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Information technology — Multimedia Middleware —

Part 1: Architecture

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Partie 1: Architecture

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. 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 document 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 23004-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 23004 consists of the following parts, under the general title *Information technology — Multimedia Middleware*:

— *Part 1: Architecture*

— *Part 2: Multimedia application programming interface*

— *Part 3: Component model*

— *Part 4: Resource and quality management*

— *Part 5: Component download*

— *Part 6: Fault management*

— *Part 7: System integrity management*

Introduction

MPEG, ISO/IEC JTC 1/SC 29/WG 11, has produced many important standards (MPEG-1, MPEG-2, MPEG-4, MPEG-7, and MPEG-21). MPEG feels that it is important to standardize an application programming interface (API) for Multimedia Middleware (M3W) that complies with the requirements found in the annex to the Multimedia Middleware (M3W) Requirements Document Version 2.0 (ISO/IEC JTC1/SC 29/WG 11 N 6981).

The objectives of MPEG Multimedia Middleware (M3W) are to allow application software to execute multimedia functions with a minimum knowledge of the inner workings of the multimedia middleware, and to allow the triggering of updates to the multimedia middleware to extend the API. The first goal can be achieved by standardizing the API that the multimedia middleware offers. The second goal is much more challenging, as it requires mechanisms to manage the multimedia middleware components, and to ensure that these updates can be integrated in a controlled and dependable manner.

This part of ISO/IEC 23004 provides the following:

— a *vision* for a multimedia middleware API framework that enables

  — application software to control and extend multimedia middleware in a standardized manner;

  — multimedia software to be easily developed for, and deployed across, a variety of platforms;

  — the transparent and augmented use of multimedia resources across a wide range of networks and devices, to optimize the perceived quality for users;

— a method to facilitate the integration of APIs to software components and services in order to harmonize *technologies* for the creation, management, manipulation, transport, distribution and consumption of content;

— a *strategy* for achieving a multimedia API framework by the development of specifications and standards based on well-defined functional requirements through collaboration with other bodies.

Information technology — Multimedia Middleware —

Part 1: Architecture

1 Scope

This part of ISO/IEC 23004 defines the architecture of the MPEG Multimedia Middleware (M3W) technology.

2 Organization of this document

The remainder of this part of ISO/IEC 23004 is structured as follows. Clause 3 gives an overview of the references that are indispensable for the application of this part of ISO/IEC 23004. Clause 4 gives an overview of the terms and definitions used in this part of ISO/IEC 23004.

Clause 5 describes the high level architecture of a complete M3W system. The M3W middleware is part of an M3W system, and ISO/IEC 23004-2 specifies the application programming interface (API) of M3W as well as the realization technology. Subclause 5.2 contains a description of the context of M3W (an M3W system). This subclause also introduces the distinction between M3W API specification and realization of M3W. Subclause 5.3 gives an overview of the M3W API specification. Subclause 5.4 gives an overview of the M3W realization technology that is specified in ISO/IEC 23004-3, ISO/IEC 23004-4, ISO/IEC 23004-5, ISO/IEC 23004-6 and ISO/IEC 23004-7. Subclause 5.5 briefly discusses realization of the M3W, and emphasizes that developers can differentiate their software by producing different realizations.

This part of ISO/IEC 23004 has the following annexes.

Annex A, API specifications reader's guide, explains how the functional and the support parts of the API are specified.

Annex B, Basic types and constants, gives an overview of the basic types and constants that are used in the API specification and the realization technology.

Annex C, API evolution rules, lists the rules for the evolution of API specifications.

Annex D, Naming conventions, lists the naming conventions used in the API specifications and the realization technologies.

Annex E, Constraints on execution architecture. In the API specification a number of assumptions are made on the execution architecture. This annex lists the assumptions which hold, unless specified otherwise.

Annex F, Error handling, describes the default error handling mechanism in M3W.

Annex G, Notification, describes the default notification mechanism in M3W.

Annex H, Get set patterns, describes the default way of dealing with 'get set' patterns in M3W.

Annex I, Handling variation, explains how to deal with variation in M3W systems.

Annex J, API qualifiers, contains a table that lists all of the qualifiers that are used in the API specification.

Annex K, Name abbreviations guide, gives an alphabetical list of words and their abbreviations commonly used in names.

Annex L, IDL, describes the two variations of IDL used in ISO/IEC 23004. One variation is used for the specification of the M3W API, the other one is used in the realization technology. This annex explains how the IDL used to specify the M3W API can be translated into the IDL used in the realization technology.

3 Normative references

The following referenced documents are indispensable for the application 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/IEC 23004-2, *Information technology — Multimedia Middleware — Part 2: Multimedia API*

ISO/IEC 23004-3, *Information technology — Multimedia Middleware — Part 3: Component model*

ISO/IEC 23004-4, *Information technology — Multimedia Middleware — Part 4: Resource and quality management*

ISO/IEC 23004-5*, Information technology — Multimedia Middleware — Part 5: Component download* [1)]

ISO/IEC 23004-6*, Information technology — Multimedia Middleware — Part 6: Fault management* [1)]

ISO/IEC 23004-7*, Information technology — Multimedia Middleware — Part 7: System integrity management* [1)]

1) To be published.