

# LithiumBAT – Detection of Lithium Batteries Using Security Screening Equipment

## Contractor

Rapiscan Systems Limited

## Consortium Members

CAA International

## Contract period

22/12/2022 - 21/04/2024

## Budget

350 000€

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## Main objectives:

The main objective of the project is to evaluate the feasibility of the detection of lithium batteries transported as checked baggage using the security screening equipment and processes in operation at airports.

Notwithstanding that screeners shall primarily focus their attention on identification of prohibited items from a security perspective, there is a need to investigate possible technical, operational and regulatory solutions to support safety requirements (in particular detection of lithium batteries not transported in line with applicable safety rules) without affecting the performance of screening operations.

The project should investigate what are the technical, operational and regulatory solutions available to support safety-related requirements without affecting the performance of security operations as well as identify the main limitations, constraints and financial cost elements for their implementation at European airports.

An impact assessment of the proposed detection of lithium batteries on security operations performance for the screening of hold baggage shall be performed and presented. An initial impact assessment for cargo operations is also expected.

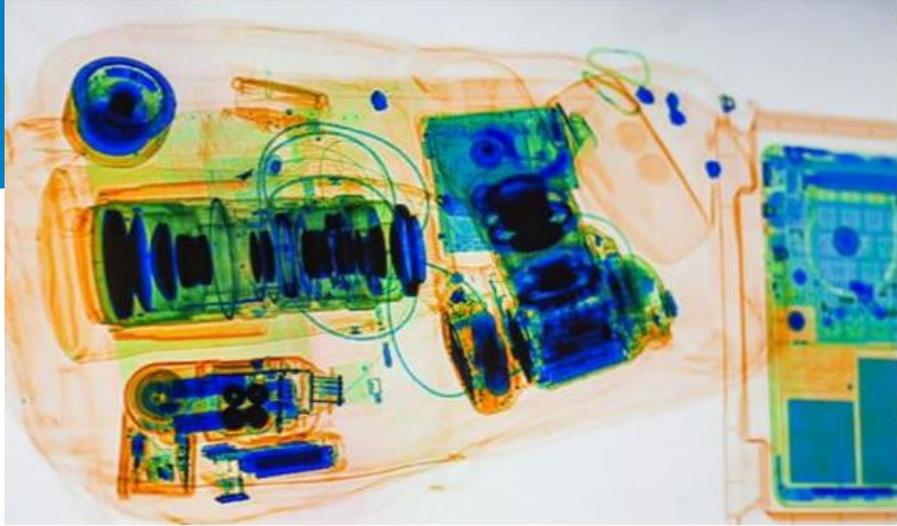
The project shall also consider potential safety benefits for other transport scenarios. (e.g. cargo, mail).

## Impacts & benefits

The expected main outcome of the project is to assess the valid and cost-effective technical, operational and regulatory solutions to be used for detecting lithium batteries in hold baggage, while considering additional potential safety benefits for other transport scenarios (e.g. cargo, mail).



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**Lithium batteries** are becoming more and more ubiquitous in portable electronics and electrical devices. Their diverse form-factors and favourable energy storage characteristics make them the prime choice of batteries in many applications. Yet the high density of stored energy along with the combustion characteristics of Lithium also constitute a risk. This risk is particularly evident in the aviation field onboard the aircraft, and in particular in the hold, where fire hazards pose particularly severe risks to the aircraft.

For these reasons lithium batteries present in checked luggage are **tightly regulated and restricted by ICAO**. Enforcing such regulation requires means to detect the presence of unwanted Lithium batteries in the baggage. An opportunity lies with the re-use of imaging and detection equipment primarily aimed at aviation security. With adaptations to its detection software as well as operational adjustments, aviation security detection equipment can be made to also target the specific safety risk posed by lithium batteries. LithiumBAT aims at exploring these different dimensions.

Certain restrictions apply to the carriage by passengers of lithium metal and lithium-ion batteries in accordance to ICAO Annex 18 and the ICAO Technical Instructions for the Safe Transport of Dangerous Goods (ICAO Doc. 9284). Enforcing such regulation requires means to detect the presence of unwanted Lithium batteries in the baggage.

**Four technical tasks** have been identified to cover the scope of the activity and fulfil the project objectives:

- Task 1: Review of state-of-the-art solutions, development of test plan and protocol and consultation with Stakeholders
- Task 2: Performance of tests, collection of data
- Task 3: Analysis of tests performed, consultation with Stakeholders
- Task 4: Conclusions and recommendations

The **main output of the project** will consist in a consolidated report on the state-of-the-art for solutions supporting the detection of lithium batteries at airports, the results and analysis of trials performed using an operational security

infrastructure, processes and associated staff as well as the series of recommendations for the consolidation of the main findings of the project.

The project encompasses the performance, through a series of tests, of hold baggage screening equipment (explosive detection systems (EDS)) at an airport where traffic exceeds 2 million passengers annually.

The aim of the trial is to demonstrate technical and operational solutions and assess the performances, limitations and constraints for the detection of lithium batteries. The tests should also assess the impact on security performance and operations.

The project should also assess what additional resources and competencies are needed for screening personnel to perform additional duties and conduct an assessment in terms of training and resources required.

