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Australian Standard™

Information technology—Coding of audio-visual objects

Part 19: Synthesized texture stream

This Australian Standard was prepared by Committee IT-029, Coded Representation of Picture, Audio and Multimedia/Hypermedia Information. It was approved on behalf of the Council of Standards Australia on 27 October 2004.
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PREFACE

This Standard was prepared by the Standards Australia Committee IT-029, Coded Representation of Picture, Audio and Multimedia/Hypermedia Information.

This Standard is identical with, and has been reproduced from, ISO/IEC 14496-19:2004, *Information technology—Coding of audio-visual objects—Part 19: Synthesized texture stream*.

The objective of this Standard is to provide designers of multimedia content with guidance for creating synthesized texture streams for very low bit rate synthetic video clips, within the MPEG-4 encoding audio-visual presentation.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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Reference to International Standard		*Australian Standard*	
ISO/IEC		AS/NZS	
14496	Information technology—Coding of audio-visual objects	14496	Information technology—Coding of audio-visual objects
14496-1	Part 1: Systems	14496.1	Part 1: Systems

Only referenced documents that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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INTRODUCTION

ISO/IEC 14496 specifies a system for the communication of interactive audio-visual scenes. The specification includes the following elements:

1. the coded representation of natural or synthetic, two-dimensional (2D) or three-dimensional (3D) objects that can be manifested audibly and/or visually (audio-visual objects) (specified in part 1,2 and 3 of ISO/IEC 14496);

2. the coded representation of the spatio-temporal positioning of audio-visual objects as well as their behavior in response to interaction (scene description, specified in part 11 of ISO/IEC 14496);

3. the coded representation of information related to the management of data streams (synchronization, identification, description and association of stream content, specified in part 11 of ISO/IEC 14496);

4. a generic interface to the data stream delivery layer functionality (specified in part 6 of ISO/IEC 14496);

5. an application engine for programmatic control of the player: format, delivery of downloadable Java byte code as well as its execution lifecycle and behavior through APIs (specified in part 11 of ISO/IEC 14496); and

6. a file format to contain the media information of an ISO/IEC 14496 presentation in a flexible, extensible format to facilitate interchange, management, editing, and presentation of the media.

The information representation, specified in ISO/IEC 14496-1 and in ISO/IEC 14496-11, describes the means to create an interactive audio-visual scene in terms of coded audio-visual information and associated scene description information. The encoded content is presented to a terminal as the collection of elementary streams. Elementary streams contain the coded representation of either audio or visual data or scene description information or user interaction data. Elementary streams may as well themselves convey information to identify streams, to describe logical dependencies between streams, or to describe information related to the content of the streams. Each elementary stream contains only one type of data.

Elementary streams are decoded using their respective stream-specific decoders. The audio-visual objects are composed according to the scene description information and presented by the terminal's presentation device(s). All these processes are synchronized according to the systems decoder model (SDM) using the synchronization information provided at the synchronization layer.

The scene description stream identifies different types of objects, such as audio, visual, 2D and 3D graphics, etc. that define a scene composition of the content. Synthesized Textures streams provide for photo-realistic animations that can be transmitted using very low bitrates. These type of aniumamtions can be used in combination with other streams to enhance any scene.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents.

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AUSTRALIAN STANDARD

Information technology — Coding of audio-visual objects —

Part 19:
Synthesized texture stream

1 Scope

This part of ISO/IEC 14496 specifies functionalities for the transmission of Synthesized Texture data as part of the MPEG-4 encoded audio-visual presentation. More specifically, it defines:

1. The synthesized texture format representation that is utilized for Synthesized Texture data encoding

2. The coded representation of Synthesized Texture data streams.

2 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 14496-1, *Information technology — Coding of audio-visual objects — Part 1: Systems*

ISO/IEC 14496-11, *Information technology — Coding of audio-visual objects — Part 11: Scene description and application engine*

3 Synthesized Texture Compression Technology

3.1 Functionality and Semantics

3.1.1 Overview

Synthesized Textures represent photo-realistic textures by describing color information of vectors. Synthesized Texture streams are used for creation of very low bit rate synthetic video clips. Synthesized Texture clips are built using key frame based animations of skeletons that affect photorealistic textures whose color information is modeled by equations.

A texture top-level **Synthesized Texture** Node (**STNode**) can be defined for playing **SynthesizedTextures,** see ISO/IEC 14496-11 for additional details . The **STNode** itself is similar to the **MovieTexture**, and uses url field to reference an Object Descriptor describing the associated stream(s). The stream contains both the object textures and their animation descriptions . The **STNode** also exposes control points that can be used to manipulate via affine transforms the objects carried in its associated stream. By this way **STNode** can implement synthesized interactive SynthesizedTextures. As any texture, the resulting texture can be mapped onto any 2D or 3D surface.