



ESO Expanding Horizons – Council update

Paul Callanan, Jarle Brinchmann, Mariya Lyubenova
108th Committee of Council Meeting, Norrköping, SE
10-11 March 2026





Identifying ESO's next programme

It should be a **transformational facility in the 2040s landscape** that enables scientific benefits in several areas and serves a **large part** of the astronomical community. It could be:

- A new telescope facility at an existing or new observatory site;
- A significant upgrade of an existing facility that is (co-)owned by ESO;
- Other ideas or combinations.

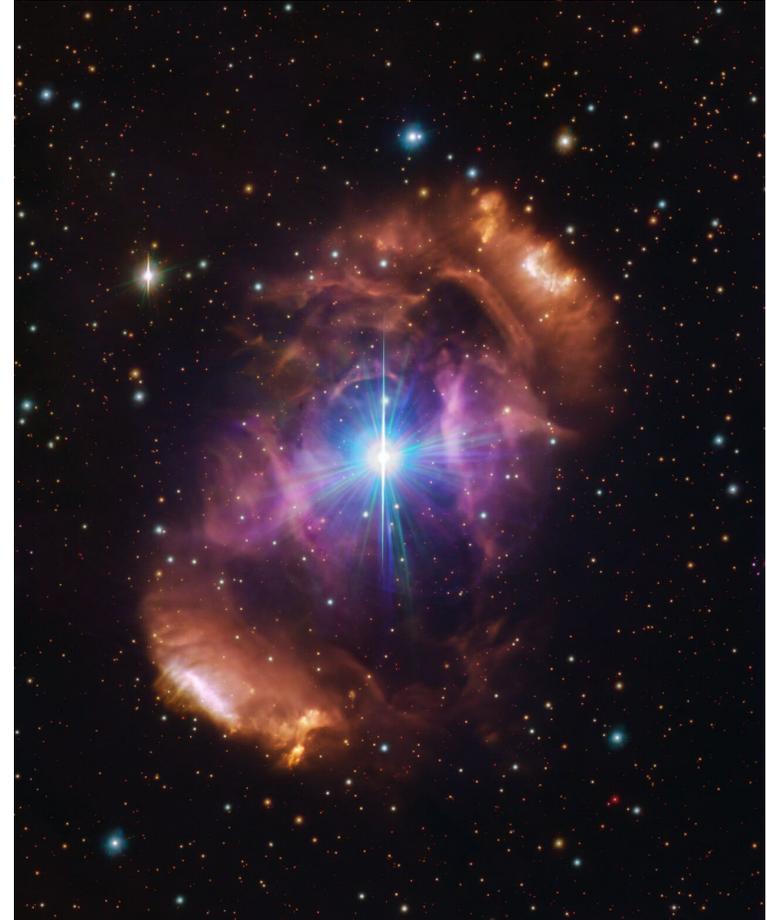
.. Also note the comments of the Visiting Committee: “the VC recognizes the importance of commencing the process, both to inspire long-term commitment of talented junior staff as the completion of the ELT looms, and to attract potential future partners with an exciting vision of ESO’s future.”

How ESO's next programme will be selected

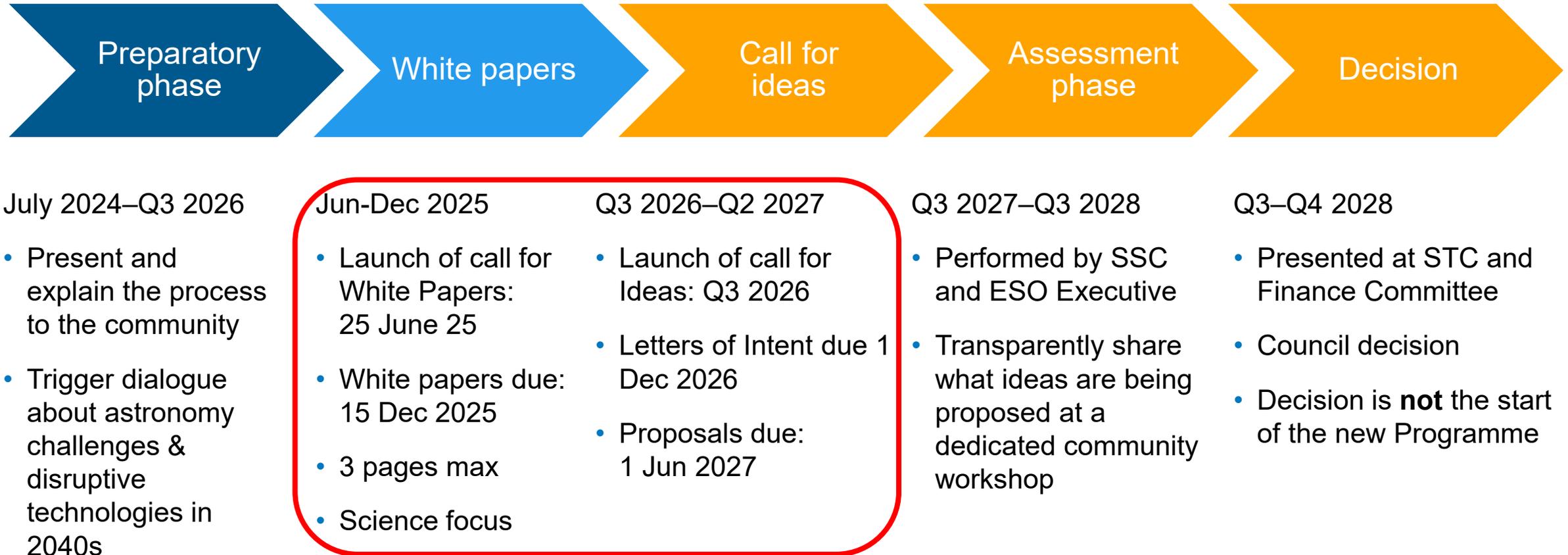
A transparent selection process

Expanding Horizons is an **open and inclusive call** to ESO's community

- Call for **science ideas to motivate convergence** among the community;
- Assessment of the proposals will be made based on **scientific drive** and **organisational factors**;
- Ample **preparation time and activities** foreseen to incentivise the community and **foster dialogue and debate**.



Expanding Horizons timeline



Selection criteria for ESO's next programme

Recommendation to Council will be prepared by ESO's Executive, including input by a Senior Science Committee (appointed by Council), based on:

- **Scientific drive:** Which fundamental problems in astronomy are expected to be addressed? How broad impact the new facility will have? What synergies are there with other ESO facilities?
- **Organisational ability:** Are competencies and skillsets available to own the design and development of the new facility? Is the organisation able to fulfil its operational requirements?
- **Sustainability:** To what degree the new facility could be designed, built and operated in an environmentally, socially and financially sustainable manner?
- **Institutional model:** Should the new facility be developed in a partnership with another organisation?
- **Risks assessment:** Will the new programme compromise the successful operation and development of ESO's existing facilities?

Senior Science Committee (SSC)



- Angela Adamo, University of Stockholm (ESO STC)
- Joss Bland-Hawthorn, University of Sydney (Astrophotonics)
- Marica Branchesi, Gran Sasso Science Institute (Multi-messenger)
- Paul Callanan, University College Cork (ESO Council, SSC chair)
- Heather Cegla, University of Warwick (Life & Habitability)
- Stéphane Charlot, Institute d'Astrophysique de Paris (Cosmology)
- Vik Dhillon, University of Sheffield (ESO Council)
- Marcella Marconi, INAF- Osservatorio Astronomico di Capodimonte (ESO STC)
- Karin Öberg, Harvard (Star/planet formation)
- Nanda Rea, Institut de Ciències de l'Espai – CSIC (Transients & high-energy)
- Hans-Walter Rix, MPA (Galaxies)
- Norbert Hubin (ESO, retired)

In attendance from ESO – Xavier Barcons, Jarle Brinchmann, Sara Krauss, Mariya Lyubenova



The Senior Science Committee has met 4 times so far (online and hybrid). Very strong engagement.

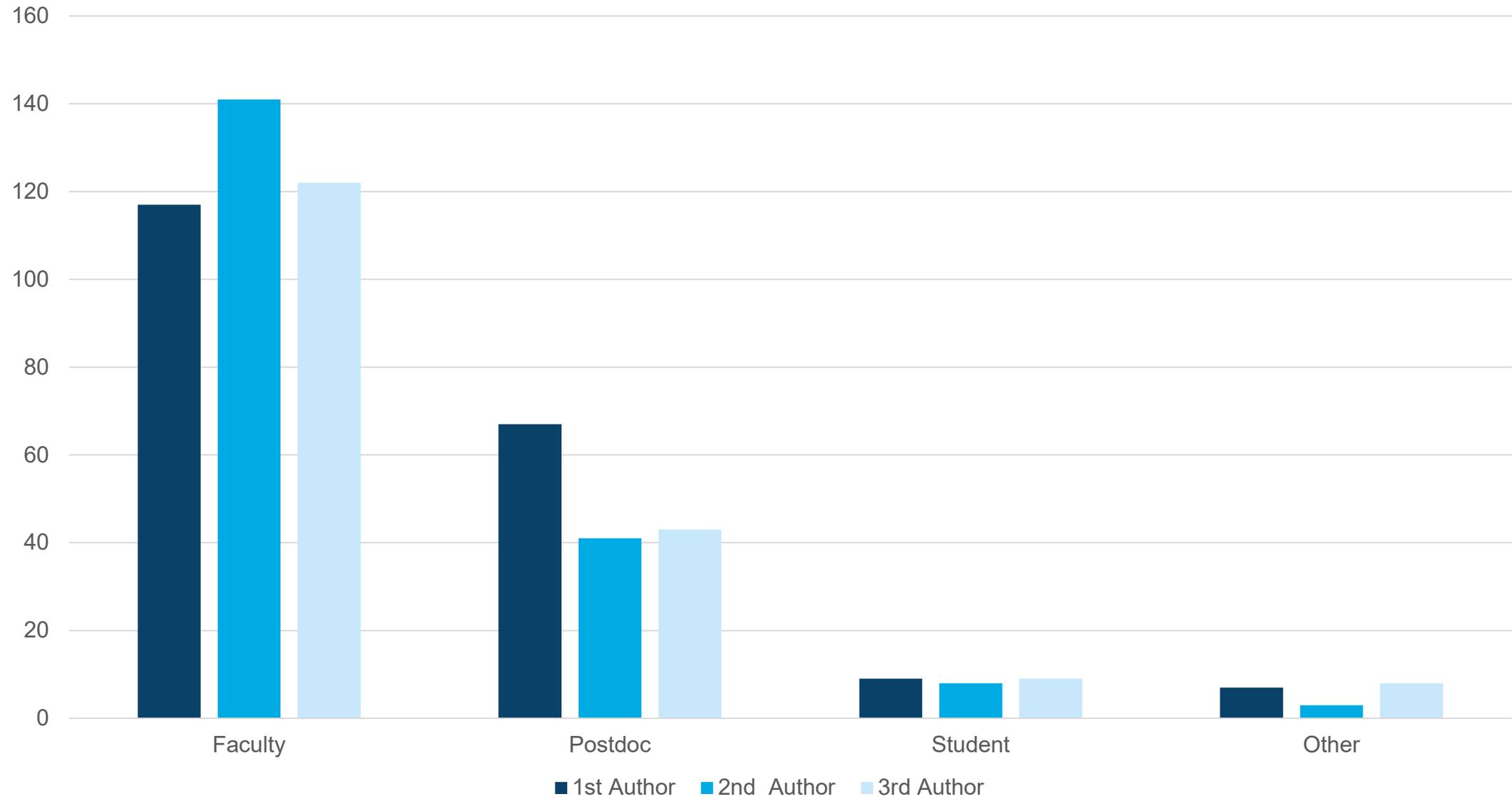
Early action item: solicit White Papers from the community, to

- Identify the major science questions of the 2040s, and what transformative facility is required to address these.
- Encourage community engagement in the Expanding Horizons process.
- Submissions encouraged from researchers at all career levels.
- Identify areas where expertise on SSC is lacking.
- Provide a guide to help structure community workshop later in 2026.

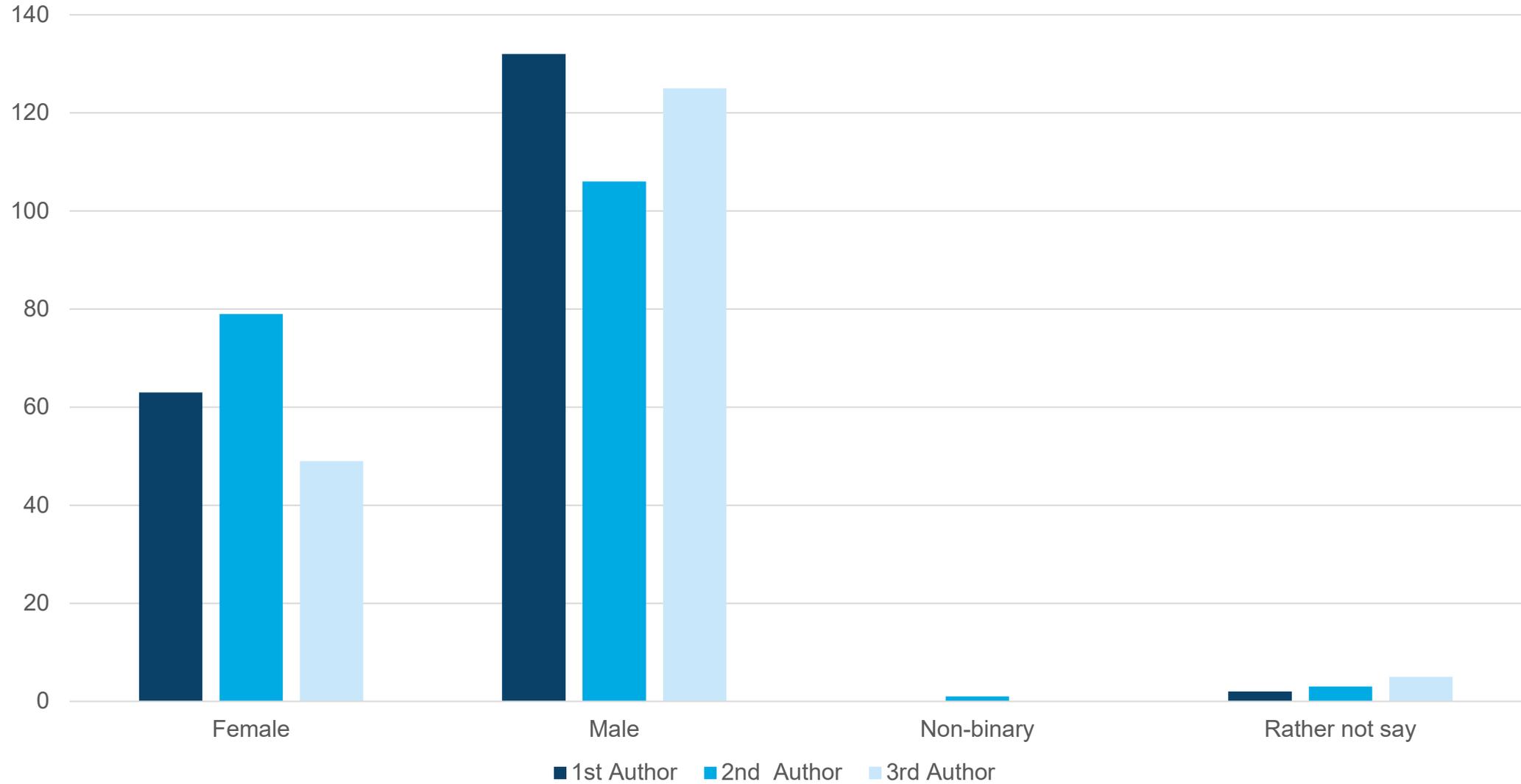


- The 208 White Papers received by December 15, 2025 deadline were assigned to SSC members for review (not assessment) before Christmas.
- Each SSC member received 30-40 White Papers, matched as closely as possible to their area of expertise. Reviewers were asked -
 - What, in their opinion, was the most compelling science (or technology) idea amongst their White Papers (followed by the 2nd and 3rd)?
 - Indicate any White Papers that show clear overlap in scientific area.

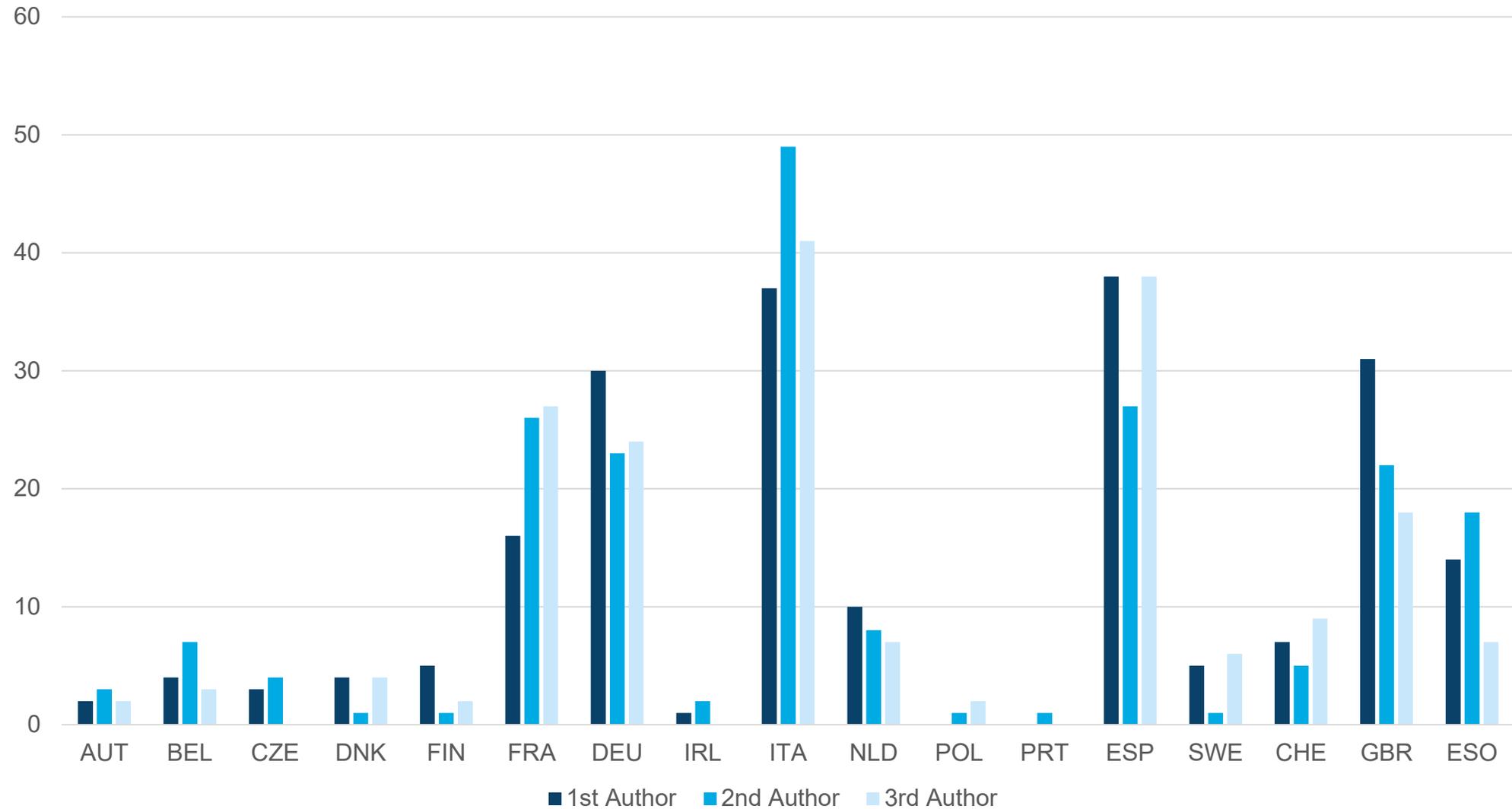
Career Stage of authors



Gender of authors

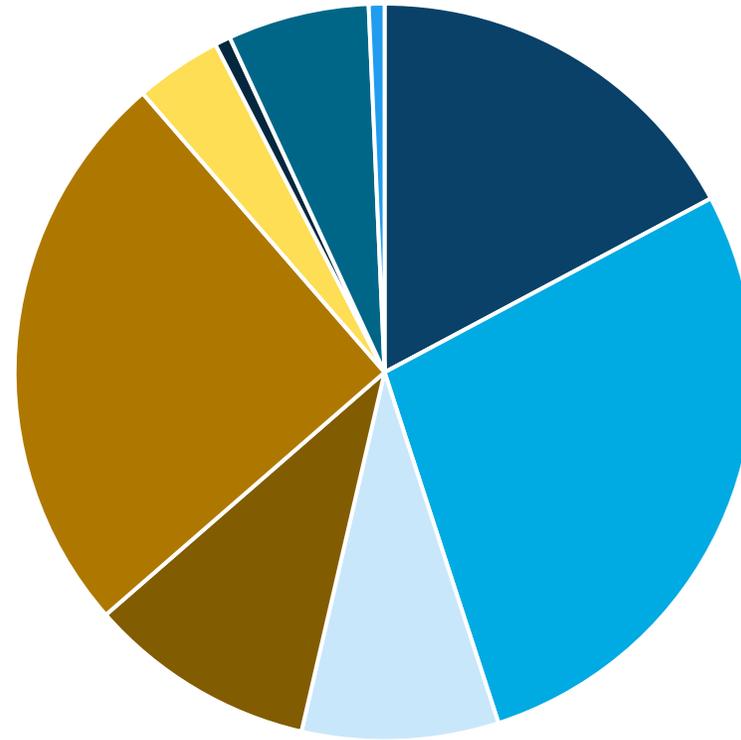


Country of Affiliation of authors



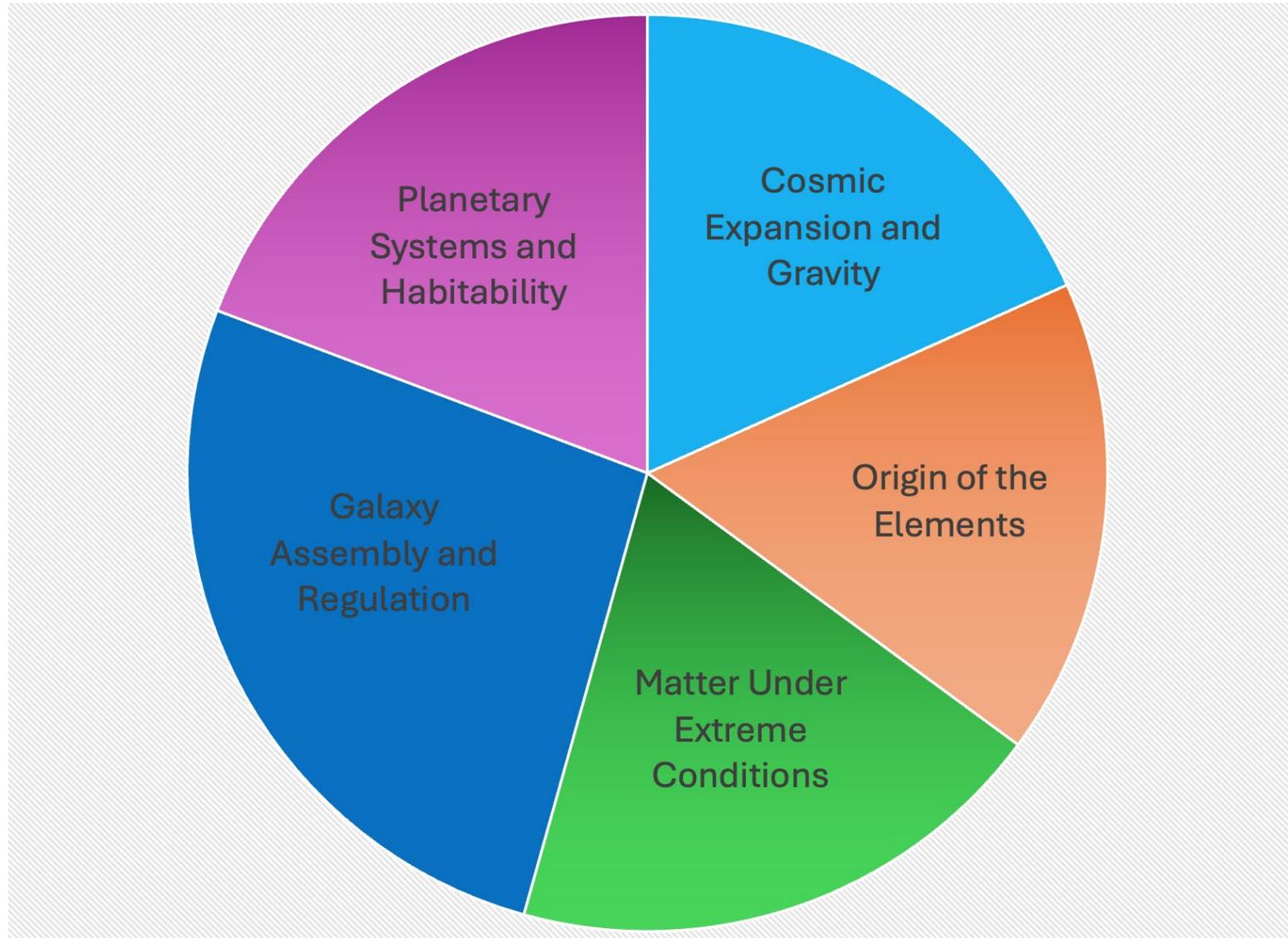
General Statistics

208 unique white papers submitted

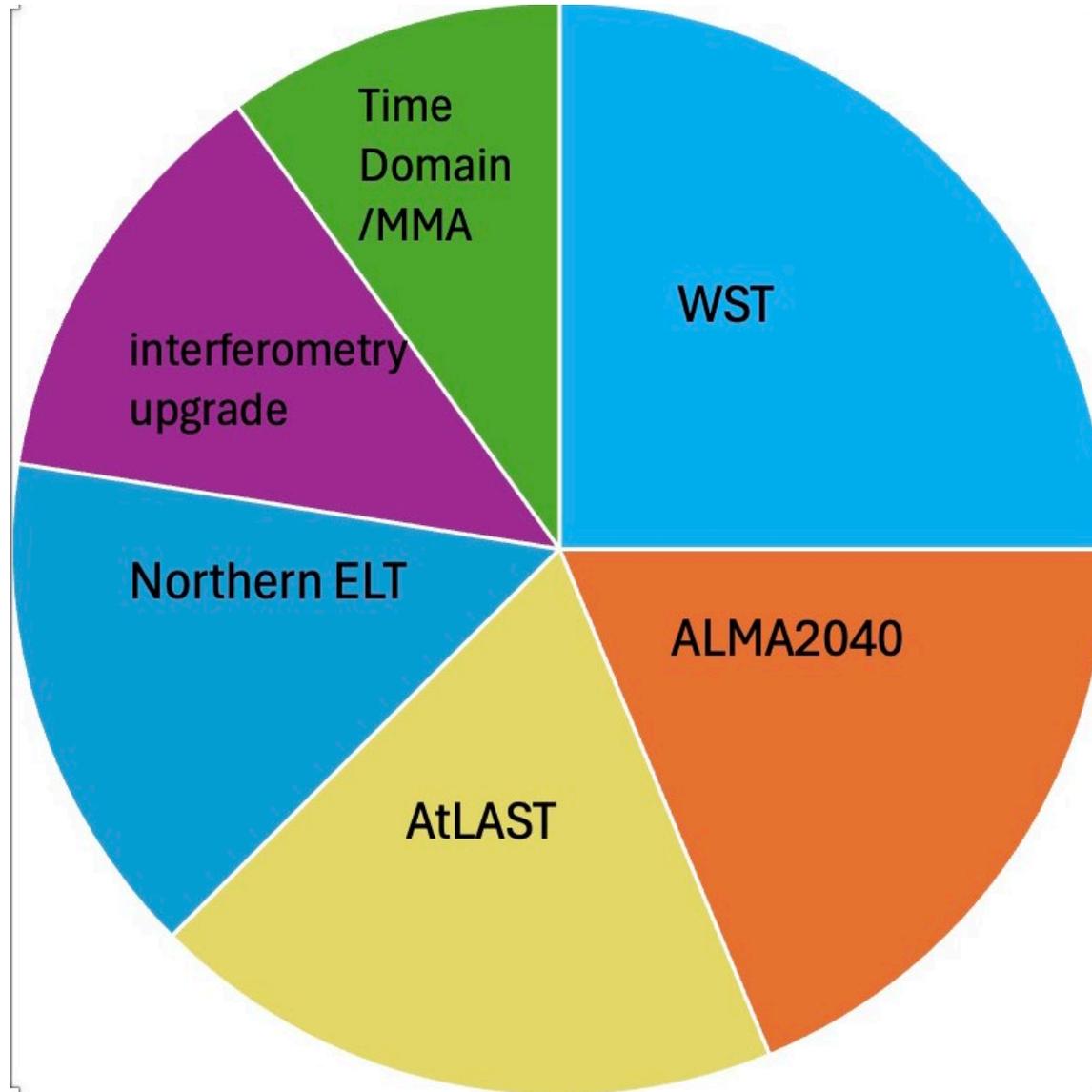


- Cosmology (50)
- Galaxies (81)
- Interstellar medium, nebulae (25)
- Planetary systems (29)
- Stars (73)
- The Galaxy (11)
- The Sun (2)
- Facilities_Surveys (18)
- Governance_Sustainability (2)

White Papers by general science theme



White Papers by facility type



Although the focus of the White Papers was intended to be on the scientific challenges of the 2040s, many (if not most) respondees clearly struggled to separate the science from the enabling transformative facility.



Next Steps:

- ESO Expanding Horizons Community Workshop, July 13-17, 2026.
 - Intent is to get broad engagement across the community, concerning both science drivers and facility needs – seeking overlaps and synergies and community consolidation around specific facility concepts.
 - A mix of plenary and breakout sessions.
 - Discussions of transformative technology developments will also be included.
- Launch of Call for Ideas Q3/2026
- Letters of Intent deadline Dec 1, 2026.



Thank you!

Paul Callanan
Jarle Brinchmann
Mariya Lyubenova

@ESOastronomy

@ESOastronomy

@ESOastronomy

european-southern-observatory

@eso.org

@ESOastronomy

@ESOobservatory

