Ministry of Defence

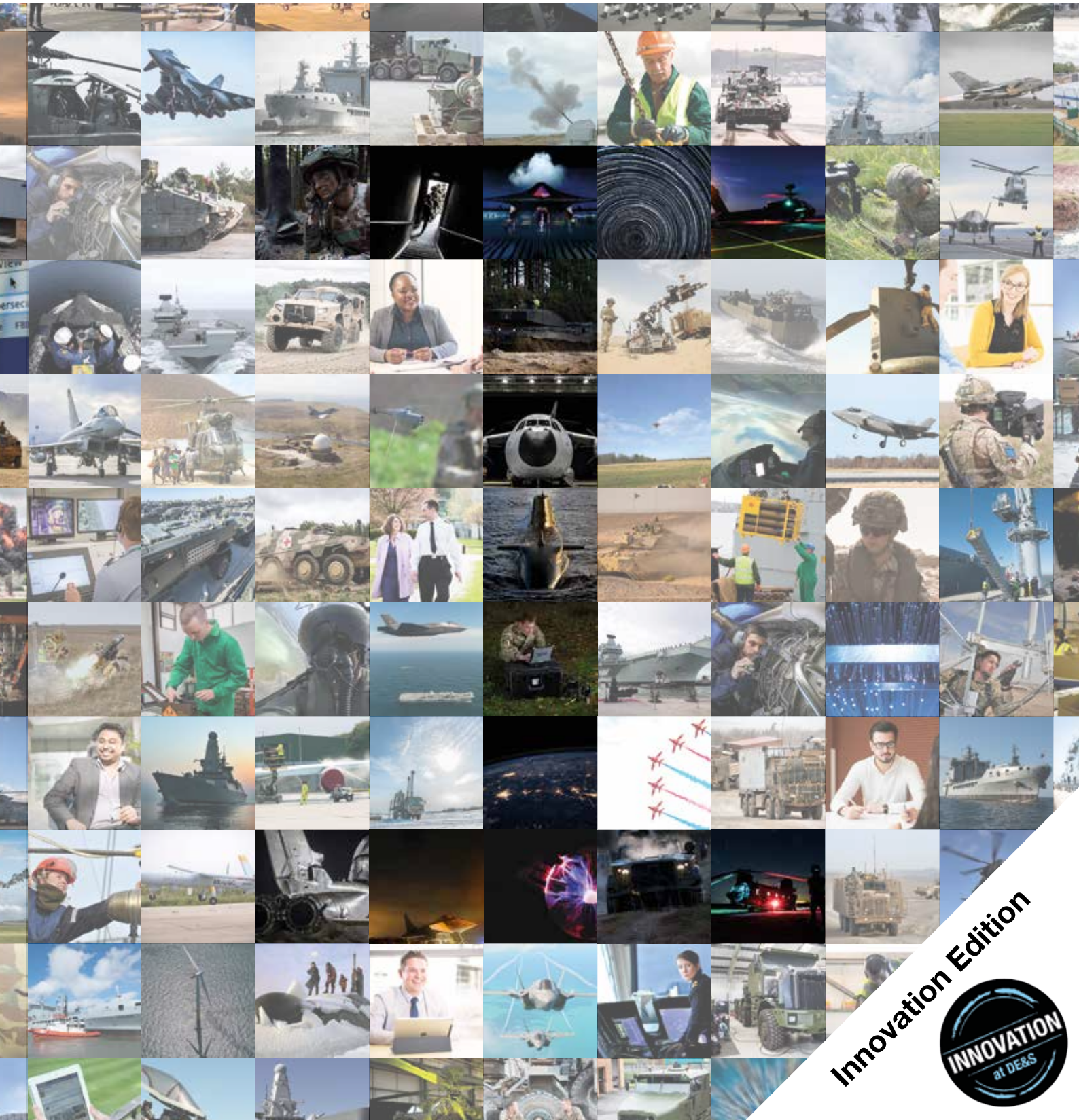
de&s

www.des.mod.uk

desider

Issue 128
March 2019

the magazine for defence equipment and support



Innovation Edition

INNOVATION at DE&S

Foreword

Welcome to a special edition of Desider that celebrates the drive at DE&S to be at the forefront of innovation, encouraging fresh thinking across all corners of the Defence community.

"These programmes will require all of us at DE&S to challenge ourselves and work with the front line commands and industry to come up with even better and more innovative ways of thinking leading to delivery"

By Sir Simon Bollom, CEO

Inside you will read about some of the many inventive programmes and projects DE&S teams are currently delivering, including Unmanned Aerial Vehicles keeping firing ranges safe, Team Tempest's work to develop the UK's next generation fighter aircraft and the introduction of state-of-the art seats that reduce the physical impact on small boat users.

We also have contributions from some of the key people across the MOD involved in making sure innovation is at the heart of everything the department does – today and into the future.

These include DE&S' very own Tim Rowntree, Director Engineering and Safety, as well as Vice-Chief of the Defence Staff General Sir Gordon Messenger, Director Defence Innovation Clare Cameron, MOD Chief Scientific Adviser Simon Cholerton and Deputy Chief of Defence Staff (Military Capability) Air Marshal Richard Knighton.

There are also case studies with members of the DE&S Technology Office underlining what a dynamic and energising place DE&S is to work at and the potential to harness innovation to the benefit of our forces in the front line.

We have been given a key role by the Defence Technology and Innovation Board in delivering some very significant future innovation initiatives, including the 'Spearhead' programmes. The article by Geoff Spour, DE&S' new Spearheads Portfolio Team Leader, gives an excellent outline of this activity.

These programmes will require all of us at DE&S to challenge ourselves and work with the front line commands and industry to come up with even better and more innovative ways of thinking leading to delivery. Over the years, DE&S has built up a track-record of applying innovative thinking to deliver solutions to urgent operational requirements and to solve complex problems in our core programmes. We can build on this experience and knowledge and look to deliver greater levels of innovation to the front line as a matter of routine.

We must adopt a more agile approach to Defence to provide the very best equipment and support to our armed forces, who have the vital role of protecting our nation against ever-changing and increasingly serious threats.

Last month saw another impressive list of DE&S achievements. I was delighted to visit DECA Sealand to congratulate our workforce on securing the deal that sees the UK awarded £500 million of work by the US Department of Defence to support the cutting-edge F-35 jets as a global repair hub.

It is an enormous privilege in my role to meet DE&S teams and I am always struck at the dedication, pride and positivity on show.

Our Flight Simulators and Synthetic Trainers team delivered a £44 million High- G training facility at RAF Cranwell that will revolutionise fast jet pilot training in the Royal Navy and RAF.

And the first fuel tanks supporting the UK's new fleet of submarine hunting aircraft – the RAF P-8A Poseidon fleet - have rolled off the production line in Cambridge.

Finally, I must recognise Devonport super apprentice Phoebe Loveridge. Phoebe won the MOD Apprentice of the Year award last month after already winning the National Institute of Engineering and Technology title, and the Bridgwater and Taunton College Apprentice of the Year.

What a credit you are to DE&S.

Editor:

Tom Morris - 9352 37888 or
0117 9137888
tom.morris114@mod.gov.uk

Innovation edition assistants:

Rachel Crease and Clive Langmead

Contributors:

Laura Martin Plaza, Louise Allford, David Copsey, Tom Knight, Hugh Woodward, Brigadier Graham Finch, Alex Barnett, Derek Shaw, Samantha Nicholas, Vicki Lucas and Major Chares Ross

Photography and Design:

Katherine Williams, Charlie Perham, Jack Eckersley, Beth Squire, Andrew Linnett and Mark Hawke

Distribution Manager:

Dick Naughton - 9352 34342 or
0117 9134342
Dick.Naughton501@mod.gov.uk

Advertising Manager:

Edwin Rodrigues
edwin.rodrigues@
noahsarkmedia.com
+44 (0) 748 257 1535

Printing

cds.co.uk

Contents

On the cover

Innovation edition

Photo by:
Various from Creative Team, Defence Imagery and industry

www.gov.uk/government/publications/desider-2019

Twitter: @DefenceES

Facebook: @DefenceES

LinkedIn: Defence Equipment & Support

YouTube: DE&S

Tim Rowntree, Director Engineering and Safety, gives three reasons why the Defence Innovation challenge is not only necessary – but a huge opportunity for DE&S

This edition of Desider showcases some of the amazing innovation already happening across DE&S. With its experience right across the Defence Acquisition portfolio, from the smallest commodity items to the Queen Elizabeth Class Carriers, DE&S is well placed to play a key role at the very heart of the Defence Innovation initiative. These are, simultaneously, both exciting and daunting times for UK Defence. Exciting because we have the potential to equip our armed forces with step-change technologies to bring new and highly potent capabilities; daunting because most of today's high-end technologies are equally available to our enemies as to ourselves. The warning signs of cyber, drones and artificial intelligence are out there, so it is vital that we embrace these new developments, move quickly and maintain the edge. This will mean embracing risk and finding new, more agile ways of working. In partnership with Head Office, industry, the Defence Science and Technology community and the Front Line Commands, DE&S can do this. I see three key reasons why the Innovation challenge presents a great opportunity for everyone in DE&S:

- **We already have a strong capability to build on**, with professional depth across all functions within a strong programme management culture and framework. Innovation happens in an environment where everybody gets involved, taking on a shared challenge with true diversity of thought. DE&S provides this environment, stimulated, where appropriate, by greater empowerment, acceptance of higher risk and the willingness to experiment.
- **We are perfectly placed to support both Head Office and the Front Line Commands**. From its central position, DE&S can bring coherence across all areas of Defence and provide an expert commercial interface with industry. This will enable us to work cooperatively with the Front Line Commands, Defence Science and Technology and Head Office to develop the best and remove duplication while protecting our longer-term interests. Although innovation requires freedom of thought and flexibility, it also needs strong discipline and a high level of competence. This will be essential to feed the right initiatives and to decisively stop work that is not productive.
- **DE&S has already been given a key role right at the centre of the Defence Innovation programme**. With the full support of our CEO, DE&S has clearly signalled that it is 'open for business' in the innovation space. Recognising this, the December 2018 Defence Technology and Innovation Board agreed that DE&S will play a leading role in supporting the Front Line Commands and Head Office in the delivery of a group of 'Spearhead' programmes. These Spearheads are a high-profile portfolio of projects that will develop and test our ability to deliver cutting-edge capabilities faster and more effectively. This puts DE&S at the centre of the Innovation challenge.

DE&S is well placed to play a key role at the very heart of the Defence Innovation initiative

INNOVATION at DE&S

Taken together, these three reasons give DE&S a massive boost. The future looks bright!

Defence Innovation - views from the key players

Vice Chief of Defence Staff General Sir Gordon Messenger

I was delighted to be asked to say a few words for this Desider innovation issue because I am convinced of the pivotal role that DE&S will play in the modernisation of Defence. The simple fact is that, to provide effective defence against the ever-evolving threats of the 21st Century, we need to think and do things differently – we need to be innovative.

This era of rapid technological development will require a new approach to the way we procure and support our equipment. Dynamism and flexibility will be critical facets of a system that ensures a strategic edge to counter threats and deter aggression before situations escalate. Such an approach requires us to be a learning organisation, to adapt as we go and to have the discipline to know when to stop projects that are not delivering. We will need agility, creativity and a willingness to take the right amount of risk. I recognise we have some way to go.

People are the critical enabler of success in this endeavour. Innovation and people must be inextricably bound together through an 'innovative by instinct' culture in the DE&S of the future. Such a culture will be essential in developing the modern, energetic, future-looking workforce that Defence needs, and in attracting and retaining the young talent and relevant skills that we will depend upon for future success. We in Defence must also leverage our unique offer and proactively foster the ability to excite and inspire our people. Innovation has to be at the heart of this.

DE&S has grasped the challenge and taken a key role at the heart of the Defence Innovation Initiative. This includes supporting the delivery of the Spearhead programme, designed to test and develop our ability to balance risk against benefit in a much more dynamic environment than we are used to. We must experiment to learn and to succeed. We must also be prepared to fail, but we should aim to fail quickly and safely, learn valuable lessons and move on. This will test all of us in Defence Acquisition, including Head Office, the Capability Customer, Defence Science and Technology and of course industry. It will drive us to find new ways of working to bring us cutting-edge ideas and technologies to protect our future. These are exciting times, and in my role as Chair of the Defence Technology and Innovation Board I am delighted to have the great expertise and commitment of DE&S on board for the journey and the challenges ahead.

Deputy Chief of Defence Staff (Military Capability) Air Marshal Richard Knighton

"As a department we need to be more comfortable embracing risk to find new, agile ways of delivering capability to the front line. DE&S will be key to making this happen and I welcome their strong support."

Clare Cameron, Director Defence Innovation

"I am delighted to be the new Director Defence Innovation. One of the first daunting things I had to do was take the Spearheads Portfolio to the Investment Approvals Committee – all the collaborative work that the teams had done already meant we got the approval. However, it proved that the very top of the MOD is receptive and prepared to test themselves and display innovative behaviours. So we now need to live up to the faith that has been put in us, and empower the teams to deliver this portfolio. While the Spearheads portfolio is the first case of its kind, we should continue challenging ourselves to break down the barriers to innovation and promote the innovative behaviours that we want to see in our workforce."

Simon Cholerton, MOD Chief Scientific Adviser

"Science and Technology has never been more important for the armed forces. With the pace of technological change, we need innovative and agile projects, such as the Spearhead projects, to ensure we can pull through latest cutting-edge technology from both the civil sector and the MOD core research programme."

An absorbing way to reduce the physical toll experienced by boat crews

Pictured: CSS Boats team leader Alistair Hughes at Portsmouth (Picture by Beth Squire)

During some manoeuvres, the g-forces felt by boat crews on military operations can be similar to those felt by Formula 1 drivers.

With this stark fact in mind, the DE&S Commercially Supported Shipping (CSS) Boats team has been discovering ways to upgrade hundreds of in-service boats to make them safer for operators on the front line.

The majority of boats have fixed seats, meaning users generally have to absorb shock and vibration through their own bodies. Harsher conditions and sea-states can even encourage boat users to stand and use their knees as shock absorbers rather than rely on the seats to absorb the impact.

With the help of the Naval Design Partnering team, the Boats team put their expertise to work, leveraging knowledge of the market to seek to buy and fit state-of-the-art suspension seats for a range of different craft.

The problem? The industry tends to be dominated by small companies making largely anecdotal claims about the performance of their products – there was a lack of objective, scientific measures due to the absences of any recognised British or international standards.

Designing the protocol called for some lateral thinking and confident engineering, but the result was a framework which had lasting benefit not only for us but the wider Defence community

Alistair Hughes, CSS Boats team leader

How, then, could a level playing field be created?

To begin, the team developed an entirely new testing protocol, specifically designed to allow objective performance measurements.

Subsequently, in 2016, more than 20 seats from several different manufacturers were tested, with results forming a key element of seat selection for each type of boat.

CSS Boats team leader Alistair Hughes said: "The key for the new protocol was to discover and measure improved performance without causing knock-on effects, or even harm, in other areas.

"Designing the protocol called for some lateral thinking and confident engineering, but the result was a framework which had lasting benefit not only for us but the wider Defence community."

The test which the MOD developed attracted interest from several partner nations, including Canada and Holland.

Ultimately, the protocols were used to select seats for more than 250 UK boats, including those which perform essential roles, such as the Arctic models used by the Royal Marines, the Pacific models employed by the Royal Navy, the Gibraltar Defence Police interceptors, diving boats, and Riverine Patrol and Rigid Raiding craft.

Alistair said: "As with all design challenges, there was plenty of wider context to consider.

"Several boat types needed modifications to accommodate the additional weight of the seats, while comprehensive testing was needed to ensure safety and that they could perform essential military operations, such as delivery by air.

"The MOD's work in this area has been genuinely world-leading, vastly improving the mitigation of shock and vibration for our people who operate in small boats."

Seats have already been fitted to over 100 craft, with the remaining 150 boats to be completed by March 2020.

First two cutting-edge Ares armoured vehicles delivered to British Army

Pictured: The Ares vehicles were delivered to the British Army at Bovington (Picture courtesy of General Dynamics UK)

The first two Ares vehicles – variants of the Ajax family of armoured vehicles – have been formally delivered to the British Army.

The handover, on February 14, came after the successful completion of general acceptance testing at the General Dynamics' factory in Merthyr Tydfil, Wales.

Following the handover, the two vehicles will be based at the Armour Centre in Bovington, Dorset, which is the British Army's centre of excellence for training in the core skills of armoured warfare.

The centre trains soldiers in driving and maintaining armoured fighting vehicles, as well as operating vehicle weapons systems and communications equipment.

Huw Cable, Head of the Vehicle Demonstration and Manufacture team at DE&S, said: "I am delighted that we have now handed over the first two Ares to our colleagues in the British Army, who will now put the vehicles through their paces.

"This is a significant step forward for the Ajax programme, marking the commitment of all involved in the project and is the first step in providing the armed forces with world-beating multi-role, mounted fighting and reconnaissance capabilities fit for the future."

Not only is this a momentous milestone for the project, it is an exciting time for our soldiers, who will now begin training with this world-class, next generation capability

Major General Colin McClean, Director Land Equipment

In all, General Dynamics Land Systems–UK will deliver 589 Ajax vehicles across six different variants – Athena, Ajax, Ares, Apollo, Atlas and Argus – to the British Army.

The Ajax fleet provides a step-change in capability used by the British Army and incorporates cutting-edge and proven technology to provide an unparalleled balance of protection, weight and agility.

They will be the 'eyes and ears' of the British Army on the battlefields of the future. The new vehicle will give the Army enhanced intelligence, surveillance, protection, target acquisition and reconnaissance capabilities for decades to come.

Major General Colin McClean, Director Land Equipment, added: "I am hugely proud of everyone who has been part of this journey – not only is this a momentous milestone for the project, it is an exciting time for our soldiers, who will now begin training with this world-class, next generation capability."

The six variants in the Ajax programme are due to come into service in 2020, providing a full suite of medium armoured vehicles and capabilities.

Min DP praises DE&S staff during visit

Minister for Defence Procurement Stuart Andrew paid tribute to DE&S employees, thanking them for the "astonishing amount" of work they do during a town hall at MOD Abbey Wood.

The Minister, who visited the site on February 7, commended recent successes for DE&S, including the Army Warfighting Experiment at Salisbury, Queen Elizabeth Carrier class and F-35 fighter jet milestones and the successful integration of weapons onto Typhoon.

He also highlighted the changing world we now live in and the necessity for defence to be agile, so it can adapt to ever-changing threats.

The Minister, who was introduced by DE&S CEO Sir Simon Bollom, told staff: "I want to say, first of all, two words that are not said enough, and that is thank you. Thank you for what you do for Defence and the work that you do.

"I know that you deal with very complex projects against incredibly challenging timescales, spending an enormous amount of time going through things in incredible detail - and I want you to know it's appreciated. The amount you do on behalf of the MOD is just astonishing."

DE&S senior staff appointments

DE&S CEO Sir Simon Bollom has announced two senior staff appointments.

Adrian Baguley, currently Director Programmes, will take over the post of Chief of Materiel (Joint Enablers) when Pete Worrall retires at the end of March.

In addition, Rear Admiral Chris Gardner, on promotion to Vice-Admiral, will take up the post of Chief of Materiel (Ships), taking over from Neal Lawson, who had served as interim. He comes to DE&S from his role as Assistant Chief of the Naval Staff (Ships).

Sir Simon said: "The strength of the Ships leadership team going forward is now well-positioned to deliver the considerable programme of work in the Ships domain and I am personally looking forward to working with Chris, Neal, Henry Parker and the rest of the team."

He added: "I knew it would be no easy task to find a worthy successor to Pete in this role where he has been outstanding, but I am delighted that Adrian will come in to lead the Joint Enablers portfolio, where his wealth of acquisition and defence knowledge, and previous experience as Director Helicopters, will continue the positive momentum in the Joint Enablers domain."

Inspiring Innovation event in May

DE&S will be hosting the third annual Inspiring Innovation event on May 15 and 16, 2019.

During this unique event organisers will be exploring how DE&S can deliver at pace to maintain battle-winning edge and promoting the need for defence to increase its appetite for risk to deliver true innovation to the front line.

DE&S staff can expect keynote talks, workshops, interactive activities and a site-wide networking day connecting internal project teams, defence primes and outside industry and businesses.

Throughout day one, each of the four neighbourhoods at Abbey Wood, Bristol, will host company and project stands, whilst there will be keynote talks spread throughout day two. Assorted workshops and activities will take place across the site on both days.

Organisers say Inspiring Innovation will demonstrate that there is potential for innovation across all functions and areas within DE&S. It is hoped this event will inspire, educate and connect DE&S personnel, proving that innovation is an essential part of the organisation's DNA.

INNOVATION at DE&S

End of an era for Tornado jets

After almost 40 years serving the UK on military operations across the world, iconic RAF Tornado jets have returned home for the last time.

First entering service in 1979, the fast jets have been used in operations across the world, most recently fighting Daesh to push the terrorist group back through Syria and Iraq.

They returned from operations for the final time, flying into RAF Marham on February 5.

The weapons capabilities of the soon-to-retire Tornados are now being delivered by RAF Typhoon jets, which will continue to take a leading role in the Coalition's mission against Daesh.

The Tornado will be officially retired from service at the end of March and will only be used for training purposes over the UK in the intervening period. As part of the second flight three of the aircraft passed over MOD Abbey Wood on February 20.

Chief of the Air Staff, Air Chief Marshal Sir Stephen Hillier, said: "We can all take immense pride in what the Tornado has achieved in defence of the nation over nearly four decades, and reflect back on the courage, commitment and achievements of everyone who has contributed to the success of this extraordinary aircraft." To mark their retirement a series of three farewell flights were arranged.

BFPO launches guide

DE&S CEO Sir Simon Bollom visited the British Forces Post Office (BFPO) to launch a handy guide to help keep the UK armed forces, their dependents and loved ones in touch when personnel are deployed overseas.

BFPO delivers personal and official mail to over 650 locations across the globe, including some of the world's most remote and austere places.

The compact 12-page guide gathers together all the essential information for their customers in one place, including the free mail services available to some locations. It also provides top tips for making the most of BFPO services and ensuring their mail is delivered as quickly and efficiently as possible.

Mirren McLeod, BFPO's communications and secretariat manager (pictured with Sir Simon), said: "This guide was created based on our experiences of the most common queries and questions we find our customers have on using our services. It will be especially helpful to those new to sending BFPO mail but will also act as a useful reminder to our longer-standing customers."

The BFPO Customer Guide is now available to view and download from the BFPO site.

Calling all SMEs

The Special Projects Programme Delivery Group at DE&S are hosting an Industry Day as part of the Three Counties Defence and Security Expo (3CDSE) and want to hear from interested small and medium-sized enterprises (SMEs).

The day, on July 16, 2019, provides the opportunity to hear about the vision and future programme of work, with the Joint Forces Command Special Projects capability sponsor and delivery teams from DE&S presenting their specialist portfolios and running a range of smaller breakout sessions to discuss their work in more detail.

Ian Smith, Head of the Special Projects Programme Delivery Group at DE&S, said: "We're always looking to find the latest innovations in technology and procurement to apply to equipment for our specialist users – this industry day is our way of exploring new possibilities and finding new SME suppliers to bring on board."

For more information and to register your interest, visit www.3cdse.co.uk.

Cutting-edge UAV further improves firing range safety

Pictured: An Aibotix X6 in flight (Picture submitted)

A team at DE&S responsible for ensuring firing ranges are safe have acquired a cutting-edge unmanned aerial vehicle (UAV) to further eliminate the risk of danger at the sites.

The DE&S Defence Ordnance Safety Group (DOSG) provides safety advice for the safe procurement of ordnance munitions and explosives. It also advises on the safe use of weapon systems in training on the Defence estate, both in the UK and abroad.

DOSG use a ballistic computer model to simulate the effects of firing weapons. Statistical probabilities are produced which are used to determine the weapon danger area that must be applied on firing ranges to ensure the safety of users, observers and the general public.

To ensure that the most accurate danger area can be determined, detailed representation of the topography of the range is required – the relative height of the range floor and its extent.

To do this, an Aibotix X6 was acquired by the team to capture data in the form of photographs, which are orthorectified (oriented north and adjusted for mapping) using the onboard differential GPS data. The UAV allows the team to provide accurate coverage of six to eight hectares in approximately six hours – a process that would have taken several days beforehand.

Innovation can only advance if a climate to accept it exists – at every level

Major (ret) Charles Ross, DOSG UAV Duty Holder

The six-rotor UAV, with a lift capacity of two kilograms, enables a number of different sensors to be deployed. Flight planning software is used to ensure the target area is covered with a sufficient density of photographs. Once the flight plan is uploaded, the UAV becomes wholly autonomous and will take photographs at pre-determined waypoints.

This data is processed to produce a Digital Elevation Model (DEM) of the 3D surface. Using a high resolution digital camera and software incorporating stereoscopic techniques, an accuracy of 12 millimetres can be achieved in both location and height.

The photographs are downloaded from the UAV and the photogrammetry software splices all the images together, creating a mosaic covering the area under the flight plan route. The software also quickly creates a 3D representation of the surface by draping the mosaic over the DEM.

DOSG UAV Duty Holder, Major (ret) Charles Ross, said: "Using a drone greatly increases the DOSG modelling capability by providing highly accurate data in a relatively short space of time. It is possible, now, to provide accurate coverage of six to eight hectares in approximately six hours from launch to finished product. It would have taken several days in the past.

"The system is now effective and valuable, but the complexity of the processes faced by the team to arrive at this place proved daunting and at times the goal seemed almost unachievable. Innovation can only advance if a climate to accept it exists – at every level."

Mastering the load reduces burden by half

Pictured: A 99 Sqn C-17 from Brize Norton delivering essential equipment (Picture by Cpl Rob Bourne)

A member of the Defence Support Chain Operations and Movement (DSCOM) team at DE&S has developed a tool that has revolutionised data entry by load control staff at RAF Brize Norton – reducing their workload in this area by almost 50 per cent.

David Copsey (pictured right) became aware, after close analysis and discussion with the Senior Air Movements Officer at the air base, that there was much duplication of effort when it came to recording data around the movements of loads on British military transport aircraft.

With thousands of loads – which may include troops, weapons, vehicles, trenching tools, toilet rolls and tents – transported on a daily basis, recording their deployment is a mammoth task.

David identified five separate areas that stood out, from double typing of loading forms for flight folders to multiple entry notifications for departure and arrivals. Some innovation was needed.

He took up the challenge to integrate and computerise the system by employing an enhanced Excel spreadsheet and ultimately building a precision tailored tool for the process that was user friendly and had good functionality on and offline, even in areas of limited internet.

It has reduced the amount of time spent by load control staff recording the data by almost 50 per cent

David Copsey, Defence Support Chain Operations and Movement

INNOVATION at DE&S

However, to do this David first had to learn the Excel code from scratch, which resulted in him spending many evenings burning the candles at both ends.

The new tool enabled the five separate manual processes to be combined. Information is generated directly from load and movement data entered just once. On screen note-box areas can also show a level of detail not previously possible and menus mean far less risk of entry errors. This is supported by tools, which mean reference data and reports can be pulled instantaneously rather than having to tediously read everything through and type it out.

David said: "Testing the tool went live at RAF Brize Norton on November 1 last year and remarkable benefit was seen almost immediately. It has reduced the amount of time spent by load control staff recording the data by almost 50 per cent.

"This means teams have more time to spend on their primary role as opposed to recording data. It also supplies quick access to accurate data for reporting to the Front Line Commands and DE&S senior management."

Following the success at RAF Brize Norton, a request has been made by RAF Akrotiri in Cyprus to expedite a change to the tool. This went live on January 1. Full capability is due by March 31, 2019.

Future combat air system technology initiative

Pictured: CGI of the UK's concept model for a next generation fighter jet (Picture courtesy of BAE Systems)

As part of an innovative joint industry and government team led by the RAF Rapid Capabilities Office (RCO), DE&S are providing key commercial, airworthiness, programme and wider procurement specialists to underpin the delivery of the Future Combat Air System (FCAS) Technology Initiative (TI). Read more about their exciting role below

FCAS TI was launched following the Strategic Defence and Security Review 2015. It represents a significant government investment of around £2bn over 10 years into an ambitious Research and Development (R&D) portfolio to keep the UK at the cutting edge of Combat Air Systems. In doing so, it maintains political choice by sustaining the UK's ability to have a leading role in the next generation of capabilities for the 2040+ environment.

Reflecting the highly uncertain nature of R&D, FCAS TI is an agile and value driven initiative. At its heart is an ethos of not being afraid to fail fast, adjust direction or stop activities before completion when better outcomes can be achieved elsewhere. All current and candidate activities are reviewed on a 3-monthly cycle, with recommendations made to the Senior Responsible Owner. Last year, FCAS TI was reshaped through this process during the close development of the Combat Air Strategy with UK industry, and comprises three core elements:

- National Projects. The majority of this work is now delivered through the novel and collaborative Team Tempest arrangement. This brings together the RAF RCO, scientific experts from DSTL, DE&S and industry partners (BAE Systems, Leonardo, MBDA and Rolls-Royce) to deliver a range of co-funded flagship demonstrations showcasing UK capabilities. Outside of Team Tempest, there are wider niche UK projects.
- Project PYRAMID. Development and validation of a comprehensive open Mission System architecture, using defined interfaces, to enable more capable and flexible air systems whilst reducing integration costs.
- International Projects. Cooperative work with partners, including the planned next phase of work with France.

"Importantly, FCAS TI seeks to optimise approaches across the UK's government and industry enterprise. DE&S can therefore use this opportunity to test new management techniques – both to support R&D delivery and future acquisition", Hugh Woodward, DE&S Combat Air Future Deputy Head, said.

With the parallel launch of the Combat Air Acquisition Programme (CAAP) to replace the capabilities currently offered by Typhoon, a new and growing Strategic Programmes delivery team is being established within the Combat Air Operating Centre. This will provide coherent leadership for DE&S support to achieving the aims of CAAP, FCAS TI and the wider Combat Air Strategy.

Importantly, FCAS TI seeks to optimise approaches across the UK's government and industry enterprise. DE&S can therefore use this opportunity to test new management techniques – to support R&D delivery and future acquisition

Hugh Woodward, DE&S Combat Air Future Deputy Head

INNOVATION at DE&S

Find out more about the Combat Air Strategy

Cambridge company fuelling the way for P-8A Poseidon programme

Pictured: Minister for Defence Procurement Stuart Andrew at Marshall Aerospace and Defence in Cambridge (Picture by Jack Eckersley)

The first fuel tanks supporting the UK's new fleet of submarine hunting aircraft have rolled off the production line in Cambridgeshire.

The announcement was made by Defence Minister Stuart Andrew when he visited Marshall Aerospace and Defence in Cambridge to showcase the first fuel tanks that will support the UK's new fleet of RAF P-8A Poseidon aircraft.

The Minister said: "Our new submarine-hunters will be a potent deterrent to our adversaries and a dependable asset for the UK and our allies, and the innovative defence equipment built by Marshall will help us combat a range of intensifying threats."

The major milestone comes after the first cohort of RAF aircrew commenced their training for the programme earlier this year, marking the start of a vital enhancement of the UK's military capabilities in the maritime environment.

The P-8A Poseidon is a new aircraft for the RAF and is designed to operate for long durations over water in maritime patrol roles, in particular anti-submarine, anti-shipping and search and rescue.

This would not have been achieved without the hard work, professionalism and dedication of the delivery team based at Abbey Wood

Michelle Sanders, P-8A project team leader

The new fuel tanks will enable the first of nine P-8A aircrafts to be delivered to RAF Lossiemouth in Scotland in Spring 2020.

Michelle Sanders, team leader of the P-8A project team at DE&S, said: "This is a significant milestone for the P-8A programme, with production of the first UK P-8A aircraft on-track for delivery in October 2019. This would not have been achieved without the hard work, professionalism and dedication of the delivery team based at Abbey Wood."

The fuel tanks have been manufactured by Marshall for over nine years and are used globally, supporting the United States Navy and Royal Australian Air Force.

The P-8A team are also managing the delivery of the strategic facility that will house the aircraft at RAF Lossiemouth. This, in future, will bring further job roles and personnel into RAF Lossiemouth when the fleet is fully operational.

Chief of Materiel (Air) for DE&S, Air Marshal Julian Young, said: "The work carried out under the P-8A programme demonstrates how we work collaboratively with industry to deliver vital capability to our armed forces – a proven approach that is leading the way internationally.

"This battle-proven aircraft, already in service with our allies across the globe, will be crucial in the protection of our continuous-at-sea deterrent as well as our new aircraft carriers, helping to tackle the threats we face in the skies and at sea."

The innovative sub-hunting fleet, designed for future growth and adaptability, will reinvigorate the UK's specialist airborne maritime patrol capability through advanced, state-of-the-art anti-ship missiles, sonobouys and torpedoes. The aircraft will also contribute to the protection of the UK's nuclear deterrent and the UK's new aircraft carriers, seeking to locate and track hostile submarines and enhance the UK's maritime search and rescue capability.


Picture: Jack Eckersley

On embracing change and the importance of innovation

Alastair Goodson is deputy head in the DE&S Technology Office, responsible for defining a dynamic portfolio that informs capability development

What does your role involve?

As a deputy head in the DE&S Technology Office, I am responsible for defining a portfolio of pre-concept demonstrators, studies and other evidence-gathering to inform capability development. Until recently, I led on DE&S' Innovation Strategy and our corporate interface with MOD's science and technology and innovation organisations.

What about your role is exciting, rewarding or interesting?

Being a team leader in the Technology Office is always fascinating. Almost by definition, we are doing things that are novel, at least in the MOD. We work with customers and stakeholders to understand what evidence is needed to de-risk future acquisition, and how to get it. Increasingly, this is less about developing technology within Defence and more about overcoming the barriers to its exploitation, such as understanding the regulatory and logistic challenges of a high altitude pseudo-satellite capability. Every project presents new intellectual challenges and ambitious expectations but provides an exciting opportunity to give our forces an advantage.

How important to you is teamwork?

Teamwork is essential. Obviously, there's only so much anyone can do themselves. Particularly when trying to bring about change, it's vital to understand different viewpoints, to be conscious of biases and group-think, and to welcome challenge. Diversity is particularly important to innovation, too. It's often when different perspectives meet that the "spark" needed to turn ideas into reality happens. The Post-It was born when one 3M researcher spotted an alternative use for a colleague's failed glue. It's also important to consider the wider team, including industry and regulators. Changes need to be workable for all key stakeholders, which is why the Technology Office runs events like the Army Warfighting Experiment, helping MOD and industry to explore ideas together.

How are you helping embed change in your area?

As a team leader, I am helping to embed DE&S transformation into a team handling a fluid sub-portfolio of small pre-concept projects across all Command customers. Strategically, I am providing input into the Acquisition Review to enable DE&S to consciously adjust its risk appetite, where appropriate, to help deliver MOD's aspirations for agility and innovation. It is notoriously difficult for large organisations to be innovative, but there are great examples across DE&S – like our Additive Manufacture laboratory – and I am trying to help those stories get told, connect people to share experience and stimulate ideas, and lead by example through our projects.

Why did you choose to pursue a career in DE&S?

Growing up, I had always been interested in military equipment: building model kits, reading about it and watching my local air-show. I also fondly remember a boat-trip around Portland Harbour on a family holiday. When applying for engineering degrees, I was encouraged to take a year out, and won a place on the MOD's highly-regarded DESG Student and Graduate Engineer scheme. Coincidentally, my mentor, and in due course my first "proper" job in MOD, was at Portland, procuring a sonar system. I've had such a variety of interesting jobs since that I've never felt the need to leave.

What do you most enjoy about your job?

The huge variety, and the people. In a week, I could be discussing projects ranging from record-breaking unmanned air platforms, through 3D-printing and open architectures, to innovative oil-condition monitoring technologies, whilst supporting Acquisition Reform and helping embed the Defence Innovation Initiative.

The people in the Tech Office are special! They have knowledge, experience and, crucially, a willingness to take managed risk and learn. They also make work fun.

What do you enjoy doing in your spare time?

I have just finished a part-time Postgraduate Diploma in Systems Engineering, so spare time has been a bit limited recently. I enjoy skiing, and would like to watch more rugby, but most of my time is spent trying to do my share of parenting two busy daughters.

What might surprise people about you?

Despite leading on innovation and being an early-adopter of technology myself (as the pile of discarded gadgets at home attests), I often find myself wearing de Bono's (physician Edward de Bono was the father of lateral thinking) cautious, black "thinking hat" when workshopping ideas. It's useful to ensure threats and downsides are uncovered, too, when pursuing opportunities. Just remember to take it off afterwards!

DE&S plays key role in £500 million global F-35 support assignment

Pictured: Britain's new cutting-edge F-35B aircraft arriving at RAF Marham in June last year (Picture courtesy of Lockheed Martin)

The UK's role as a leading partner on the global F-35 programme has received another huge boost, after the F-35 avionic and aircraft component repair hub in North Wales was awarded a second major assignment of work by the US Department of Defence, worth £500 million.

In 2016 the F-35 Joint Programme Office selected the UK as a global repair hub for F-35, a decision that will generate millions of pounds and support hundreds of high tech jobs in North Wales, where components for the global fleet F-35 aircraft will be serviced and maintained.

This second assignment will see significantly more UK support work to the cutting-edge jets, including Maintenance, Repair, Overhaul and Upgrade (MRO&U) services for an even wider range of avionic, electronic and electrical systems on hundreds of F-35s based globally.

DE&S led the coordination of the UK bid for the F-35 Component MRO&U Tier 2 Campaign. This involved leading a team from the Defence and Electronics Components Agency (DECA), BAE Systems and Northrop Grumman through the Sealand Support Services Ltd (SSSL) joint venture and around 20 F-35 component original equipment manufacturers to produce an integrated bid on behalf of the UK.

In winning this work, the UK has demonstrated how the MOD can collaborate effectively with industry, bringing together a highly skilled and experienced workforce to offer an innovative and best value support solution for the benefit of F-35 partners

Sir Simon Bollom, DE&S CEO

Deputy Team Leader for the Lightning Delivery Team in DE&S, Andy Hewitt, said: "This announcement is great news for the UK and proof of the important role we play in the global F-35 programme. It is also a good example of teamwork and collaboration between DE&S, DECA and industry.

"We knew that the level of competition would be high, particularly from the programme's European partners, so we really had to demonstrate why we are best placed to carry out the component MRO&U services that we bid for. Everyone who has been involved with this assignment can be proud of their part in helping to secure some £500 million of revenue for the UK."

The new assignment will support hundreds of additional F-35 jobs in the UK, many of them at DECA, MOD Sealand, where the majority of the work will be carried out.

Sir Simon Bollom, DE&S CEO, said: "In winning this work, the UK has demonstrated how the MOD can collaborate effectively with industry, bringing together a highly skilled and experienced workforce to offer an innovative and best value support solution for the benefit of F-35 partners.

"The UK also benefits from a long-term commitment to the F-35 programme and its unique defence relationship with the US. Together with our partners from DECA, BAE Systems and Northrop Grumman, SSSL will be able to offer the F-35 programme engineering excellence, world-class innovation and agility."

This further F-35 assignment reaffirms DECA's role in providing services and support to the world's most advanced fighter aircraft for decades to come. SSSL support work and services for F-35 are scheduled to commence from 2020.

SMi Group proudly presents the 4th annual...

SMi
LINKING BUSINESS with INFORMATION

FUTURE ARMOURED VEHICLES Ssituational AWARENESS

3RD-4TH APRIL 2019

Copthorne Tara Hotel, London, UK

Delivering Information Superiority to the Armoured Vehicle

SPONSORED BY:

galleon embedded computing

Microflown AVISA 3D Acoustic Situational Awareness

observis

Pleora Technologies

2017 TESTIMONIALS

"Excellent organisation, content and Networking" *Vitavox*

"Very worthwhile conference" *Galleon Embedded Computing*

"Excellent again!" *RFEL*

CONFERENCE CHAIRMAN:

Mr John Crozier, Technical Partner Urban Canyon Sixth Sense (UC6S), **DSTL, UK MoD**

EXPERT MILITARY AND INDUSTRY SPEAKERS INCLUDE:

Colonel Manuel de Hoyos Sánchez, Spanish 8x8 Wheeled Combat Vehicle Program Manager, Spanish Armament General Directorate, **Spanish MoD**

Lieutenant Colonel Simon Routledge, SO1 Land Systems, Land Systems Programme, Platforms Division, **DSTL, UK MoD**

Lieutenant Colonel Chad Preece, Capability Integration Lead, Protected Mobility Capability Project HQ NZDF Capability Branch, **New Zealand Defence Force**

Lieutenant Colonel Torcica Valentin, Chief of Armoured Office, **Romanian MoD**

Major Ola Petter Odden, Development Officer, Combat Lab, Norwegian Army Land Warfare Centre, **Norwegian Armed Forces**

Major Colin Sinclair, Project Director Land Command Support System, Directorate of Land Requirements, **Canadian Army**

Captain-commandant Kristel Mostrey, Material Manager Piranha and Dingo, **Belgian MoD**

Colonel (ret'd) Mike McCarthy, Deputy to the Commanding General, Maneuver Support Center of Excellence, **United States Army**

Mr Keith Smith, GVA Manager, Land Environment Operating Centre, **DE&S, UK MoD**

Professor Merfyn Lloyd OBE, Visiting Professor, **Vetronics Research Centre**

Mr Pasi Niemela, Chief Engineer C4ISTAR, **Patria Land Systems Oy**

Mr Alex Koers, Co-founder and Director, **Microflown AVISA**

www.armouredvehicles-sa.com/desider

Register online or fax your registration to +44 (0) 870 9090 712 or call +44 (0) 870 9090 711

SPECIAL RATES AVAILABLE FOR MILITARY AND GOVERNMENT REPRESENTATIVES

CPD CERTIFIED

@SMiGroupDefence
#FAVSA2019

3C DSE THREE COUNTIES DEFENCE & SECURITY EXPO

Three Counties Defence & Security Expo 2019

Three Counties Showground, Malvern
16 -17 July 2019

- ✓ **HEAR** the vision of the Special Projects Programme Delivery Group at the MoD Industry Day*
- ✓ **BOOK** your stand for 3CDSE Exhibition
  - 150+ exhibitors
  - Showcase your innovation
  - Meet 2,000 key decision-makers
- ✓ **ENGAGE** with DE&S team leaders at the MoD Connection Zones
- ✓ **LEARN** from MoD team leaders, ADS and SME leading experts at the 3CDSE Conference
- ✓ **NETWORK** at the 3CDSE Innovation Dinner

The Three Counties Defence & Security Expo (#3CDSE) is the region's leading event for the defence and security industry

Visit www.3cdse.co.uk to register to attend and find out more.

Contact info@3cdse.co.uk to book your stand

*Limited capacity; delegates will require security cleared status

HEADLINE SPONSOR LEVEL PEAKS ASSOCIATES

GOLD SPONSORS KINETIC WILCOX THALES Knowledgepool ARMOLD DEFENSE

MEDIA PARTNER SHEPHARD

Pictured from top: The new High G test facility at RAF Cranwell, the facility in action and Air Chief Marshal Sir Stephen Hillier in the gondola (Pictures by Paul Saxby)

Cutting-edge fast jet trainer opened at RAF Cranwell

"Seeing the Centrifuge now in full operation is a real testament to great collaborative working between DE&S, RAF and industry"

Russ Cole, Flight Simulators And Synthetic Trainers (FsAST) Portfolio Team Leader

A state-of-the-art High-G training and test facility has been opened at RAF Cranwell by the Chief of the Air Staff, Air Chief Marshal Sir Stephen Hillier.

The £44 million project, delivered by DE&S, is used by fast jet pilots in the Royal Navy and Royal Air Force to replicate flight in aircraft such as the Hawk, Typhoon and new F-35 Lightning.

Pilots are able to experience up to 9G – nine times the normal gravitational pull of the Earth – and learn how to use their specialist in-cockpit flying equipment to help them cope with these stresses. The centrifuge can accelerate up to 9G in one second and rotate up to 34 times a minute.

The new facility revolutionises High-G training, as pilots are not simply strapped into the device and exposed to G-force but are able to 'fly' as they would in a flight simulator as the pilot manoeuvres the aircraft and applies the G-force.

Director Air Support at DE&S, Richard Murray, said: "This new and exciting facility is replacing the High-G trainer until recently used by Defence; that dates from the 1950s and no longer matches the performance of the modern fast jet aircraft such as the F-35 and Typhoon.

"The Centrifuge is capable of accelerating up to 9G in just one second, but rather than just sitting in it, the replica, flyable cockpit delivers realistic and immersive training, helping to simulate real-life missions while teaching pilots to deal with acceleration and High G-forces."

Pilots using the facility benefit from a cockpit which closely represents that of their normal aircraft, enabling them to conduct a plethora of training scenarios, from air-to-air combat to dealing with in-bound missile threats.

The device will also be used to trial and test new equipment to be used on fast jet aircraft and by the pilots. This will also ensure that the testing is done in a benign environment before being trialed in live flight.

Air Chief Marshal Sir Stephen Hillier said: "By exposing our Typhoon, Lightning and Hawk pilots to High-G forces in a tailor-made and completely controlled environment, we are significantly enhancing safety in the air and making a major contribution to our operational effectiveness."

The new facility at RAF Cranwell is used by fast jet pilots progressing through the UK Military Flying Training System and into their flying careers. Fast jet pilots will refresh their training at least every five years to keep them as safe as possible and current in the techniques used to handle High-G forces in flight.

The RAF Centre of Aviation Medicine is using the facility to train aircrew to recognise the effects of G-force, develop awareness of it and learn the physical techniques needed to counter the effects on their bodies during combat missions. Up to 300 aircrew will receive training on the centrifuge each year.

The 39-tonne centrifuge built by Thales UK has seen the company team up with world leading centrifuge specialists AMST from Austria to design and build the equipment. Thales has been training RAF aircrew since the 1930s, providing over 300 complex simulators for 60 different platforms.

Russ Cole, FsAST Portfolio Team Leader, said: "I am really proud of the FsAST team, led by Steve Hunt, that delivered this new and exciting High-G facility – on time, on budget and fully meeting all requirements. Seeing the Centrifuge now in full operation is a real testament to great collaborative working between DE&S, RAF and Thales/AMST."

High Altitude Pseudo Satellite – soon to be undergoing testing by DE&S in Australian skies

Pictured: An engineering flight trial of Zephyr at Yuma Proving Ground in Arizona (Picture courtesy of Airbus)

An ultra-lightweight Unmanned Aerial Vehicle (UAV) that operates at the edge of space will take to the skies for crucial flight testing overseen by the DE&S Tech Office.

The Operational Capability Demonstration (OCD) flight testing of the Airbus High Altitude Pseudo Satellite (HAPS) Zephyr 8 is expected to begin this month at a new dedicated flight base in Wyndham, Western Australia.

Working with Joint Forces Command, the Tech Office is delivering the OCD to improve MOD's understanding of how the innovative technologies employed in a HAPS capability might be utilised to inform Defence's decisions around how best to provide next-generation battlefield intelligence to the UK armed forces.

The OCD contract with Airbus, signed in 2016, included the purchase by JFC of three Zephyr platforms.

Zephyr operates in the stratosphere at an average altitude of 60,000 feet and could support a wide range of applications, including land and maritime surveillance, as well as a variety of communication tasks. It runs exclusively on solar power, flying above the weather and conventional air traffic – filling a gap complementary to satellites, other UAVs and manned aircraft to provide persistent local satellite-like services.

We have worked with Airbus to develop a unique trial schedule to take maximum advantage of good weather and look forward to exploring the potential this exciting platform can offer

Chris Delaney, Zephyr lead
DE&S Tech Office

The UAV pioneered the use of carbon fibre wing ribs, silicon solar arrays, electric motors and rechargeable batteries to remain continuously aloft, even in darkness.

Rear Admiral James Morley, Director Capability JFC, said: "Designed and built in the UK, Zephyr is one of the cutting-edge technologies that we are exploring to maintain our competitive advantage in communications and surveillance.

"Joint Forces Command has invested in this platform to better understand the opportunities that it offers for all of our forces; it demonstrates how Defence is working hard with our industrial partners to encourage and support innovative approaches to meet our requirements now and into the future."

Last summer, in the USA, Zephyr surpassed the world flight endurance record without refuelling when it stayed airborne for 25 days, 23 hours and 57 minutes – easily surpassing the old record of 14 days, 22 minutes and eight seconds, set by a previous version of the UAV.

It will most likely exceed this during the testing in Australia, where, after its 10-12 hour journey to 60,000ft, it is hoped Zephyr will remain airborne for a minimum of 30 days.

Technicians from Airbus Defence and Space will travel with DE&S UAV and Director Equipment and Safety Technical Office teams to Australia for the trials, which are weather dependent.

Chris Delaney, Zephyr lead within the DE&S Tech Office, said: "There have been considerable efforts from all involved to be in a position where we can start this testing.

"This included negotiating approvals with the Australian air regulators and obtaining the required military permit to fly.

"We have worked with Airbus to develop a unique trial schedule to take maximum advantage of good weather and look forward to exploring the potential this exciting platform can offer."

Geoff set to spearhead innovative delivery

Pictured: Geoff Spour (Picture by Jack Eckersley)

DE&S is at the heart of innovation. Geoff Spour, newly appointed Spearhead Portfolio team leader, talks to Desider about turning innovation into delivery agility

For evidence that Defence has wholeheartedly adopted the ethos of innovation, look no further than this issue of Desider. There is a challenge to DE&S on the horizon to take a radically different approach to its daily business.

I've just redeployed from the Submarine Delivery Agency into the Directorate of Engineering and Safety team to be at the forefront of the Defence Spearhead Initiative. It is an exciting time to be part of the innovation landscape, with a proliferation of ringfenced funds and initiatives designed to drive new projects forward.

Innovation was first recognised as a Defence priority in the 2015 Strategic Defence and Security Review, launching both the Defence Innovation Initiative and Defence Innovation Fund (DIF). At £800 million over 10 years, the DIF was a significant investment and is coordinated by the Defence Innovation Unit in Main Building.

Fast forward three years and we find ourselves at another significant turning point in Defence's desire to more readily and rapidly adopt innovation into capability delivery. The Modernising Defence Programme (MDP) has reinforced this position by endorsing the £540 million Spearhead Initiative and the £500 million Defence Transformation Fund, together with a top-down review of acquisition processes in the Acquisition Review.

The objective of the Spearheads is to solve real-world military problems by combining emerging technological solutions with faster acquisition practices. The Spearheads comprise a seven-year portfolio of three programmes, encompassing underwater battlespace superiority; intelligence, surveillance and reconnaissance; artificial intelligence in command and control systems.

In response, Commands are adjusting their attitude to risk to optimise the delivered capability in terms of relevance and delivery speed.

As a result, our customers increasingly want us to be more responsive and see existing procurement processes as a barrier to innovation. I believe that this is false – our organisation frequently delivers urgent capability requirements and rapid operational support when the need arises. We need to work with our customers to articulate their needs and priorities better, whilst being more adaptive and open to managed risk and scaled procurement.

Ultimately, for innovation to be successful, ideas must be exploited

Defence Innovation Vision

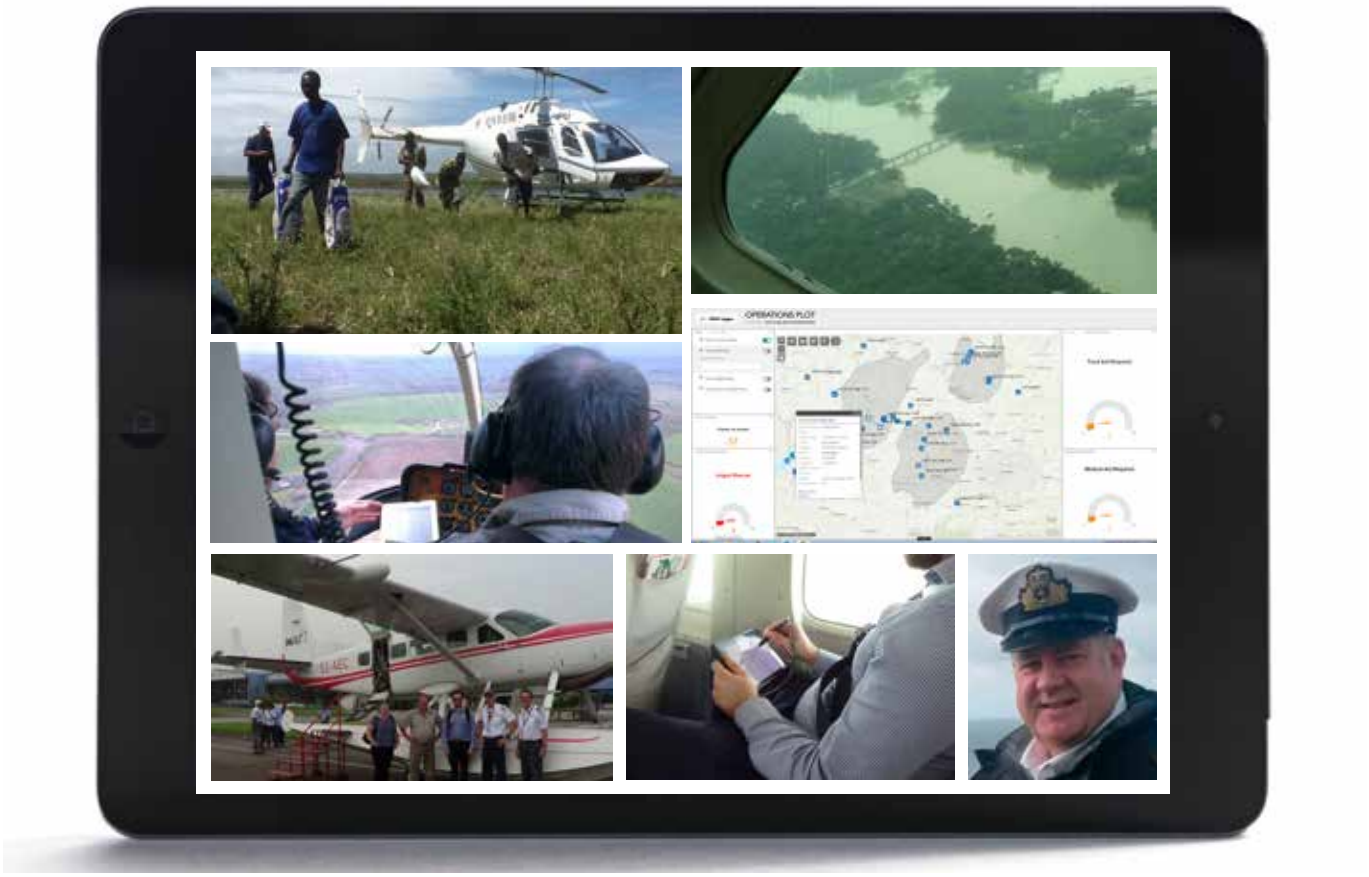
The CEO has endorsed Tech Office plans to create an exploratory multi-disciplinary team to trailblaze a more rapid and adaptive procurement process for novel technology, outside of traditional capability acquisition. The first projects that I will be leading will be under the Spearhead and MDP Transformation Fund initiatives.

With just three years to deliver, the Defence Transformation Fund will drive a rapid pace of technology delivery that is currently outside of formal acquisition engagement. Our response will be critical to ensuring that we remain an organisation that our customers want to work with.

With so much emphasis on innovation across Defence, our ability as an organisation to lead, not lag behind, will define the value that we add to Defence as a whole. I'm excited to be here in the team from the outset.

A simple solution to accelerating humanitarian relief

Pictured clockwise from top left: Charity food delivery during Mozambique floods, flooding in Bangladesh, screen shot of DROP logger, Lt Cdr Clive Langmead, DROP logger in use, DROP logger Trial Team Dhaka and Clive flies first DROP logger trial (Pictures submitted by Lt Cdr Clive Langmead)



Lt Cdr Clive Langmead watched on in horror at the images of hurricanes destroying Caribbean islands. Here he tells Desider how one of his darkest moments led to one of his brightest ideas

I could see the news pictures were showing a terrible story before anything terrible had happened.

Two dark swirls of cloud were marching west across the Atlantic towards the island homes of nearly a million people. Hurricanes Irma and Maria were hurling themselves into the Caribbean in the autumn of 2017. It was a forecast I had often seen before, usually off the coast of Africa.

As a volunteer pilot for a charity I had delivered food after storm floods in Mozambique. I knew what the pictures meant. A tweet from a shipmate noted HMS Ocean, my last ship, and others were on their way to help pick up the pieces. Not much more anyone could do against this force of nature.

In my cosy MOD Farnborough office I could only watch and pray. I did both.

I also remembered some innovative work we had done for Wings Like Eagles, the helicopter charity. We had developed an app on my iPad to re-locate people in need, report damaged bridges and re-supply washed out clinics, wherever we flew.

You touched the screen as you flew over and it recorded what you saw, and where. Simple but hugely effective

INNOVATION at DE&S

You touched the screen as you flew over and it recorded what you saw, and where. Simple but hugely effective. No more hurried notes on paper or greasy knee pads (whilst trying to fly low, safely) or rough crosses on half folded maps.

It gave a solid GPS fix and 'bridge down' or 'food dump', 'rescue needed' with the location nailed to within 20 metres even flying fast. Notes if you wanted, and a photo. It could be used by a passenger. A life saver. Surely it was something UK Forces on humanitarian assistance and disaster relief work could use? I brought it into work and was told to apply for a MOD Innovation Fund grant.

So began the development of the Disaster Relief Operations Plot (DROP) logger. I had six months.

A small GIS map contractor, Helyx in Tewkesbury, were happy to work on it, at risk, before a contract came to develop it further with me. I needed their goodwill.

It was not plain sailing by any means. Despite the innovation fund time limit, getting the project accelerated proved problematic and three months were lost. With no easily identifiable method of buying approved commercially available off-the-shelf purchases, I even bought some things myself.

But the story ends well. We started late, got it flown and greatly improved and then gave it a rigorous field test in Bangladesh over severe monsoon floods and in the midst of riots. All who flew with DROP logger liked it a lot.

Now it is hardened and waterproofed and works well in a military environment. And the large screen projection of the map (online and unclassified so anyone can use it, host nation, Red Cross, Médecins Sans Frontières, other military units) means that command and control is immediate, saving lives and quickly bringing aid.

Will anyone adopt it? We wait and see.

des.mod.uk

A new home for careers at DE&S

Innovation across DE&S

Innovation has long been high on the agenda at DE&S. Here Desider editor Tom Morris highlights just a few of the stories that have appeared since he took on the role in 2015

Medical marvel

In September 2016 Desider reported that Lieutenant Colonel (ret) Richard Garbutt orchestrated the modification of six Gazelle helicopters in just seven months so they could provide medical treatment on board. This prevented the need for a proposed civilian-operated helicopter service for the British Army Training Unit Suffield in Canada and, as well as undoubtedly saving lives, saved in the region of £15 million. Richard was awarded an MBE in 2018.

Tempus Pro

In April 2017 we reported that DE&S had signed a contract to deliver innovative lifesaving medical monitors to the UK armed forces. The Tempus Pro monitors help facilitate emergency treatment for Royal Navy, Army and RAF personnel injured or taken ill on active duty. The lightweight, robust and portable monitor can be used on land, at sea and in the air and transmits vital medical data in real time back to treatment teams, giving them a better understanding of a patient's condition ahead of time. Hundreds have been delivered to the armed forces.

Typhoon simulators

The number of flight simulators at RAF Lossiemouth was doubled to allow crucial training to take place, Desider reported in May last year. The two additional Emulated Deployable Cockpit Trainers allowed up to four Typhoon pilots to fly synchronised combat missions at the same time, a formation essential on operations. The delivery of this key capability by the DE&S Fast Air Support Team boosted combat training and cut costs.

Autonomous minesweeping

In June 2018 the DE&S Mine Countermeasures and Hydrographic Capability team handed over to the Royal Navy an autonomous minesweeper system that can clear sea lanes of mines without putting the lives of sailors at risk. The system consists of a 36ft unmanned surface vessel which tows three coil-auxiliary boats equipped with innovative electrodes and sensors for detonating digital sea mines designed to detect and target warships as they pass overhead.

Ajax

April last year saw news that DE&S signed a deal to equip the British Army's Ajax family of fighting vehicles with an innovative threat detection system. The vehicle-mounted Ajax Shot Detection System is designed to accurately sense and report the direction of incoming fire and gives the crew the critical situational awareness to react to the threat. Director Land Equipment Colin McClean said: "Integrating this new sensor on to our family of Ajax vehicles is another innovation we are investing in to ensure that British soldiers have the very best equipment."

AWE

The end of 2018 saw the biggest military robot exercise in British history take place. The Army Warfighting Experiment gives the British Army an invaluable opportunity to see how new technologies could potentially support future operations. Managed by the DE&S Technology Office, last year's AWE saw engagement from more than 50 companies, from large primes to one man 'garden shed' innovators, all wanting to showcase their products. The Tech Office's James Morris said: "The aim of AWE is to create the conditions where innovation can thrive."

Apprentice impresses

In October 2016, Drew Killingley, then a DE&S apprentice, was highlighted by his team for fixing operational critical laptops that had been destined for the scrapheap. Army HQ had a high demand for the laptops as they were used to diagnose Foxhound vehicles, but their operating systems had become corrupted. Drew's work saw 11 of the 13 devices returned to relevant units and saved in the region of £50,000.

Unmanned Warrior

In November 2016 Desider reported on the success of Unmanned Warrior – then the largest event of its kind in Europe. Organised by the DE&S Tech Office alongside the Royal Navy, the six-week exercise in Scotland allowed industry to demonstrate technology around hydrographic and oceanographic data gathering, anti-submarine warfare, mine countermeasures, surveillance and control of autonomous systems. At the time Fleet Robotics Officer, Commander Peter Pipkin, said: "The importance of this event, both in terms of collaborative working and promoting innovation, should not be underestimated."

BriteCloud brilliance

May 2018 saw Desider report on the delivery of BriteCloud to the RAF. These cutting-edge miniature decoys, developed by the DE&S Technology Office and industry, help protect combat jets from modern radar-guided missiles by using powerful radar emissions to disrupt missile systems, drawing them away from their intended target. Amazing technology all contained in something that is similar in size and appearance to a beverage can.

Bullseye

In November 2017 we reported that ingenious DE&S apprentices from Devonport had designed a dartboard for use by recovering service personnel and veterans. Chris Nowell-Smith and Lawrence Parker were asked by Help for Heroes to design and build a height-adjustable dartboard that could be used by both standing participants and wheelchair users. Former soldier Snowy Dyson said: "I helped the apprentices draw up the criteria and they did a fantastic job."

60 second spotlight

"My grandfather accidentally swam in a crocodile-infested river and he unknowingly dined with a local Tibetan King"

Emily Saunders

Job:

Technical Specialist working for the Tech Office based at MOD Abbey Wood

Your route into DE&S?

My Maths BSc set me up for an unexpected career in DE&S. I loved prime number theory and selected courses in everything cryptography-based, specifically searching for jobs with that buzz word that these days is so well-known. Fortunately, the DESG Graduate Scheme offered opportunities in crypto and has allowed me to explore many other interesting areas, even sponsoring my Aerospace Systems MSc. Now I'm working with a team of super-intelligent people exploring exciting future technologies.

Your claim to fame?

During my maths days I studied the works of Glyn Harman, a professor at my university. Professor Harman published some great findings in number theory and has attained the well-respected Erdös number 2. The Erdös number was created to mark the connection/separation between a 20th century famous Hungarian mathematician, Paul Erdös, and his network of collaborators. Collaborators with those obtaining an Erdös number are also bestowed with the honour. I once hoped to take an MSc under Professor Harman for the opportunity of collaborating with him and obtaining Erdös number 3. Unfortunately for me, he took his retirement the year before I completed my BSc. Nevertheless, I'm proud to have studied his works and the cherry on the cake is that he shares my Christian faith.

Your advice to anyone?

First be truthful to yourself, then be truthful to others. Then hopefully one day you'll understand the meaning of truth.

What do you do when you're away from work?

Thankfully, constants in my life are my faith and my parents. Everything else is juggled around those, including keeping fit, seeing friends and travelling far away somewhere exciting!

What are you most proud of?

Some readers will undoubtedly laugh at my answers but, honestly, I'm most proud of believing in Jesus Christ. There is nothing else that impresses me more than someone who puts their mind to God, figures Him out and then lives it. I'm proud when I do that and I'm devastated when I don't.

If you were sent to a desert island, what three things would you take with you?

The thought of a desert island reminds me of the island in the Life of Pi. Naturally, I'd take Noah's ark complete with the zoo, Samson's great strength and an unlimited supply of bread and wine.

What irritates you the most?

Talking about simple things and too many questions that are easy to answer. I often want to shake people into life and say: "come on guys, let's talk about something stimulating!"

What is your favourite place in the world?

Anywhere beautiful with the wide ocean, mountains, bananas and rum. My friends and family are scattered all around the world in UAE, Burkina Faso, Turkey, USA, Romania and Bolivia. I'd love to gather them together somewhere like St Lucia and simply live life.

What would surprise people about you?

My thrill to travel the world comes from my grandfather, Jim Saunders. He filmed wildlife for the BBC with the likes of Gerald Durrell, David Shepherd and Johnny Morris (sometimes David Attenborough, too). As a child, he told me stories of his adventures around the world, like when he accidentally swam in a crocodile-infested river and he unknowingly dined with a local Tibetan King!

INNOVATION at DE&S

Do you or someone you know deserve their 60 seconds in the spotlight?

Email tom.morris114@mod.gov.uk

Further success for Devonport "high flyer" at annual apprentice award ceremony

Pictured: Phoebe Loveridge receives the MOD Apprentice of the Year Award from Caroline Paige (Picture Beth Randall)

Phoebe Loveridge rounded off a stellar 12 months after being named MOD Apprentice of the Year 2018 at an award ceremony in the centre of Bristol.

She was recognised for, amongst other achievements, her work as a Science, Technology, Engineering and Maths (STEM) ambassador, her commitment to her apprenticeship and for achieving distinctions in her academic studies.

It is the third award Phoebe, an engineering surveyor with the Submarine Delivery Agency, HMNB Devonport, has received recently alongside the national Institute of Engineering and Technology (IET) title, and the Bridgwater and Taunton College Apprentice of the Year.

The ceremony, held at the Bristol Harbour Hotel on February 5, was attended by DE&S CEO Sir Simon Bollom along with other senior members of staff.

Lorna Stubbs, Engineering Trainee Development Manager at Devonport, said: "This is an amazing achievement by Phoebe. To get one award is fantastic, but to scoop all three is remarkable."

Phoebe was joined by other hopefuls and winners from the prestigious Tom Nevard competition – an annual engineering event staged since 1952 that sets various design and engineering challenges to test apprentice's imagination and ability.

This is an amazing achievement by Phoebe. To get one award is fantastic, but to scoop all three is remarkable

Lorna Stubbs, Engineering Trainee Development Manager at Devonport

This year's event, staged at Shrivenham in August, saw individual participants design and build an elastic band weapon and a team challenge to build a radio-controlled hovercraft.

Competitors in the Sir Henry Royce Award, which runs alongside the Tom Nevard competition, were asked to design and build a camping axe.

Jordan Gibbs (DM Gosport) and Lorn Trybis (MOD Abbey Wood) scooped individual challenge winner awards while George Masters, Lauren Drake, Frank Lippik-Murphy (all MOD Abbey Wood), Matthew Harrison (DM Gosport) and Scott Murton (DE&S Devonport) won the team prize.

The Sir Henry Royce Memorial Foundation Medal went to Charles Hadley (MOD Abbey Wood), while the HRH Prince of Wales's Award for Services to Defence Engineering was presented to this year's winner Hayley Barden by Chief Technician Robert Bates (winner of the 2017 Inaugural Award).

Caroline Paige, the first trans-gender serving military officer, rounded off the evening with a truly inspirational after dinner speech outlining her personal journey and encouraging the attendees to take all opportunities and make their one life the best.

Defence is the largest employer of apprentices in the UK, with 9,000 engineering apprenticeships and a total of 20,000 across a range of disciplines.

Apprenticeships are a crucial way of developing the skills required by employers and of providing people from all backgrounds with the opportunity to obtain skills that will contribute to their achievement in the workplace.

Distinguished service, wellbeing and £1,000 for a worthy cause

A DE&S employee whose work was instrumental in the successful delivery of the first of the Royal Navy's 65,00 tonne aircraft carriers – HMS Queen Elizabeth (QNLZ) in 2017 – has retired.

James Ember, who was Power and Propulsion team leader for the QNLZ Delivery Acceptance Team based in Rosyth, joined DE&S in 2007 after a long career in the Royal Navy.

He initially joined the organisation as part of the Ship Upkeep group, overseeing refits on a wide range of vessels before transferring to the Queen Elizabeth Class Delivery Acceptance Team in 2013.

His work on the Power and Propulsion system acceptance was key in the successful delivery of QNLZ and his subsequent work on the HMS Prince of Wales Power and Propulsion systems has helped set the conditions for the delivery of this platform to the Royal Navy.

To mark his retirement, James was presented with a framed picture of QNLZ and letter of thanks from Senior Responsible Officer Admiral Blount and Director Ships Acquisition Henry Parker by Captain Ian Groom, Client Director for the Aircraft Carrier Alliance.

DE&S Time to Change Champions produced a number of resources to help colleagues to improve their understanding of mental health.

The resources, including powerful personal stories, a quiz, empowering presentations and a poem, were produced to coincide with Time to Talk Day – a national initiative held on February 7 part of the Time to Change campaign, which aims to end discrimination around mental health.

A market stall in MOD Abbey Wood, held in partnership with mental health first aiders and the Charity for Civil Servants, was also run alongside the resources that were available both online and on Skype to DE&S employees across the business.

Time to Change Champion Ian Slade said: "Feedback was overwhelmingly positive and a number of people subsequently registered to become a champion themselves, having been inspired by the event. Our aim is to ensure no one is made to feel isolated for having a mental health problem."

The Weapons Operating Centre (WOC) tuck shop at MOD Abbey Wood has again raised £1,000 for the Great Western Air Ambulance Charity (GWAAC).

Organiser Sheila Smart and Richard Smart (Director Weapons) presented a cheque to GWAAC Corporate Partnerships Coordinator Holly Adlem.

On average, GWAAC attend five incidents each day – prioritising the most critical patients. Their priority is to get to patients fast. The team treat people at the scene, on the road and in the air, and give them the best chance of a positive outcome.

The brilliant team of pilots, expert paramedics and doctors attend incidents across the region either by helicopter or in critical care cars. They went on 1,887 missions in 2018 and need donations of more than £3 million each year to remain operational, as they receive no government funding.

Sheila said: "A huge thank you to all those who supported the tuck shop throughout the year."

Inaugural event celebrates parents

DE&S celebrated new parents by holding the first corporate Keeping in Touch Event open to staff away on, and preparing for, parental leave.

The event had been organised to recognise the complex challenges new parents face returning to work, including the importance of talking about and maintaining wellbeing once returned.

Lieutenant General Paul Jaques opened the event, updating colleagues on changes that were happening within the organisation.

Morag Stuart, DE&S 2* Gender Champion, spoke about the importance of wellbeing within the workplace and encouraged working parents to be loud and proud. Senior Civil Servant Chris Carpenter spoke about his experience of shared parental leave and the enrichment this bought to him and his family.

Bluebell Charity offered insights into perinatal wellbeing and signposted support that is available. DE&S Corporate Function Managers and Human Resources representatives were on hand to speak to attendees about function and policy changes. And mental health first aiders and Time To Change Champions were available to provide support.

Recent returnees shared their experiences, helping colleagues with their plan for returning to work.

Organisers Carla Francis and Natalie James said: "The sense of affinity in the room during the event was remarkable, as was the interaction of DE&S colleagues supporting one another."

MOTTO the MOD Lottery **November winners**

£20,000	Paul Hosking, Helston
£2,500	Kevin Woods, JFC
£1,000	Christopher Cormack, Lincoln
£500	Karen Tait, London
£250	Kim Wright, ABW
£100	Jayne Vernon, Liverpool
	Mark Goodman, ABW
	Heather Hammond, ABW
	Trevor Williams, ABW
	Troy Day, ABW
	Sharon Richards, Nottingham
	Lee Stevenson, Holywood
	Georgia McCarthy, ABW
	Rowan Gough, ABW
	Matt Treasure, ABW
	Graham Smith, Washington
	Ian Bradley, Fife
	Mark Perrett, Bristol
	Brian Thompson, Wimbourne
	Christopher Cormack, Lincoln
	James McIntosh, Beith
	Jonathan Ackland, ABW
	Elizabeth Shillitoe, ABW
	Nicholas Jones, Salisbury
	Paula Norris, Bordon

Last month's missing word was:

Aircraft

S	D	P	J	P	K	B	L	H	T	W	V	C	U	E	P	N	I
N	N	E	F	G	X	A	C	M	V	P	I	N	Z	V	O	L	N
N	O	I	T	A	M	R	O	F	S	N	A	R	T	I	N	A	G
N	V	I	C	N	R	R	A	H	V	O	L	S	T	T	R	N	E
U	E	W	T	V	E	S	E	E	T	R	U	A	E	A	E	I	N
G	L	W	J	A	U	D	N	V	Y	W	R	I	H	N	D	G	I
O	T	R	N	C	I	T	E	H	O	I	O	H	E	I	O	I	O
D	Y	N	C	E	I	R	P	C	P	L	D	R	T	G	M	R	U
M	P	E	P	V	S	E	A	S	E	J	U	T	G	A	Q	O	S
I	S	Q	E	N	Z	S	N	V	S	R	B	T	E	M	G	T	N
S	C	R	E	A	T	I	V	I	T	Y	P	Z	I	I	I	N	L
S	E	N	O	T	S	E	L	I	M	X	P	N	X	O	O	V	R
E	G	N	A	H	C	F	R	E	S	H	P	D	U	O	N	F	X
Q	V	F	Q	J	C	J	Q	J	N	S	O	L	U	T	I	O	N

Word Search

Change	Inspiration	Revolution
Creativity	Inventive	Solution
Fresh	Milestone	Success
Global	Modern	Transformation
Growth	Newness	Unprecedented
Imaginative	Novelty	Variation
Ingenious	Original	Zephyr

Find which word or name is missing from this wordsearch.

Note - they may appear vertically, horizontally, diagonally, forward or backward.

Case Study

Suzy Harris, Project Manager within the Technology Office, gives her insight into some of the benefits of working for the organisation

Name:
Suzy Harris

Job title:
Project Manager (PM) – Technology Office

How long have you worked for DE&S?
12 years (including a four-year secondment to London Head Office)

Why did you choose to pursue a career in DE&S?
I've always been fascinated by the military, so I thought it would be an interesting place to work. I wasn't wrong! Having exposure to complex and diverse military requirements and taking a job which allows me to contribute directly to those requirements is part and parcel of being a Project Manager within DE&S.

What does your role entail?
I am the Project Lead for the Army Warfighting Experiment (AWE), the biggest experiment in the Army calendar. This entails overseeing all DE&S aspects of project delivery, managing resources and placing contracts for the facilities and provisions required, ranging from workshop space to data collection tablets and on-site 4G provisions. I am also responsible for ensuring the data collected reaches appropriate stakeholders within DE&S, ultimately de-risking and informing future military procurements.

What are the opportunities to develop and progress within your function?
I was lucky enough to participate and complete a Masters degree in Defence Acquisition Management at Cranfield University funded by DE&S. Being on the Means of Identifying Internal Talent scheme for eight years also provided opportunities to work in other locations – including a secondment for four years to London Head Office.

What do you most enjoy about your job?
The Technology Office is a diverse and fast-paced team, full of energy and innovative ideas. We take pre-concept ideas and the 'big questions' and create ways of examining them which are often unique within DE&S. As a PM in the Tech Office you hold responsibility for the whole of a project, from start to finish within a short space of time, which makes it a fascinating place to work.

What's your ambition?
I've seen first-hand the benefits of using experimentation in providing answers to some of the big questions within Defence, especially with regards to new and emerging technologies and innovative ways of working. My ambition is to promote the benefits of experimentation within the pre-concept space and hopefully see this route used more broadly.

What's your greatest achievement (in your role) to date?
The scale of AWE this year has surpassed everyone's expectations; at one point the Prime Minister was rumoured to have been interested in coming to Salisbury Plain! The team working on AWE coped amazingly with the increased pressures and have done an amazing job delivering an excellent experiment on behalf of the Army. Leading this team is something I am exceptionally proud of.

Why would you recommend DE&S to others as a great place to work?
DE&S offers a huge amount of variation across a career. I have been involved in managing a radar for the Navy, purchased dog equipment for an urgent operational requirement, asset sales in Head Office and through AWE, examining the potential of the use of robotics and autonomous systems. You can choose whatever sparks your interest.

What are the social benefits of working for DE&S?
DE&S offers an excellent opportunity for anyone who is interested in flexible working. I went part-time after having children and have been able to maintain a challenging and demanding job through flexibility of my team and management attitude to alternative working patterns.

Picture: Jack Eckersley

WORK FOR DE&S

For more info and job opportunities visit:
www.des.mod.uk

Civil Service

Here are six great reasons to work for DE&S

Bonuses & Recognition

Annual bonus and one-off payments based on performance for going above and beyond

Pension

Our Alpha pension is conservatively valued at 21% of your salary. Most private companies only offer 6-12%

Flexible Working

Balancing work and life, various working patterns

Professional Development

Choose a career path that's right for you

Holiday

25 days rising to 30 days after 5 years

Facilities

We provide a modern, safe and convenient work environment

For even more reasons see our 'Little Book of Big Benefits' at www.des.mod.uk

Future Vacancies

Operational Researcher - Modelling & Analysis DE&S

Bristol | £19,000 - £24,000pa | Senior Administrator/Specialist

Estimated timeline: 15/03/19 - 21/03/19

Post type **Permanent**

Job Description: An exciting opportunity exists to join our modelling and analysis team, an essential part of our Integrated Logistics function. This is a key specialism that guides and interacts with a range of teams and domains across DE&S to deliver supply chain systems, modelling, data and metric analysis.

Technical Through Life Support (TTLS) DE&S

Bristol | £30,000 - £42,000pa | Professional II

Estimated timeline: 15/03/19 - 07/04/19

Post type **Permanent**

Job Description: The TTLS is responsible for the delivery and capture of all relevant through life support documentation and analysis which forms the basis of the Support Strategy, Support Plans and Schedules. You will work collaboratively with industry, engineers, the armed forces customer and end-users to support the design and/or in-service support of the product or support solution to ensure customer requirements are satisfactorily met.

Support Solution Junior Consultant DE&S

Bristol | £30,000 - £40,000pa | Professional II

Estimated timeline: 29/03/19 - 14/04/19

Post type **Permanent**

Job Description: As a Junior Consultant we will provide you with first class training through our development scheme – once successfully completed you will advance to a Senior Consultant, at which point we will increase your salary by £3k per annum, plus further salary increases in line with performance. This highly rewarding role is to ensure the support and system of activities that enables defence equipment are serviceable and available to the front line armed forces.