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Dear Vandana Desai and George Helou:

January 20, 2021

This document reports on the IRSA User Panel meeting held virtually on December 3rd and 4th 2020. The role of the User Panel is to evaluate IRSA's content and services from the user's perspective, advise on the priorities for ongoing/planned activities (in light of current funding level), and to suggest improvements or new services, not covered in the current work plan. The members of the Panel attending the meeting were: Alexandra Pope (University of Massachusetts Amherst), Rose Finn (Siena College), Klaus Pontoppidan (STScI), Peter Veres (CfA), Remy Indebetouw (University of Virginia), and Stephanie Juneau (NSF's NOIRLab). The meeting ran for 6 hours split over two days and consisted of presentations from Vandana Desai, Harry Teplitz, Steven Groom and Luisa Rebull on the various activities of IRSA. In this letter, I summarize comments and suggestions from the User Panel's on IRSA activities over the past year and the plan for the upcoming year.

IRSA continues to be a widely used resource for the community with over 20 million queries in 2020. While *Spitzer* is closing out, its data housed at IRSA will continue to be crucial for many studies especially going into the *JWST* era. The panel continues to recommend that IRSA retains institutional knowledge/memory and technical expertise on *Spitzer* in the long term given the tremendous legacy value of the *Spitzer* data. The IRSA team is actively preparing for new big-data coming from the SPHEREx and Euclid missions and working on tools to enhance the science from these projects. IRSA has begun hosting data from cosmological simulations and the panel looks forward to seeing the usage statistics after these have been available for a few years.

The User Panel was pleased to see that IRSA continues to be very responsive to the recommendations from the panel from the previous year. IRSA explained their decision to retire Atlas instead of Finder Chart and the panel supports this decision. The panel was excited about all the new datasets becoming available from IRSA including NEOWISE, SOFIA, IRTF, contributed data sets, simulations, Gaia, and ZTF. In particular the committee was impressed by the inclusion of the SOFIA dataset which was clearly a significant effort.

The panel agrees that spectroscopic visualization is a high priority and IRSA is on the right track in development of this tool. The panel noted that other archives and projects have similar goals given upcoming datasets and the panel wondered how these projects could work together to maximize synergy. A workshop to bring people together to discuss current plans and share ideas would be ideal but alternatively, IRSA could review existing spectroscopic visualization software (e.g. from ALMA, JWST, etc.) and to determine whether it may be useful to adapt existing functionality and/or portions of existing tools. Spectroscopic visualization is a rapidly developing, and therefore evolving area of functionality in astronomy software.

The panel noted that there will be considerable synergy between *JWST* data and IRSA holdings. For example, *Spitzer* data will be crucial for planning and exploiting *JWST*/MIRI data. As a baseline, the panel felt that most users will expect to be able to determine if a given target is observed or is scheduled to be observed with *JWST* from within IRSA and get the FOV

of these observations. Being able to access the data directly and more complex synergistic activities between *JWST* data at MAST and *Spitzer* data at IRSA would be desirable (e.g. possibly through the new science platforms initiative). The panel recommends that IRSA keep this in mind as they develop tools and capabilities in the coming year to determine how much work is involved to maximize this synergy and if additional resources are required.

The panel agreed strongly that open source development (which is already being done with, e.g., pyVO) should be continued as much as possible as it will help interoperability with other archives. Such efforts could be augmented to include high-level Python libraries or tools (alongside tutorials and use cases).

The panel was happy that NASA recognized the importance of science platforms proposed in the 2020 Programmatic Review and that they are supporting a cross-archive study with a consulting firm to help IRSA, MAST and HEASARC develop a vision and plan. This is a good opportunity for the archives to develop a structure collaboratively in anticipation of a recommendation from the Astro2020 decadal survey. The panel looks forward to hearing about an actionable plan (such as a business model and/or description of synergies and complementarity with the efforts of the collaborating institutions) in a future meeting.

During this challenging year with an international pandemic, IRSA has had to adjust to several challenges including staff working from home and less access to hardware. The panel would support IRSA's plan to delay specific work items to help with staff overwork and burnout should such tasks be identified. With some tasks being put on the back burner, the panel is concerned about the limited resources needed to get back on track. The panel recognizes that additional resources might be needed to "catch up" on tasks delayed due to the pandemic and supports IRSA making requests for available funds from NASA.

To summarize, the panel recommends the following actions for IRSA in the coming year: 1) consider holding a workshop for developers of spectroscopic visualization tools to improve coordination and limit duplicative work, 2) improve synergy between IRSA holding and *JWST* data, for instance by enabling import of *JWST* footprints from MAST, and 3) prioritize further support of open source projects, for instance in the area of pyVO.

In conclusion, the panel was pleased with the progress IRSA made this year, especially given the challenging conditions imposed by the international pandemic. IRSA continues to be visible and accessible to the astronomy community through participation in the AAS meetings, providing video tutorials (including a new suite for accessing the SOFIA data) and organizing community workshops and discussions. IRSA is proactive in soliciting science use cases for future missions from the panel and the community so they can produce the best tools for data access and analysis.

Sincerely,



Alexandra Pope

on behalf of the IRSA User Panel members: Rose Finn, Remy Indebetouw, Stephanie Juneau, Klaus Pontoppidan and Peter Veres