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OGC SPACE STANDARDS DOMAIN WORKING GROUP CHARTER

STANDARD

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I PREFACE

Table 1

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Authors: Charles Heazel

Table 2

OGC Space Standards Domain Working Group Charter

Table 3

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II SECURITY CONSIDERATIONS

No security considerations have been made for this document.

2

INTRODUCTION

2 INTRODUCTION

This Domain Working Group (DWG) charter defines the role for OGC activities within the Space domain and to provide an open forum for the discussion and presentation of interoperability requirements, use cases, pilots, and implementations of OGC Standards in this domain. This Charter is to be presented to the OGC's Technical and Planning Committees for consideration.

Domains are distinct Information Communities that defines a user domain where:

- A distinct market, application, or business approach exists;
- Common data definition, structure, syntax, and definitions exists;
- Common user requirements exist; and/or
- Common approach to vendors exists

2.1. Working Group

Operation of OGC Domain Working Group follows the policies and procedures of the Technical Committee. The following definition from the Technical Policies and Procedures apply to this DWG Charter template.

Domain Working Group: A group (organizationally, a subgroup of the TC) of individuals composed of members of the TC and invited guests, with the specific intent of solving some particular interoperability problem or problems in a particular technology domain for recommendation to the Technical Committee.

Functions of a Domain Working Group are as follows.

- Provide a forum for discussion and documentation of interoperability requirements for a given information or user community.
- Provide a forum to discuss and recommend document actions related to Interoperability Program Reports.
- Develop Change Requests Proposals (CRPs) for existing OGC Standards.
- Develop engineering reports with the intent seeking approval by the TC for release of these documents as OGC White Papers, Discussion Papers or Best Practices Papers.
- Informational presentations and discussions about the market use of adopted OGC Standards.
- Have a formal approved charter that defines the DWGs Scope of Work and estimated timeline for completion of the work.

- Have all-member voting policies (unless otherwise stated).
- Have missions and goals defined by the TC.

A DWG Does Not work on Standards submissions, candidate Standards, or revisions to existing OGC Standards. However, a DWG can develop change requests as document interoperability requirements that can then be submitted as work items to a Standards Working Group (SWG).

A DWG may determine that they wish to have public collaboration, such as in teleconference, email discussions, or a public twiki. In this case, the DWG shall make a motion to the TC to approve public participation in the DWG. Voting in DWGs is by simple majority of OGC Members present at the WG meeting, not just Voting TC Members, with the caveat that no OGC Member organization may cast more than one vote in a WG vote.

3

PURPOSE OF WORKING GROUP

3 PURPOSE OF WORKING GROUP

The Space Standards Domain Working Group will serve as a forum to identify requirements for standardization which are unique for the Space Domain, identify which organizations (if any) are working those requirements, and to promote harmonization and integration of shared concepts across all Space standards.

4

PROBLEM STATEMENT

4 PROBLEM STATEMENT

There is no common concept of “Space Standards”. The Space domain is composed of a wide collection of initiatives, each addressing one part of the whole. Each of these initiatives is developing their own standards and conventions. Attempts to harmonize across these initiatives is limited.

While the OGC cannot solve this problem for all disciplines, it can make sure that the concepts of space and time are consistent and interoperable across all communities in the Space domain. In addition, we can identify emerging Space domain standards which would impact our existing OGC Standards and encourage the impacted SWGs and DWGs to take appropriate action.

5

CHARTER

5 CHARTER

5.1. Charter members

The initial membership of the Space Standards Domain Working Group will consist of the following members and individuals with extensive education and experience in the Space Domain, namely:

Table 4

Name	Email	Organization
Charles Heazel	cheazel@heazeltech.com	Heazeltech

5.2. Key activities

1. Serve as an umbrella DWG for all OGC Domain Working Groups working in the Space Domain.
2. Identify and document missions in the Space Domain which may have unique standardization requirements.
3. Identify and document initiatives which are developing Space standards and conventions.
4. Identify opportunities for the OGC to provide spatial-temporal data models, services, design patterns, and other architectural elements which can serve as a common capability across all Space standardization initiatives.
5. Stay current on OGC Space related initaitives and be prepared to report on these efforts to other non-OGC initiatives.
6. Liaison with Space standardization initiatives as needed to promote commonality in space-time concepts.
7. Establish Standards Working Groups as needed to address Space related requirements which are not otherwise being addressed.

5.3. Business case

The domain for Space Standards is large and diverse. There is a risk that the standards, conventions, and practices arising from these diverse interests will be fragmented and non-interoperable. This Domain Working Group seeks to mitigate that risk by promoting space and time as a common enabling technology for all application communities in the Space domain.

6

ORGANIZATIONAL APPROACH AND SCOPE OF WORK

6 ORGANIZATIONAL APPROACH AND SCOPE OF WORK

6.1. Business goals

1. Establish liaison relations with key initiatives in space Standards
2. Achieve consensus on concepts for space and time based on OGC standards.
3. Extend OGC Standards to support missions in the Space Domain.

6.2. Mission and Role

To serve as a coordinating body for Space Standards leading to interoperable representations for space and time across all Space Standards.

6.3. Activities planned for Space Systems DWG

1

NORMATIVE REFERENCES

1 NORMATIVE REFERENCES

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Some of the resources relevant to the work of this DWG are described below.

1.1. Flexible Image Transport System (FITS)

1. FITS Format for Planetary Surfaces: Definitions, Applications, and Best Practices gives an overview of FITS and the software ecosystem.
2. Planetary Data FITS format and metadata convention is a wiki page with tables of proposed new keywords for FITS.
3. Representations of world coordinates in FITS describes how are assigned physical coordinate values of the image pixels.
4. Representations of celestial coordinates in FITS applies spherical map projections to above coordinates.

1.2. The Consultative Committee for Space Data Systems (CCSDS)

The CCSDS is a multi-national forum for the development of communications & data systems standards for spaceflight. Their publications include:

- Space Interworking Services Area, https://public.ccsds.org/Publications/SIS.aspx
- Motion Imagery, https://public.ccsds.org/Pubs/706x1g2.pdf
- Digital Motion Imagery, https://public.ccsds.org/Pubs/766x1b3.pdf
- Space Link Service Area, https://public.ccsds.org/Publications/SLS.aspx

The full set of CCSDS publications can be found at https://public.ccsds.org/Publications/AllPubs.aspx

In 1990, CCSDS entered into an arrangement with the International Standards Organization (ISO) which would allow completed CCSDS standards to be processed and approved as ISO standards. To effect that, ISO Technical Committee 20 Subcommittee 13 was formed and designated "Space Data and Information Transfer Systems". Effectively, the CCSDS membership now has a dual role, functioning as the CCSDS standards body and as the ISO TC20/SC13 standards body.

ISO TC20/SC13 publications are available from https://cwe.ccsds.org/cmc/docs/Forms/AllItems.aspx?RootFolder=/cmc/docs/ISO%20TC20-SC13%20Subcommittee&

1.3. NASA SPICE Toolkit

NASA's Navigation and Ancillary Information Facility (NAIF) offers NASA flight projects and NASA funded researchers the "SPICE" observation geometry information system to assist scientists in planning and interpreting scientific observations from space-based instruments aboard robotic planetary spacecraft. SPICE is also used in support of engineering tasks associated with these missions. While planetary missions were the original focus, today SPICE is also used on some heliophysics and earth science missions.

The SPICE Toolkit is available from this JPL Web Site https://naif.jpl.nasa.gov/naif/toolkit.html

1.4. Double Asteroid Redirection Test

1. NASA Planetary Defense Coordination Office: https://www.nasa.gov/specials/pdco/index.html
2. DART Mission Web Site: https://dart.jhuapl.edu/
3. From Hubble: https://www.nasa.gov/feature/goddard/2022/webb-hubble-capture-detailed-views-of-dart-impact
4. IAC-17.A3.4B.2 is a paper which describes the DART mission. It includes a description of the flight path which may be sufficient to synthesize DART trajectory data. It is available from https://www.researchgate.net/publication/312193122_AIDADART_Double_Asteroid_Redirection_Test