

DRAFT

HORIZON-MISS-2023-CIT-01-01: Co-designed smart systems and services for user-centred shared zero-emission mobility of people and freight in urban areas (2Zero, CCAM and Cities' Mission)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 25.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 50.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	<p>The rules are described in General Annex G. The following exceptions apply:</p> <p>Grants awarded under this topic will be linked to the following action(s):</p> <p>HORIZON-MISS-2021-CIT-02-03</p> <p>Collaboration between the consortia awarded as well as with the 2Zero and CCAM Partnerships and the Cities Mission Platform¹ is essential and consortia must ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration between the consortia awarded as well as with the Mission Platform must be formalised through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date.</p>

¹ Conceived through the Horizon 2020 project NetZeroCities - Accelerating cities' transition to net zero emissions by 2030, Grant Agreement n. 101036519, to be scaled up through the topic *HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform*

Expected Outcome: Project results are expected to contribute to all of the following outcomes:

- Mobility solutions that respond to people's and cities' needs, co-designed with local authorities, citizens and stakeholders, tested and implemented in cities to achieve climate neutrality by 2030.
- Transferrable solutions for mobility of people and goods exploiting the combined potential of electrification, automation and connectivity to significantly and measurably contribute to:
 - o The Cities Mission's objective of climate neutrality by 2030;
 - o Reduction of CO2 emissions supporting the 55% reduction goal for 2030;
 - o Lower energy demand;
 - o Improved air quality, less noise;
 - o Reduced congestion, more reliable, predictive travel times and more efficient transport operations;
 - o More effective use of urban space also considering the other transport modes and multimodal hubs;
 - o Improved safety particularly for vulnerable road users;
 - o Improved inclusiveness, especially by facilitating equitable and affordable access to mobility for all users, in particular for people with reduced mobility.
- Economically viable, modular and adaptable solutions that are transferrable among cities committed to achieving climate neutrality by 2030.
- Capacity built among local authorities, users and mobility systems providers to accelerate the take-up of shared, smart and zero emission solutions and to implement their monitoring and evaluation.
- Implementation plans for local and regional transport authorities to replicate the roll-out of innovative smart mobility solutions and related infrastructure (in particular for charging and/or connectivity) in cities beyond those involved in the project.
- Contribution to updates of urban and transport policies as well as relevant strategic research and innovation agendas (SRIA), particularly of the 2Zero and CCAM partnerships.

Scope: Urban mobility is a key sector that cities need to address for accelerating their transition to climate neutrality: citizens, freight forwarders, urban planners, transport operators as well as technology providers should jointly exploit the combined potentials of electric, automated and connected vehicles as well as integrated and shared people mobility and freight transport in their planning and actions. This requires a mutual understanding and alignment of the

opportunities of technical solutions from the CCAM and 2Zero partnerships and of needs identified by users and cities striving for the Mission target of climate neutrality.

Proposals should include co-designed innovative passenger mobility and freight transport concepts which are agreed between technology providers and cities, in cooperation with end users, citizens and other stakeholders (for example visitors) to optimise the performance, ease of use and to maximise uptake. They should then be tested and demonstrated in real environments and use cases before being replicated. They should complement current public transport and freight transport services as well as active mobility and micromobility, also with modular and interoperable last mile choices, while being scalable for the roll out, adaptability and co-implementation for different types of cities. At the same time, they should help to identify new challenges, e.g. regarding flexibility, privacy and resilience, in order to set requirements for the further improvement of technologies.

Proposals are expected to develop, test and demonstrate innovative solutions for mobility of people and freight exploiting the combined potential of electrification, automation and connectivity. Proposals must consider and explore the opportunities for technology transfer and synergy potentials with the respective other domain to fully cover passenger and goods mobility, although a primary focus on either people or goods mobility is possible. Solutions should be based on existing technologies and should satisfy cities' and users' needs, targeting implementation of pilot cases at city level to ensure feasibility, buy-in, acceptance and thus a seamless integration of mobility solutions and infrastructure in a citywide transport system.

All the following aspects should be addressed by the proposals:

- Establish a co-design process between local public authorities, city planners, end users (for example inhabitants, visitors, commuters) and automated and zero-emission mobility systems providers to ensure a user-centric and seamless integration of solutions in existing ecosystems.
- Build upon the results of recent collaborative research on, for example, power grid integration, charging infrastructure, vehicle connectivity, automation or smart fleet, road traffic and energy management, safety of vulnerable road users, and also build upon relevant experience of cities and partnerships.
- Demonstrate integrated and shared, automated and zero-emission solutions and services for people mobility and freight transport. Where needed and duly justified, design of vehicles and functions and the development of specific infrastructures for energy and joint and harmonized data management² to extend and optimise their use can be included.
- Develop open while resilient systems and replicable solutions that can be scaled-up within a city environment and flexibly adapted to current and evolving needs and use cases in the context of Sustainable Urban Mobility Plans (SUMP). Mobility services to and from sub-

² Compliant with FAIR data principles
(https://ec.europa.eu/info/sites/info/files/turning_fair_into_reality_0.pdf)

urban areas should be included in proposed solutions, so as to widen the pool of possible users of these solutions, services and systems.

- Co-design implementation plans for local and regional transport authorities to roll-out innovative smart mobility solutions and related infrastructure (in particular for charging and connectivity) and to lower energy demand.
- Evaluate cost and benefits of the systems and services tested along with real-world challenges and opportunities, based on user and city needs, and provide feedback on viability and limitations as well as new requirements to the 2Zero and CCAM partnerships.
- Support the development of skills on the planning and implementation of smart, shared and zero-emission urban mobility systems within the local authorities and co-creation with private stakeholders along SUMP and Sulp (Sustainable Urban Logistics Planning) guidelines, e.g. the practitioner briefing on Road Vehicle Automation of the Sustainable Urban Mobility Plans.
- Disseminate results via the 2Zero and CCAM partnerships and the Mission Platform and via relevant events, such as CIVITAS, Transport Research Arena (TRA) conference and other European events.

Proposals should fully exploit technologies developed/under development in the 2Zero and CCAM partnerships when designing, testing and demonstrating solutions and services, such as, e.g., automated and connected functions or digital twins optimising the charging, parking, safe (remote) control, operational design domain of vehicles or the fleet, traffic management and last-mile operations.

To allow for a thorough evaluation of the projects' ambition, progress and effect compared to the state of the art in the European Union and internationally, proposals are expected to provide measurable or predictable indicators of contributions of the tested solutions to the applicable outcomes and impacts expected from the 2Zero and CCAM partnerships as well as the Cities Mission. These should be supported by clear baselines, quantified targets and appropriate review processes for each participating city and include a detailed analysis of present and future potential user groups. The 'CIVITAS Process and Impact Evaluation Framework' and 'Sustainable Urban Mobility Indicators', where appropriate in combination with other sector-specific impact evaluation methodologies, should be used to evaluate the impact of the solutions.

Selected projects may consider including activities to investigate and foster societal readiness, for example by measuring the acceptability of new mobility solutions as well as behavioural change. This could include inter alia methods of co-assessment as well as actions to increase public awareness in order to anticipate and mitigate potential negative rebound effects.

This should be accompanied by mechanisms for common lesson drawing and learning, within the project, between the projects funded under this topic and through the Cities Mission Platform and 2Zero/CCAM partnerships.

Each proposal should envisage pilot demonstrations in at least two cities (lead cities) situated each in a different Member State or Associated Country. Proposals should provide the necessary evidence of the cities' commitment to test and implement the co-designed solutions. To foster replicability and up-taking of the outcomes, each proposal should also engage at least four replication/follower cities.

The consortia awarded under this topic must establish a collaboration agreement, to identify clear links among themselves and ensure complementarity, coordination and exchange on relevant linked activities. The consortia awarded should also foresee active collaboration with relevant and related projects funded under this call in order to address synergies and complementarities between the projects of the Cities Mission portfolio. In particular collaboration with the Mission Platform is essential. The collaboration between consortia awarded as well as with the Mission Platform must be formalised through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date.

In addition, given the important role of territories in which the participating cities are located, lead cities are encouraged to seek cooperation with and support from their territories, where relevant (metropolis, functional urban area, grouping of interacting municipalities with the cities, region, etc.). Support could take the form of, for example, an integration or link in an existing or future programme of the territory, financial support, or the involvement of representatives of these territories as partners in the project.

This topic requires the effective contribution of SSH (Social Sciences and Humanities) disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities. Social innovation should also be considered to support the actions under this topic in order to match innovative ideas with social needs. Inclusiveness of vulnerable populations (older people, children) as well as gender perspectives in mobility should be considered.

If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries are expected to clearly describe if and how the use of Copernicus and/or Galileo/EGNOS are incorporated in the proposed solutions. In addition, if the activities proposed involve the use and/or development of AI-based systems and/or techniques, the technical and social robustness of the proposed systems has to be described in the proposal.