

Technology Strategy Board

Driving Innovation



Highly innovative technology enablers for aerospace

**COMPETITION FOR COLLABORATIVE R&D FUNDING
FEBRUARY 2012**

EPSRC

Engineering and Physical Sciences
Research Council



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COMPETITION FOR COLLABORATIVE R&D FUNDING

Summary

The Technology Strategy Board is to invest up to £5m in collaborative research and development that encourages innovative solutions to some of the higher-risk challenges facing the UK aerospace industry. Up to a further £1m may be available from the Engineering and Physical Sciences Research Council (EPSRC) for projects with a significant, high-quality academic research component.

The competition will focus on the key barriers or challenges at underlying levels that are identified in the National Aerospace Technology Strategy (NATS) and will support high-risk, high-potential approaches that might not otherwise have been accommodated in the large integration and validation projects more typical in the aerospace sector.

This is an open competition. We are looking to fund applied research projects attracting up to 50% public funding. Proposals must be collaborative and

business-led. We expect to invest between £500k and £1m in each successful project, although projects outside this range will be considered. Projects are likely to have a maximum duration of around two years.

This is a two-stage competition. It opens on **13 February 2012** and the deadline for registration is at noon on **14 March 2012**. The deadline for expressions of interest is at noon on **21 March 2012**. The second stage for invited applicants opens on **18 April 2012** and the deadline for completed applications is at noon on **23 May 2012**. A briefing event will be held in London on **22 February 2012**.

Background

The UK has the second largest aerospace industry in the world with significant capabilities in the key areas of: engines; airframe structures and materials; equipment; and air transport system integration. This position has been achieved through innovative stakeholders bringing leading-edge technologies to market. Today, the industry faces fresh challenges from globalisation, new competitors and climate change.

The growth of global air traffic over the last 50 years has been substantial, and forecasts indicate that it will continue at around 5% a year. The resulting demand for new aircraft that meet the exacting environmental and operational performance demanded by society presents an enormous opportunity for the UK.

Meeting this demand sustainably, affordably, reliably and safely depends heavily on continuous and intensive research, innovation and technology application.

The UK aerospace and air transport community has developed the National Aerospace Technology Strategy (NATS). NATS focuses on those areas of the aerospace sector in which the UK is globally competitive and/or world class. Each area has its roadmap detailing the sequence for

transition of research into technology development and validation through to products that feed the global market.

The Aerospace, Aviation and Defence Knowledge Transfer Network (KTN) actively maintains the technology roadmaps.

Scope

The aim of this competition is to stimulate businesses to overcome these barriers by:

- investing in high-risk, high-potential technology that may not be fundable from their own resources
- improving co-ordination and collaboration between the platform integrators (for example at the aircraft, engine and major system level) and the lower levels of the industrial supply chain, including academia. Participation of UK platform or system integrators in the projects is encouraged
- focusing on key high-risk areas and delivering high-potential solutions that underpin the aerospace industry's own strategic technology roadmaps
- investing in innovative or disruptive solutions that have the potential to: give the UK aerospace industry a competitive advantage in the global market; better position the UK aerospace industry for participation in EU research and technology projects and programmes; and complement existing or planned large-scale integration and validation projects, for example by adding new approaches or by reducing risk.

Projects should have a clear and visible route to exploitation and be supported and 'pulled through' by the platform integrators at the upper levels of the UK's global aerospace supply chain. They will generally be at the applied research stage leading to, and possibly including, some work packages of experimental development. We expect most projects to be starting around the 'proof of concept' maturity level and be developing towards 'demonstrator' level.





The projects must align with one or more of the technology areas below.

On board energy and power

- alternative power sources including energy harvesting and recovery
- energy storage in composite structures
- high-density, high-efficiency, harsh-environment power and control
- combustion efficiency of biofuels in 'lean burn'

Performance and health sensing, prediction and data transmission

- next generation sensors and integrated sensing systems
- high bandwidth data transmission
- performance prediction of 'as manufactured' composite structures to optimise assembly and repair
- predictive algorithm and decision-making techniques and technologies
- achieving a trusted, validated and certifiable process for health and usage management dependence.

Integrated surfaces and structures

- morphing aerodynamic control surface structures
- integrated multi-functional structures
- REACH compliant materials and coatings for wear, corrosion and fatigue protection
- composite leading-edge structural solutions for hybrid laminar flow control.

Flow control

- predicting transition in natural laminar flow wings due to 3D effects of underlying loaded structures
- real-time on-board sensing of laminarity over surfaces
- flow simulation at 'off-design' conditions.

Human factors

- tools and techniques to extract user knowledge in aerospace system design
- approaches to reduced and distributed crewing.

Communications and networks

- secure communications that enable system wide information management services for air traffic management
- disruptive technologies and innovations to improve future air traffic management surveillance operations
- cabin connectivity including on-board wireless network and broadband provision.

Note: Generic manufacturing technologies are out of scope for this competition, as they are potential areas for other competitions. The application of advanced or novel manufacturing approaches in the development of innovative solutions to the specific aerospace applications outlined above will be considered.

Funding allocation and project details

We have allocated up to £5m to fund collaborative R&D projects that are within the scope of this competition. The Engineering and Physical Sciences Research Council (EPSRC) has expressed an interest in supporting this competition. A total of £1m additional funding from EPSRC may be available for projects in line with the scope of this competition that contain a significant, high-quality academic research component and demonstrate added value to the existing EPSRC portfolio, by building on or being complementary to existing EPSRC research programmes. Applicants invited to apply for stage 2 of this competition are advised to clearly identify any potential such work-packages at that stage of their application.

Projects must be collaborative and can involve science-to-business or business-to-business interactions. Projects must be business-led; therefore academics can apply only as a collaboration partner in a consortium. The participation of system or platform integrators in the consortium is encouraged to ensure a clear route to exploitation.

Looking for partners to work on your project? Go to **_connect** (www.innovateuk.org/connect) to find collaborators and networks.

Applications are expected in the area of applied research, which can attract up to 50% public sector funding of total eligible project costs. All applications will be assessed on individual merit in accordance with the normal Technology Strategy Board process. However, in order to ensure coverage of the whole technology scope, we reserve the right to apply a 'portfolio' approach across the six technology areas, subject to applications meeting the required quality threshold.

Further information is available in the *Guidance for Applicants* (available from the Competitions section of our website www.innovateuk.org once you have registered) and at an optional briefing that will be held in London on **22 February 2012**.

Application process

This is a two-stage competition:

Stage 1: applicant submits an expression of interest

Stage 2: we invite selected applicants to submit a full application.

The competition opens on **13 February 2012**. The deadline for registration is at noon on **14 March 2012** and compulsory expressions of interest (EOIs) must be submitted by noon on **21 March 2012**.

Applicants submit a compulsory EOI which is assessed by an independent panel of experts. Selected applicants are then invited to submit a full application. The second stage for invited applications will open on **18 April 2012** and closes at noon on **23 May 2012**.

Note: All deadlines are at noon.



If you have any queries about the technical scope of the competition or the application process, please contact the Competitions helpline on 0300 321 4357 or email competitions@innovateuk.org

More information

To apply for this competition you must first register with us. You can do this by going to our web page for this competition at www.innovateuk.org under Competitions. When you register you will get access to all the supporting information you need to read before you apply, including the *Guidance for Applicants* and the application form.

Key dates

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| Competition opens | 13 February 2012 |
| Briefing day | 22 February 2012 |
| Deadline for registration | 14 March 2012 noon |
| Expressions of interest deadline | 21 March 2012 noon |
| Stage 2 opens (for invited applications) | 18 April 2012 |
| Deadline for receipt of full applications | 23 May 2012 noon |

Competition helpline:
0300 321 4357

Email:
competitions@tsb.gov.uk

Publicity

As part of the application process all applicants are asked to submit a public description of the project. This should adequately describe the project but not disclose any information that may impact on intellectual property, is confidential or commercially sensitive. The titles of successful projects, names of organisations, amounts awarded and the public description will be published once the award is confirmed as final. Information about unsuccessful project applications will remain confidential and will not be made public. E-mail pressoffice@tsb.gov.uk with any queries.

The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve quality of life.

Collaborative research and development is part of the Government's Solutions for Business portfolio.

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