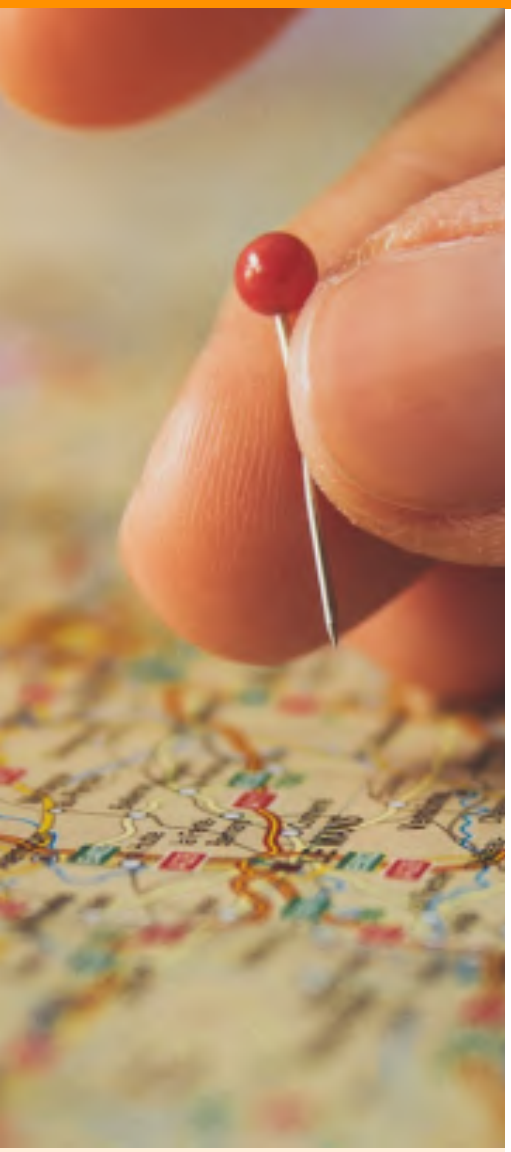
HARMONY

SPATIAL & TRANSPORT PLANNING FOR A NEW MOBILITY ERA

NOW IS THE TIME FOR HARMONY

The world is calling for significant changes towards more sustainable mobility. That is why HARMONY is enabling public authorities of metropolitan areas to lead the transition towards a new mobility era. Now.



THE HARMONY MODEL SUITE

The HARMONY Model Suite harmonises spatial and multimodal transport planning models to comprehensively model the dynamicity of the transport and spatial organisation in urban and regional areas.

New mobility services and technologies could help cities and regions meet the European Union's target to reach **net-zero emissions by 2050**. Also, ever changing urban conditions, as well as unexpected events (such as the COVID-19 pandemic) call for disruptive solutions improving citizens' lives and achieving environmental targets. As a result, metropolitan authorities are striving to integrate multiscale spatial and transport planning tools to explore and evaluate such solutions. The HARMONY Model Suite (MS) will support them in this ambitious goal.

The HARMONY MS is a software-agnostic platform bringing together not only transport and spatial planning models but also disruptive mobility services and technologies. Also, the MS is an integrated, software-agnostic, and multiscale model system. It can be combined with independent modelling and planning tools already in use in different metropolitan areas. It encompasses three different level of modelling, namely the **strategic, tactical, and operational** ones. Additionally, the Model Suite can deal with both passengers' **mobility and freight** transport needs, both in **urban and regional** environments. Finally, the results stemming from the deployment of the MS can be transferred to aspiring metropolitan areas to update SUMPs across Europe.

The review of new forms of mobility, freight distribution and their business models and the co-creation activities in the six HARMONY areas so far have ensured the alignment with the real needs and goals of the European metropolitan areas. This led to the definition of the MS conceptual architecture, which informes the **use cases modelling** in Oxfordshire, Rotterdam, Athens and Turin, as well as for the **demonstrations of drones and automated vehicles** in Oxfordshire, Rotterdam and Trikala. In addition, a first functional **prototype** of the HARMONY MS is being finalised to illustrate its applicability and operational ability. By the end of this year, we expect the first version of the MS to be ready, as well as several insights from the three demonstrations in Oxfordshire, Rotterdam and Trikala.

METROPOLITAN AUTHORITIES ARE STRIVING TO INTEGRATE MULTISCALE SPATIAL AND TRANSPORT PLANNING TOOLS TO IMPROVE CITIZENS' LIVES AND ACHIEVE ENVIRONMENTAL TARGETS.

ZERO TO HERO: ZERO EMISSION LOGISTICS IN ROTTERDAM

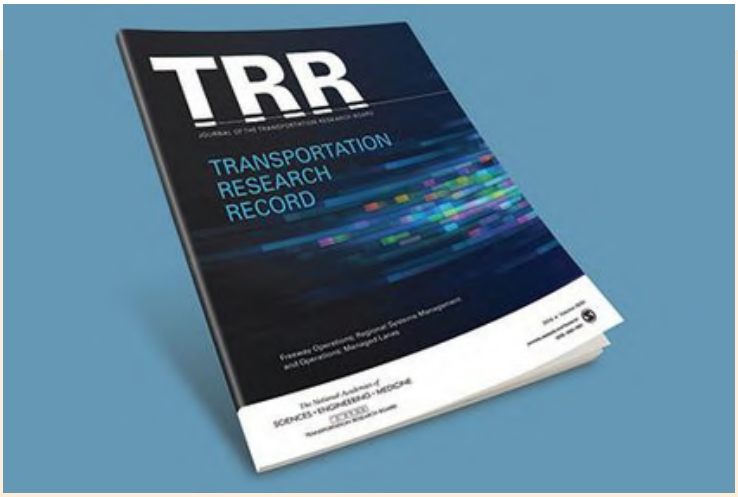
The HARMONY Tactical Freight Simulator estimated the impacts of the planned introduction of a zero-emission zone in Rotterdam.

Urban freight is one of the domains covered in HARMONY, and for this domain a **Tactical Freight Simulator** (TFS) is being developed and applied to the use case of a **Zero-Emission Zone** (ZEZ).

As part of a broader vision for **emission-free city logistics**, the city of Rotterdam plans to introduce a ZEZ in combination with urban consolidation centers (UCCs) on the outskirts of the city to generate a shift to zero-emission vehicles. As a case study, HARMONY implemented heterogenous transition scenarios for each logistic segment into the TFS and analyzed the systemwide impacts. This model is multiagent, empirical, and shipment based and simulates long-term and short-term tactical choices.

Results confirmed that **emissions reduced dramatically**, by 90%, inside the ZEZ. At the city scale, this corresponds to a reduction of almost 10%, as most freight-related traffic is generated by the port and involves long-haul heavy goods vehicle transport that does not enter the city center. Another interesting finding was a small increase of +0.25% in vehicle kilometers traveled overall, which can be attributed to the rerouting of shipments through the UCCs. Finally, the HARMONY's TFS proved effective in addressing a complex ZE city logistics scenario, with UCCs and transitions in vehicle type. The level of detail in the multiagent model also permits assessment of different transition paths to ZE vehicles for each logistics segment, to better account for the heterogeneity in preferences of different actors. This provides a better empirical basis for informed decision-making.

Rotterdam has committed to reducing CO2 emissions by 49% by 2030. However, to achieve this policy objective, more measures are needed, for instance to decarbonize long-haul freight transportation, which constitutes a large part of the emissions in the study area.



Read the full paper:
Simulation of the Impacts of a Zero-Emission Zone on Freight Delivery Patterns in Rotterdam

Authored by the Delft University of Technology, Significance and the City of Rotterdam

HARMONY STAKEHOLDERS' WORKSHOPS

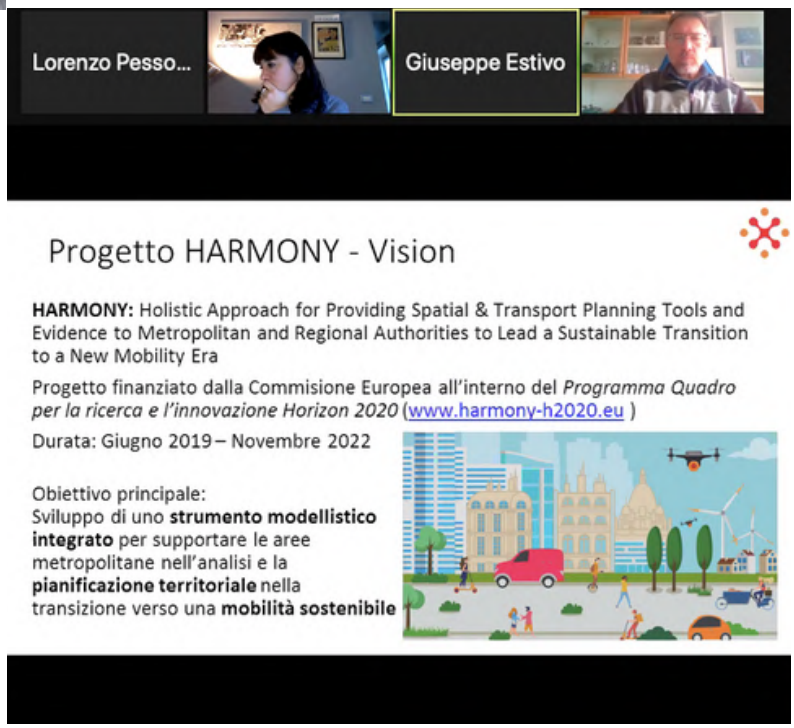
HARMONY periodically organises co-creation activities in its six areas to ensure that its solutions actually meet the need and objectives of European cities and regions.

FLYING TAXIS? DRONES AS A COMPONENT OF MODERN URBAN MOBILITY

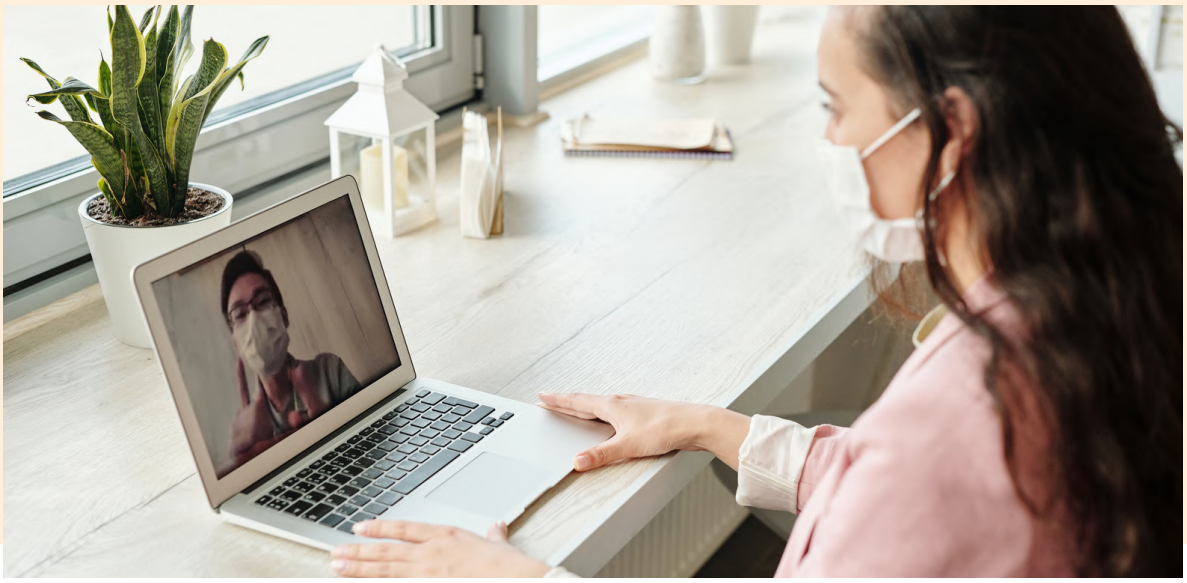
Metropolia GZM and UCL Maas Lab invited Polish stakeholders from the Urban Air Mobility sector to discuss threats and opportunities related to several UAM use cases. Three top issues were selected for further discussion: drone missions as support for rescue missions, transport of medicines and medical samples, passenger transport. The engagement activities in GZM will be of vital importance to integrate Urban Air Mobility into the updated SUMP for this metropolitan area.

MAAS IN TURIN

HARMONY organised the first stakeholder engagement workshop in Turin with TRT, Urban Lab and the metropolitan city of Turin to present the project main objectives and to collect the local mobility stakeholders's feedback. In Turin, HARMONY focuses on the impact of new public transport infrastructure and services (metro and SFN), as well as the new MaaS (Moblity as a Service) paradigm, exploring synergies for the simulation of SUMPs.



HARMONY envisages a series of co-creation activities to engage local transport stakeholders to support the Model Suite and to frame the scope of its application. The goal is to collect information on the context of each study area, as well as to identify barriers, strenghs and opportunities of the service and outline its more sustainable application in the future. If you are interested in joining these activities, sign up for the HARMONY End Users' Group.



HARMONY IN INTERNATIONAL EVENTS

Safe distancing doesn't mean that networking and engagement activities are left behind. HARMONY participated in a number of virtual events in 2021.

TRANSPORT RESEARCH BOARD | 25-29 January 2021
Participation to several poster sessions

ERCI WEBINAR | 24th March 2021
Planning multimodal mobility in cities and regions: the HARMONY Model Suite

UCL GUEST LECTURE | 30th March 2021
Applying the HARMONY Tactical Freight Simulator to a case study for zero-emissions zone in Rotterdam

COMMERCIAL MICROMOBILITY CONFERENCE | 1st April 2021
HARMONY public-private partnership

EUCAD 2021 | 20-22 April 2021
Virtual exihibition of European R&D projects

ITF PRE-SUMMIT RESEARCH DAYS | 11-12 May 2021
Presentation of the paper: "Barriers and opportunities in sustainable urban mobility planning in response to the Covid-19 pandemic" by UCL

NEXT GENERATION MOBILITY | 18-20 May 2021
Presentation of the HARMONY Model Suite use cases modelling in Turin

SAVE THE DATE!

HARMONY organises dedicated sessions in international conferences and events as part of its dissemination activities. Join our next ones!

URBANISM NEXT EUROPE

The first **Urbanism Next Europe** Conference will be held online on June 9-10-11, 2021, in collaboration with the city of Rotterdam, Netherlands, which is one of the HARMONY project partners. They will present HARMONY to international decision-makers and urban professionals from Europe and beyond during specific parallel sessions on 10th June 2021:
- "The urgency of integrating city logistics in urban planning for liveable cities of the future"
- "What to be prepared for on your way to Zero Emissions City Logistics".

IPIC 2021

HARMONY is one of the IPIC 2021 sponsors. The International Physical Internet Conference 2021 aims to provide an open forum for researchers, companies, institutions, and citizens to explore, discuss, introduce leading edge concepts, methodologies, recent projects, technological advancements, start-up initiatives, for current and future Physical Internet implementation to get freight flows and logistics services as accessible and connected as information and services are over internet in both global and last mile.

FACTSHEET
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