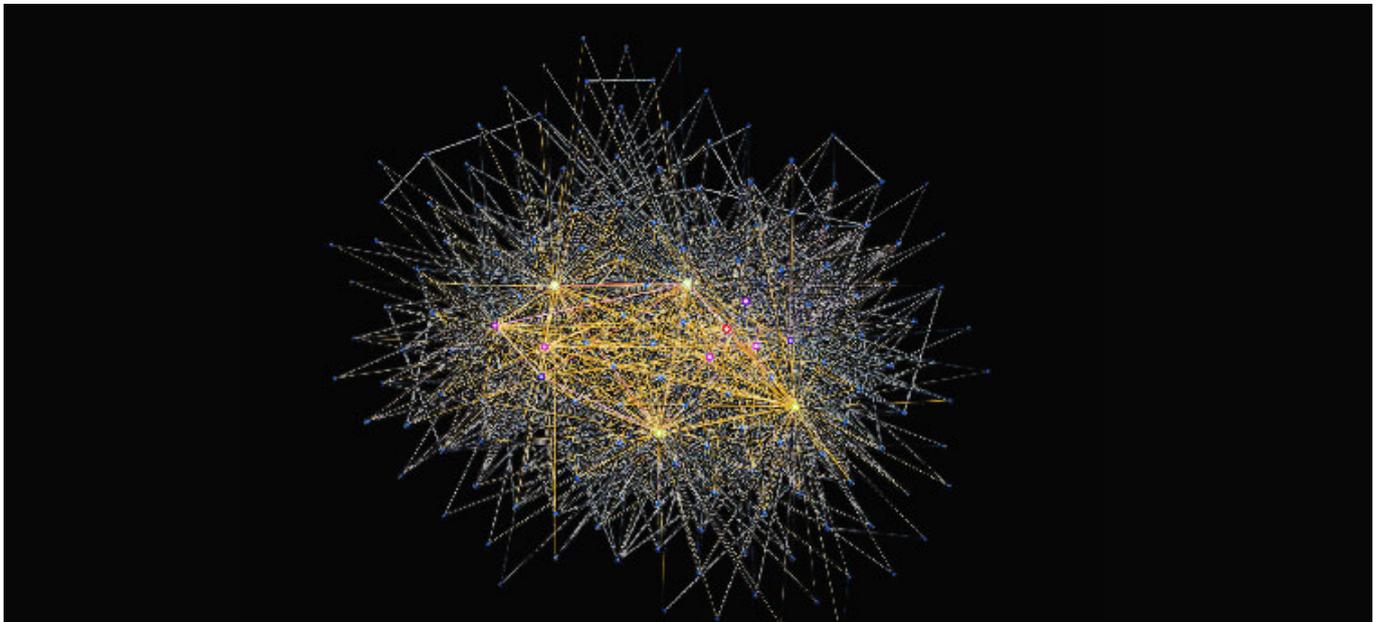


Data, Economics and Visualization team

# Ecole Nationale de l'Aviation Civile

## [Data, Economics and Visualization team](#)

Adapting data science methods to the air transport system through a multidisciplinary approach combining economics, statistics, and data visualisation.



The work of the DEVI team is centred on aeronautical data and addresses the statistical analysis, visualisation, elaboration, and estimation of economic models. This interdisciplinary team draws on three scientific fields which are: applied mathematics, data visualisation, and economics. It is strengthened by the support of an IT engineer and the manager of a database containing information about airline companies, airports, and air traffic from country to country and city to city.

## Fields of research

STATISTICS is devoted to new methods of data analysis such as: statistical analysis of plane trajectories, the adaptation of algorithms allocated to aeronautical data, the study of large graphs. The use of information geometry to analyse the structure of plane trajectories is a novel and promising activity, with the principle application being the detection of atypical flights.

AIR TRANSPORT ECONOMICS positions itself as a European reference pertaining to subjects such as: the study of airline companies and their strategies for market entry, the analysis of interventions on behalf of the authorities and their impact, the modelisation of the behaviour of stakeholders (consumers, producers, regulators, aeronautical facilities). In particular, the analysis of the impact of

new communication technology (ICT) on the behaviour of air travellers, done through the notion of “time value”, is part of the research concerning all modes of transportation.

DATA VISUALISATION explores the visualisation and interaction methods for large quantities of data. Many algorithms exploit this data automatically, thus limiting the ability of users to evaluate the quality of the obtained results. The approach explored by DEVI seeks to reinstate the human at the heart of the system; the computer resources are used for their power to calculate and display, whereas the extraction of knowledge and decision making remain human.

## Applications and projects

- Analysis of company network structure influence on the strategic behaviour of economic agents. Application example: analysis of the economic impact of the liberalisation of air transport in the ASEAN (Myanmar, Cambodia, Vietnam, Indonesia, Philippines, Laos). This type of analysis, combining both graph theory and economics, is seeing strong growth, particularly for improving the study of economical impact on European hub regions
- Information geometry and curve areas for analysing aeronautical safety data. This project aims to develop automatic data analysis tools, with the help of recent advances in functional data analysis, information geometry and curve variations
- Study of interactive methods to explore trajectory data with algorithms derived from image processing. In particular, edge bundling is used to group trajectories deemed close from a certain distance in order to extract data (e.g. major flows)
- Interactive volumetric exploration of baggage scanner images. Image exploration is a tool for dealing with baggage image uncertainties, for example blind spots due to the overlapping of objects. It can also deal with zones of different densities by filtering and allow for the selection of certain objects

[The DEVI team website ///](#)

Documents

See as well

Contact

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