

Guidelines for Proposals for TUM GNI Inter/national Projects – Call No. 1

Call closes: September 30, 2025, **11:59 pm** (GTM+1)

1. General introduction

The Georg Nemetschek Institute Artificial Intelligence for the Built World at the Technical University of Munich (TUM GNI) is a flagship center for academic research, teaching and knowledge transfer to the society on artificial intelligence (AI), machine learning, data-centered engineering and related data and knowledge based technologies, with special dedication to applications in architecture, engineering, construction, operate & manage in built environment (AECOM). The built world (also denoted as the built environment), which implies the complete life cycle of buildings and built infrastructure, is the focus of the Institute.

The Nemetschek Innovation Foundation supports the Institute, and TUM embeds it in its large network of data-centered sciences. The Institute thus develops and promotes a new generation of technologies with strategic importance for digital sciences in general and AECOM industries in particular. It contributes to the solution of grand societal challenges, including environment, climate, information & communications, mobility & infrastructure. Taking advantage of big data, extracting information by data analytics, creating insight from machine learning, AI for the Built World will be a key technology for designing, planning, constructing, operating, and managing systems of buildings and built infrastructure.

TUM GNI funds a network of multi-disciplinary research projects, flexible in

the composition of its members and the precise research topics, yet always collaborative in the structure of each project.

Project Composition

Inter/national projects at the TUM GNI must always bring together researchers from the **AECOM domain with mathematics-/informatics-oriented researchers focusing on core scientific questions on Data Science and Machine Learning**. The scope of projects may include user acceptance, public/private spaces in responsive (smart) cities, and more generally, trustworthiness. Also, AI fields such as intelligent user interfaces, explainable AI, probabilistic AI, generative AI, and agentic AI are welcome.

The Institute supports the inter/national network through the funding of PhD candidates and their infrastructure. Projects can be proposed by two to four Principal Investigators (PIs) (for a total of 2 to 4 funded PhD candidates) and can be funded for up to 4 years. Non-TUM PhD candidates are supported through a TUM GNI scholarship. TUM PhD candidates are funded through a regular E13 working contract.

PIs may be from TUM or another German or international university, provided that at least 50% of the PIs are affiliated with TUM. TUM PIs must be part of the TUM School of Engineering and Design departments of Aerospace and Geodesy, Architecture, Civil and Environmental Engineering, or Materials Engineering, or TUM School of Computation, Information and Technology departments of Mathematics, Computer Science, or Computer Engineering¹.

¹ Second affiliations with any of these departments/schools are acceptable.

External PIs must belong to equivalent departments at their respective universities. For the consortiums as a whole, at least one PI must be from the built environment domain and one PI must be from the mathematics/ computer science domain (see above). Any PI can only submit one project proposal for one open call. The interdisciplinary collaborative projects to be funded are selected based on a suggestion of the Scientific Advisory Board of the Institute.

2. Team setup and budget allocation

2.1. Principal investigators (PIs)

Proposals are submitted by a team of two to four PIs from TUM and other universities. At least 50% of PIs must be from TUM. External PIs receive €4,000 per year for travel, as well as scholarship funding for one doctoral candidate each. In addition, each external PI is awarded €20,000. At the time of application, external PIs should expect to remain employed at their home institution for the duration of the project.

For eligibility of TUM PIs, the following regulation holds: *Any individual who is entitled to award doctoral degrees at TUM can act as PI: professors, emeritus professors, retired professors, TUM Distinguished Affiliated Professors, and TUM Junior Fellows.*

2.2. Project Team Leaders (PTL)

TUM GNI Project Teams are led by a TUM PI, the Project Team Leader (PTL), who is responsible for setting up the collaboration

within the project, as well as the monitoring of its progress, financial controlling, interim and final reports. Project teams start with a kick-off meeting organized by the PTL, introducing the team members. At the latest 24 months after that, each project team must submit an *interim report* and a *final report* at the end of the project. A summary of the research activities must be reported each year to TUM GNI.

The PTL is the key contact for communication within the team and with TUM GNI management. They will mediate in cases of conflict and support the PIs in their supervisory role. The PTL is in charge of administration, the team budget, and organizing team meetings. It is expected that the PIs and PhDs participate in the annual TUM GNI General Assembly along with other TUM GNI events.

2.3. Doctoral researchers (PhD)

TUM GNI funds two to four doctoral researchers in the Project Teams (one doctoral researcher per PI). TUM doctoral candidates are remunerated according to TVL-E13. External doctoral candidates will receive a scholarship of €2,000 per month for up to four years from TUM GNI. External doctoral candidates should expect to complete their PhD at their home university within the duration of the project. TUM GNI Project Team composition must ensure diversity (e.g., internationality, gender).

2.3.1. Direct project costs

TUM GNI Project Teams have a budget of €6,000 per PhD candidate dedicated to funding direct project costs, e.g., computer equipment, chemicals, or laboratory equipment. The funds can also be used for recruitment costs, hosting project-relevant conferences, or inviting guests. Acquisitions must be performed by TUM

members and according to the TUM guidelines and regulations. Equipment can be lent to external PhDs and must be returned to the TUM Chair at the end of the project. *TUM-PIs (including their project-related travel) cannot be supported through these funds.*

2.3.2. Mobility funds

The doctoral researchers have a budget of €2,000 per year for personal travel, including prolonged stays abroad, conferences, research visits, etc. Travel must be conducted in line with the Bavarian Travel Expense Act (Bayerisches Reisekostengesetz). External PhDs are expected to spend at least 6 months (which can be divided into several stays) at the TUM project partner. The TUM PI is responsible for providing a workplace for the visiting external PhD.

The mobility budget may be supplemented by the direct project costs (but not vice versa). It cannot be transferred from one doctoral researcher to another. A redistribution of the budget amongst potential doctoral researchers is possible only before the start of the project.

2.4. Budget Overview

TUM PI

1 PhD candidate TVL-E13 for 48 months

TUM PhD

6.000€ total direct project costs

8.000€ total mobility funds

External PI

20.000€ fellowship

16.000€ total mobility funds

External PhD

2.000€ per month stipend for 48 months

6.000€ total direct project costs

8.000€ total mobility funds

3. Proposals

*Central to the proposal are descriptions of the thesis projects of all participating doctoral researchers (including associated doctoral researchers). These descriptions should be supplemented by a summary of the research field and own preparatory work. Furthermore, the application must contain a concept that ensures **close cooperation between the members of the TUM GNI Project Team.***

The proposals must include signed statements by all non-TUM PIs that they are eligible to supervise PhDs at their home university, that they are willing to supervise the PhD funded through a scholarship provided by TUM GNI, and that they will cover all potential costs related to registering the PhD in the respective program of their university (e.g., Tuition Fees)

Proposals should include a rough work schedule and must be signed by the PIs and the nominated PTL. Submitted *proposals must not exceed 6 pages plus 2 pages per PI for the description of the planned thesis project of each doctoral researcher in length. The page limit (max. 10 pages for 2-PI-Team, max. 12 pages for 3-PI-Team, and max. 14 pages for 4-PI-Team) excludes all appendices (in particular references and CVs of PIs).*

The duration of the proposed projects is 4 years.

All project proposals are subject to an evaluation procedure performed by the TUM GNI Scientific Advisory Board and external referees.

To optimize the search for referees, we ask all PIs to provide (via separate email at the time of submitting the proposal) contact data (name, email, affiliation) for four individuals who are familiar with the research fields but do not have

conflicts of interest. In particular, they must not have joint publications or other scientific work with the proposing PIs. For further details, see Annex 1 – Proposal Template.

In a first step, the TUM GNI Scientific Advisory Board will review all proposals and examine whether an application matches the TUM GNI goals both conceptually and structurally. These aspects include primarily **interdisciplinarity** (plans for exchange across disciplines, regular team meetings, potential job shadowing initiatives within the team, etc.). *Projects that do not meet the expected standards will be rejected and excluded from the subsequent review process.*

Following this, proposals will be evaluated by two external referees. To this end, the board will typically select one referee from the proposer's suggestions and identify another on their own. The external reviewers will primarily evaluate scientific excellence but also consider the interdisciplinary requirements.

After that, the TUM GNI Scientific Advisory Board reconvenes and takes the final decision. In case of comparable reviews, the board will pay attention to further aspects.

Moreover, diversity is an aspect of increasing importance that should be reflected in the proposal, e.g., by hiring female and/or international doctoral researchers.

4. Public relations

TUM GNI Projects will be published on the TUM GNI website. TUM GNI Project Teams shall establish links on their web pages to the TUM GNI website. They shall give credit to TUM GNI in all scientific activities (e.g., papers, conference contributions, etc.). This applies to all TUM and external project members.

5. Miscellaneous

All funds are administered through TUM GNI and granted upon request and the availability of funds. TUM GNI reserves the right to alter funding schemes at any time.

Funding is provided for five years after the grant approval letter is issued. Unspent money will no longer be available after this date.

6. Appendix

- Annex 1 – Proposal Template