

ISO/IEC 14496-6:2000-12 (E)

Information technology - Coding of audio-visual objects - Part 6: Delivery Multimedia Integration Framework (DMIF)

Contents		Page
1	Scope	1
2	Conformance	1
2.1	Requirements for conformance	1
2.2	DMIF-Application Interface	1
2.3	DMIF signalling messages	2
3	Normative references	2
4	Terms and definitions	2
5	Abbreviations	3
7	Compliance terms	5
8	DMIF overview	5
8.2	The objectives of DMIF	6
8.3	The DMIF communications architecture	6
8.4	DMIF computational model	8
8.5	DMIF QoS model	9
8.6	The User Plane in the Delivery Layer	9
9	Remote interactive scenario	10
9.1	Additional requirements	10
9.1.1	Introduction	10
9.1.2	Billing policies	11
9.1.3	Possible evolution to Heterogeneous Networks	11
9.2	DMIF within the context of the ISO/OSI layers	11
10	The DMIF-Application Interface	12
10.1	The DMIF-Application Interface key concepts	12
10.2	Common semantic elements	13
10.2.1	channelDescriptor	13
10.3	DMIF-Application Interface primitives	15
10.4	DMIF-Application Interface semantics	17
10.4.1	DA_ServiceAttach ()	17
10.4.2	DA_ServiceAttachCallback ()	18
10.4.3	DA_ServiceDetach ()	18
10.4.4	DA_ServiceDetachCallback ()	18
10.4.5	DA_ChannelAdd ()	18
10.4.6	DA_ChannelAddCallback ()	19
10.4.7	DA_ChannelDelete ()	19
10.4.8	DA_ChannelDeleteCallback ()	19
10.4.9	DA_UserCommand ()	19
10.4.10	DA_UserCommandCallback ()	19
10.4.11	DA_Data ()	19
10.4.12	DA_DataCallback ()	20
10.4.13	DA_UserCommandAck()	20
10.4.14	DA_UserCommandAckCallback()	20
10.4.15	DA_ChannelMonitor()	20
10.4.16	DA_ChannelEvent()	20

10.5	QoS Monitoring	21
10.5.1	Monitoring events	21
10.5.2	qosMode	21
10.5.3	qosReport	23
11	The DMIF-Network Interface	23
11.1	The DMIF-Network Interface key concepts	23
11.2	Common syntax elements	24
11.2.1	DMIF Descriptors	24
11.2.2	DMIF to DMIF data	26
11.2.3	Resource Descriptors	26
11.2.4	Direction parameter	28
11.2.5	Reason parameter	28
11.2.6	Response parameter	28
11.2.7	channelDescriptor and qosDescriptors	29
11.3	DMIF-Network Interface primitives	34
11.4	DMIF-Network Interface semantics	36
11.4.1	DN_SessionSetup ()	36
11.4.2	DN_SessionRelease ()	36
11.4.3	DN_ServiceAttach ()	36
11.4.4	DN_ServiceDetach ()	37
11.4.5	DN_TransMuxSetup ()	37
11.4.6	DN_TransMuxRelease ()	37
11.4.7	DN_ChannelAdd()	37
11.4.8	DN_ChannelAdded()	38
11.4.9	DN_ChannelDelete ()	38
11.4.10	DN_TransMuxConfig ()	39
11.4.11	DN_UserCommand ()	39
11.4.12	DN_UserCommandAck ()	39
12	Control Plane mappings	40
12.1	Default syntax	40
12.1.1	Syntax elements	40
12.1.2	DNI mapping to DMIF signalling messages	46
12.2	Syntax for IP networks with (or without) RSVP signalling, using TCP for DMIF signalling	56
12.2.1	Approach overview	56
12.2.2	DSM-CC Resource Descriptors used	56
12.2.3	Usage of networkSessionIds	56
12.2.4	Usage of transactionIds	57
12.2.5	DNI mapping to socket actions and RSVP signalling	57
12.3	Syntax for IP networks with (or without) RSVP Signalling, using UDP for DMIF signalling	59
12.3.1	Approach overview	60
12.3.2	DSM-CC Resource Descriptors used	60
12.3.3	Usage of networkSessionIds	60
12.3.4	Usage of transactionIds	60
12.3.5	DNI mapping to socket actions and RSVP signalling	60
12.4	Syntax for ATM networks with Q.2931 signalling	61
12.4.1	Approach overview	61
12.4.2	DSM-CC Resource Descriptors used	61
12.4.3	Usage of networkSessionIds	61
12.4.4	Usage of transactionIds	61
12.4.5	DNI mapping to Q.2931 signalling messages	62
12.5	Syntax for Networks with ITU-T H.245 Signaling	66
12.5.1	Approach overview	66
12.5.2	DSM-CC Resource Descriptors used	66
12.5.3	Usage of networkSessionIds	66
12.5.4	Usage of transactionIds	67
12.5.5	DNI mapping to H.245 Signaling messages	67
12.5.6	Data transmission procedures	68
13	Terminal Capability Matching	68
13.1	DMIF Default signalling with Compatibility Descriptors	68

Annex A (informative) Overview of DAI and DNI parameters	69
A.1 Sessions and services	69
A.2 Channels	69
Annex B (informative) Information flows for DMIF	71
B.1 Information flows for Remote Interactive DMIF	71
B.1.1 Initiation of a service in a Remote Interactive DMIF	72
B.1.2 Addition of Channels in a Remote Interactive DMIF	74
B.1.3 Deletion of Channels in a Remote Interactive DMIF	80
B.1.4 Termination of a Service in a Remote Interactive DMIF	82
B.2 Information Flows for Broadcast DMIF	83
B.2.1 Initiation of a service in a Broadcast DMIF	84
B.2.2 Addition of Channels in a Broadcast DMIF	85
B.2.3 Deletion of Channels in a Broadcast DMIF	86
B.2.4 Termination of a service in a Broadcast DMIF	87
B.3 Information Flows for Local Storage DMIF	87
B.3.1 Initiation of a service in a Local Storage DMIF	88
B.3.2 Addition of Channels in a Local Storage DMIF	89
B.3.3 Deletion of Channels in a Local Storage DMIF	90
B.3.4 Termination of a service in a Local Storage DMIF	91
Annex C (informative) Use of URLs in DMIF	92
C.1 Introduction	92
C.2 Generic concepts	92
C.3 URL schemes allowed in DMIF	92
C.4 New URL schemes	92
C.4.1 URL scheme for DMIF signalling over UDP/IP	93
C.4.2 URL scheme for DMIF signalling over TCP/IP	93
C.4.3 URL scheme for DMIF signalling over networks using NSAP addresses format	93
Annex D (informative) Protocol error recovery	94
D.1 Timeouts and retransmission	94
D.2 Transaction state variables	94
D.2.1 Transaction identifier: Tid	94
D.2.2 Transaction state: Tid.state	94
D.2.3 Associated session: Tid.Sid	94
D.2.4 Transaction message timeout: Tid.tMessage	94
D.2.5 Expired transactionId holding timer: Tid.tHold	95
D.2.6 Transaction message: Tid.message	95
D.2.7 Tid.retransBound	95
D.2.8 Tid.numRetrans	95
D.3 Transaction Identifier State Machine	95
D.4 Transaction Identifier State table	96
E.1 ResourceDescriptor format	98
E.1.1 ResourceDescriptorDataField	98
E.1.2 Specifying ranges and lists of values in resource descriptors	99
E.3 Resource descriptor definitions	102
E.3.1 AtmSvcConnection resource descriptor definition	102
E.3.2 IP resource descriptor definition	102
E.3.3 AtmVcConnection resource descriptor definition	103
F.1 Introduction	104
F.2.1 Overview of ETS 300 401 payload transmission	104
F.2.2 Object descriptor encapsulation	105
F.2.3 Scene description stream encapsulation	109
F.2.3.1 BIFSCCommandDataField	110

F.2.4	ClockReferenceStream encapsulation	111
F.2.5	Audiovisual stream encapsulation	111
F.3	Walkthrough of a typical MPEG-4 session carried in an ETS 300 401 system	112
F.3.1	General	112
F.3.2	Start of a session	113
F.3.3	Retrieval of the InitialOD	113
F.3.4	Retrieval of the subsequent BIFS and Object Descriptor streams	113
F.3.5	Retrieval of the clock reference and the audio-visual streams	113
F.3.6	Dynamic changes to the scene	113
F.4	Mapping of DAI procedures to ETS 300 401 procedures	113
F.4.1	Initiation of an MPEG-4 service in a DAB system	114
F.4.2	Addition of channels in an MPEG-4 service in a DAB system	114
F.4.3	Deletion of Channels in an MPEG-4 service in a DAB system	115
F.4.4	Termination of a service in an MPEG-4 service in a DAB system	115
Annex G (informative) Patent statement		116
G.1	Patent statement	116
H.1	Introduction	118
H.2	Walkthrough of a typical MPEG-4 session carried in an H.324 system	118
H.2.1	General	118
H.2.2	Start of a session	118
H.2.3	Retrieval of the InitialOD	118
H.3	Mapping of DAI procedures to H.245 procedures	118
H.3.1	Initiation of a service in a Remote Interactive DMIF	119
H.3.2	Addition of Channels in a Remote Interactive DMIF	119
H.3.3	Deletion of Channels in a Remote Interactive DMIF	121
H.3.4	Termination of a Service in a Remote Interactive DMIF	122
Annex I (informative) DMIF Application Programming Interface - Syntax definition		123
I.1	Objectives of this Annex	123
I.2	DAI protocol flow	123
I.3	Application Programming Interface	124
I.3.1	DMIF primitives	124
I.4	DMIF Application Programming Interface - ANSI C/C++	126
I.4.1	Reference Implementation	126