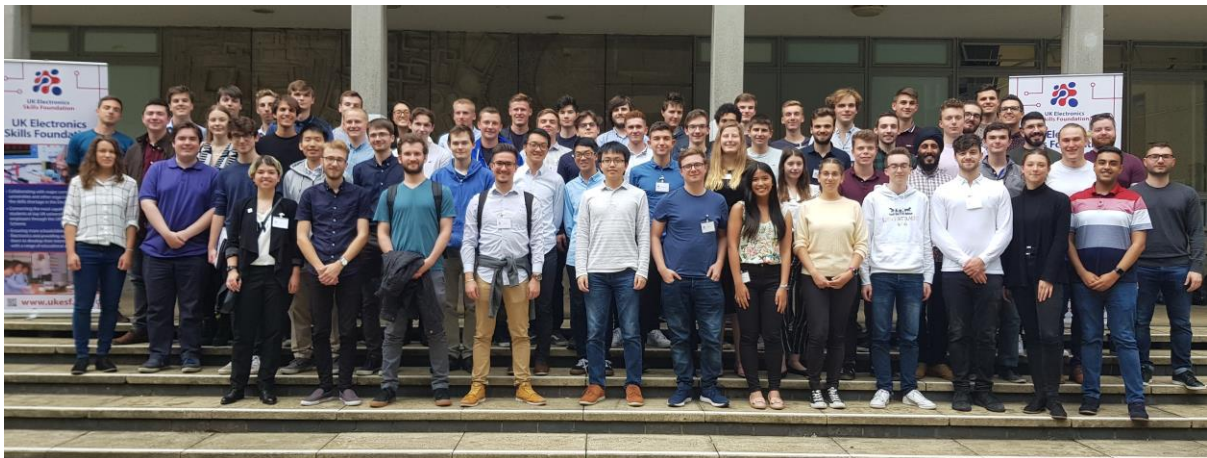




**UK Electronics
Skills Foundation**

Annual Review 2019/20



Attendees of the 2019 Scholar Workshop

“Opportunities, relationships and learning. Receiving a UKESF Scholarship opened the world for me.”

Agnes Nagy, UKESF Scholar (Nottingham/vivaMOS), on what the UKESF has meant to her

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Miranda Lowther, UKESF Scholar (York/Renesas)

“When I was on my placement, I went to do an outreach activity with Stew Edmondson at Imperial College. Just a quick talk about my experience in the UK as a student and what I've done to get to where I was. It helped remind me about how important it is that we keep on promoting and showing students, their families, and people around them that engineering is more than what they think it is. Engineering is one of the crucial ways of how we work, it's how we live our lives, and without engineering, we'd be nothing.”

About the UKESF

The UKESF's mission is to encourage more young people to study Electronics and to pursue careers in the sector.

550

students have received
UKESF Scholarships
since 2010

In the UK, the Electronics sector is big, valuable and growing; however, the demand for capable, employable graduates is currently outstripping supply. The UKESF is an educational charity, launched in 2010, with both public and private seed-corn funding. We operate collaboratively with major companies, leading universities and other organisations to tackle the skills shortage in the Electronics sector.

We ensure that more schoolchildren are aware of Electronics and the opportunities available, helping them to develop their interest through to university study. At university, we support undergraduates and prepare them for the workplace.

Registered charity number: SC043940
www.ukesf.org

100%

of employers rated the
UKESF as 'excellent' or
'good'

Introduction

Indro Mukerjee, Chairman

Writing as one of the founders of the Foundation, approaching our 10th year of successful operation and marking another year of achievements as shown in this review, I would have expected to be writing a different introduction.



For now, all I'll say about the past is to give heartfelt thanks and respect to our sponsors, partners, scholars, volunteer trustees and, of course, our brilliant UKESF team for making the last 10 years possible.

We will acknowledge this anniversary in due course but, for now, the focus is on dealing with the effects of the COVID-19 pandemic in the present and on working and building for the future. The pandemic is far from over and its full implications are far from clear; and most of us have been and are being directly or indirectly touched by its effects. Our UKESF team is focussed on pragmatically and efficiently keeping going so that we can continue to serve our partners and scholars. This is being done through a great deal of determination, resilience, flexibility and creativity.

Ever since we started the Foundation, our work has been about building the future by inspiring and supporting students and scholars into the Electronics industry. There has never been a more important time to work to build the future of our industry than now; with so many challenges and a clear need to maintain and develop the strength of the UK's Electronics-based industries. So, we all believe that it's vital to keep going and to be able to do our best for both our industrial and academic partners so that we can help build the future. We all look forward to being able to share more achievements in next year's review.

Whether you're one of our partners, a scholar or just interested in the UKESF, on behalf of our trustees, I'd like to wish you good health, peace and happiness in these turbulent times.

The Year at a Glance

24

leading UK universities for Electronics are UKESF partners

100k

over £100k raised to support scale-up of "Electronics Everywhere"

200+

children have benefitted from working with Robokid kits

7

new companies joined the UKESF Scholarship Scheme

28

percentage of scholarships awarded to female students

50

Scholars graduated

300

schools expected to receive "Electronics Everywhere" resources

976

Twitter followers (@theUKESF and @TOTElectronics)

2,006

average number of unique website users per month

Scholar Destinations

The UKESF has information about **98%** of the 276 scholars who have graduated between 2012 and 2019.

Of those, **76%** are employed by Electronics or Technology companies and **17%** are studying for a PhD or doing research at a university.

64% of scholars in employment are working for a UKESF Partner Company.

Executive Statement

Stew Edmondson, CEO



Welcome to our Annual Review for 2019/20.

The year started with us making ambitious plans for expanding our programme of school and outreach activities. However, as with much else this year, the coronavirus pandemic has had a massive impact. In recent months, with schools closed and all of our normal face-to-face activities cancelled or postponed, we have been focusing almost entirely on guiding the Foundation safely through the COVID-19 crisis.

This has been a difficult period but our whole team has responded magnificently; I have been heartened by the support that we have continued to receive from our partners from both industry and higher education. In particular, I would like to thank our volunteer Trustees, who have provided me with invaluable advice and support. As a result, I am pleased to say that we have been able to 'steady the ship' and can now look ahead to 2020/21 with a fair degree of confidence. This is important, as our work is now even more vital as the UK emerges from the crisis with a renewed focus on technology and innovation.

Looking back over the year, there have been a number of highlights.

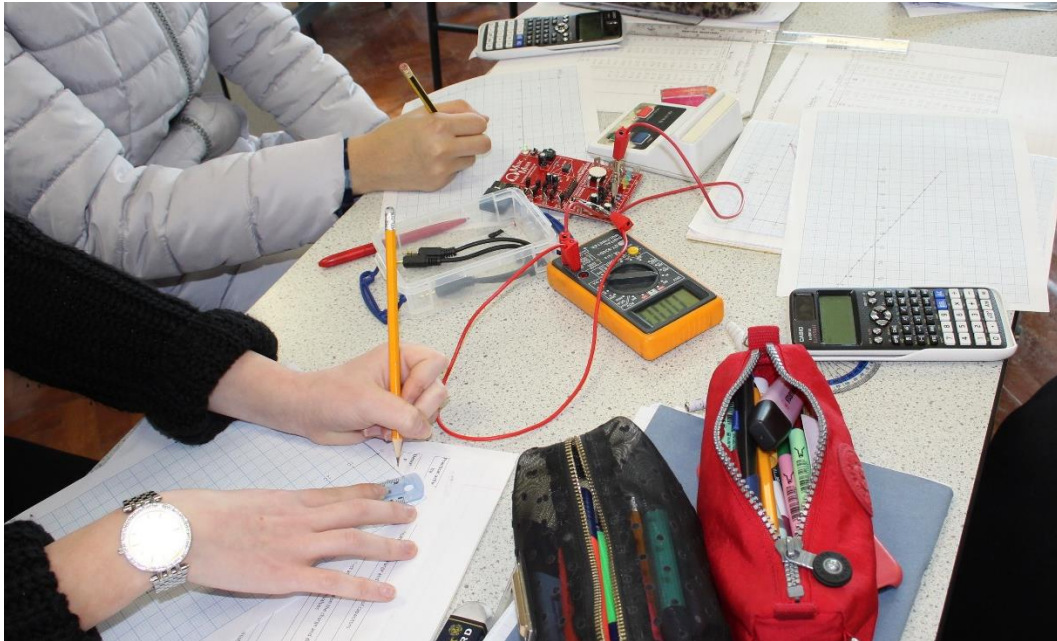
We were delighted to receive sufficient financial support from a number of donors to scale-up our "Electronics Everywhere" project for schools. We have had manufactured (in the UK, by Ultra CEMS) all the classroom resources for 300 more schools, which will be distributed to state schools as soon as we are able to. It was great to receive endorsement for the "Electronics Everywhere" project from the Royal Academy of Engineering.

I am also pleased to report that the number of UKESF Scholarships awarded to female Electronics undergraduates rose to 28% this year. This is very welcome news, as we work to improve the gender balance in Electronics. Meeting our Scholars is always a pleasure for me and our largest ever-residential workshop with 63 students last September was a particular highlight. Overall, it is worth re-stating the success of our Scholarship Scheme, as this is the bedrock of our Foundation:

Since 2012, over 550 engineering undergraduates have participated in the UKESF Scheme, with work placements being provided by 65 different companies. Of those that have graduated, we know that 93% are engaged in the Electronics and Technology sector.

None of this would have been possible the support of our many stakeholders. As we approach our 10th anniversary, I would once again like to extend my personal and heartfelt thanks to all those individuals and organisations with whom we have collaborated.

Highlights of the Year



Students using the Music Mixer at Egglecliffe School, Stockton-on-Tees

Electronics Everywhere

Electronics Everywhere, a partnership with the University of Southampton, shows young people how engaging Electronics can be. We provide specially designed circuit boards to teach core Electronics concepts to A-level students in Physics (the Music Mixer) and Computer Science (the Logic & Arithmetic Kit), along with CPD for teachers, free to state schools. Last year, over 170 schools were supplied with a total of 2,700 boards, with a teacher from each school having received training at the University of Southampton. This year, over £100,000 has been raised to scale up the project, with 300 schools expected to receive resources.



Dr Hayaatun Sillem CBE, Chief Executive of the Royal Academy of Engineering

"At the Royal Academy of Engineering, we are committed to working with the engineering community to encourage more young people to become engineers and to make a difference in the world ... We are pleased that the Electronics Everywhere project is reaching 300 more schools this year and congratulate our colleagues at the UKESF on the expansion of the programme."

Many thanks to the main Electronics Everywhere donors for 2019/20:





Assembling Electronics Everywhere kits in the UKESF office

Company Satisfaction Survey

In April 2020 we sent out a survey to our scholarship-sponsoring company partners and were delighted and reassured to know that employer satisfaction remains exceptionally high. Of the 21 companies who completed the survey:

- An amazing 94% of companies praised the quality of applicants for the UKESF Scheme;
- Over 87% thought that the Scheme represented good value for money;
- Our service was rated as either 'Excellent' or 'Good' by all companies;
- All sponsors would recommend the UKESF Scheme to another company.

Graphcore feedback in UKESF Company Survey, 2020

"We had a higher proportion of female engineer applicants compared to our direct intern programme which proved to be valuable to us, even though not our initial focus or intention!"

Activities & Partnerships

Schools

Girls into Electronics

While the 2020 course was cancelled due to the coronavirus outbreak, we have already committed to continuing our sponsorship of The Smallpeice Trust's Girls into Electronics residential course at Royal Holloway, University of London, for 2021. The course (for girls aged 15–17) takes place over three days and provides the opportunity to experience university life while finding out what Electronic Engineering is all about. We provide sponsorship and competition prizes, bring along several Scholars to join our CEO in giving a talk and answering questions, and arrange the attendance of Partner Companies for the popular networking session.

In feedback released following the inaugural course in 2019, 95% rated the course as excellent or good, and 100% reported that the course further increased their interest in engineering generally. 73% of attendees were from state schools.

Girls into Electronics 2019 attendee feedback

"The networking with companies session was extremely interesting as I was able to ask in-depth questions about topics I was interested about to industry professionals. It also gave me an idea of what jobs are within the sector."

Headstart Summer Schools

The two UKESF-sponsored Headstart Summer Schools planned for 2020, to take place at the Universities of Sheffield and Glasgow in June and July respectively, were cancelled due to the coronavirus outbreak. These residential courses are normally attended by STEM-focused Year 12/S5 students and offer a first taste of university life and studying Electronics at degree level, with a variety of lectures, labs and activities. We contributed a PowerPoint presentation of Electronics-focused content to a virtual replacement course organised by Sheffield, and hope to reschedule both physical courses for 2021, continuing our support of the popular networking with companies session.



Children experimenting with Robokid robots at a primary school in Scotland

Robokid

We have continued to supply primary schools with Robokid kits to run activities with their pupils, including two schools in Scotland, one in Bath and one in Wiltshire. Robokid, developed by Heriot-Watt University, is a hands-on Electronics project for use in the classroom with ages 9–11 that aims to encourage enthusiasm for Electronics and STEM subjects. Over 200 children have benefitted from working with the kits this year, and we continue to liaise with further schools that wish to receive the kits.

A teacher at Burntisland Primary School, Scotland, on the Robokid kits

“Thanks for a great project which the children really enjoyed.”

Undergraduates



Automotive Electronics Competition finalist James Leyland with Aileen Ryan (UltraSoC) and Stew

Automotive Electronics Competition

The winners of the inaugural Automotive Electronics Competition were announced at the 2019 AESIN Conference. The competition is run in partnership with AESIN and with generous support from UltraSoC, and requires entrants to write a short 'think piece' on the future of cyber security for connected and autonomous vehicles. The standard of entries was impressively high. Winner David Kong received £1,000 prize money, with finalist James Leyland receiving £500.

David Kong, UKESF Scholar (Edinburgh/ON Semiconductor) & Automotive Electronics Competition winner

"Taking part in the competition made me think deeper about the road ahead for automotive cybersecurity. As we work towards releasing Level 5 autonomous vehicles, it is crucial that engineers consider cybersecurity from both software and hardware perspectives. I am very grateful to my UKESF scholarship sponsor company, ON Semiconductor, for providing me with the summer work placement that opened my eyes to the world of automotive cybersecurity."

BrightSparks

In January 2020 we became an official supporter of EW BrightSparks, an annual programme run by *Electronics Weekly* in partnership with RS Components, aiming to highlight the brightest young electronic engineers (aged 18–30) in the UK who are already making a difference in the Electronics sector. This year, three UKESF Scholars were profiled as BrightSparks: Yanislav Donchev (current Southampton/Qualcomm Technologies and Embedded Systems Competition winner 2019), James

Imber (graduated Southampton/Imagination Technologies and now Senior Research Engineer at sponsor company) and Dominic Lane (graduated Surrey/API Technologies and now PhD student at Lancaster University).



Stew Edmondson with Dialog Award recipients Katie and Alice, Ian Kent (Dialog Semiconductor) and Kevin Stenson (The Smallpeice Trust)

Dialog Award for Female Undergraduates

A collaboration with our long-standing corporate partner Dialog Semiconductor and with The Smallpeice Trust, this award is for female undergraduates who are commencing the first year of their studies on Electronics-related degree courses. In October we visited Dialog in Swindon to meet the inaugural 2019 recipients of the award during their work placements, Alice (Cambridge) and Katie (Imperial College); both were really enjoying the experience and Alice contributed a guest blog post about it for our website. The 2020 recipients are Carol and Husna (both Imperial College).

Alice, Dialog Award for Female Undergraduates recipient

“Interning at Dialog for eight weeks was a great experience to consolidate and build upon what I have been learning at university in a real workplace ... This was my first time practically applying the basics of digital circuits I had been taught ... it was a fun challenge to first understand what it was I was trying to design, and then work out how I was going to implement it.”



Stew Edmondson with Embedded Systems Competition finalists Torran Green and Yanislav Donchev, and Aileen Ryan (UltraSoC)

Embedded Systems Competition

The finalists of the inaugural Embedded Systems Competition, which is supported by UltraSoC, were awarded at the TechWorks Awards & Gala Dinner. The competition highlights excellence in students completing their major individual project on embedded systems; entrants were required to submit an A1 poster summarising their projects. Both finalists were students at the University of Southampton; UKESF Scholar Yanislav Donchev (Qualcomm Technologies) was announced as the winner and received £1,000, with runner-up Torran Green receiving £500.

Yanislav Donchev (Southampton/Qualcomm Technologies), Embedded Systems Competition winner 2019 & EW BrightSpark 2020

"I worked hard for my third-year project and being the national winner of the Embedded Systems Competition 2019 is extremely rewarding ... Today embedded systems are found in almost every electronic device and motivating students to leverage their experience in this field is of great importance."

Innovation Challenge

In 2019, graduated UKESF Scholar Nikolay Momchev (Edinburgh/Allegro Microsystems) was named winner of the Innovation Challenge (sponsored by Enginuity, formerly known as SEMTA), along with his partner on the project, at *The Telegraph's* STEM Awards. They created a concept for an efficient robotic strawberry picking process and hope to take their idea to the next stage, now that they have graduated and are embarking on careers in the Electronics sector, by ultimately bringing their invention to market.

RF Engineering & Communications Competition

This annual competition, run in partnership with the Radio Communications Foundation (RCF) and with support from Leonardo, is now in its fourth year and showcases the work of students at UKESF partner universities who are focusing on RF engineering and communications in their final year.



Stew Edmondson (UKESF) with Scholars of the Year Mary Bennett and Hugo McNally, and Neil Dickins (IC Resources)

Scholar of the Year Award

Scholar of the Year 2019 was awarded jointly to Mary Bennett (Surrey/Embecosm) and Hugo McNally (Southampton/ON Semiconductor) at the TechWorks Awards & Gala Dinner. The award celebrates scholars who have made a significant contribution during their work placement and who have actively promoted Electronics to young people. It is kindly sponsored by IC Resources. Mary has continued to work at her sponsor company, Embecosm, while Hugo graduates in 2021.

Hugo McNally, Joint-Scholar of the Year, 2019

“The UKESF has provided me with the opportunity to meet many marvellous people. Not only the people at my sponsoring company and the UKESF, who have taught me immeasurable amounts, but also the network of other high-achieving scholars.”

Scholar Workshop

Regarded as a highlight of our Scholarship Scheme, our Scholars' Workshop for 2019 took place in September at the University of York. The Workshop encourages both personal and professional development and is delivered by a team of renowned facilitators. Feedback was once again overwhelmingly positive: of the 63 attendees, 67% rated their overall experience as 'excellent' (the highest possible rating), with the remaining 33% rating it 'good' (the second highest).

Comments included: "Loved the entire week. It's a brilliant opportunity to interact with like-minded people and the content covered is very useful and interesting" and "The previous interns at our company said that this workshop was really good but it still exceeded my expectations".



Teams working on their projects during the 2019 Scholar Workshop

2019 Scholar Workshop attendee

"A fantastic four-day crash course on how to become a successful engineer. The lectures were captivating, the workshops were fun and educational, and overall it was a great opportunity to form both business connections with other students, and make lifelong friends!"

Scholarship Scheme

Seven new sponsoring companies joined the scheme, taking the total number offering scholarships to 34 for the 2019/20 round of applications. We also welcomed three new partner universities; the addition of Queen's University (Belfast), Swansea University and the University of Warwick means that sponsoring companies are able to connect with even more high quality students, and that we now truly cover the whole of the UK, partnering with a total of 24 academic institutions nationwide.

Of the 59 UKESF Scholarships awarded to Electronics undergraduates at partner universities for 2019/20, the number going to females rose to 28%, a 12% increase on the previous academic year. 16% of applicants were female. All applicants were able to apply for up to four of the 34 leading companies in the Electronics and Engineering sectors offering our scholarships. Each scholarship includes a bursary, a paid summer work placement and a paid-for place at our residential workshop, among other benefits.

Skills 4 UK Scholar's Award

The recipient of the 2019 Skills 4 UK Scholar's Award was Rachel Howard (Bristol/Altran), who benefits from a place on Skills 4 UK's award-winning Career Development Programme, as well as additional coaching. The award is open exclusively to final-year female scholars and takes into account academic performance, placement feedback and STEM-awareness contribution. Following graduation, Rachel accepted a job offer from her sponsor company, Altran, and begins work as a Junior Consultant/Engineer in September 2020.

Rachel, Skills 4 UK Scholar's Award winner 2019

"Winning this award means a lot to me. There is always room for me to improve my confidence and professional development and Skills 4 UK are experts in diversity and inclusion. I am very excited to learn from them."



UKESF Scholar Megan (left) at the WES Student Conference

WES Student Conference

In November 2019 we enabled all our final-year female scholars to attend the annual Women's Engineering Society (WES) Student Conference for the fourth year running, kindly sponsored by Enigma People Solutions. The conference brings together students, academics and young engineers, providing an opportunity to network and learn together. The Scholars had a brilliant time and shared their thoughts with Enigma in a series of interviews following the event.

Megan (Southampton/Sky), WES Student Conference attendee

"This weekend I had the fantastic opportunity to attend the Women's Engineering Society conference 2019 through my UKESF Scholarship. The theme this year was 'Transform the Future', which after the panel sessions we attended I feel even more inspired to do exactly that. Over the course of two days we had various inspiring speakers, panel discussions with the WES YMB and professionals in the industry and CPD workshops, of which the leadership one was a particular highlight for me, making me more determined to achieve the very best. Multiple opportunities to network (including at a formal dinner) with both companies and other female engineers, which was both informative and empowering, and many of these I now happily call my friends."

Communications & Engagement

Online Presence

On the UKESF website, the average number of unique visitors per month increased by **117** compared to last year.

We maintained our excellent newsletter response rates – our average newsletter open rate was **37%** (the average rate for the UK in 2019 was 18%), with an average click-through rate of **5%** (likewise, 3%).¹

Over the course of the year, we gained **55** new Twitter followers, taking our total number to **782**, in addition to the **194** followers of our @TOTElectronics (#TurnOnToElectronics campaign) account.

Thanks to a revitalised LinkedIn company page, we gained **209** new followers on the platform, taking the total to **577**. We also gained **40** new Facebook followers, taking the total there to **327**.

1) Source: getresponse.com/resources/reports/email-marketing-benchmarks.html



Stew with the UKESF Scholar volunteers on the UKESF stand at the 2019 AESIN Conference

Engagement

In October 2019, we took part in the annual AESIN Conference. Stew Edmondson and a UKESF Scholar gave speeches during the conference welcome, and were later joined by a group of Scholar volunteers, who networked with delegates and helped promote the UKESF throughout the conference. Stew also took part in the Executive Panel Discussion.

In November we attended the annual TechWorks Awards & Gala Dinner, where we announced the Scholar of the Year Award winners and held a raffle that raised almost £3,000 for our vital work educating and enthusing children about Electronics. We had three tables, with guests including five UKESF Trustees, 15 former and current UKESF Scholars (including the 2019 Skills 4 UK Scholar's Award recipient), the Embedded Systems Competition finalists and various representatives from some of the companies and organisations we partner with.

Over the course of 2019/20, we have also participated in events organised by Imperial College London and the Sutton Trust, Cambridge Wireless, Connected Places Catapult, the ElecTech Council, GAMBICA, the Compound Semiconductor Applications Catapult and Technology Scotland.

#ISOLATIONINTERN

In May 2020 we announced our support for Blackfinch Ventures' #ISOLATIONINTERN movement, as part of our response to COVID-19. The movement was designed to help UK startups recruit students and researchers for remote working opportunities during the pandemic. We helped generate interest and raise the profile of #ISOLATIONINTERN amongst our 24 Partner Universities by utilising our well-established connections and asking our academic contacts to publicise the jobs on offer, reached out to our large network of graduated Scholars (many of whom are now part of startups themselves) and drew the attention of our Sponsor Companies to the movement.

Level 7 Apprenticeship Standard

In April we published a feature titled 'Post-Graduate Apprenticeships for Electronics Engineers' to publicise the new Level 7 Standard for 'Electronic Systems Principal Engineer', which we helped bring to fruition last year, in partnership with TechWorks. The feature included a case study of the University of the West of England, Bristol (UWE) to encourage more universities to work with their industrial partners to create post-graduate programmes based on the Standard, which will ultimately benefit the whole of the Electronics industry in the UK. We also updated our Degree Apprenticeship Factsheet, providing a clear and concise overview of how these apprenticeships work and how companies can get involved.

Income & Expenditure

Income 2019/20 (2018/19)

Sponsorship, Grants and Donations – £156,439 (£79,583)

Scholarship Scheme (bursaries, management fees and workshop fees) – £287,883 (£322,338)

Total income = £444,322

Expenditure 2019/20 (2018/19)

Scholarship Scheme (bursaries and workshop) – £188,488 (£203,036)

Educational Activities – £108,185 (£42,467)

With Thanks To...

The UKESF Steering Board and our Trustees:

Indro Mukerjee, Prof Bashir Al-Hashimi CBE, Dr Derek Boyd, Neil Dickins, Dr Graeme Philp, Darren Race and Lynn Tomkins.

All the scholarship-sponsoring companies and all of our Partner Universities.

All the organisations that we have collaborated with:

TechWorks, Blackwell's, IC Resources, Skills 4 Ltd, ThinkEleven, The Engineering Development Trust, The IET, The Radio Communications Foundation, The Smallpeice Trust, Women's Engineering Society, Enigma People Solutions and Mathys & Squire.

Special thanks to the following companies for their donations this year: ARM, AWE, Dialog Semiconductor and Qualcomm.

The ARM logo consists of the lowercase letters 'arm' in a bold, blue, sans-serif font.The Dialog Semiconductor logo features a stylized blue 'd' icon to the left of the word 'dialog' in a blue, sans-serif font. Below 'dialog' is the word 'SEMICONDUCTOR' in a smaller, blue, sans-serif font.The Qualcomm logo features the word 'Qualcomm' in a blue, sans-serif font. The 'Q' is stylized with a blue swoosh that extends under the 'u' and 'a'.

“Moving beyond talk about the skills shortage to take positive action is what the UKESF is all about.”

Stew Edmondson, CEO, UKESF

Our Strategic Priorities

The purpose of the UKESF is to tackle the skills shortage in a coherent way. Our aim is to:

“Encourage more young people to study Electronics and to pursue engineering careers in the sector.”

To achieve the aim, we have four strategic priorities:

- Ensure more schoolchildren are **aware** of Electronics. Show these children, their parents and teachers that there are exciting and worthwhile careers available as designers and engineers in the Electronics sector.
- With our partners, provide opportunities for them to develop their **interest** in Electronics and engineering, through to university study and/or apprenticeship.
- At university, ensure that undergraduates are encouraged to pursue careers in the Electronics sector and they are supported in their professional **development** so when they graduate they are equipped with work-ready skills and experience.
- After graduation from university, we will help create a community of Electronics engineers to secure the future pipeline. We will **build relationships** and act as the representative voice for the sector on skills.

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