HARMONY

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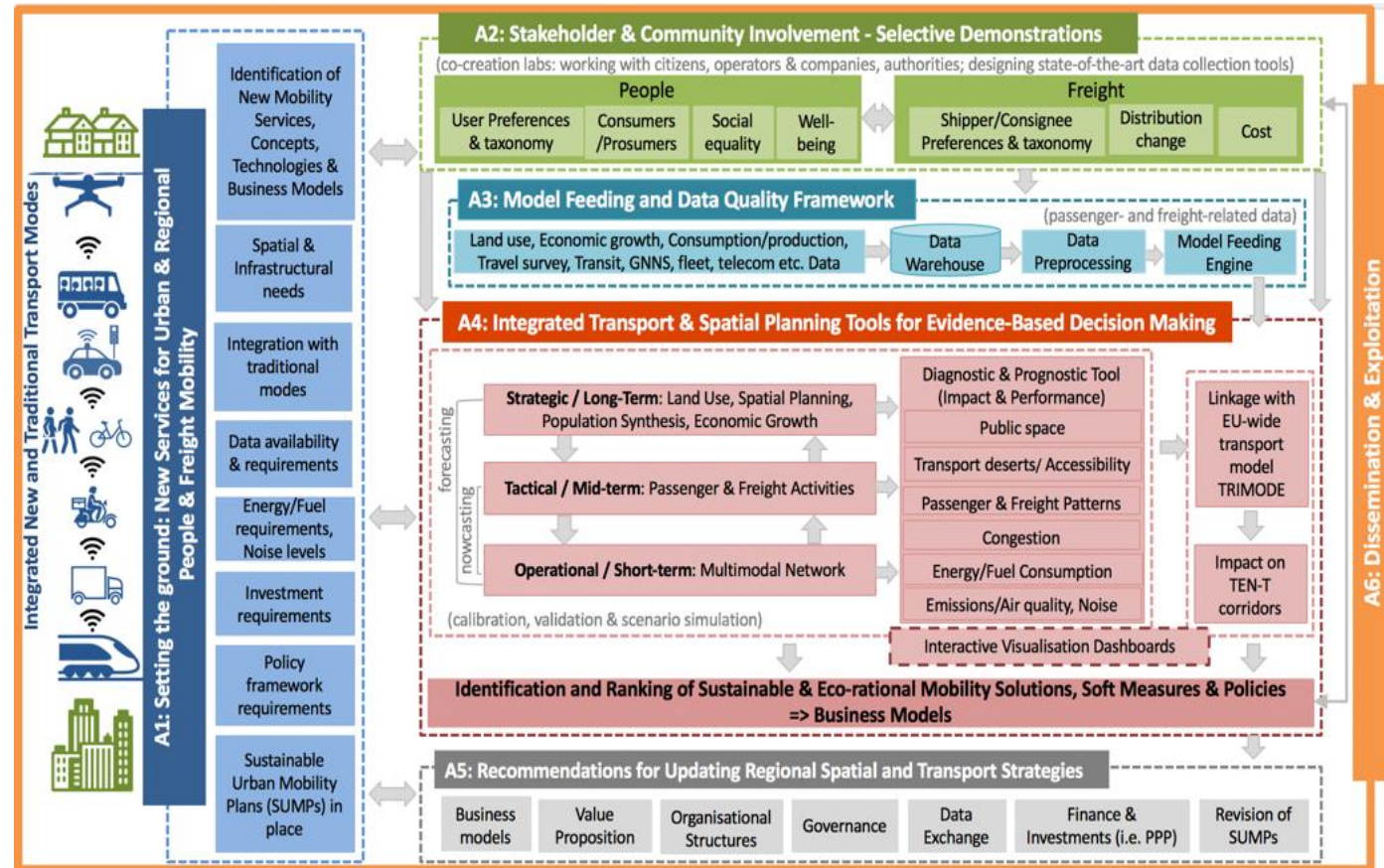
Part of: 2020 CIVITAS

MaaS Lab | UCL

Toulouse 22

HARMONY Vision

Develop -> a new generation of harmonised spatial and multimodal transport planning tools

Model -> the changing transport and spatial organization dynamics

Why -> to enable metropolitan area authorities to lead the transition to a low carbon new mobility era in a sustainable manner.

A2: Stakeholder & Community Involvement - Selective Demonstrations
(co-creation labs: working with citizens, operators & companies, authorities; designing state-of-the-art data collection tools)

People				Freight		
User Preferences & taxonomy	Consumers /Prosumers	Social equality	Well-being	Shipper/Consignee Preferences & taxonomy	Distribution change	Cost

A3: Model Feeding and Data Quality Framework
(passenger- and freight-related data)
Land use, Economic growth, Consumption/production, Travel survey, Transit, GNNS, fleet, telecom etc. Data — Data Warehouse — Data Preprocessing — Model Feeding Engine

A4: Integrated Transport & Spatial Planning Tools for Evidence-Based Decision Making

forecasting / nowcasting

Strategic / Long-Term: Land Use, Spatial Planning, Population Synthesis, Economic Growth

Tactical / Mid-term: Passenger & Freight Activities

Operational / Short-term: Multimodal Network

(calibration, validation & scenario simulation)

Diagnostic & Prognostic Tool (Impact & Performance)
Public space
Transport deserts/ Accessibility
Passenger & Freight Patterns
Congestion
Energy/Fuel Consumption
Emissions/Air quality, Noise

Linkage with EU-wide transport model TRIMODE

Impact on TEN-T corridors

Interactive Visualisation Dashboards

Identification and Ranking of Sustainable & Eco-rational Mobility Solutions, Soft Measures & Policies => Business Models

A5: Recommendations for Updating Regional Spatial and Transport Strategies

Business models	Value Proposition	Organisational Structures	Governance	Data Exchange	Finance & Investments (i.e. PPP)	Revision of SUMPs

A1: Setting the ground: New Services for Urban & Regional People & Freight Mobility
Integrated New and Traditional Transport Modes

Identification of New Mobility Services, Concepts, Technologies & Business Models
Spatial & Infrastructural needs
Integration with traditional modes
Data availability & requirements
Energy/Fuel requirements, Noise levels
Investment requirements
Policy framework requirements
Sustainable Urban Mobility Plans (SUMPs) in place

A6: Dissemination & Exploitation

Main Outcomes

❑ The HARMONY Model Suite (software) and multi-dimensional evaluations of spatial and transport planning use-cases

❑ Training material and activities for using the HARMONY MS

❑ Recommendations for SUMPs update (transport modelling)

Metropolitan Areas and Activities

www.harmony-h2020.eu

Harmony-H2020

Harmony_H2020

Rotterdam
- Autonomous robots demonstration - Freight
  - HARMONY MS - Freight

Oxfordshire
- Autonomous shuttle bus- Passengers
- Drones demonstration + e-vans - Freight
  - HARMONY MS - Passenger

Trailblazing

Athens
- HARMONY MS - Strategic

Turin
- HARMONY MS - Strategic & Tactical

Aspiring

Trikala
- Drones demonstration for medical purposes

Katowice (GZM)
- Adopter metropolitan area

Follower

HARMONY MODEL SUITE

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

Integration of new and existing sub-models, including:

1. land-use models (strategic/long-term),

2. people and freight activity-based models (tactical/mid-term),

3. multimodal network models (operational/short-term).

Enables end-users to couple/link independent models and analyse a portfolio of regional and urban interventions for both passenger and freight mobility:

- policies and capital investments,

- land-use configurations,

- economic and sociodemographic assumptions,

- travel demand management strategies

- new mobility service concepts.
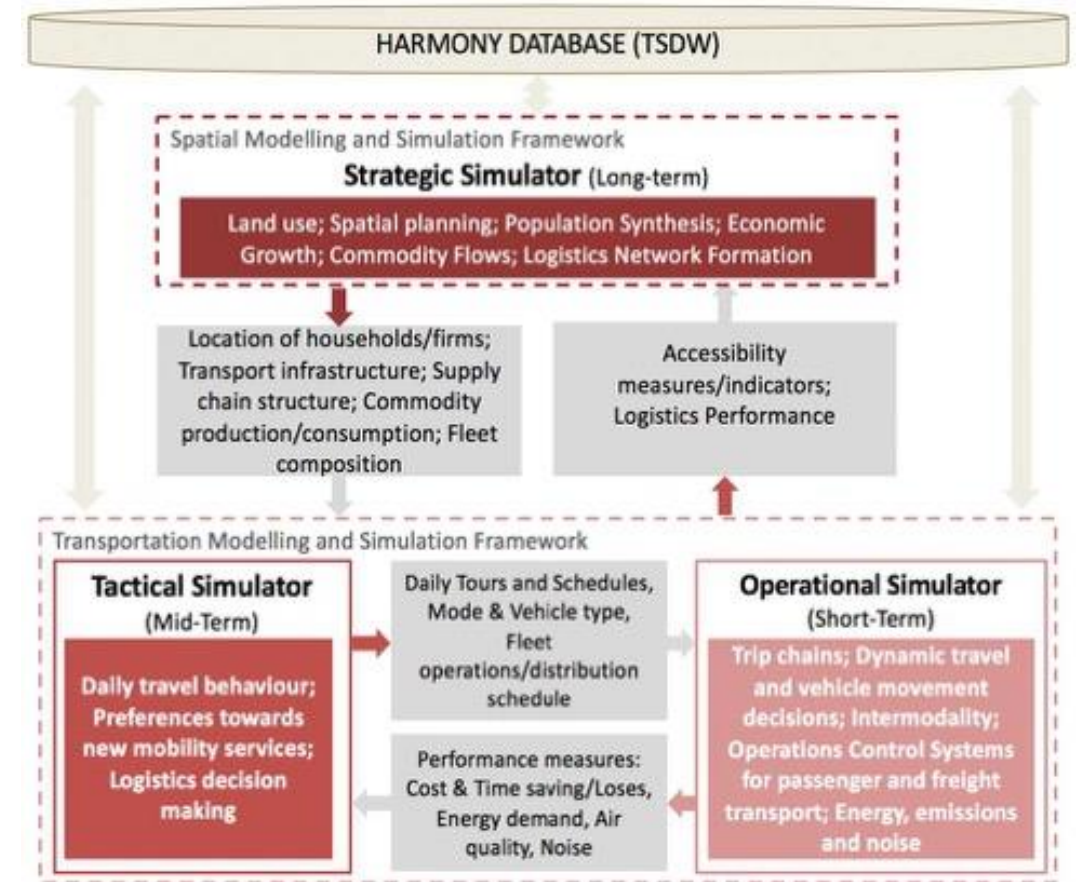
MS Software Architecture

Web-based interface
User can choose which transport interventions to evaluate and compare on a concrete setting
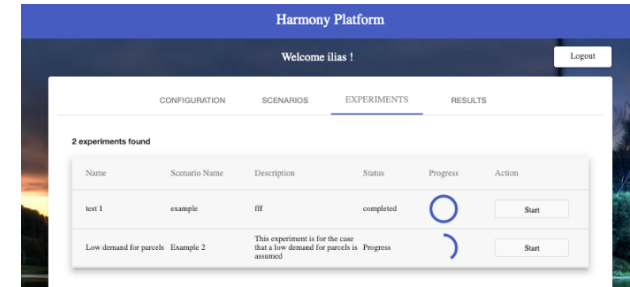
Platform core
Upon a user's request, runs a specific workflow that consists of one or more simulators/models
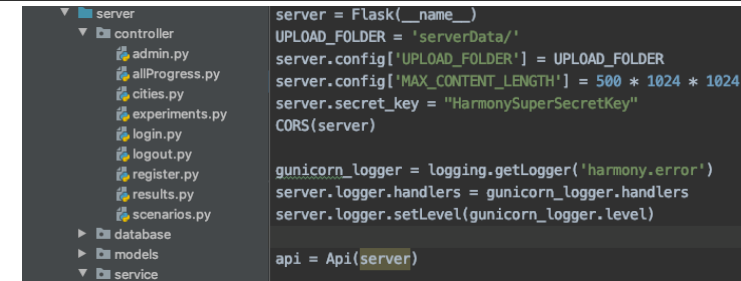
Platform plugins
Simulators and models that can be plugged in to the platform and used in workflows
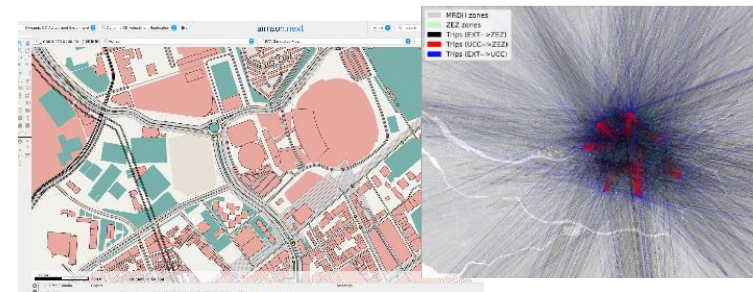
Modelling scenarios - Results

Oxford

- New land uses (Housing Developments)
- Emerging mobility for passengers and freight (Autonomous DRT and Crowd-shipping)

Impact scope: regional economy, mobility patterns and flows, network/service performance and energy/emissions (tactical and operational planning)

Rotterdam

- Spatial and Infrastructure Developments (Zero Emission Zones, Microhubs)
- Emerging Freight Transport Services (Electric vehicles, Crowd-shipping, E-bikes)

Impact scope: freight demand analysis, environmental footprint (strategic, tactical and operational planning)

Turin

- New land uses and PT infrastructure
- Mobility as a Service
- Remote working
- Restricted vehicle access zones

Impact scope: Impact on regional economy, transport demand, accessibility and environmental footprint

Athens

- New land uses and investments
- Connected and Autonomous Vehicles

Impact scope: Impact on regional economy, network/service performance and energy/emissions (strategic and operational planning)

The HARMONY Consortium

21 partners from 9 European countries / ~7.8million Euro

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Smart and Sustainable Mobility for all.

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Thank you!

HARMONY