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**Space data and information transfer  
systems — Attitude data messages**

*Systèmes de transfert des informations et données spatiales —  
Messages de données d'attitude*

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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 504.0-B-1 Cor.1, July 2015) and was adopted (without modifications) by Technical Committee ISO/TC 20, *Space vehicles*, Subcommittee SC 13, *Space data and information transfer systems*.

This second edition cancels and replaces the first edition (ISO 13541:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

- adds clarifying text to 1.3, Conventions and Definitions.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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# 1 INTRODUCTION

## 1.1 PURPOSE

**1.1.1** This Attitude Data Message (ADM) Recommended Standard specifies two standard message formats for use in transferring spacecraft attitude information between space agencies: the Attitude Parameter Message (APM) and the Attitude Ephemeris Message (AEM). Such exchanges are used for:

- preflight planning for tracking or attitude estimation support;
- scheduling attitude and data processing support;
- carrying out attitude operations;
- performing attitude comparisons;
- carrying out attitude propagations and/or sensor predictions;
- testing to initialize sub-system simulators (communications, power, etc.).

**1.1.2** This Recommended Standard includes sets of requirements and criteria that the message formats have been designed to meet. For exchanges where these requirements do not capture the needs of the participating agencies, another mechanism may be selected.

## 1.2 SCOPE AND APPLICABILITY

**1.2.1** This document contains two attitude data messages designed for applications involving data interchange in space data systems. The rationale behind the design of each message is described in annex B and may help the application engineer to select a suitable message. Definition of the attitude accuracy underlying a particular attitude message is outside of the scope of this Recommended Standard and should be specified via Interface Control Document (ICD) between data exchange participants. Applicability information specific to each Attitude Data Message format appears in sections 3 and 4, as well as in annex subsection B3.

**1.2.2** This Recommended Standard is applicable only to the message format and content, but not to its transmission. The transmission of the message between agencies is outside the scope of this document and should be specified in an ICD or by following a CCSDS standard on transmission.

**1.2.3** Description of the message formats based on the use of the eXtensible Markup Language (XML) will be available. An XML schema is defined by the CCSDS Recommended Standard titled 'XML Specification for Navigation Data Messages' (reference [5]). Agencies should specify, via ICD, the ASCII file format to be exchanged (Keyword Value Notation [KVN] or XML).