

# Regional Case Studies



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# UKDI-DASA's UK-Wide Impact

## Introduction

Innovation thrives in every region of the United Kingdom, from established tech clusters to industrial heartlands, historic urban centers to rural communities. The Defence and Security Accelerator, part of UK Defence Innovation (UKDI-DASA) and Defence Science and Technology Laboratory (Dstl) is proud to fund and nurture this nationwide ecosystem of creativity, recognising that breakthrough ideas can emerge anywhere.

This booklet showcases 12 remarkable small and medium-sized enterprises (SMEs) - one from each region of the UK - who are transforming defence and security capabilities through their innovative work. These case studies represent just a fraction of the diverse supplier landscape UKDI-DASA and Dstl supports, demonstrating our commitment to finding and funding the best ideas regardless of geography.

By investing across the breadth of the UK, we ensure defence and security benefit from the unique perspectives, specialised knowledge, and industrial traditions that characterise different regions. This approach doesn't just deliver better solutions; it strengthens local economies, creates high-skilled jobs, and builds resilient supply chains throughout the nation.



Click on a region to visit the  
case study



# Regional funding in numbers

2016-2025

£18M	East Midlands
£45M	East of England
£37M	London
£8M	North East
£8M	North West
£2M	Northern Ireland

£28M	Scotland
£81M	South East
£54M	South West
£9M	Wales
£13M	West Midlands
£9M	Yorkshire & The Humber

£319M	Total Funding
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South West: Sentinel Photonics

# Laser Sharp



## Camera-based laser detection for battlefield threat awareness and laser eye protection system

Founded in 2019 by former Dstl scientists, Sentinel Photonics has transformed military laser detection through breakthrough camera-based technology that addresses critical battlefield threats - funded by UKDI-DASA and Dstl.

Traditional laser warning systems rely on photodiodes that struggle with continuous wave lasers and generate false alarms. Sentinel's LASERD MAX system uses unique camera-based detection of spectral and spatial laser features, providing comprehensive 360-degree coverage that can identify multiple laser types simultaneously; even in challenging daylight conditions.

"What makes our system unique is the ability to detect many different types of lasers simultaneously in a clustered background," explains **Sean Tipper, Chief Technology Officer**.

Sentinel also developed FROST (Filters for Reduction of Optical Signature Thresholds), protecting users' eyesight from laser damage whilst preventing detection by enemy scanning systems. This technology achieved commercial success through integration into KS1 rifles entering UK Armed Forces service via the Hunter programme.

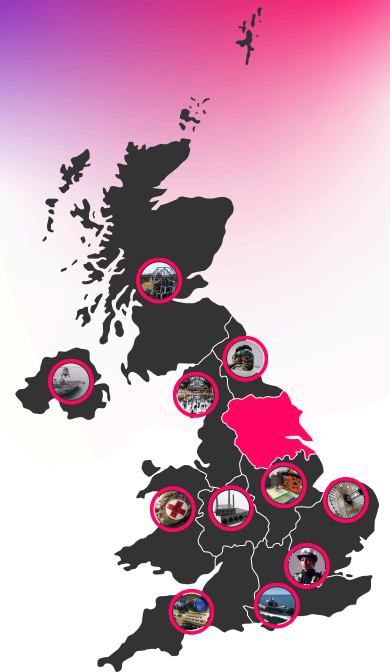
UKDI-DASA and Dstl support proved instrumental throughout Sentinel's journey. Early UKDI-DASA projects in 2020 provided critical funding enabling full-time technology development.

When growth required team expansion, UKDI-DASA's Defence Innovation Loans in 2022 transformed the company from a founder-led startup to a 20-person enterprise capable of delivering advanced defence technology at scale.

Sentinel has expanded across NATO nations through strategic partnerships in Poland, Netherlands, Romania, Denmark, Australia, and France. "There's a direct link from UKDI-DASA-funded work to us making sales and getting partners into markets," remarks Tipper.



# Robot Revolution



## Micro factories bringing manufacturing resilience to defence supply chains

With the help of UKDI-DASA funding and Dstl technical support, Rivelin Robotics has developed a micro factory technology that automates post-processing of additive manufactured (AM) parts, addressing supply chain vulnerabilities across defence and commercial sectors.

Currently, AM parts require hand-finishing to remove leftover edges, excess material and surface imperfections before use. This manual process creates barriers through human error, time, product variability, and safety risks.

Rivelin's micro factory solution uses proprietary control systems that provide industrial robots with human-like dexterity and perception. The system can process components across multiple materials - including metals, polymers, and ceramics - while handling diverse part geometries.

"We've created a robot with human-like intelligence and dexterity that finishes components faster and more consistently than manual methods, eliminating the economic penalties of traditional hand-finishing," explains **Robert Bush, Founder and CEO**.

The defence implications are significant. For example, consider naval operations where ships require spare parts. Crews may be forced to wait weeks for deliveries or pay for costly local machining costs. In contrast, Rivelin's technology enables on-demand manufacturing eliminating supply chain dependencies and saving money for the tax payer

The company has successfully expanded from aerospace, medical, automotive, and energy sectors into defence, now spanning customers across Spain, France, Germany, and the United States. With micro factories sold to five customers, Rivelin exemplifies how UKDI-DASA and Dstl support transforms innovative concepts into deployed defence capabilities addressing real operational challenges and supply chain resilience requirements.





# Safety in Numbers



AI web application that helps organisations combat complex crimes, such as child exploitation.

Trilateral Research has developed STRIAD, a platform for Responsible AI designed to create explainable AI-enabled web applications that support organisations in addressing complex issues such as human trafficking, child exploitation, and pharmaceutical crimes.

Since 2018, Trilateral has progressed from a proof of concept to a product launch through three funded projects. The London-based SME partnered with defence stakeholders to create ethical AI solutions that uphold transparency and explainability in complex, sensitive decision-making environments.

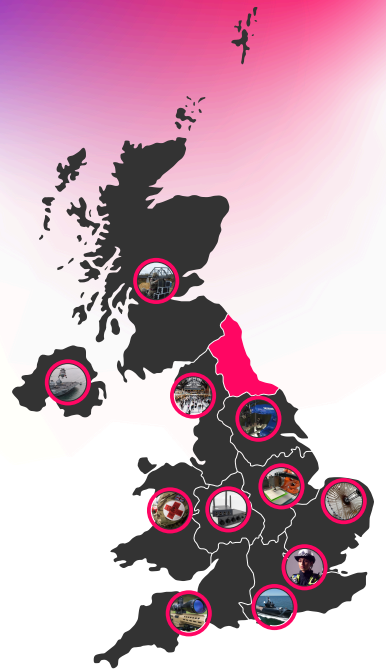
**Dr Hayley Watson, Director of Sociotech Innovation at Trilateral Research**, explained: "UKDI-DASA provided us the space and time to innovate and co-design with defence users, which enabled our development of sociotechnical methods for building ethical AI to combat complex societal problems."

In subsequent customer deployments, for Greater Manchester Combined Authority, the STRIAD:Honeycomb application was used to enable secure data sharing with the police and civil society organisations to better understand human trafficking risks. Natural language processing, network analysis and geo-spatial insights providing unique insights into trafficking routes, push/pull factors, victim vulnerabilities, victim needs, geographic trends and localised hotspots.

Working with the Medicines and Healthcare products Regulatory Agency (MHRA), STRIAD was used to replace manual investigation with real-time web surveillance and explainable intelligent risk analysis through Natural Language Processing, cutting response times from 30 hours to 3. Designed with MHRA investigators, the model empowers MHRA to act swiftly and protect public health.



# The Sky's Not the Limit



## VRAI's data capture and analysis technology helps improve pilot and MLRS crew training

With the help of UKDI-DASA funding and Dstl technical support, Newcastle-based VRAI has developed groundbreaking technology - HEAT - to capture, store, analyse and visualise data generated during training.

During Project iDAS they combined virtual reality simulation with advanced data capture to transform RAF pilot training. The company recognised critical gaps in fast jet training, where instructor availability limits training capacity and subjective observation affects consistency.

Traditional pilot training faces significant constraints: each instructor can only manage two or three students simultaneously, creating bottlenecks in pilot development. Assessment relies heavily on subjective observation, making standardised training quality difficult to achieve.

VRAI's HEAT solution captures rich datasets from across the training spectrum in order to improve human performance.

"We believe the technology we're developing will allow us to bring genuinely game-changing advancements in how training is delivered and its success is measured," explains Niall Campion, VRAI Founder.

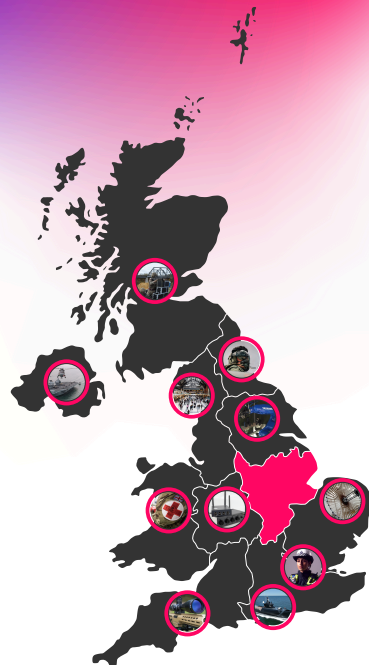
"Without UKDI-DASA funding and Dstl support it would have been impossible for us to bring this product into the UK defence supply chain."

Further developing the technology, VRAI has since secured contracts for Multi Launch Rocket System (MLRS) tactical simulators through UKDI-DASA's 1st Customer Fund.

In project RAPIDD, funded through the UKDI-DASA DTEP programme, VRAI and BAE Systems are deploying HEAT across the spectrum of Hawk training devices - from desk based systems right up to the live aircraft.



# Armour Automation



## Revolutionary robotic system transforms ceramic-composite armour manufacturing

Foresight Innovations Limited has developed SoniJoin, a ground-breaking automated system that transforms ceramic and composite armour manufacturing. Founded in 2016 and partnering with Nottingham Trent University and Hephaestus R&D consultants, the company automates the traditionally manual process of joining ceramics to composite backing materials in body armour and vehicle protection systems.

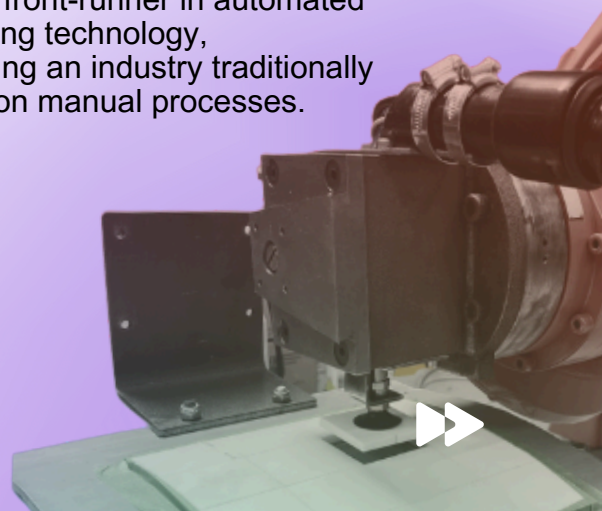
The innovation centres on a four-metre-high robotic pick-and-place system that precisely positions ceramic tiles and composite materials, applying their SoniJoin process to create enhanced structural integrity. This automated system constructs materials in three-dimensional patterns, enabling bespoke armour solutions whilst significantly improving manufacturing productivity and repeatability.

"UKDI-DASA's funding and Dstl support has been transformative for our technology development," explains **Dr John Weightman, Director, Foresight Innovations**. "The support enabled us to progress from concept to a proven system that delivers both enhanced performance and manufacturing efficiency."

Through three funding phases beginning with a Dstl competition in 2018, Foresight Innovations progressed from concept to Technology Readiness Level 5 with proven ballistic performance. Range trials as part of their UKDI-DASA project also demonstrated that the automated joining solution can produce armour systems that perform just as well as existing solutions, but now with significantly more speed and lower costs.

Defence applications include personnel protection, vehicle armour, aircraft systems, and naval platforms across all environments. Beyond military uses, SoniJoin addresses civilian security sectors including VIP vehicles, cash-in-transit systems, and police response units where economic constraints limit protective options.

Foresight Innovations has positioned itself as the front-runner in automated armour joining technology, revolutionising an industry traditionally dependent on manual processes.





# Cutting Edge

## Modular trauma training models revolutionising combat medical education



Swansea University spin-out Trauma Simulation has developed ground-breaking whole-body training models that transform how Combat Medics and Medical Emergency Response Teams prepare for life-saving interventions. Founded by Professor Ian Pallister, the company recognised critical limitations in existing trauma training solutions that relied on unrealistic single-use mannequins, animal materials, or cadavers.

Traditional training methods prove costly, unrepeatable, and often fail to represent realistic trauma injuries or enable comprehensive intervention practice. Most models focus solely on male physiology, limiting training effectiveness for diverse patient scenarios.

Trauma Simulation's innovation comprises a life-like silicone model featuring whole-body carrier-base including head, neck, airway, lungs, thorax, pelvis, and upper thighs. Reusable modules insert into the base, enabling training for multiple trauma procedures including pelvic haemorrhage treatment, junctional haemorrhage control, windpipe insertion, fracture stabilisation, and incising burnt skin.

"The support I have received through UKDI-DASA and Dstl has been game-changing," explains **Professor Ian Pallister, Founder of Trauma Simulation**. "This support has enabled me to develop advanced damage control surgical simulation models currently being used in Military and Civilian education courses."

Trauma Simulation progressed from a single-employee start-up to integral component of the Military Operational Specialist Teams Training course. The modular system enables authentic trial-and-error learning, with users identifying medical issues realistically rather than anticipating predetermined interventions.

Models have been deployed to training establishments, troop deployment locations, and aboard aircraft carriers. Recent UKDI-DASA funding also supported development of female anatomy models, ensuring medical teams prepare effectively for diverse patient scenarios whilst enhancing simulation exercise relevance and flexibility.





Northern Ireland: Kinsetsu

# Tracks of my Peers



## Kinsetsu's personnel tracking technology from concept to service in the Royal Navy

Kinsetsu, a Belfast-based SME, was funded in 2019 through the Get the Ship in Shape Themed Competition.

Royal Navy vessels are highly complex and operate in extremely hazardous environments, with crews that can number into the thousands. However, navies around the world, including the Royal Navy, use a simple manual peg in/out board to record the number of people on board a ship. This system lacks digitalisation, which makes it difficult to efficiently locate and track personnel and visitors on larger vessels, such as the Queen Elizabeth Class Aircraft Carriers.

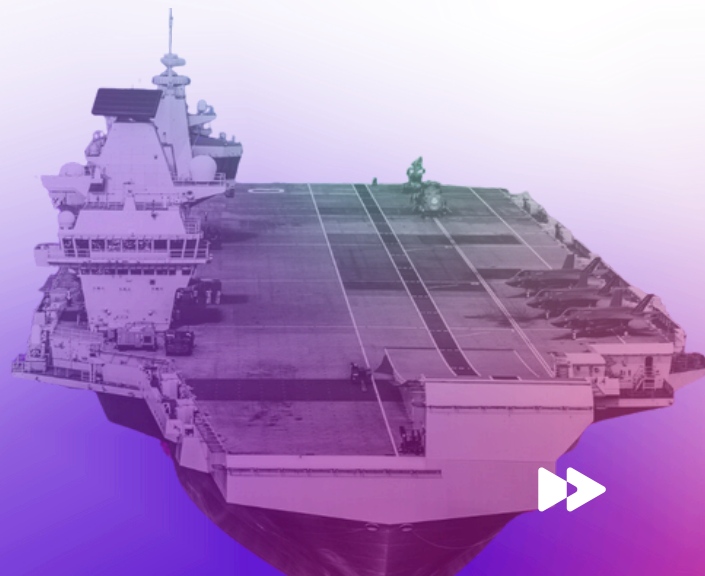
Kinsetsu's innovation comprises a network of ruggedized deckhead and bulkhead-mounted terminals, placed at ingress and egress locations and high-traffic areas throughout a ship. The crew use their ID card at a terminal when they enter or leave the ship. Visitors are provided with a visitor card to capture arrival and departure, providing traceability of their visit.

Awarded an MOD commercial contract in 2022, their K-Track technology is now in service on HMS Queen Elizabeth and HMS Prince of Wales.

UKDI-DASA and Dstl support has been transformative for Kinsetsu. From just five employees focused entirely on non-defence work, they've grown to 25 staff and tripled their turnover. The company continues exploring new defence opportunities in the UK, Europe, and North America.

### **Co-founder Jackie Crooks said:**

"UKDI-DASA and Dstl have been invaluable in raising our profile and enabling access to the defence and security sector, which we could never have achieved on our own. Their collaborative approach, pairing us with subject matter experts from Dstl and the Royal Navy, informed our deployment of the solution within the defence operating environment."



# Block by Block



## QUICKBLOCK's innovative building blocks for Force Protection

Funded by Dstl through the UKDI-DASA Themed Competitions Take Cover: Phases 2 and 3, Scotland-based QUICKBLOCK's innovative building block system enables the Armed Forces to build defensive structures rated for ballistics and blast protection.

QUICKBLOCK's solution started its life as a civilian product, made from a resilient plastic, for use cases such as light construction, agricultural applications and humanitarian aid structures.

With Dstl and UKDI-DASA funding, QUICKBLOCK was able to streamline the design for military use and incorporate armoured materials into the system. Extensive ballistic and blast trials have proven the overall effectiveness of the system, leading to the development of additional solutions like hostile vehicle mitigation barriers.

Since working with UKDI-DASA, QUICKBLOCK has achieved remarkable success. The SME won the Innovation Award 2024 at the International Security Expo for their armoured block. Their durable plastic blocks were used to build realistic training scenarios for UK-led medical training of Ukrainian Armed Forces, The British Army has also adopted QUICKBLOCK to enhance its Close Quarter Battle (CQB) training environment at the Infantry Battle School in Brecon.

Additionally, QUICKBLOCK secured investment through a UKDI-DASA Defence Innovation Loan. This funding enabled the company to relocate their supplier base to Yorkshire, strengthening their supply chain and avoiding recent shipping disruptions in the Red Sea. The UK move also strengthened their environmental credentials: QUICKBLOCKS are made entirely from recycled British plastic waste with minimal transportation emissions.

**QUICKBLOCK CEO, Andrew Vincent said:** "We are incredibly grateful for the support from UKDI-DASA and Dstl. The project rapidly accelerated the development of our product for the defence market and allowed us access to end-users that we would otherwise not have had. QUICKBLOCK's beauty is its simplicity, yet it has the potential to save many lives. We have developed a system which can act as a single resource to solve a variety of problems."



NorthWest: Createc

# Crowd Watch

## Createc's AI and LiDAR innovation helps enhance crowd safety



Picture this scenario: a security officer monitors multiple screens; analysing footage of commuters at a bustling railway station. Suddenly, a section of the crowd startles and steps back. It could be as simple as someone spilling their coffee and others reacting, passengers rushing to catch a train that's just been announced, or, in a worst-case scenario, a criminal brandishing a knife and causing panic. During critical moments like this, time is of the essence. But with potentially hundreds of hotspots to manage in a busy station, it can be difficult to quickly identify danger areas.

A system that enables security operators to swiftly adjust to changing circumstances and enhance crowd surveillance in busy areas can be crucial for saving lives.

However, this is a complex challenge. Suspicious behaviour can manifest in various ways, and crowds naturally react diversely to different situations. Another hurdle is in delivering a user-friendly package to customers to ensure that usage and upkeep are simple and intuitive.

Createc has effectively addressed these obstacles with support from UKDI-DASA, refining their solution over multiple projects, which is now being implemented by Network Rail.

The solution uses AI and LiDAR to create an anonymous track for each individual in the observation area, with the data being sent to cloud servers for analysis and to generate alerts for staff.

The system enables security management to gain a detailed understanding of activities in all sensor-covered areas.

Following the successful trials, Network Rail has acquired the autonomous crowd monitoring technology and has deployed it at Kings Cross Station

**David Clark, Director of Operations, Createc said:** "Createc has had a tremendous experience working with UKDI-DASA, particularly with Situate, our Anonymous Crowd Monitoring innovation. UKDI-DASA's services have provided a solid platform for our innovation to grow and evolve. Their support has been instrumental in helping us engage with potential customers and expand our reach."





# Disconnect to Protect



## A West Midland cyber security company goes global: Physical Connection Control against Cyberattacks

It's the dead of night and a remote site is under cyber-attack by an unknown assailant. The attack has the potential to spread from network to network, revealing critical information and overcoming even the most advanced cybersecurity software.

In a situation like this, the best course of action may be to physically pull the plug on the network to stop the attack from spreading. However, this requires someone on site to take action and physically disconnect hardware, which isn't always possible or efficient.

Better yet, don't let the system be seen to begin with. Goldilock's FireBreak solution can perform both of these functions as the First Line and Last Line of defence/

With the help of UKDI-DASA funding and Dstl technical expertise, Wolverhampton-based SME, Goldilock, has developed a hardware cyber-defense system that allows operators to physically connect or disconnect any network or device from a system – all from a remote location – and in a control channel outside the view of the attackers

**Stephen Kines, Co-Founder, Goldilock said:** "In our startup days, UKDI-DASA's Innovation Outline process made it possible for a smaller and resource-strapped company like us to get a chance to build our ideas into something that has now become a global product."

Goldilock's support from UKDI-DASA has generated ongoing external funding, as well as ever growing attention from major commercial organisations around the world in tandem with branches of the MOD, US DoD, Cabinet Office, NATO, and Ukrainian Cyber Command, where the innovative technology is already being deployed





# Space Unfolded



## Deployable antennas transforming satellite capabilities from cubesat to constellation

In the vastness of space, a miniaturised satellite about the size of a domestic washing machine unfurls a dish antenna with millimetre precision while delivering a 16-fold increase in area.

Within seconds, this compact satellite package transforms into a sophisticated synthetic aperture radar (SAR) that can take detailed, high-resolution pictures of Earth from space. This breakthrough represents Oxford Space Systems' revolutionary approach to space technology.

"We specialise in taking antenna technology that would normally only fly on car-sized spacecraft and putting it onto something the size of a shoebox," explains **Chris Bee, Business Development Director**. "By bringing down launch costs and enabling constellation approaches, we're completely changing how defence organisations think about space-based intelligence gathering."

Oxford Space Systems first secured Dstl funding through UKDI-DASA to develop the parabolic antenna technology in 2019, providing crucial early-stage funding when the company was still refining the core concept. This initial investment enabled the team to develop their signature wrapped rib antenna manufacturing processes and establish in-house mesh knitting capabilities.

Subsequent UKDI-DASA funding and Dstl technical support in 2022 and 2023 through the UKDI-DASA Defence Innovation Loans scheme supported the crucial next step: getting the antenna hardware into space. The loan enabled Oxford Space Systems to develop and launch their first in-orbit demonstration – a critical milestone in an industry where credibility depends on space launch experience.

Oxford Space Systems' journey reached a huge milestone in 2025 with their selection for the Oberon project, which aims to launch a demonstrator for an operational high-resolution synthetic aperture radar system. As a supplier to Airbus, who will provide the payload and spacecraft, Oxford Space Systems is supplying the critical deployable antennas which make high-resolution imagery in any weather during day and night possible.



# Defying Drones



## LiveLink Aerospace's counter-UAS sensor helps protect Royal Navy ships

Cheap, accessible commercial-off-the-shelf drones present a serious challenge to defence and security. This is exacerbated by their limited radar signature, making them difficult to detect by traditional air defence systems.

This is a challenge area that was recognised by Hampshire-based SME LiveLink Aerospace, who first engaged with UKDI-DASA in 2020 through the Dstl competition Countering Drones (Phase 2).

Run on behalf of the Home Office, the competition sought counter unmanned aerial system (C-UAS) innovations that can be integrated at fixed-site and mobile-site scenarios.

The end result was a low-cost, flexible and scalable sensor unit for tracking multiple UAS. Dubbed Passive Detection & Ranging (PDAR).

In 2022, LiveLink Aerospace adapted their C-UAS technology for a Royal Navy tender which sought a maritime solution for C-UAS. After a competition demanding field trials, the Royal Navy purchased over 10 C-UAS systems for frontline ships.

LiveLink Aerospace achieved another success when their technology was the first to be trialled aboard the XV Patrick Blackett during the Royal Navy tender.

This shows how UKDI-DASA funded innovations are making a big impact, while also emphasises how Defence can leverage civilian innovations discovered by UKDI-DASA through its security-focused competitions and services.

**Aleks Kowalski, LiveLink Aerospace's Business Director said:**  
"Not only did UKDI-DASA and Dstl have the vision to support a high risk project where the commercial market was failing, but working with UKDI-DASA provided wider benefits. The project liaison staff provided by UKDI-DASA were excellent. They provided constructive criticism when required, represented the 'voice of the customer' to challenge the development team, and much appreciated enthusiasm and encouragement throughout."



# Get in touch



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