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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.

In exceptional circumstances, 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), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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

ISO/IEC TR 15413 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 34, *Document description and processing languages*.

Introduction

The technology to access large font libraries has become an increasingly important concern of document processing, electronic publishing, and application support facilities such as printing and display services.

This Technical Report specifies a system-independent interface to font services that provides for distribution, management and use of font resources.

This Technical Report is organized as follows:

- The general model of font services and its relationship to other parts of the document processing model are specified.
- The Abstract Font Service Interface (AFSI), which defines the facilities to access font resources in a system-independent way, is specified.
- Statements covering the conformance of font service systems are provided.

NOTE The first approach of JTC1/SC18 for Font Services was taken to develop an International Standard with two parts:

- Part 1: Abstract Service Definition
- Part 2: Protocol Specification.

During the standardization activities JTC1/SC18 found that the protocol for font resource interchange was still under technical development and changed the target to Technical Report for Font Services - Abstract Service Definition.

Information technology — Font services — Abstract service definition

1 Scope

This Technical Report provides the access facilities which can be used for creation, distribution, management, and use of font resources conforming to the architecture of ISO/IEC 9541.

This Technical Report is intended to be used in a variety of configurations meeting a variety of connectivity needs, including communication protocols, application programming interfaces, and application services.

This Technical Report defines an abstract interface to the font access facilities. This Technical Report will not specify the concrete syntax for a language binding of font service facilities, nor the concrete protocol used to communicate between the systems that provides or uses the font service facilities.

This Technical Report is intended for use in a wide variety of document processing environments, including:

- authoring;
- formatting and page layout;
- printing and display services;
- electronic publishing via removable media and/or information network.

2 References

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

ISO/IEC 9541-3:1994, *Information technology — Font information interchange — Part 3: Glyph shape representation*.

ISO/IEC 10179:1996, *Information technology — Processing languages — Document Style Semantics and Specification Language (DSSSL)*.

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

3 Terms and definitions

For the purposes of this Technical Report, the following terms and definitions apply.

3.1

font manager

font service user that installs font resources into a system environment, manages the font usage and administers associated contracts (regarding access, royalties, etc.)

3.2

font property

property as defined in ISO/IEC 9541-1

3.3

font provider

font service user that designs typefaces, creates new font resources for sale and distribution (Design Source) or acquires font resources on consignment or for re-marketing with or without intervening modification (Data Source)

3.4

font query

query which is sent from a font service user to a font service entity to get or modify some font resource information

3.5

font requester

font service user that requests font resource information to create format, print, or display documents in a single or multi-system environment

3.6

font resource information

block of information about a font resource or some font resources which is returned from a font service entity to a font service user as the result of a font query

3.7

font service

interchange facility between a font service user and a server of font resources

3.8

font service API

interface between a font service user and a font service entity

3.9

font service entity

entity (or set of connected entities) which provides access facilities to resolve requests from font service users

3.10

font service protocol

relationship between font service entities to convey font service commands and responses

3.11

font substitution

substitution of an alternative font resource for a specified font resource which is not available

3.12

font service user

person and/or application software that provides requests, or manages font information in a computer system or network

3.13

glyph association

mapping or association of character codes (usually in an unformatted document data stream) to the glyph information contained in a font resource

3.14

glyph substitution

substitution (usually in a formatted document data stream) of an alternative glyph for a specified glyph which is not available in a requested font resource

4 Font service model

4.1 Font service user categories

Font service users are classified in the following three categories. In this Technical Report, the term "font service user" is used to represent all kinds of person(s) and application software in these categories.

Font Providers

Person(s) (and Application software) that design typefaces, create new font resources for sale and distribution (Design Source) or acquires font resources on consignment or for re-marketing with or without intervening modification (Data Source).

Font Managers

Person(s) (and Application software) that installs font resources into a system environment, manages the font usage and administers associated contracts (regarding access, royalties, etc.).

Font Requesters

Person(s) (and Application software) that requests font resource information to create format, print, or display documents in a single or multi-system environment.

4.2 Font service entity

Font service entity is an entity which provides facilities to access font resource information for font service users. This entity will be implemented as a program or component of a processing system which receives the font queries from font service users and returns font information.

A font service entity manages a set of font resources. Any information retrieval and/or modification on one of those font resources shall be done by this entity. In the case that a font service user sends a font query to a font service entity to get some information from a font resource which is not directly managed by the font service entity, the entity may send a font query to get the information from another font service entity. In such a case, a font service entity itself may act as a font service user to another font service entity.

Figure 4.1 shows a simplified model of the relationship between a font service entity and font service users.

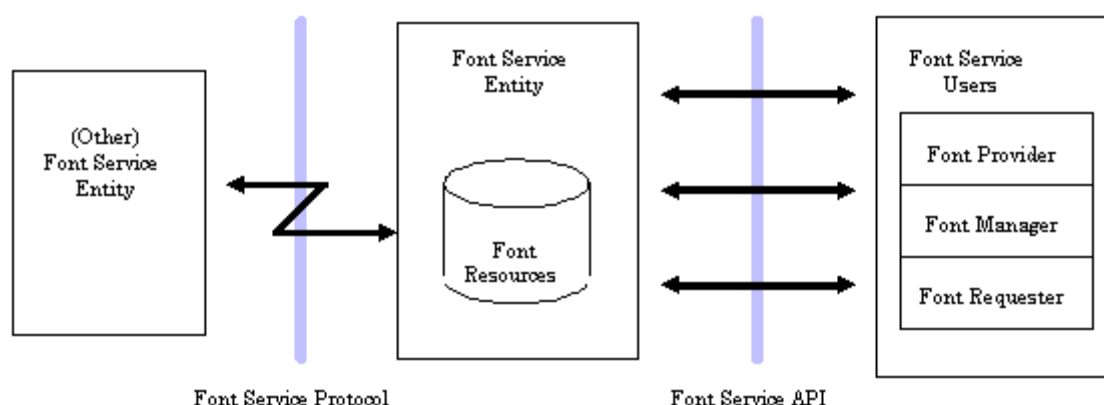


Figure 4.1 — Relationship between font service entity and font service users

Figure 4.2 shows the relationship between the font service entity and the ISO/IEC JTC 1/SC 34 document processing architecture.

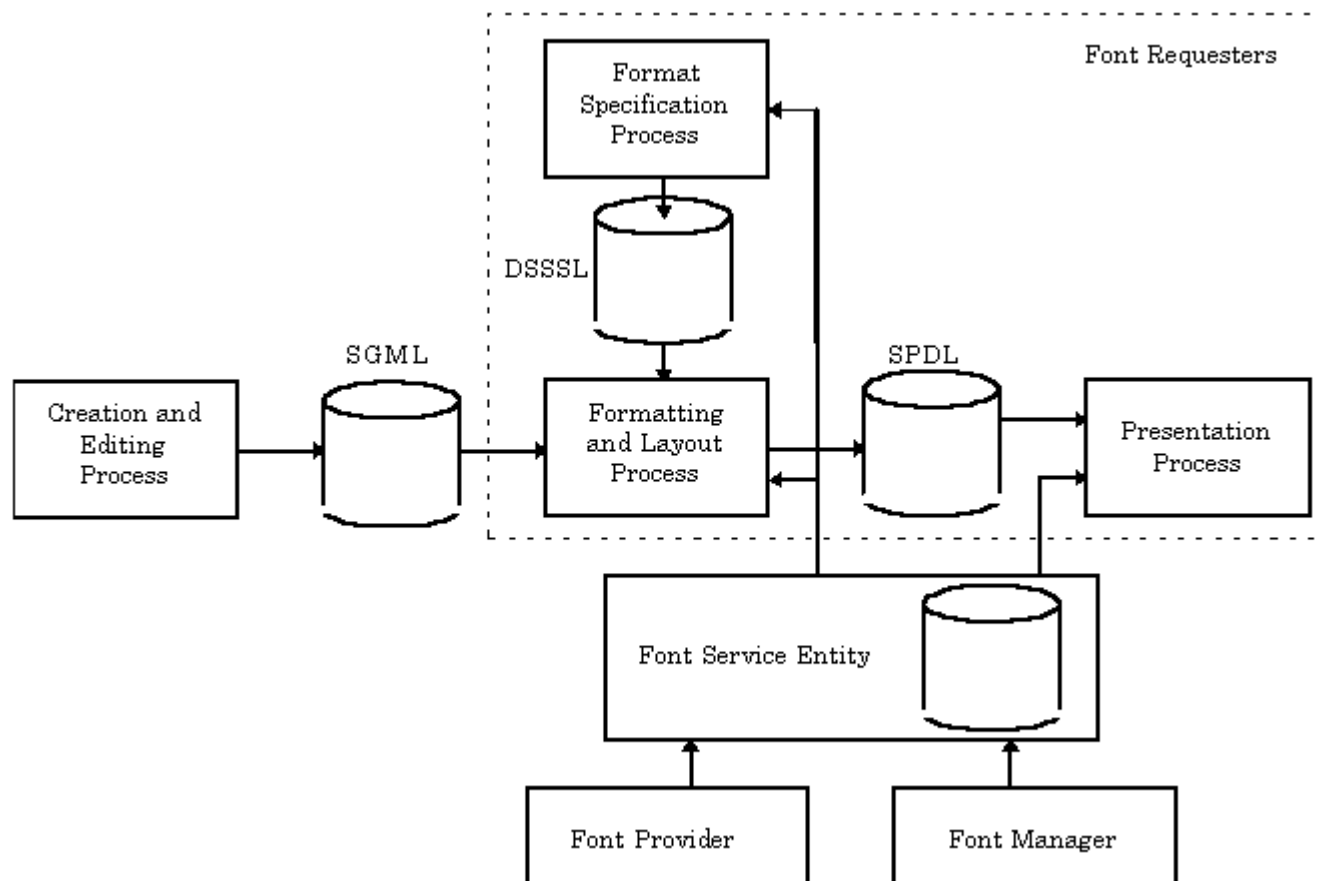


Figure 4.2 — Relationship between font service entity and SC 34 document processing architectures

The font resource information requested by these processes is different process by process. Formatting and Layout Process requests the description and metrics information. Presentation Process requests all the font resource information (description information, metrics information, and glyph shape information).

There may be a process called Font Installation and Maintenance Process, which provides new font resources to be managed by the font service entity. This process also executes the usage monitoring and the access control of each font resource.

4.3 Abstract Font Service Interface (AFSI)

This Technical Report defines the Abstract Font Service Interface (AFSI), which specifies the abstract interface between a font service user and a font service entity.

This Technical Report defines the AFSI as a set of specifications of "primitives". A primitive is a unit of communications between the font service entity and font service users. In this Technical Report, each primitive is defined as an abstract service which takes zero or more parameters, and returns zero or more results. Some primitives modify the internal data objects and/or the status of the font service entity as the side effect.

5 Data types

This clause defines data types used in the definitions of the Abstract Font Service Interface (AFSI).

Types used in AFSI are classified in two categories, base types and composite types. Base types are simple, elemental types and values of base types have no subordinate structures. Composite types are structures constructed from base types and/or other composite types.