SOCFAI

An artificially intelligent platform for optimised air travel

With a focus on airports, the ITEA project SOCFAI (Secure Open Collaboration Framework powered by Artificial Intelligence) will address the complexity of collaborative, multi-stakeholder operations via an open-source, AI-powered framework and specialised modules for improved monitoring and traceability.

Addressing the challenge

Transportation hubs like airports face increasing complexity due to globalisation, including growing numbers of operation types and stakeholders responsible for the process chain. These stakeholders may have conflicting business goals or internal disagreements. Operational inefficiency is further exacerbated by fluctuating demand and external factors like the weather, leading to economic losses and decreased sustainability. The measurement of operational delays is therefore crucial to assessing inefficiencies, yet the integration of systems across operations and hubs is highly complex and often requires customisation. To increase efficiency, all operations should be monitored and traced from a single point.

Proposed solutions

By creating an AI-powered operation control framework, SOCFAI will enable the gathering, processing, generation and dissemination of all kinds of information between connected operational systems. The core module will offer generic functionalities like operational dashboards for real-time situational awareness, an AI-powered message hub and authentication/authorisation services to manage interacting systems and facilitate communication between them. As an open-source platform architecture, the framework will be free to use in hubs worldwide; it can then be enhanced with specialised service modules based on the operational domain and context, such as for airport resource management and

optimisation, passenger and baggage flow monitoring, energy consumption management or safety and security processes. Although SOCFAI will focus on airports, similar problems exist in other

a significant figure given that delays have cost airport stakeholders and passengers as much as EUR 12.5 billion in a year in Europe alone. Further economic growth will be enabled by SOCFAI's open-source nature, allowing third parties to generate business value and employment according to their needs, while the consortium members will develop solution partnerships for commercialisation based around AI-powered services. This will help them to expand in a global airport management market projected to reach
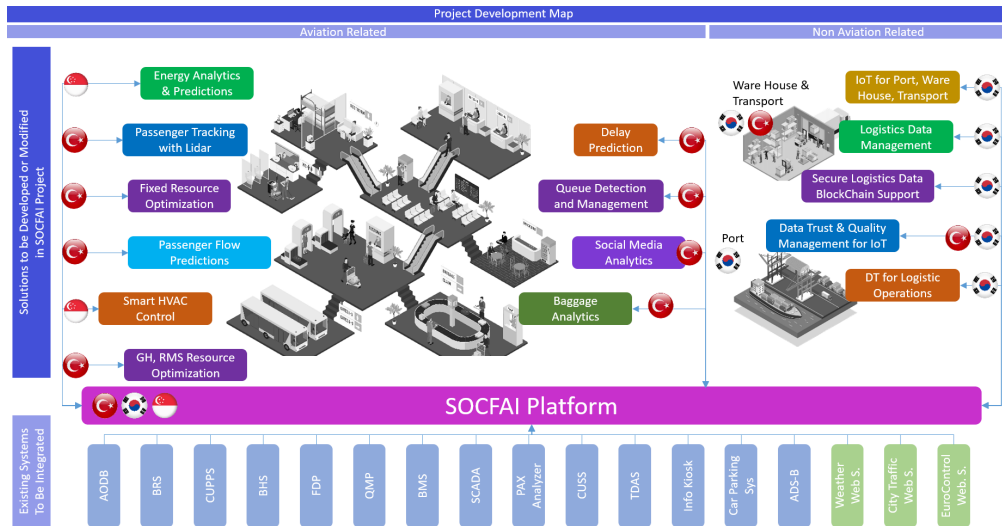
^ SOCFAI platform architecture

operational industries; solutions for non-aviation problems will therefore also be evaluated at the initial level.

Projected results and impact

No open-source tool meets all of the big data platform requirements of operational hubs with many stakeholders, making the SOCFAI platform a pioneering innovation. By identifying the causes of disruptions and stakeholder conflicts and offering tools to manage them, a 3% reduction in delayed flights is expected –

USD 11 billion by 2026 at a compound annual growth rate of 5.4%. As for wider society, the project aims to increase fixed resource usage efficiency by 5% and promote the concept of greener airports in line with current European strategy. Last but not least, SOCFAI's optimised throughflows will enhance the safety, security and satisfaction of staff and passengers, ensuring that the project offers well-rounded benefits to all involved in air travel.

Project partners

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Project funded by

Enterprise Singapore

KIAT | Korea Institute for Advancement of Technology

TÜBİTAK

Project start
July 2023

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Project end
June 2026

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