INTRODUCING
ENTERPRISE PARTNERS

- IET makes history with creation of Junior Board
- Developing the future’s military technical engineers
- Digital Fluency: the next big thing beyond coding
- Leonardo enriches students’ work place experience
IET Enterprise Partners

An IET Enterprise Partnership is available to UK-based SMEs who can commit to an annual IET membership base of 15 engineers.

**Benefits of Enterprise Partnership**
- Access a wide range of professional development solutions;
- Increase your company’s profile in the engineering community;
- Develop your employees’ technical knowledge;
- Share ideas for innovation with like-minded engineers and companies;
- A dedicated Account Manager.

**Criteria of Enterprise Partnership**
- Enterprise Partners are SMEs who are:
  - Involved in engineering & technology;
  - Able to commit to an annual IET membership for 15 engineers;
  - Can provide an ‘IET Champion’ as a point of contact within the company.

Register your interest in becoming an Enterprise Partner by emailing partnerships@theiet.org
Welcome to the winter 2016 edition of Partner News.

In this issue, we celebrate the launch of our brand new partnership community, Enterprise Partners, formed to encourage more engagement with the SME market. Enterprise Partners are entrepreneurial and innovative SMEs who are committed to professionalism and are seeking to be part of the IET community. We introduce our founding Enterprise Partners on page 24.

We feature an article on how the IET made history with the creation of the new Junior Board. For the first time in the IET’s history, we brought together a group of school children and Trustees to discuss ideas for the future.

We also report on the success of the Academic Partner Summer Conference that was held at IET London: Savoy Place earlier this year, and ask a Siemens apprentice what inspired her into engineering and what gaining EngTech means to her.

We hope you enjoy reading this issue. If you have any feedback or questions, or would like to submit an article for a future issue, please email partnernews@theiet.org.

Sally Davidson Jones
Partnership & Development Manager
The IET has invited a group of school children to join its new Junior Board in a groundbreaking move to tackle the engineering shortage by encouraging input and ideas from the potential engineers of tomorrow.

The IET brought together its Junior Board and Trustees for the first time earlier this year, with the inaugural meeting discussing skill shortages in the sector and how best to make careers in the industry appeal to young minds.

A total of nine children took part in the meeting, ranging from the ages of 12 to 17, all with a passionate interest in STEM subjects. Each child brought a selection of ideas with them to open up the discussion to fresh, critical thinking and a modern outlook.

Some of the ideas discussed included putting courses on for parents to give them more information about the exciting careers available in the industry for their children, teaching young people about historic female engineers as well as their male counterparts, and the need to position the industry as ‘cool’ in the media in order to encourage children to engage with it.

The IET Junior Board meeting took place at the IET’s Savoy Place headquarters in London, and also involved six Trustees, who were present in order to help steer the meeting and form the list of agreed outcomes from the discussion.

These were to:

1. Identify and work with celebrities who both parents and young people respect – and who have inspiring STEM skills – to showcase the career options available to young people
2. Create a web platform showcasing a range of engineering-related experiments young people and parents can do at home
3. Launch a visual social media campaign that shows incredible and inspirational pictures of engineering feats and careers
4. Highlight the importance of 3D printers and how transformative they are becoming – perhaps with a school competition to create something using a 3D printer
5. Put on information events for parents only to showcase real,
local engineering companies and the careers they offer

- Offer coding workshops and YouTube ‘how tos’ showcasing areas of engineering and technologies like BBC micro:bit and Raspberry Pi.

The board meeting, and its outcomes, mark a new way of thinking for the IET, which now has a group of enthusiastic young STEM advocates to consult.

Welcoming the suggestions brought to the table from its junior influencers, the IET is calling on other historical STEM institutions to follow suit and encourage fresh thinking from young STEM enthusiasts to help modernise and transform the industry – and sustain its economic prospects.

“As an engineering institution with 145 years of history under its belt, we’ve taken a landmark step in establishing a Junior Board for young people to come together with experienced members of our Board of Trustees” says IET past President Naomi Climer. “Our industry continues to suffer from skill shortages, so it’s vital that we do as much as possible to inspire the young people of today – the next generation of would-be engineers – into careers in the sector.

“By listening to, and taking on board, young people’s ideas for modernisation and progression within the sector, we’re opening ourselves up to new approaches in the way we present engineering careers to the next generation and their parents. This could prove really valuable in challenging outdated perceptions of engineering, and inspiring more children to become engineers in the future.”

“IT was great that our ideas were taken on board and it was interesting to see what the engineers do in their jobs too,” adds 13-year-old Daisy Agarwal, who took part in the IET Junior Board. “It would be great to see our ideas put into practice to help encourage more people my age into engineering.”

For more information on the IET’s Engineer a Better World Campaign, please visit www.engineer-a-better-world.org.
Introducing a new standard in engineering e-learning

Results from the IET’s latest member survey found that following professional registration, professional development and/or training was considered to be the most valuable activity by IET members.

Indeed, the same survey found that nearly 50 per cent of members were planning to improve their professional or technical skills in the next year, showing a need for specialised training created specifically for engineers.

In order to offer organisations access to technical and professional training ‘anytime, anywhere’ for their engineers, the IET has entered into an ambitious programme of creating a wide range of online and mobile training and development – the IET Academy.

The IET Academy
The programme will provide a wide range of courses for new employees as well as experienced engineers looking to enhance their existing knowledge and broaden skills. Transforming engineering education and development, the IET Academy will offer a unique blend of self-paced and directed learning. The training will be developed in partnership with industry and academia, providing organisations with the opportunity to enhance and develop the skills of their engineers and technologists.

Robust, scalable training
It will provide robust, scalable training opportunities across all engineering sectors that can be customised for both industry and location-specific needs.

There will be media-rich content, including videos, podcasts and case studies, together with a wide range of assessment types, aimed at meeting the learning needs of all staff, from apprentices through to experienced engineers.

Immediate content development plans will cover areas such as mobile communications, power systems and railway safety and satellite communications as well as subjects including entrepreneurship and engineering ethics.

Each course will include around 30 hours of learning and assessment-based content created by subject experts to ensure that the training is of the highest quality.

With additional features such as achieving CPD (Continuing Professional Development) hours, course certification, engaging multimedia and clear learning objectives, the IET Academy will ensure your organisation’s engineers have access to expert training tailored to meet engineers’ needs.

To find out more about the IET Academy and to request a free demonstration for your organisation, please visit www.theiet.org/academy.

Alternatively, to discuss the IET Academy further, please email us at academy@theiet.org.
New report reveals public apathy for smart cities

Only 18 per cent of the British public has heard of a ‘smart city’, according to the IET report ‘Smart Cities – Time to involve the People’, which also reveals a lack of consumer consensus on the relevance of technologies typically associated with next gen digitally-empowered environments.

Cities’ adoption of new technologies has traditionally involved little consultation with consumers. As a result, the report suggests that the public has yet to buy into the idea of ‘smart cities’ – and be convinced of the value and benefits that technology, delivered on a city-scale, could bring to their daily lives.

New disruptive technologies and applications such as on-demand taxi services, like Uber, and Airbnb-style online accommodation services may help to change hearts and minds, and the report also cites projects in Glasgow, Peterborough, Bristol and London that have successfully taken a people-centred approach to smart cities. Even so, the findings suggest there is still some way to go before the concept is likely to be embraced by the public.

“In spite of substantial investment from the Government, local authorities and businesses, most people don’t understand the concept or, more importantly, how ‘smart city’ digital communications technology could improve their quality of life by enhancing infrastructure and public services,” says Alan Howard, IET Sector Head for Thought Leadership.

“Promoting lessons learned from pilots like those in Glasgow, Peterborough, Bristol and London will help inspire, inform and influence more local authorities and communities about how technologies can improve the quality of the daily lives of their citizens. “It’s also important that public authorities, businesses and service providers understand the innovations and issues that people want to see in ‘smart cities’ and communities – and put greater emphasis on the human and societal outcomes of their initiatives,” Alan continues.

“Putting people first, rather than technology, is essential if we are to improve quality of life and create livable, connected, sustainable cities and communities in which to live, work and invest. Without this, we risk developing technology-enabled cities and communities that people neither recognise or value.”

When those questioned were asked how useful five smart city technologies might be if they were introduced in their local area, the IET’s Smart City report revealed a lack of any clear consensus.

■ 29 per cent of respondents felt that ‘intelligent’ streetlights activated by movement to improve safety, deter crime and save energy would be most useful.

■ 25 per cent were most interested in buildings that generate their own energy – and collect and recycle water and waste.

■ 23 per cent thought sensors embedded in roads and buildings which measure traffic flows, predict congestion, and adjust traffic lights and signals, would be most useful.

■ 15 per cent would most like to receive up-to-the-minute travel information via smart phone, enabling them to plan and pay for journeys, using different types of transport.

■ 8 per cent saw most value in being able to order driverless or electric transport from their smart phone.

To read the full report, please visit www.theiet.org/smartcities.
New President throws support behind Engineering Horizons Bursary

Newly appointed IET President Professor Jeremy Watson has launched his presidential term with a commitment to inclusivity, aiming to gain support for 75 new bursaries during his tenure.

The IET hopes that firms large and small from across the UK will offer their support, helping to increase the number of engineers entering the profession.

In the face of a nationwide engineering skills shortage, the IET has been working to inspire future engineers through school-based activities, as well as offering university-based students the opportunity to apply for an IET scholarship.

New funding programme
This year it has launched a new funding programme to support the IET Engineering Horizons Bursary scheme. It is an acknowledgement that, to meet the skills shortage, we need to look more widely at the talent available.

The IET will award bursaries of £1,000 a year to candidates who are passionate about engineering and have faced obstacles or personal challenges and need financial assistance.

Providing financial support
It is aimed at those entering an apprenticeship or an engineering degree programme having completed a BTEC, HNC, HND or other similar qualifications, with the bursary payments made for up to four years of their IET approved apprenticeship scheme or IET accredited undergraduate degree.

Bursary award winners will receive an annual award of £1,000 per year for the duration of their degree course (up to three years for BEng and four years for MEng) or apprenticeship (up to four years), as well as a wide range of other benefits.

If you would like materials to promote the Engineering Horizons Bursary scheme, or know an organisation interested in supporting the scheme, please contact Mehmet Baylav at mbaylav@theiet.org or +44(0)1438 767410.

For more information on the scheme, please head online and visit us at: www.theiet.org/horizons.

IET Engineering Horizons Bursary

Whichever route you take, we’ll ensure your future depends on your talent, not your circumstances

Not everyone follows the same route towards a career in engineering. Whether you decide to take the degree route following a HNC, HND or similar qualification, or enter via an apprenticeship, the IET Engineering Horizons Bursary can help ease your path.

We are looking for passionate engineering apprentices or students (including mature and part-time students) who face obstacles or personal challenges, and need financial assistance.

You’ll have to be in (or just about to start) either your first year of an IET approved apprenticeship scheme or an IET accredited undergraduate degree.

Bursary award winners will receive an annual award of £1,000 per year for the duration of their degree course (up to three years for BEng and four years for MEng) or apprenticeship (up to four years), as well as a wide range of other benefits.

Find out how to apply and view a full list of criteria and benefits. www.theiet.org/horizons
Outstanding Incorporated Engineer awarded for her achievements

Squadron Leader Gemma Lonsdale has won the 2016 Baroness Platt of Writtle Award for her outstanding work as an engineer officer in the Royal Air Force (RAF).

This July, at the Worshipful Company of Engineers’ annual awards ceremony, Gemma was presented with a medal, certificate and prize money of £1,000.

Presented by the Engineers Trust, the charitable trust fund of the Worshipful Company of Engineers, this prestigious annual award recognises the achievements of a newly registered Incorporated Engineer (IEng).

In 2015, more than 1,400 talented engineers successfully achieved IEng status. Gemma was nominated for this award by the IET and judged against nine others; four of which were IET members which included IET Fellow Nick Watkins, Managing Director of Thamesgate which he founded in 2003; Mark Roddy who is a Lieutenant Commander in the Royal Navy; Simon Ward has worked in the rail industry for 15 years and Craig Hughes who established Bramley Building Services in 2000 and grew a successful business as Managing Director. The judges were particularly impressed by Gemma’s presentation, application of engineering knowledge, leadership ability, management and commercial skills.

A high standard of engineering and professionalism

“This award is for Incorporated Engineers of all disciplines. This year saw an exciting spread of nominees working in a variety of industries from aircraft and railways to manufacturing, welding, scaffolding, and mechanical and electrical services. Their nomination papers demonstrated a very high standard of engineering and professionalism,” notes Peter Blair-Fish, Award Coordinator of the Worshipful Company of Engineers.

Gemma is currently the Senior Engineer Officer on an RAF Typhoon Squadron, responsible for the availability, capability and airworthiness of the aircraft. In previous roles, she has reduced the time for scheduled maintenance of Tornado aircraft by 55 per cent and led the engineering input to an inquiry into an aircraft that overshot a runway during an emergency landing. As a trials officer, her astute engineering judgement enabled her to design a unique transportation system for a damaged aircraft, and she made a significant contribution to the flight safety of one of the RAF’s aircraft fleet.

Committed to promoting STEM careers

Gemma shows commitment to the engineering profession as a STEM ambassador, promoting engineering within the RAF to the Air Cadet organisation and encouraging junior officers to engage with professional institutions.

“My career in the RAF has always been both exciting and challenging and it is an honour to have my achievements recognised by the IET and the Worshipful Company of Engineers,” says Gemma. “I would like to thank my family and colleagues for all their support and I will continue to share my enthusiasm for engineering with young people and encourage them to follow this extremely rewarding career.”

Quality candidates

“I would like to congratulate Gemma Lonsdale, who is clearly an outstanding IEng registrant,” adds Jon Prichard, Engineering Council CEO. “We were delighted to hear from the judges that the quality of all the nominated candidates was extremely high.

“Incorporated Engineers make an essential contribution to all sectors of the engineering profession, and once again we would like to thank the Engineers Trust for recognising these individuals through this award.”
In a bid to increase recruitment, an Access to Engineering (A2E) programme has been developed for 101 Battalion of the Corps of Royal Electrical and Mechanical Engineers (101 Bn REME), an Army Reserve Battalion providing equipment support to 102 Logistics Brigade.

Providing a firm employment commitment to potential recruits, the programme, targeted primarily at college leavers and the Job Centre Plus, is an intensive three month course that will deliver trained Army Reserve (AR) soldiers with a driving licence, suitable workplace qualifications in safety, health, environment and fire and a Class 4 qualification in engineering.

Upon graduating from the scheme, soldiers are then presented with two options. The first is a Regular Army attachment for nine months to enable the soldiers to become Class 3/2 tradesmen, with the second being a limited AR commitment to develop to Class 3 status.

**Working with industry**

Recognising that not all potential recruits want to join the Regular Army, but wish to become professional engineers, 101 Bn REME has launched an initiative named Partnering for Talent (PfT). This seeks to provide an opportunity for members of industry to sign a memorandum of understanding and become a PfT partner to the Battalion, providing A2E graduates with a third career option.

Partnering is a commitment from industry to provide vacancy interview opportunities to potentially suitable candidates from the A2E programme, without any firm commitment of employment. For those successful at interview, the company will take over where A2E finished, further developing their engineering skills. In return, members of industry will not only have access to a talent pool of motivated potential engineers, they will be informed of, and invited to, specific training events.

With Army Reserve Centres at Wrexham, Prestatyn, Liverpool, Manchester, Preston, Walsall and Telford, 101 Bn REME’s large geographical footprint provides a potential access route to many highly trained and experienced ex-servicemen seeking employment.

**Interested in partnering with 101 Bn REME?**

To discuss in more detail please email either 101reme-hq-employerengagement@mod.uk or 101REME-HQ-ROSO@mod.uk or call on 01978 316155.
Open to all Royal Navy weapon engineers regardless of rank, experience or specialisation, the Rear Admiral Bateson Award has been introduced to recognise individuals who have made a significant impact to their branch or trade in the previous 12 months.

As reported in the last issue of Partner News, this award is sponsored by the IET, and is the brainchild of Lieutenant Steve Jones, Warrant Officer Course Manager, HMS Collingwood.

"I am working on ways to bolster the ethos of my trade and this award was one of the ideas I had to do so," he says. The prize was awarded for the very first time this July, as part of the passing out parade at HMS Collingwood. Chief Petty Officer (CPO) Martin Rowley was presented with the award by Alec Bateson, the grandson of Rear Admiral Bateson after whom the award is named, and IET past President and retired Royal Navy Commodore Weapon Engineer Submariner, Barry Brooks.

"It was really satisfying to see the first one being awarded, and to be able to sew the thread between the past, present and future," says Lt Jones proudly.

Rear Admiral Bateson Award
CPO Rowley became the recipient of the first Rear Admiral Bateson Award, by demonstrating initiative and clear leadership as Head of Department in managing a complex overhaul of his ship’s systems whilst also forming and developing his technical team to achieve operational standards on completion of the overhaul.

"It was a great privilege to observe the range of hard work and dedicated professionalism by the Navy’s engineers and technicians being celebrated at HMS Collingwood’s end of year ceremonial divisions," says Barry.

"Admiral Bateson would have been proud of the legacy that he established from his own achievement of being appointed the Royal Navy’s first Electrical Flag Officer in 1949. The Bateson family members, who also attended the ceremony, were very pleased to reconnect to the Navy in this way."
‘Move’ and ‘Re-org’ of Defence school of engineering excellence

The redevelopment of the RAF base at Lyneham, Wiltshire, into the new home of Royal Electrical and Mechanical Engineers (REME) training has led to exciting and profound changes to the training structure and environment for its engineers.

A major achievement and a huge investment, MOD Lyneham sees the centralisation of REME’s engineer training operations from the old Bordon and Arborfield sites onto one modern base that will provide the foundation for innovation in technical training. This involved moving over 250,000 assets – from toolboxes to Challenger 2 tanks – to their new home as part of the Defence School of Electronic and Mechanical Engineering (DSEME) composed of 8 Training Battalion (8 Trg Bn) REME, the REME Arms School and Number 4 School of Technical Training RAF at St Athan.

Colonel Ed Heal took on the lead of DSEME in September 2016 for the next three years. “The new infrastructure and modern facilities provided at MOD Lyneham offer a huge opportunity for the Defence School of Electronic and Mechanical Engineering to deliver up to date and challenging training for the maintainers of the Army and Royal Marines” he says. One year into occupying a new site the snagging is largely complete and the focus is on developing training with our Babcock partner, and establishing relationships with local technical education centers across Wiltshire. The opportunities are immense and the progress continual”.

8 Trg Bn REME comprises five companies covering REME’s eight training trades; in total responsible for an average student population of 1,500. Its Commanding Officer, Lieutenant Colonel Daryl Hirst, has taken this opportunity to transform the delivery of technical training within REME, which has entailed cultural change as well as policy, process and resource amalgamation.

Linking operations “We’ve designed the structure of the battalion very consciously to link operations between the technical training companies,” Lt Col Hirst explains. “Then within each company there is a ‘trade champion’ whose focus is on company progression, modernisation and accreditation etc. In terms of professionalising and improving what we do, I can only see it getting better and better,” he enthuses.

Lt Col Hirst sees the biggest benefit arising from the creation of MOD Lyneham being that all trades are now learning together on one site. “All the trades are now training together as we fight – the training is integrated at trade level and also at the various different levels and qualifications, allowing us to ensure consistency of training. The entire remit of technical, professional, engineering and management training is done on one site. That is going to bring with it huge benefits in terms of effectiveness of the Corps.”

Changing the culture The new setup at MOD Lyneham has also positively changed the culture on-site. Working closely with Babcock, there is no longer a differentiation between the military, civil service and Babcock staff.

“There was an old culture of the battalion doing duty of care and an organisation providing training. That paradigm has changed now,” Lt Col Hirst explains. “That caused friction before, but now it sits together under me, as the two are interlinked, and that’s really an improvement.”

As part of the championing of the trade training, Lt Col Hirst is keen to highlight that he really values the accreditation as such, he has incorporated scheduled briefs to all trade courses.

The value of independent accreditation “It gives us huge credibility across the Army and attracts quality youngsters. The Army runs the biggest apprenticeship scheme and accrediting that appropriately gives us an edge over the other Corps and has allowed us to maintain, proportionately, the size of the REME compared to the size of the Army.”

Lt Col Hirst goes on to explain that professional registration is also an important concern for him and he hopes to make this an aspiration for his engineers.

“That aspirational element, a degree of recognition for achieving excellence, is a really good way to build that into the culture,” he notes.

MOD Lyneham has a special registration agreement (SRA) with the IET, which, the new REME Arms School Chief Instructor Lt Col Peter McMillan explains “the training delivered within DSEME allows REME personnel to follow an approved professional engineering development pathway such as the IET’s. Soldiers and officers have a fully supported route to achieve all levels of professional engineering competence during their Army career.
Working closely with the IET

Alongside the I Mech E, which also has an SRA with MOD Lyneham, IET staff regularly visit the site to highlight what professional engineering institutions can offer.

“The IET comes into Lyneham regularly to brief the soldiers and let them know about the benefits of membership, registration and also getting involved early,” Lt Col McMillan notes.

“We’re also working with Sarah to look at bringing in Professional Registration Advisors (PRAs) to do workshops with our staff,” adds Warrant Officer Class 1 (WO1) Artificer Sergeant Major (ASM) Ian Hart, trade champion for the Helmand Company.

“We’re hoping to set aside an office space for IET representatives to use for presentations, workshops and also so our soldiers can book a one-on-one slot with a PRA to see what they need to focus on.”

Professionalism is at the core of the training that takes place at MOD Lyneham and it’s clear to see that it’s leaders understand the importance of professional registration and recognition of these career achievements. The IET looks forward to expanding on its already strong relationship with REME.

MOD Lyneham is home to:

- The Defence School of Electronic and Mechanical Engineering (DSEME)
- 8 Training Battalion REME
- Corps Royal Electrical and Mechanical Engineers (REME)
- School of Army Aeronautical Engineering (SAAE)
- Babcock Defence Support Group
- REME Museum of Technology (set to open to the public this year)

MOD Lyneham – the facts

- MOD Lyneham is also known as The Prince Phillip Barracks.
- 70 per cent of the current site is new build.
- There was a physical move of 260,000 assets from Bordon and Arborfield to MOD Lyneham between June and November 2015.
- Site population averages at 1,900 military staff and students, 130 civil servants and 550 contractors.
- In a typical year, 950 courses spread over 214 course types will be taught to roughly 10,500 REME soldiers.
Developing the future’s military technical engineers

Report by Sergeant Boyd, Clerk of Works (Electrical), Professional Engineering Wing, 1 Royal School of Military Engineering.

The Professional Engineering Wing (PEW) is a department within the Royal School of Military Engineering based in Chatham, Kent, and is tasked with the training of multi-discipline or civil, mechanical and electrical infrastructure engineers.

Training involves an intensive two-year higher education course whereupon completion, soldiers become the subject matter experts in their discipline and are able to provide technical advice to all three services: the Army, the Royal Air Force and the Navy.

Military and civilian engineering practices comprise the majority of the course whilst also affording soldiers the opportunity to complete a foundation degree in their respective disciplines.

Selection process
The selection process for the respective disciplines begins 18 months prior to the start of each course. Students’ applications must be supported by their Officer Commanding and Commanding Officer and they must demonstrate leadership qualities and competence in their chosen field. Potential students are selected from both Junior and Senior Non-Commissioned Officers after the successful completion of the selection process. This involves physical and mental tests, followed by an interview led by the PEW’s Chief Instructor and the Senior Military Instructor of the discipline that is being applied for.

To ensure that the British Army’s technical requirement is satisfied, the three disciplines are intertwined at various stages of the course. Therefore studies consist of construction management, building services management and electrical engineering. As well as these core subjects, students undergo training in contract management, quantity surveying, project management and force protection engineering.

This training underpins the ‘five pillars’ of a Clerk of Works within the military; infrastructure consultancy, engineering design, project management and facilities management, also increasing the students’ employability.

Professional development
Continuing professional development (CPD) is a big part of the course and each of the discipline’s wings at PEW conduct visits to engage with engineers around their area of expertise. In addition, IET events are regularly attended, providing students with the opportunity to engage with more experienced civilian engineers. These events also allow students to keep abreast of any technological advancements taking place in the wider engineering community.

Graduation postings
The culmination of two years of hard work sees students graduating from all three disciplines, gaining promotion to the rank of Staff Sergeant and receiving their certificates of academic qualification from the Dean of Greenwich University.

Upon graduation, students will be posted to various units within the Army where their technical expertise can be called upon to support all three services.
Sponsored by the IET, the REME Best First Line Unit Award is presented annually for continued excellence in engineering and support to operations worldwide. The 2015/16 award was presented to 4 Regiment Army Air Corps Workshop REME at a ceremony at Wattisham Airfield this summer by IET Head of Membership Mark Organ.

Tasked with providing regimental and squadron capabilities ready for the demands of contingency, the Workshop has been challenged, tested and validated throughout the year, delivering beyond expectation within an environment of limited resources.

The last 12 months have been continuously demanding with the changeover from training to readiness. The vision and aim was to focus on equipment support capability that created independent aviation platoons to meet the needs of the diverse contingency environment. The result was a flexible workshop organisation that could provide support to aviation in the maritime, land and special forces environments across multiple locations.

The Workshop, through its unbroken dedication and professionalism, has provided UK Defence with a very high readiness contingency aviation capability, in the context of significant budgetary constraint. This is entirely down to the quality of leadership, hard work and innovation of those in the Workshop.

Delivering the MOD’s future communications and information systems

This June, the IET hosted the annual joint Professional Engineering Institution’s Defence Lecture in conjunction with the Royal Corps of Signals at IET London: Savoy Place, sponsored by PA Consulting and Leonardo.

The lecture, entitled MORPHEUS – Evolution beyond the Bowman Radio, Delivering the Land Tactical Communications and Information System for the Future, provided an ideal opportunity for industry and the MOD to come together to discuss the challenges of delivering the future system.

After a welcome from IET Chief Executive Nigel Fine, Air Marshal Julian Young welcomed the speakers to the stage. Army Headquarters’ Colonel Adam Corkery, the MOD’s Information Systems and Services representative Lieutenant Colonel ‘Chopsey’ Cornell, and PA Consulting’s Tony Reeves each spoke about their organisation’s involvement with the project including defining requirements, evolutionary design and future defence user demands.

The Bowman radio initially entered service in March 2004, providing a secure voice and data communications system well beyond its Clansman predecessor. Operations in Iraq and Afghanistan demanded continuous evolution of the Bowman fleet, touching every deployed element of the tactical battle from soldier to helicopter; headquarters to armoured tank.

The three high quality lecture presentations provided an explanation of the evolution of contemporary and future military operating concepts, the enduring challenge of procuring communications and information systems that both meet the user need and are technically cutting edge and, finally, how industry can work with the defence sector to deliver the required capability.
Exclusively for IET Academic Partners, this year’s summer event offered engaging talks along with several opportunities to network, share best practice and celebrate the ongoing success of the Academic Partner programme.

Attended by representatives from the majority of the IET’s Academic Partner universities, the conference began with IET Chief Executive Nigel Fine welcoming guests to IET London: Savoy Place and giving an overview of the highlights of Academic Partners from the past 12 months, continuing to facilitate links within its partnership community being high on the IET’s agenda.

Expanding collaboration
“Bringing our partnership communities together is particularly important to us. We look forward to continuing to evolve our partnerships over the coming years to enable this kind of collaboration and have a bigger collective voice for engineering and technology,” Nigel said at the event.

Best practice
Dr Misha Filip, from the IET Academic Accreditation Committee, then gave a presentation on best practice for integrating industrial input within accredited programmes alongside the IET’s Academic Accreditation Manager, Katherine Bunting.

Teaching excellence
Paul Chillingworth from Mathematics in Education and Industry presented the opportunities and risks of a further mathematics A Level, followed by the Higher Education Academy’s Head of STEM, Sean Ryan, who gave an update on the Teaching Excellence Framework.

Dr Lisa Simmons from Manchester Metropolitan University took to the stage next to discuss the university’s experience of embedding the online development recording and planning tool IET Career Manager into their curriculum.

Graduate employability
The presentations closed with Professor John Perkins, Chair of the IET Education and Skills Sector Panel, speaking about graduate employability, including potential problems and what action the IET is taking.

Both the presentations and Q&A panel raised some interesting points that continued to be discussed throughout the following networking session.

In addition, during the event guests were treated to a complimentary tour of the refurbished IET London: Savoy Place including the impressive roof terrace.

Fantastic feedback
The Academic Partner team received fantastic feedback, with several guests commenting on how wonderful it was to see the new, technologically advanced building.

You can find the presentation slides and photos from this event online at bit.ly/2dsFoid.
Loughborough University’s Control Systems Group has announced that a consortium led by Ricardo Rail Ltd will develop the first installation of a radical new track switch product.

Repoint is a patented ultra-high availability/maintainability track switch that could help support increased levels of day-to-day rail traffic across the network.

The design introduces the concept of using several actuators to operate the same points, meaning that in the event of a single failure the remaining actuators continue to function safely. With this additional redundancy built into each machine, rail traffic can still pass and remedial maintenance can be scheduled without causing immediate disruption to services.

Repoint also uses a unique ‘lift, hop and drop’ mechanism, a method that eliminates the friction experienced by the slide chairs used in traditional point machines. It is also much faster to operate: Repoint can move a switch in under half a second, compared to four seconds for conventional designs – an improvement that can help support increased network capacity.

The first full-scale Repoint will be integrated with London Underground infrastructure in early 2018.

The development of Repoint originates from a request by the industry’s independent body RSSB, to explore ways to increase network capacity. Following discussions with industry stakeholders, the limitations of switch machines, and the extent of disruption caused by a single failure, was seen by the University as an area that could benefit from a fresh approach. The UK has over 20,000 switch and crossing units and, despite representing only five per cent of network mileage, they account for over 15 per cent of the track maintenance budget.

Ricardo Rail have assembled a consortium including Progress Rail, DEG Signal and MPEC Technology and will now assist with the next stage of design, build and trial of a Repoint switch.

The contract is the result of an invitation to provide industrial development assistance publicised for official tender (OJEU) in June 2016.

Repoint was awarded an IET Innovation Award in the transport category at the ceremony on Wednesday 16 November.

For more information, please visit our website at www.theiet.org/innovation
Eight schools from across South Wales and the South West of England took part in the annual Engineering Olympics held at the University of South Wales this summer.

The competition involved teams from schools and colleges competing in three events: the Robo-Rally Challenge, the Platform Ejector Seat Challenge and the Robot Programming Challenge.

“The teams brought some wonderful and creative ideas with them to the Engineering Olympics this year, and it was great to see such a high standard of engineering ingenuity,” says Dr Daphne O’Doherty, Head of the School of Engineering at the University of South Wales.

“We have the largest engineering provision in Wales and, with our top-class facilities, including our new multi-million-pound Centre of Automotive and Power Systems Engineering (CAPSE) building and the extended Aerospace Centre, we are able to offer our students an excellent learning experience and preparation for a wide range of careers in the industry,” she added.

“We want the next generation of engineers to have first-hand experience of what it takes to succeed in their chosen career and the ‘Olympics offers them the chance to test their skills while having the support of our experts, who can point them in the right direction.”

Ruben Wharton, 15, from Wrthlington School in Bath, worked on the Robo-Rally Challenge.

“We’ve enjoyed working on the robot and testing it on the track to see how accurate our programming is. I’m interested in electrical engineering so this has been great to get involved with – the Engineering Olympics has been a lot more fun than sitting in our classroom,” Ruben laughs.

Damian Jones, a Design and Technology Teacher at Ysgol Dyffryn Aman in Ammanford, had a team of students who worked on the Robot Programming Challenge.

“The students have worked on this challenge in their own time, so it’s really encouraging to see them come together through their shared interest in engineering,” Damian says.

“Events such as the Engineering Olympics are a great way of engaging students and getting them to think about careers in so many different sectors, with challenges that are a novel alternative to heavy industry and workshop-based tasks.”

Iyesha Stacey and Sarah Moore from Mendip Studio School in Wrthlington worked on the Ejector Seat Challenge.

Going for gold at the Engineering Olympics
Children are growing up in a world of mobile phones, tablets, smart TVs, augmented reality, networked systems and the newly emerging Internet of Things. While using an array of devices and apps is second nature to them, it is much less the case that they understand how they work.

Digital Fluency is intended to fill this gap – an innovative approach to integrating learning, emphasising the importance of moving seamlessly between exploring, learning and assimilating knowledge when harnessing today’s technologies.

**A new approach to learning**

In a nutshell, it brings together disparate aspects of computer science, cognition, design and everyday life to provoke curiosity, deep learning and creativity. The approach was developed by an interdisciplinary team in the Department of Computer Science at UCL’s award winning Interaction Centre (UCLIC), led by Professor Yvonne Rogers together with Dr Nic Marquardt, Dr Venus Shum, Dr Rose Johnson and Susan Lechelt.

The Digital Fluency approach promotes the learning of four types of fundamental thinking: critical, computational, creative and connected. Students learn how to apply these when engaged in core learning activities for a given concept or topic: exploring, reflecting, making, coding, sharing, showing, problem-solving, problem-finding and collaborating.

**Magic Cubes**

To facilitate this new kind of learning the team has developed an extensive, tangible computing toolkit called Magic Cubes: special building blocks that encourage collaborative exploration through a range of exciting and sometimes mysterious making and programing activities. For example, one minute someone can be using it to construct a cube, the next making a pattern of LEDs light up while shaking the cube, then watching an interconnected set of cubes placed in a room light up like a Mexican wave.

The graspable, colourful and intuitive cubes are packed with sensors and an LED matrix, providing enticing opportunities for anyone to get started straight away experimenting and exploring their environment and ideas. The goal is to make future generations become not only consumers, but also critical thinkers and active shapers of technology.

**Shaping technology**

Audiences of different ages and levels of understanding have used the toolkit at a number of public engagement and outreach programmes at events including BBC tech workshops, the Exploratorium in San Francisco, the Royal Institution UCL Engineering masterclasses and in special needs schools among others.

For more information on the magic cubes, please contact Yvonne Rogers at y.rogers@ucl.ac.uk or go to www.codeme.io or for the UCL award go to www.uclic.ucl.ac.uk.
London Met named best CCNP provider in Europe

University gains Cisco Academy recognition for providing Cisco Certified Network Professional (CCNP) Curriculum Excellence.

London Metropolitan University has been recognised by Cisco for providing the best delivery of the CCNP curriculum in Europe, after being awarded the organisation’s annual Academy Curriculum Excellence for its high quality teaching of the CCNP curriculum.

The award puts the University ahead of institutions in more than 15 countries across Europe where the curriculum is taught, and was granted to the University based on student feedback scores and student performance based on final exam results.

As well as running the Cisco CCNP Routing and Switching short course, the University offers the Cisco CCNA Security and Cisco CCNA Routing and Switching short courses. It also runs computer networking-related MSc courses in the form of the Computer Networking and Cyber Security MSc and the Computer Networking and Cyber Security with Work Experience MSc, which are also linked to the CCNP curriculum.

Super Regional Academy
London Metropolitan University was established as a Cisco Academy Training Centre in 1998, before later becoming a Super Regional Academy, within the former University of North London’s School of Communications Technology and Mathematical Sciences – now the Communications Technology Cluster within the School of Computing and Digital Media. It is one of the few places in the UK certified by Cisco Systems to provide CCNP training in one of the most advanced Cisco labs in the UK.

Since 1998, the university has trained instructors across the UK and Far East, and supported a range of educational institutions including universities, further education colleges, and higher education colleges and schools.

International trainer
In 2012 the University was selected as an Academy Support Centre and Instructor Training Centre to continue its high quality support and training to academies and instructors across the globe. London Met became one of the first universities to embed Cisco material into its undergraduate and postgraduate programmes in 1999 and has since been offering Cisco professional training courses to local people through part and full-time courses.

Part-time courses
The University’s part-time and weekend courses in computer networks and inter-networking teach students the skills needed to design, build and maintain computer networks, and enable successful candidates to take the CCNA and CCNP examinations.
The course portfolio at Ulster University’s School of Engineering includes MEng and BEng Hons programmes in mechanical, mechatronic, electronic, biomedical and engineering management disciplines – all of which are professionally accredited and include an integrated placement year in industry. Postgraduate programmes in manufacturing management, composite materials and biomedical engineering are also offered.

Within Ulster University, the School of Engineering and the School of Computing and Intelligent Systems have received Athena SWAN Bronze awards, (a UK movement created to inspire young women to study and pursue STEM careers), acknowledging their work to help support women into engineering careers.

“These awards underline the faculty’s continued commitment to doing its part in inspiring and attracting the next generation of women to engineering and to other STEM disciplines,” notes Dr Margaret Morgan, the Athena SWAN Champion in the School of Engineering.

“Regardless of the STEM course followed, Ulster University graduates are work-ready, with the knowledge, skills and entrepreneurial drive to compete professionally within key growth sectors.”

Promoting STEM careers
In line with the University’s commitment to the Athena SWAN principles, it regularly holds events to promote the exciting and rewarding career opportunities in STEM. For example, last year the University held an Engineering Bright Futures symposium to mark Ada Lovelace Day. During the event, schoolgirls got hands-on with innovative technologies in 3D printing, tissue engineering, composite materials and environmental science that demonstrated in a practical way the real life applications of STEM in our everyday lives. The girls also heard from a line-up of female role models at different stages of their STEM careers including a quality engineer, a KTP associate and a mechanical engineering final year student.

This October the University held a conference entitled Gender Equality in STEMM*: The Future is Bright, designed to showcase the innovative practice underway in the sector to encourage women and girls into STEM careers and transform workplace culture.

Transforming workplace culture
The event brought together over 120 delegates including researchers, policy makers, educators and industry leaders. There were keynote addresses from Professor Curt Rice, Head of Norway’s Committee on Gender Balance and Diversity in Research, Gillian McColgan, Chief Technology Officer, Marquis Technologies and Dr Anke Lipinsky, Scientific Associate, Center of Excellence Women and Science, GESIS Leibniz Institute for the Social Sciences.

*Science Technology, Engineering, Maths and Medicine.
Introducing Enterprise Partners

The IET is proud to announce the launch of its new partnership community: Enterprise Partners.
An Enterprise Partnership is available to UK-based SMEs that commit to an annual IET membership base of at least 15 engineers and technicians.

Each IET Enterprise Partner works with the IET’s Partnership and Development team to create implementation plans that focus on the continuing professional development of staff and facilitate links with the wider IET partnership community.

Some of the key benefits of an Enterprise Partnership with the IET include:

- Access to a wide range of professional development solutions
- Increased company profile in the IET engineering community
- Opportunity to develop employee technical knowledge
- Networking and sharing ideas with like-minded engineers and organisations
- Dedicated IET account management
- Discounts on a range of products and services
- Recruitment opportunities
- Features in *Partner News* and quarterly partnership newsletters.

The IET is keen to work with small to medium sized businesses that are innovative in engineering and technology and are passionate about engaging in the IET partnership community. We would like to take this opportunity to welcome our founding Enterprise Partners to the IET partnership community:

- Airborne Systems
- CHG Electrical
- Comau
- Denroy
- ETA Projects
- Fundamentals
- GES Group
- Holovis
- Lintott
- Sevcon
- Xeros

If you are interested in becoming an Enterprise Partner, please contact us at [partnerships@theiet.org](mailto:partnerships@theiet.org) to discuss further.
AIRBORNE SYSTEMS LTD

With over 90 years design experience, Airborne Systems Ltd offers an extensive range of services, including engineering design, manufacturing, build to print, training, test and evaluation and through life support of aerial delivery systems, parachutes, search and rescue solutions and is an expert in naval corner reflector passive RF decoy technology. Airborne Systems has world-class status for pioneering advancements in technology by approaching product design from a military standpoint.

COMAU

Comau is a worldwide leader in manufacturing flexible automation systems and integrating products, processes and services that increase efficiency while lowering overall costs.

Headquartered in Turin, Italy, with an international network that spans 17 countries, Comau uses the latest technology and processes to deliver advanced turnkey systems. The company specialises in body joining and assembly, search and rescue solutions and is an expert in naval corner reflector passive RF decoy technology. Airborne Systems has world-class status for pioneering advancements in technology by approaching product design from a military standpoint.

DENROY PLASTICS

Denroy Plastics Ltd was established in 1972 and has grown to become a global leader in providing single source solutions of plastics products to quality and safety conscious industries such as aerospace, defence, automotive and healthcare.

The company offers a single source for a complete range of added value services in the production of finished devices, components and enclosures.

Denroy services a broad spectrum of business sectors and has extensive knowledge and expertise in processing a diverse range of polymers from the most common polypropylene grades through to the high engineering grades of PEEK and PPS used in the aerospace industry.

GES GROUP

Eta Projects is an independent firm of design engineers, consultants and technical specialists offering a broad range of professional services. It supports business sectors where mechanical-electrical services are critical, i.e. healthcare, telecommunications and commercial. Its core specialism is design, delivery, testing and commissioning of HV/LV, UPS and standby generator systems. It specialises in power quality and troubleshooting-related problems. It undertakes risk-based condition reports on HV/LV electrical infrastructures, identifying single points of failures with recommendations on cost-effective solutions.

Eta Project’s USP includes experts in direct procurement of prime items, including HV/LV and UPS/generators, potentially achieving savings up to 20%.

CHG ELECTRICAL

Sheffield-based CHG Electrical specialises in electrical and mechanical engineering, with its clients benefiting from the company’s years of experience working within the industrial, commercial, residential and public sectors.

Strategic partnerships and acquisitions have led to the formation of the CHG Group, enabling cross utilisation of resources and expertise to provide a comprehensive package of products, services, project management and turnkey solutions.

Examples of the typical electrical and mechanical engineering work completed by the company include power circuit design, testing, instrument control and automation, panel design and build, renewable technology, heating ventilation and air conditioning and building energy management systems (BEMS).

FUNDAMENTALS

Fundamentals Ltd is a family-run company dedicated to delivering quality products and services to the electrical power industry.

Fundamentals is an established leader in voltage control products and services for the grid, and is developing a comprehensive range of asset management technology for transformers, tapchangers and cables. The company also offers an extensive range of asset management services for all electrical plants.

Furthermore, this fast-growing company offers an end-to-end service covering all voltage levels from LV to 400 kV across a diverse range of equipment types from various manufacturers.
** ETA PROJECTS  

Eta Projects is an independent firm of design engineers, consultants and technical specialists offering a broad range of professional, specialist services. It supports business sectors where mechanical-electrical services are business critical, i.e. healthcare, telecommunications and commercial business.

Its core specialism is design, delivery, testing and commissioning of high voltage, low voltage, UPS and generator standby systems and it specialises in power quality and troubleshooting-related problems. It undertakes risk-based condition reports on HV/LV electrical infrastructures, identifying single points of failures with cost-effective solutions.

Eta Project’s USP includes experts in direct procurement of prime items, including HV/LV and UPS/generators, potentially achieving savings of 20 per cent.

** SEVCON  

Trusted by the world’s leading companies for electrification solutions, Sevcon designs and manufactures high quality AC and DC motor controllers and system components which impact on the way people travel, work and live.

It offers a diverse range of products on electrically powered vehicles from forklift trucks to high performance sports cars, which are constructed to perform reliably in the most severe conditions.

With the acquisition of Italian-based Bassi, the Sevcon product line has been expanded, with the addition of fast-charging systems for batteries.

** LINTOTT  

Lintott is a pioneering customer-centric process solutions provider. The company specialises in the design, manufacture and aftercare of factory-built, packaged water and waste water treatment systems, process software and electrical control panels.

Through continuous reinvention and by fostering a culture of creativity and engagement, Lintott’s primary objective is to redefine standards, thus creating value and delivering simplicity. This seeks to realise its vision to be “the first choice supplier – every time”.

In addition to standard customisable solutions, industry-defining digital connectivity provides clients with reduced lead-times and ever-smarter solutions.

** XEROS  

Xeros is the world leader for using polymer technology in many water-based processes to achieve significant environmental benefits associated to water, energy and chemicals.

From the Xeros Technology Centre in Rotherham, it has an international profile in commercial laundry and leather processing sectors, with new developments for the use of the polymer technology being undertaken in other sectors.

** HOLOVIS  

Holovis designs and delivers experiential immersive experiences for several market sectors including creating mixed reality (virtual and augmented) solutions for industry and innovative, new attractions for the world’s major theme parks.

The multidisciplinary British-based team of engineers, designers and programmers are all aspiring leaders in their field specialising in mechanical, electrical, software, and CAD-based projects.

Pioneering the development and deployment of new technology solutions into high-impact applications across Europe, Asia, the Middle East and USA, Holovis supports its engineers to become accredited and Chartered professionals, as high quality personnel are a key driver of its exponential growth.
Leah Barlow EngTech, a final year engineering apprentice at Siemens.
EngTech success for Siemens apprentice

A final year Siemens engineering apprentice, Leah Barlow, recently became professionally registered as an Engineering Technician (EngTech) through the IET.

From a young age Leah had always helped her dad around the house. Being an electrician, he was always doing odd jobs at home and she would look over his shoulder and try to help out with anything she could. Although she’d never had any ‘real’ experience in an engineering environment, Leah believes that this, coupled with the fact she’s always loved to find out how things work, is what led her towards a career in engineering.

When she finished her GCSEs Leah was directed towards studying A levels, and wasn’t presented with any other options. However, after completing her A levels she successfully applied for a place on the Siemens apprenticeship scheme, and she was sent to Trafford College to begin a nine month City & Guilds performing engineering operations (PEO) qualification, as well as working towards a BTEC in electrical and electronic engineering.

“The thing I am most proud of achieving so far is getting double distinction stars in my BTEC,” Leah says. “Throughout my school career I have had the ability to do well but have never had the drive to make myself succeed. However, after finally finding something I am interested in, it meant I was able to excel and achieve the best grade possible, whilst enjoying it at the same time.”

Rotating work placements

When her PEO was over Leah spent the next two years rotating through different business departments at Siemens’ Princess Road and Wythenshawe sites in Manchester. “This allowed me to find out more about the company and the roles each department played,” Leah explains. “In addition I undertook project work for my workplace NVQ. Following my BTEC I started my HNC, which I am in the last year of, while also taking on a HND in the evenings. I’m hoping to continue my studies to a degree conversion in the future.”

IET apprentice membership

Leah joined the IET a few years ago after it was suggested she’d benefit from becoming an apprentice member. With just a few years under her belt, she’s already found several of the membership features very handy. “I found it very useful during my time in college as there are study resources available to use which helped me with some of my assignments, but it was also useful in general for networking etc. I have often had invites for events in my area, which are great at apprentice level for getting to know more about the engineering community,” she says.

Gaining EngTech as an apprentice

Due to the Siemens apprenticeship scheme being IET approved, Leah was also able to use her NVQ, BTEC qualification and the departmental experience she’d gained to apply for Engineering Technician (EngTech) status.

“I found the application process for EngTech relatively simple - I filled out the form I was given and after a few weeks I found my application had been approved and I received my certificate in the post,” says Leah. “I believe having EngTech registration will help me in my career as it will help to show that the time I have put in to achieve my qualifications and prove that I have gained the experience and knowledge required,” she adds.

The final year of her apprenticeship

Now in the final year of her Siemens apprenticeship, Leah is currently part of a project in the hardware side of the business.

“I had experience in creating and editing CAD panel drawings, ordering and specifying equipment and completing comprehensive tests so that the equipment is site-ready. I found the hardware side a lot more interesting than I originally thought and feel like it has given me the best foundation to build upon in future,” she says.

“I plan to further my knowledge in hardware, but to also move over and complete some training in programming and the associated software in order to get a full view of what goes in to the systems,” she concludes.

Leah and colleagues at an apprentice recruitment event.
Engineers at Lockheed’s site in Ampthill, Bedfordshire, will develop two key parts for the cutting-edge, multi-million euro Space Rider project being developed by the European Space Agency (ESA).

After being launched into orbit, the small, unmanned craft will gather scientific data, carry out exploration missions and deliver cargo to and from the International Space Station.

Crucially, Space Rider will be capable of surviving re-entry into the Earth’s atmosphere, making it reusable and an affordable way to bring important findings back from space.

Surviving re-entry
Lockheed Martin will develop the actuator system, which operates flaps to steady the flight during re-entry along with the landing system to bring the spacecraft safely back to Earth.

“This is a first for Europe and a first for Lockheed Martin in the UK,” says Stephen Gibson, Space Business Lead at Lockheed Martin’s Ampthill site. “Space Rider will orbit the Earth, staying up there anywhere from two weeks to six months. It will fly a couple of times a year, with each craft designed to carry out at least six flights over its lifetime.”

Lockheed Martin UK has been contracted to work on the project by the Italian Aerospace Research Centre (CIRA), who, together with Thales Alenia Space Italy, is developing the craft for ESA.

Mid-air retrieval
As part of the deal, Lockheed Martin UK will look at landing systems for the spacecraft.

“Space Rider will re-enter our atmosphere at 7.5km a second. Making sure it lands back on earth safely is a major part of the project. We’re looking at two solutions, pulling in expertise and capabilities from across Lockheed Martin Corporation,” says Alex Godfrey, Technical Lead at the Ampthill site.

“The first is a mid-air retrieval system, which means the spacecraft is slowed down by a parafoil and then captured in the sky by a helicopter; the second is a more traditional landing gear, with it coming to rest on a runway.”

Space Rider’s first launch is expected to take place around 2020.
Astra Zeneca re-energises its work with the IET through new partnership

The agreement was signed by IET Head of Membership Mark Organ alongside Marc Jones, Astra Zeneca’s Regional Vice President, Supply, EMEA. Also in attendance were Astra Zeneca’s Paul Millinger, Associate Director Engineering Projects and Construction and IET Scheme Owner, Peter Alexander, Project Manager and IET Scheme Co-ordinator, and Richard Lloyd, Associate Director, Facilities.

“We undertook this partnership with the IET because it became clear that our existing relationship was focused on progressing graduates to Chartered Engineer (CEng) status, almost overlooking those engineers who had taken alternative career paths,” notes Paul.

**Engineering community**

“Becoming a Corporate Partner with the IET gives us a better focus for the wider engineering community, linking them with ways to progress their professional registration applications, as well as helping those that have already achieved it with their continuing professional development,” he continues.

“We have re-energised our work with the IET; improving our understanding of how we can work together, giving us access to other industries and organisations to exchange ideas and we’re taking advantage of IET resources to really push our engineers to get involved,” he enthuses. “It’s even encouraged me to apply for Fellowship!”

**Registration scheme**

Adam Parnell, Regional Development Manager – North of England, is looking forward to the next steps.

“This newly formed partnership will act as a springboard for future activity,” he says.

“We have already launched a company based registration scheme, which included several sessions for engineers and technicians at all levels of their career, as well as a mentor training day.”
Engineers at the Atomic Weapons Establishment (AWE) are working at the cutting-edge of additive manufacturing, more commonly known as 3D printing. This supports AWE’s ability to carry out modelling and rapid manufacturing, helping our understanding of the performance and other characteristics of a nuclear warhead during its lifetime.

With the emergence of mainstream 3D computer-aided design (CAD) tools in the mid 1990s, AWE began investigating related technologies including 3D printing. Functional prototypes were increasingly used at AWE during this period for simple form-and-fit models, sourced through external suppliers.

In 2001 AWE procured its first rapid prototyping system based on binder-jetting technology, closely followed by a material extrusion (polymer) system. Following this, the demand for prototype components increased significantly. Consequently, AWE invested in a large-format powder bed fusion (polymer) system.

**Cutting-edge capabilities**

As rapid prototyping became engrained within the product development cycle, users began to demand components made in different materials to suit new applications. In response, AWE’s engineers and manufacturing specialists established cutting-edge capabilities to produce metallic components, flexible and transparent polymers, and latterly printed electronics: PEL – a system that uses an inkjet head to deposit conductive ink onto a substrate to form a circuit that is also capable of printing certain electronic components. Electronic and additive manufacturing techniques are starting to converge.

The current capability produces in excess of 5,000 components per annum, supporting applications ranging from design verification, jigs and fixtures, to tooling and architectural models in support of the nuclear deterrent programme.

Within AWE’s additive manufacturing capability, there are additional tools that complement one another. Electronic prototype equipment, which includes mechanical routing, laser ablation – a process that removes the copper from a blank sheet to form a conductive track – and PEL are all used for the production of electronic prototypes.

Model-based inspections and reverse engineering cover white light and laser scanning – in 3D – plus state-of-the art contact measurement systems allowing the engineer to remotely take dimensions of components or models.

**Training and development**

As part of AWE’s commitment to inspiring current and future generations of scientists and engineers, it places great importance in the training and development of employees. The lure of working on its advanced additive manufacturing machines and with its highly trained specialists attracts a continuous intake of apprentices and graduates. The work is challenging and stimulating and provides them with training that promotes continuing professional development (CPD) aligned with competencies, supporting professional registration.

AWE continues to maintain and develop its additive manufacturing capability in line with the demands of its engineers. This involves working collaboratively with industry, academia and business partners, ensuring it remains able to quickly adapt to changing requirements.

To explore the unique and exciting opportunities available in engineering at AWE please visit AWE.co.uk/careers.
BAE Systems commends engineers for professional registration achievements

This June BAE Systems invited representatives from the IET and IMechE to their Barrow-in-Furness site to celebrate the achievements of the individuals being awarded their Chartered Engineer (CEng), Incorporated Engineer (IEng) and Fellowship certificates.

Martin Pulford, Capability Manager – Engineering Submarine Solutions, was one of the driving forces behind this site’s success.

“We have a particularly excellent relationship with the IET going back to 2000 when we first started the company based registration scheme, and we are very proud of this. Some Fellows here today actually went through that scheme in the early 2000s – it makes me feel old knowing that some of the graduates I recruited over the years are now Fellows!”

Stephanie Smith, IET Professional Registration Account Manager, works closely with the Barrow-in-Furness site and attended the event on behalf of the IET.

“Martin’s comments prove how important professional registration is to BAE Systems and these celebration events show how much it is valued by the company,” she says. “I was delighted to see the individuals we celebrated so proud of their achievements; I hope they are inspired by their experience to support colleagues currently going through the process,” she adds.

“With the scale and complexity of the products we produce, BAE Systems’ engineering function is understandably large and diverse with numbers in the region of 1,400 engineers and designers. It is great to see so many engineers that have taken the time and effort to gain the qualifications that they obviously deserve,” adds Graeme Corkill, BAE Systems’ Deputy Chief Engineer.

“The business remains committed to supporting our engineers through professional registration for all institutions, and is keen on developing the relationship with the IET and IMechE further to ensure more of our engineers seek professional registration.”

The IET’s Stephanie Smith (front row, third from left) with the successful engineers as well as BAE Systems’ Martin Pulford (back row, first from left), Russ Watson (front row, fourth from left) and Graeme Corkill (front row, fifth from left).
This July the BBC invited its engineering graduates to New Broadcasting House, London, to celebrate their graduation and showcase the BBC’s technical talent.

The new graduates were joined by family and friends as well as representatives from industry, academia and the IET.

The agenda included a welcome from the BBC Chief Technology Officer Matthew Postgate, as well as several speakers from the BBC, industry, partner universities, the IET, and alumni from past BBC programmes, and saw each graduate congratulated on their success.

At the event Michelle Richmond, IET Director of Membership and Professional Development, spoke about her experiences as an engineer and how she worked her way up to her current position.

“It was a pleasure to be part of the BBC engineering talent celebration,” she says. “It was clear to see the passion their young engineers have and the hard work they put into achieving their qualifications. I’m certain they all have bright futures ahead of them.”

“In addition to the achievements our talent has made, this event also demonstrated the positive collaborations we have built since 2013 inside the BBC, and additionally with our valued external partners and universities,” adds Huw Davies, BBC Engineering Programme Manager.

During the visit a series of tailored information sessions took place outlining further professional development pathways and mentoring opportunities. The sessions were attended by approximately 40 engineers at varying stages in their careers, from recent graduates through to Chartered Engineers, all responsible for implementing smart solutions on major infrastructure projects throughout the UK.

“Capula is proud of its diverse and highly skilled workforce and since 2010 we have recruited over 60 graduate engineers into our dynamic, fast-paced organisation,” says Steve Tellwright, Capula’s HR Director.

“We encourage and support our engineers to achieve further professional accreditation and this Corporate Partnership agreement with the IET supports our people strategy and allows us to maintain our position as a leading system integration business in the marketplace.”

Capula is delighted to have become a Corporate Partner of the IET in an agreement that will help strengthen its professional development activities and enable more of its employees to reach their potential.

To acknowledge the start of a closer working relationship between the two organisations, Capula’s directors recently welcomed the IET Regional Development Manager Sarah Larkham to its head office in Staffordshire.

During the visit a series of tailored information sessions took place outlining further professional development pathways and mentoring opportunities. The sessions were attended by approximately 40 engineers at varying stages in their careers, from recent graduates through to Chartered Engineers, all responsible for implementing smart solutions on major infrastructure projects throughout the UK.

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Capula has recently been selected by National Grid, another IET Corporate Partner, to be a key supplier on their Substation Control System (SCS) upgrade framework.
Technology firm Leonardo has launched a new cross functional group initiative for academic work streams at its Edinburgh site. Led by Technical Specialist Tom Pitchforth, this innovative work placement activity allows students to work together on a project, in turn benefiting the business. Here Tom shares details of this project and its potential to make tangible contributions to the business in the longer term.

What is the main objective of this activity?
In the past, our work placement intake in Edinburgh has typically worked on a wide array of individual projects. This new approach seeks to promote cross discipline working within a group, where the work focuses on real, live business objectives. Modularity and re-use are key focus areas for engineering to improve efficiency and reduce costs. 2016’s academic placements in Leonardo’s Radar and Advanced Targeting (RATs) line of business used a model-driven engineering approach to develop simulations at a high level and then flow this down to implementation.

This design process requires a number of engineers from different disciplines and also involves development tools from different vendors. The academic group looked at the latest capabilities of the development tools and how they could best leverage these to efficiently create and deploy models.

Who does the team include?
The team comprised three, six and 12-month work placement students. This group was created from successful applicants within systems, software and firmware engineering. Activities were aligned to their academic study, and in a purely academic environment it wouldn’t be possible to acquire this practical experience.

For this reason, we are working increasingly closely with higher education to improve the experience in a way that is led by employers.

How do you hope this work will be applied within the business?
Following the placements, a number of technical documents and reference designs are being made available. These are intended to raise awareness of new tools and techniques, promoting knowledge sharing and best practice. Engineers and projects should then use these techniques, or re-use design modules to increase their working efficiency.

What is the next step for this project?
This was a trial for a larger group within the academic placements, but the work packages assigned are part of a larger business strategy. Due to the placements’ success, they will set the foundation for an academic group activity in 2017, which will build upon the work and the models already created.

A lot of this work is focused on next generation modelling and digital processing. The hope is to continually expand this capability as the activities evolve. An ‘Innovation Hub’ is also being set up at the Edinburgh site that will have a focus on digital processing and innovation. Some of 2016’s academic activities will feed into this and it is expected that the 2017 placements may benefit from this new arrangement.

What do you hope the students will take away from this experience?
Before the placements started in June I knew this was quite an ambitious undertaking, as the work packages were quite advanced and technically demanding. I was surprised at how quickly they picked up the tools and techniques and started working as a unit, solving each other’s technical challenges as well as their own. Weekly meetings with a different chairperson from the group also allowed them to work on their planning and management skills.

I hope they will have returned to university feeling more confident about working in industry, with a positive view of working at Leonardo.
This June, Royal Mail welcomed IET representatives to its Sheffield Mail Centre to celebrate the site becoming the first large plant to reach a 100 per cent professionally registered workforce.

The IET’s Professional Registration Manager Stephanie Smith and Membership Communications Manager Laura Beard interviewed the team of newly qualified Engineering Technicians (EngTechs) before being treated to a tour of the impressive facility.

“This scheme is a great way for our skills to be recognised outside of Royal Mail,” says newly registered EngTech John Steward. “It has changed the way the company trains people. Professional registration is now stated on job descriptions, which is raising standards. Also, it’s good for new apprentices coming in, as EngTech is now built into the course,” he adds.

The team is hugely proud that the Sheffield Mail Centre has been named the first Royal Mail site to achieve 100 per cent professional registration.

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“Royal Mail is a Corporate Partner of the IET and we really do work together to fully support all engineers to attain professional registration,” continues Tony Nicholls, Engineering People Development Manager at Royal Mail.

“Royal Mail’s newly qualified EngTechs with the IET’s Stephanie Smith and Royal Mail’s Tony Nicholls (far right)."
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To find out more about the IET Academy and to request an early preview for your organisation please contact us at academy@theiet.org or visit www.theiet.org/academy
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