INTERNATIONAL STANDARD

ISO/IEC 13886

First edition
1996-03-15

Information technology — Language-Independent Procedure Calling (LIPC)

Technologies de l'information — Appel de procédure indépendant du langage (LIPC)

Reference number
ISO/IEC 13886:1996(E)

Contents

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 organizations 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.

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.

International Standard ISO/IEC 13886 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces.*

Annexes A to D of this International Standard are for information only.

Introduction

The purpose of this International Standard is to provide a common model for language standards for the concept of procedure calling. It is an enabling standard to aid in the development of language-independent tools and services, common procedure libraries and mixed language programming. In mixed language applications, server procedures would execute on language processors operating in server mode, and the procedures would be called from language processors operating in client mode. Note that the languages need not be different, and if the processors are the same the model collapses into conventional single processor programming.

Most programming languages include the concepts of procedures and their invocation. The main variance between the methods used in various programming languages lies in the ways parameters are passed between the client and server procedures. Procedure calling is a simple concept at the functional level, but the interaction of procedure calling with datatyping and program structure along with the many variations on procedure calling and restrictions on calling that are applied by various programming languages transforms the seemingly simple concept of procedure calling into a more complex feature of programming languages.

The need for a standard model for procedure calling is evident from the multitude of variants of procedure calling in the standardized languages. The existence of this International Standard for Language-Independent Procedure Calling (LIPC) does not require that all programming languages should adopt this model as their sole means of procedure calling. The nominal requirement is for programming languages to provide a mapping to LIPC from their native procedure calling mechanism, and to be able to accept calls from other programming languages who have defined a mapping to this International Standard.

This International Standard is a specification of a common model for procedure calling. It is not intended to be a specification of how an implementation of the LIPC is to be provided. Also, it is important to note that it does not address the question of how the procedure call initiated by the client mode processor is communicated to the server mode processor, or how the results are returned. The model defined in this International Standard is intended for use by languages so that they may provide standard mappings from their native procedure model. This International Standard depends on the International Standard for Language-Independent Datatypes, ISO/IEC 11404, for the definition of the datatypes that are to be supported in the model for LIPC that it provides.

Information technology – Language-Independent Procedure Calling (LIPC)

1 Scope

This International Standard specifies a model for procedure calls, and a reference syntax for mapping to and from the model. This syntax is referred to as the Interface Definition Notation. The model defined in this International Standard includes such features as procedure invocation, parameter passing, completion status, and environmental issues relating to non-local references and state.

This International Standard does not specify:

- the method by which the procedure call initiated by the client mode processor is communicated to the server mode language processor;
- the minimum requirements of a data processing system that is capable of supporting an implementation of a language processor to support LIPC;
- the mechanism by which programs written to support LIPC are transformed for use by a data processing system;
- the representation of a parameter.

NOTE – Originally it was the intention to align the definitions and concepts of this International Standard with those of the RPC standard (ISO/IEC 11578). Unfortunately, in a late stage of the development process of the RPC standard it was decided to use for that standard a completely different approach. Hence the intended alignment did not materialize.

Annex D gives an overview of the differences between the concepts as defined by this International Standard and the RPC standard.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of current valid International Standards.

ISO 2375:1985, *Data processing – Procedure for registration of escape sequences.*

ISO/IEC 10646-1:1993, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane.*

ISO/IEC 11404:1996, *Information technology – Programming languages, their environments and system software interfaces – Language-independent datatypes.*

ISO/IEC 8824-1:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

ISO/IEC 8825-1:1995, *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*