International Standard

ISO/IEC 21000-3

Information technology — Multimedia framework (MPEG-21) —

Part 3:
Digital Item Identification

Technologies de l'information — Cadre multimédia (MPEG-21) —

Partie 3: Identification des éléments numériques

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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 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC 21000-3:2003), which has been technically revised. It also incorporates ISO/IEC 21000-3:2003/Amd 1:2007 and ISO/IEC 21000-3:2003/Amd 2:2013.

The main changes are as follows:

— removal of Annex A (normative) - Requirements for the Registration Authority for Digital Item Identification Systems, and related descriptions that requires ISO/IEC 21000-3 to employ Registration Authority.

— updating information on ISO 15706-2 (ISAN), which has recently been approved as an International Standard.

— provision of MPEG-21 DII with the ability to explicitly and unambiguously describe existing relationships between different MPEG-21 Digital Items. It also conveys the base inter-DI relationship taxonomy in the form of an RDF/OWL ontology.

A list of all parts in the ISO/IEC 21000 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

0.1 Executive summary for MPEG-21

Today, many elements exist to build an infrastructure for the delivery and consumption of multimedia content. The aim for MPEG-21 multimedia framework (ISO/IEC 21000) is to describe how these various elements fit together.

The result is an open framework for multimedia delivery and consumption, with both the content creator and content consumer as focal points. This open framework provides content creators and service providers with equal opportunities in the MPEG-21 enabled open market. This will also be to the benefit of the content consumer providing them access to a large variety of content in an interoperable manner.

The vision for MPEG-21 is to define a multimedia framework to enable transparent and augmented use of multimedia resources across a wide range of networks and devices used by different communities.

This document specifies how Digital Items (see ISO/IEC 21000-2) and parts and collections thereof can be uniquely identified.

0.2 Organisation of the document

This introduction contains an overview of MPEG-21 Digital Items and the relation between ISO/IEC 21000-2 and this document.

Clause 4 specifies how to uniquely identify Digital Items, how to associate related identifiers with Digital Items and how to identify different types of Digital Items. Clause 5 then specifies how to associate metadata with Digital Items by using description scheme identifiers.

Annex A contains an example of how to resolve a unique identifier to appropriate metadata. Annex B contains a list of existing identification schemes that can be used by this document. Annex C provides an approach to dealing with varying functional granularities for identifying Digital Items. Annex D provides an example of how to express the relationship between two Digital Items.

0.3 Introduction to Digital Items

Within any system (such as MPEG-21) that proposes to facilitate a wide range of actions involving Digital Items, there is a need for a very precise description for defining exactly what constitutes such an "item". Clearly there are many kinds of content, and probably just as many possible ways of describing it to reflect its context of use. This presents a strong challenge to lay out a powerful and flexible model for Digital Items which can accommodate the myriad forms that content can take (and the new forms it will assume in the future). Such a model is only truly useful if it yields a format that can be used to represent any Digital Items defined within the model unambiguously and communicate them, and information about them, successfully.

ISO/IEC 21000-2 provides such flexibility for representing Digital Items.

0.4 Example of a Digital Item

This subclause provides a simple example of a Digital Item. More complex examples can be found in ISO/IEC 21000-2.

This example uses ISO/IEC 21000 to create an "MPEG-21 music album" comprising a series of resources:

— Three audio files (coded in MPEG-2 AAC, as specified in ISO/IEC 13818-3) representing the "tracks" that form the basis of the album;

— Two text files (in Unicode, as specified in ISO/IEC 10646) representing the lyrics to two of the tracks;

— Two images (in JPEG, as specified in the ISO/IEC 10918 series) representing the cover photograph and other artwork of the album;

— A text file (in HTML, as specified in W3C, HTML 4.0 Specification[24]) representing the introductory text for the album.

The relationship between these resources and how they relate to the Digital Item itself is expressed in ISO/IEC 21000-2 (DID). The DID contains, besides the references to the resources, information *about* the item and/or parts thereof. These metadata elements are associated through DID mechanisms to the item/resources as shown in Figure 1.

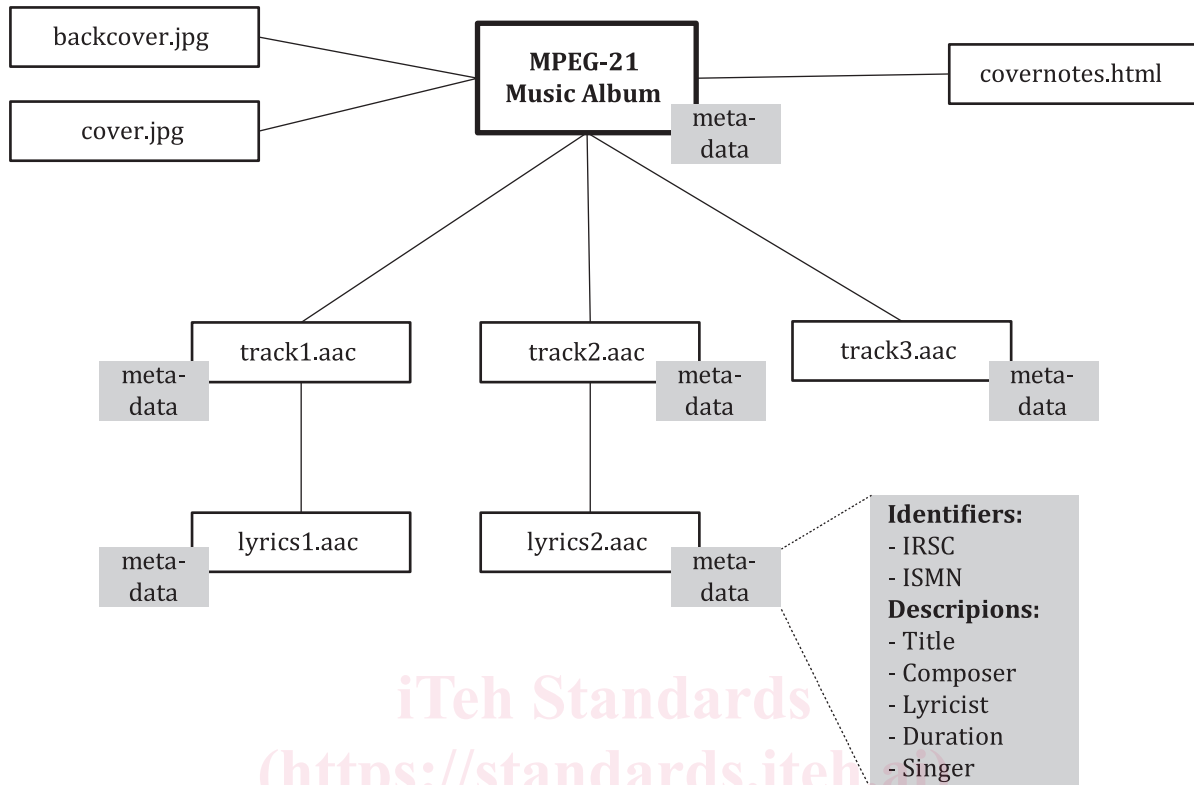Figure 1 — MPEG-21 music album

0.5 Relationship between Digital Item Declaration and Digital Item Identification

Identifiers covered by this document can be associated with Digital Items, containers, components, and/or fragments thereof by including them in a specific place in the Digital Item Declaration. This place is the STATEMENT element. Examples of likely STATEMENTs include descriptive, control, revision tracking and/or identifying information.

Figure 2 shows this relationship. The shaded boxes are subject of this document while the bold boxes are defined in ISO/IEC 21000-2.

Several elements within a Digital Item Declaration can have zero, one or more DESCRIPTORS (as specified in ISO/IEC 21000-2). Each DESCRIPTOR may contain one STATEMENT which can contain one identifier relating to the parent element of the STATEMENT. In Figure 2, the two statements shown are used to identify a Component (left hand side of the diagram) and an Item (right hand side of the diagram).