SELECTED FIVE THEMATIC AREAS FOR INNOVATION PROJECTS

At the moment EIT Urban Mobility partners have published 100 innovation ideas where they are looking partners to join.

Headlines of those ideas are shown in slides to follow. To find out more information of each idea, please register to EIT Urban Mobility app WeDaVinci [https://eitum.wedavinci.com/](https://eitum.wedavinci.com/), where you can also present your own innovation idea

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01 Active Mobility

Because of the wide variety of direct and indirect health and environmental benefits of active mobility such as walking and cycling, many cities want to increase their active mobility levels, while ensuring safety for all road users.

Active mobility is regular physical activity undertaken as a means of transport. It includes travel by foot, bicycle and other vehicles which require physical effort to get moving. It does not include walking, cycling or other physical activity that is undertaken for recreation purposes. There are both individual and public health benefits of active mobility, primarily through the direct impacts of physical activity, but also indirectly through reduced air pollution and noise pollution if active mobility modes increase due to a shift from non-active modes. Active mobility modes include walking, cycling, pedal-assisted e-bikes, kick-scooter, and skateboards but not mopeds, electric bikes with no pedal-assist or electric scooters. As well as the considerable health benefits, active mobility modes also provide benefits in terms of reducing the amount of space used (compared to cars), freeing up space in public transport, and reducing CO2 emissions.

Because of the wide variety of benefits associated with active mobility, many cities want to increase levels of active mobility, and in some cases high levels of active mobility (e.g. cyclists) require new solutions to support crowding/congestion of cycling infrastructure and still ensure high quality of life and good use of public space. Supporting modal shift to active mobility requires a range of different measures, not least the (re-)allocation of space in urban areas to allow for safe solutions for these modes, for travel and parking when required. There are however many barriers to achieving increased active mobility, not least that decades of car-centric planning have created organisational and cultural barriers to prioritise active mobility in many European cities.

== Expected outcomes & impacts ==

The expected outcome would be higher levels of use of active mobility in target demo cities. The solution(s) would be safe, inclusive, and environmentally sustainable. There would be a notable modal shift in city partners from private motorised vehicles to active mobility showing a decreased in noise and air pollution. Solution(s) would provide opportunities for direct and indirect business growth, skills acquisition, and job creation. The social impact would be healthier, cleaner transport with lower incidence of accidents and higher safety levels when using active mobility.

Environmental impacts are reduced greenhouse gas emissions, better use of public spaces and more liveable urban areas.
02 Sustainable city logistics

New trends such as e-commerce pose new challenges for cities, such as increased number of vehicles on the road and higher numbers of deadly accidents involving vulnerable road users. Innovations are needed to address these issues in city logistics.

Freight transport is key to the smooth running of a city. Freight transport includes the transport of goods, from parcel delivery, delivery of building materials to construction sites, to domestic and commercial waste disposal. Without freight transport, our cities would not function. City logistics is a term used to describe the running of freight transport in urban areas. Freight transport causes problems in terms of negative impacts for air pollution, noise pollution, GHG emissions, blocking areas of the public realm, and being involved in a disproportionately large number of deadly collisions with vulnerable road users. The freight transport industry adapts quickly to new trends such as e-commerce and on-demand consumerism, but these can cause additional problems when not considered with a focus of sustainability – increasing distances driven and number of vehicles on the road, and also creating unsustainable working conditions for delivery companies.

Introducing innovations in city logistics and making it more sustainable requires cooperation between a wide range of partners as well as new vehicles, business models and technologies. Solutions include new vehicles, new procurement / purchasing models, new consolidation solutions, new hub services, new production models (e.g. so that goods are produced “close-to-home”), new software solutions for optimising freight, new solutions for managing loading/unloading etc.

Expected outcomes & impacts

The expected outcomes are improvement of urban logistic operations through logistical, future vehicle design, including urban air logistics, behavioural and technological innovations. The solution should be low-carbon, accessible, safe, efficient, and clean. The impacts should be healthier, safer environments, reduction of greenhouse gas emissions and local air and noise pollution, as well as enhancing the overall quality of life of citizens.

Examples

Some examples of specific topics that can be addressed include:

- Demonstration of solutions to increase freight intermodality with a focus on zero-emission last mile transport.
- Demonstration of solutions that reduce freight demand through for example waste management, local production, aggregate management, citizen engagement, etc.
- Demonstration of solutions that optimise routes based on reducing emissions and noise pollution.
- Demonstration of real-time enforcement of freight demand and access restriction measures including digital cameras, ultra-low emission zone control monitoring and geofencing.
- Demonstration of solutions to reduce last-mile freight transport from e-commerce, e.g. freight hubs unmanned collection and drop-off points, collaboration with retail to reduce / deal with returns, optimised delivery services, etc.
- Demonstration of innovative logistics measures in urban areas with specific challenges such as dense historic city centres and use of waterways.
- Design and test of drone delivery with vertical location mapping in a dense urban area considering issues such as noise, bylaws, airway zoning / mapping, intrusion, reliability, and safety.
- Application of parking / loading & unloading management solutions for freight to reduce obstructive vehicles – these can be both digital and physical measures.
Automated emission zone switching
Automatically change from traditional fuel to electric d...

Same day bike messenger delivery
Together with local entrepreneurs in the city centre and...

Hubs - ideation workshop

Dynamic curb management - ideation

Pop-up warehouses - ideation workshop

Idle resources - ideation workshop

Data platforms - ideation workshop

Mobile delivery hubs - ideation workshop
06 Future mobility

This area looks at the future of mobility, and at how we can reach reduction in greenhouse gas emissions, higher levels of accessibility and better use of urban space by introducing innovative technologies such as AI, blockchain, 5G and IoT.

We live in a fast and ever-changing world where new services and disruptive technologies have the potential to reshape the way in which we live and work and how we move. Innovative and disruptive technologies take-up can be challenging for mobility providers, cities and citizens due to unsuitable processes, skill-sets, administrative rules, lack of training, data ownership, pace of innovation etc.

One of the clear enablers of new mobility services and innovations is digitalisation: technologies such as artificial intelligence, blockchain, 5G and IOT are and will shape all sectors and fields. In the field of mobility, these innovative technologies enable the creation and adoption of new services such as mobility as a service (MaaS), shared micro-mobility services, autonomous driving, and urban air mobility to name a few.

New mobility services have the potential to improve livability in our cities, release space to citizens and help decarbonise our transport systems by supporting a systemic change to more people-friendly sustainable transport solutions. However, there are many administrative, legal and technical challenges that stand in the way of unlocking the potential benefits.

----- Examples
Some examples of specific topics that can be addressed include:
- Demonstration of new pan-European MaaS services, particularly ones that integrate micro-mobility services and active mobility with public transport. The focus should be on accessibility for a wide range of citizens.
- Development and testing of new models for city authorities to prepare and support the implementation of new mobility services in line with their policy goals, for example digital city models, data ecosystems, new cooperation models, new stakeholder / co-creation fora.
- Increasing integration of transport services in the form of ticketing, information, and service provision.
- Demonstration of new digital tools / applications, / solutions to manage use of urban spaces, including road spaces (e.g. curbside management, geo-fencing) and pro-actively communicate management actions in real-time with logistics, mobility providers, and citizens.
- Launch of applications of connected and automated driving for all types of Vehicles of the Future. Market introduction of highly automated driving systems towards SAE level 4 is expected.
- Demonstration of urban air mobility solutions in alignment with city policies, ensuring safe and sustainable solutions for both passenger and freight transport. Airways mapping and real-time zone control for drones.
- Demonstration of artificial intelligence in mobility management applications, e.g. complex mobility scenario predictions and applications that facilitate journey user experience. Data protection management and cyber-security are key considerations.
- Creation of transport on demand services adapted to user needs enabling accessibility for low-density areas and vulnerable users.

----- Expected outcomes & impacts
The expected outcome would be to contribute to city policy objectives through the use of innovative measures in one or more European city. It is expected that a business model for the new service is tested and implemented. The measure implemented should have the potential for replication and scaling in other European contexts. The expected impacts are better mobility services for citizens, higher levels of accessibility, reduction in greenhouse gas emissions, and better use of urban space.
ByBus
Shuttle on demand service based on AI

The role of AI in Future Mobility
AI Multimodal Mobility Assistant

Valorize Urban Mobility Data
eCall extended services

Feedback from Central Hub discussion
Main discussion points on challenge area Future mobili...

5G Connected Car
Driving with a sixth sense

The car will be its own driver
Autonomous driving

Car user experience towards MaaS
Services for car users towards integrated mobility

City broke multioperator for sharing ser...
Sharing services have intensively landed on our cities...
Integration of first and last mile (App)... Flexible integration of first and last mile (demand-resp...)

GiraVolta Open API multimodal vehicle on demand platform to reserv...

Autonomous 3W eBikes and eScooters If 3W eBikes or 3W eScooters could drive autonomously in o...

Noise reduction in cities To create a map of real-time noises from the city may he...

Pathway Framework Supporting the Deployment of Mobility Solutions in Urban...

AI and Heuristics for Motion in Urban Ar... Artificial Intelligence and Heuristics for Motion in Urb...

Intelligent Speed Assistance Managing the speed data supply chain for assisting C-ITS

ISA safety preconditions Are the physical and digital infrastructure ready for IS...
Emission-free last mile solutions
Develop a system of last-mile solutions for the transport.

Red light violation warning
Red light violation warning notified when conflicting traffic.

Pilot automated shuttles
Taking it to the next level.

Business model for self-driving shuttle
How to create a sustainable model for upcoming and low demand.

Last mile solutions in low density areas
Discovering feasible new innovative solutions.

Urban Air Mobility (Flying taxis)
What to do with Urban Air Mobility.

Increasing acceptance for drones
City of Hamburg is interested in ideas to increase awareness.

Low-contact mobility for public transport
Creating a low contact public transportation.
Face Mask Detection for Public Transport
Computer vision (CV) can be used to analyze whether people...

corporate carsharing for city organizati...
carsharing dedicated for employees of city authorities, ...

Collision warning device for VRU
Collision warning device for all forms of micromobility ...

Urban dynamic map Hamburg (UDM-HH)
Development of an open and harmonized platform under mun...

Data-based optimization of traffic control
Effectively reducing waiting times at traffic signals th...

Sustainable logistics tracking APP
Smart Lockers >24h delivery

Mobility change management model
APP with a basis of AI that recognise the transport mode...

Micromobility: information & management
Information management platform to facilitate micro mobi...

Space management platform
Space management platform for micromobility parking and ...
08 Mobility and energy

As Europe’s transport sector is almost entirely reliant on fossil fuels, innovations in the area of mobility and energy are crucial. These can be focused on adopting and enabling cleaner modes of transport such as electric vehicles.

The transport sector in Europe is over 90% fossil fuel dependent. It is crucial that we change this in order to decarbonise our transport systems and increase energy independence. There is no single fuel type that can easily replace the diesel and petrol that is used in internal combustion engines (ICE) today, but a range of different fuels and propulsion techniques can be used depending on the transport requirements. Electric vehicles are particularly apt for use in urban areas due to zero tailpipe emissions, lower noise emissions and higher energy efficiency at lower speeds. Replacing ICES with cleaner fuel-propulsion solutions requires new vehicle technologies (including retro-fitting), charging/refuelling supply as well as demand for the fuels. To enable this requires new partnerships, business models and new infrastructure (often in the public realm).

The widespread (and fast) adoption of electric vehicles in urban areas poses challenges not least relating to appropriate charging infrastructure covering a wide variety of transport patterns and needs (e.g. taxi, truck, small delivery vehicles, bus, boat, moped, e-bike as well as private car). This impacts the electricity grid, and infrastructure improvements need to be made, for example in building new electricity substations in often dense urban areas. Load-balancing solutions are needed in order to ensure that demand matches supply.

Refuelling stations also need to be in place for other cleaner fuels, e.g. hydrogen for fuel-cell electric vehicles, CBG, LGV, and for P2X. In most cases these are related to longer distance and/or heavier transport and would be located in peri-urban areas.

Uptake of cleaner fuels has been slow in most European cities, faced with challenges related to business models, new cooperation models, high capital costs for new technologies, required infrastructure upgrades, behavioural change, to mention a few.

Expected outcomes & impacts

The expected outcome would be increased use of cleaner fuelled vehicles in one or more European city. The measure implemented should have the potential for replication and scaling in other European contexts. Alignment is expected with national and European policy on cleaner fuels. The expected impacts are reduction in greenhouse gas emissions, increased quality of life in urban areas and better use of urban space.

Examples

Some examples of specific topics that can be addressed include:

- Innovative measures to increase the demand for zero-emission vehicles, showing a clear take-up of vehicles in fleets.
- Demonstration of innovative charging solutions to test new load balancing techniques, fast and slow charging solutions and behavioural incentives (e.g. lower cost for lower power), access to company/private parking lots for residents in off-peak hours, battery storage to shave peak load, V2G, etc.
- Implement and test universal charging of universal cableless solutions for all mobility vehicles e.g. with multimodal interchanges being clear example of early adoption sites.
- Demonstration of solutions where different energy players and stakeholders align on single-use urban access with user-friendly design and simple terms of use and payment.
- Demonstration of smart grid/micro grid energy infrastructure with green energy production for all types of Vehicles of the Future including solar, hydrogen and biofuels.
- Installation of easily relocatable mid-size high-capacity energy storage solutions to upgrade existing or planned charging infrastructure movable from place to place. Clear consideration needs to be made of the fit with surrounding urban environment and accessibility to charging points.
- Innovative cooperation models and business model development to create refuelling stations for cleaner vehicles (e.g. jointly with transport purchasers, procurers, municipalities, energy companies, etc.).
TracToZero
Solutions for an optimal transition to carbon-neutral tr...

Safety on EVs
Ensure the electro mobility spread

Semaphore inductive charging
Inductive charging sections in selected stops underneath...

Feedback from Central Hub discussion
Main discussion points on challenge area Mobility and En...

Vehicle 2 Grid
A smart and sufficient charging infrastructure

THERMOCLES
Thermal comfort is essential to persuade people to use p...

Transition towards zero emissions zone
Until you are made aware of pollution you cause you may ...

PowerManagement
Tool able to use reserved power input of another device...