CLUSTER 5

CLIMATE
ENERGY
MOBILITY

HORIZON EUROPE
INFO DAYS 2021

SAFETY AND RESILIENCE – PER MODE AND ACROSS ALL TRANSPORT MODES

Road and Aviation Safety Topics

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MOVE.B3

2021 – 2027
Testing safe lightweight vehicles and improved safe human-technology interaction in the future traffic system

Scope

AREA A Testing safe lightweight vehicles
- Perform advanced testing on crash, toughness, fracture and fatigue of new materials for vehicles
- Analyse the crash scenarios of the future, considering active safety devices but also their potential failure
- Address standardised positions for crash absorbing elements
- Demonstration of a minimum number of crash tests designed to validate virtual testing for a large number of different scenarios

Area B – Safe human-technology interaction in the future traffic system
- Design and development of intuitive, understandable, non-distracting and reliable adaptive interfaces for human-technology interaction in road vehicles minimising training needs for safe usage.
- Develop concepts of external interfaces, also considering the characteristics (for instance speed, direction) that are possible to interpret and understand by all road users.
- Understand long-term effects (physical and mental), potential risks and possible benefits for road users exposed to and actively using adaptive HMI technologies, and propose means to improve or maintain road user performance in terms of safety.
- Development of safety validation methods for new adaptive HMI technologies.
HORIZON-CL5-2021-D6-01-10

Testing safe lightweight vehicles and improved safe human-technology interaction in the future traffic system

Expected outcome

For Area A:
- Safer but also lighter and circular vehicle structures
- Advanced vehicle concepts with higher compatibility between vehicles of different sizes and masses in dissimilar crashes.
- Advanced structural designs tolerant to a wider set of crash angles.
- Improved safety in future mixed traffic scenarios including an increasing number of automated vehicles

For Area B
- Reduced driver distraction as an important factor in road crashes.
- Intuitive and unobtrusive information of drivers and other road users about expected actions at any time.
- Safer mobility for all road users including the ones with impaired mental and/or physical capacity.
- Availability of human-centric adaptive interfaces and positive stimulation and utilisation of human abilities by new human-technology interfaces.
- Improved validation methods for HMI.
Testing safe lightweight vehicles and improved safe human-technology interaction in the future traffic system

Type of action: RIA, TRL 5-6

EU contribution (indicative): 3.5-4m Euro per proposal
Total for the topic is 12m Euro

Deadline: 19 October 2021
HORIZON-CL5-2021-D6-01-11

Radical improvement of road safety in low and medium income countries in Africa

Scope

- In-depth road accident investigations in selected areas/countries to find evidence of the underlying contributing factors behind accident
- Develop an innovative approach to promote the Safe System approach in selected African countries
- Analyse the most appropriate road safety assessment methodologies and traffic management systems, as well as protection principles for the vulnerable road users and vehicle occupants, and define criteria for measuring future progress.
- Identify requirements for skills development and training of staff, and research and innovation needs, with a view to quick deployment of suitable solutions.
- Design, develop and implement a series of small scale pilot demonstration projects to test the implementation of a safe system approach at different levels (national, regional, city etc)
- Carry out an evaluation and assessment of the pilot demonstration projects.
- Define guidelines detailing requirements and propose recommendations from the small scale pilot demonstrations useful for the implementation of a safe system approach to be up-scaled for the African continent (capacity building).
Expected outcome

- Contribute to the global target of 50% fewer road fatalities and serious injuries by 2030 in low to medium income countries in Africa.
- More effective design of road safety practices, measures and policies in the targeted countries; establishment of the safe system approach in national road safety strategies.
- Improvement of road safety and traffic fluidity conditions in Africa, ultimately saving thousands of lives and lessening the human, social and economic burden of road accidents.
- The reinforcement of endogenous African capabilities with a view to long term sustainable progress in the fight against road casualties and for a more efficient and sustainable transport system.
HORIZON-CL5-2021-D6-01-11

Radical improvement of road safety in low and medium income countries in Africa

Type of action: RIA, TRL 5-6

EU contribution (indicative): 4m Euro per proposal
Total for the topic is 8m Euro

Deadline: 19 October 2021
Predictive safety assessment framework and safer urban environment for vulnerable road users

Scope

AREA A Predictive safety assessment framework
- Development of new methods to efficiently predict the effects of the implementation of a new technology, new means of transport and regulatory or behavioural changes on road safety up to the level of socio-economic benefits.
- Further development and validation of virtual models of the relevant elements of the transport system for which such further development is most urgently needed.
- Analysis, how the application of new technology and/or the introduction of new regulation will affect the remaining road safety burden, and how traffic and crash scenarios will change with their market penetration and/or enforcement respectively.

Area B – Safer urban environment for vulnerable road users
- Safe inclusion of new means of transport into the traffic system.
- Protection principles and solutions to provide a safe environment for vulnerable road users.
- Protective equipment (helmets, clothes, reflectors) that is innovative, effective, user friendly and likely to lead to higher usage rates.
- Improved detection mechanisms of vulnerable road users by other users and accurate prediction of their behaviour including at road intersections.
- Analysis of the most common causes of accidents concerning vulnerable road users and demonstration of applied solutions.
- Provide clear guidance to cities and Member States/Associated Countries on how to incorporate the vulnerable road users dimension into infrastructure planning and sustainable urban mobility plans especially for the aspects of safety, security and accessibility.
Predictive safety assessment framework and safer urban environment for vulnerable road users

Expected outcome

For Area A:
- Harmonised, prospective assessment framework for road safety, both active and passive, solutions (for policy, regulatory and consumer assessment).
- Comprehensive virtual representation of challenging scenarios in future road traffic.
- Well-founded prognoses on the effects of new solutions on road safety and protection of vulnerable road users and vehicle occupants.

For Area B
- 50% reduction in serious injuries and fatalities in road crashes by 2030, with a focus on measures addressing unprotected vulnerable road users
- Better prediction of all road users behaviour and the use of new transport modes
- Concepts and guidelines for safe inclusion of new types of vulnerable road users, e.g. those using new means of transport into the traffic system
- Development of solutions that facilitate inclusion of all vulnerable users in the transport system
- Facilitation of modal shift to active and clean modes of transport
Predictive safety assessment framework and safer urban environment for vulnerable road users

Type of action: RIA, TRL 5-6

EU contribution (indicative): 4-4.33m Euro per proposal
Total for the topic is 13m Euro

Deadline: 12 January 2022
Safe automation and human factors in aviation – intelligent integration and assistance

Scope

Activities should address a renewed safety focus on the teaming between the human and automation, given the steady increase in automation in aviation operations at large (e.g. in cockpit, ATC, maintenance, etc.)

- better understand and anticipate why incidents happen – the triggering events/hazards, the cognitive failures and the challenges at the human-machine interface
- more focus on Human Digital Interface design and on integrating AI into human crews and teams
- The proposals may include the explicit commitment from the European Aviation Safety Agency (EASA) to assist or to participate
Expected outcome

New technologies and processes that will deliver improved:

- monitoring of human performance, system performance and external hazards
- intelligent assistance in all safety-critical situations, allowing fall-back response in case of severe system perturbations
- qualification and training tools and methods to maintain high standards of safety and resilience
- organisational and regulatory preparedness, safety culture and societal acceptance in the advent of more automation in aviation
HORIZON-CL5-2021-D6-01-13

Safe automation and human factors in aviation – intelligent integration and assistance

**Type of action**: Research and Innovation Actions

**EU contribution**: between EUR 4.00 and 8.00 million / total: EUR 12 million

**Deadline**: 14 Sep 2021
More resilient aircraft and increased survivability

Scope

Activities should contribute to maintain a high-level of safety in aviation by encompassing the evolution of external hazards with the evolution of aviation systems

- Increase the ability to predict and avoid or mitigate weather hazards
- Advance systems and methods for reliable aircraft tracking and for safe evacuation, search and rescue of passengers and crew, including with new aerial means as drones
- The proposals may include the explicit commitment from the European Aviation Safety Agency (EASA) to assist or to participate
More resilient aircraft and increased survivability

Expected outcome

Project results are expected to contribute to two or more of the following expected outcomes in order to contribute to Flightpath2050 safety goals:

- Near real-time proactive prediction, detection, communication and avoidance/mitigation of anomalies and hazards at the airport (e.g. on the runway, at ground-handling, etc.), in the atmosphere (e.g. extreme weather phenomena) and on-board (e.g. fire, electromagnetic interference, structural issues, etc.), including self-protection.

- Improved safety modelling and design of aircraft and airports to increase survivability e.g. in case of fire, crash, ditching, including impact of new fuels or energy systems.

- Improved means and methods for reliable tracking of aircraft and timely evacuation, search and rescue of passengers and crew.
HORIZON-CL5-2022-D6-01-07

More resilient aircraft and increased survivability

**Type of action:** Research and Innovation Actions

**EU contribution:** between EUR 4.00 and 8.00 million / total: EUR 9 million

**Deadline:** 12 Jan 2022
On behalf of the RTD.C3 and MOVE.B3 teams

Thank you!

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