**Decision Support System for Sustainable Mobility in Urban Agglomerations**

Authors: Prof. Eden Mamut, Dr. Laurentiu Oancea, Dr. Gabriel Prodan, Cosmin Tacciu

“Ovidius” University of Constanta

Aim: To develop Computation with Federated Resources of an on-line decision support system in order to facilitate the gathering of traffic related information at city and metropolitan area level, the development of data analysis tools and result export.

The final outcome is to provide decision makers and other specialists a centralised tool to carry on complex analyses, to provide transport optimization possibilities, pollution maps and the export of reports and alternative possibilities for the reduction of mobility related impacts.

The Decision support system is operational and may be accessed at -Tomybot.ro.

Tomybot is based on reliable data collected from: traffic analysis (PTV Visum application), air pollution analysis (mobile laboratory of the Municipality), traffic values (traffic surveillance, studies, measurements), analysis tools and algorithms.

Scientific objectives:

* Proof of concept of the processing in federated infrastructures of traffic data, pollution data, image recognition and other similar;
* Integrating input data into modeling and simulation software as PTV VISUM and ADMS;
* Dynamic adjustments of the decision processes based on real-time inputs.

Computing objectives:

* Testing and validation of the computational strategies for Big Data processing;
* Evaluation of the performance obtained in federated infrastructures in comparison with local processing facilities
* Extraction of accurate dynamic estimates of the computational resources at different phases of compiling, running and validating the code;
* Strategies for the evaluation of the availability of processing and storage resources and concurrent CPU approaches for accessing the required resources, in each phase of the project;
* Comparative analysis of the required processing and storage resources for the new model of federated processing,
* Exploring opportunities for an integrated interaction of the scientific coordination team and the system engineers operating the federated infrastructures for computation.
* Development of an Artificial Intelligence approach for real-time decision processes

At present, the research team has a computation infrastructure including a small cloud with 29 processing nodes, 29.1 GB RAM, 1.4 TB storage. The local infrastructure is connected to the national GRID for scientific computation and education ROeduNET.

Taking into account the very low scale of the computation infrastructure, there are no additional management and administration services.

The OUC team is interested on the following topics:

1. How to access substantial CPU time in a federated cluster?
2. How to obtain assistance in compiling and running the data processing?
3. How to maximize the access to large capacity storage
4. Post processing facilities for extended data representation applications (including graphics).