2025 ENSCI User Panel Report

May 29, 2025 hybrid meeting: held in person at IPAC and on zoom

Members of User Panel

- **Dr. Eric Murphy** (UVA, NRAO; chair)
- **Prof. Caitlin M. Casey** (UC Santa Barbara; EC)
- **Prof. Yicheng Guo** (U. Missouri)
- **Prof. Michael Rutkowski** (Minnesota State University)
- **Prof. Gabriela Canalizo** (UC Riverside)
- **Prof. Daniel R. Weisz** (UC Berkeley)
- **Prof. Anja von der Linden** (Stony Brook)
- **Prof. Lado Samushia** (Kansas State)

Link to presentation material:
https://collaboration.ipac.caltech.edu/spaces/EUP/pages/161617153/28+May+2025

Link to 2024 report:
https://euclid.caltech.edu/download/MediaFile/33/binary/original

User Panel Response to NASA's Proposed Budget

Before getting to the main body of the report, the ENSCI User Panel felt it important to comment on NASA's proposed FY26 budget. Details of the President's FY26 Budget Request for NASA Astrophysics were released shortly after our User Panel meeting. The proposed cuts to NASA Astrophysics are indeed catastrophic and would substantially reduce the US's leadership in many areas of technology and engineering. It is worth noting that NASA Astrophysics was not singled out in the President's FY26 Discretionary Budget cuts, as the National Science Foundation's proposed budget (covering an even broader range of research areas) is similarly dire. Maintaining US scientific leadership in such an environment seems highly infeasible.

The continued advancement of science and technology is foundational to the advancement of entire peoples and societies. Over the last 65+ years, NASA Astrophysics in particular has played an essential role in driving so many of these key advancements, with the US as the global leader. The general public continues to (and always will be) in awe of the knowledge that is captured from the cosmos using NASA's revolutionary observatories. From the high-resolution images and movies of distant "island universes" being formed soon after the Big Bang, stars forming out of dense clouds of gas and dust, accreting super massive black holes ejecting interstellar material via tightly collimated jets, and earth-like planets forming worlds in distant solar systems not unlike our own, humanity's understanding of our place in the universe has been fundamentally transformed by NASA's investment in missions of discovery.

Astrophysics additionally provides a natural means for international collaboration in the most technically advanced areas of science and engineering. These collaborations often lead to benefits that are valued well in excess of what individual parties contribute. It is fair to say that the US has been able to routinely capitalize on these partnerships and leverage them into leadership roles for future technical and scientific ventures. Euclid is a prime example of this type of partnership, where the US contributed to the research, development, and construction of hardware (i.e., the Near-Infrared Spectrometer and Photometer; NISP) that in turn allowed participation in the scientific mission, providing the US community with access to data and the freedom to lead their own research.

Given this investment, ENSCI is a critical resource for the US community as it provides the primary mechanism to enable US-led science with Euclid. Without this resource, the US community would lack the necessary knowledge, tools, and support to effectively carry out leading-edge science using Euclid. In addition to supporting all US-led scientific investigations with Euclid, ENSCI provides a fundamental framework to support more general archival science. This capability is a foundational means to democratize science to all communities in the US, leveling the playing field for those who may not be located at a large R1 institution. In doing so, the scientific return of other US-led missions, such as JWST, will also be dramatically enhanced by providing researchers with the most compelling targets to follow-up using JWST's robust suite of imaging and spectroscopic capabilities. Lastly, ENSCI is helping lay the foundation for streamlining the US community interaction with the soon-to-be-launched Nancy Grace Roman Space Telescope, which is supported in the FY26 budget request. Continuing to support ENSCI will significantly increase the investment that the US has made in Roman, ensuring that the US remains a global leader in astrophysical research and cosmology.

Executive Summary:

The Euclid NASA Science Center at IPAC (ENSCI) User Panel convened via a hybrid meeting on May 29, 2025. This makeup of the User Panel included 4 new members, as 3 members just rotated off. Three of the committee members were in attendance at IPAC in Pasadena, while the remainder joined via Zoom. The User Panel was chaired by Eric Murphy.

During the meeting, ENSCI provided a list of questions for the panel to consider during this review. The members of the ENSCI team additionally made 7 presentations to the panel covering status updates to both Euclid and ENSCI, responses to past (2023 & 2024) panel reports, the Q1 Data Release, the IRSA-Euclid Explorer, preliminary plans for DR1, and results from a recent user survey. In the following report, we briefly comment on ENSCI's handling of recommendations from previous reports, as well as provide responses to the questions that that panel was asked to focus on.

We would like to thank all of the speakers for their clear presentations, and ensuring that there was sufficient time to take questions and have discussions between members of the ENSCI team and the Panel. The panel would also like to acknowledge that the ENSCI team continues to do a tremendous job to support the US-based Euclid user community by providing a large number of resources and tools to allow them to maximize the scientific return on the US participation in Euclid. **Given all of the resources/effort that the US has already put into ensuring Euclid's successful launch and science operations, funding the efforts being led by ENSCI should be a high priority for NASA as they will help guarantee that the US can capitalize on this prior investment.** This is especially critical now that Euclid has reached a major milestone by being able to release a substantial amount of data products to the community for analysis (i.e., Q1). Ensuring that the US community has the tools to sufficiently exploit these data now will ensure that they are also preparing to take advantage of the more substantial DR1 data release next year, especially in the possible absence of additional funding support. ENSCI should continue to keep up the great work that they are doing!

Response to Previous UP Comments:

The User Panel acknowledges and greatly appreciates the time and significant effort that ENSCI has given to responding to past User Panel reports. We would especially like to thank ENSCI for their detailed responses to our previous User Panel comments, which even includes those that were discussed ~2 years ago. Some examples include:

- Updates on the deicing issues
- An update on the ERO custom vs. standard pipelines.

- Creation of notebooks
- Creation of a Quarterly Newsletter
- Webinars developed for Q1 data release
- The creation of a Technical FAQ and youtube videos for Q1
- Creation of a Proposal Support Page

We also would like to thank ENSCI for continuing to try to work with ESA in pursuing answers/progress on some of our previous comments/suggestions (e.g., schedule visualization tool). The panel understands that ESA has many priorities and deadlines in addition to these requests, and therefore greatly appreciates that ENSCI continues to push on them as we feel such additional tools/resources would benefit the US scientific community.

Response to ENSCI Questions to the User Panel:

1. Feedback on Q1 data release

ENSCI has done an excellent job in producing the necessary resources for scientists to access and incorporate Euclid data into their science. IRSA provides a user-friendly interface to interact with and access Euclid Q1 data. Furthermore, the creation of the 5+1 notebooks, which were delivered for the Q1 data release along with supporting webinars and advertised on the ENSCI website, are considered to be highly enabling for community access to Euclid data. This effort should be continued and expanded.

Consequently, these notebooks should be better highlighted on the ENSCI website in a more central, easily discoverable place outside of the Webinar sub-page in which they're currently presented.

2. Feedback on plans for DR1

The User Panel acknowledges and appreciates the forward-thinking of ENSCI to prepare the US user community for the much larger volume of Euclid data that will be made publicly available from DR1. It is important that the community has the tools available to them now to start to work with the Q1 data to ensure that they can effectively take advantage of the larger DR1 data release.

The currently planned ENSCI DR1 updates (e.g., forced photometry on VIS positions, new webinars, and new notebooks) are all worthwhile additions to the archive. Additionally, releasing the results from a second user survey ahead of the DR1 call will be a valuable exercise.

Conditional on ESA's release of this information, the User Panel asks that ENSCI please use available channels (e.g., the ENSCI newsletter) to advertise which specific data products will be provided/supported under DR1.

3. Does the user panel have any specific comments on future ENSCI notebooks and/or webinars?

The ENSCI-developed notebooks are extremely impressive and will undoubtedly be a useful tool for users, allowing them to tailor their usage for their own specific science goals. The User Panel really would like to emphasize this point! The accompanying webinars are vital in providing context to the notebooks (e.g., describing necessary tricks for joining catalogs). In terms of ideas for future notebooks and webinars, the User Panel strongly encourages continued development of these notebooks and associated webinars that capture feedback from the Euclid user community (perhaps gathered through the next user survey).

The User Panel also encourages the development of a notebook illustrating the use of the ssa_query package. ENSCI should also encourage the US community to share tools (e.g., methods, notebooks) to develop broader US engagement with the archives. In a sense, be opportunistic and take advantage of other notebooks that may have been developed by other Euclid users, perhaps hosting them in a separate user contributed section. The panel completely understands that ENSCI should not be responsible for validating any of these efforts, but rather they can simply advertise these resources to help grow the community.

4. Feedback on the user survey

The first ENSCI user survey was released mid November of 2024 and closed at the end of January 2025. The survey focused on querying the community on their current and potential future usage of Euclid data and included questions on ERO data and access, Q1 data and access, ENSCI website and tools, EGIP call participation, and communication about Euclid news. There was also a portion of the survey that allowed participants to list specific requests/recommendations, for which a few people provided responses that have been captured by ENSCI.

The User Panel felt that this was a well-run survey that provided ENSCI with useful information for planning purposes. That said, it was a bit worrisome that only a third of the US-based professionals that participated were aware of the EGIP call. We encourage ENSCI to have additional User Surveys, possibly annually, at meaningful times in the year (e.g., post/pre ROSES call, after DR1). We also encourage ENSCI to actively seek ways to increase the number of survey participants (e.g., leveraging other, more widely distributed NASA/AAS newsletters). Furthermore, we support using the survey to capture specific recommendations from users and suggest that these be accumulated into a database. These could then be re-purposed in future surveys for users to prioritize to help ENSCI future planning.

5. Does the user panel have any comments on current services on IRSA and/or future IRSA DR1 plan

The current visualization and catalog services are excellent resources for the community to help maximize their access and analysis of Euclid data. ENSCI should continue to coordinate with IRSA on the development and advertisement of publicly available tools (e.g., notebooks) regarding the preferred methods for data access to reduce any egress concerns.

Additionally, IRSA should start to ramp up the advertisement of the “new paradigm” of data access through cloud-based services and tools (e.g., science platforms like Fornax) ahead of DR1. Having notebooks that encourage best practices for efficiently and effectively utilizing these services will be of great value to novice users that are not well versed in HPC systems. Lastly, the User Panel felt that it would be beneficial if ENSCI more prominently linked access to the IRSA resources on the ENSCI webpage.