INTERNATIONAL STANDARD

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Information technology — Programming languages — Ada: Conformity assessment of a language processor

Technologies de l'information — Langages de programmation — Ada: Évaluation de conformité d'un processeur de langage

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 18009 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*.

Introduction

The Ada language community has a strong tradition of “compiler validation,” meaning **conformity assessment**. Originally, the validation program was administered under the auspices of the United States Department of Defense, as the use of “validated” compilers was a condition of usage in defense programs. Three key elements of this validation program were the conduct of **testing** by independent **testing laboratories**, resolution of any **test issues** by a single **authority** (the “Ada Validation Organization”), and world-wide acceptance of the “validation certificates” resulting from successful **conformity testing**. In 1998, the U.S. DoD elected to turn the responsibility for **conformity assessment** over to the private sector. This **International Standard** provides the basis for private sector **conformity assessment**. It is the intent of this **International Standard** to ratify existing practices for Ada **conformity assessment**.

In general terms, this **International Standard** states that independent **Ada Conformity Assessment Laboratories** (**ACAL**) would perform the **conformity assessment**. The various **ACALs** would collaborate on the formation or designation of a single **Ada Conformity Assessment Authority** (**ACAA**). The **ACAA** would manage and administer an **Ada Conformity Assessment Test Suite** (**ACATS**). Each **ACAL** would perform **conformity assessments** by applying the **ACATS** in accordance with an **Ada Conformity Assessment Procedure** (**ACAP**). Each **ACAL** would issue **certificates of conformity**. The **ACAA** would resolve any **test issues** that may arise during **conformity assessments** performed by **ACALs** and would approve **test reports** and **certificates of conformity** before they are issued to the **clients** of the **ACAL**.

The **ACAA** would act in the role of the current de facto “Ada Validation Organization” and its “Fast Reaction Team” and would also participate in the work of ISO/IEC JTC1/SC22/WG9 in order to apprise that group of possible defects discovered in the language **standard** as a result of **conformity assessment**.

This **International Standard** does not reuse an existing **test method** designed for any other language [as suggested by ISO/IEC Guide 2, 6.7.1] but instead describes a method that, although new to standardization, has a long de facto tradition within the Ada community. This method is based upon a well established method that has already been in uniformly applied usage for 15 years. Continuity with this tradition is considered essential to the success of the Ada language **standard**.

This **International Standard** has the following goals:

- This **International Standard** should permit a smooth transition from the current de facto method of “Ada compiler validation” to the standardized method.

- Users of Ada **processor certifications** should gain the same degree of assurance as is gained with the current de facto **certification** mechanism.

This **International Standard** was prepared by Working Group 9 (*Ada*) of Subcommittee 22 (*Programming languages, their environments and system software interfaces*) of Joint Technical Committee 1 (*Information technology*). It establishes **requirements** for assessing the **conformity** of Ada language **processors** to the **requirements** of the Ada language **standard**.

Portions of this **International Standard** are based upon U.S. Department of Defense procedures for Ada compiler “validation.” The co-operation of the U.S. DoD in contributing the appropriate documents is gratefully acknowledged.

ISO, IEC, JTC1 and SC22 have already prepared a number of **documents** related to **conformity assessment**. Rather than make normative references to these **documents**, this **International Standard** incorporates appropriate excerpts of their text, in some cases paraphrasing the text, changing the normative strength, or adapting the **provision** to the specific circumstances. In each case, the original source of the **provision** is noted in brackets. Therefore, these **documents** are listed in the bibliography of this **International Standard**, rather than in Clause 3, Normative reference.

In order to relate better to the large body of existing work, particular attention has been paid to terminology. Terms defined in this **International Standard** have been presented in bold typeface.

Information technology — Programming languages — Ada: Conformity assessment of a language processor

1 Scope

1.1 This **International Standard** establishes **requirements** for certifying an assessment that an Ada language **processor conforms** to the **requirements** of the Ada language **standard**, ISO/IEC 8652. It places **requirements** on the **organization** that performs the assessment, the assessment procedures, and the **test suite** used in the assessment. Finally, it places **requirements** on the form for the **certificate of conformity**.

1.2 This **International Standard** concerns only the **assessment of conformity** to the language **requirements** of ISO/IEC 8652. It does not concern the assessment of any other characteristics of a language **processor** or of the construction process used by the **manufacturer** of the language **processor**.

NOTE In the sense of [ISO/IEC Guide 23], the Ada language **standard**, ISO/IEC 8652, is to be regarded as a *standard for a specific property* rather than a *comprehensive product standard*.

1.3 This **International Standard** is intended to be primarily suitable for use by a **third party authority** although portions of it may also be applied by a supplier (first party) or by a user or purchaser (second party).

1.4 An Ada language **processor** may be claimed to **conform** to the **requirements** of ISO/IEC 8652 regardless of the application of this **International Standard**. This **International Standard** prescribes the method for obtaining a **certification** that an Ada language processor **conforms** to ISO/IEC 8652. Customers desiring to acquire a language **processor** certified as **conforming** should explicitly require that **certification** by citing this **International Standard**.

1.5 **Certification** should not be construed as guaranteeing that the certified product is free of **non-conformities** or defects; it only certifies that no evidence of **non-conformity** was found during the **certification** process.

2 Conformity

2.1 An Ada language **processor** is said to be “certified as conforming” if so assessed by an **Ada Conformity Assessment Laboratory** (**ACAL**) and the **Ada Conformity Assessment Authority** (**ACAA**). In performing this **certification**, the **ACAL** and the **ACAA** shall consider the results of **testing** performed by the **ACAL**. The **ACAL testing** shall be performed in accordance with the **Ada Conformity Assessment Procedure** (**ACAP**) using the **Ada Conformity Assessment Test Suite** (**ACATS**).

2.2 This International Standard places requirements upon the ACAL, ACAA, ACAP and ACATS.

NOTES

1 **Conformity** of an “implementation” of the Ada language **standard** is defined by subclause 1.1.3 of ISO/IEC 8652. The term “language **processor**” or “compiler” in this **International Standard** is to be regarded as synonymous with the term “implementation” as used in ISO/IEC 8652. This **International Standard** prescribes **requirements** for the assessment that a language **processor conforms** to the **requirements** of ISO/IEC 8652.

2 An **International Standard** on **test methods**, such as this one, does not imply any obligation to carry out any kind of **test**. It merely states the method by which the assessment, if required and referred to (for example, in the same or another **standard**, or in a **regulation**, or in contract documents), should be carried out. [ISO/IEC Directives, Part 2, subclause 6.5]

3 Normative reference

The following **normative documents** contain **provisions** which, through reference in this text, constitute **provisions** of this **International Standard**. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this **International Standard** are encouraged to investigate the possibility of applying the most recent editions of the **normative documents** indicated below. For undated references, the latest edition of the **normative document** referred to applies. Members of ISO and IEC maintain registers of currently valid **International Standards**.

ISO/IEC 8652, *Information technology — Programming languages — Ada*.