**TOWARD A VENUS SPATIAL DATA INFRASTRUCTURE (VSDI).** J. R. Laura, J. J. Hagerty, T. N. Titus, and T. M. Hare, USGS Astrogeology Science Center, Flagstaff, AZ, 86001, email: jlaura@usgs.gov.

**Introduction.** The efficient collection and utilization of remotely sensed planetary data is a primary driver for efficient and effective active flight mission operations and nearly all scientific research projects. The value and complexity of collected data increases when the data are accurately spatialized. Colloquially, the act of "pushing the pixel" to the body increases the amount of information included in the collected data, adds the ability to perform cross data set studies, and increases the complexity of data storage, search, and use. The terrestrial community has broadly developed Spatial Data Infrastructures (SDIs) to address the aforementioned complexities and more recently, the planetary science community has begun development of a Planetary Spatial Data Infrastructure (PSDI) framework [1]. Herein, we describe what a PSDI is and who may benefit from the development and adoption of a Venus SDI (VSDI).

**Planetary Spatial Data Infrastructure (PSDI)** A PSDI is the collection of users, policies, standards, data access mechanisms, and the data themselves [2,3]. These components are grouped into two themes: human- data interaction (data and people), and facilitating technologies (policy, access, and standards). We briefly describe each component of a PSDI in turn.

***Users*****:** A PSDI seeks to remove the burden of data processing from the end user, and improve data access, discovery, and use in order to allow for increased focus on the science that uses the data. ***Policies*****:** A PSDI succeeds or fails at the adoption phase and policies to support the collection and sharing of data in standards compliant ways, and to ensure longevity of infrastructural services are critical to that success. ***Standards*****:** The development, codification, and adoption of standards to support data interoperability and use in widely available tools are critical for usability. ***Data Access*****:** Improved discoverability and ease of spatial data use would not be impactful without data access mechanisms to reduce the burden of discovery for end users. Access mechanisms are transient and dependent upon infrastructural data providers. ***Data*****:** Data can be divided into two broad categories: foundational and framework. The former include geodetic control, topography, and orthorectified images [1] and are essential as baseline data products across a range of scientific and decision-making processes. For example, NASA's Magellan mission provided the initial seeds for a VSDI once derived products like the synthetic aperture radar (SAR) F-MAP mosaics [4] and global topography [5] were generated. Framework data products are those of critical importance to a smaller subset of the research community.

**Benefits of a PSDI** Simplistically, "spatial data should just work" and PSDIs exist to support complex decision-making and knowledge synthesis by the user community. The collection, preparation for use, and dissemination of spatial data requires significant expertise and the planetary science community currently pushes that burden across the entire research community We argue that, as the volume and complexity of collected spatial data increases this model is not sustainable. A PSDI seeks to address this issue by pushing the requirement away from the planetary research scientist and towards the spatial expert. Additionally, PSDIs seek to: (1) improve channels of communication between data providers, maintainers, and users, (2) improve data reusability and data fusion potential, (3) improve data access and discovery mechanisms, (4) reduce duplication of infrastructural data storage and dissemination solutions to support increased development of end- user access portals, and (5) identify gaps in knowledge.

**Towards a Venus Spatial Data Infrastructure** Rajabifard [3], identifies a process based view of SDI development that can act as a road map for the implementation and adoption of SDIs within a research community. In this abstract we seek to fulfill the first goal in creating an SDI, the communication of the existence of PSDI and engagement with the community. A knowledge inventory is the second step in developing a body specific PSDI. A knowledge inventory seeks to answer questions such as "What data products are available and at what accuracies?", "Are data products available in a standards compliant form?", "What data are missing and how might they be collected or derived?", "Who can provide infrastructural data management?". In proposing future data acquisition missions, it is essential to focus on strategies that seek to maximize the science return *and* support collection and generation of high quality, low-error, spatial data products.

**Conclusion.** The development of a VSDI supports current research efforts and demonstrates a comprehensive plan for the management and dissemination of newly collected data to the broader planetary science community in a highly usable form should new missions be proposed.

**References**: [1] Laura et al., (2017) ISPRS Int. J. Geo-Inf. 6(6). [2] Exec. Order 12906. (1994) OMB. [3] Rajabifard et al. (2001) SDI Concepts. [4] Saunders, R. et al., (1992) JGR, 97, 13067-13090. [5] Ford and Pettengill (1992) J. Geophys. Res., 97, E8, 13,103-13,114.

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