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**Charter for the Solar System Interest Group**

**Version 1.01**

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**Abstract**

This note describes the Charter of the Solar System Interest Group, detailing its scope and objectives.

**Status of This Document**

This is an IVOA Note expressing suggestions from and opinions of the authors. It is intended to share best practices, possible approaches, or other perspectives on interoperability with the Virtual Observatory. It should not be referenced or otherwise interpreted as a standard specification.

**Acknowledgements**

This note has been reviewed and accepted by the IPDA Steering Committee.

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# Motivation

Various groups throughout the world are actively involved in the development of standards and tools to support the capture, management, access and use of scientific data across planetary science, astrophysics, and heliophysics observatories, experiments and models. These various groups are using similar instrumentation and therefore similar types of data or models. This is calling for coordination on interoperability.

Many of these communities have developed online systems and efforts have been made across each of these communities to establish international presence. These groups are linked with the IVOA (International Virtual Observatory Alliance), the IPDA (International Planetary Data Alliance), the SPASE (Space Physics Archive Search and Extract) group, the OGC (Open Geospatial Consortium), and various other smaller scale projects (such as the EU funded Europlanet project, but not restrictively). These groups have been assessing and tailoring standards that need to be now coordinated with acknowledged international entities such as IVOA, IPDA, SPASE or IAU (International Astronomical Union).

The IVOA defines interoperability standards mainly driven by astronomy science cases. Some IVOA standards are also used in other disciplines and in particular for some solar and planetary science related projects. In this context, closer collaboration between the two alliances (IPDA and IVOA) has been started to determine common interests, possibility of knowledge sharing and re-use of interoperable standards.

The IPDA [1,2] defines standards for the capture of compatible archives based on a common information model and a set of standards for constructing planetary science archives. A significant amount of the IPDA efforts revolve around developing the interface between missions/data providers and planetary science data archives to ensure that data products can be delivered and archived using common metadata and data definitions based on the PDS4 standards.

# Charter

The Solar System Interest Group (SSIG) will aim at reviewing IVOA standards in the scope of Solar System sciences. The SSIG will work with all IVOA working groups to review, assess and propose IVOA standard adjustments for Solar System sciences. The standard assessments, reviews and potential evolutions will be proposed to relevant working groups keeping in mind two main ideas:

* re-use of IVOA standards with as little changes as possible
* modifications with a topical scope as wide as possible

# Objectives

The preliminary IPDA-IVOA interaction study conducted in 2015 [3] highlighted the following focus topics for the SSIG:

* Standard **List Coordinate Systems and Reference Frames**. Link with NASA/NAIF SPICE system for possible implementation in STC.
* Standardization of **planetary observation geometry** (linked with the OGC/GIS community), covers semantics, data model and implementation
* Consolidation of **EPN-TAP** (Solar System flavor of ObsTAP, developed by Europlanet/VESPA). Adjustments of TAP and ADQL. Future IVOA Standard ?
* Standard **List of Ground Observatories and Space Missions**.
* Work with **Astronomy Data Centers** to enhance the distribution of their **planetary products** (ESO, CADC, HST…)
* **Cross-matching of registries** (IVOA, SPASE, NASA/PDS…), at least on Dublin Core.
* Promoting and extending **SAMP** (Simple Application Messaging Protocol), adding new message types (e.g., NASA/PDS, netCDF, HDF5…)
* Reviewing and extending **IVOA Data Models and Semantics** to Solar and Planetary Sciences.
* Proposing **new serialization examples for IVOA standards** with file formats used in solar and planetary sciences (HDF5, netCDF…)
* **FITS keyword standardization for Planetary targets** (ongoing work within VESPA and USGS)
* **VOEvent** for “Space Situational Awareness” (SSA) for Earth and planetary events.
* **Exoplanetary** sciences (using planetary standards for exoplanetary data to enhance comparative analyses)

The SSIG will this specifically (but not restrictively) work on the following topics:

* Semantics (facility nomenclature, thesaurus and unified content descriptors)
* Space Time Coordinates (solar and planetary reference frames and targets)
* Data Access Layer (TAP, ADQL, Datalink, SODA)
* Applications (SAMP!)
* Data Models and serializations
* Time Domain (Solar and Planetary observations are all time tagged)

# References

[1] IPDA Charter. <https://planetarydata.org/about/charter/charter>

[2] A. Sarkissian, et al. 2016. “The International Planetary Data Alliance (IPDA): Overview of the Activities.” In ASP Conference Series, 505:29–34.

[3] B. Cecconi, et al. 2015. Investigate IVOA/IPDA Interactions. IPDA Note.