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The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

MISSION OPERATIONS MESSAGE ABSTRACTION LAYER—JAVA API

RECOMMENDED PRACTICE

CCSDS 523.1-M-1

MAGENTA BOOK

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1 INTRODUCTION

1.1 PURPOSE OF THIS RECOMMENDED PRACTICE

This Recommended Practice defines a Java API for the Mission Operations (MO) Message Abstraction Layer (MAL) specified in reference [1].

1.2 SCOPE

The scope of this Recommended Practice is the definition of all concepts and terms that establish a Java API for consuming and providing MO services on top of the MAL. The MAL Java API is intended to maximize the portability of the MO components across various underlying MAL implementations and transport protocols.

1.3 APPLICABILITY

This Recommended Practice serves as a specification of a Java API providing all the concepts defined by the MAL, in particular the interaction patterns, the access control and transport interfaces.

The API supports version 1 of the MAL as specified in reference [1].

The API depends on Java 5.

1.4 RATIONALE

The goal of this Recommended Practice is to document how to develop and utilize MAL-based services using Java (reference [2]).

Another objective is to create a guide for promoting portability between various software packages implementing the MAL Java API and applications using the MAL Java API.

1.5 DOCUMENT STRUCTURE

This Recommended Practice is organized as follows:

a) section 1 provides purpose and scope, and lists definitions, conventions, and references used throughout the Recommended Practice;

b) section 2 gives an overview of the API;

c) section 3 defines the MAL API that represents the MAL service interface;

d) section 4 defines how a MAL service specification is mapped to Java;

e) section 5 defines the transport API that represents the MAL transport interface;

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f) section 6 defines the access control API that represents the MAL access control interface;

g) section 7 defines the encoding API, an optional set of interfaces that can be used by the transport layer in order to externalize the encoding behaviour.

NOTE – Some application code examples are given in annex C.

1.6 DEFINITIONS

Attribute: Either

– a field of a Java class called ‘attribute’,

– the data type MAL::Attribute, or

– the interface Attribute defined in the MAL Java API.

1.7 CONVENTIONS

1.7.1 NOMENCLATURE

The following conventions apply for the normative specifications in this Recommended Practice:

a) the words ‘shall’ and ‘must’ imply a binding and verifiable specification;

b) the word ‘should’ implies an optional, but desirable, specification;

c) the word ‘may’ implies an optional specification;

d) the words ‘is’, ‘are’, and ‘will’ imply statements of fact.

NOTE – These conventions do not imply constraints on diction in text that is clearly informative in nature.

1.7.2 INFORMATIVE TEXT

In the normative sections of this document (sections 3-7), informative text is set off from the normative specifications either in notes or under one of the following subsection headings:

– Overview;

– Background;

– Rationale;

– Discussion.

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