TRA Visions 2016

Student Competition:

- Eligible Topics
- Rules, Guidelines and Evaluation Criteria

Contents

1) Introduction

TRA VISIONS will be aimed at University and Technical Institutes students pursuing bachelor degrees and higher. The competition presents an opportunity for students to showcase their work on an international stage at the Transport Research Arena (TRA) 2016 Conference between the 18th and 21st of April 2016 in Warsaw. Initially, participants will be invited to submit an abstract under one of the TRA-2016 conference Topics (*Call for Ideas*) which covers the general areas of:

- Environment – Decarbonisation, Sustainability and Energy Efficiency
- Vehicles & Vessels Technologies, Design and Production
- Urban and Long-Distance People Mobility - Systems and Services
- Freight Transport and Logistics
- Safe, Secure and Resilient Transport Systems
- Transport Infrastructures
- Human Factors, Socio-Economics and Foresights
- Automation and Connectivity
- Enabling Environment for Innovation Implementation

The registration period will be open until 31/05/2015, where all the participants are invited to register their ideas and submit a title and a short abstract of their ideas for the Student Competition. The participants will have to develop and submit their idea until 30/09/2015. The Submission should be a report based on the Final Project Template (available for download from the TRA VISIONS website), a short presentation and a project poster accompanied by an optional short video. The submission phase will be followed by an *Evaluation of Ideas* period during which a judging panel will determine which are the top 3 ideas per mode (including cross-modality). The winner certificates and their prizes will be presented in a prestigious award ceremony during the TRA 2016 event.

2) Academic Competition Research Areas 2016

2.1 Pillars / Transport modes

A. Road	**B. Rail**
- Highways, - Urban and rural roads, - Passenger and freight transport, - Cycling, - Pedestrian	- High-speed, - Passenger and freight railways, - Urban and light rail systems
C. Waterborne	**D. Cross-modality**
- Maritime, - In-land waterborne, - Short sea shipping, - Deep Sea Shipping - Passenger transport and cruises, - Floating infrastructures and support vessels - Container Shipping, - Dredging	- Co-modality, - Inter-modality, - Combined transport, - Interfaces, - Intermodal terminals, - Integrated infrastructures, - Public transport - Airports

2.2 Research Topics/Areas

RA1: Environment – Decarbonisation, Sustainability and Energy Efficiency
- Electromobility,
- Greenhouse gas and pollutant emission,
- Alternative fuels
- Optimisation of energy use
- Alternative drive train concepts,
- Drag reduction
- Noise, vibration and harshness
- Electromagnetic compatibility
- Thermal Management
- Life Cycle Analysis

RA2: Vehicles & Vessels Technologies, Design and Production
- Cars, Trucks, Buses (vehicle segments M1-M3, N1-N3)
- Off-Highway-Vehicles (Farming, Mining, Construction)
- Bicycles, Powered 2 wheelers
- Trains,
- Ships, On-board equipment,
- Lightweight design, technologies and materials
- Innovative design and construction methods
- Prototyping,
- Cost effective design and production

RA3: Urban and Long-Distance People Mobility – Systems and Services
- Comprehensive municipal transport concepts
- Intermodal Mobility
- Congestion management
- Ride-sharing (e.g. car-sharing, bike-sharing)
- New mobility services
- Field operation tests
- Traffic simulation
- Traffic managements systems

RA4: Freight Transport and Logistics
- Transport hubs
- Congestion management
- Field operation tests
- Distribution management and transport planning
- Intermodal transport systems
- Delivery services

RA5: Safe, Secure and Resilient Transport Systems
- Accident mitigation,

- User and Passenger safety
- ITS solutions,
- Health and biomechanics,
- Crashworthiness,
- Fire performance and Blast resistance,
- Failure investigation,
- Security and crisis management,
- Risk management,
- Resilience
- Data management and security/ Rules and rights for data management

RA6: Transport Infrastructures
- Roads, Tunnels, Bridges, Pavements,
- Railtracks,
- Stations,
- Seaports & Marinas,
- Offshore platforms,
- Canals, Locks,
- Geotechnics,
- Fuel infrastructures
- Charging infrastructure and smart grids,
- New materials and technologies,
- Asset management sensing and monitoring

RA7: Human Factors, Socio-Economics and Foresights
- Future mobility perspectives
- Methods for future research
- Customer segments and profiles
- Macroeconomic Factors
- Socio-demographic behavior
- HMI- Design
- Ergonomics of transport system
- Regulatory environment
- Customer technology perception

RA8: Automation and Connectivity
- On-board ICT, Vehicle-to-driver (V2D)
- Vehicle-to-vehicle (V2V)
- Vehicle-to-infrastructure (V2I) communication
- Cloud infrastructure and mobile networks
- Telematics and Information Systems
- Advanced driver assistant systems (ADAS) function and technologies
- Autonomous driving systems

RA9: Enabling Environment for Innovation Implementation
- Innovation process

- Industrial cooperation
- New investment models
- Technical harmonisation,
- Industrial property rights

3) Competition rules

1. Group or individual entries are eligible for all pillars. Entries may be submitted by any individual or 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. Students cannot submit the same abstract/ video under different pillars.

3. The registration period is from 01/02/2015 to 31/05/2015 in which participants are invited to submit an abstract of their idea under one of the TRA 2016 conference Topics.

4. All submitted entries will automatically give their permission for their abstract to go public on the project website. It is the applicant's responsibility to ensure that such publication does not breach the copyright of others.

5. All abstracts and videos must be the students own work. Students may submit work already published, provided it is their own work and its publication to the TRA Visions website does not breach the copyright of others.

6. All abstracts must be not less than 300 words and not more than 500 words. It may contain up to 3 diagrams, images or figures as appropriate.

7. The deadline for comprehensive project submission is 30/09/2015 at Mid-night Central European Time. Any entries beyond this time will not be accepted unless an extension is granted.

8. The maximum allowable number of final submissions is 100 per mode. Only the first 100 submissions for Road, 100 for Rail and 100 for Waterborne will be evaluated. This limitation works on a first come first serve basis.

9. No "copyright" infringing content can be included. We will accept video entries in any language; however, foreign language videos must include English subtitles.

10. Only entries submitted within the online submission section of the TRA Visions website will be accepted.

11. The competition is open to early-stage researchers registered in a College or University from across the European Union, EU Candidate Countries, Potential EU Candidate Countries and European Economic Area[1]. An early-stage researcher is

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[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, Macedonia, Malta, Montenegro, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Switzerland, Spain, Sweden, Turkey, United Kingdom

defined herein as University and Technical Institutes students pursuing bachelor, master, PhD or comparable degrees. Students who graduate earlier than the beginning of the academic year of the submission deadline are not eligible to apply. Students who graduate from a PhD degree before the submission deadline of 30/09/2015 are welcome to participate in the senior researcher competition.

12. Winners will be acknowledged on both the TRA Visions and the TRA 2016 websites and may be acknowledged on the websites of the consortium members. (e.g. WEGEMT, BALance etc.)

13. All finalists (one nominee / team representative per winning team) will receive a contribution towards their accommodation and travel expenses to the TRA 2016 Conference in Warsaw, Poland. The contribution is dependent on the point of origin within Europe which should be the students' normal place of study. It is a condition of this award that the student attends the conference. It is up to all finalists to organize their own travel arrangements to Warsaw. The organizers will endeavour to make available low cost accommodation, subject to availability.

14. There will be 3 winning ideas per transport mode. The winning student prizes per mode consist of 1st 2nd and 3rd runner-up. All finalists will be given a certificate acknowledging their achievement.

15. Entrants must indicate a supervising professor and his organisation. The TRA Visions organisers can contact the supervising professor to verify the submitted idea and the entrants. 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.

16. 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 applicants side – applicants are advised to apply as early as possible.

17. 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.

18. 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 design, construction, research, equipment, training or operations of new and innovative concept ideas and products. 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 30/05/2015 using the Abstract submission form available from the TRA VISIONS 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 must be submitted no later than the 30/09/2015.

The **Final Report** should include the following:
- The main text should be in electronic format and neatly presented. The final submissions must not to exceed 25 pages.
- It should comprise of 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.
- 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 transport mode / pillar 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 feasibility, safety, environment, production, logistics etc. For example for a project within waterborne:

Detailed design description covering the following (where applicable):

- sizing and principal dimensions including approach for 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.
- **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.
- 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. A short supportive video is optional and should be uploaded separately.
- Quantity of max.10 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 1 is a summary of the expected deliverables and their corresponding deadlines.

Table 1 Summary of the expected deliverables with their deadlines

Deliverable	Deliverable Content	Dates
Registration & Abstract	**Online Registration:** Register online as a team leader or as a member of an existing team. Required information include Supervisor, student profile etc. Name, Organization, Team, Research Area of Contribution. Title and Short description (abstract) of idea.	**From February 2015** **To 31/05/2015**
Final Deliverables	**Final Project Report:** Upload final project template containing anonymous final document containing the final project contribution from the team. **Final Project Presentation:** Upload Presentation template containing final project presentation from the team. **Final Project Poster:** Upload Poster template containing final project poster from the team. **Attachments & others:** Upload any attachments related to the final project (supporting video, excel spreadsheets, CAD files etc.)	**To 30/09/2015**

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 Student Competition are presented in Table 2. 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

Table 2

Official start date for the contest	**01 - Feb - 2015**
End of registration period/ Abstract Submission	**31 - May - 2015**
Final version submission deadline	**30 - Sep - 2015**
Awards ceremony	**APR 2016**

6) Evaluation Criteria

- **Scientific Merit 60%**
- **Impact 20%**
- **Presentation 20%**

6.1 Scientific Merit

Research must:

- emphasize on novelty, or at least an innovative application of existing knowledge
- address an important problem
- advance scientific knowledge by the completion of this project
- be appropriate to the research field being investigated
- have 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

6.2 Impact

Research must:

- show adequate relevance to the transport industry
- provide support that it is applicable within the industry
- be appropriate to the current (or future) trends within the industry
- propose how it could be incorporated into the system, if not already present
- not be out-dated

6.3 Presentation

Submissions must:

- clearly state the primary theme or purpose
- contain properly sequenced ideas
- have depth of communications 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

Additionally submitted supporting video is to be evaluated as a plus.

7) Prizes and awards

The awards and prizes of the top 3 winners will be announced during the VISIONS TRA 2016 award ceremony which will take place during the prestigious high level event of Transport Research Arena (TRA 2016) which will be organised in Warsaw during April 2016.

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 Mr. George Smyrnakis (Email: george.smyrnakis@ncl.ac.uk).

Appendix I: VISIONS-TRA2016 Competition Timeline

| Feb 2015 | Mar 2015 | Apr 2015 | May 2015 | June 2015 | Jul 2015 | Aug 2015 | Sep 2015 | Oct 2015 | Nov 2015 | Dec 2015 | Apr 2016 |

Call for Ideas. This is the registration period where all the participants are invited to register their ideas and submit a title and a short abstract of their ideas for the academic contest.

Final Ideas Submission. The Final Project has to be submitted no later than the 30st of September 2015.

Evaluation of Ideas. During this period the ideas will be evaluated and the judging panel will determine the top three ideas per mode. A short video will also be developed for every winning idea and all the ideas will be published in a book.

01 – Feb - 2015
Initiation of Academic Contest

30 - Sep - 2015
Registration & Submission of Final Project Deadline

Apr 2016
VISIONS-TRA2016 Award Ceremony