

ISO/IEC 14496-1:2004-11 (E)

Information technology - Coding of audio-visual objects - Part 1: Systems

Contents

Page

Foreword	vi
0 Introduction	viii
0.1 Overview	viii
0.2 Architecture	viii
0.3 Terminal Model: Systems Decoder Model	x
0.4 Multiplexing of Streams: The Delivery Layer	x
0.5 Synchronization of Streams: The Sync Layer	x
0.6 The Compression Layer	x
0.7 Application Engine	xii
0.8 Extensible MPEG-4 Textual Format (XMT)	xii
1 Scope	1
2 Normative references	1
3 Additional reference	2
4 Terms and definitions	2
4.1 Access Unit (AU)	2
4.2 Alpha Map	2
4.3 Atom	2
4.4 Audio-visual Object	2
4.5 Audio-visual Scene (AV Scene)	2
4.6 AVC Parameter Set	3
4.7 AVC Access Unit	3
4.8 AVC Parameter Set Access Unit	3
4.9 AVC Parameter Set Elementary Stream	3
4.10 AVC Video Elementary Stream	3
4.11 Binary Format for Scene (BIFS)	3
4.12 Buffer Model	3
4.13 Byte Aligned	3
4.14 Chunk	3
4.15 Clock Reference	3
4.16 Composition	3
4.17 Composition Memory (CM)	3
4.18 Composition Time Stamp (CTS)	3
4.19 Composition Unit (CU)	3
4.20 Compression Layer	4
4.21 Container Atom	4
4.22 Control Point	4
4.23 Decoder	4
4.24 Decoding buffer (DB)	4
4.25 Decoder configuration	4
4.26 Decoding Time Stamp (DTS)	4
4.27 Delivery Layer	4
4.28 Descriptor	4
4.29 DMIF Application Interface (DAI)	4
4.30 Elementary Stream (ES)	4
4.31 Elementary Stream Descriptor	4
4.32 Elementary Stream Interface (ESI)	4
4.33 M4Mux Channel (FMC)	4

4.34	M4Mux Packet	5
4.35	M4Mux Stream	5
4.36	M4Mux tool	5
4.37	Graphics Profile	5
4.38	Hint Track	5
4.39	Hint	5
4.40	Inter	5
4.41	Interaction Stream	5
4.42	Intra	5
4.43	Initial Object Descriptor	5
4.44	Intellectual Property Identification (IPI)	5
4.45	Intellectual Property Management and Protection (IPMP) System	5
4.46	IPMP Information	6
4.47	IPMP System	6
4.48	IPMP Tool	6
4.49	IPMP Tool Identifier	6
4.50	IPMP Tool List	6
4.51	Media Node	6
4.52	Media stream	6
4.53	Media time line	6
4.54	Movie Atom	6
4.55	Movie Data Atom	6
4.56	MP4 File	6
4.57	Object Clock Reference (OCR)	6
4.58	Object Content Information (OCI)	7
4.59	Object Descriptor (OD)	7
4.60	Object Descriptor Command	7
4.61	Object Descriptor Profile	7
4.62	Object Descriptor Stream	7
4.63	Object Time Base (OTB)	7
4.64	Parametric Audio Decoder	7
4.65	Parametric Description	7
4.66	Quality of Service (QoS)	7
4.67	Random Access	7
4.68	Reference Point	7
4.69	Rendering	7
4.70	Rendering Area	7
4.71	Sample	8
4.72	Sample Table	8
4.73	Scene Description	8
4.74	Scene Description Stream	8
4.75	Scene Graph Elements	8
4.76	Scene Graph Profile	8
4.77	Seekable	8
4.78	SL-Packetized Stream (SPS)	8
4.79	Stream object	8
4.80	Structured Audio	8
4.81	Sync Layer (SL)	8
4.82	Sync Layer Configuration	8
4.83	Sync Layer Packet (SL-Packet)	8
4.84	Syntactic Description Language (SDL)	9
4.85	Systems Decoder Model (SDM)	9
4.86	System Time Base (STB)	9
4.87	Terminal	9
4.88	Time Base	9
4.89	Timing Model	9
4.90	Time Stamp	9
4.91	Track	9
4.92	Interaction Stream	9
5	Abbreviations and Symbols	9

6	Conventions	11
7	Streaming Framework	11
7.1	Systems Decoder Model	11
7.2	Object Description Framework	17
7.3	Synchronization of Elementary Streams	72
7.4	Multiplexing of Elementary Streams	83
8	Syntactic Description Language	92
8.1	Introduction	92
8.2	Elementary Data Types	92
8.3	Composite Data Types	95
8.4	Arithmetic and Logical Expressions	99
8.5	Non-Parsable Variables	99
8.6	Syntactic Flow Control	99
8.7	Built-In Operators	101
8.8	Scoping Rules	101
9	Profiles	101
Annex A (informative) Time Base Reconstruction		103
A.1	Time Base Reconstruction	103
A.2	Temporal aliasing and audio resampling	104
A.3	Reconstruction of a Synchronised Audio-visual Scene: A Walkthrough	105
Annex B (informative) Registration procedure		106
B.1	Procedure for the request of a Registration ID (RID)	106
B.2	Responsibilities of the Registration Authority	106
B.3	Contact information for the Registration Authority	106
B.4	Responsibilities of Parties Requesting a RID	107
B.5	Appeal Procedure for Denied Applications	107
B.6	Registration Application Form	107
Annex D (informative) Conversion Between Time and Date Conventions		111
D.1	Conversion Between Time and Date Conventions	111
Annex E (informative) Graphical Representation of Object Descriptor and Sync Layer Syntax		113
E.1	Length encoding of descriptors and commands	113
E.2	Object Descriptor Stream and OD commands	114
E.3	OCI stream	114
E.4	Object descriptor and its components	115
E.5	OCI Descriptors	117
E.6	Sync layer configuration and syntax	120
Annex F (informative) Elementary Stream Interface		121
Annex G (informative) Upstream Walkthrough		123
G.1	Introduction	123
G.2	Configuration	123
G.3	Content access procedure with DAI	124
G.4	Example	124
Annex H (informative) Scene and Object Description Carousel		128
I.1	SL packet encapsulation of AVC Access Unit	129
I.2	Handling of Parameter Sets	129

Annex J (informative) Patent statements	131
J.1 General	131
J.2 Patent Statements for Version 1	131
J.3 Patent Statements for Version 2	132
Bibliography	134