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Information technology — Image processing and interchange (IPI) functional specification —

Part 5:
Basic image interchange format (BIIF)

Technologies de l'information — Spécification fonctionnelle pour le traitement de l'image et l'échange (IPI) —

Partie 5: Format d'échange de l'image de base (BIIF)

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 24, *Computer graphics, image processing and environmental data representation*.

This second edition cancels and replaces the first edition (ISO/IEC 12087-5:1998), which has been technically revised. It also incorporates the Technical Corrigenda ISO/IEC 12087-5:1998/Cor. 1:2001, and ISO/IEC 12087-5:1998/Cor. 2:2002.

The main changes are as follows:

— updated foreword and introduction;

— updated normative references;

— changed the IMODE field value definition from “PVV” to “PVU” so that the IMODE field value range may be extended by a BIIF profile;

— updated the Open Skies Digital Data Exchange Format (OSDDEF) BIIF Profile definition to match the current definition used by the Treaty on Open Skies and the Open Skies Consultative Commission (OSCC).

A list of all parts in the ISO/IEC 12087 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

ISO/IEC 12087-1 establishes the conceptual and architectural framework for the ISO/IEC 12087 series. In particular, it defines the types of all image data objects, image-related data objects, and attributes that may be interchanged by means of the Image processing and interchange – Image interchange facility (IPI-IIF).

ISO/IEC 12087-2 establishes the specification of the Programmer's Imaging Kernel System (IPI-PIKS).

ISO/IEC 12087-3 provides a data format specification and an application program interface specification. The IIF data format may be used for image data interchange in open, heterogeneous environments. It may also serve as a local file format for imaging applications, especially in conjunction with ISO/IEC 12087-2. In future, the IIF data format may be used by telecommunication standards. Examples are future versions of File Transfer, Access, and Management (FTAM), ISO/IEC 8571; the Message Oriented Text Interchange Systems (MOTIS), ISO/IEC 10021 [also known as Message Handling System (MHS), CCITT Recommendation X.400]. Thus, the IIF data format can become part of the application-oriented OSI communications protocols.

ISO/IEC 12088-4 provides the application program interface language binding for the C programming language. The Image processing and interchange (IPI) functional specification, ISO/IEC 12087, upon which this binding is based, first emerged as an International Standard in 1994. The functional description of ISO/IEC 12087 is specified in a language independent manner and needs to be embedded in language dependent layers (language bindings) for use with particular programming languages.

ISO/IEC 12089 defines the encoding rules that apply to representations of IPI-IIF image data. Due to the fact that the syntax of the IPI-IIF data format definition, from ISO/IEC 12087-3, is expressed using Abstract Syntax Notation One (ASN.1), ISO/IEC 12089 makes use of the Basic Encoding Rules (BER) for ASN.1. Furthermore, ISO/IEC 12089 provides a rationale (in Clause 4) for the introduction of new encoding rules, in addition to those defined by the BER, that provide support for heterogeneous pixel types within the context of the IPI-IIF data format definition.

This document establishes the specification of the Basic image interchange format (BIIF) part of the IPI functional specification. This document conforms to the architectural and data object specifications of ISO/IEC 12087-1, the Common architecture for imaging. BIIF supports a profiling scheme that is a combination of the approaches taken for ISO/IEC 12087-2 (PIKS), ISO/IEC 10918 (JPEG), ISO/IEC 8632 (CGM), and ISO/IEC 9973.

When the extensibility of this document, or the inherent constraints of the structured format of BIIF, do not meet the needs of a more complex application, then concepts and features of ISO/IEC 12087-3 (IIF) can be considered as a more appropriate method of image interchange. For example, the ability to support complex combinations of heterogeneous pixel types, self-defining pixel structures, or abstract structures can be done with IIF.

Information technology — Image processing and interchange (IPI) functional specification —

Part 5: Basic image interchange format (BIIF)

1 Scope

This document establishes the specification of the Basic image interchange format (BIIF). This document provides a foundation for interoperability in the interchange of imagery and imagery-related data among applications. It also provides a detailed description of the overall structure of the format, as well as specification of the valid data and format for all fields defined with BIIF. Annex C contains a Model Profile of BIIF in tables to assist in profile development.

The scope and field of application of this document includes the capability to perpetuate a proven interchange capability in support of commercial and government imagery, Programmer's Imaging Kernel System (PIKS) data, and other imagery technology domains in that priority order.

This document provides a data format container for image, symbol, and text, along with a mechanism for including image-related support data.

This document:

— provides a means whereby diverse applications can share imagery and associated information;

— allows an application to exchange comprehensive information to users with diverse needs or capabilities, allowing each user to select only those data items that correspond to their needs and capabilities;

— minimizes preprocessing and postprocessing of data;

— minimizes formatting overhead, particularly for those applications exchanging only a small amount of data and for bandwidth-limited systems;

— provides a mechanism (Transportable File Structure, TFS) to interchange PIKS image and image-related objects;

— provides extensibility to accommodate future data, including objects.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8601:2004[1)], *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO/IEC 8632 (all parts), *Information technology — Computer graphics — Metafile for the storage and transfer of picture description information*

1) Withdrawn and replaced by ISO 8601-1:2019 and ISO 8601-2:2019.