Beyond Earth – Lessons learned and Challenges of Planetary Cartography

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The standardization of cartographic methods and data products is critical for accurate and precise analysis and scientific reporting. This is more relevant today than ever before, as researchers have easy access to a magnitude of digital data as well as to the tools to process and analyze these various products. The life cycle of cartographic products can be short and standardized descriptions are needed to keep track of different developments.

Planetary Cartography does not only provide the basis to support planning (e.g., landing-site selection, orbital observations, traverse planning) and to facilitate mission conduct during the lifetime of a mission (e.g., observation tracking and hazard avoidance). It also provides the means to create science products after successful termination of a planetary mission by distilling data into maps and map-related products. After a mission's lifetime, data and higher level products such as mosaics and digital terrain models (DTMs) are stored in archives and are eventually reused and transformed into maps and higher-level data products to provide a new basis for research and for new scientific and engineering studies. The complexity of such tasks increases with every new dataset that has been put on this stack of information, and in the same way as the complexity of autonomous probes increases, also tools that support these challenges require new levels of sophistication. In the planetary sciences, cartography and mapping have a history dating back to the roots of telescopic space exploration and are now facing new technological and organizational challenges with the rise of innovative missions, improved instruments, global data initiatives, new organizations and opening research markets. A general aim for this Planetary Cartography community is to develop concepts and approaches to foster future cooperation between scientists, cartographers and non-cartographers.

The focus of this contribution is to summarize recent activities in Planetary Cartography, highlighting current issues the community is facing, and to derive future opportunities in this field.
in order to address technical and scientific objectives. Furthermore, we focus on (1) identifying and prioritizing needs of the planetary cartography community along with a strategic timeline to accomplish such goals, (2) keeping track of ongoing work across the globe in the field of Planetary Cartography, and (3) identifying areas of evolving technologies and innovations that deal with mapping strategies as well as output media for the dissemination and communication of cartographic results.

By this we would like to invite cartographers, researchers and map-enthusiasts to join this community and to start thinking about how we can jointly solve some of these challenges.