

# DATAPP – Digital Transformation and Data Science Applications



## Contractor

ALG Global Infrastructure Advisors, S.L.U

## Consortium Members

None

## Contract period

12/12/2022 - 11/08/2024

## Budget

799 597€

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## Main objectives:

Digital technologies are already being deployed throughout the air transport system. Not only these technologies may improve the safety, productivity, accessibility and sustainability but they also raise new security and privacy risks, while involving significant changes to business models, working processes, standards and regulations.

The need to anticipate the changes and evolutions of aviation standards requires timely and upstream investigation of the application of radically new concepts and processes for aviation products, processes and operations.

This research project will cover the development of three (3) case studies:

- Use of **flight training data** to support the application of Evidence-based - Competency-based training concepts and standards (Evidence-Based Training EBT – Competence-Based Training and Assessment CBTA). The case study will encompass the development of comprehensive guidelines for moving towards the implementation of **EBT** and **CBTA** concepts.
- Application of new analytical methods and techniques for **fuel management (pre-flight/ in-flight)**. The project will encompass the in-depth analysis of the benefits and constraints associated to state-of-the-art digital solutions for fuel management, considering the current safety issues reported, as well as the preparation of comprehensive documentation to support the proposed evolution of standards and regulatory requirement.
- Data models for **enhancing the use of flight data for safety**. The proposed case study shall investigate the development of comprehensive data models 'bridging' between the data sources of flight data monitoring programmes and their use for the operator's safety-relevant processes and for industry-wide data exchange programmes.

## Impacts & benefits

The main output of the project shall be the comprehensive evaluation of benefits, constraints, standardisation and deployment issues, including the recommendations for adjusting safety regulations and related standards, and how new digital technologies could contribute to addressing the issue.



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## Further reading

**Use of flight training data to support the application of Evidence-based - Competency-based training concepts and standards:** To successfully achieve the implementation of training schemes based on evidence and observations, the exploitation of a large set of data is crucial. This data includes operational data, flight training data records, safety reports, pilots' surveys. Currently the availability of such data has improved significantly but requires dedicating significant resources while carefully assessing the specific needs of operators. The case study is intended to investigate the progressive implementation of EBT – CBTA concepts through a series of steps allowing to measure the main requirements associated to the increasing use of flight and training data sets, to assess the main solutions and best-practices available to aircraft operators and training centres as well as to ascertain the benefits and constraints along the different steps identified. The case study encompasses the development of comprehensive guidelines for moving towards the implementation of EBT and CBTA concepts.

**Application of new analytical methods and techniques for fuel management (pre-flight / in-flight):** The transition to digital fuel management systems by airlines raises the issue of possible evolutions of the current regulatory requirements and standards associated. The case study investigates the impact of a series of digital solutions for fuel management used during the different phases of flight with the aim to assess a series of proposed changes to the regulatory provisions (e.g., on standard fuel reserves). The project encompasses the in-depth analysis of the benefits and constraints associated to state-of-the-art digital solutions for fuel management, considering the current safety issues reported, as well as the preparation of comprehensive documentation to support the proposed evolution of standards and regulatory requirements.

**Data models for enhancing the use of flight data for safety:** A Flight Data Monitoring (FDM) programme assists an operator to identify, quantify, assess and address operational risks. Per the Air Operations rules, an FDM programme must be part of the operator safety management system (SMS). Using commercial off-the-shelve (COTS) solutions, the

collection of flight data from a high proportion of flights is common practice today, but many aircraft operators still face challenges in effectively using the collected data to support their FDM/SMS and other safety-relevant processes for which the operator is responsible. In particular, the use of common standards and guidelines addressing the collection of flight data for an operator's safety-relevant processes is missing. Further to that, an operator may wish to share its flight data, for instance in the framework of an industrywide data exchange programme (such as EASA Data4Safety or FAA ASIAS) to produce safety intelligence (e.g. metrics dashboards, blind benchmarking, studies) that is useful for the operator, for other aviation stakeholders and ultimately for aviation safety. The proposed case study shall investigate the development of comprehensive data models 'bridging' between the flight data sources and their use for the operator's safety-relevant processes and for industry-wide data exchange programmes.

*This project is part of the portfolio of EASA managed research projects funded under the European Research Programmes. Projects under this portfolio address research needs of civil aviation authorities and are geared to generate mid-term benefits after the successful completion of the project to enhance safety, security and sustainability.*

