



IET Futures Fund

Impact Report | 2022

IET Futures Fund raises money to support the next generation of engineers, to find solutions to our most pressing problems.





Jasmine Brittan

Engineering BEng (Hons) with Intercalated Year
University of Warwick
Launch Scholarship supported by the Belling
Charitable Settlement.

Jasmine Brittan was first introduced to the world of engineering at 13 years old thanks to an IET Faraday® Challenge Day arranged by her year nine Physics teacher. She is now a 2022 IET Launch Scholarship recipient, supported by the Belling Charitable Settlement.

Prior to the IET Faraday® Challenge Day, Jasmine had never had the opportunity to experience practical engineering — it gave her a glimpse into what life as an engineer just might be like.

“

I enjoyed the day so much, and it showed me that engineering could be a viable career option for me. I honestly don't think I would have considered engineering if it wasn't for the IET Faraday® Challenge!

Jasmine Brittan

”

Foreword

It is my pleasure to have taken on the role of Chair of the Futures Fund. I am truly inspired by the stories of the next generation of engineers and their determination to overcome adversity to engineer a better world.

We are living in challenging and unpredictable times. With the deepening cost of living crisis, it is more important than ever that we support and empower those facing barriers to studying or working in engineering. We don't want anyone to be left behind because they can't afford to pursue their ambitions.

In 2022, we awarded our first Launch Scholarships, which evolved from Engineering Horizons bursaries. Recipients are telling us how much they value the support, both financially and through the added value from engaging with their donors and the IET. You can read more about the impact of our Awards on page 14.

2022 also marked a welcome return to face-to-face delivery of our education programmes. Teachers and children were

thrilled to be back attending in-person IET Faraday® Challenge Days and *FIRST*® LEGO® League tournaments and Festivals.

During Bob Cryan's year as IET President, we are excited to be matching every donation to the Futures Fund pound for pound up to £500,000. As of December 2022, we had raised a total of £342,245 in match funding. With your support, we can release the remaining funds to support and inspire even more future engineers. To help us reach this target, please **click here** to donate now.

I would like to thank every single one of our donors for their generosity. Their support is making a very real difference to the future of engineering.



Dawn Ohlson MEng CEng FIET
Chair, IET Futures Fund Working Group

If, like us, you are passionate about the future of engineering, contact the IET Development team to find out how you can make a difference. Whether you are making a personal donation or an introduction to a company, your support is warmly appreciated.

Give today at donate-futures.theiet.org or contact us at development@theiet.org

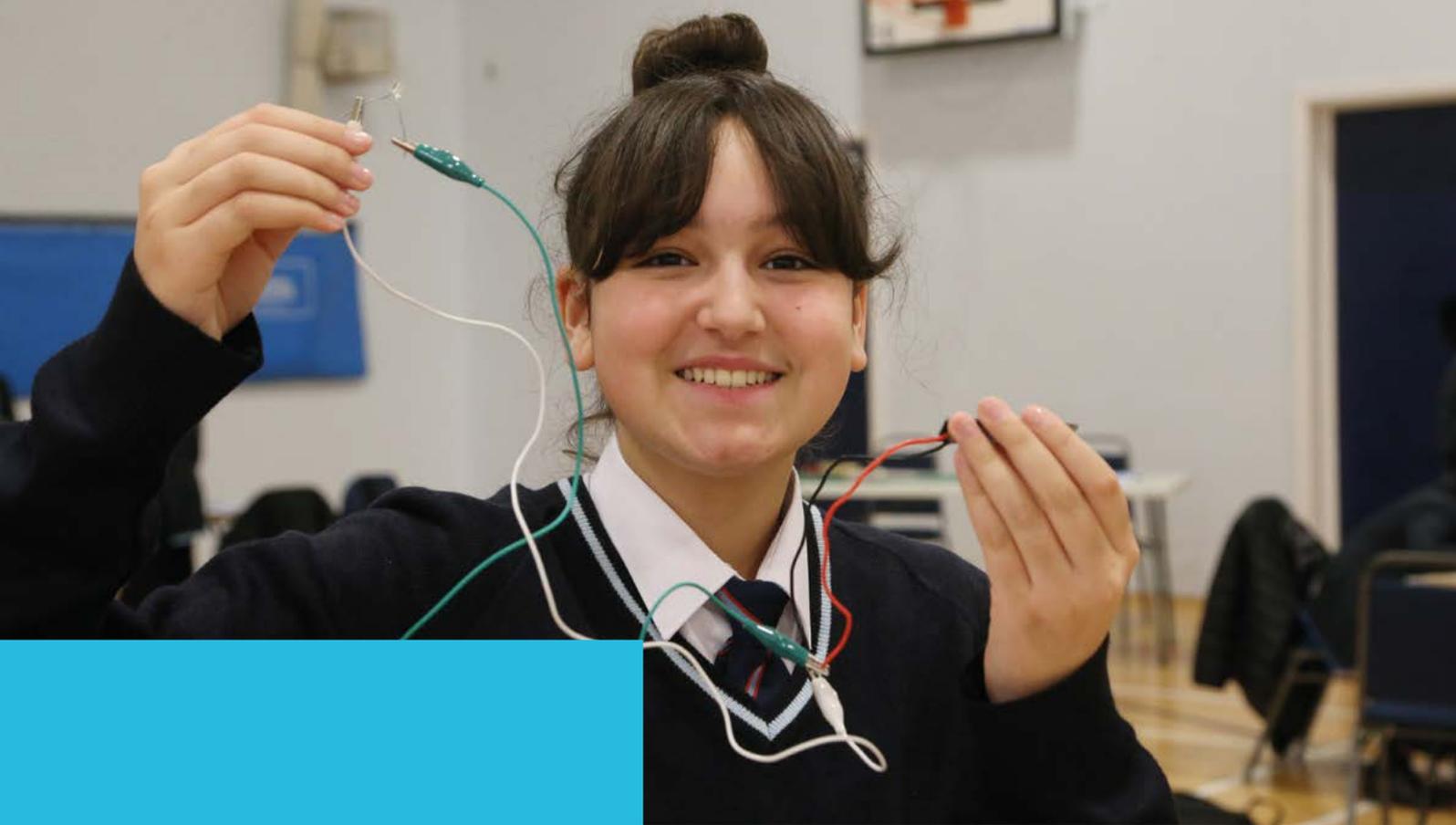


IET Education

It was wonderful to return to mostly "business as usual" delivery in 2022 following the disruption of the pandemic. The return to face-to-face activities has been fully embraced! You can read updates from our flagship STEM Education programmes, *FIRST*® LEGO® League and IET Faraday® Challenge Days, on the following pages.

IET Education also provides free downloadable teaching resources and classroom activities for students aged 5-11 and 11-19 years old.

We have started working in partnership with companies and charitable trusts and foundations to develop and deliver teaching resources around areas of mutual interest. Our first collaboration was supported by the Bugatti Trust Museum and Study Centre, an independently funded UK-registered charity with educational aims and objectives and a unique historic Bugatti archive. Working in partnership, we produced a primary resource on **gear ratios** and a secondary resource on **wheel materials**.



“

We are so pleased that the material is out there now for all to enjoy and experience. It has been a pleasure to work with the IET on the development of these wonderful resources.

Angela Hucke, Curator
for the Bugatti Trust

”



2021/22 season:



165

events were held



5,429

students from 283 schools
and 1 home-educated team



83

schools engaged with,
defined as "hard to reach"

(high percentage of free school
meals, rural schools and social
mobility indicators)



77%

increase in students who,
after taking part in an IET
Faraday® Challenge Day
would now consider studying
or working in engineering

IET Faraday® Challenge Days

The 2021-22 IET Faraday® Challenge season was delivered in partnership with the Institute of Healthcare Engineering and Estate Management (IHEEM).

Teams were tasked with designing a prototype that could be used in a children's hospital to make a stay more comfortable for young patients and their families. They needed to take into account key considerations such as sustainability, energy and waste management and their prototype had to include an electrical circuit.

Students were scored throughout the day on their planning and research; development and functionality of the product; use of budget; product engineering; the final presentation, and their teamwork and attitude throughout. Members of each winning team won a gift voucher for themselves, a trophy for their school, and had their score added to the national league table.

The National Final was held on 29 June 2022 at Alder Hey Children's NHS Foundation Trust in Liverpool, with the top five teams from the season's league table having to design and build a prototype to help motivate patients whilst in hospital.



"I really felt like I learnt a lot from this experience and I think it will help me massively in my future choice of career."

12-year-old girl

"I have had a great time working with different people and seeing the different stages of developing such as planning, accounting and making."

12-year-old girl

"The level of challenge is great; it stretches and goes beyond knowledge from their science and tech lessons."

Teacher

"Absolutely class, students have missed hands-on, creative events like these, so different to what they do in school and the Challenge Leader was so engaging. Thanks."

Teacher





From concept... to reality

**IET Faraday® Finalists' ideas
to help children in hospital
to be brought to life**

The five national finalists were Berkhamsted Girls School from Hertfordshire, St Aidan's High School from North Lanarkshire, Eggescliffe School and Sixth Form College from Stockton-on-Tees, Fulford School from York and St Edmund's Catholic School from Portsmouth.

After a very close competition with impressive presentations, the season's winning team was St Aidan's School from North Lanarkshire. They designed a prototype munchie box to help patients choose what to eat whilst in hospital and to motivate those feeling reluctant to eat.

The team went on to attend IHEEM's National conference in October to share their experience. They said:

"We developed skills like teamwork, communication and patience... winning this challenge can make our CVs stand out and help us in future jobs that require teamwork, creativity and thinking on the spot."

"A couple of years ago my perception of engineers was that it was mostly a male-dominated job, but especially after the experience we've all been through, my views have changed. Now I know that anyone can be an engineer... engineers make a huge difference to children's and adults' lives."

Here's what some of the other finalists had to say at the Final:

"After taking part in the IET Faraday® Challenge Days, I would definitely consider being an engineer or going into the industry."

"It's not just about how much you know, and what you can make, it's actually about why are you making it, and how is this going to benefit people?"

The five finalists have since been given the opportunity to have their winning designs made into real tools to help children in hospital through a partnership with the IET, IHEEM and the NHS's New

Hospital Programme. The New Hospital Programme will work directly with the five teams to transform their winning ideas into design tools that will directly help children in hospitals.



"It's been a great experience, it's an honour for Scotland to take part and to have made the final! Thank you for the experience."

St Aidan's School, IET Faraday® Challenge Day 2021-22 Winners



FIRST[®] LEGO[®] League

The season's theme was **CARGO CONNECT**, which focused on the transportation of goods around the world.

Our *FIRST*[®] LEGO[®] League Challenge Finals were back to face-to-face and the excitement was palpable! We welcomed over 500 children aged 9-16, making up 65 teams, to the GB Finals in Harrogate. And 200 children, from 25 teams, came to the Scottish finals – including a guest team from Norway! Whilst most of our events were back to in-person, Wales and Ireland were still

impacted by Covid restrictions so some activity had to take place virtually.

Funding from our donors enables children and young people from schools in disadvantaged areas, who do not have the resources to support the activity, to be able to access the programme.



Over **39,000** children and young people took part in *FIRST*® LEGO® League



65% of participating teams/classes received funding from donors and sponsors, which supported over **23,000** disadvantaged children



60% of participants in *FIRST*® LEGO® League Explore and Challenge were involved as part of a whole class activity – 8% more than the previous year



45% of participants were girls

We heard from Pauline, a teacher in Manchester whose class benefited from support from Network Rail.

"We are a small special school where over 80% of the students have free school meals. We deal with social, emotional and mental health issues. Some have been taken into care. Most have ADHD or are on the autistic spectrum. Most come from families with low academic attainment. Our budgets would not cover access to the equipment for *FIRST*® LEGO® League, so the support from Network Rail meant that we could sign up to the programme.

It took a while to convince students to take part – they were really afraid of programming – something we can't offer in school. Our poor laptops didn't help – but when I showed the students what I had programmed at home – they got over their fears and within seconds were adapting my programme. That astounded me. It was a steep learning curve.

Our students need a lot of encouragement to try new things. They felt good when they programmed the LEGO® SPIKE™ Prime better than the teacher."





"It's not about building robots,
it's about robots building people"

Growing *FIRST*[®] LEGO[®] League in Ireland



In 2020, the Science Foundation Ireland (SFI) Discover Programme generously supported *FIRST® LEGO®* League in the Republic of Ireland with a two-year grant, allowing us to significantly scale up the reach and impact of the programme. As well as providing vital seed funding to build the capacity of our Ireland delivery partner, Learnit, the grant supported the development of Irish curriculum-specific resources, created in partnership with Dublin City University.

While the All-Ireland Finals sadly did not take place in 2022 due to Covid restrictions, a team of Irish Girl Guides from North County Dublin won the Breakthrough award at the *FIRST® LEGO®* League International Open in Rio de Janeiro in August. Competing against 100 teams from across the world, the Irish Girl Guides team were awarded for their confidence and capability across all elements of the competition.

In 2021-22, over **26,000 children** and young people aged 4-16 benefitted from *FIRST® LEGO®* League in Ireland.

Dr Ruth Freeman, Director, Science for Society at SFI, said: "We are absolutely delighted to be supporting the IET and Learnit to grow this impactful programme, tailoring it to Irish schools and bringing engineering and robotics to new audiences. This programme supports the SFI Discover programme's central aims to increase public engagement and broaden participation and access to STEM across Ireland."

Ross Maguire of Learnit says.

"We are hugely grateful for SFI's support which has allowed us to reach thousands more children across Ireland. *FIRST® LEGO®* League is more than a robotics competition. The concepts of cooperation and competition combine. It's the idea that, by working together, we all win. These fantastic young people are taking the first steps to becoming tomorrow's innovators, creators and problem solvers. It's not about building robots, it's about robots building people."

We are delighted that SFI Discover will be continuing to support the IET and Learnit for another two years on completion of this initial project, to enable us to build on our achievements and further embed the programme in Irish schools.



IET Future Talent Awards

Our Awards schemes are now known as the Future Talent Awards, the first of which were distributed in 2022.

Launch Scholarships evolved from Engineering Horizons Bursaries. They support people from under-represented backgrounds, with a demonstrable commitment to engineering. Recipients will be experiencing financial need and/or facing a financial or personal barrier to pursuing their ambition.

We awarded  98 Launch Scholarships in 2022.

“



"I am thrilled to have been selected for this opportunity. Coming from a deprived background, going to university in general has changed the way I see life... I can see doors opening for the future that I never expected for me."

Ben Anderson, Launch Scholarship 2022 recipient supported by Eland Cables



"As an adult returner to education with two young children, the financial help that the award provides will help me to support my family while still devoting the maximum amount of time to my studies. Without this award I would have to take on more part-time work, giving me less time to work on my engineering skills."

Andrew Graham, Launch Scholarship 2022 recipient supported by the David Family Foundation

”

We reach a diverse range of students. Of our 2022 Future Talent Awards recipients:



27%

are women (industry average 16.5%, Engineering UK 2022)



40%

are from an Asian, Black and/or mixed ethnic background



13%

are over the age of 25



18%

are disabled or have a long-term health condition



Molly Fraser

Software Engineering Apprentice Degree

MBDA UK

Engineering Horizons Bursary supported by the Engineers Trust

Thanks to her IET bursary and supported mentoring, Molly's confidence has blossomed and she's excelling in her degree apprenticeship. Here she highlights how awards like this have an important role to play in opening up engineering to a much wider range of people.

Molly Fraser is a software engineering apprentice at MBDA Missile Systems, where she's currently two and a half years into her four-year degree apprenticeship scheme. While working towards her A levels, Molly applied to several universities. She also applied for the MBDA degree apprenticeship, but as she puts it, "had no intention of going down that career path".

This all changed with the arrival of Covid and a simple chat with her mum.

"She said I had the choice of paying £9,000 a year to sit in Zoom lectures, or actually gain some experience at the same time as doing my degree without getting in debt," Molly explains. "That's what led to me choosing the apprenticeship and I don't regret that decision one little bit!"

Throughout the four years of her apprenticeship Molly will undertake a total of eight six-month placements across the business whilst studying towards her digital and technology solutions (software engineering pathway) BSc.

It was during her first induction week that she was introduced to the IET and the Engineering Horizons Bursary scheme (which the current Launch Scholarships scheme evolved from).

The impact of the bursary

Molly's bursary consists of financial support alongside mentoring offered by Molly's donor organisation, the Engineers Trust. This has helped her excel at university.

"Before I was relying on just pen and paper, but thanks to the bursary I was able to buy a laptop and the specialist software I needed. This enabled me to take more detailed notes during lectures – even record them – and do programming on the go. I could also take that laptop to work and show my managers my work and ask for their feedback," she says.

"In my second year at uni I got firsts in all of my modules, which really surprised me. I think it was down to that laptop and the support I received from my mentors.

"Before this award I was very hesitant to put myself forward for special events, competitions etc. But my confidence has really grown thanks to the bursary and mentoring I've received."

Paying it forward

Molly also offered to help the Engineers Trust onboard their next group of award recipients last year and now runs a peer-to-peer mentoring group for them. Other volunteering roles she's taken up include being a STEM ambassador for Hertfordshire and being part of the East of England Young Apprentice Ambassador Network.

"I've also volunteered to help at *FIRST*® LEGO® League events. Volunteering is great for exposure and learning something new. As I move forward with my career, I hope I can continue giving back in this way."

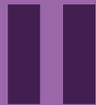


**BECAUSE
IT'S
IMPORTANT
TO 'PAY
IT FORWARD'**





BECAUSE HAVING ROLE MODELS IS SO IMPORTANT



Chris Cooper is in his final year of an MEng in Electronic Engineering at the University of York. He is an Engineering Horizons Bursary Recipient, supported by Spirax-Sarco Engineering. He is looking forward to joining Spirax-Sarco's Graduate Leadership Programme as a Graduate Engineer.



"Because of the bursary I was given the time and resources to further develop my skills outside of my degree"

Alongside his studies, Chris set up Role Models Yorkshire – a non-profit that helps young people from disadvantaged backgrounds go to university and/or achieve their career aspirations.

Coming from a low-socioeconomic background, and being neurodiverse, resulted in Chris believing that he would never be able to go to university because he thought university "isn't for people like me". However, while working at Portakabin in York, Chris had a chance to meet with a University of York student. After Chris expressed that he dreamed of being an engineer but didn't think that university was for him, the university student managed to help Chris see the potential that he had to succeed.

That chance meeting with a positive role model resulted in Chris resitting his GCSEs, going to college and then becoming a student at the University of York himself.

This led to him wanting to inspire and support others to fulfil their potential. He explains how the Engineering Horizons Bursary has helped him in his course and gave him the freedom to develop his skills and help others to get into engineering:



Chris was awarded Social Mobility Champion for his work with Role Models Yorkshire at the Student Social Mobility Awards.

"I've had to both complete my degree, keep up with my commitments as well as look after my family. This put me in huge financial difficulty, but the bursary helped relieve me of this burden.

This year, I had the opportunity to complete a five-week internship at the Department for Transport as part of the Futures and Innovation team.

I took part in a virtual Q&A session with a secondary school on life as an engineering student. I was also a member of the University of York student expert panel representing disabled, religious and

neurodiverse engineering students, in order to make my university more accessible for my peers and future engineering students. Furthermore, I mentored, through the charity ZeroGravity, an A-Level student through the application process for a mechanical engineering degree.

Without the bursary, I wouldn't have the time for extra-curriculars because I would have to work all the spare hours to afford bills and books for my degree. Because of the bursary I was given the time and resources to further develop my skills outside of my degree."



Graduate Survey

Each year, we ask our graduates to report back on where they are now, and how their Award helped them. This data refers to our Engineering Horizons Bursaries graduates and apprentices, which is the programme that Launch Scholarships evolved from.



A total of **72%** went straight into jobs or further study in Engineering and Technology. Of these:



62% are employed in Engineering and Technology



10% went on to postgraduate study in Engineering and Technology



13% were actively seeking employment

(All figures correct as of Summer 2022).

Of our earlier graduates who completed their course or apprenticeship between 2018 and 2021, 90% have stayed in Engineering and Technology.

Our graduates have gone on to work for a wide range of companies. 2022 Graduate destinations included Roke, Tata Steel UK, Rolls-Royce, Sellafield Ltd, Gatwick Airport, Leonardo, Celsa Steelworks, STFC and Powell.



David Appleby completed a Higher Apprenticeship with Tata Steel (Port Talbot). He is now employed as a Specialist Systems Engineer for **Tata Steel UK** and was supported by **Ironmongers Foundation**.

"You've given me the opportunity to meet other engineers from my target career path and other young engineers in the same position as me. This has given me confidence and insight."



Bhargav Maniar was supported by Chemring. He is now employed as a Graduate Engineer working in software engineering for Artificial Intelligence and Machine Learning at **Roke** – a company owned by **The Chemring Group**.

"I am now working with the sponsor company - I would have not joined them otherwise without the IET Engineering Horizons scheme."



Leave a Gift in Your Will to the IET Futures Fund

Leaving a gift in your will to the IET Futures Fund is a powerful way to make a lasting impact on the future of engineering. We know that this is a deeply personal journey, and that it can also be a complex process. We have produced a new Legacy Brochure to provide more information on leaving a legacy and the impact it could have on future generations.

If you would like to know more, please take a look at the brochure, email development@theiet.org or call +44 (0)1438 767410.

Why support the next generation?

||

**BECAUSE YOU
NEVER STOP BEING
AN ENGINEER**

||

IET Futures Fund



The Institution of
Engineering and Technology

Look Ahead

2023 marks ten years since the first Diamond Jubilee Scholarships were awarded. We look forward to catching up with some of our amazing graduates to see what they are getting up to now. People like Tom Maidment CEng MIET, who is now building a global net-zero strategy for one of the UK's largest food businesses.

Tom was offered a place to study for an MEng in Automotive Engineering with Sustainability at the University of Warwick. He was awarded a Diamond Jubilee Scholarship in 2013.

"What the scholarship did was give me time. Without it, I would have had to work during the year. I was able to spend time focussing on work and applying for internships rather than working at a bar. At the same time some of my course mates were struggling with money."

"I managed to get an internship with Jaguar Land Rover that first summer of my course. I was invited back every summer and then offered a graduate engineer role."

Sustainability is important to Tom and on completion of his graduate scheme he became a technical analyst working on building a corporate sustainability plan at Jaguar Land Rover. Tom achieved his CEng with the IET and the support of Jaguar Land Rover.

Now, as Group Product Sustainability Senior Manager at the Hilton Food Group, Tom's challenge is to build a net-zero strategy at a global level.

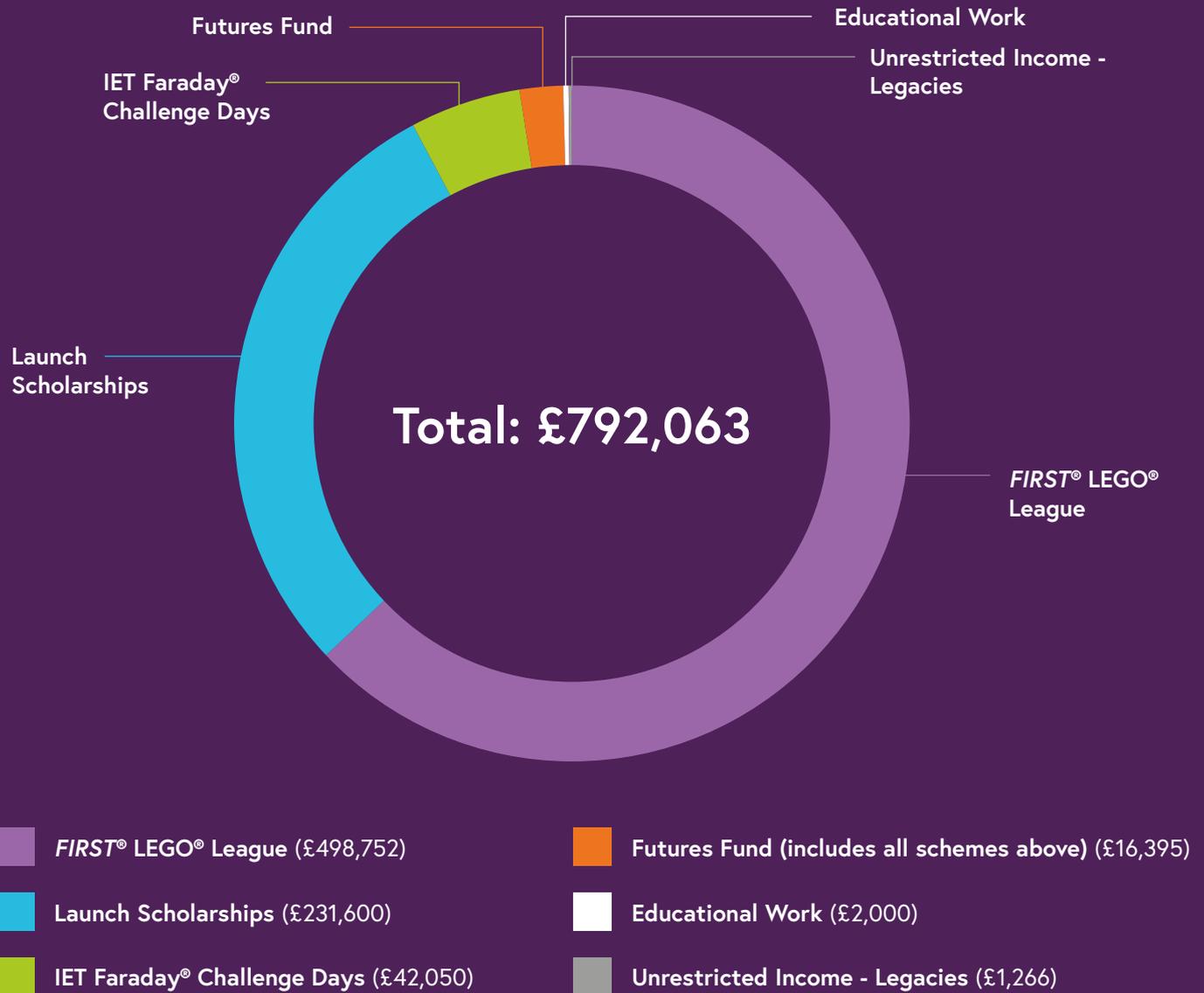
His next step is to become a Chartered Environmentalist.



"Sustainability is increasingly important. It has gone from being a tick box across to core of business. The scholarship helped me make a difference."

Tom Maidment CEng MIET, Diamond Jubilee Scholarship 2013-2017

2022 Income pledges (by funding use)



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We are grateful to the many individual members who gave to the Futures Fund and through the Take Your Place option.



Make a difference today

If you're passionate about the future of engineering, contact the IET Development team to find out how you can help make a difference.

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