## INCITS Annual Report

## Annual Report for: JTC 1 / SC 22 / WG 9

## Covering the Period from 1 January 2016 to 1 January 2017

#### Informal Description of Work:

Brief description of the External US TAG, which will help INCITS members remember what the US TAG does and can also provide useful information for INCITS marketing materials. The description could be based on the formal program of work, but should be reviewed to determine if it needs to be updated or enhanced.

SC 22 WG 9 is responsible for the development and coordination of ISO standards and Technical Reports for Programming Language Ada. Ada is the language of choice for important parts of the real-time, embedded systems community as well as aerospace and defense segments. Ada is also being used in other market segments, such as automotive, railway, and banking.

WG 9 is updating the Ada Conformance Test Suite to be in alignment with the new revision of the standard (ISO/IEC 8652:2012). We are working on an update to the Ada and SPARK Parts of the SC 22 WG 23 Technical Report on Vulnerabilities to be in alignment with the new version of that TR.

#### Executive Summary

The Executive Summary should address the overall status of the External US TAG in areas such as the current level of participation, general reasons for any delays in progressing standards activities. This section should be written to provide INCITS an overview of the current situation within the External US TAG.

The focus of WG 9 over the year was to conduct the various items of work. The work of WG 9 was conducted with the following priorities in its work:
• (highest priority) Respond to Defect Reports and/or Ada Issues on ISO/IEC 8652;
• Updating the Ada Conformity Assessment Test Suite to be in alignment with the new revision of the standard (ISO/IEC 8652:2012)
• Update to the Ada and SPARK Annexes to the WG 23: Vulnerabilities Guidelines Type III Technical Report;
• Develop Technical Reports or Standards improving the Ada libraries;
• Consider proposals for extending the language;
Given the guidance provided in the ISO directives, National Bodies are designating experts to participate in WG 9. WG 9 has representatives from Canada, Italy, Spain, Switzerland, Portugal, UK, and US. Germany’s support continues to be intermittent. Belgium is still working on resuming their support. France withdrew their support as of 2014 and has not resumed participation.
The position of chair has transitioned from Dr. Joyce Tokar to Dr. Patrick Rogers, as of September. The meeting #71 attendees formally expressed their appreciation for Dr. Tokar’s years of service in that capacity.

#### Accomplishments

This section should address significant accomplishments since the previous annual report. This should be free form and not exceed a page. It should include a list of significant publications during the past year. A significant publication is one that, in the Chairman's judgment, contains information that could be useful to someone desiring descriptive background information not incorporated in draft standards.

Completed Projects:
Technical Corrigendum for ISO/IEC 8652:2012 (Ed 3), Information technology – Programming languages – Ada: Resolution of defects and issues identified in 8652:2012, was published by the Geneva-based International Organization for Standardization (ISO) in Feb 2016. The Corrigendum was developed under the auspices of Working Group ISO/IEC JTC1/SC22/WG9, in particular by WG9's Ada Rapporteur Group (ARG).

Projects Underway
Ada Annex to WG 23 Technical Report on Vulnerabilities: Update Ada Annex for ISO/IEC TR 24772: Technical Report on Vulnerabilities based on changes to the TR developed by WG 23.

SPARK Annex to WG 23 Technical Report on Vulnerabilities: Update a SPARK Annex for ISO/IEC TR 24772: Technical Report on Vulnerabilities based on changes to the TR developed by WG 23.

Maintenance of ISO/IEC 14519:2001, Ada Binding to POSIX

TR 24718: Update to TR 24718, Guide for the use of the Ada Ravenscar Profile in high integrity systems, based on the Technical Corrigendum.

TR 15942: Update TR 15942, Guide for the use of the Ada programming language in high integrity systems, based on the Technical Corrigendum.

#### Challenges

Significant challenges since previous report. What problems have been faced? Are the issues resolved? If not, what is the plan for resolving the issues? If approved milestones exist, status should be in terms of these milestones. Any delays should be explained and future plans highlighted. This section should also address TAG activities, including changes to the programme of work.

Expected challenges in the next twelve months. Is controversy expected for approving a standard? Is there likely to be a huge mass of public comments? This section should also address TAG activities, if any.

*NOTE: Issues not meant for broader review (i.e., personnel and international issues) should be provided in a separate document of “*External US TAG *concerns” for Executive Board review.*

SC 22 WG 9 was pleased to see the continuation of SC 22 WG 23 (Working Group on Software Vulnerabilities) as much of their work is complementary to the work underway in SC 22 WG 9.

Some European national bodies are unable to support their Ada technical groups at this time

#### Liaison Activities

List the groups with which the External US TAG liaises. Comment on any significant activities. Indicate any liaison activities conducted during the year both nationally and internationally. Explain whether future work will require you to establish new liaisons. Spell out all titles, descriptions, etc. followed by the respective acronym, if applicable. Include a brief description of why the liaison was established, maintained or discontinued.

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

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

WG 9 has a liaison to SC 22/WG 23, Erhard Ploedereder (Germany).

WG 9 has a liaison with FORTRAN, INCITS PL/22.3, Van Snyder (NASA) is the representative from INCITS PL/22.3.

#### Membership and Officers

The External TAG Administrator will provide a list of the members and identify trends in membership or other membership issues that would affect the ability of the External US TAG to meet its workload. The list of officers (both elected and appointed) gives some indication of who the key people are and how long they have served. *Please append the membership list (organization names only) to the end of the report.*

National body participation in WG 9 is stable. There has been long-time participation from Canada, Germany, Italy, Switzerland, UK, and US. Spain and Portugal have joined WG 9 as an active member (Note: Belgium continues to work on their funding issues to continue to participate in WG9).

#### External US TAG Officers:

The name and organization of each person that held an office during the year should be included. If an office was held by more than one person, list each and indicate dates in office.

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| **Officer Position (e.g., Chairman)** | **Name and organization represented** |

Chair, AdaCore:: Dr. Patrick Rogers, as of 9/2016
Chair, Pyrrhus Software, LLC:: Dr. Joyce Tokar, to 9/2016
Vice Char, N/A
Secretary, IDA:: Mr. Clyde Roby, since 9/2007
International Representative, N/A

#### Future Trends and Related Technical Activities

This section allows for comment on the market relevance of this area of standardization. Areas that should be addressed are the number of companies participating in the activity, new members attracted to this area of work, and survey data regarding the economic impact of this area of standardization should be cited.

The External US TAG is invited to prepare a brief analysis of technical trends leading to future standardization needs, both national and international, and how this may affect its program of work. In the interest of more proactive and strategic planning we urge you to share your insights on trends surrounding your areas of expertise. Note that these future trends are not intended to deal with future plans on projects you are about to define as described in Section 3 above. The future trends described here need not be limited to the range of your current projects but instead go beyond your present technological focus.

In considering related technical activities, it would be helpful if the report included a description of where this TAG's work fits within the realm of IT, including links to other groups.

To aid you in your response to this future trends section these kinds of questions should be considered:

1. What is your vision of where the technology for your area of work is headed in the next 3-5 years from now?
2. What are the emerging technologies or user requirements that might require some level of standardization?
3. Where do you see your work growing and possibly linking (e.g. bindings, profiles) with or requiring close coordination with other SDOs?

The INCITS External US TAG should report on its future standardization plans and briefly describe probable project proposals. It is in this section that a representation of the relationship of the External US TAG projects would be helpful.

Eight to nine national bodies regularly participate in the work of WG 9; most of them regularly attend meetings. Each of the NBs typically votes at the WG 9 level. Those that are P-members of SC 22 typically vote at that level.

Implementation of the Category C Liaisons with Ada-Europe and ACM SIGAda has broadened the base of technical review and support for language standardization.

All new work item suggestions are screened by the requirement for active support from five national bodies. This has worked well, resulting in explicit commitments from national bodies supporting a possible project.
WG 9 uses Rapporteur Groups to perform the drafting of its technical documents. This allows WG 9 itself to meet only twice per year – for approximately one-half-day at each meeting. When appropriate, WG 9 delegates initial drafting to national bodies working with Rapporteur Groups. (For example, the US contributed the draft of the revision to ISO/IEC 8652.)

The following deliverables are anticipated during the next 12 months:
• Continue to address Ada Issues
• Work on updating the Ada Conformance Assessment Test Suite to be in alignment with the revised standard
• Update to the Ada and SPARK Annexes to the WG 23 Technical Report on Vulnerabilities
• Update to TR 24718, Guide for the use of the Ada Ravenscar Profile in high integrity systems.
• Update TR 15942, Guide for the use of the Ada programming language in high integrity systems.

Working to coordinate our activities with other related organizations to broaden our user community.

#### Other Administrative Information

This section can be used to provide for the reporting of any procedural matters the External US TAG feels should be brought to the attention of INCITS.

SC 22 WG 9 conducts semi-annual meetings that are scheduled to coincide with the major conferences organized by major professional societies in this area.

Recent Meetings
• Meeting #70 of WG9 was held in conjunction with the 21th International Conference on Reliable Software Technologies Ada-Europe 2016, Friday morning 17 June 2016 in Pisa, Italy.

• Meeting #71 of WG9 was held the morning of Saturday 8 October 2016 in Pittsburgh, PA in conjunction with ACM HILT 2016, the ACM SIGAda’s High Integrity Language Technology International Workshop on Model-Based Development and Contract-Based Programming.

Future Meetings
• Meeting #72 of WG9 will be held in conjunction with the 22nd International Conference on Reliable Software Technologies Ada-Europe 2017, Friday 17 June 2017 in Vienna, Austria.

#### Marketing Information

Include at least one item that can be used to publicize the work of the group.

The publication of the Technical Corrigendum highlights the steady and orderly evolution of the Ada programming language. New versions of the standard are published by ISO at roughly ten-year intervals. Between releases, the ARG reviews the standard for completeness, correctness, and unambiguity, and also considers and analyzes proposed updates ranging from minor wording changes to the addition of major new features. Especially in the case of new features, the ARG performs a careful analysis of the tradeoffs among the design choices, taking into account the requirements of all the stakeholders (existing Ada users, potential new users, compiler implementers, third party tool providers, educators and researchers, etc.) This process has worked successfully since the language's inception more than thirty years ago, resulting in precisely defined standards that are issued in a timely fashion and that meet the evolving needs of the Ada community.

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| Committee Membership |

Pyrrhus Software, LLC
AdaCore
AXE