

**NASA Advisory Council**  
**The Mapping and Planetary Spatial Infrastructure Team (MAPSIT)**

**Terms of Reference**

Purpose

The acquisition, organization, and analysis of planetary spatial data, including images, cartographic products, and geologic maps are critical for linking science investigation and exploration planning for all solid bodies in the Solar System.

The Mapping and Planetary Spatial Infrastructure Team (MAPSIT) is a community-based interdisciplinary forum for the discussion, analysis, and representation of matters concerning the creation and development of planetary geographic information, spatially-registered data, and cartographic products, a program of sustained planetary geologic mapping, and the tools necessary for these capabilities.

The MAPSIT mission is to advance U.S. objectives in space achievement by ensuring that planetary spatial data are usable for any conceivable purpose, now and in the future, by the scientific and engineering communities.

Community

Participation in MAPSIT activities is open to all members of the planetary science and exploration community, particularly those scientists, engineers, technologists, and other professionals—in academia, government, or the commercial sector—who are interested in planetary spatial data infrastructure. International participation is welcome.

Activities

To execute its mission, MAPSIT performs two functions: Program Analysis and Community Liaison. MAPSIT will:

- 1) Generate findings concerning the scientific rationale, objectives, technology, and long-range strategic priorities for effective acquisition and processing of planetary spatial data, integration of image datasets, geospatial software development, and geologic mapping and other cartographic programs;
- 2) Help ensure that the best geospatial data acquisition, processing and analysis, geologic mapping and cartographic standards, and planetary nomenclature are developed for, and maintained in, present and future NASA flight missions and research activities;
- 3) Encourage the development of standards to assess the accuracy and precision required for cartographic and geographic information systems technologies and products;
- 4) Help develop and support planetary spatial data infrastructures to effectively acquire, process, integrate, and distribute planetary data to the community so that products “just work” for users;

- 5) Encourage the development of tools, data products, and services, that will help ensure the best technologies can be applied to data processing, use, storage and visualization of planetary spatial data;
- 6) Facilitate the generation of geospatial data products and programmatic capabilities required for the planning of U.S. robotic precursor missions and human exploration of the Solar System, and enable a broad continuum of exploration activities, which include (but are not limited to) science analysis of planetary surfaces, the identification of safe landing sites, sampling locations, hazard assessment, and the geospatial characterization of planetary surfaces and in-situ resources;
- 7) Encourage training of personnel in the community for the use and improvement of spatial data-related tools, software, and products;
- 8) Help coordinate and enable the co-registration of datasets from U.S. missions;
- 9) Help coordinate and enable the co-registration of datasets from international missions with those from U.S. missions;
- 10) Assist NASA and the USGS as needed in developing, fostering, and maintaining critical U.S. geospatial, cartographic, and geologic mapping capabilities;
- 11) Provide a regular forum for broad discussion related to planetary spatial data infrastructure and emerging needs, serving as a conduit for community input into planetary exploration activities and planning;
- 12) Maintain a close connection with, and facilitate communication among, NASA, the Planetary Science Advisory Committee (PAC) and other NASA Advisory Council (NAC) Analysis Groups, Federal mapping agencies, allied space agencies, and relevant international coordination entities (e.g., the International Astronomical Union) on the topics of planetary spatial data; and
- 13) Communicate findings and assessments to the planetary science community and stakeholders. This would include presenting findings, and particularly those findings for which a formal response from NASA is desired, to the PAC. Findings in response to requests from the NAC; NASA (SMD, HEOMD, and STMD); the USGS; other U.S. government entities, or their respective advisory groups will also be reported to the originator(s) of the request. All findings will be posted to the MAPSIT website.

Together, these actions will help ensure that the planetary science community can widely leverage planetary geospatial data and products to make ongoing research discoveries that advance Solar System research goals.

### Organization

The MAPSIT Steering Committee consists of the Chair, the Vice-Chair, the Past Chair, the NASA Liaison, and up to 15 at-large representatives from the planetary science and exploration communities. The NASA Liaison serves as an *Ex Officio* member of the Steering Committee. The director of the USGS Astrogeology Science Center and the Planetary Data System Chief Scientist also serve as *Ex Officio* members.

The Chair of MAPSIT is drawn from the U.S. planetary science community and is appointed for a term of three years, in consultation with the Director of NASA's Planetary Science Division (PSD). The Chair must not be a PAC member. The Chair is assisted by a NASA Liaison (a PSD

staff member, appointed by the PSD Director), who serves as the single point of contact with NASA.

Nominations for the Steering Committee are solicited through an open call to the community, and appointments are made by the MAPSIT Chair, in consultation with the Steering Committee and the NASA Liaison. The Steering Committee is constituted to achieve a functional balance and diversity from members of the planetary geospatial community. The nominal term for Steering Committee members is three years. Terms may be renewed at the discretion of the Chair. Appointments may be terminated at any time by mutual agreement.

The MAPSIT Chair provides final approval, prioritization, and scheduling of requested tasks after consultation with the MAPSIT NASA Liaison and Steering Committee. The Chair is responsible for reporting findings (as described above) to the PAC.

The MAPSIT Steering Committee may organize ad hoc or standing subcommittees to address specific issues, with membership open to community-based experts upon invitation from the Steering Committee. Standing subcommittees must be chaired by a member of the Steering Committee. Ad hoc subcommittees may be chaired by experts from outside of MAPSIT upon invitation from the Steering Committee. These sub-groups report their findings to the Steering Committee and the full community. Reports are formally approved by the MAPSIT Chair, after review by the MAPSIT Steering Committee and the NASA Liaison, and typically after discussion in an open MAPSIT forum.

The MAPSIT Steering Committee meets once per month by telecon to discuss critical issues and plan for community meetings. The full MAPSIT community meets at least once per year (traditionally at an LPSC town hall and adjacent to the Planetary Data Workshop), or as otherwise requested by NASA. The MAPSIT Chair and NASA Liaison set the regular annual meeting schedule, in consultation with the Steering Committee.

The MAPSIT meeting and status reports and relevant documents are posted to the MAPSIT website <https://www.lpi.usra.edu/mapsit/> and are provided to the PAC and NASA.

Logistical and organizational support for MAPSIT activities is provided by NASA PSD and the USGS Astrogeology Science Center.

Last Updated by Becky McCauley Rench, NASA Liaison to MAPSIT in consultation with Jani Radebaugh, MAPSIT Chair, and the MAPSIT Steering Committee, on 16 April 2020.