

# ISO/IEC JTC1/SC22/WG9 N 646

## Draft Minutes

### Meeting #87 of ISO/IEC JTC 1/SC 22/WG 9

Monday, 10 June 2024

Meeting #87 of WG 9 was held Monday, 10 June 2024. The meeting began at 16:50 UTC. The meeting was face-to-face with remote participants.

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Recess

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## Opening Orders

Call to Order

Appointment of Meeting Secretary

ISO Code of Conduct (CoC) review

[https://standards.incits.org/apps/group\\_public/document.php?document\\_id=138721](https://standards.incits.org/apps/group_public/document.php?document_id=138721)

Welcome and Administrative Arrangements

Approval of the [Agenda](#)

Approval of [N639](#): Meeting #86 Minutes.

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## Reports and Introductions

**Austria – Johann Blieberger (HoD)**

Nothing to report.

**Canada – Brad Moore (HoD)**

Nothing to report.

**Finland – Niklas Holsti (HoD)**

Nothing to report.

**Italy – Tullio Vardanega (HoD)**

Nothing to report.

**Portugal – Luis Miguel Pinho (HoD)**

Nothing to report.

**Spain – Alejandro Mosteo (HoD)**

Nothing to report.

**Switzerland – Nicholas Kaethner (HoD)**

Apologies.

**UK – Jeff Cousins (HoD)**

Nothing to report.

**USA – Tucker Taft (HoD)**

Apologies.

**Guests**[AGENDA](#)

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**Liaison Reports and Introductions****Ada Europe – Dirk Craeynest**

Ada-Europe would like to inform the WG9 convener that its liaison delegation to Meeting #87, held in hybrid mode on Monday 10 June 2024, will consist of Erhard Ploedereder (remote) and Dirk Craeynest (in-person).

As announced in our previous report, this week the Ada-Europe conference (AEiC 2024) [1] returns to Spain, for the first time in Barcelona (hosted by the Barcelona Supercomputing Center), and 9 years after the previous in-person edition in Spain was held in Madrid (Ada-Europe 2015 conference) [2].

[1] <http://www.ada-europe.org/conference2024>

[2] <http://www.ada-europe.org/conference2015>

Preparations are ongoing for the next Ada-Europe conference (AeiC 2025). No decisions have been taken yet, though.

We reconfirm our usual hospitality agreement for WG9, ARG, HRG, and WG23, to co-locate their meetings at our conference.

Production of the Ada User Journal (AUJ) [3] continues, but with some delays due to the busy schedule of the all-volunteer Editorial Board.

The process leading to the merger of the AUJ with Ada Letters still continues, though discussions with ACM take more time than expected and we cannot estimate yet when this will become operational.

Starting with last year's volume (44) some readers of the AUJ opted-in for the opportunity to get only the digital version of new AUJ issues.

[3] <http://www.ada-europe.org/auj>

Last year, Ada-Europe announced that the Ada 2022 Language Reference Manual would be published by Springer in its LNCS series. By now, the master copy is in the hands of Springer, and we hope to get news about the publication date soon. Ada-Europe already polled its membership for their interest, and is ready to place a group order for them, as soon as possible.

**SIGAda** – Tucker Taft (apologies)

**WG 23** – Erhard Plödereder

ISO has let us know its revised policy regarding free availability. It has reestablished the status quo that Technical Reports can be freely available again. WG23 will now have to decide how to proceed as some WG23 documents are ready in International Standard format while others are in Technical Report format, largely dependent on when the drafts were finished. A WG23 meeting will deal with this question in the very near future. Participation by WG9 in this meeting would be most welcome to discuss the path to be taken for the Ada and Spark Parts.

Since my last report to WG9, Python has reached a stage where final review is indicated. The only remaining Part under construction is now the C++ Part.

The present technical status of the Parts from the viewpoint of WG23 is as follows (largely a repeat of my previous report):

- Part 1 as an International Standard is at the DIS stage and will be resubmitted to ISO within the near future.
- The Ada Part as an International Standard is completed.
- The SPARK Part as an International Standard is completed but the ISO editor's wishes are not yet incorporated.
- The Fortran Part as an International Standard has been completed and approved by WG5. Its progression will be voted upon at the next WG23 plenary.
- The C Part is approved by ISO as a Technical Report. The mostly editorial updates to turn it into an international standard are on hold.
- Technical work of WG23 on the Java Part as a TR is completed. However, it needs review by the Java community, which has not yet happened. WG23 is still looking for an interest group willing to perform such a review.
- The Python Part is in final review by the creators. Broader review would then be useful, but unfortunately WG23 was as yet unsuccessful in identifying an addressable community.
- The C++ Part is making slow progress, as fine points of C++ semantics are being discussed by and with the WG21 experts.

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

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## Convenor's Report Activities since the Last Session

ISO and IEC have relaxed the criteria for no-cost availability of deliverables. This change is a direct result of efforts by the SC 22 Chair, working with inputs (horror stories) from the WG Convenors and Project Editors.

The following is a paraphrase of the message received from the SC 22 Chair. My (Pat's) comments are within brackets, inline.

Amendments and revisions of documents that were previously approved for free availability will now be approved as long as their scope has not been expanded. [All of our documents likely satisfy that requirement.] (The full criteria are specified on the last page of JTC 1/AHG 5 N 49.)

There are a few things to note.

\* These new criteria have been approved for a one-year trial period. It could be anywhere from 9-18 months. There is a good chance the new criteria will be extended after the trial period, but there are no guarantees. Consequently, now is the time to push through any documents that we want to get approved under the new criteria.

\*Technical Reports and Technical Specifications have had their eligibility restored. There is no longer a need to upgrade a document to a standard for the sole purpose of getting it approved for no-cost availability.

[This affects our new TS (formerly TR) 24718 on the use of Ravenscar. However, I don't know whether we can argue that the ISO Ada standard itself should be freely available, because it was not in the relatively recent past. To be determined. AI for Pat.]

\*There will be a new web site for free downloads, and it will require people to create an account for themselves and tell ISO and IEC who they are. This does not affect their ability to get documents for free; ISO and IEC are just frustrated that currently there are no data on how widely no-cost documents are being used, and they want to collect some data.

\*The current free download web site contains (rather indirect) wording preventing companies from downloading free ISO and IEC documents and bundling them into larger libraries for sale.

There are two documents that show the results of the changes. If ISO incorrectly rejects an application for no-cost availability, we can show them these documents to explain why they should have been accepted. These documents are:

ISO-IEC\_JTC\_1-AHG\_5\_N49\_REPORT\_FROM\_JTF\_ON\_ISO-IEC\_JTC\_1\_PUBLICLY\_AVAILABLE\_STANDARDS\_PHASE\_1-SUMMARY\_AND\_RECOMMENDATIONS.pdf

and

ISO-IEC\_JTC\_1-AHG\_5\_N50\_IEC\_Board\_and\_ISO\_Council\_decisions\_regarding\_the\_JTF\_on\_freely\_available\_standards\_February\_2024.pdf

[Pat has soft-copies of these documents and will send them to any WG 9 member who wants a copy. They are also in the ISO Documents online.]

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## Project Editor Reports (as needed)

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

In compliance with resolution 44-4 of WG 9, this message is to inform you that the AIs listed below have completed Editorial Review, and are submitted to WG 9 for approval at the next meeting (meeting #87). It is expected that HODs and liaison representatives would take this opportunity to circulate these AIs for comments within their respective organizations, and return comments to the ARG as soon as feasible.

The editorial review period has just concluded, so we do not expect further changes to these AIs. Substantive comments from WG 9 organizations would probably cause the corresponding AIs to be removed from the list submitted to WG 9, as such comments are best addressed at an ARG meeting.

This represents the fourth batch of bug fixes and improvements to Ada 2022.

The AIs can be found online at <http://www.ada-auth.org/AI22-SUMMARY.HTML>. Note that we are in the process of modernizing the format of AIs. A few AIs appear in both text and HTML formats on the Ada-Auth.org website; such AIs were converted to HTML during the deliberations and therefore the HTML version contains the current version of the AI.

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AI22-0026-1/06 2024-03-20 -- Problem with nested type extension check  
AI22-0051-2/03 2024-04-06 -- Preelaborable\_Initialization and contract aspects  
AI22-0055-1/06 2024-04-16 -- Usage Advice  
AI22-0059-1/03 2024-03-20 -- Parallel\_Calls aspect for types  
AI22-0072-1/06 2024-03-20 -- Meaning of direct references to components  
AI22-0080-1/04 2024-03-22 -- Clarify definition of declarative region  
AI22-0081-1/04 2024-03-23 -- Allow named notation for reduction expression arguments  
AI22-0082-1/04 2024-04-24 -- Problems with nonlimited reference types  
AI22-0083-1/07 2024-03-23 -- Treat dynamically-tagged expressions as class-wide in various contexts  
AI22-0084-1/03 2024-02-20 -- Resolution of aspects that are subprograms  
AI22-0085-1/04 2024-02-17 -- Various presentation issues  
AI22-0086-1/05 2024-04-24 -- Conversions of general access-to-object values  
AI22-0087-1/03 2024-02-20 -- Text buffers are initially empty  
AI22-0088-1/03 2024-03-14 -- Privacy and Put\_Image  
AI22-0089-1/05 2024-04-24 -- Current Instance for Single Task/Protected Objects  
AI22-0090-1/05 2024-04-16 -- No\_Return for formal subprogram and access-to-subprogram types  
AI22-0092-1/03 2024-04-16 -- Recommend limited reference types  
AI22-0093-1/03 2024-04-16 -- Problems with No\_Return  
AI22-0095-1/02 2024-02-22 -- The number of values for predefined character types

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

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

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

No comments received; no actions needed.

**TS 24718 (Guide for the Use of the Ravenscar Profile in High Integrity Systems)** (Alan Burns, Tullio Vardanega)

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

**TR 24772-6: (SPARK Part of Programming Language Vulnerabilities)** (Stephen Michell, Erhard Plödereder, Tullio Vardanega)

We want to move them forward to match ISO CS editors requirements.

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## Rapporteur Group Reports (as needed)

### Rapporteur Report ARG

- In Resolution 86-4 WG 9 requested the ARG to submit a draft plan for the next set of enhancements to the Ada language. To be provided by the June 2024 meeting. (Overcome by events regarding the ARG's composition and operating principles.)
- Rapporteur Report - ARG  
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Since the last report (Oct 2023), the ARG has met (electronically) three times (Dec 2023, Feb 2024, May 2024). The AIs approved at the first two of those meetings (and also at the Oct 2023 meeting that was held a week before the last WG 9 meeting) are intended for WG 9 review at this meeting. They were listed in a message Randy sent to the WG 9 mailing list on April 26 and are repeated here:

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AI22-0026-1/06	2024-03-20	-- Problem with nested type extension check
AI22-0051-2/03	2024-04-06	-- Preelaborable_Initialization and contract aspects
AI22-0055-1/06	2024-04-16	-- Usage Advice
AI22-0059-1/03	2024-03-20	-- Parallel_Calls aspect for types
AI22-0072-1/06	2024-03-20	-- Meaning of direct references to components
AI22-0080-1/04	2024-03-22	-- Clarify definition of declarative region
AI22-0081-1/04	2024-03-23	-- Allow named notation for reduction expression arguments
AI22-0082-1/04	2024-04-24	-- Problems with nonlimited reference types
AI22-0083-1/07	2024-03-23	-- Treat dynamically-tagged expressions as class-wide in various contexts
AI22-0084-1/03	2024-02-20	-- Resolution of aspects that are subprograms
AI22-0085-1/04	2024-02-17	-- Various presentation issues
AI22-0086-1/05	2024-04-24	-- Conversions of general access-to-object values
AI22-0087-1/03	2024-02-20	-- Text buffers are initially empty
AI22-0088-1/03	2024-03-14	-- Privacy and Put_Image

AI22-0089-1/05 2024-04-24 -- Current Instance for Single Task/Protected Objects  
AI22-0090-1/05 2024-04-16 -- No\_Return for formal subprogram and access-to-  
subprogram types  
AI22-0092-1/03 2024-04-16 -- Recommend limited reference types  
AI22-0093-1/03 2024-04-16 -- Problems with No\_Return  
AI22-0095-1/02 2024-02-22 -- The number of values for predefined character types  
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The AIs can be found at  
<http://www.ada-auth.org/AI22-SUMMARY.HTML>  
Some of the older AIs are still in text format while the newer AIs are in HTML.

### **Rapporteur Report HRG**

In Resolution 86-6 WG 9 requested the HRG to submit a draft plan for the next set of high-integrity guidelines for the Ada language, possibly in consultation with WG 23. Not included in the text of the resolution was the understanding that "Nothing is planned." would be a reasonable possible response.

Joyce's reply was "Nothing is planned at this time."

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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.

**AI-78-3:** WG 9 members should individually prepare to discuss WG 9 work items after delivery of Ada 202x. Examples could include: additional activities for the HRG along reliability and security lines; co-joining efforts with the real-time workshops in order to produce standards-related documents; adoption of SPARK and its environments into the WG9 scope.

Status: Open.

**AI-81-3:** Pat to get the WG 9 documents transferred to the ISO Documents facility, pending resolution of retaining public free access to the documents in the official ISO document system.

Status: Open. Does not look good for free access to anything other than documents that are specific to a draft.

**AI-82-2:** Alejandro to submit sections of TR 15942 to WG 9 as they become available.

Status: Open. Pat to look for a "mentor" to answer questions but not produce document text. [Tucker Taft volunteers to provide some time as a mentor.]

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## **Committee as a Whole**

- Note retirement of Juan Antonio de la Puente



- Proposed Reclassification of AI22-0069-1

AI22-0069-1 is classified as a Ramification yet has three paragraphs of changed normative wording. Ramification AIs cannot have normative wording.

The AI is already WG 9 Approved, so in theory it is not supposed to be changed. But we cannot have an AI that, by classification, does not make any normative changes, yet does in fact make normative changes.

Proposed Action for WG 9: Allow the AI to be reclassified (by the ARG), without also having WG 9 re-approve it, since the content is unchanged. Only the classification would change.

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## Unfinished Business

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## New Business

Tullio's proposed "Rebooting the ARG" document, as follows:

## General principles

The ARG needs to be "rebooted" from a foundation closer to the original intent and to the ISO stipulations. Some of the clauses below are "old news", which is perfectly fine: their essence was somewhat lost over the last few years and it is opportune to refresh them and put them in context.

1. The Ada programming language shall continue to be an international standard under ISO, and shall continue to evolve as the Ada community at large requires via a regulated process that "listens" to user requirements, designs the features that meet those requirements, and assesses their technical viability via exploratory implementations.
2. ISO/SC 22 Working Group 9 (WG 9) is responsible for the ISO language standard and manages the above process consistent with ISO procedures for developing language standards. The detailed technical work is carried out by the WG 9 subgroup known as the Ada Rapporteur Group (ARG).
3. The scope of the work to be carried out by the ARG is specified by WG 9 as a whole, at the beginning of the ISO SC 22 project corresponding to the language standard revision. Details of the resulting technical work are subject to approval by WG 9 at regular intervals.
4. ARG members are recognised technical experts from within the Ada language community, who commit to operating on a voluntary basis. Per ISO/IEC Directives, Part 1, these experts act in a strictly personal capacity and not as the official representative of any entity.
5. The ARG membership is approved by WG 9. Prospective members that meet the prerequisite at point 4 may propose themselves as candidates or may be sought.
6. ARG members do not receive a stipend for their ARG work, but it is desirable that their employer, if any, fund their ARG effort, including travel costs should they be incurred, in

- full or in part, under the premises of point 4 above. Crowd-funding or sponsorships should fund the Project Editor and the associated editorial work.
7. The ARG should be able to perform exploratory technical work to assess the viability of specific language features. To this end, the ARG should have access to up-to-date, free and open source Ada technology that serves the exploration goals.
  8. All Ada vendors shall be invited to contribute to the ARG work, in a manner consistent with points 4, 5, and 6.
  9. Ada vendors are, of course, entitled to run their own internal exploratory implementation teams, pursuing the vendors' own agenda on language features of interest. WG 9 will actively facilitate regular "technical alignment meetings" among all such teams, to reach a technical agreement on what recommendations for language standardization should be forwarded to WG 9. The existence of such teams should be declared explicitly to WG 9 for the sake of arranging these meetings.
  10. The ARG decisions are determined by consensus, as defined in ISO/IEC Guide 2:2004:

"consensus: General agreement, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments.  
NOTE Consensus need not imply unanimity."

Per ISO/IEC Directives, Part 1, "sustained oppositions" are views expressed at minuted meetings and which are maintained by an important part of the concerned interest and which are incompatible with the committee consensus. Those expressing sustained opposition have a right to be heard, and the following approach is recommended:

- If the leadership determines that there is a sustained opposition, it is required to try to resolve it in good faith.
- However, a sustained opposition is not akin to a right to veto. The obligation to address sustained opposition does not imply an obligation to resolve them successfully.

The responsibility for assessing whether or not a consensus has been reached rests entirely with the leadership. This includes assessing whether there is sustained opposition or whether any sustained opposition can be resolved without compromising the existing level of consensus on the rest of the document. In such cases, the leadership will register the opposition and continue the work.

This operating principle shall be documented in the ARG Procedures.

11. Recommendations for technical changes to the language standard must come to WG 9 solely from the ARG. This prescription has three ramifications:
  - a. To obtain approval of feature proposals of their interest, vendor-internal exploratory implementation teams should persuade the ARG at technical alignment meetings. Failing to reach consensus at such meetings shall prevent WG 9 from considering those recommendations.
  - b. It is expected that all recommendations put forward by the ARG to WG 9 are agreed beforehand by the ARG, including those at technical alignment meetings. In the event that some vendors disagree on any such recommendations, the ARG may continue to put them forward to WG 9, with a clear and transparent record of the points of disagreement.

- c. WG 9 should promulgate into the standard those amendment features that have enjoyed agreement at technical alignment meetings. For features that are not in that situation but that the ARG deems essential in spite of lack of agreement, WG 9 may consider to include them in the standard amendment as optional Specialized Needs Annexes. Because these Annexes are optional, vendors need not implement them to claim conformance with the standard, but their implementation, if ever undertaken, must conform with the language standard.

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### **Scheduling of Future Meetings**

Per Resolution 86-3, the October 2024 meeting will be held on the 10<sup>th</sup> at 16:30 UTC and will be virtual.

There will be a December 2024 WG 9 meeting. The meeting will be virtual. Pat to send email to collect date of either 4<sup>th</sup> or 11<sup>th</sup>. The purpose of the meeting will be to discuss Tullio's proposal (AI-87-2) for the implementation of the general principles.

The June 2025 meeting will be decided at the December meeting.

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### **Review of New Action Items**

**AI-87-1:** Pat will go through the process of requesting TS 24718 to be freely available (but not Ada 2022 IS).

**AI-87-2:** Tullio will identify a proposed way to implement the General Principles, and will present it at the December meeting.

**AI-87-3:** Pat to send email to determine when the December meeting will be held, i.e., either the 4<sup>th</sup> or the 11<sup>th</sup>. The exact date for the June 2025 meeting will be identified at that meeting.

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### **Final Consideration of Resolutions**

**Resolution 87-1:** The meeting minutes of meeting #86 are approved.

**Resolution 87-2:** WG 9 approves the AI-22 AIs previously approved by the ARG in the recent ARG report.

**Resolution 87-3:** We will have a December 2024 meeting to discuss Tullio's Way Forward.

**Resolution 87-4:** WG 9 wishes to express our appreciation to Juan Antonio de la Puente for his many years of dedicated service.

**Resolution 87-5:** WG 9 approves the reclassification of AI22-0069-1 as a Binding Interpretation.

**Resolution 87-6:** WG 9 approves the proposed General Principles document. To be an N-doc in the WG 9 document repository.

**Resolution 87-7:**

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.

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 Plödereder, 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 87-8:**

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, Arnaud Charlet, Jeff Cousins, Gary Dismukes, Claire Dross, Robert Duff, Edward Fish, Niklas Holsti, Pascal Leroy, Brad Moore, Alejandro Mosteo, Jean-Pierre Rosen, Justin Squirek, Tucker Taft, Tullio Vardanega, and Richard Wai.

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.

**Appreciation 87-9:** ISO/IEC JTC 1/SC 22/WG 9 expresses its grateful appreciation to Miguel Pinho for acting as secretary for Meeting #87.

**Appreciation 87-10:** ISO/IEC JTC 1/SC 22/WG 9 expresses its grateful appreciation to the Convenor, Pat Rogers, for his support of WG 9.

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## **RECESS**

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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.