EASA
European Union Aviation Safety Agency

Research Project Webinar

Detection of Lithium Batteries Using Security Screening Equipment

18th October 2023 10:30 – 12:30 CET

Delivered in partnership with our consortium

Rapiscan systems
An OSI Systems Company

UK Civil Aviation Authority International

Thank you all for attending

The Webinar will start shortly

Time has been allowed at the end of the presentation to ask the panel questions

Questions should be logged using the Q/A function at the top of the screen

Agenda

- Welcome to the Webinar
- Project Background
- Introduction to the project team
- Project overview
- Project Delivery
- Feedback, questions & answers
- Close

Welcome from EASA

Research project: Detection of lithium batteries using screening equipment

- **Focus:** Hold baggage screening

Importance of investigating what are technical, operational and regulatory solutions that can be used to detect lithium batteries using screening equipment

EASA objective: Ensure safety of flights

Your views and expertise are needed

Thank you and stay connected!

Adam Borkowski
Aviation Security & Intelligence Expert
Project Technical Lead

Lithium batteries and passengers

Main concerns are related to:

- Increasing number of incidents involving lithium batteries on board the aircraft
- Increasing number of items containing lithium batteries by passengers (unlimited)
- Increasing power of such items (limited)
- Counterfeit items
- Passengers not complying with the regulations – **carriage of undeclared items**

Risks posed by lithium batteries are mainly fire and smoke. The event occurs very quickly and has catastrophic consequences due to the high temperatures reached and the amount of toxic smoke.

Mitigating measures:

- Before: **prevent the items from reaching the aircraft**:
  - **Screening (to be explored)**
  - Information to passengers (regulations and safety promotion)
- After: Training (CBTA), procedures (ICSG), establishing further limitations – EASA's LOKI-PED project

EASA's Related project LOKI-PED

Project funded from the EU Horizon Europe Research and innovation programme
https://www.easa.europa.eu/en/research-projects/loki-ped-lithium-batteries-firesmoke-risks-cabin

Contract with: Frauenhofer Gesellschaft. Consortium members are Fraunhofer Institutes for Highspeed-Dynamics, Ernst-Mach-Institut, EMI, and Building Physics IBP team with AIRBUS

Burning Laptop. © Adobe Stock

2023

WP1 Characterization of the main hazards posed by lithium batteries and PEDs carried by passengers and aircrew in the cabin

2024

WP2 Evaluation of the consequences of fire and smoke

WP3 Assessment of the limits related to the number of batteries and the battery power / energy

WP4 Comparison of the risk scenarios with the limits established by the applicable regulations

2025

WP5 Assessment of the cabin emergency procedures

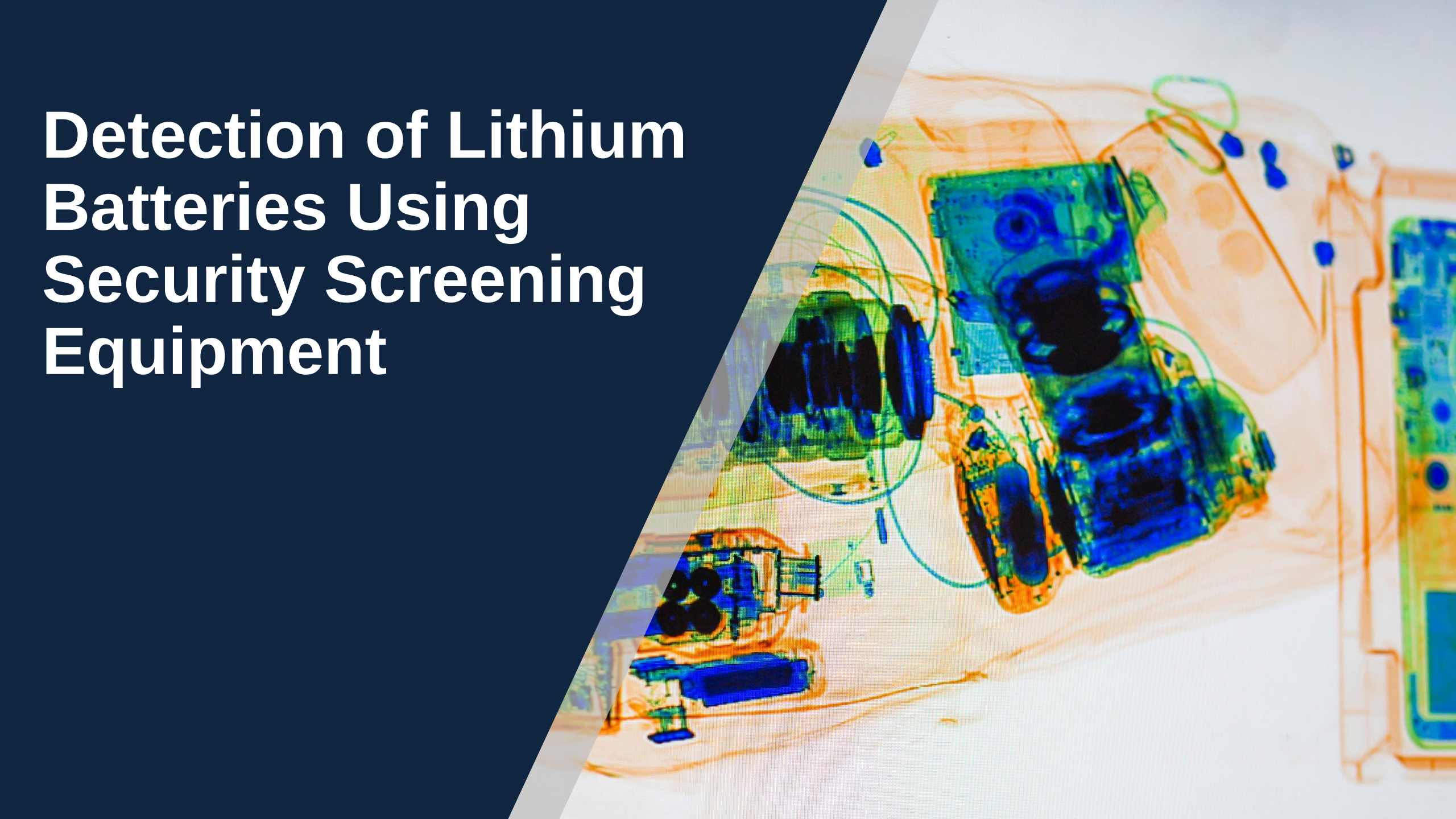
WP6 Assessment of additional mitigation measures

WP7 Identification of gaps in the regulatory provisions

https://loki-ped.de/

Facilities: https://www.ibp.fraunhofer.de/en/expertise/energy-efficiency-and-indoor-climate/vehicle-climate-control-systems/flightlab-flight-test-facility.html

Detection of Lithium Batteries Using Security Screening Equipment



Project team

- A leading global provider of security inspection solutions, with more than 100,000 products installed in over 170 countries.
  - Dean Smith – Project & Technical Lead
  - Eric Chevalier – Technical Expert

- The consulting and training arm of the UK CAA
  - Sarah Fox - Project Manager
  - Stuart Coates - Communications Lead
  - Simon Evans – Technical Adviser
  - Jackie Burtenshaw – Project Support

- Regulatory advice and specialist guidance
  - Dr Ben Wong - UK Civil Aviation Authority
  - Mario Ranito – UK Civil Aviation Authority

CAA International

As the UK CAA's independent technical cooperation arm, we unite and export UK CAA know-how to improve aviation and aerospace standards globally

Our subject matter experts provide holistic advice, training and regulatory systems on UK, ICAO and European-based standards, and work in partnership with Governments, aviation agencies, regulators and industry organisations to establish robust, sustainable regulatory systems

We believe everyone, everywhere, should have access to safe, secure and greener air transportation and as a **Social Enterprise** we take action to overcome the greatest aviation challenges facing the developing world – investing and driving change where it is needed most



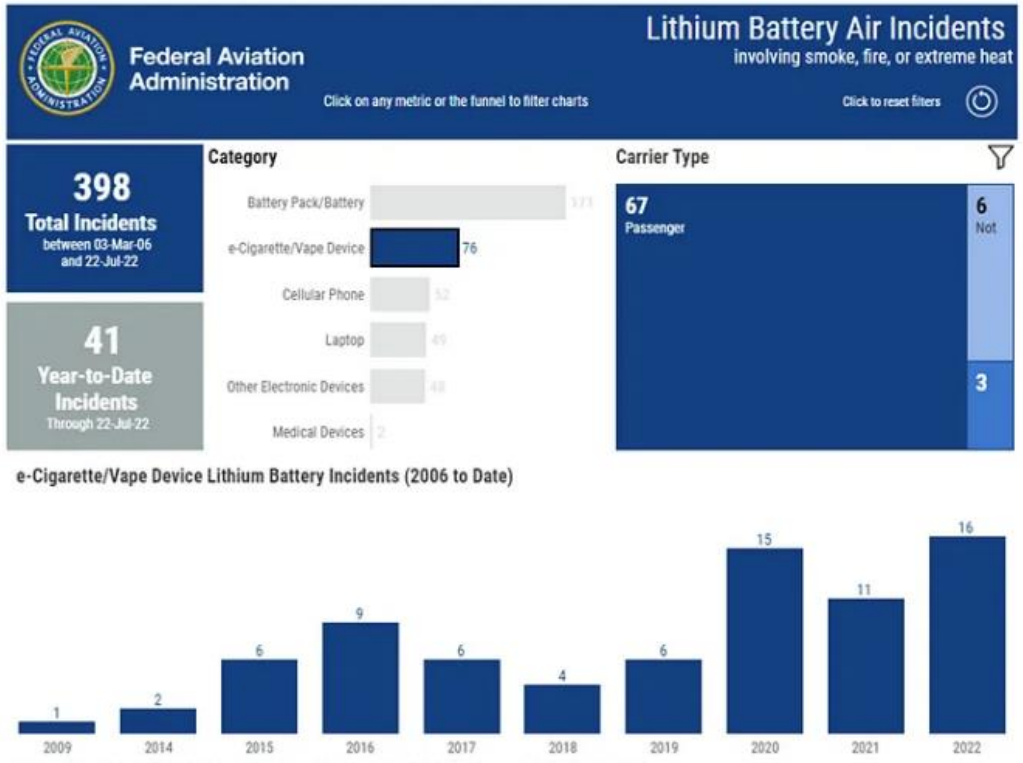


Rapiscan

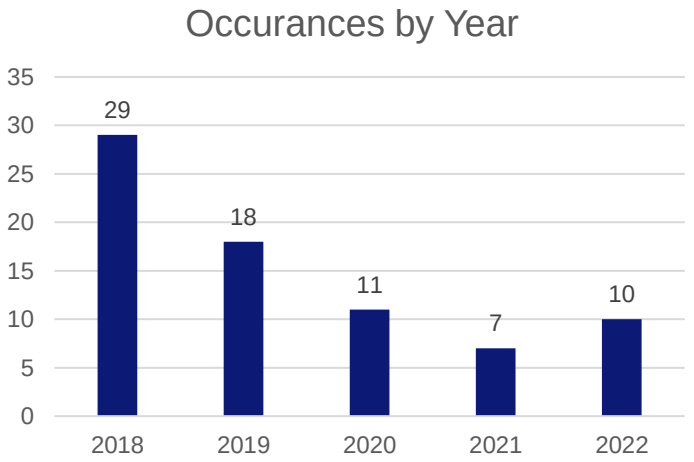
- This lithium battery detection project is focused on checked baggage
- Rapiscan has many years of experience in this application
- >500 checked baggage explosive detection systems sold
- On-site algorithm trial at a Rapiscan customer
- Experience already with dangerous goods algorithm (incl. Lithium Batteries)

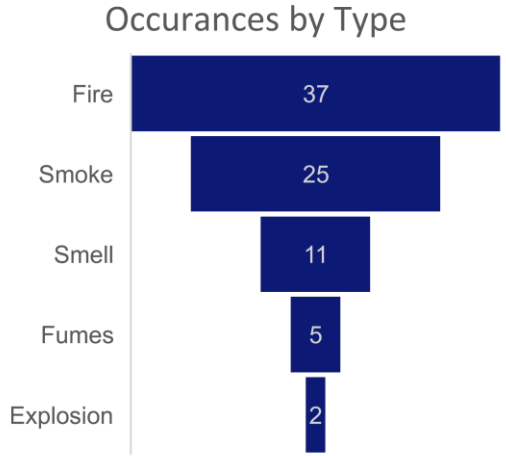



Lithium Batteries



Source: FAA





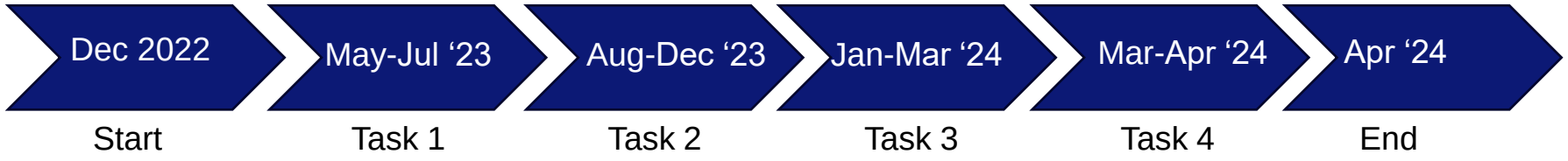
Source: European Central Repository

Lithium battery incidents are on the rise & pose a safety concern

Project Overview

Project comprises 4 tasks

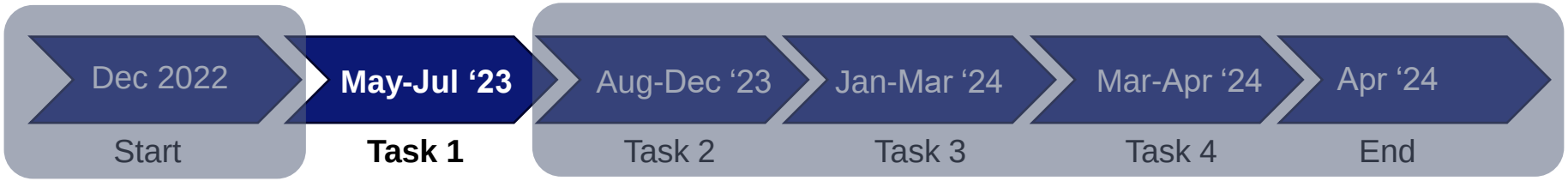
1. State-of-the-art solutions; Test Plan; Consultation with stakeholders
2. Development & on-site trial of a lithium detection algorithm
3. Analysis of the on-site test results
4. Project summary report



Project Overview

Task 1 - 3 components

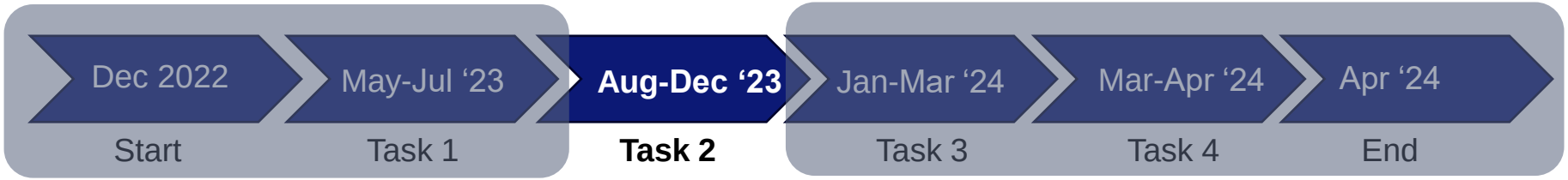
- Review of the state-of-the-art solutions for lithium battery detection
  - Identification of technologies capable of being used in an airport setting
  - How the most suitable technology could be applied
- Test plan
  - Lithium battery detection algorithm specification
  - Algorithm development process
  - Running the algorithm at an airport
  - Data to be collected and presented
- Consultation with stakeholders
  - Summary from 1-to-1 interviews conducted with airports, airlines, interest groups and regulators & this Webinar



Project Overview

Task 2 – 3 components

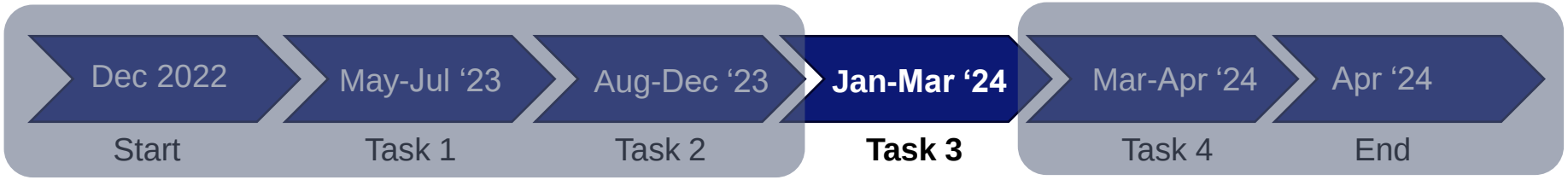
- Laboratory controlled test of the lithium detection algorithm
- Laboratory test using trial airport stream of commerce
- On-site trial to establish performance and operational/security impact
  - Observe screeners – alarm clearance times …
  - Algorithm performance – detection rate, real alarms, false alarms …
  - De-briefs with screeners and supervisors



Project Overview

Task 3

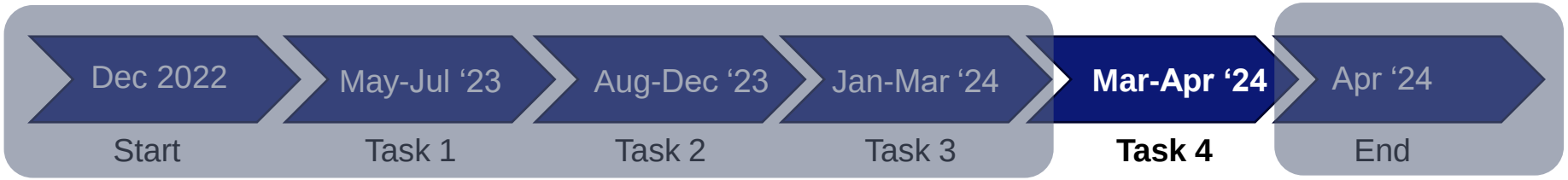
- Results from the trial will be collated, analysed and summary report
  - Detection rate
  - Real and false alarms/rate
  - Operator performance and review times
  - Process to clear a real and false alarm
  - Operational/security impacts
  - Feedback from screeners and supervisors
  - Summary report



Project Overview

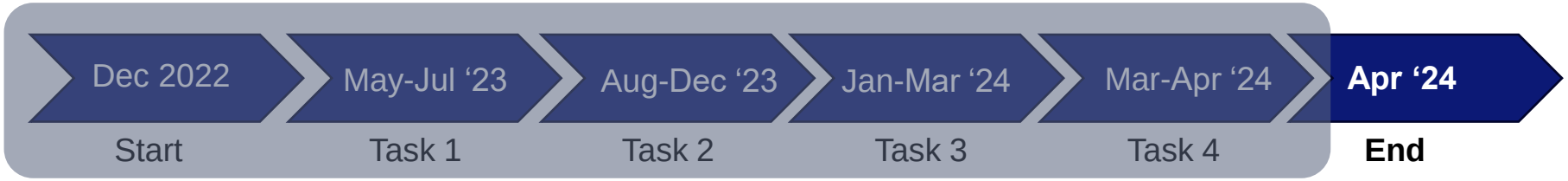
Task 4

- Create a publicly available report summarising
  - Main outcomes
  - Conclusions
  - Recommendations for detection of lithium batteries in checked baggage

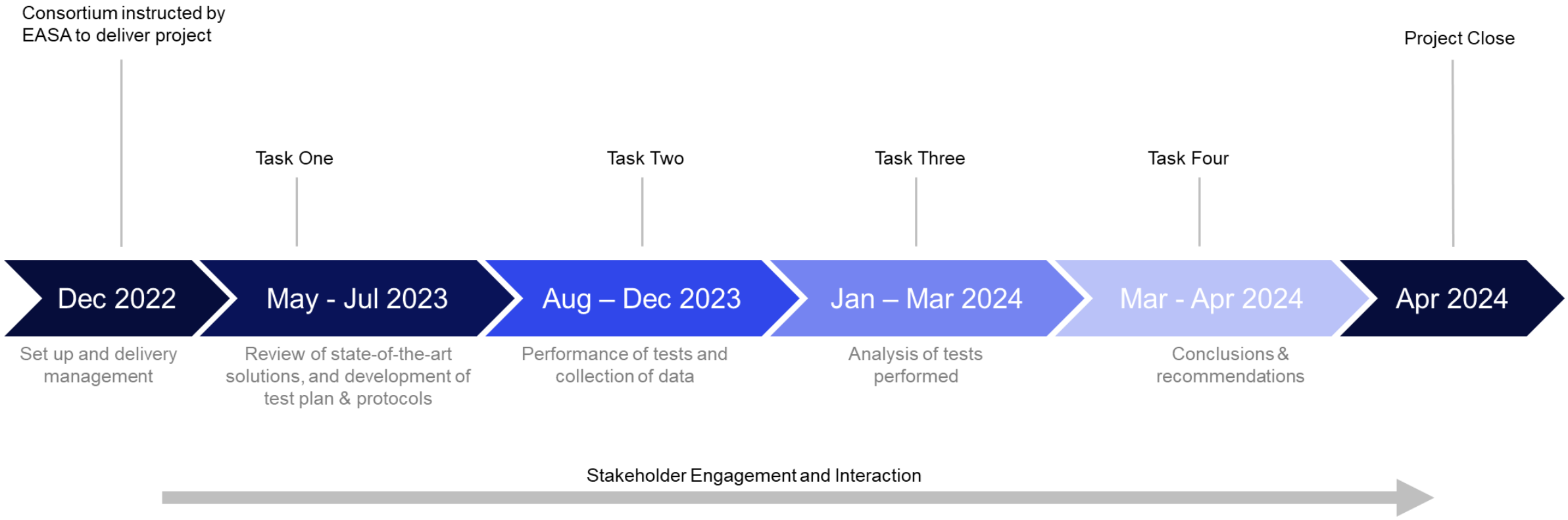


Project Overview

- A study that could support detection of lithium batteries in checked baggage by providing objective and reliable data on performance and impact
- A look at how lithium battery detection is performed today
- Views from across the industry
- Operational and performance data from an on-site test using an EDS machine + dedicated detection algorithm
- Summary report



Delivery Schedule



Questions & Answers

Please submit questions using the Q/A function at the top of the screen

Close

Thank you all for attending

Full Question and Answers, along with this presentation, will be posted on the EASA Website

We are planning a further workshop in February next year to share with you the results of the tests performed

If you wish to participate further in this project, share your thoughts with us or provide general feedback please contact a member of the Project Team

Introductory Webinar: Research Project on the Detection of Lithium Batteries using Security Screening Equipment - Online event | EASA (europa.eu)

End Presentation

Detection of Lithium Batteries Using Security Screening Equipment | EASA (europa.eu)