TECHNICAL REPORT

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Information technology — An operational model for characters and glyphs

Technologies de l'information — Modèle pour l'utilisation de caractères graphiques et de glyphes

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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 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.

The main task of a technical committee is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— Type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— Type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— Type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 15285, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 2, *Coded character sets*, and Subcommittee SC 18, *Document processing and related communication* (which has since been reorganized into SC 34, Document description and processing languages).

Introduction

People interpret the meaning of a written sentence by the shapes of the characters contained in it. For the characters themselves, people consider the information content of a character inseparable from its printed image. Information technology, in contrast, makes a distinction between the concepts of a character's meaning (the information content) and its shape (the presentation image). Information technology uses the term *character* (or *coded character*) for the information content, and the term *glyph* for the presentation image. A conflict exists because people consider characters and glyphs equivalent. Moreover, this conflict has led to misunderstanding and confusion. This Technical Report provides a framework for relating characters and glyphs to resolve the conflict because successful processing and printing of character information on computers requires an understanding of the appropriate use of characters and glyphs.

Historically, ISO/IEC JTC 1/SC 2 has had responsibility for the development of coded character set standards such as ISO/IEC 10646 for the digital representation of letters, ideographs, digits, symbols, etc. ISO/IEC JTC 1/SC 18 has had responsibility for the development of standards for document processing, which presents the characters coded by SC 2. SC 18 standards include the font standard, ISO/IEC 9541, and the glyph registration standard, ISO/IEC 10036. The Association for Font Information Interchange (AFII) maintains the 10036 glyph registry on behalf of ISO.

This Technical Report is written for a reader who is familiar with the work of SC 2 and SC 18. Readers without this background should first read Annex B, "Characters", and Annex C, "Glyphs".

This edition of the Technical Report does not fully develop the complex issues associated with the Chinese, Japanese, Korean, and Vietnamese ideographic characters used in East Asia. In addition, although it discusses the process of rendering digital character information for display and printing, it avoids discussing the inverse process of character recognition (that is, converting printed text into character information in the computer).

Information technology —
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1 Scope

The purpose of this Technical Report is to provide a general framework for discussing characters and glyphs. The framework is applicable to a variety of coded character sets and glyph-identification schemes. For illustration, this Technical Report uses examples from characters coded in ISO/IEC 10646 and glyphs registered according to ISO/IEC 10036.

This Technical Report

— differentiates between coded characters and registered glyphs

— identifies the domain of use of coded characters and glyph identifiers

— provides a conceptual framework for the formatting and presentation of coded character data using glyph identifiers and glyph representations

This Technical Report describes idealized principles that were not completely followed in coding characters for ISO/IEC 10646 and in registering glyphs according to ISO/IEC 10036. The fact that ISO/IEC 10646, ISO/IEC 10036, and other standards do not completely follow the principles in the model does not invalidate the model and does not diminish the utility of having the model.

2 References

ISO/IEC 9541-1: 1991, *Information technology — Font information interchange — Part 1: Architecture.*

ISO/IEC 10036: 1996, *Information technology — Font information interchange — Procedures for registration of font-related identifiers.*

ISO/IEC 10180: 1995, *Information technology — Processing languages — Standard Page Description Language (SPDL).*

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