

ISO 18202:2015-12 (E)

Space data and information transfer systems - Mission operations message abstraction layer

Contents	Page
1 INTRODUCTION	1-1
1.1 GENERAL.....	1-1
1.2 PURPOSE AND SCOPE.....	1-1
1.3 DOCUMENT STRUCTURE	1-1
1.4 DEFINITION OF TERMS	1-2
1.5 NOMENCLATURE	1-4
1.6 REFERENCES	1-4
2 OVERVIEW	2-1
2.1 GENERAL.....	2-1
2.2 ABSTRACT INTERFACE SPECIFICATIONS.....	2-1
2.3 ABSTRACT SERVICE SPECIFICATIONS	2-8
3 ABSTRACT SERVICE SPECIFICATIONS	3-1
3.1 OVERVIEW	3-1
3.2 TRANSACTION HANDLING	3-1
3.3 STATE TRANSITIONS.....	3-1
3.4 MESSAGE COMPOSITION	3-2
3.5 MAL SERVICE INTERFACE.....	3-4
3.6 ACCESS CONTROL INTERFACE.....	3-100
3.7 TRANSPORT INTERFACE.....	3-104
4 MAL DATA TYPE SPECIFICATION	4-1
4.1 OVERVIEW	4-1
4.2 FUNDAMENTALS.....	4-8
4.3 ATTRIBUTES.....	4-9
4.4 DATA STRUCTURES.....	4-14
5 MAL ERRORS	5-1
6 SERVICE SPECIFICATION XML	6-1
7 CONFORMANCE MATRIX	7-1
ANNEX A SECURITY, SANA AND PATENT CONSIDERATIONS (NORMATIVE)	A-1
ANNEX B DEFINITION OF ACRONYMS (INFORMATIVE)	B-1
ANNEX C INFORMATIVE REFERENCES (INFORMATIVE)	C-1

<u>Figure</u>	<u>Page</u>
2-1 Message Exchange Sequence Example	2-2
2-2 Request, Indication, and Message Relationship	2-4
2-3 Consumer State Diagram Example	2-5
2-4 Message Decomposition Key	2-7
2-5 Message Header Decomposition Example	2-7
2-6 Message Body Decomposition Example	2-7
3-1 SEND Interaction Pattern Message Sequence	3-4
3-2 SUBMIT Interaction Pattern Message Sequence	3-8
3-3 SUBMIT Interaction Pattern Error Sequence	3-9
3-4 SUBMIT Consumer State Chart	3-10
3-5 SUBMIT Provider State Chart	3-11
3-6 REQUEST Interaction Pattern Message Sequence	3-16
3-7 REQUEST Interaction Pattern Error Sequence	3-17
3-8 REQUEST Consumer State Chart	3-18
3-9 REQUEST Provider State Chart	3-19
3-10 INVOKE Interaction Pattern Message Sequence	3-24
3-11 INVOKE Interaction Pattern Error Sequence	3-25
3-12 INVOKE Consumer State Chart	3-27
3-13 INVOKE Provider State Chart	3-28
3-14 PROGRESS Interaction Pattern Message Sequence	3-36
3-15 PROGRESS Interaction Pattern Error Sequence	3-37
3-16 PROGRESS Consumer State Chart	3-39
3-17 PROGRESS Provider State Chart	3-41
3-18 PUBLISH-SUBSCRIBE Interaction Pattern Message Sequence	3-53
3-19 PUBLISH-SUBSCRIBE Pattern Alternative Message Sequence	3-54
3-20 PUBLISH-SUBSCRIBE Interaction Pattern Consumer Error Sequence	3-59
3-21 PUBLISH-SUBSCRIBE Interaction Pattern Provider Error Sequence	3-60
3-22 PUBLISH-SUBSCRIBE Consumer State Chart	3-67
3-23 PUBLISH-SUBSCRIBE Broker to Consumer State Chart	3-70
3-24 PUBLISH-SUBSCRIBE Provider State Chart	3-72
3-25 PUBLISH-SUBSCRIBE Broker to Provider State Chart	3-74
3-26 CHECK Access Control Pattern Message Sequence	3-100
3-27 CHECK Access Control Pattern Error Sequence	3-101
3-28 SUPPORTEDQOS Transport Pattern Message Sequence	3-105
3-29 SUPPORTEDIP Transport Pattern Message Sequence	3-108
3-30 TRANSMIT Transport Pattern Message Sequence	3-111
3-31 TRANSMIT Transport Pattern Error Sequence	3-112
3-32 TRANSMITMULTIPLE Transport Pattern Message Sequence	3-115
3-33 TRANSMITMULTIPLE Transport Pattern Error Sequence	3-116
3-34 RECEIVE Transport Pattern Message Sequence	3-119
3-35 RECEIVEMULTIPLE Transport Pattern Message Sequence	3-122

<u>Table</u>	<u>Page</u>
2-1 Example Operation Template	2-3
2-2 Example Primitive List	2-4
2-3 Service Overview Table	2-8
3-1 MAL Message Header Fields	3-3
3-2 SEND Operation Template	3-5
3-3 SEND Primitive List	3-5
3-4 SEND Message Header Fields	3-7
3-5 SUBMIT Operation Template	3-9
3-6 SUBMIT Primitive List	3-10
3-7 SUBMIT Message Header Fields	3-13
3-8 Submit ACK Message Header Fields	3-14
3-9 REQUEST Operation Template	3-17
3-10 REQUEST Primitive List	3-18
3-11 REQUEST Message Header Fields	3-21
3-12 Request RESPONSE Message Header Fields	3-22
3-13 INVOKE Operation Template	3-26
3-14 INVOKE Primitive List	3-26
3-15 INVOKE Message Header Fields	3-30
3-16 Invoke ACK Message Header Fields	3-31
3-17 Invoke RESPONSE Message Header Fields	3-33
3-18 PROGRESS Operation Template	3-38
3-19 PROGRESS Primitive List	3-38
3-20 PROGRESS Message Header Fields	3-44
3-21 Progress ACK Message Header Fields	3-45
3-22 Progress UPDATE Message Header Fields	3-47
3-23 Progress RESPONSE Message Header Fields	3-50
3-24 PUBLISH-SUBSCRIBE Operation Template	3-61
3-25 PUBLISH-SUBSCRIBE Register Operation Template	3-61
3-26 PUBLISH-SUBSCRIBE Publish Register Operation Template	3-62
3-27 PUBLISH-SUBSCRIBE Publish Operation Template	3-62
3-28 PUBLISH-SUBSCRIBE Publish Error Operation Template	3-62
3-29 PUBLISH-SUBSCRIBE Notify Operation Template	3-62
3-30 PUBLISH-SUBSCRIBE Notify Error Operation Template	3-63
3-31 PUBLISH-SUBSCRIBE Deregister Operation Template	3-63
3-32 PUBLISH-SUBSCRIBE Publish Deregister Operation Template	3-63
3-33 PUBLISH-SUBSCRIBE Primitive List	3-66
3-34 REGISTER Message Header Fields	3-77
3-35 REGISTER_ACK Message Header Fields	3-78
3-36 PUBLISH_REGISTER Message Header Fields	3-81
3-37 PUBLISH_REGISTER_ACK Message Header Fields	3-82
3-38 PUBLISH Message Header Fields	3-86

<u>Table</u>	<u>Page</u>
3-39 PUBLISH_ERROR Message Header Fields	3-87
3-40 NOTIFY Message Header Fields	3-89
3-41 DEREGISTER Message Header Fields.....	3-92
3-42 DEREGISTER_ACK Message Header Fields	3-94
3-43 PUBLISH_DEREGISTER Message Header Fields	3-95
3-44 PUBLISH_DEREGISTER_ACK Message Header Fields.....	3-97
3-45 CHECK Operation Template.....	3-101
3-46 CHECK Primitive List.....	3-102
3-47 SUPPORTEDQOS Operation Template	3-106
3-48 SUPPORTEDQOS Primitive List	3-106
3-49 SUPPORTEDIP Operation Template.....	3-109
3-50 SUPPORTEDIP Primitive List.....	3-109
3-51 TRANSMIT Operation Template.....	3-112
3-52 TRANSMIT Primitive List.....	3-113
3-53 TRANSMITMULTIPLE Operation Template	3-116
3-54 TRANSMITMULTIPLE Primitive List	3-117
3-55 RECEIVE Operation Template	3-120
3-56 RECEIVE Primitive List	3-120
3-57 RECEIVEMULTIPLE Operation Template.....	3-123
3-58 RECEIVEMULTIPLE Primitive List.....	3-123
5-1 Standard MAL Error Codes.....	5-1
7-1 Conformance Matrix.....	7-1