



Cranfield
University

Digital Aviation Research and Technology Centre (DARTeC)



An industry research
and technology
enhancement
opportunity by
Cranfield University



Background

Advances in digital aviation are driving innovation opportunities in all aspects of the airline industry, addressing high-level strategic drivers. New and challenging ideas are now emerging and being actively researched that are defining the aircraft, airport, airlines and airspace industries for the future including;

- **Inflight and on-ground autonomy**
- **Paperless maintenance, repair and operations (MRO)**
- **Connected cabin and cabin sensors**
- **Seamless passenger handling**
- **Inflight and on-ground MRO through augmented reality**
- **Urban air space design and management (UAV applications)**
- **Air traffic management security, safety and performance**
- **Business model redefinition**
- **Data analytics and cyber security.**

Independent research programmes in specific applications of digital aviation have the advantage of accelerating technological progress but they tend not to consider the systems integration challenges that often hinder their actual market adoption. Research and technical development is required in this area that has a systems integration approach at its core – whether the system involves technical control & data exchange, operational management or the business environment itself. By adopting a systems integration focus, digital aviation has enormous potential to support the future development of air transport.

Value proposition

Integrated Digital Aviation Systems Research

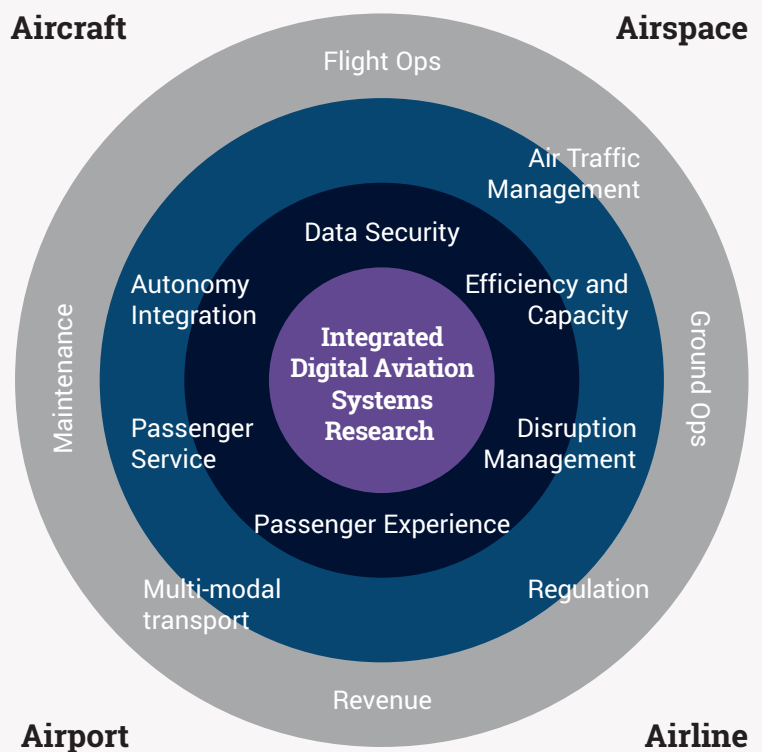
Through a dedicated Digital Aviation Research and Technology Centre (DARTeC), that is fully resourced via industry, government agency and academic research collaborators, significant advances can be made in the development and market adoption of digital aviation enabled technology, operations and business models.

Such a Centre would be both highly networked and focused on advances in digital systems for direct application within the airline industry.

Importantly the Centre will work with partners to deliver an early return on investment (within the first five years) and set up a pipeline of innovative technology/business solutions to provide a sustainable flow of business value into the future (beyond five years).

Additionally DARTeC would provide:

- Cranfield thought-leadership feeding a pipeline of new digital aviation technologies
- Leverage of investment, including funding from UK Government and Cranfield University
- Education, Training and Recruitment
- Opportunity to collaborate with key industry stakeholders (including customers, suppliers and regulators)
- Tax Credits.



Proposal Digital Aviation Research and Technology Centre (DARTeC)

It is proposed that in partnership with government and industry that a dedicated Digital Aviation Research and Technology Centre (DARTeC) is established at Cranfield University that will have access to; unique physical and simulation capability, research air space and world class expertise.

Such a Centre would be capable of delivering both bespoke confidential and collaborative systems research and technology for the benefit of its collaborating partners.

Cranfield University has a unique combination of assets and experience that are highly relevant to the air transport sector.

DARTeC would provide:

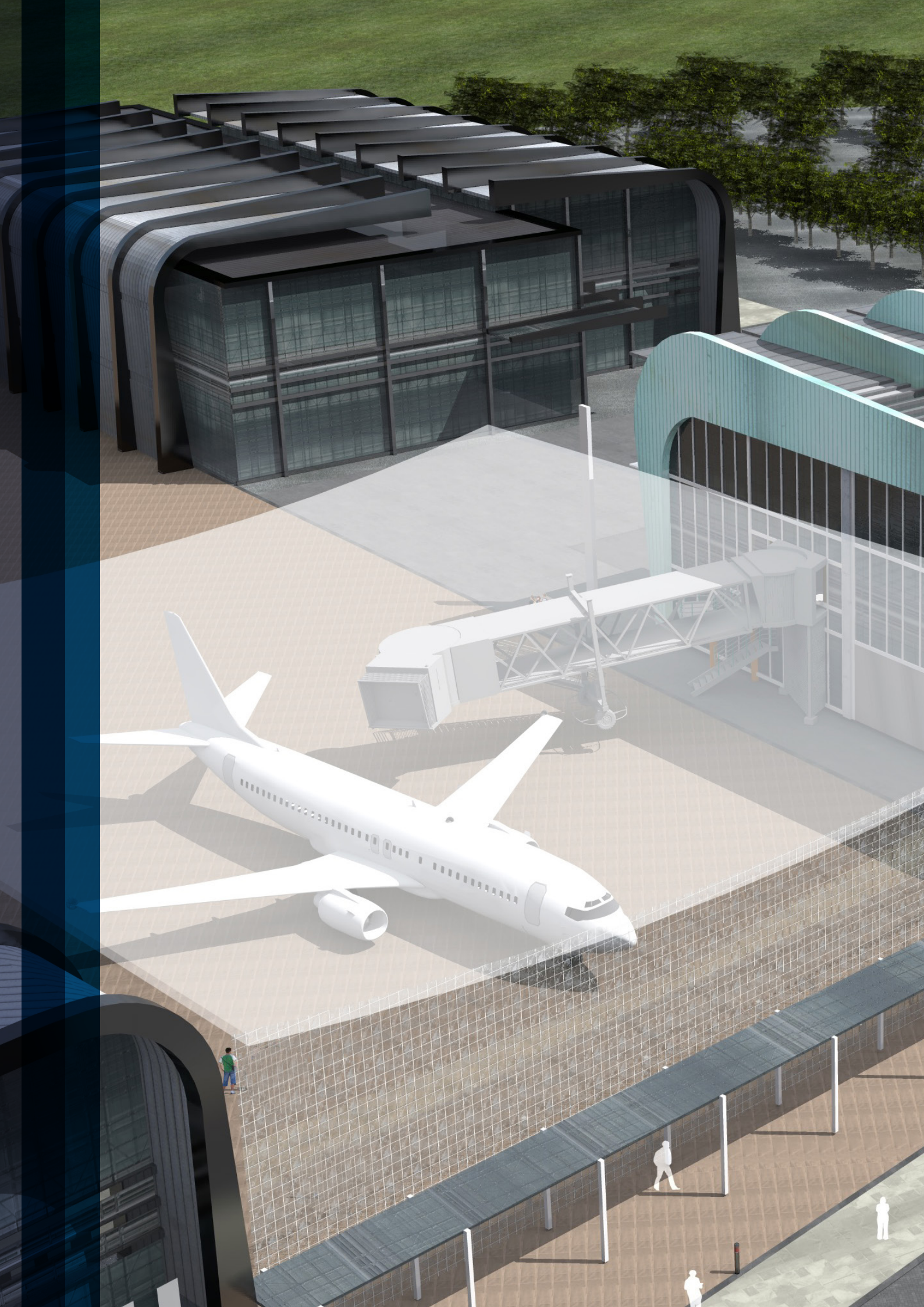
- a focus on the advancement of integrated digital systems across the full aircraft, airport and airspace spectrum offering the complete “door-to-door” passenger experience.
- a world-class technology demonstration and maturation environment (physical and virtual) at industry scale suitable for research and technology programmes at Technology Readiness Levels one through to six.
- access to the Centre’s assets plus those of the global digital aviation research and technology sector to provide integrated technical and business systems solutions for accelerated market implementation.
- the opportunity to leverage UK and international research funding initiatives to scale up digital aviation research and technology development activities.





Cranfield University's unique aviation advantage

- Radar-Enabled Research Airspace
 - Connected to Operational Airport
 - Aerospace Integration Research Centre (AIRC)
 - Integrated Vehicle Health Management (IVHM) Centre
 - Safety and Accident Investigation Centre (CSAIC)
 - Intelligent Automation and Through-life Engineering Services
 - National Flying Laboratory Centre (NFLC) including research aircraft
 - Boeing 737-400 demonstrator
 - National Wind Tunnel Facility
 - Aero-structure Assembly and Systems Installation Laboratory
 - Autonomous Systems Laboratory
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Opportunity

In the 2015 Budget, the UK Government announced £400 million of funding for the Research Partnership Infrastructure Fund (UKRPIF) ‘...to support capital investment in scientific grand challenges. The Government can confirm that this will focus on proposals that not only meet expectations for excellent research, but also recognise the potential for local economic growth, local collaboration and leverage.’

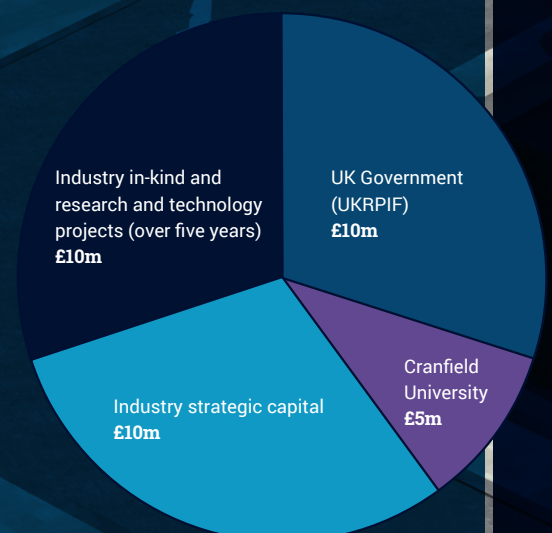
As a result of this announcement a two stage competition is ongoing that is seeking high-quality proposals with significant industry support that will address the research and growth objectives of the fund.

The proposed Digital Aviation Research and Technology Centre (DARTeC) fulfils all the objectives of the funding call. The initial proposal submitted in April has already been successful and a full proposal is under development for submission in December 2016.

It is estimated that the total investment requirement for the DARTeC is £35m over the first five year period of its operation.

On the assumption of a successful proposal submission the primary potential source for capital funding for the Centre will be the UK Research Partnership Investment Fund (UKRPIF) which would contribute circa £10m. Subject to Executive approval Cranfield University will make an infrastructure investment equivalent to £5m. This represents a potential total funding contribution towards DARTeC of circa £15m

The balance of the funding requirement will need to be obtained through a consortium of industry partners, providing variously both strategic capital investment and a mix of in-kind and research and technology project contributions for agreed research programmes over five years.





Further information


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