

# VIRTUA – Blockchain for Airworthiness in Aviation



## Contractor

FPT Software Europe SARL

## Consortium Members

None

## Contract period

09/12/2022 – 08/08/2024

## Budget

440 500€

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## Main objectives:

The development of digital solutions for air transport encompasses the use of virtualisation technologies to manage approved aircraft parts, implementing the concept of a decentralised ledger collectively named as 'blockchain'.

The use of blockchain technologies for the management of approved aircraft parts or components (along EASA Form 1 certificate) would impact on the whole lifecycle of such certificates, from their issuance by approved production organisations (POA) to the changes introduced by design or maintenance organisations. A regular issue faced by the different actors involved is whether the certificates are genuine and how to revoke when defects are identified or when cases of 'suspected un-approved parts' (SUP) are detected.

This research project on the implementation of blockchain technologies addresses the potential benefits and constraints (incl. costs) considering the different Stakeholders involved in the management of aircraft parts and components, by investigating different types of existing blockchain solutions and different use cases for their implementation along the lifecycle of approved parts and components.

In the cases where the benefits are confirmed, the project will also undertake the assessment of the main changes to be introduced in regulations, standards and working processes as well as the preparation of guidelines and supporting materials.

The general purpose of this research is to:

- Identify and assess the blockchain digital solutions for management of aircraft parts
- Design use cases and collect feedback from aviation stakeholders
- Assess regulatory and standards changes to be implemented and formalize in a roadmap

## 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

With the right regulatory conditions, blockchain could be a key element in the aeronautical industry, contributing to the creation of a **right environment for digital solutions and services** by providing high-speed, secure and trustworthy infrastructures what could allow aviation industry to improve parts identification and traceability .

The project will start with a thorough **review of the existing literature**, industry standards and regulations and identify the solutions relevant for the research. A detailed **workplan for the development of the case study** will also be developed.

In a second stage, the project team will **assess the impact of the identified solutions**, analysing the main changes compared to existing operations, the key benefits and constraints (or limitations) for the different users, as well as the maturity level reached and remaining uncertainties. This activity will involve interview with diferent stakeholder across the aviation industry within Initial and Connitnuing airworhthines. In this scope, several stakeholder workshops are foreseen – to present the use cases developed, review the results obtained and collect feedback.

Lastly, the research will identify the **main changes and gaps with regards to regulatory materials and aviation standards** which are required for the gradual deployment of the digital solutions proposed.

*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.*

