PROJECT

NOSTROMO

Next-Generation Open-Source Tools for ATM Performance Modelling and Optimisation

Funding: European (Horizon 2020)

Duration: Jun 2020 - Nov 2022

Status: Ongoing

Total project cost: €1,771,361

EU contribution: €1,771,361

Call for proposal: H2020-SESAR-2019-2

CORDIS RCN : 229590

Objectives:

The ATM system is composed of a myriad of elements that interact with each other generating a number of properties characteristic of complex adaptive systems, which make the ATM system intrinsically difficult to model. One of the most challenging modelling problems is the assessment of the performance impact of new solutions at a system-wide level, which has been a long-time objective of the ATM research community.

NOSTROMO project aims to develop new approaches to ATM performance modelling able to reconcile model transparency, computational tractability and ease of use with the necessary sophistication required for a realistic representation of the ATM system.

The main objectives of NOSTROMO are:

1. Develop a methodology for the construction of ATM performance metamodels that approximate the behaviour of computationally expensive simulation models to allow a systematic and efficient exploration of the model input-output space and a robust handling of the associated uncertainty, by exploiting the recent advances in the field of active learning;
2. Implement the proposed metamodelling methodology by developing Open-Source metamodels of different state-of-the-art microsimulation tools able to reproduce ATM performance at ECAC level;
3. Develop a set of visualisation and visual analytics tools that facilitate the analysis, interpretation and communication of the results of the new metamodels;
4. Demonstrate and evaluate the maturity of the NOSTROMO approach and the capabilities of the newly developed toolset through a set of case studies addressing the performance assessment of SESAR Solutions at ECAC level. They will cover a variety of ATM phases, solutions and KPAs/KPIs sufficiently heterogeneous to allow a comprehensive benchmarking against the performance modelling methodologies currently in use, to analyse the added value and the limitations of the NOSTROMO approach and evaluate the appropriateness of its transition to SESAR IR and improvement of the E-OCVM.

Parent Programmes:

H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Centro De Referencia Investigacion Desarrollo E Innovacion Atm, A.i.e.

Address:
Avda De Aragon 402 4 Edificio Allende

N/A Madrid
Spain

EU Contribution: €368,625

Partner Organisations:

The University Of Westminster Lbg

Address:
Regent Street 309
London
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EU Contribution: €333,125

Universitat Politecnica De Catalunya

Address:
Calle Jordi Girona 31
8034 Barcelona
Spain

Organisation Website:
http://www.upc.edu

EU Contribution: €198,625

Nommon Solutions And Technologies Sl

Address:
CALLE CLAUDIO COELLO 124 - PLANTA 4A TRASERA
28006 MADRID
Spain

EU Contribution: €297,250

Danmarks Tekniske Universitet

Address:
Anker Engelunds Vej
DKN/A2800 Kgs. Lyngby
Denmark

Organisation Website:
http://www.dtu.dk

EU Contribution: €375,500

Isa Software

Address:
St Georges House Chester Road 215-219
Manchester
M154JE
United Kingdom

EU Contribution: €198,236

Technologies:

Aircraft operations and safety
Big data analytics for management of ATM

systems

Development phase: Research/Invention

STRIA Roadmaps: Network and traffic management systems

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Digitalisation

Geo-spatial type: Other