HARMONY

HARMONY project

Holistic Approach
for Providing Spatial & Transport
Planning Tools and Evidence
to Metropolitan and Regional
Authorities to Lead a Sustainable
Transition to a New Mobility Era

Angelo Martino
TRT Trasporti e Territorio

Brussels, 14-16 February 2023

RTR CONFERENCE

HARMONY Project - Overview

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 815269

Part of: 2020 CIVITAS

HARMONY

European project funded by the European Commission within the **Horizon 2020** Framework Research Programme: June 2019 – February 2023

Objective

- Develop a new generation of **harmonised spatial and multimodal transport planning tools** to support Metropolitan and Regional Authorities toward a **Sustainable Transition to a New Mobility Era**

Results

- **Model Suite (MS):** multi-scale, software-agnostic, integrated model system (mainly based on the activity-based approach).
- **Recommendations for SUMPs update** (new technology and services, modelling tools)

Applications

- Analyse regional and urban interventions for **passenger and freight mobility**
- **Six European metropolitan areas:** Rotterdam (NL), Oxfordshire (UK), Turin (IT), Athens (GR), Trikala (GR), Upper Silesian-Zaglebie Metropolis (PL)

Transport modelling to support transport planning

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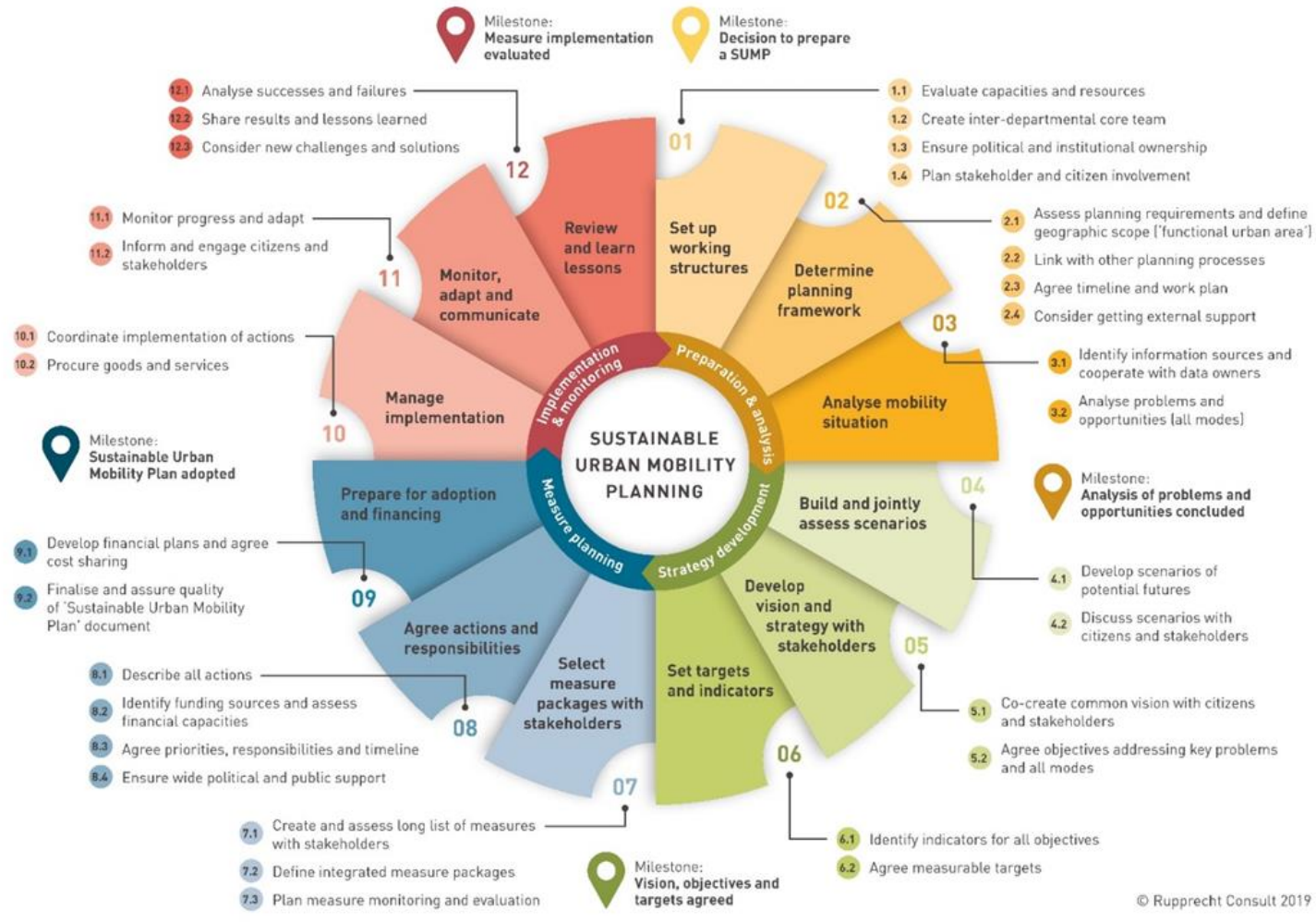
- **New mobility services and technologies** offer new opportunities

- **Integrated modelling approach** is needed to support land use and transport planning in metropolitan areas as **strategic** decisions, affect the **tactical** and **operational** levels and viceversa



HARMONY Model Suite

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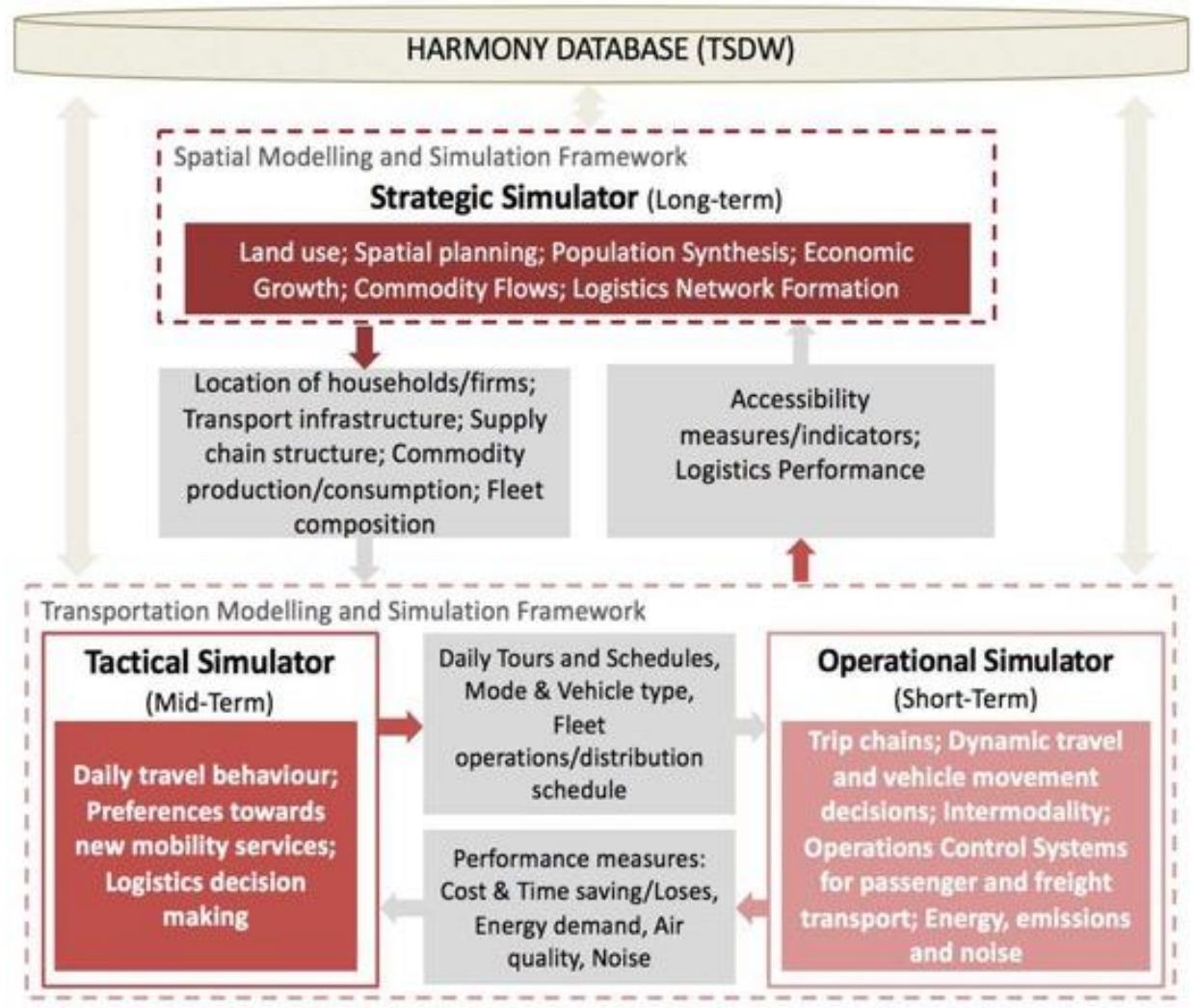
Harmony MS

Multi-scale, software-agnostic, integrated activity-based model system

Integrates new and existing sub-models:

- land-use models (strategic/long-term)
- passenger and freight activity-based models (tactical/mid-term)
- multimodal network models (operational/short-term)

Enables the analysis of interventions for both passenger and freight mobility



HARMONY Model Suite

STRATEGIC

Regional economic, demographic forecasting, **land-use**, spatial freight and passenger interaction and long-term **mobility choice** models.
Long-term *horizon (e.g., year-to-year, every 5 years)*

TACTICAL

Agent-based passenger and freight demand model, representing passenger and freight agents' choices.
Mid-term *horizon (e.g., on a day-to-day level)*

OPERATIONAL

Representing the transport supply and demand interactions at high granularity on **transport network**.
Short-term *horizon (e.g., second to second, minute to minute)*

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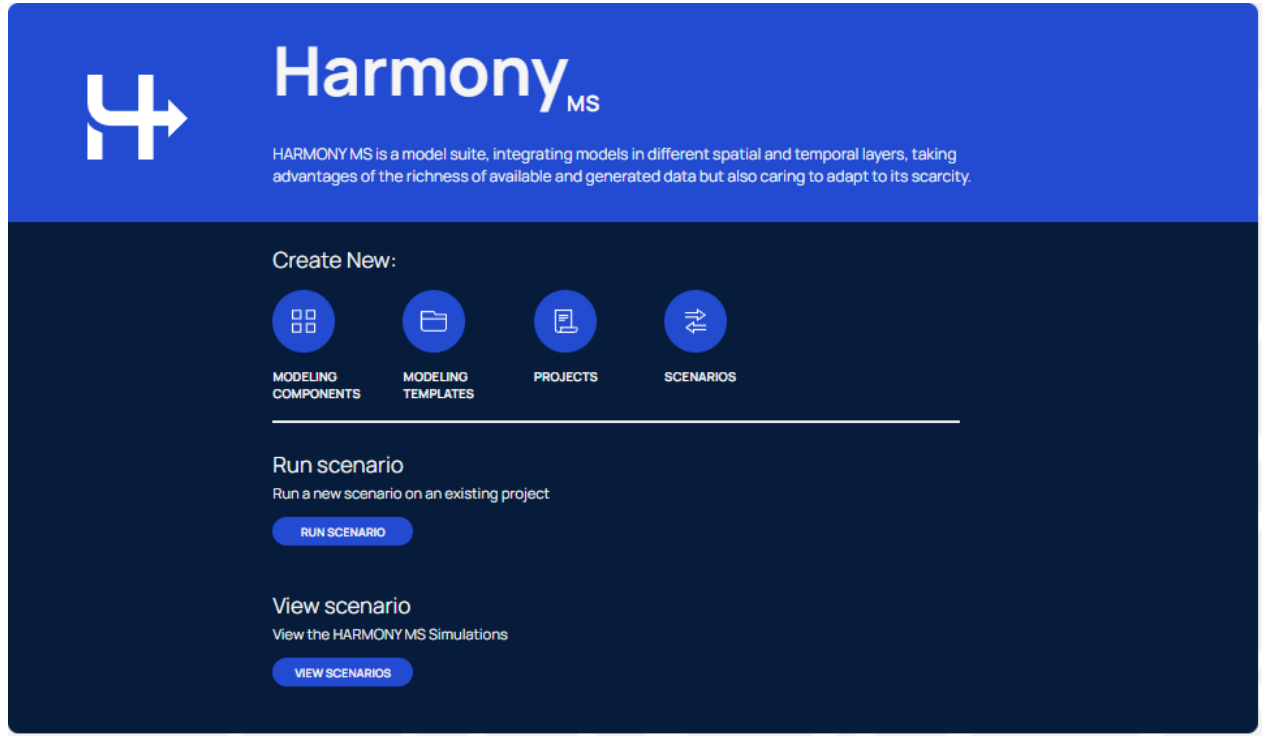
- **Integrated** spatial and transport **models**
- Integrated supply and demand models with **feedback loops**
- Customized interface for **modellers/ planners and decision makers**
- Ability to **connect** existing models (i.e., Aimsun / PTV / Sumo etc.)
- **Comparison** of scenarios
- Visualisation/comparison of **KPIs**
- **State-of-the-art tools** developed by researchers and offered to practitioners in a simple and user-friendly way



HARMONY MS Dashboard: ABM setup

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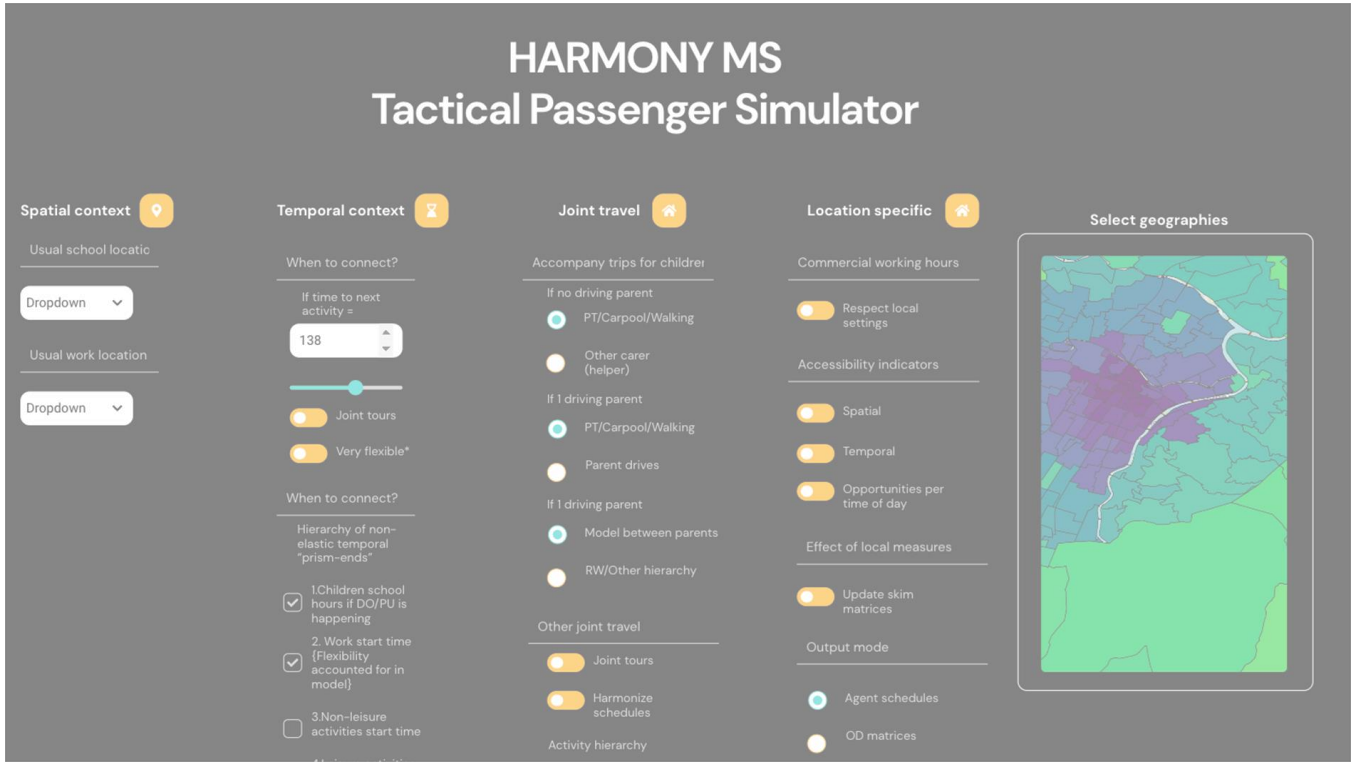
- List of **configuration parameters of the Agent Based Model** to allow the user to **specify the inputs and configure the scenario**



HARMONY MS Dashboard: KPIs

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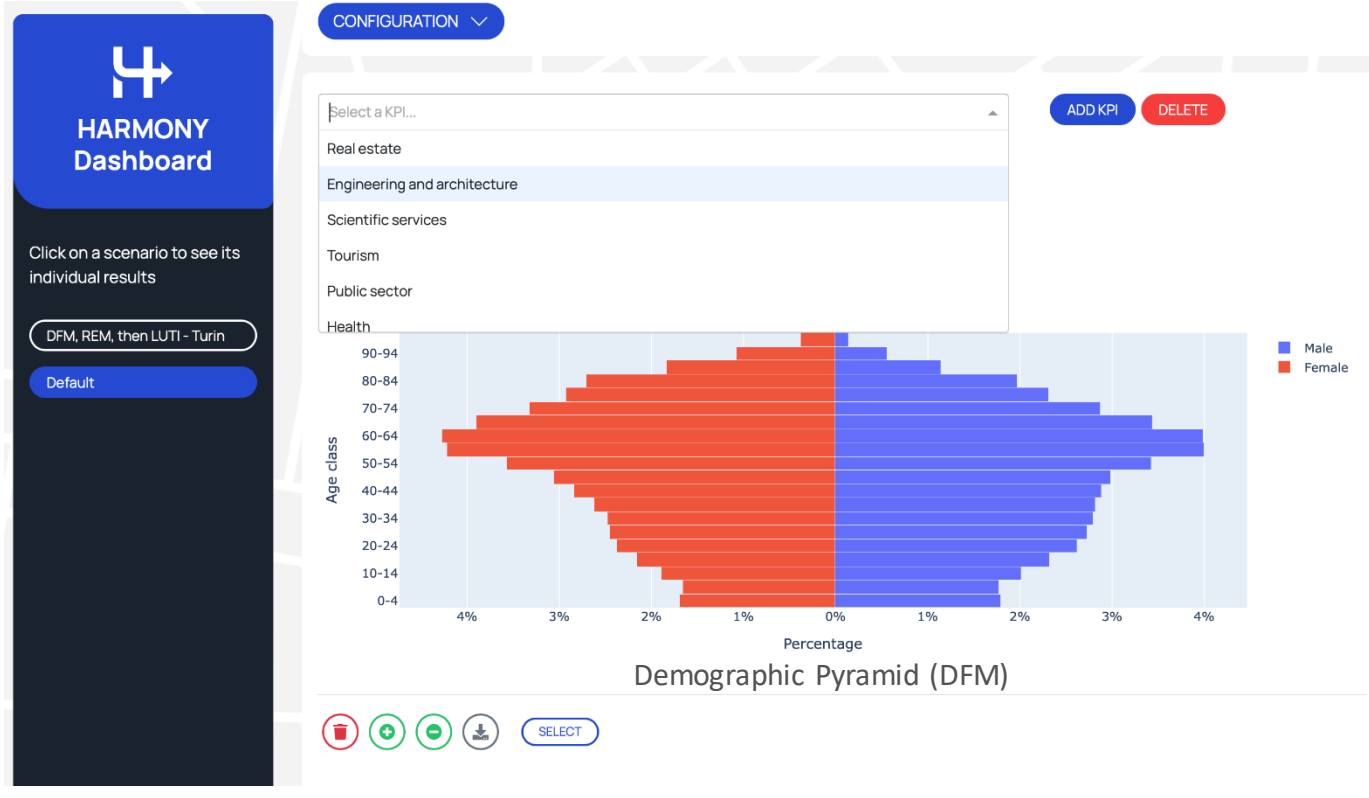
- **KPI** visualization in the HARMONY MS Dashboard
- **Predefined set of KPIs** for each modelling template, related to each modelling component used, e.g.:
  - Demographic pyramid (DFM)
  - Total Jobs by Year (REM)
  - Jobs accessibility by rail (LUTI)
  - House accessibility by car (LUTI)
  - Trips per activity per hour of the day (ABM)
  - Modal split (ABM)
- Dropdown menu to choose **additional KPI**



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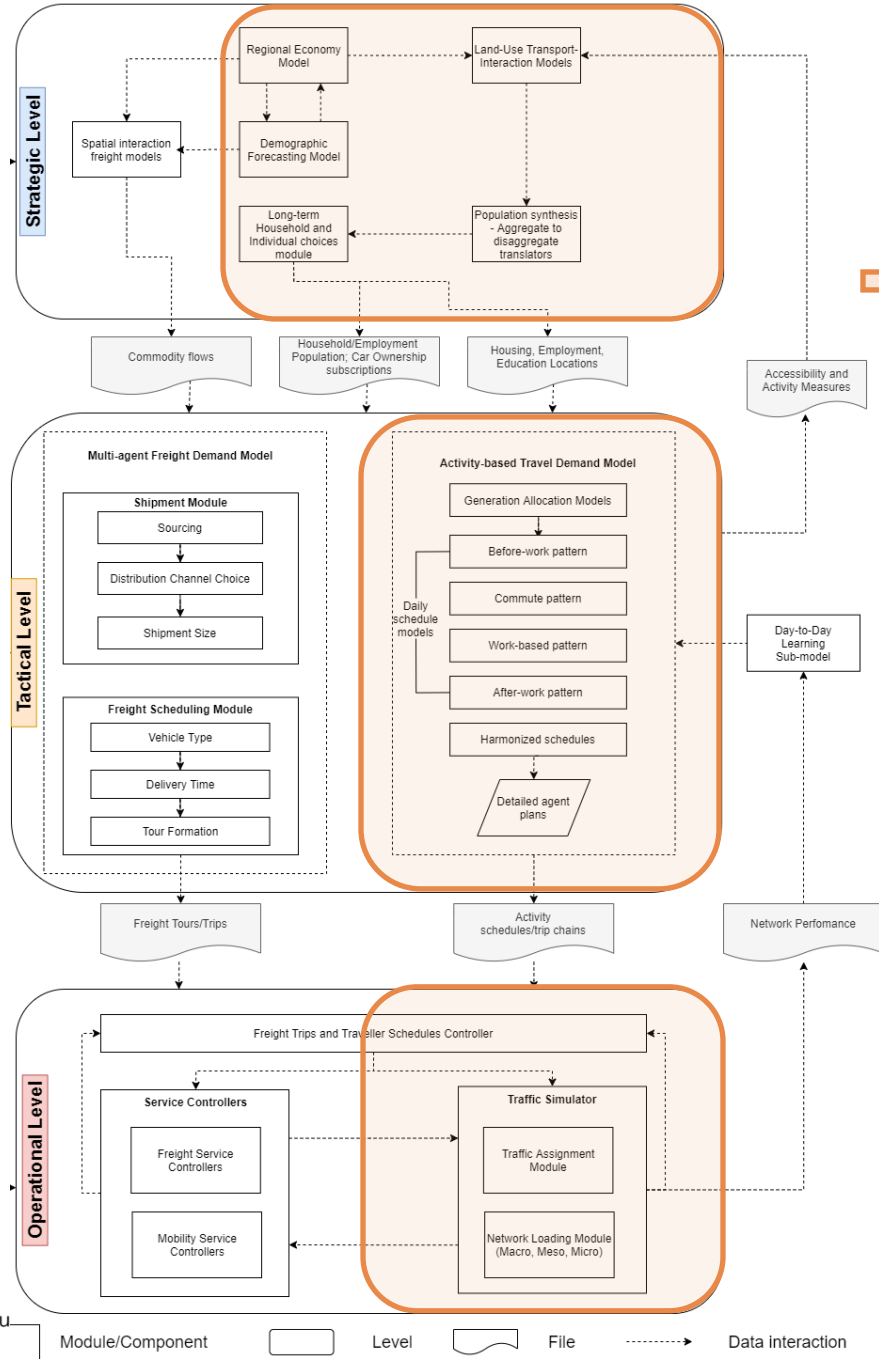
HARMONY MS – Turin use cases

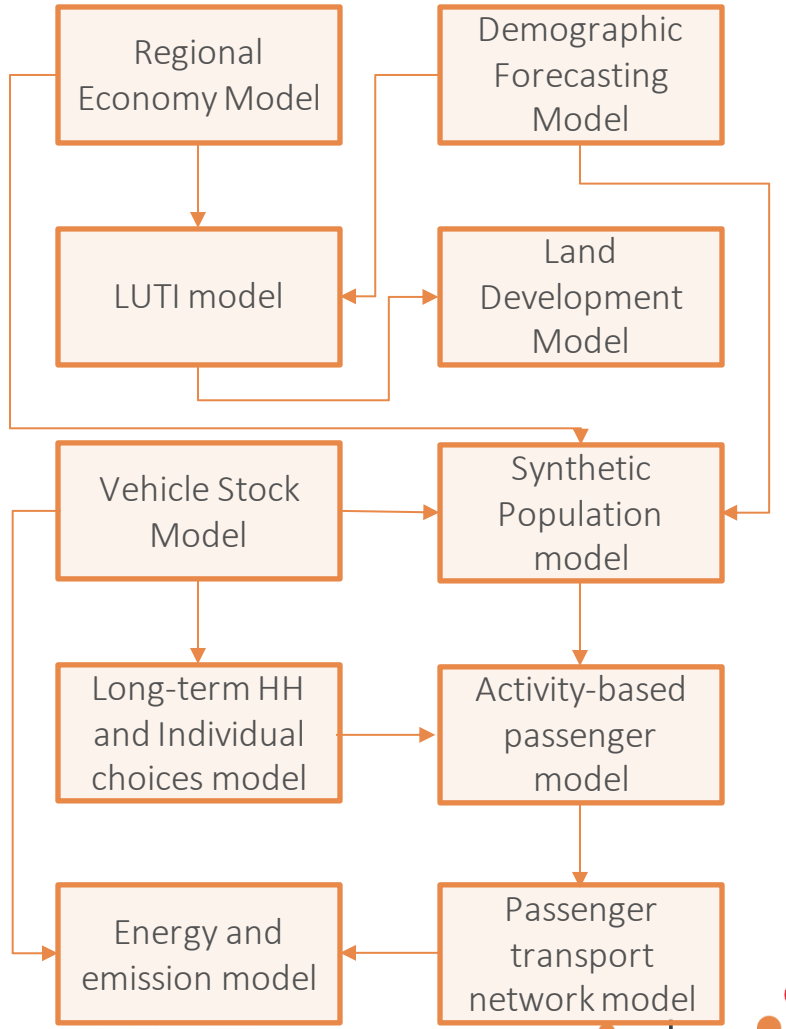
1	**Land use development & New public transport infrastructures**: • new land use development and relocation in Turin and FUA (work, health, university) • Extension / new metro lines and metropolitan rail system in the FUA
	Designed on top of use case 1:
2	**MaaS demand**: Integration of public transport with shared mobility services in the FUA
3	**Remote working / activity schedule**: Reduction of trips for work and study (remote); change of travel patterns during the day
4	**Urban Vehicles Access Regulation measures**: daily ZTL area (Turin central zone), Traffic calming extensively in Turin and first belt municipalities, Low Emission Zone in Turin and several neighbouring municipalities

STRATEGIC

TACTICAL

OPERATIONAL





www.harmony-h2020.eu

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HARMONY project outcomes

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HARMONY MS applied for

City of Rotterdam

OXFORDSHIRE COUNTY COUNCIL

CITTÀ DI TORINO

transport for athens

HARMONY MS training courses at Delft, Athens, London and Barcelona Universities and in Turin and Katowice

Harmony guidelines for the use of modelling tools for sustainable urban mobility plans in the new mobility era

To be published on the CIVITAS and ELTIS platforms

2030 CIVITAS Sustainable and smart mobility for all

THE CIVITAS INITIATIVE IS CO-FUNDED BY THE EUROPEAN UNION

Final Event #HarmonyH2020

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Learn more about low-carbon mobility HARMONY solutions in Barcelona on how to tackle urban challenges and ensure a variety of sustainable transport solutions for the safer, healthier and more fluid passage of people and goods.

- 2-day Workshop - **HARMONY MS training course**
- 1-day Conference - **The Next Generation of Transport Planning Tools for Sustainable Urban Mobility**

Barcelona, 22 - 24 February 2023

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HARMONY Consortium

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21 partners from 9 European countries