**Ada-Europe Liaison Report:**

**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 #68 in Madrid, Spain, on Friday 26 June 2015.

The delegation consists of:

- Erhard Ploedereder

- Dirk Craeynest (presenter)

Ada-Europe has decided to commemorate the Bicentennial anniversary of Ada Lovelace with both a series of articles on Ada Lovelace in the issues of the Ada User Journal (AUJ) during 2015, as well as featuring a very well received documentary on the life of Ada at the occasion of its annual conference here in Madrid, June 2015.

The next Ada-Europe conference will be held on June 13-17, 2016, in Pisa, Italy, 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.

Although no firm decisions have been taken yet, we are expecting the Ada-Europe 2017 conference to be organized in Vienna, Austria.

We reconfirm our willingness to support the Ada standardization related activities. As in previous years, Ada-Europe is willing to continue supporting the WG9 convener, hopefully together with SIGAda and the ARA.

Finally, Ada-Europe is happy to report a healthy situation with the Ada User Journal. Four issues are published each year. In addition to the several articles published, and the Ada Lovelace celebration articles, the Journal continues printing material from the industrial track and tutorials of the Ada-Europe conference, as well as proceedings of workshops which took place together with AE conferences. The AUJ also continues with its traditional Quarterly News Digest, Conference Calendar and Forthcoming Events sections, and the ongoing SPARK 2014 Rationale articles.

**SIGAda Liaison Report:**

**SIGAda Liaison Representative, David Cook**

SIGAda held its 2014 conference, HILT 2014, October 17 - 19 in Portland, OR.

HILT 2014 was held at the same venue as the SPLASH 2014 conference (Portland, OR), with some hope to save on expenses, make it easier for invited speakers who might be attending SPLASH anyway, increase visibility, and increase general attendance. Overall the experience was positive, though the benefits were modest to minimal in these various dimensions. Attendance was not particularly affected, and no more papers than usual were submitted.

As in past HILTs, the final program was quite strong, and the attendees uniformly praised the quality of the tutorials, the keynotes, the papers, and the presentations. Financially, the conference was a modest success, as we had a very small surplus after all conference expenses were paid. This reversed a losing trend from the past four SIGAda conferences.

The decision was made not to hold a 2015 conference, so the SIGAda Executive Committee is the early planning stages for SIGAda/HILT 2016.

**WG 23 Liaison Report:  
WG 23 Liaison Representative, Erhard Ploedereder**

Since the last report (in Portland), WG23 had many meetings:

* a teleconference-plus-meeting immediately after the WG9 meeting in Portland
* a physical two-day meeting in Kemah, TX, January 26-27
* two-hour teleconferences on February 23, March 30, and May 27

Another physical meeting is scheduled immediately after today's WG9 meeting.

The DIS 19760, "Code Signing for Source Code" was approved by ISO. Presently it is in final voting as International Standard (until July 6th). A few issues are expected to be raised during the ISO review; work to address them is already planned.

The main effort was focused on progressing TR 24772, the vulnerabilities report. To allow the main document and the language-specific Annexes to progress at their own pace, it was decided to split the document into separate parts. TR 24772-1 is the main document and TR 24772-2 through -9 are the Annexes presently available (-2 Ada, -3 C, -4 Python, -5 Ruby, -6 SPARK, -7 PHP, -8 Fortran, -9 COBOL). A business plan was submitted to SC22, proposing the creation of the necessary projects for the WG. For 2015, WG23 asked for approval to start the work on TR24772-1, the main document, and on the Annexes for Ada, C, and Fortran. The projects have a formal duration of 36 months, which is the maximum ISO will allow. Of course, we hope to be done much more quickly, but ISO processes lately react rather badly to schedule overruns. Hence a schedule with maximum leeway was proposed. In coming years, the other Annexes will be phased into the schedule. WG23 felt that a staged schedule avoided any possible overload caused by all annexes arriving concurrently from the producing WGs. Responsible persons or chaperons were identified for the various annexes. For the Ada Annex, I am that person, with technical work delegated to WG9 and its RGs. Desirable Annexes, e.g., for C++ and C#, were identified. Interest to contribute annexes was expressed by external groups dealing with Linux, MUMPS, and a modeling language.

WG23 will do final editing and harmonizing of styles between the Annexes. As before, the technical content is to be produced by the respective language standardization groups, mostly within SC22.

The separation into individual parts comes with the need to have each part conform to the usual structure of Standards within SC22. Some rewriting and text shuffling is required to match this structure.

The Ada annex, which was forwarded to WG9/HRG two weeks ago, has been updated to conform to the latest version of the base document, excepting text for the vulnerabilities that have been added since version 1; they deal mostly with concurrency and need to be written. Furthermore, updates resulting from Ada12 (and Ada15?) capabilities should be made, before the document is returned to WG23. The newly separated sections on Concepts and Terminology need technical and editorial attention.

3 meetings (Washington DC, New Delhi, London) and 4 teleconferences are scheduled between September 2015 and April 2016.

**FORTRAN, INCITS/PL22.3 Liaison Report:**

**FORTRAN, INCITS/PL22.3 Liaison Representative, Van Snyder**

During the past year, the US ANSI Fortran committee, INCITS/PL22.3, has had two meetings, in Las Vegas, 13-17 October 2014 and 22-27 February 2015.

The next joint meeting of the US ANSI committee and the ISO/IEC committee, JTC1/SC22/WG5, will be hosted by BSI in London, 3-7 August 2015.

The two major work items of the London meeting are to finalize the work plan for the current revision of the Fortran standard, ISO/IEC 1539-1, and approve publication of ISO/IEC TS 18508 "Additional Parallel Features in Fortran," WG5/N2056 This TS enlarges upon the coarray

facility of SPMD parallel programming provided by the 2008 standard. The agenda of the meeting is WG5/N2052.

ISO/IEC 29113 "Further Interoperability of Fortran with C" has been incorporated into the current draft of the next revision of the standard, http://j3-fortran.org/doc/meeting/207/15-007r1.pdf.

The US ANSI Fortran committee continues to accept formal requests for interpretations. Those that are errata (as opposed to clarifications) are usually assembled into corrigenda. ISO has published three corrigenda concerning Fortran 2008. These have been combined into a WG5

document WG5/N2005; the interpretations that led to these corrigenda are combined in WG5/N2006.

One batch of interpretations has been completed since Corrigendum 3 has been published, WG5/N2042. It has not been decided whether a further Corrigendum concerning Fortran 2008 will be published, or the results simply incorporated into the next revision.

WG5 documents are available from http://www.nag.co.uk/sc22wg5/docs.html.

[AGENDA](#A3)

### Convenor's Report

### Activities since the Last Session

Since the Convenorship of WG 9 is held by the USA, the Convenor provided a report to NCITS on the status of the work in WG 9. This report is available as [N550](#N550).

The Convenor participated in the International Real-Time Ada Workshop (IRTAW) in April. During this session, a request was made for IRTAW to take on the responsibility to update TR 15942 and TR 24718. The consensus of the meeting was for the Convenor to conduct a market survey to determine the current usage of these documents. The Convenor sent out requests for information to the Ada, Real-Time, and High-Integrity community. There was some interest in having these documents updated. More discussion on this topic will be conducted during the [Committee as a Whole Session](#CAAW).

The HILT 2015 conference has been cancelled. As a result, there is a need to determine where and when WG 9 will conduct its fall meeting. The Convenor sent out a letter ballot with some options for the meeting. It appears that the WG 9 community is interested in co-locating the fall meeting with the ARG meeting in Vermont in October. More discussion on this topic will be conducted during the [Scheduling of Future Meetings Session](#NextMeet).

The Convenor has been in discussion with the WG 9 Secretariat regarding the publication of the Corrigendum for Ada 2012. Upon approval of WG 9 to send the draft document forward, the Convenor will submit the document as part of an ISO/IEC DCOR ballet to SC 22. SC 22 also needs to see the Defect Reports that are associated with this Technical Report.

SC 22 will then conduct a ballot of at least three months on the document. Assuming the vote is for approval, the corrigendum will be published following this ballot cycle. However, if there are disapprovals, then WG 9 needs to be prepared to respond and request another ballot, if necessary.

### Meeting Objectives

The major objectives for this meeting are:

1. Approval of the Ada 2012 Technical Corrigendum
2. WG 9 Meetings
3. Ada Issues
4. Update to the Ada and SPARK Annexes to the WG 23 Technical Report on Vulnerabilities
5. Approach to developing Ada 202x
6. Develop Technical Reports or Standards improving the Ada libraries
7. Consider proposals for extending the language

[AGENDA](#A4)

### Project Editor Reports

### ISO/IEC 15291 (ASIS)

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

There are no activities to report. There was a recommendation for National Bodies to confirm this document.

### IS 8652 (Information Technology--Programming Languages—Ada)

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

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

There was a recommendation for National Bodies to confirm this document.

[AGENDA](#A5)

### Rapporteur Reports

**Rapporteur Report ARG:**

The Ada 2012 standard has so far (1 June 2015) generated 160 Ada Issues (AIs).

The ARG met in Portland in October 2014. The focus of the meeting was on preparing the 2015 Corrigendum, with the intention that this would be ready for submitting by the June 2015 WG 9 meeting. Eight regular AIs were not discussed as they were awaiting action completion, though none of these are high priority and only two medium priority. All but two of the other eighteen regular AIs were approved with changes, the two (both low priority, 38 & 138) being agreed in principle but requiring further investigation.

Some (14) of the amendment AIs, which did not require syntax changes and were relatively mature, were also discussed as potential candidates for the 2015 Corrigendum. Four were approved with changes (41, 117, 124 & 130), and four were regarded as desirable but requiring further investigation (3, 86, 129 & 135).

Three phone meetings, one in each of the first three months of the year, discussed the candidate AIs for the Corrigendum further.

As of 1 June 2015, 64 AIs had been approved by WG 9, 36 by the ARG but not yet by WG 9, and 39 are work items for discussion at the ARG. Of the 39, 7 are binding interpretations and 32 are candidates for the potential Ada 2020 amendment (3 of which have already been deemed to be “promising”).

The Corrigendum was approved unanimously by the ARG, and submitted to WG9 on 9 April 2015.

A number of AI's have completed editorial review and are ready for approval by WG 9. The list follows. As usual, the full text of the AI's can be found at [www.ada-auth.org/ais.html](http://www.ada-auth.org/ais.html). (This list was distributed to the ARG in three batches on 30 January, 28 February and 1 April, following the three phone meetings, and to WG 9 on 6 May 2015).

Note that WG9 may prefer to approve the Corrigendum as a whole rather that approving these AIs.

AI12-0003-1/13 2015-03-25 -- Specifying the standard storage pool

AI12-0038-1/07 2015-01-27 -- Shared\_Passive package restrictions

AI12-0041-1/03 2014-11-18 -- Type\_Invariant'Class for interface types

AI12-0090-1/06 2015-01-19 -- Pre- and Postconditions and requeues

AI12-0094-1/03 2015-01-19 -- An access\_definition should be a declarative region

AI12-0103-1/04 2015-01-19 -- Expression functions that are completions in package specifications

AI12-0106-1/05 2015-01-19 -- Write'Class aspect

AI12-0109-1/03 2015-01-20 -- Representation of untagged derived types

AI12-0113-1/03 2014-11-19 -- Class-wide preconditions and statically bound calls

AI12-0117-1/03 2014-11-17 -- Restriction No\_Tasks\_Unassigned\_To\_CPU

AI12-0121-1/03 2015-01-19 -- Stream-oriented aspects

AI12-0124-1/04 2015-01-19 -- Add Object'Image

AI12-0129-1/08 2015-05-05 -- Make protected objects more protecting

AI12-0130-1/03 2015-01-19 -- All I/O packages should have Flush

AI12-0131-1/02 2014-11-13 -- Inherited Pre'Class when unspecified on initial subprogram

AI12-0132-1/02 2014-11-13 -- Freezing of renames-as-body

AI12-0133-1/04 2015-01-19 -- Type invariants and default initialized objects

AI12-0134-1/03 2015-01-19 -- Error in Storage Pool example

AI12-0135-1/05 2015-03-03 -- Enumeration types should be eligible for convention C

AI12-0136-1/03 2015-01-20 -- Language-defined packages and aspect

Default\_Storage\_Pool

AI12-0137-1/03 2015-01-20 -- Incomplete views and access to class-wide types

AI12-0138-1/09 2015-05-05 -- Iterators of formal derived types

AI12-0141-1/02 2015-01-28 -- Add Raise Expression to Introduction

AI12-0142-1/03 2015-02-23 -- Bad subpool implementations

AI12-0145-1/02 2015-01-28 -- Pool\_of\_Subpool returns null when called too early

AI12-0146-1/01 2015-01-21 -- Should say stream-oriented attribute

AI12-0147-1/02 2015-01-28 -- Expression functions and null procedures can be declared in a protected\_body

AI12-0148-1/03 2015-01-29 -- Dangling references

AI12-0149-1/01 2015-01-22 -- Type invariants are checked for functions returning access-to-type

AI12-0150-1/03 2015-01-28 -- Class-wide type invariants and statically bound calls

AI12-0151-1/02 2015-02-26 -- Meaning of subtype\_indication in array component iterators

AI12-0152-1/04 2015-03-25 -- Eliminate ambiguities in raise expression and derived type syntax

AI12-0154-1/03 2015-03-03 -- Aspects of library units

AI12-0157-1/03 2015-05-05 -- Missing rules for expression functions

AI12-0158-1/02 2015-03-26 -- Definition of quantified expressions

AI12-0159-1/04 2015-03-31 -- Corrections from the Corrigendum Editorial Review

Work on the ASIS standard remains paused.

Future meetings are scheduled for 26-28 June 2015 in Madrid, Spain, in conjunction with the Ada-Europe 2015 conference, and for 16-18 October 2015 in Vermont, U.S.A.

Continuation of the ARG: Resolution [68-2](#r2).

Approval of AIs: Resolution [68-5](#r5).

**Rapporteur Report HRG:**

The HRG has not met since the last WG9 meeting. It has been preparing to provide input into the Vulnerabilities report. A meeting to progress the Ada annex of this report will take place on Friday 26th June in Madrid.

Continuation of the HRG: Resolution [68-3](#r3).

[AGENDA](#A5)

### Open Action Items and Unimplemented Resolutions

This is the "To Do" list for WG9. 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 63-3**

Determine if the IRTAW group is willing to update the ISO/IEC 15942 standard to be in alignment with Ada 2012. (Tullio Vardanega)

*Status:* Closed

*Discussion:* Tullio has talked with Alan Burns but no further action has been taken at this time. Revisit at the next meeting.

How much of the old standard has been subsumed by Ada 2012? How has the environment of High Integrity Systems changed to impact the TR?

Joyce will develop a position paper for the next IRTAW meeting (April 2015) to get this topic onto the agenda.

Joyce wrote a short position paper for the 17th IRTAW with the position that IRTAW should take on the role of updating these reports. More discussion during the Committee as a Whole Session.

**Action Item 67-1**

The WG 9 Convenor will get in touch with the IRTAW leadership to encourage the development of preliminary parallelism proposals that may be used to develop at parallelism TS. And to discuss cooperating with Ada Europe 2016.

*Status:* Open

*Discussion:* This item was not discussed at this meeting of WG 9.

[AGENDA](#AA)

### Committee as a Whole

* Ballot on the Technical Corrigendum for Ada 2015

The ARG has completed the generation of a Draft Technical Corrigendum for Ada 2012, [N551](#N551). The ARG has voted approval of this document and has now sent it forward to WG 9 for submission to ISO/IEC JTC 1/SC 22.

The purpose of this session is to determine if there is consensus within WG 9 to send this document forward. If so, the Convenor will submit the document to ISO/IEC JTC 1/SC 22 in the proper format.

Discussion

Resolution [68-6](#r6). Resolution [68-10](#r10).

* Corrigendum and Addendum Updates and the production of Ada 202x

Ada Germany is concerned about the publication of the Corrigendum given that there has been a lot of energy expended to publish the Ada 2012 standard as a Springer Lecture Notes in Computer Science 8339. Now that there is a corrigendum, this makes the book out of date.

The message is that Ada Germany would like more details on the schedule of changes and updates to the language in the future. Note, that Resolution 66-8 clearly indicated that the ARG was to develop a corrigendum for Ada 2012 in the 2015 timeframe.

The vision at the last WG 9 meeting was that we follow the WG 5 (Fortran) model where WG 9 produces modifications every 3 years. This was discussed at the last two WG 9 meetings. And the working group agreed that this was the path to be pursued going forward.

The ARG and WG 9 need to produce a better schedule for the production of corrigenda, amendment, and the update to the standard.

One concern is how to identify a particular comment is associated with the edition of the standard.

Do we want to have a new standard in 2020 or later? Or should a Technical Specification be written rather than an amendment? New and interesting capabilities may be published as Technical Specifications.

The balloting on Technical Specifications is single level within ISO; similar to a corrigendum, taking approximately 3 months.

Then the ARG can work on an amendment with some substantive updates to the language.

Resolution [68-](#rx)7

* Updates of TR 15942 and TR 24718

There is an interest from the technical community in seeing an update to these reports. There were 15 responses from the market survey to see these reports updated. In some instances, the reports are being used in the development of coding standards.

The Ravenscar TR (TR 24718) could be updated relatively easily. TR 15942, Guidance for the use of Ada in high integrity systems, would need reasonable effort to update this report to Ada 2012.

Resolution [68-8](#r8)

AdaCore might be interested in updating TR 15942. Brian Wichmann is around but is more interested in the history of computing rather than high integrity systems.

[Action Item 68-1](#ai1)

* WG 23 Liaison/Cooperation Objectives

There are two items of interest:

* Does WG 9 want to see and approve of the Ada Part to the WG 23 Technical Report prior to submitting it to WG 23?

There should be coordinated effort between WG 9/HRG and WG 23 with respect to the development of the Ada Part. The final version of the Ada Part to the WG 23 Technical Report should be submitted to WG 9 as a whole for approval prior to sending it to WG 23. WG 23 has the responsibility of getting the Ada Part through the full ISO approval process.

Resolution [68-9](#r9)

* Does WG 9 want to see and approve of the SPARK Part to the WG 23 Technical Report prior to submitting it to WG 23?

Is the HRG prepared to take on this work? What is Altran’s position on this? There is a brand new version of SPARK (SPARK 2014). Need to make sure that the SPARK Part contains the correct representation of SPARK.

WG 9 would like to have a final view of the SPARK Part prior to sending it to WG 23 for ISO approval process.

[Action Item 68-2](#ai2)

* Standardization of SPARK 2014

Is there an interest in developing an ISO Standard version? Looking for a provision of a home for SPARK.

[Action Item 68-3](#ai3)

Unfinished Business

**New Business**Robert Dewar is very ill. He went into the hospital for some heart work and it turns out that he has very advanced colon cancer. It appears that it is beyond the level of being able to do any kind of therapy.

Resolution [68-11](#r11)

Scheduling of Future Meetings

The next meeting of WG 9 will be held in conjunction with the next ARG meeting in the morning of Friday October 16 2015 (9:00 AM Eastern Time) in Bennington, VT and will be supported with a webex/telecon.

The next meeting of WG 9 will be held in conjunction with the [21st International Conference on Reliable Software Technologies Ada-Europe 2016](http://www.ada-europe.org/conference2016), on <TBD> June 2016 in Pisa, Italy.

Resolution [68-4](#r4)

[AGENDA](#AC)

**Administrative Actions**

#### Resolution 68-1:

The minutes of Meeting #67 contained in document [N548](#N548) are approved.

*This resolution passed unanimously.*

##### Resolution 68-2:

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 appointed as Rapporteur.

The membership of the ARG is designated to be: Steve Baird, John Barnes, Geert Bosch, Randy Brukardt, Alan Burns, Jeff Cousins, Robert Dewar, 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, she 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 68-3:

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.

Alan Burns is continued as Rapporteur.

The membership of the HRG is designated to be: Steve Baird, John Barnes, Patrick de Bondeli, Alan Burns, Rod Chapman, Robert Dewar, 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, Tullio Vardanega, and Brian Wichmann.

The Convenor of WG 9 is authorized to act for WG 9 between meetings in appointing additional members of the HRG. In doing so, she 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 68-4:

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

Meeting #69, in conjunction with the next ARG meeting in the morning of Friday October 16 2015 (9:00 AM Eastern Time) in Bennington, VT.

Meeting #70, in conjunction with the [21th International Conference on Reliable Software Technologies Ada-Europe 201](http://www.ada-europe.org/conference2016)6, on <TBD> June 2016 in Pisa, Italy.

*This resolution passed unanimously.*

#### Review of New Action Items

**Action Item 68-1:**

Tucker Taft will look into AdaCore having the resources to update TR 15942 and report back at meeting #69 (Oct 2015).

**Action Item 68-2:**

Steve Michell will report back to WG 9 at meeting #69 (Oct 2015) with respect to development and content of the SPARK Part.

**Action Item 68-3:**

Tucker Taft will inform Altran of ISO/IEC JTC 1/SC 22/WG 9’s interest in supporting ISO efforts for SPARK and will report back to WG 9 at meeting #69 (Oct 2015).

[AGENDA](#AD)

### Review of New Resolutions

**Resolution 68-5:**

AI12-0003-1/13 2015-03-25 -- Specifying the standard storage pool

AI12-0038-1/07 2015-01-27 -- Shared\_Passive package restrictions

AI12-0041-1/03 2014-11-18 -- Type\_Invariant'Class for interface types

AI12-0090-1/06 2015-01-19 -- Pre- and Postconditions and requeues

AI12-0094-1/03 2015-01-19 -- An access\_definition should be a declarative region

AI12-0103-1/04 2015-01-19 -- Expression functions that are completions in package specifications

AI12-0106-1/05 2015-01-19 -- Write'Class aspect

AI12-0109-1/03 2015-01-20 -- Representation of untagged derived types

AI12-0113-1/03 2014-11-19 -- Class-wide preconditions and statically bound calls

AI12-0117-1/03 2014-11-17 -- Restriction No\_Tasks\_Unassigned\_To\_CPU

AI12-0121-1/03 2015-01-19 -- Stream-oriented aspects

AI12-0124-1/04 2015-01-19 -- Add Object'Image

AI12-0129-1/08 2015-05-05 -- Make protected objects more protecting

AI12-0130-1/03 2015-01-19 -- All I/O packages should have Flush

AI12-0131-1/02 2014-11-13 -- Inherited Pre'Class when unspecified on initial subprogram

AI12-0132-1/02 2014-11-13 -- Freezing of renames-as-body

AI12-0133-1/04 2015-01-19 -- Type invariants and default initialized objects

AI12-0134-1/03 2015-01-19 -- Error in Storage Pool example

AI12-0135-1/05 2015-03-03 -- Enumeration types should be eligible for convention C

AI12-0136-1/03 2015-01-20 -- Language-defined packages and aspect

Default\_Storage\_Pool

AI12-0137-1/03 2015-01-20 -- Incomplete views and access to class-wide types

AI12-0138-1/09 2015-05-05 -- Iterators of formal derived types

AI12-0141-1/02 2015-01-28 -- Add Raise Expression to Introduction

AI12-0142-1/03 2015-02-23 -- Bad subpool implementations

AI12-0145-1/02 2015-01-28 -- Pool\_of\_Subpool returns null when called too early

AI12-0146-1/01 2015-01-21 -- Should say stream-oriented attribute

AI12-0147-1/02 2015-01-28 -- Expression functions and null procedures can be declared in a protected\_body

AI12-0148-1/03 2015-01-29 -- Dangling references

AI12-0149-1/01 2015-01-22 -- Type invariants are checked for functions returning access-to-type

AI12-0150-1/03 2015-01-28 -- Class-wide type invariants and statically bound calls

AI12-0151-1/02 2015-02-26 -- Meaning of subtype\_indication in array component iterators

AI12-0152-1/04 2015-03-25 -- Eliminate ambiguities in raise expression and derived type syntax

AI12-0154-1/03 2015-03-03 -- Aspects of library units

AI12-0157-1/03 2015-05-05 -- Missing rules for expression functions

AI12-0158-1/02 2015-03-26 -- Definition of quantified expressions

AI12-0159-1/04 2015-03-31 -- Corrections from the Corrigendum Editorial Review

These AIs are hereby approved by WG9.

*This resolution passed unanimously.*

**Resolution 68-6:**

ISO/IEC JTC 1/SC 22/WG 9 approves the content of the Technical Corrigendum and its subsequent submission to ISO/IEC JTC 1/SC 22 for final ballot and publication.

*This resolution passed unanimously.*

**Resolution 68-7:**

ISO/IEC JTC 1/SC 22/WG 9 directs ISO/IEC JTC 1/SC 22/WG 9/ARG to develop Technical Specification(s) and an Amendment to ISO 8652 along with the corresponding work plan with a target date of 2018.

*This resolution passed unanimously.*

**Resolution 68-8:**

ISO/IEC JTC 1/SC 22/WG 9 directs ISO/IEC JTC 1/SC 22/WG 9/HRG to evaluate updating TR 24718, Guidance to the Use of the Ravenscar Profile in High Integrity Systems and report the recommended path forward to ISO/IEC JTC 1/SC 22/WG 9 at meeting #70 (June 2016).

*This resolution passed unanimously.*

**Resolution 68-9:**

ISO/IEC JTC 1/SC 22/WG 9 directs ISO/IEC JTC 1/SC 22/WG 9/HRG to deliver the final version of the TR 24772-2 (Ada Part) to the WG 23 Technical Report to WG 9 as a whole for approval prior to sending it to WG 23 (at ISO/IEC JTC 1/SC 22/WG 9 meeting #70 (June 2016)).

*This resolution passed unanimously.*

[AGENDA](#AD)

### Final Consideration of Resolutions

#### Appreciation

**Resolution 68-10:**

Noting ISO/IEC JTC 1/SC 22/WG 9's approval of the Technical Corrigendum and its subsequent submission to ISO/IEC JTC 1/SC 22 for final approval, WG 9 expresses its appreciation to the Corrigendum editors, Randy Brukardt and Jeff Cousins, and to the other members of the ARG for their exacting work on a demanding schedule.

*This resolution passed unanimously.*

**Resolution 68-11:**

ISO/IEC JTC 1/SC 22/WG 9 expresses its deep appreciation to Robert Dewar for all of his contributions to the Ada community and the Ada programming language over many years, and wants to let him know that we are thinking of him at this difficult time.

*This resolution passed unanimously.*

**Editor’s Note:** It is with great sadness the Convenor reports that Robert Dewar passed away on 30 June 2015, 4 days after our meeting.

**Resolution 68-12:**

ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Ada-Europe and Ada Spain for their gracious accommodations for Meeting #68.

*This resolution passed unanimously.*

**Resolution 68-13:**

ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Clyde Roby for his continuing service in maintaining the WG 9 Web Page.

*This resolution passed unanimously.*

##### Resolution 68-14:

ISO/IEC JTC 1/SC 22/W 9 expresses its grateful appreciation to Stephen Michell for acting as secretary for Meeting #68.

*This resolution passed unanimously.*

##### Resolution 68-15:

ISO/IEC JTC 1/SC 22/WG 9 expresses its grateful appreciation to Joyce Tokar for convening Meeting #68.

*This resolution passed unanimously.*

[AGENDA](#AF)

Recess –

The meeting ended at 12:30. The Convenor recessed the meeting subject to her call. ISO/IEC JTC 1/SC 22/WG 9 designated experts may anticipate email ballots to be conducted during the months between this meeting and the next one.

[AGENDA](#AG)

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