NOVA Phase 6 Instrumentation call

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1. Introduction and background

With the Sectorplan, NOVA has secured funding in the long term for its Optical-Infrared (Op-IR) and Sub-mm instrumentation groups, amongst others. Contrary to previous NOVA phases, the Sectorplan funds FTEs at the instrumentation groups and does not provide any 'free funds'. However, due to the permanent nature of the Sectorplan funding, NOVA has been able to free up some cash for this call in this one-off transition.

NOVA will continue to plan its instrumentation strategy in 5-year cycles. Phase 6 will therefore span 2024-2028. In its strategy and this call, NOVA is taking the feedback from the 2023 Peer Review Committee and the Instrument Steering Committee to heart. One important aspect is that NOVA should have a diverse instrumentation portfolio, with smaller projects, at various development phases, to complement the NOVA ELT program, which spans long time scales. This allows the instrumentation groups to maintain the expertise and efficiency that is required at all development stages, while young talent can be trained in the full life cycle of an instrumentation project. It is therefore encouraged to include junior scientists and instrumentalists in proposals. Moreover, NOVA wants to bolster the ability to innovate on short time scales, pursue instrumentation Research & Development (R&D) and develop key new technologies. As always, the instrumentation program, and ideally individual projects, should serve all NOVA networks.

2. Elements of the Phase 6 instrumentation call

Taking the above into account, NOVA has devised an instrumentation call that consists of 3 elements:

1. Op-IR seed funding
2. Op-IR/Sub-mm small/medium-sized project(s) – 2nd half of Phase 6
3. General (non-Op-IR/Sub-mm) call

All elements will be detailed below. Elements 1 and 3 open now, the call for element 2 will open mid-Phase 6. Budgets allocated to successful proposals are fixed and will not be indexed. The total budget envelope for this call is listed in the appendix.

Element 1: Op-IR seed funding

In this element, there is room for up to 3 feasibility studies at the Op-IR lab. A feasibility study is a project that adheres to, but is not limited to, one or more of the following criteria:

- Stimulate innovation and R&D at the Op-IR lab
- Require technology development (such as increasing a Technology Readiness Level)
- Require integrated system engineering (i.e. combining thermal, mechanical, and optical design)
- Have difficulties finding funding otherwise due to, e.g., lack of proof of concept, current technology level etc.

Proposed projects should have the ability to mature to a level from which they can apply for a larger and/or external grant via the typical funding schemes and/or apply for element 2 of this call. Projects must be able to start in 2024 and be completed within 2 years, achieving the following goals:

- Establish clear top-level technical requirements that are derived from scientific goals
- Create a conceptual design
- Identify critical required technologies
- Formulate R&D plans to bring those technologies to the required level
- Make a project plan for the full development, including the budget

The available budget per project is 250 k€ of which 50 k€ cash and 200 k€ in FTEs at the Op-IR group (tariffs are in the appendix). Proposals must include an in-kind contribution by proposers (e.g. hours), and (cash) contributions from other sources is an advantage.

Element 2: Small/medium-sized project(s) – Op-IR & Sub-mm

This element will open in a separate call, which is foreseen in the second half of 2026.

Awarded seed-funding studies from element 1 can compete for further funding along with other projects that have a sufficient TRL. The total budget envelope for this call will be 1 M€ cash and 2 M€ in FTEs (total) at the Op-IR and Sub-mm labs. How this budget will be divided over the successful proposals, will be announced when the call for this element opens. Projects are required to have obtained external funding or have a clear chance of doing so.

Element 3: General call

This element is intended for projects that do not require time from members of the NOVA (Op-IR & Sub-mm) instrumentation groups, such as (but not limited to) participation in space projects and data science. In case of the latter, the request should be for the development of data science infrastructure supporting (existing or future) instrumentation and/or leading to new capabilities. This precludes projects on data exploitation, which will be part of the

SUMMIT proposal. The proposer must also clearly explain why their project is not served by the capacity created with the Sector plan data-science positions.

The total available budget of this cash-only element is 2 M€. There is no cap per proposal. Proposals must include in-kind contribution and/or external funding. Projects must start well within Phase 6, in principle before the end of 2025.

In general, this element of the call is not open for requests of FTEs from the Op-IR and Sub-mm groups. Elements 1 and 2 are intended for this. The only reason such proposals could be considered under this element of the call is if it can be argued that the need is urgent and element 2 opens too late. If FTEs at the instrumentation groups are requested, they should be budgeted within your proposal, and these FTEs will count towards your total requested amount.

3. Review procedure

For each element of the call, the review procedure includes the following (parallel) steps:

1. Each NOVA research network will review the scientific part of all proposals. They will judge each proposal on its scientific merit and the connections to the research strategy for each network. Finally, they will rank the proposals, per element of the call, based on scientific value and impact. The procedure followed in each network, the judgement of each of the proposals and the final ranking of the proposals will be summarized in a written report to the NOVA Board and Directorate. Thereafter the network coordinators and NOVA directorate will meet and review the recommendations of each network. They will merge the ranking lists of the three networks where possible or otherwise provide arguments why this is impossible.

2. The NOVA Instrument Steering Committee (ISC) will review the proposals on the following aspects:
   - Technical feasibility
   - Project risks and their assessment
   - Robustness and realism of the budget estimate

   Their final conclusions and recommendations for each proposal will be summarized in a written report to the NOVA Board and Directorate. The ISC will not rank the proposals nor review their scientific merit.

3. Both the research networks and the ISC should consider the following aspects in their review:
   - Involvement of junior researchers and technical staff
   - Likelihood of proposal growing into further funding

4. In the procedures under steps 1 and 2, project PIs and other applicants leave the room when their proposal is discussed. Furthermore, PIs are excluded from any activity related to the final ranking of their proposal.

5. The NOVA Directorate will provide written remarks on any programmatic constraints when applicable.

6. Final decision on approval and budget allocations will be made by the NOVA Board.

Timeline

The timeline looks as follows:

- December 2023: Call elements 1 and 3 open
- 1 March 2024: all proposals need to be submitted before the end of the day
- April/May 2024: the NOVA research networks and ISC will review the proposals
- May/June 2024: The NOVA Board will make their final decision on the proposals
- Awarded projects should start from the 2nd half of 2024 onwards

Criteria for instrumentation proposals

Successful proposals should comply with the following guidelines:

1. Comply with the overall goals and priorities of the NOVA program, which can be summarized as:
   - Carry out top astronomical research in the Netherlands
   - Train young astronomers at the highest international level
   - Sharing our new discoveries with society
2. Have challenging but realistic science goals that are internationally competitive
3. Have a well-developed plan for (future) science exploitation in the Netherlands that is clearly recognized and appreciated by one or more of the research networks
4. When applicable, the project should have a significant and internationally visible Dutch role in the instrument and consortium (PI or Co-PI role), or the potential to achieve this. The Dutch lead person must be affiliated with one of the astronomical institutes participating in NOVA. Active support and participation from more than one of the Dutch university institutes will be considered a strength
5. Fulfill NOVA's objective to enhance instrumentation knowledge at the universities
6. Have a project plan, comprising:
   - clear goals and risk assessments
   - a project team including junior researchers and technical staff (in leading positions) is an advantage
   - a path forward to full funding
   - a development timeline
   - a robust and realistic budget estimate, including sufficient contingency. As a rule, this should be at the 25%-level, depending on the phase and nature of the instrumentation project (more mature projects, e.g. passed final design

review, should require less contingency). Matching international funds for the Dutch involvement in the project are an advantage.

4. Guidelines for proposals

Proposals must be written in the template (MS Word document) that is provided with this document or can be downloaded from https://nova-astronomy.nl/phase6-instrumentation-call/.

Proposals for Element 1 and 3 should be 10 pages at maximum, including figures and appendices (excluding references) and should include at least the following topics:

- Names of PI and co-applicants
- Executive summary & introduction (~ half a page each)
- (International) partnership when applicable
- Scientific proposal, including full science case and context in NL situation (~ 3 pages)
- Technical work proposed, including contributions of each applicant (~ 2 pages)
- Planning & project management, including time schedule, workplan and milestones (~ 1 page)
- Budget, detailing required NOVA funding and contingency (~ 1 page)
- Technical risk (self-)assessment, including a risk impact table with associated costs (~1 page)

Sufficient technical information should be provided to convince the reviewers and the board that the project is both innovative and feasible. Proposals that do not provide all requested information may be excluded from further consideration.

Proposal submission

Proposals in PDF format should be submitted by e-mail to the NOVA office.
E-mail address: wijnen@strw.leidenuniv.nl and nova@strw.leidenuniv.nl

Deadline: Friday 1 March 2024, before the end of the day.

Appendix A: Total budget envelope of the call

	Cash (k€)	Op-IR FTEs (k€)
Element 1: Op-IR seed funding	150	600
Element 2: Follow-up funding	1.000	2.000
Element 3: General call	2.000	

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Appendix B: Tariffs at the Op-IR and Sub-mm instrumentation labs

Function	Hourly rate (€)
Technicians	80
Optical/Mechanical designers & engineers	95
System engineers and project managers	110

These are 2024 tariffs, and 3% yearly indexation should be applied in the budget of your proposal.