

# Call for proposals for the research program “Mobility of the Future”

## ETH Mobility Initiative

**Submission deadline: May 31, 2024, at 17:00.**

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### 1 Program overview

ETH Zurich has launched the ETH Mobility Initiative together with the Swiss Federal Railways (SBB) as first partner, followed by Siemens joining in 2019 and AMAG in 2020 to further expand research and education in the area of Mobility. Additional partners are expected to join. Within this framework, a long-term research program has been established aiming at bringing together competences from academic and industrial research in the field of Future Mobility. The overarching goal is to develop solutions that address important challenges like decarbonization, digitalization, and development of the infrastructure in the coming decades.

The program is structured around annual calls over a period of ten years that support research projects at the doctoral and post-doctoral level.

### 2 Call topics

In general, topics for research projects are defined by the Partnership Council of the Mobility Initiative on a yearly basis for subsequent calls.

Topics for proposals within this call should correspond to one or more of the following thematic areas. The list below is not exhaustive.

## **A) Simulation of mobility and spatial planning for improved transport networks**

### *Subtopics and examples:*

1. Impact of spatial planning and future mobility trends on public and/or individual transport demand.
2. Identification of real customer needs on the basis of reliable data.
3. Simulation models and guidance systems allowing a better use of road networks, e.g., in cities for more efficient transport.
4. Public transport timetables & planning that are optimized for customers' needs (new work / leisure traffic, special equipment, etc.)

## **B) New technologies and optimized systems**

### *Subtopics and examples:*

1. Increased capacity, optimized operation (ATO, ETCS L3)
2. Smart maintenance of vehicles and infrastructure (IoT)
3. Interconnected systems for Autonomous Driving (V2X)
4. Extended reality in the transport operation context
5. Railway safety and cybersecurity technologies
6. Road safety and cybersecurity technologies
7. Increased capacity / improvement of road infrastructure
8. CO<sub>2</sub> optimization through driver / passenger behavior
9. Optimal configuration of plug-in hybrid vehicle platforms to maximize electric share of driving for various customer segments
10. Sensing technologies concept influencing customer behavior towards increased electric driving
11. New technologies and alternative materials to improve the transparency and circularity of the mobility service providers' assets.

## **C) New forms of transportation and integrated mobility concepts for passengers and freight**

### *Subtopics and examples:*

1. Optimal first/last mile modes, vehicle types, and inter-modality concepts
2. Integration of on-demand shuttle / sharing concepts within public transport networks and personal needs
3. Mobility hubs for intermodal transfers
4. New passenger experience (new modes, information, trip management)
5. Smart freight logistic systems (smart disposal / return systems, drones, city logistics)
6. Interchangeability between public transport networks and (motorized) individual mobility
7. Transparent assessment of CO<sub>2</sub> footprint due to intermodal transport
8. The future of international transport, railways as complement / substitute of air transport
9. Review of differentiating factors (customer value / USP) of railway transport in tomorrow's mobility system

## D) Energy infrastructure and fuels for the future

*Subtopics and examples:*

1. Alternative energy for efficient and clean transport: electric road systems, fuel cells, e-fuels and hydrogen, hybrid powertrains
2. New solutions for energy storage in the Swiss transport context (battery simulation, e-fuel production, hydrogen logistics and storage, options for seasonal fluctuations)
3. Recycling / second life for energy storage devices (like batteries)
4. Distribution system for new energy carriers
5. Optimized special distribution of charging / e-fueling stations
6. Consideration of the infrastructure in the assessment and reduction of CO<sub>2</sub> emissions

## 3 Eligibility

To submit a proposal in the frame of the ETH Mobility Initiative, the following eligibility criteria must be fulfilled:

- The project proposal must be submitted by at least one ETH Zurich Professor as the main applicant who is holding a position for the intended duration of the project. Joint applications between several research groups are welcome if appropriate and justified by the scope of the project. However, external (non-ETH Zurich) co-applicants cannot receive funding from this program. Doctoral students funded by this program must be supervised either by the main applicant or a co-applicant.
- Proposals will only be considered if they fit one (or more) of the topics listed under point 2 above.
- Applications and supporting documentation must be written in English.
- Applications that are identical with or similar to an application that has been rejected or has only been partially funded by another granting agency prior to submission will be rejected on formal grounds.
- If applicable, relevant ethical, legal, and social considerations should be included in the proposal. The prospective research must also comply with the existing ethics regulations and adhere to the principles of research integrity valid at ETH Zurich.

## 4 Funding availability

A total of **1.3 Mio CHF** is available for the sixth call of the ETH Mobility Initiative.

The maximum funding duration per project is 4 years for projects involving doctoral students and 2 years for projects funding postdoctoral researchers. Costs will be covered for an amount of up to 250 kCHF for projects submitted by a single ETH chair, or up to 850 kCHF for projects submitted by 2-3 ETH research groups. To be eligible, costs must be directly linked to the project.

Contribution of resources of the main applicant and (if applicable) co-applicant should be indicated.

The funding will be granted to cover salaries, travel, consumables, outreach, and communication but cannot be used for the purchase of new equipment or replacement costs of laboratory and field equipment. Costs must be justified in the proposal. Standard salary rates are applicable. The salaries of the applicant and the co-applicants are not eligible for funding.

Upon project approval, funds will be allocated at the start of the project for the entire duration of the project.

## 5 Deadline for the call and submission procedure

The deadline for the submission of applications is **May 31, 2024**

E-mail for submission: [mi-grants@ethz.ch](mailto:mi-grants@ethz.ch)

Templates and updates 2024: <https://csfm.ethz.ch/en/research/projects.html>

Full proposals must be prepared using the **template provided with this call**. To facilitate a streamlined review, applicants are required to electronically submit their proposals as a singular PDF file, incorporating all components such as support letters and CVs. Submissions should be directed to the designated grant officer. Please make sure to adhere to the page limits assigned to each section of the proposal.

The proposal must consist of:

- i. A cover sheet on which the main applicant is identified, and basic information is given (position, institution, address, e-mail) and on which the title of the project, funds requested, and keywords/disciplines are indicated. All co-applicants associated with the proposal must also be identified.
- ii. An executive summary (maximum 300 words).
- iii. The scientific proposal, including the state of research, the research plan, expected milestones, as well as a list of literature references. The research plan should include sufficient scientific and technical details for the reviewers to be able to evaluate the proposal. The scientific proposal should not exceed 10 pages per proposed project (A4, single line spacing, 10-point Arial font or equivalent).
- iv. A description of the value that is added by the collaboration for projects involving more than one research group.
- v. A letter of support of at least one of the MI partners indicating the relevance of the project for the industry in the mobility sector and, if applicable, describing the specific contribution of the MI partner to the research projects (e.g. field data, expert know-how) needs to be included in the application.
- vi. A budget outlining the requested funds and justification. In addition, available resources for the complete realization of the project (own funding or other co-funding) should be indicated.
- vii. CVs and relevant publications by the applicants and relevant involved researchers.

## 6 Review and selection process

All proposals will be thoroughly assessed by a scientific evaluation committee chaired by a representative from the ETH Zurich Research Commission (“associated sub-committee” to the Research Commission, ASC). It includes both a number of experts from ETH Zurich and an equal number of experts from the partners represented in the Partnership Council of the Mobility Initiative who represent a variety of relevant disciplines.

In cases where the ASC needs additional expertise to appropriately evaluate a proposal, external reviews will be solicited. Applicants may be invited for a Q&A session by the ASC if issues need to be clarified or if specific information is required.

The ASC will make its funding recommendation to the attention of the Vice President Research at ETH Zurich, who makes the final funding decision.

Notification of the decision will usually be given within three months of the submission deadline. Projects may start immediately after approval and at the latest within four months after the reception of the decision letter.

## 7 Evaluation criteria

The decision on funding is thereby based on a strict, quality-based evaluation process that has been established in accordance with the existing standards and the usual procedures of ETH internal research funding, appropriately adapted to the specific targets of the ETH Mobility Initiative.

Main criteria:

- Strategic fit of a project proposal to the topics / areas of the call as defined by the Partnership Council of the Mobility Initiative.
- Scientific excellence assessed according to:
  - Originality / novelty of research objective
  - Suitability and quality of research approach / work method
  - Competence and experience of the applicants in the field of the proposed research
  - Added value of the collaboration between research groups (incl. industry partners), if applicable
  - Feasibility of the approach with respect to resources, management and organization
- Application relevance and practical impact of a project with respect to the whole mobility industry sector and society.
- For projects requesting funding volumes above 500 kCHF, the project should sufficiently address the socioeconomic aspects (as i.e. acceptance, implementation costs,) of the measure or technology that it is addressed in the project.

## 8 Reporting

A scientific and financial report must be submitted annually indicating project status. Grant holders may be invited to present their project status in one of the Partnership Council Mobility Initiative meetings. A final report is due upon completion of the project, including all relevant outcomes (dissertations, publications, patents, etc.). Grant holders are also encouraged to contribute to outreach and dissemination activities as appropriate in the frame of the ETH Mobility Initiative.

### For further information, please contact

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