

Instructions to the Ada Rapporteur Group from SC 22/WG 9 for Preparation of Amendment 2 to ISO/IEC 8652

Draft 3, 21 February 2009

The ARG is instructed to prepare a working draft of an amendment to ISO/IEC 8652. The main purpose of the Amendment is to make needed corrections to the language standard. A secondary purpose is to address identified problems in Ada that are interfering with Ada's usage or adoption, especially in its major applications areas (such as high-reliability, long-lived real-time and/or embedded applications and very large complex systems).

The resulting standard is intended to be a freshening of the language, rather than a major update. The intent is that it will still be reasonable to refer to it as Ada 2005, rather than needing a new name; language stability is considered an important goal. Therefore, the resulting language changes should be relatively modest.

The resulting standard will be published as an Edition, rather than yet another separate document. However, this desire should not trump the desire for language stability (subclauses should continue to use their current numbering, for instance).

The ARG is requested to pay particular attention to the following two categories of improvements:

- A) Improvements that will maintain or improve Ada's advantages, especially in those user domains where safety and security are prime concerns;
- B) Improvements that will remedy shortcomings in Ada.

Improvements of special interest in these categories are:

- Improving the use and functionality of the predefined containers;
- Improving the ability to write and enforce contracts for Ada entities (for instance, via preconditions);
- Improving the capabilities of Ada on multi-core and multi-threaded architectures;
- Improving the safety, use, and functionality of access types and dynamic storage management.

These are all examples of improvements in category A, except for the last which is an example of an improvement in category B.

In selecting features for inclusion in the amendment, the ARG should consider the following factors:

- Implementability (vendors concerns). Can the proposed feature be implemented at reasonable cost?
- Need (users concerns). Does the proposed feature fulfill an actual user need?
- Language stability (users concerns). Would the proposed feature appear disturbing to current users?
- Competition and popularity. Does the proposed feature help improve the perception of Ada, and make it more competitive with other languages?
- Interoperability. Does the proposed feature ease problems of interfacing with other languages and systems?
- Language consistency: Is the provision of the feature syntactically and semantically consistent with the language's current structure and design philosophy?

In order to produce a technically superior result, it is permitted to minimally compromise backwards compatibility when the impact on users is judged to be acceptable.

The use of secondary standards should be minimized; secondary standards should be proposed only when they would include material so important as to require standardization but so voluminous as to preclude inclusion in the Ada language standard.

WG 9 targets the following schedule for the development of the amendment:

- November 2008: WG 9 passes resolution for development of Amendment 2.
- No later than June 2009: WG 9 approves *Instructions to the ARG* for the development of Amendment 2.
- June 2009: Receipt of the final AIs from groups other than WG 9 or delegated bodies.
- November 2009: Receipt of the final AIs other than those to correct the Standard.
- June 2010: Receipt of the final AIs. Approval of the detailed scope of the Amendment by WG 9.

- Nov 2010-Feb 2011: Informal circulation of draft to National Bodies, receipt of comments and preparation of final text.
- Mar-Apr 2011: Submission of draft, WG 9 e-mail ballot.
- May-Sep 2011: SC 22 FPDAM ballot (will require prior arrangement with SC 22)
- Late 2011: JTC 1 FDAM ballot
- Early 2012: Publication (of an Edition, not of Amendment 2 alone).

Drafting discussion: (Randy Brukardt, ARG Editor)

This document was based directly on the October 10, 2002 *Instructions to the ARG* that outlined the development of Amendment 1 to ISO/IEC 8652:1995. Major modifications were:

- update the schedule to reflect the intent of WG 9 as expressed by the discussion at the meeting;
- revise the instructions to suggest "modest improvements" and to mention the intent that this is not a major change from Ada 2005 (so much so that continuing to call it Ada 2005 should be possible) – again as expressed at the meeting;
- to note that the final product is expected to be a new edition, and not just another separate document of the standard;
- to remove the various examples of potential updates and replace them by a set discussed at the February ARG meeting. These updates were felt to be the most productive areas of improvement for Ada.

Other than these changes, the document was left unchanged. In particular, the categories of changes to consider, the factors to use when considering changes, and the advice about compatibility are from the original instructions. These all proved to be very appropriate when developing Amendment 1. Specifically, the only changes to the paragraphs between "The ARG is requested..." and "The use of secondary standards..." was to delete examples of their meaning and to insert the set of paragraphs describing areas of special interest. [Note: The ARG decided to add the word "minimally" to the compatibility instructions at its February meeting.]

The proposed schedule was based on our experience with Amendment 1; in particular, we didn't leave enough time between the approval of the scope and the completion of the work for "debugging" the standard. (That includes finding and removing interactions between features, and finding omissions.) I also assumed three ARG and two WG 9 meetings a year (more would likely stretch member's resources). Otherwise, I used our actual times; in general, we followed the original schedule for Amendment 1 perfectly until the "debugging" stage. I am hopeful that we won't need quite so much review time (we're further along now than at the start of the Amendment 1 project), but ignoring history would be silly. And programmers never, ever schedule enough time for debugging. [This schedule was reviewed and approved by the full ARG at its February meeting.]