Innovate UK Business Connect - KTP Platform (Current)
2792 Innovate UK KTP 50th Golden Awards

KTP006245 between Helitune and University of Bristol

Application name should be the nominee name (i.e. the name of the Partnership team, project, people or person who will be the recipient of the Award).

Confidentiality Declaration	✓ I confirm all contributors to this project have provided consent for the use of the information provided in this application to be used by the organisers in any promotion of the Awards. ✓ The information provided does not include comercially sensitive content that requires approval before it is made public.
Consent	✓ I am happy for any of the information provided to be used by the organisers in any promotion of the Awards

1. Knowledge with Impact
Criteria
In this category applications should demonstrate exemplary TCS / KTP credentials, with a particular focus on evidencing the impacts made, the transformative outcomes delivered, and the exploitation potential realised.
Eligibility
To be eligible for this award, your TCS / KTP participation must have begun after 1st January 1975 and have been completed by 30 June 2025.

2. Driving Innovation for the Future
Criteria
Here we wish to showcase the most creative, innovative and market-disruptive aspects of TCS / KTP. Applicants here should be able to demonstrate and evidence the nature, novelty and scale of progressive change enabled and exploited by TCS / KTP.
Eligibility
To be eligible for this award, your TCS / KTP participation must have begun after 1st January 1975 and have been completed by 30 June 2025.

3. The Art of Successful Collaboration
Criteria

This theme exemplifies the TCS / KTP ethos, here we wish to focus on the relationship aspects of TCS / KTP and how applicants can demonstrate a depth and breadth of reach and impact that has been facilitated through people and organisations working in partnership for a common goal.

Eligibility

To be eligible for this award, your TCS / KTP participation must have begun after 1st January 1975 and have been completed by 30 June 2025.

The shortlisted finalists for each category will be invited to attend the Gold Awards Gala Dinner on Wednesday, 29th October 2025 at the Kimpton Clock Tower Hotel in Manchester. Each shortlisted finalist will be allocated three Gold Awards Gala Dinner tickets, but will be responsible for covering their own travel and accommodation costs.

Are you applying for the Knowledge with Impact Category? Yes

About the Nominees

Describe the People/ Partners/ Participants involved including any available TCS/ KTP project details (mention here any relevant context such as Knowledge Base and Company Partner details, main company activities, markets, locations; also consider providing turnover, profitability, and headcount numbers where possible).

> Helitune is a private limited company that operates in the helicopter maintenance market. Based in Torrington in Devon, Helitune delivers advanced rotor track and balance, vibration analysis and health monitoring systems for helicopters and fixed-wing aircraft worldwide.
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> in 2005, Helitune had 35 employees and annual turnover of £2.2M with a profit before tax of £135k. Helitune's share of the helicopter maintenance market, dominated by the major US players including General Electric and Meggitt, was in decline and their client base was 90% UK-based.
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> It was at this point that Helitune made a strategic decision to partner on a 3-year double-KTP (KTP006245) with the University of Bristol with the ambition aim of solving a long-standing engineering problem of how to reduce damaging vibrations in helicopter rotors.
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> The knowledge base team was led by Nicholas Lieven, a Professor of Aircraft Dynamics whose career had previously been focused on academic research and publication in highly cited journals. At the time, Professor Lieven was Dean of Engineering. Professor Lieven's research had resulted in the development of a probabilistic search algorithm capable of finding globally optimum results to complicated optimisation problems. The KTP provided a unique opportunity to apply this algorithm in a real-world context.

The Strategic Context

What was the strategic challenge, need or opportunity that this KTP (or formerly TCS) nomination set out to address? Please outline the key purpose/ aims/ objectives of your partnership(s) and/ or the drivers motivating the Gold Award nominee(s)

> Rotor Track and Balance (RTB) tests and adjustments are crucial to reduce damaging and potentially dangerous blade vibration in helicopters. In 2005, the RTB process involved hours of test flights and painstaking mechanical adjustments with test flights accounting for 5-12% of all flying hours. As helicopter operating costs averaged £4,000-7,000/hr, depending upon aircraft type and flight patterns, there was an industrial target to reduce the number of RTB flights and maintenance man-hours. This required a new approach that better predicted the optimal set-up, so removing the trial-and-error iterations that were required at that time. Helitune realised that solving this industry challenge would win them customer contracts. Peter Morrish (Helitune's Engineering Manager at Helitune / KTP Company Supervisor), reflected that, prior to the KTP, "what we were looking at was a complex mathematical problem and we didn't have the knowledge in-house to solve that".
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> Initial discussions with Prof Lieven revealed that a mathematical paper he had published could provide the solution to the multiparameter, pseudo-inverse problem that was required to generate

an entirely new generation of RTB algorithms. KTP006245 was subsequently launched with the objective of developing next-generation analytical techniques for helicopter rotor track and balancing in order to minimise vibration. The KTP was successful in developing the revolutionary 'Minimum Flight Routine (MFR)' technology, incorporating algorithms developed by the University of Bristol team, which is now deployed in all Helitune products. At a stroke, the MFR technology halved the flight hours to carry out RTB testing and generated an unassailable technical lead in the market for Helitune – which it enjoys to this day.

As Philip Greenish (Chief Executive, Royal Academy of Engineering) observed, “this KTP transformed the prospects of a company that was falling behind its competitors. It is now world-leading with technology that will benefit its customers enormously” (2012).

Overview of Outcomes and/or Impacts for the Beneficiaries

Please outline the key achievements. Detail the impacts realised for the host Organisation(s), the Knowledge Base(s) and the Associate(s). What were the evidential impacts and outcomes realised alongside any evidence of changes in operations, culture, economic/ societal/ environmental benefits etc. How was TCS / KTP transformational in realising optimal outcomes and impact for everyone involved.

By 2010, Helitune's turnover had risen to £3.5M with profit of £629k which was directly attributable to the KTP. The success of the MFR algorithm had enabled Helitune to expand its product development activities, recruit 12 additional staff and open new markets. The MFR technology was a critical factor in securing customer contracts with the MoD, the South African Air Force and the German armed forces worth several million £s. Company expenditure on R&D also grew from £1.1M in 2007 to £2.2M in 2012, reflecting a culture-shift towards research-led innovation.

The legacy of the KTP has endured. By 2024, Helitune’s turnover had risen to £9.29M (400% growth from pre-KTP baseline) with 70% of business derived from exports. More significantly, the spill-over benefits of the KTP have been felt across Condition Monitoring Group Ltd (CMTG), the private management-owned parent company of Helitune and Helitune’s sister company, Beran. The group workforce has expanded from 35 in 2005 to 150 today, with offices in Germany, the USA and France. For one of the UK’s 20 poorest and most rural regions, this represents a unique and sustained industrial innovation success story for Northern Devon!

From the University’s perspective, the KTP project led to:

- a further 8 CRD projects with Helitune and Beran, providing £2.1m of research funding.

- a Royal Society paper taking the research from pure structural dynamics to the field of prognostics

- 2 international prizes for best papers at the 2012 American Helicopter Society and Australian International Aerospace Conference.

- Winner of the Best KTP Award 2012

- a REF 2014 impact case study

Both KTP Associates - Richard Hunt and Steve Pollard - subsequently joined Helitune on completion of the project, eventually becoming senior engineer positions in the company, and going on to lead their own product development and R&D projects.

WOW Factor!

What makes this nomination special in having realised its exploitation potential and why should it win the Knowledge with Impact Gold Award?

IMPACT ON INDUSTRY

MFR became the world-leading technology in RTB. There is still no viable alternative solution that can take real-time optical and vibration data from aircraft and calculate the adjustments needed to reduce whole-aircraft vibration.

Reducing test flights by 50% from seven or eight to four delivers savings of over £100k per aircraft per year and the reduced requirement for extended test flying provides clear safety benefits for aircrew.

Industry recognition was quick to arrive in 2012 with the KTP team winning 2 international prizes for best papers on MFR at the American Helicopter Society and Australian International Aerospace Conference.

IMPACT ON HELITUNE

MFR technology established Helitune as the global market leader in the helicopter maintenance market by offering customers a cost-effective, more accurate way to minimise damaging helicopter vibration. Since the KTP ended in 2011, Helitune has experienced 400% company growth and has participated in 4 further Innovate UK CRD projects.

As CEO Paul Knight stated in 2025: “The success of our KTP created an innovation culture within the business, helped secure long-term relationships with leading aerospace OEMs, enabled us to attract and retain talent, and established Helitune as a UK business competing internationally at the leading edge.”

IMPACT ON THE UNIVERSITY

KTP006245 enhanced Bristol’s reputation as a world-class centre for applied aerospace research leading to international prizes and follow-on funding.

The project provided an inspirational exemplar for industrial collaboration and the outputs also supported a REF 2014 impact case study.

Professor Lieven, as Dean of Engineering and Pro Vice-Chancellor, promoted the KTP 'success story' internally in an effort to encourage a shift in focus from pure research towards applied CRD. As an indicator of the resulting change in culture, Bristol’s industrial research income in aerospace has risen from £800k per year in 2011 to £32m in 2024.