

1. INTRODUCTION

The TRA VISIONS 2024 YOUNG RESEARCHER COMPETITION will be aimed at Universities and Research Institutes for young researchers pursuing bachelor's degrees and higher (Master's and PhD) in all scientific domains involving transport, sustainability, mobility, energy, engineering, and related areas. The competition presents an opportunity for young researchers to showcase their work on an international stage at the Transport Research Arena (TRA) 2024 Conference scheduled for April 2024 in Dublin. Initially, participants will be invited to submit an abstract (Call for Ideas) under one of the TRA 2024 Conference Topics / Overarching themes (see **Table 1**).

The registration period for the Young Researcher Competition will be open from 07/02/2023 until 30/06/2023, during which all the participants are invited to register their ideas through the submission of a title and a short abstract. Participants will then have a four-month period (until 31/10/2023) to further develop their proposal into a final project. The Submission should include a report based on the Final Project Template (available for download from the TRA VISIONS section on TRA2024 website), a short presentation and a project poster accompanied by an optional short video (mandatory for all shortlisted).

The submission phase will end with the submission of the aforementioned documentation (a final report, a short presentation, a project poster and an optional video) followed by an Evaluation of Ideas period during which a judging panel will determine which are the top 3 ideas per mode (road, rail, waterborne, air and cross-modality). The evaluation of ideas will be divided into three steps: an eligibility assessment, an online evaluation, and a judging panel (further explained in section 4).

The winning certificates and prizes will be presented in a prestigious Award Ceremony during the TRA 2024 event.

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2. ACADEMIC COMPETITION SUBJECT COVERAGE 2024

2.1. Pillars / Transport Modes

Participants of the TRA VISIONS 2024 Young Researcher Competition can submit their application to one of the following five Pillars / Transport Modes presented in **Table 1**.

TRA VISIONS 2024 Pillars / Transport Modes	
A. Road	Highways; Urban and inter-urban roads; Pedestrian and Cycling infrastructures.
B. Rail	High-speed rail; Passenger and Freight Railways; Urban and light rail systems
C. Waterborne	Long distance shipping; Inland shipping; Cruise & Ferries; Short-sea shipping; Offshore, floating infrastructures and support vessels; Maritime transport; Dredging
D. Airborne	ATM and UTM; Drones, automation, and autonomy concepts; Aerodynamics; acoustic and aero elasticity; Aircraft avionics and systems; Cabin design and Passenger comfort; Future challenges in aviation; Emerging aviation risks; Material research
E. Cross-modality	Multimodality; Combined transport; Intermodality; Integrated infrastructures; Public transport; Logistics; Interfaces; Ports; ITS; Aviation infrastructures; Airports

Table 1 - Pillars / Transport Modes for the TRA VISIONS 2024 Young Researcher Competition

2.2. Research Topics / Areas

Besides submitting their application to one of the previous Pillars / Transport Modes outlined in section 2.1., participants of the TRA VISIONS 2024 Young Researcher Competition are invited to submit an abstract under the following research topics/areas based on the theme: **Transport Transitions: Advancing Sustainable and Inclusive Mobility**. This theme has been covered under 4 main Research Areas (RA) as outlined below:

- RA1. Safe & Inclusive Transport**
- RA2. Sustainable Mobility of People and Goods**
- RA3. Collaborative Digitalisation**
- RA4. Efficient & Resilient Systems**

The sub-themes under each of these overarching RA is outlined below:

- RA1. Safe & Inclusive Transport**
 - 1.1 Transport safety
 - 1.2 Future workforce & skills

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- 1.3 People-centred & inclusive transport
- 1.4 Transport policy

RA2. Sustainable Mobility of People & Goods

- 2.1 Urban, regional & rural transport
- 2.2 Zero emissions transport
- 2.3 Impact on health & the environment
- 2.4 Logistics and sustainable transport

RA3. Collaborative Digitalisation

- 3.1 Digital transition
- 3.2 Transport data sharing
- 3.3 Connected, Co-operative and Automated Mobility
- 3.4 Digital transport infrastructure

RA4. Efficient & Resilient Systems

- 4.1 Resilient infrastructure
- 4.2 Resilient networks & operations
- 4.3 Circular economy & life cycle assessments
- 4.4 Transport energy transition

3. COMPETITION RULES

1. Group or individual entries are eligible for all transport modes. Entries may be submitted by any individual or research team that consists of up to a maximum of 7 participants.
2. Only one entry will be accepted per person/team and all entries must fall into one of the outlined pillars/transport modes. Participants cannot submit the same abstract / video under different pillars/transport modes.
3. The registration period will be open from 07/02/2023 until 30/06/2023 and the young researchers are invited to submit an abstract of their idea, under one of the TRAVISIONS 2024 Competition Research Topics / Areas.
4. The deadline for comprehensive project submission is 31/10/2023 at Midnight Central European Time (31/10/2023 23:59 CET). Any entries beyond this time will not be accepted unless an extension is granted.

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5. All abstracts must have a maximum of 250 words. It may contain up to 3 diagrams, high-quality images, or figures as appropriate. Participants need to submit at least two high-resolution images or diagrams. The minimum resolution should be 1920x1080 pixels at 72 dpi (monitor resolution).
6. All submitted entries will automatically give their permission for their abstract to go public on the TRA2024 website and on the TRA VISIONS contest book. It is the applicant's responsibility to ensure that such publication does not breach the copyright of others.
7. All submissions need to include a report based on the Final Project Template (available for download from the TRA VISIONS section on TRA2024 website), a short presentation and a project poster accompanied by an optional short video (about 1 minute). The submission of a video is mandatory for all shortlisted ideas (top 10 ideas per mode). The shortlisted students will be notified well in advance to develop the short videos.
8. All submitted entries need to be in understandable, academic English, of general European interest and need to ensure a clear understanding of the idea. Video entries in any language will be accepted; however, foreign language videos must include English subtitles.
9. All abstracts and videos must be the work of the young researchers. Participants may submit work already published, provided it is their own work and its publication to the TRA VISIONS section on TRA2024 website does not breach the copyright of others.
10. The maximum allowable number of final submissions is 100 per mode. This limitation works on a first come first serve basis.
11. No "copyright" infringing content can be included.
12. Only entries submitted within the online submission section of the TRA VISIONS section on TRA2024 website will be accepted.
13. The competition is open to young researchers registered in a College, University or Research Institute from across the European Union, EU Candidate Countries, Potential EU Candidate Countries and European Economic Area¹.

¹ Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxemburg, FYRO Macedonia, Malta, Montenegro, the Netherlands, Norway, Poland, Ireland, Romania, Serbia, Slovakia, Slovenia, Switzerland, Spain, Sweden, Turkey, United Kingdom

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14. Winners will be acknowledged on the TRA 2024 websites and may be acknowledged elsewhere.
15. All finalists (one nominee/team representative per winning team) will receive a contribution towards their accommodation and travel expenses to the TRA 2024 Conference in Dublin, Ireland. The contribution is dependent on the point of origin within Europe which could be the young researchers' place of study or permanent place of residence. It is a condition of this award that the finalists attend the conference. It is up to all finalists to organise their own travel arrangements to Dublin. The organisers will endeavour to make available low-cost accommodation, subject to availability.
16. There will be 3 winning ideas per transport mode. The winning young researcher prizes per mode consist of 1st (5000€), 2nd (3000€) and 3rd runner-up (2000€). All finalists will be given a certificate acknowledging their achievement.
17. Entrants must indicate a supervising professor/senior researcher/senior scientist, her/his organisation and contact details. The TRA VISIONS organisers can contact the supervising professor to verify the submitted idea and the entrant's status. Entrants must provide all requested details when entering the competition, as outlined in the Application Form. Entrants must comply with all rules to be eligible for the prizes. No responsibility is accepted for ineligible entries or entries made fraudulently. Entrants will be deemed to have accepted these rules and to agree to be bound by them when entering this competition.
18. The TRA VISIONS organisers do not accept any responsibility for late or lost entries due to poor performance of the Internet or any other technical difficulties on the applicant's side – applicants are advised to apply as early as possible.
19. Without the expressed permission of the organisers, this competition is not open to employees or contractors of the TRA Conference, or anyone already involved or participating in it, or any person directly or indirectly involved in the organisation or running of the TRA VISIONS competition, or their direct family members.
20. The evaluation of ideas is divided into three steps: an eligibility assessment, an online evaluation, and a judging panel. The eligibility assessment is conducted by the TRA VISIONS organisers. Submissions which comply with the stated requirements are evaluated in a remote online evaluation in which two evaluators assess each eligible project and give a ranking. The final evaluation phase, in which the shortlisted top 10 ideas for each mode are evaluated by a judging panel during a shortlisting workshop, determines the three top ideas per mode (road, rail, waterborne, air and cross-modality).

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21. The judges' decision is final in every situation including any not covered above and no correspondence will be entered into. The judges reserve the right to have discretion regarding the rules. The organisers reserve the right to cancel the competition at any stage, if deemed necessary in their opinion, and if circumstances arise outside of their control. The competition will be cancelled if financial support anticipated by the organisers does not materialise. In such circumstances, no costs will be refunded.

4. SUBMISSIONS

Projects may cover the topics on the list of research areas/topics outlined in 2.2 and include transport development and innovation aspects around the design, construction, research, equipment, training or operations of new and innovative transport and mobility concepts. Existing products, devices, services, or procedures will not be considered.

Output: The participants should engage in further research and use their creativity, knowledge, and personal effort in order to produce an innovative concept idea of high-quality standards. The "concept idea" is not required to be a completely engineered "ready to build" product. The idea may also contain new ("quantum leap") technical solutions, based on solid engineering judgment and feasibility estimation. All submissions should include evidence of originality identifying any similar work and, if so, what distinguishes the submission from this other work.

Upon registration participants should register their personal details (username, password, name, surname, organisation, supervising professor, etc). After an eligibility check, participants will then have to submit an abstract and a title describing their idea by **30/06/2023 23:59 CET** using the Abstract submission form available from the TRA VISIONS section on TRA2024 website.

Final project submissions should be submitted in electronic format, using the "Final Project" template, the "Poster" template, and the "Presentation" template (documents available for download from the website). The Final Project can be submitted at any time repeatedly (only the latest version uploaded will be considered) up until **31/10/2023 23:59 CET**.

The **Final Report** should include the following:

- The main text is in electronic format and neatly presented in an academic format. The final submissions must be more than 2 pages but must not to exceed 20 pages.
- A description of the methodical approach, the concept, its basic principles, the assumptions made and an indication of how the concept contributes to the state of the art.

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- It must show how the concept meets the future market and society needs and address potential technology gaps.
- A comprehensive literature survey to demonstrate knowledge on the field should be included. The report should include clear references.
- It should address issues such as safety, environment, production, logistics, etc. where necessary and provide some evidence, in the form of calculation or engineering judgment and feasibility.
- The above requirements should be presented according to the following table of contents:
 - **Management summary**
 - **Introduction**
 - **Selection of pillar/transport mode and related research topics:** describe the selected transport mode and research topic that the concept idea fits into.
 - **Literature survey:** describe existing published concept ideas fitting to selected research topics.
 - **Description of Idea: Proposed solution:** describe the proposed solution including advantages as compared with existing concepts. Address how “Contest Targets” are met considering the specific research topics.
 - **Potential technological gaps and issues in research topics:** describe the identified technology gaps and themes for further development in the areas of technical and economic feasibility, safety, security, environment, production, logistics, etc.

For example, for a project within waterborne:

Detailed design description covering the following (where applicable):

- sizing and principal dimensions including the approach to sizing
- speed/powering/propulsion
- weight estimation
- load capacity
- stability analysis
- sea keeping analysis
- general arrangement plans
- cost analysis (investment costs)
- cargo rate analysis

- **Appendices**, if necessary, should provide additional details to support the concept.

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- **Drawings, illustrations, calculations, and data listings** should only appear in the appendices where necessary and should all be submitted in electronic format.

The **Presentation** should include the following:

- Title slide containing: Project title, key specifications, team members, contact data, supervising professor/senior researcher/senior scientist
- Motivation and objectives of project
- Methodological approach
- Summary of key results, added value to state of the art should be highlighted
- Conclusion and further research demand
- Illustrations should be used throughout the presentation describing the concept idea. All illustrations need to have a high resolution.
- Quantity of max.10 slides

A short supportive Video is optional and should be uploaded separately. Ideas which are shortlisted (top 10) are obliged to submit a video.

- Videos can show a real moving picture, interviews with team members and/or commented slides.

The **Poster** should include the following:

- Project title
- Key characteristics (a few bullet points highlighting the most distinct characteristics of the project)
- Motivation and objectives of your project
- Methodology (as illustration / figure)
- Project results
- Further steps/ Research demand and outlook
- Team/ Project partners

Submissions should be submitted to TRA VISIONS in electronic format via the registration website. **Table 2** is a summary of the expected deliverables and their corresponding deadlines.

Deliverable	Deliverable Content	Dates
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Registration & Abstract	<p>Online Registration: Register online as a team leader or as a member of an existing team. Required information include Supervisor, young researcher profile etc. Name, Organisation, Team, Research Area of Contribution. Title and Short description (abstract) of idea (about 250 words)</p>	<p>From 07/02/2023</p> <p>To 30/06/2023 <i>23:59 CET</i></p>
Final Deliverables	<p>Final Project Report: Upload final project template containing anonymous final document containing the final project contribution from the team.</p> <p>Final Project Presentation: Upload Presentation template containing final project presentation from the team.</p> <p>Final Project Poster: Upload Poster template containing final project poster from the team.</p> <p>Attachments & others: Upload any attachments related to the final project (supporting video, excel spreadsheets, CAD files etc.)</p>	<p>To 31/10/2023 <i>23:59 CET</i></p>
Video for shortlisted Ideas	<p>Video: Upload video containing description of the idea/project (top 10 projects only)</p>	<p>To 31/01/2024 <i>23:59 CET</i></p>

Table 2 - Summary of the expected deliverables with their deadlines

The IP rights of any project submitted will be processed according to each University's procedures and policies.

5. COMPETITION SCHEDULE

The scheduled deadlines for the TRA VISIONS Young Researcher Competition are presented in **Table 3**. Each deliverable will be open for editing until the end of the deliverable deadline (even if the participant(s) have submitted it prior to that). For electronic registration, you should visit: <http://www.travisions.eu>

Official start date for the contest	07 - February - 2023
End of registration period/ Abstract Submission Deadline	30 - June - 2023 (23:59 CET)
Final version submission deadline	31 - Oct - 2023 (23:59 CET)
Deadline for submission of pitch videos (top 10 only)	31 - Jan - 2024 (23:59 CET)
Awards ceremony	April 2024

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Table 3 - Official deadlines for the TRA VISIONS 2024 Young Researcher Competition

6. EVALUATION CRITERIA

As previously explained, all project entries submitted to this competition are going to be subjected to an initial eligibility assessment, an online evaluation, and a judging panel. The eligibility assessment is conducted by the TRA VISIONS organisers and submissions that comply with the stated requirements will be evaluated in a remote online evaluation in which two evaluators assess each eligible project and give a ranking.

This evaluation process is carried out based on the following criteria and their respective weights as outlined in **Table 4** below:

Criteria	Weight
<p>Scientific Merit</p> <p>Research must:</p> <ul style="list-style-type: none"> • emphasize novelty or at least an innovative application of existing knowledge • address an important transport/mobility problem • advance scientific knowledge by the completion of this project • be appropriate to the research field being investigated • have a conceptual framework, design, methods, and analyses adequately developed, well-integrated and appropriate to the aims of the project • acknowledge potential problem areas and consider alternatives • have adequate scientific support for the project 	60%
<p>Impact</p> <p>Research must:</p> <ul style="list-style-type: none"> • show adequate relevance to the sustainability of the transport industry and society • provide support that it is applicable within the industry and society • be appropriate to the current (or future) trends within the industry and society • propose how it could be incorporated into the system, if not already present • not be out-dated 	20%

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<p>Presentation</p> <p>Submissions must:</p> <ul style="list-style-type: none"> ● clearly state the primary theme or purpose ● contain properly sequenced ideas ● have the depth of communication appropriate to the audience ● include words and terms appropriate to the audience ● not exceed the length appropriate to the competition ● follow punctuation, spelling, and formatting conventions ● observe correct grammar in the written text ● secure the audience’s attention at the beginning ● use visual aids and produce a presentation of up to 10 slides with pictures ● use the correct level of formality ● figures and tables must be clear, precise, and well formatted 	<p>20%</p>
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Table 4 - TRA VISIONS 2024 Young Researcher Competition evaluation criteria and weights

7. PRIZES AND AWARDS

There will be 3 winning ideas per transport mode. The winning young researcher prizes will be sponsored by the industry and every mode will consist of the:

- 1st runner-up - 5000€
- 2nd runner-up - 3000€
- 3rd runner-up - 2000€

All finalists will be given a certificate acknowledging their achievement. The awards and prizes of the top 3 winners will be announced during the TRA VISIONS 2024 Award Ceremony which will take place during the prestigious high-level event of Transport Research Arena (TRA 2024) which will be organised in Dublin, Ireland in April 2024.

8. FURTHER INFORMATION

For further information, please visit <http://www.travisions.eu> where you will have access to all the template documents and you will be able to register online your idea for the competition. Alternatively, you can contact info@travisions.eu.

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APPENDIX I: TRA VISIONS 2024 YOUNG RESEARCHER COMPETITION TIMELINE

