Consultative Committee for Space Data Systems

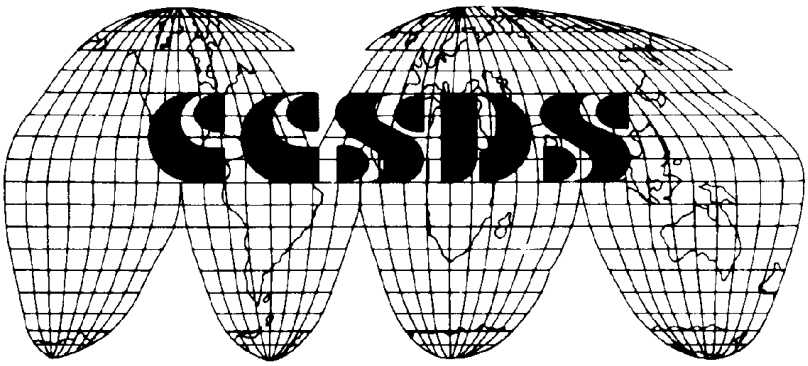
RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS

STANDARD FORMATTED DATA UNITS -- CONTROL AUTHORITY PROCEDURES

CCSDS 630.0-B-1

BLUE BOOK

June 1993



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This Recommendation reflects the consensus technical agreement of the following member Agencies of the Consultative Committee for Space Data Systems (CCSDS):

- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centre National D'Etudes Spatiales (CNES)/France.
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- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- National Aeronautics and Space Administration (NASA)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.

The following observer Agencies also concur with this Recommendation:

- Chinese Academy of Space Technology (CAST)/People's Republic of China.
- Department of Communications/Communications Research Center (DOC-CRC)/Canada.
- Institute of Space Research (IKI)/Russian Federation.

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STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of member space Agencies. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed RECOMMENDATIONS and are not considered binding on any Agency.

This RECOMMENDATION is issued by, and represents the consensus of, the CCSDS Plenary body. Agency endorsement of this RECOMMENDATION is entirely voluntary. Endorsement, however, indicates the following understandings:

- Whenever an Agency establishes a CCSDS-related STANDARD, this STANDARD will be in accord with the relevant RECOMMENDATION. Establishing such a STANDARD does not preclude other provisions which an Agency may develop.

- Whenever an Agency establishes a CCSDS-related STANDARD, the Agency will provide other CCSDS member Agencies with the following information:

  -- The STANDARD itself.

  -- The anticipated date of initial operational capability.

  -- The anticipated duration of operational service.

- Specific service arrangements shall be made via memoranda of agreement. Neither this RECOMMENDATION nor any ensuing STANDARD is a substitute for a memorandum of agreement.

No later than five years from its date of issuance, this Recommendation will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or (3) be retired or canceled.

In those instances when a new version of a RECOMMENDATION is issued, existing CCSDS-related Agency standards and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each Agency to determine when such standards or implementations are to be modified. Each Agency is, however, strongly encouraged to direct planning for its new standards and implementations towards the later version of the Recommendation.

FOREWORD

This document is a technical Recommendation for the standardization of the Control Authority organization for supporting the digital transfer of space-related information in an open system data interchange using Standard Formatted Data Units (SFDUs). Other aspects of the SFDU concept are described in documents listed in the Reference section.

This Recommendation defines the responsibilities that must be assumed and the services that must be provided by the participating CCSDS Agencies in order to facilitate the creation and operation of the Control Authority organization. The primary function of this organization is to register and disseminate data description information.

Through the process of normal evolution, it is expected that expansion, deletion, or modification to this document may occur. This Recommendation is therefore subject to CCSDS document management and change control procedures which are defined in Reference [1].

Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

DOCUMENT CONTROL

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CONTENTS

Section Page

REFERENCES vi

1 INTRODUCTION 1
1.1 Purpose and Scope 1
1.2 Applicability 1
1.3 Advised Approach to Reading the Document 2

2 CONTROL AUTHORITY ORGANIZATION AND RESPONSIBILITIES 3
2.1 Control Authority Organization 3
2.2 Control Authority Organization's Responsibilities 5
2.2.1 The CCSDS Secretariat's Responsibilities 5
2.2.2 The MACAO's Responsibilities 5

3 PROCEDURES FOR USER SERVICES 7
3.1 Request Processing 7
3.2 User Services Provided by the CA Agent 8
3.2.1 CCSDS Data Description Dissemination 8
3.2.2 Control Authority Annual Report Dissemination 8
3.3 User Services Provided by the MACAO 9
3.3.1 Data Description Registration 9
3.3.2 Data Description Dissemination 10
3.3.3 Data Description Revision 12

4 PROCEDURES FOR INTERNAL ADMINISTRATION 13
4.1 CCSDS Secretariat Internal Administration 13
4.1.1 Establishing a MACAO 13
4.1.2 Dissolution of a Primary MACAO 14
4.1.3 CA Annual Report Publication 14
4.2 MACAO Internal Administration 15
4.2.1 Establishing a Descendant MACAO 15
4.2.2 Dissolution of a Descendant MACAO 16
4.2.3 MACAO Annual Report Production 16

ANNEX A

ACRONYMS AND ABBREVIATIONS 19

ANNEX B

GLOSSARY 21

INDEX 25

Figure

Figure 2-1. Control Authority Organizational Structure 3

REFERENCES

[1] *Procedures Manual for the Consultative Committee for Space Data Systems*. CCSDS A00.0-Y-5. Yellow Book. Issue 5. Washington, D.C.: CCSDS, 1992 or later issue.

[2] *Standard Formatted Data Units—Structure and Construction Rules*. Recommendation for Space Data Systems Standards, CCSDS 620.0-B-2. Blue Book. Issue 2. Washington, D.C.: CCSDS, May 1992 or later issue.

[3] *Standard Formatted Data Units—A Tutorial*. Report Concerning Space Data Systems Standards, CCSDS 621.0-G-1. Green Book. Issue 1. Washington, D.C.: CCSDS, May 1992 or later issue.

[4] *Space Data Systems Operations with Standard Formatted Data Units: System and Implementation Aspects*. Report Concerning Space Data Systems Standards, CCSDS 610.0-G-5. Green Book. Issue 5. Washington, D.C.: CCSDS, February 1987 or later issue.

[5] *Standard Formatted Data Units—Control Authority Procedures Tutorial*. Report Concerning Space Data Systems Standards, CCSDS 631.0-G-1. Green Book. Issue 1. Washington, D.C.: CCSDS, June 1993 or later issue.

1 INTRODUCTION

1.1 Purpose and Scope

The quantity of data processed in space systems has increased greatly in the last decade. As programs of cooperation become more and more widespread, data interchange becomes a more important matter. Use of universally available data-format descriptions becomes essential in programs involving international cooperation. Therefore, an effort to standardize data interchange and the use of data descriptions is appropriate.

This document deals with an organization which handles the interchange of data descriptions. The organization is called the Control Authority; it facilitates the interchange of data descriptions between users who wish to process data and the Agency organizations which hold the data descriptions.

The objective of the Control Authority organization is to provide a data description management infrastructure supporting the Standard Formatted Data Unit (SFDU) concept (see References [2] and [3]). A complete mechanism for international data description archival and interchange will require the following components:

1. An internationally coordinated Control Authority organization to implement the services required.

2. A uniform set of responsibilities, services, and associated procedures for the members of this organization.

3. Standard sets of information used in the interactions among members of the Control Authority organization and users.

4. Standard data description languages and standard data structures to permit the writing and packaging of data descriptions.

5. A standard set of media and protocols for communication within the organization and between users and the organization.

The purpose of this document is to define points (1), (2) and (3) as described above.

The operating principles and procedures for the CCSDS are defined in Reference [1]. An overview of the general SFDU concept and the basic functions of the Control Authority organization are given in Reference [4]. Reference [5] contains the requirements and rationale for the Control Authority Procedures described by this document.

1.2 Applicability

This Recommendation is intended to be used by those involved in implementing the Control Authority organization and as a guideline for the development of internal Agency standards. It is also to be used by SFDU users as a description of available Control Authority services.

1.3 Advised Approach to Reading the Document

Familiarity with the SFDU concept is a prerequisite for understanding this Recommendation. If the reader is not familiar with the SFDU concept, it is advised that References [2], [3] and [4] be read prior to reading this Recommendation.

The document is structured as follows:

- Section 2 describes the Control Authority organization and its responsibilities.
- Section 3 describes the procedures for user services.
- Section 4 describes the procedures for the internal administration of the Control Authority organization. This section is intended only for implementors of the Control Authority organization.
- Annexes A and B provide a list of acronyms and abbreviations and a glossary of terms used in this document.

2 CONTROL AUTHORITY ORGANIZATION AND RESPONSIBILITIES

2.1 Control Authority Organization

The Control Authority organization supports the transfer and usage of SFDUs by providing data description registration, revision, and dissemination services. This organization, as shown in Figure 2-1, is composed of the following entities:

1. The CCSDS Secretariat, supported by the Control Authority (CA) Agent.

2. Member Agency Control Authority Offices (MACAOs).

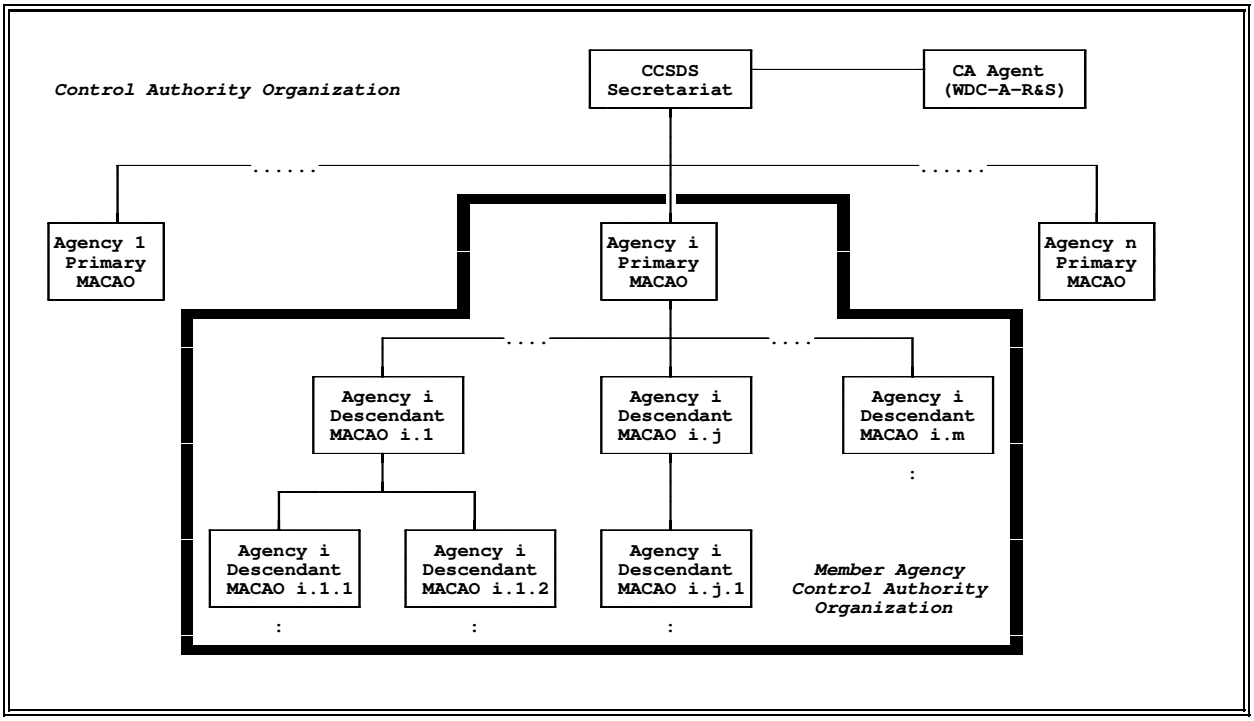

Figure 2-1. Control Authority Organizational Structure

Figure 2-1 shows the support relationship of the CA Agent to the CCSDS Secretariat. It also shows possible organization structures that participating Agencies may establish. For example, each Primary MACAO may choose to establish a hierarchy of MACAOs. If one does so, then each of the lower-level MACAOs is called a Descendant MACAO with respect to a higher-level MACAO (an Ascendant MACAO).

The CCSDS Secretariat delegates the tasks involved in fulfilling its responsibilities concerning Control Authorities, as identified in 2.2.1, to the CA Agent. The World Data Center A for Rockets and Satellites (WDC-A-R&S) is serving as the CA Agent.

A MACAO has the responsibilities identified in 2.2.2. Although there is a distinction made between Member and Observer Agencies within the CCSDS (Reference [1]), no distinction is made between these Agencies within the Control Authority organization. Therefore, Control Authority offices established by either Member or Observer Agencies are referred to as MACAOs. *(Note: In this document, unless otherwise specified, Control Authority office means any MACAO or the CA Agent, and MACAO means any Primary or Descendant MACAO).*

Each participating Agency that has implemented this Recommendation has established its own Primary MACAO. The Primary MACAO has overall responsibility for ensuring the Control Authority services for its Agency are provided.

The data description services of registration, revision, and dissemination provided by the Control Authority organization require unique identification of the data descriptions. In support of this process, an identification scheme for data descriptions that includes identification of the responsible Control Authority office is used. The method for identifying Control Authority offices is outlined immediately below. The full identification scheme for data descriptions is presented in Section 3.

Each Control Authority office in the Control Authority organization, including the CCSDS Secretariat together with the CA Agent, is identifiable throughout the CCSDS by a unique Control Authority Identifier (CAID). The CAID is a unique four-character Restricted-ASCII (RA) string (Reference [2], Annex D). The identification scheme is as follows:

1. for identifying the CCSDS Secretariat together with the CA Agent, the

   CAID = "CCSD";

2. for identifying a MACAO, the

   CAID = xyyy

   where: x = an RA character other than "Z",

   yyy = a three-RA-character string (xyyy cannot be "CCSD");

3. for identifying that the data description is not available from the Control Authority organization, the

   CAID = Zyyy

   where: Z = the RA character "Z",

   yyy = a three-RA-character string.

(Note: Any data description having a CAID beginning with "Z" is not available from a MACAO and may not be uniquely identified within the CCSDS domain. Therefore, users of these descriptions are responsible for the necessary associations between any data described by these descriptions and the descriptions themselves.)

2.2 Control Authority Organization's Responsibilities

The Control Authority organization's responsibilities performed by the CCSDS Secretariat and MACAOs are detailed in the following subsections.

2.2.1 The CCSDS Secretariat's Responsibilities

The CA Agent discharges the following responsibilities of the CCSDS Secretariat:

1. Ensure availability of all CCSDS data descriptions, i.e., those with CAID = "CCSD".

2. Disseminate CCSDS data descriptions (provided as CCSDS Recommendations) upon request.

3. Ensure uniqueness of MACAO CAIDs through interaction with the Primary MACAOs.

4. Receive and maintain organizational information on established MACAOs.

5. Publish an annual report that summarizes the Control Authority organization and activities for the year, and ensure availability of the content of all such previous reports.

6. If necessary, negotiate with other participating Agencies to identify one which will assume the data description revising, archiving and disseminating responsibilities of a participating Agency whose Primary MACAO is to be dissolved. Once a MACAO is dissolved, no new data descriptions shall be registered using the dissolved MACAO's CAID. However, revisions of previously registered data descriptions must continue to be accepted.

7. As necessary, assist participating Agencies in establishing Primary MACAOs.

8. Ensure that Primary MACAOs receive necessary written guidelines, Recommendations, and instructions for the operation of the Primary and Descendant MACAOs.

The following responsibilities are desirable:

9. Promote the use of CCSDS data descriptions.

10. Promote the reuse of data descriptions within and across Agencies.

11. Implement, register and disseminate software for supporting the SFDU concept, and publish and maintain a directory of all such software.

2.2.2 The MACAO's Responsibilities

The MACAO responsibilities are as follows:

1. Register new and revised data descriptions.

2. Disseminate data descriptions upon request.

3. Ensure availability of data descriptions which it has registered.

4. (Primary MACAO only) Request a CAID from the CA Agent for each Descendant MACAO to be established within its Control Authority organization.

5. (Primary MACAO only) Maintain a log of CAIDs assigned to its Descendant MACAOs.

6. As necessary, establish Descendant MACAOs. Any MACAO that establishes Descendant MACAOs maintains overall responsibility.

7. Ensure that Descendant MACAOs receive necessary written guidelines, Recommendations, and instructions for their operations.

8. Inform its Ascendant MACAO if it intends to cease fulfilling its Control Authority responsibilities. In the case of a Primary MACAO, the Primary MACAO shall inform the CA Agent.

9. Assume the data description archiving, revision, and dissemination responsibilities of any of its Descendant MACAOs that become inoperative, or ensure that another MACAO assumes these responsibilities. Once a MACAO is dissolved, no new data descriptions shall be registered using the dissolved MACAO's CAID.

10. Maintain statistics of requests processed and make them available for the annual report published by the CA Agent.

The following responsibilities are desirable:

11. Promote the use of CCSDS data descriptions.

12. Promote the reuse of data descriptions within and across Agencies.

13. Implement, register and disseminate software for supporting the SFDU concept, and publish and maintain a directory of all such software.

14. Provide the CCSDS Secretariat with information concerning operations of the Control Authority organization to improve each of the following:

    a. CCSDS Recommendations;

    b. CCSDS Reports;

    c. the discharge of CCSDS Secretariat CA responsibilities.

3 PROCEDURES FOR USER SERVICES

The procedures for user services provided by the CA Agent and MACAOs are defined in 3.2 and 3.3, respectively.

In the procedures for the services defined in 3.2 and 3.3, request processing is common to both; therefore, it is described in 3.1.

3.1 Request Processing

This service is the means of interaction between the CA organization and its users for all other Control Authority services defined in the following subsections (such as registering a data description or obtaining an Annual Report). The required information for each type of request, the information returned for each type of request, and any additional processing requirements are specified in the relevant subsections. The procedure for this service is as follows:

1. The user shall determine from the MACAO any requirements regarding submission of requests. The MACAO shall inform or negotiate with the user the following items:

    a. Specification of the medium (physical or electronic) on which the request will be sent.

    b. Details that will allow the MACAO to extract the information from the medium (e.g., file name, message title).

    c. Specification of the medium on which the response will be sent (e.g., hard copy, floppy disk, electronic mail).

2. A MACAO or the CA Agent shall accept a request for a provided service (see 3.2 and 3.3).

3. A response shall be sent to the requester within five working days of receipt of the request.

4. This response shall contain one of the following:

    a. The requested information.

    b. An explanation for the delay and the estimated date that the requested information is to be provided. If the requested information is still unavailable by that estimated date, a new estimated date and an explanation for the delay shall be provided.

    c. The reason the request cannot be fulfilled.

5. If the particular MACAO or the CA Agent is unable to fulfill a request, but it is likely that another Control Authority office can fulfill the request, it shall identify that Control Authority office. The MACAO may choose to forward the request, or simply provide the contact information. The response shall inform the requester of the specific action taken.

3.2 User Services Provided by the CA Agent

3.2.1 CCSDS Data Description Dissemination

This service is a means by which users may obtain the CCSDS data descriptions. The procedure for this service is as follows:

1. Upon receipt of a request for a CCSDS data description, the CA Agent shall disseminate the CCSDS Recommendation (i.e., the published document) that contains the requested data description. The CCSDS Authority and Description Identifier (ADID) is the only information required by the CA Agent to determine the data description desired. The CCSDS ADID shall be formulated as follows:

   CCSDS ADID = CCSDzzzz

   where: zzzz = CCSDS Data Description Identifier (DDID), composed of four RA characters, which, when combined with the CAID = "CCSD", makes the CCSDS ADID unique within the CCSDS domain.

2. The CA Agent shall respond to the requester with one of the following:

   a. The Recommendation defining the requested CCSDS ADID.

   b. An explanation of the delay in disseminating the Recommendation and the estimated date of dissemination.

   c. The reason why the ADID definition cannot be disseminated.

3.2.2 Control Authority Annual Report Dissemination

This service is the means by which users obtain the Control Authority Annual Report (as defined in 4.1.3). The procedure for this service is as follows:

1. The user must submit a request that includes the year of the Annual Report desired.

2. Upon receipt of the request, the CA Agent shall verify whether the report can be disseminated.

3. The CA Agent shall respond to the requester with one of the following:

   a. The requested Annual Report.

   b. An explanation for the delay of the dissemination of the report and the expected dissemination date.

   c. The reason why the report can not be disseminated.

3.3 User Services Provided by the MACAO

3.3.1 Data Description Registration

This service is the means by which data descriptions are registered by the Control Authority organization so that they are available upon request. The procedure for this service is as follows:

1. A Registration Package (RP) is used to supply all the necessary information for registering a data description. The RP contents shall include meaningful data for all the items listed below. Those items for which a value indicating "Not Applicable" is an option are identified appropriately.

    a. Submission date of the RP to the MACAO.

    b. Title, in English, of the data description.

    c. Brief description, in English, of the purpose and scope of the data description.

    d. Release Status [releasable, non-releasable]. This indicates whether the RP Originator says the data description can be made available to the user community. The RP Originator or Permitted Revisers are the only requesters that may receive the data description while the status is non-releasable.

    e. Revisability Status [revisable, non-revisable]. This indicates whether the data description can be revised. This status must be consistent with the contents of the Permitted Revisers list (see point h).

    f. Revision Comment, in English. The original RP will have a Revision Comment that indicates it is the original version of the data description.

    g. Identification of the RP Originator:
        1. Name (person and/or position).
        2. Affiliation ["Not Applicable" is an option].
        3. Postal address.
        4. Telephone number(s).
        5. Electronic mail address(es) ["Not Applicable" is an option].
        6. Facsimile number(s) ["Not Applicable" is an option].

    h. Identification of Permitted Revisers. The RP Originator is not automatically a Permitted Reviser. A list with no names may be submitted only if the Revisability Status is non-revisable. The Permitted Reviser information for each Permitted Reviser is:
        1. Name (person and/or position).
        2. Affiliation ["Not Applicable" is an option].
        3. Postal address.
        4. Telephone number(s).
        5. Electronic mail address(es) ["Not Applicable" is an option].
        6. Facsimile number(s) ["Not Applicable" is an option].

    i. The data description.

2. Upon receipt of the RP, the MACAO shall ensure that the information specified in point 1 above is sufficient to accept, and respond as appropriate.

3. Upon determining that the information provided is sufficient to register the data description, the MACAO shall assign the following to the data description:

   a. A unique identifier called a MACAO ADID to the data description. The MACAO ADID shall be formulated as follows:

      MACAO ADID = xyyyzzzz

      where: xyyy = MACAO CAID as defined in 2.1;
      zzzz = MACAO Data Description Identifier (DDID), composed of four RA characters, which, when combined with the CAID, makes the MACAO ADID unique within the CCSDS domain.

   b. A Revision Number of zero (0).

   c. A Registration Date.

4. The MACAO shall archive the data description.

5. The MACAO shall respond to the RP Originator with one of the following:

   a. The registered data description, which includes the assigned MACAO ADID. The data description shall be transmitted within a Data Description Package (see 3.3.2).

   b. An explanation for the delay in registering the data description and the expected date when the data description will be registered.

   c. An explanation for not registering the data description.

3.3.2 Data Description Dissemination

This service is the means by which users acquire data descriptions. The procedure for this service is as follows:

1. The MACAO receives a request for a data description. Any request for a data description must include the data description's ADID and, optionally, the Revision Number (see point 2.a.7) (the latest releasable revision is the default).

2. The MACAO shall reply to the requester (i.e., the user making the request) with one of the following:

   a. A Data Description Package (DDP), which contains the following:

      1. The ADID of the data description.
      2. Title, in English, of the data description.
      3. Brief description, in English, of the purpose and scope of the data description.

4. Registration date of the data description. This is the date a MACAO assigns an ADID or increments the Revision Number of the data description to the value for the Revision being disseminated.
5. Release Status [releasable, non-releasable]. This indicates whether the data description is available to the user community. The RP Originator or Permitted Revisers are the only requesters that may receive the data description while the status is non-releasable.
6. Revisability Status [revisable, non-revisable]. This indicates whether the data description can be revised.
7. Revision Number of the data description. The original DDP will have 0 (zero) as its Revision Number.
8. Revision Comment, in English. The DDP resulting from the original RP will have a Revision Comment that indicates the DDP is for the original submission.
9. Identification of the RP Originator.
   A. Name (person and/or position).
   B. Affiliation ["Not Applicable" is an option].
   C. Postal address.
   D. Telephone number(s).
   E. Electronic mail address(es) ["Not Applicable" is an option].
   F. Facsimile number(s) ["Not Applicable" is an option].
10. Identification of Permitted Revisers. The RP Originator is not automatically a Permitted Reviser.
   A. Name (person and/or position).
   B. Affiliation ["Not Applicable" is an option].
   C. Postal address.
   D. Telephone number(s).
   E. Electronic mail address(es) ["Not Applicable" is an option].
   F. Facsimile number(s) ["Not Applicable" is an option].
11. The data description.

b. An explanation for the delay in dissemination and the expected dissemination date.

c. An explanation indicating why the data description cannot be disseminated.

3.3.3 Data Description Revision

This service is the means by which revisions to a registered data description are made. A revision is always against the most recent releasable data description having the same ADID.

Revised data descriptions must continue to apply to all existing data carrying the associated ADID. *For example, a revision may correct an error or clarify the semantics of a data description.* If existing data may not be supported by the change being made, then the data description will have to be registered as a new data description and assigned a new ADID (see 3.3.1). The procedure for the Data Description Revision service is as follows:

1. To revise a registered data description, any one of the Permitted Revisers shall submit a Revision Registration Package (RRP) in the same manner as when registering a new data description (see 3.3.1, point 1), except that its previously assigned ADID and a Revision Comment shall be included. The Permitted Reviser submitting the Revision Registration Package now becomes the RP Originator of this package.

2. The MACAO shall check the following before accepting the revision:

    a. The registered data description is revisable and the request for change has come from one of the Permitted Revisers.

    b. The RRP contents (as described in 3.3.1, point 1) are included.

3. If the RRP contents are sufficient to register the data description, the MACAO shall do the following:

    a. Increment the Revision Number to be 1 greater than the highest Revision Number for releasable data descriptions having the same ADID.

    b. Assign the Registration Date.

    c. Archive the revised data description under this Revision Number so that it is retrievable via its MACAO ADID and the Revision Number. The original and all revisions of a releasable data description shall always be available (i.e., they are permanently archived). Only the most recent non-releasable revision of a data description for a given ADID need be archived.

4. The MACAO shall respond to the Permitted Reviser with one of the following:

    a. The MACAO ADID and the new Revision Number assigned to the data description. This MACAO ADID shall be transmitted within a Data Description Package (see 3.3.2).

    b. An explanation for the delay in registering the revision of the data description, and the date when the data description is expected to be registered.

    c. An explanation for not registering the revision of the data description .

4 PROCEDURES FOR INTERNAL ADMINISTRATION

4.1 CCSDS Secretariat Internal Administration

4.1.1 Establishing a MACAO

This procedure is the means by which a participating Agency establishes its participation in the Control Authority organization. To participate in the Control Authority Organization, an Agency must establish a Primary MACAO; it may subsequently establish Descendant MACAOs.

1. To establish a Primary MACAO, the participating Agency representative, who is the CCSDS Head of Delegation, submits a request to the CA Agent. This request shall contain the following information:

    a. Name of participating Agency.

    b. Name of participating Agency representative to CCSDS.

    c. Postal address of participating Agency representative.

    d. Telephone number(s) of participating Agency representative.

    e. Electronic mail address(es) of participating Agency representative.

    f. Facsimile number(s) of participating Agency representative ["Not Applicable" is an option].

    g. Proposed CAID for this Primary MACAO.

    h. Name of Primary MACAO.

    i. Name of principal contact (person or position) at the Primary MACAO.

    j. Name of secondary contact (person or position) at the Primary MACAO.

    k. Postal address of Primary MACAO.

    l. Telephone number(s) of Primary MACAO.

    m. Electronic mail address(es) of the Primary MACAO ["Not Applicable" is an option].

    n. Facsimile number(s) of the Primary MACAO ["Not Applicable" is an option].

2. To establish a Descendant MACAO, the Primary MACAO shall submit a request containing the information listed in 4.2.1, point 2, to the CA Agent.

3. The CA Agent shall ensure that the proposed CAID is unique, approve or reject it, and notify the Agency.

    a. In the case of establishing a Primary MACAO, the CA Agent shall respond to the Agency representative. Once the CAID is approved, the CA Agent shall provide this CAID, along with a copy of all CCSDS standards and guidelines applicable to MACAOs, to the Agency representative.

b. In the case of establishing a Descendant MACAO, the CA Agent shall respond to the Primary MACAO. Once the CAID is approved, the CA Agent shall provide this CAID to the Primary MACAO.

4. The CA Agent shall archive the information provided in points 1 or 2 above.

4.1.2 Dissolution of a Primary MACAO

This procedure is the means by which a participating Agency terminates its participation in the Control Authority organization.

1. A participating Agency informs the CA Agent that it intends to dissolve its Primary MACAO.

2. The CA Agent shall negotiate with other participating Agencies to identify one that will assume the data description revising, archiving, and disseminating responsibilities of the Agency whose Primary MACAO is to be dissolved.

4.1.3 CA Annual Report Publication

This procedure is the means by which the Control Authority organization publishes information about its current status and activities.

1. The CA Agent receives, by 14 February, the previous year's activity summary (see 4.2.3) from each Primary MACAO.

2. The CA Agent shall publish a report for the previous calendar year, to be distributed by 31 March of the current year. This report shall contain the following information:

   a. A list of all CAIDs, descriptions of each participating Agency's Control Authority organizational structure, and all contact information for each MACAO.

   b. For each CCSDS data description:

      1. The ADID of the data description.
      2. Title of the data description.
      3. CCSDS Recommendation document number.
      4. CCSDS Recommendation publication date.
      5. Brief description, in English, of the purpose and scope of the data description.

   c. A list of MACAOs which have been dissolved and contact information for the organization that has assumed responsibility for the affected data descriptions at each dissolved MACAO.

   d. For each releasable data description registered or revised at each MACAO during the previous calendar year:

      1. The ADID of the data description.
      2. Title, in English, of the data description.
      3. Brief description, in English, of the purpose and scope of the data description.

4. Registration Date of the data description.
5. Revision Number.
6. Revision Comment, in English.
7. Status indicating revisable or non-revisable.

e. A summary of the Control Authority organization's statistics for the previous calendar year, as follows:

1. Number of Primary and Descendant MACAOs established.
2. Number of CCSDS Recommendations disseminated.
3. Number of MACAO ADIDs assigned.
4. Number of data description revisions.
5. Number of ADIDs assigned to non-releasable data descriptions.
6. Number of non-releasable revisions to data descriptions.
7. Number of requests received for each ADID.

f. A list of all data descriptions, identified by ADID, that have been put forward by the MACAOs during the previous calendar year as candidates for the CCSDS standardization process.

3. This Annual Report shall be available to the CCSDS Secretariat, participating Agencies, and all MACAOs and to individual users by request under the procedures specified in 3.2.2.

4.2 MACAO Internal Administration

4.2.1 Establishing a Descendant MACAO

This procedure is the means by which any MACAO establishes a Descendant MACAO.

1. The Ascendant MACAO shall coordinate with the Primary MACAO in proposing a CAID for the Descendant MACAO. The Ascendant MACAO shall provide the Descendant MACAO with all applicable MACAO standards and guidelines.

2. The Primary MACAO shall forward the following information to the CA Agent:

Participating Agency and Primary MACAO Identification

a. Name of Participating Agency.

b. Name of Primary MACAO.

c. CAID of Primary MACAO.

d. Name of principal contact (person or position) at the Primary MACAO.

e. Postal address of Primary MACAO.

Descendant MACAO Identification

f. Proposed CAID of Descendant MACAO.

g. Name of Descendant MACAO.

h. Name of principal contact (person or position) at Descendant MACAO.

i. Name of secondary contact (person or position) at Descendant MACAO.

j. Postal address of Descendant MACAO.

k. Telephone number(s) of Descendant MACAO.

l. Electronic mail address(es) of Descendant MACAO ["Not Applicable" is an option].

m. Facsimile number(s) of Descendant MACAO ["Not Applicable" is an option].

n. CAID of the Ascendant MACAO (i.e., the MACAO responsible for the Descendant MACAO).

3. Upon receiving an approved CAID from the CA Agent, the Primary MACAO shall inform the Ascendant MACAO (of the newly established MACAO) of this CAID and shall update its log of Agency CAIDs.

4.2.2 Dissolution of a Descendant MACAO

This procedure is the means by which a Descendant MACAO would be eliminated from the CA organization.

1. A Descendant MACAO informs its Ascendant MACAO and its Primary MACAO that it intends to dissolve.

2. The Primary MACAO shall ensure that another MACAO takes over the responsibilities of the MACAO to be dissolved.

3. The Primary MACAO shall notify the CA Agent of the dissolution and shall identify which MACAO has assumed responsibility for the affected data descriptions.

4.2.3 MACAO Annual Report Production

This procedure is the means by which MACAO service activity is reported to the CA Agent for inclusion in the CA Annual Report.

Each Primary MACAO shall provide the CA Agent with the following activity summary by 14 February of the calendar year following the activity:

1. A list of all MACAO CAIDs from the participating Agency, a description of the participating Agency CA organizational structure, and all contact information for each of its MACAOs.

2. For each releasable data description registered or revised during the calendar year at each of its MACAOs, the following information shall be provided:

   a. The ADID of the data description.

   b. Title, in English, of the data description.

   c. Brief description, in English, of the purpose and scope of the data description.

   d. Registration Date of the data description.

   e. Revision Number.

   f. Revision Comment, in English.

   g. Status indicating revisability or non-revisability.

3. A summary of each MACAO's statistics accumulated for the previous calendar year, as follows:

   a. Number of MACAO ADIDs assigned.

   b. Number of data description revisions.

   c. Number of requests received for each ADID.

   d. Number of ADIDs assigned to non-releasable data descriptions.

   e. Number of non-releasable revisions to data descriptions.

   f. A list of all data descriptions, identified by ADID, that the MACAO has suggested during the year as candidates for submission to the CCSDS standardization process.

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ANNEX A

ACRONYMS AND ABBREVIATIONS

Purpose:

This annex defines the acronyms and abbreviations which are used throughout this Recommendation.

Term	Meaning
ADID	Authority and Description Identifier
ASCII	American Standard Code for Information Interchange
CA	Control Authority
CAID	Control Authority Identifier
CCSDS	Consultative Committee for Space Data Systems
DDID	Data Description Identifier
DDP	Data Description Package
MACAO	Member Agency Control Authority Office
RA	Restricted ASCII
RP	Registration Package
RRP	Revision Registration Package
SFDU	Standard Formatted Data Unit
WDC-A-R&S	World Data Center A for Rockets and Satellites

ANNEX B

GLOSSARY

Purpose:

This annex defines the key terms which are used throughout this Recommendation.

ASCII: The term used to identify the American Standard Code for Information Interchange (see Reference [2], Annex D).

Authority and Description Identifier (ADID): The concatenation of the Control Authority Identifier (CAID) and the Data Description Identifier (DDID).

CCSDS ADID: The combination of the CAID = "CCSD" and a four-character RA string which makes the identifier unique within the CCSDS domain.

Control Authority (CA): An organization under the auspices of CCSDS which supports the transfer and usage of SFDUs by providing operational services of registration, archiving, and dissemination of data descriptions. It comprises:

- The CCSDS Secretariat supported by the CA Agent
- Member Agency Control Authority Offices (MACAOs)

Control Authority Agent (CA Agent): An organizational entity that has agreed to discharge the CA responsibilities of the CCSDS Secretariat. The WDC-A-R&S has agreed to act as this agent. Overall CA responsibility rests with the CCSDS Secretariat.

Control Authority Identifier (CAID): A four-character restricted-domain ASCII string, which identifies an individual CA office or the CCSDS Secretariat.

Data Description Package (DDP): The combination of a data description, its ADID, and identification information, originating from MACAOs and supplied to users to facilitate understanding of data.

Data Description Identifier (DDID): A four-character restricted-ASCII string, assigned by a MACAO or the CCSDS, to distinguish among descriptions with the same CAID (see Reference [1]).

Member Agency Control Authority Office (MACAO): An individual CCSDS-participating Agency organization that has accepted the operational responsibilities and constraints specified within CCSDS Recommendations on CA operations.

Participating Agency: A Member or Observer Agency of the CCSDS.

Open System Data Interchange: The process of transferring data from one open system to another. An open system is one which uses publicly available formats and protocols, so that anyone can communicate with the open system by following the open system standards. It should be noted that open system does not imply an uncontrolled or unrestricted access to the data.

Permitted Revisers: A list of individuals or organizations that have been specified, in a Registration Package, as having the authority to submit a revision of the data description in that Registration Package.

Primary MACAO: The entity in the Control Authority organization that has overall responsibility for ensuring Control Authority services for its Agency and any of its Descendant MACAOs are provided.

Registration Date: The date a MACAO assigns an ADID or increments a Revision Number of a data description.

Registration Package (RP): A particular data description, with its accompanying identification information, intended for registration by a MACAO.

Restricted ASCII (RA) Character: A character from the ASCII character set consisting of the numeric characters 0-9, and the upper-case letters, A–Z, of the Roman alphabet.

Revision Registration Package (RRP): A revision of a particular data description, with its accompanying identification information, intended for registration by a MACAO.

RP Originator: That individual or organization that submits the Registration Package to a MACAO and accepts responsibility for the RP content.

Standard Formatted Data Unit (SFDU): Data that conform to CCSDS SFDU Recommendations for structure, construction rules, and field specification definition.

Submission Date: The date the RP is submitted to a MACAO, as determined by the RP Originator.

World Data Center A for Rockets and Satellites (WDC-A-R&S): An organization under the World Data Center that is collocated with NASA's National Space Science Data Center. It responds to world-wide requests for information about rockets and satellites and performs related services.

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INDEX

Agency . . . . . i, ii, 1, 3-5, 13-16, 20, 22
- Member . . . . . i, ii, 3, 20, 22
- Observer . . . . . i, 3, 4, 22
- Participating 3-5, 13-16, 22

Annual Report 5, 6-8, 14-16
CA Agent 3-8, 13-16, 22
CAID 4-6, 8, 10, 13-16, 20, 22
CCSDS Secretariat . . . . . i, iii, 3-6, 13, 15, 22
Data Description . . . . . iii, 1, 3-12, 14, 15, 17, 20, 22, 23
- Archiving 6
- Dissemination 8, 10
- Registration 3, 9
- Revision 12

MACAO 3-6, 7, 9-17, 20, 22, 23
- Ascendant 3, 6, 15, 16
- Descendant 3, 4, 6, 13-16
- Primary 3-6, 13-16, 22

Permitted Reviser 9, 11, 12
Registration Package 9, 12, 20, 22, 23
- RP 9-12, 20, 23
- RRP 12, 20, 23

RP Originator 9-12, 23