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LEVITATE

Development of a Policy Support Tool to assess Societal Level Impacts of Connected and Automated Vehicles

Event: Annual Polis Conference 2020
Location: Virtual Event
Date: 30 November - 3 December 2020

LEVITATE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824361.

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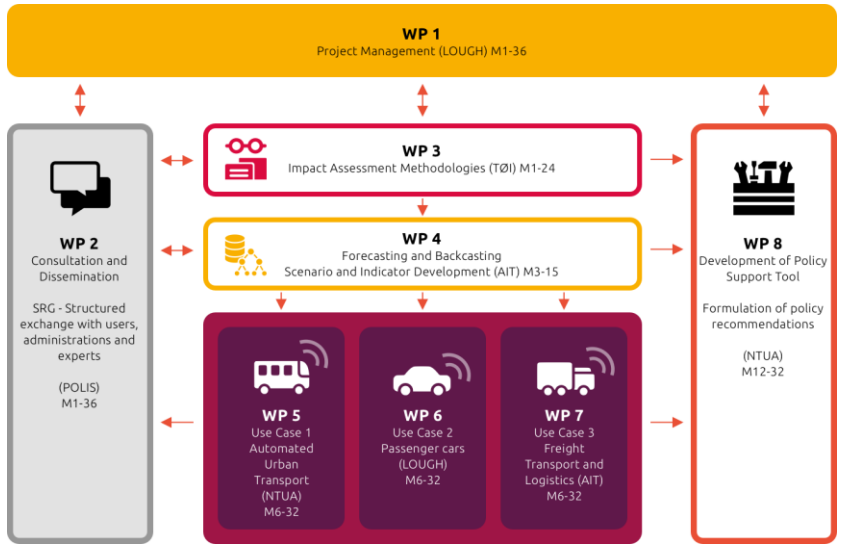
The Levitate Project

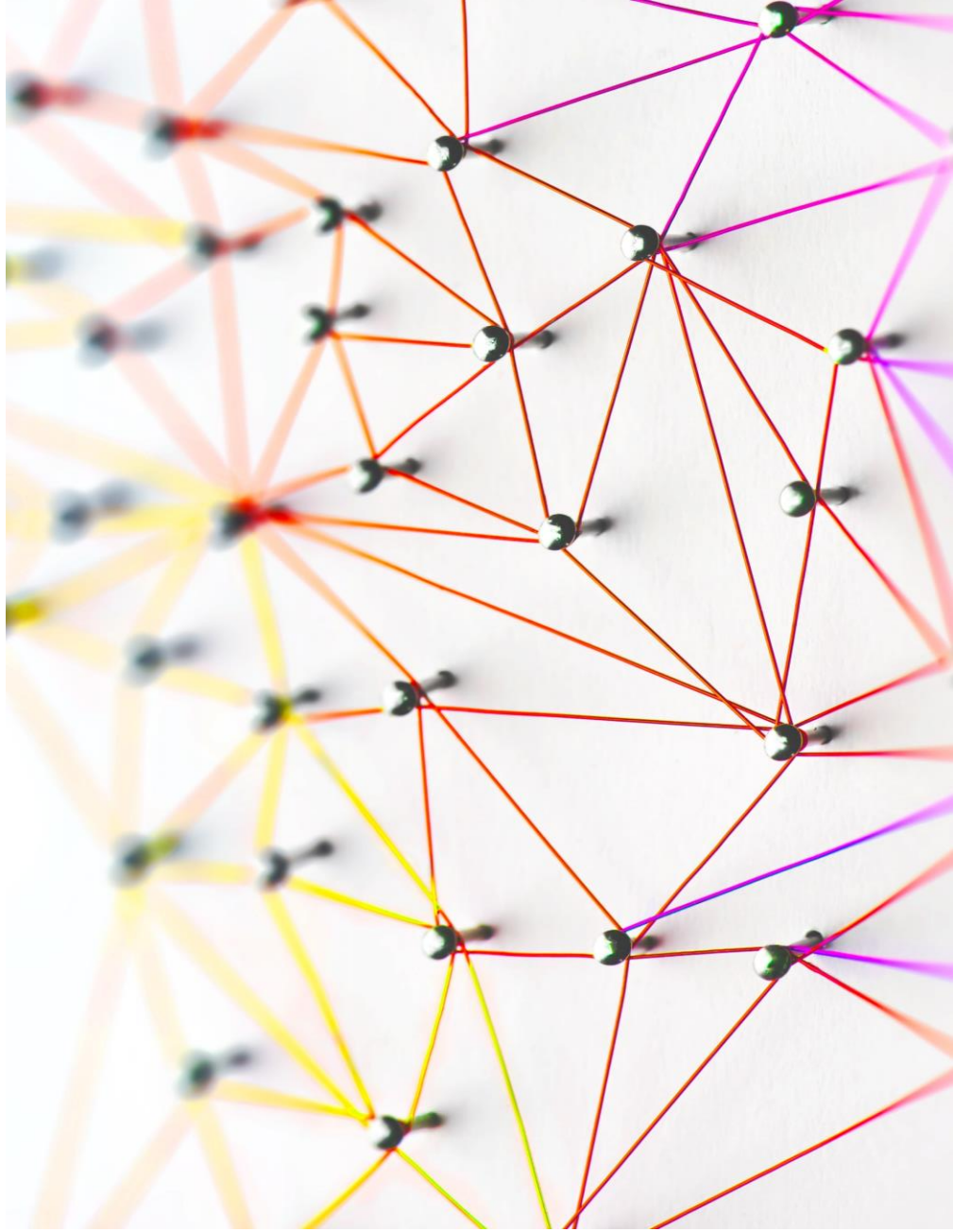
LEVITATE focuses on the development of a new impact assessment framework, in order to enable policymakers to manage the **introduction of connected and automated transport systems**, maximise the benefits and utilise the technologies to achieve societal objectives

- **Project partners:**
  LOUGH (UK), AIT (AT), AIMSUN (ES), NTUA (EL), POLIS (BE), SWOV (NL), TOI (NO), TfGM (UK), City of Vienna (AT), QUT (AU), TJU (CN), UMTRI (US)
- **Duration of the project:**
  36 months (December 2018 – December 2021)
- **Framework Program:**
  Horizon 2020 - The EU Union Framework Programme for Research and Innovation – Mobility for Growth



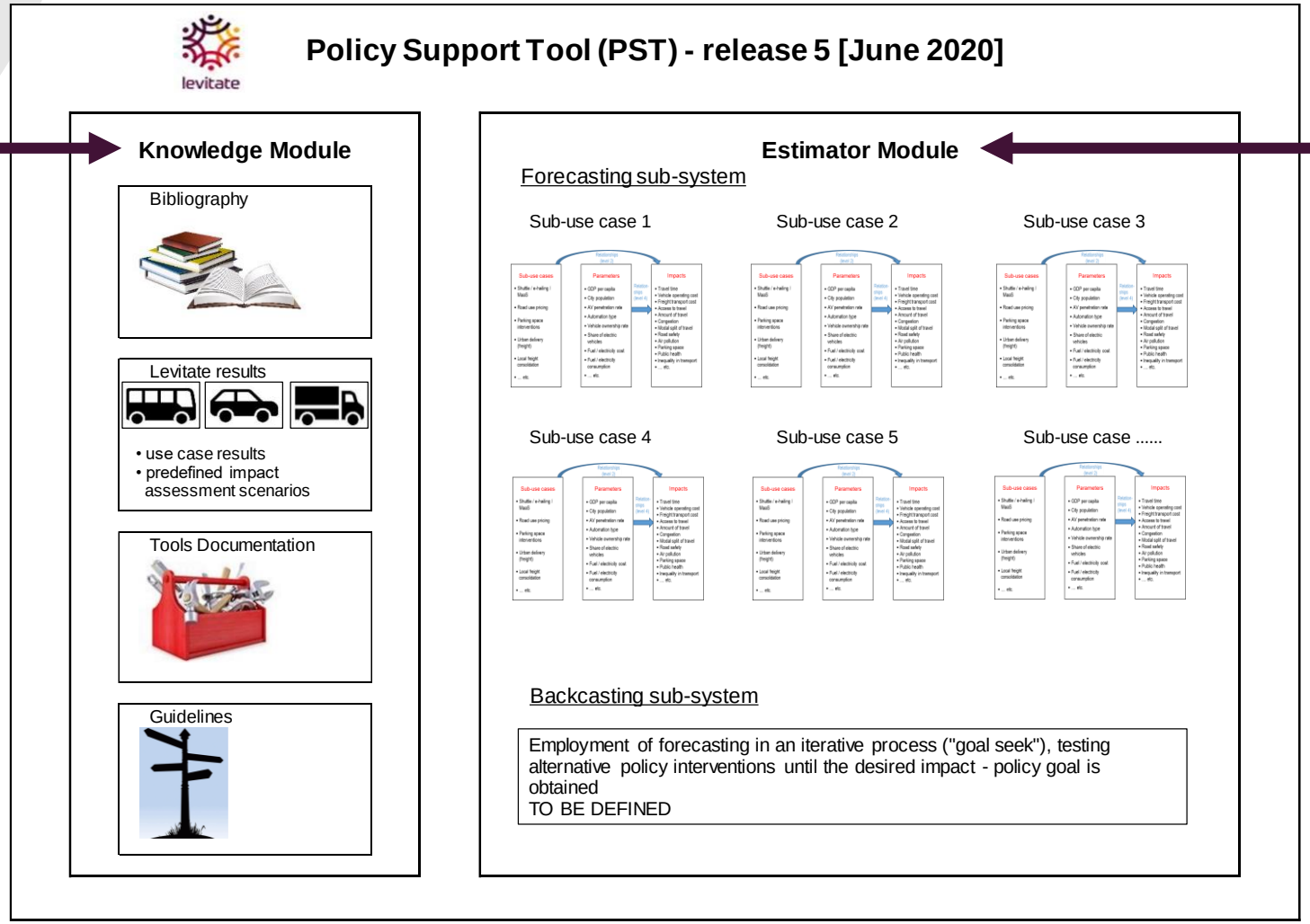
Aims

- To consolidate the outputs of WPs 4-7 into an **overall framework** for the assessment of impacts, benefits and costs of CATS, for different automation and penetration levels and on different time horizons;
- To **analyze user needs** for a decision support tool aiming to assist in the analysis of urban policy scenarios and targets;
- To develop and implement a **toolkit** and a **decision support** tool, allowing the testing of various policy scenarios on the basis of the needs of relevant stakeholders, incorporating both **forecasting** and **backcasting** approach;
- To provide **policy recommendations**.



PST Structure

- **Static**
- **Searchable**
- **Components:**
  - Bibliography
  - Results
  - Tools
  - Guidelines and policy recommendations



- **Dynamic**
- **Interactive**
- **Javascript Design**
- **Sub-systems:**
  - Forecasting
  - Backcasting
  - CBA module
  - Case studies

PST Knowledge Module: Overview [1/2]

PST Knowledge Module Contents – based on the NTUA conceptual framework:

1. **Bibliography:** Relevant literature concerning impact assessments of CATS
   - Systematic literature review across the project and one per use case
   - The documentation of each sub-use case
   - Short synopsis summarizing each use-case/sub use-case
2. **Project results:** Case studies, impact assessments

   For each case study:
   - Information regarding the scenarios and baseline conditions
   - Assumptions and limitations relevant to each case study to be explained in detail there-in as well
   - Showcasing of case study results

PST Knowledge Module: Overview [2/2]

3. Documentation of tools: Toolbox of Levitate methods

For each methodology (Microsimulation, Delphi, System Dynamics):

- Information regarding the methodological background, much of which is existing on presentations
- Assumptions and limitations relevant to each methodology to be explained in detail as well

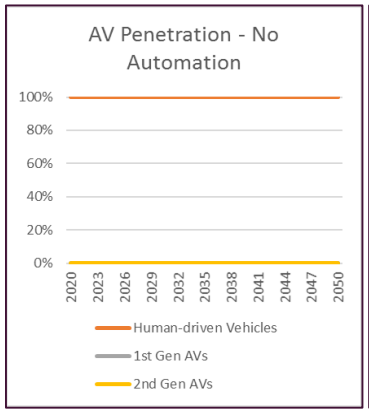
4. Guideline excerpts: Guidelines and policy recommendations regarding CATS

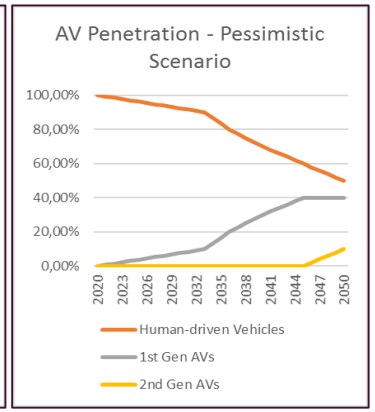
- Explanations and tutorials on the use of the PST Estimator modules
- Overall recommendations to cities from project results
- Additional recommendations from literature or other inputs if necessary

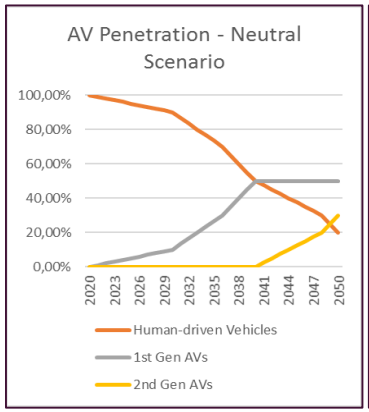
The PST Knowledge Module will be **static & searchable**

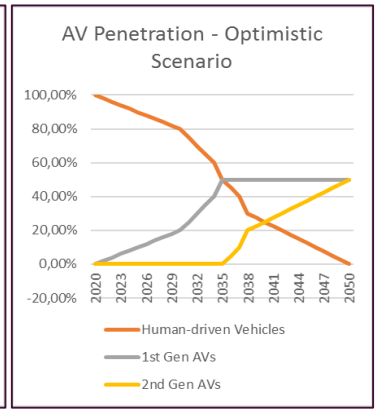
PST Forecasting Estimator

- **Step 1:** Selection of use case and sub-use case:
- **Step 2:** Definition of initial values
- **Step 3:** Definition of base scenario:
- **Step 4:** Details of sub use-case implementation
- **Step 5:** Estimation of forecasted impact indicator values for reference scenario (without SUC)
- **Step 6:** Estimation of forecasted impact indicator values for intervention scenario (with SUC)
- **Step 7:** SUC impact estimation – presentation of results









PST Backasting Estimator

Functionality: The backcasting process is envisioned to be the inverse of forecasting

Specifically:

1. With what measures can one reach impact goal X in year Y?
2. What year would they need to be taken?
3. What happens when two measures are combined?

Current approach: The creation of Impact Modification Factors (IMFs) and their **combinations** in pairs drawing from the HSM philosophy for CMFs

Current Achievements

- Contribution in the **definition** of CATS sub-use cases, parameters and impacts, considering both user needs and practical project limitations.
- **Standardization** of WPs 5-7 impact estimation outcomes and of assumptions at project level.
- Continuous development and updates of **PST framework**, as the project results gradually mature.
- Development of **1st Demo Forecasting Excel** with guessed relationships.
- Development of **2nd Demo Forecasting Excel** with actual estimated relationships, for one SUC and six impacts.

Future Plans

- Finalization of the PST **backcasting estimator**
- Development and integration of the PST **CBA estimator**
- Development of the online PST structure and preparing a highly ergonomic, eye-catching **user interface**
- **Test**, **validate** & improve all PST estimators
- Integrate information and project results into the static **knowledge module** of the PST
- Develop **policy recommendations**

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