



**TOWARDS  
VISION**



# YEAR OF ENGINEERING ROADSHOW: MEET THE PARENTS IMPACT REPORT



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Towards Vision

# Year of Engineering Roadshow: Meet the Parents 2018 Impact Report

## Summary

As part of the Department for Transport backed Year of Engineering (2018) I have conducted a year-long 'roadshow' entitled *Meet the Parents*, to take a stand of engineering careers information out to meet parents and students face to face, and talk to them about future opportunities in engineering. Parents are vital influencers in the career choice of their children – especially their daughter's career - and this group are notoriously difficult to reach and to support. This stand aimed to go to them, rather than hoping they will come to us, and it has sought to target a variety of shows and events, many of which have no connection to science and engineering at all, where parents' science/engineering capital is low.

## Funding and Support

The activity was funded by the Engineering Education Grant Scheme (EEGS) of the IET (Institution of Engineering and Technology) & IMechE (Institution of Mechanical Engineers, and the Royal Commission for the Exhibition of 1851. A total of £4500 was secured to deliver this activity, which visited 13 shows over the course of 11 months and reached over 7500 people. The remaining cost of the activity was covered by Toward Vision – my own company.

Support for the activity, by way of resources, volunteers, publicity and advice was obtained from the organisations below, to whom I am very grateful.



In addition, all of the stands were provided free of charge, and I am grateful to the event organisers and individuals listed in the document for their support in offering free exhibition space, and to all of the volunteers who supported this activity throughout the year.

## Schedule

The Roadshow has visited the following shows in 2018:

- Association of Science Education Conference, Liverpool, 4-6 January 2018
- Girl Guiding Anglia Ready for Take Off, 17 March 2018
- Get up to Speed with STEM (GUTS), Sheffield, 18 April 2018
- Royal Bath and West Show, 30 May-2 June 2018
- Great Exhibition of the North, Institute of Mining, Newcastle upon Tyne, 23 June 2018
- Girls in Engineering Day, University of Hertfordshire, 30 June 2018
- Royal International Air Tattoo, 13-15 July 2018
- Shuttleworth Air Show and Heritage Day, 2 September 2018
- Abergavenny Food Festival, 15 September 2018
- Thames Festival. Taking Off: The IET Opens its Doors, 22 September 2018
- IET Presidential Address, 11 October 2018
- World Federation of Engineering Organisations (WFEO) Meeting and Global Engineering Congress, ICE, London, October 2018
- Future Engineers, National Railway Museum, York, 3 November 2018

## Observations

During the course of the year a number of issues have been evident through my encounters with the parents and carers who visiting the stand. A noticeable difference exists between parents who have, and parents who do not have science/engineering capital. This is apparent from the difference in engagements at shows like RIAT, the Royal International Air Tattoo, where parents have a high degree of science/engineering capital, compared to the Royal Bath and West Show, for example, where this is not necessarily the case. The questions that parents ask, the level of knowledge around STEM in general, the types of science/engineering qualifications that exist, and the value of apprenticeships are examples of areas where a real range of understanding and expertise exists. It has been evident, however, that there is strong desire amongst all parents to support their children with an appropriate career choice, and parents are generally good at recognising an aptitude towards science/engineering/practical hands-on type skill in their own child. A gap, however, exists in the extent at which parents are able to give this support, with some being 'unqualified' to give the support that is needed, and a lack of knowledge of where it can be found. In my opinion there is a real need for more support for the parents who do not have science/engineering capital who nevertheless want to support their children into STEM careers.



58%  
of 11-14 yr olds  
know almost  
nothing  
about types of  
apprenticeships and  
what apprentices do.

## Recommendation

More needs to be done to reach and support parents who lack science/engineering capital to allow them to have the confidence to encourage their own children into STEM careers.

This support needs to go beyond a digital campaign, or a simple information website. It needs to take the form of real engagement on a long term basis, and the provision of a one stop shop careers hub where parents and students can receive specific advice relevant to engineering careers. This should include both technical and academic routes into engineering via T levels, A levels, apprenticeships and degrees.

# Overview of the Shows and Events Attended

## Association of Science Education Conference, Liverpool, 4-6 January 2018

This first event of the year at the ASE conference in Liverpool was an excellent way to ensure that the stand resources were ordered in time for the start of the year, and this early event enabled for the stand to be trialled with teachers and visitors at this popular annual science education conference. Many teachers took away resources and posters for their classroom walls to publicise the Year of Engineering, and this was an excellent way to launch the year to schools.



Amanda Spielman, Ofsted CEO, was one of the visitors to the stand, and I was able to tell her all about the aims of the Year of Engineering. Approximately 900 teachers attended the exhibition.

Thanks to Nicola Hern for the free stand and her support with this event.

## Ready for Take Off, Girl Guiding Event, Milton Keynes, March 2018

This superbly attended event was organised by Girl Guiding Anglia for leaders of Brownies and Guides, and the event had a STEM theme. Many workshop activities took place on the day (of which I participated in the organisation of one called Magnificent Women) and there was also an exhibition of stands where the leaders could pick up resources and ideas for STEM activities. This group of leaders were about the most receptive group I have come across during the whole year. They were desperate for help and ideas about activities and advice in STEM – few of them appeared to have science/engineering backgrounds but they all seemed to recognise that the girls liked to do STEM activities, and that they needed help in delivering these. (And as a result of this day I delivered three more outreach activities on the theme of materials, packaging and recycling). Very many resources were taken on this day, and the stand was left practically empty! Doing more outreach activities of this kind would be very worthwhile, and my long term aim is to persuade the Girl Guides to develop an Engineering Badge.



Thank you to Girl Guiding Anglia for organising this event and inviting me to attend.

## GUTS – Get Up to Speed in STEM, Sheffield, March 2018

This show is aimed at young people and takes place annually at Magna in Rotherham. In 2018 it attracted 2500 visitors, young people who come with their school teachers or parents.



The events are a chance for visitors to see some of the fastest vehicles, innovations and people on earth all in one place, and to see how they are influenced by STEM.

The Year of Engineering Stand was positioned next to a slime making and volcano building activity which attracted a huge amount of interest and visitors, and this fortuitous positioning allowed many visitors to be reached as they queued to make slime and volcanos!

Thanks to John Barber for his support in inviting me to GUTS 2018, and for offering a free stand.

<https://www.getuptospeed.org.uk/home/about>

## Royal Bath and West Show, Shepton Mallet, May-June 2018

This huge agricultural show at the Shepton Mallet Showground in Somerset attracted some 135,000 visitors over the four show days in 2018, and the Year of Engineering stand was very prominently placed in the Imagineering tent close to the showground entrance. A rainy couple of days ensured that the marquee was packed on most days, and very many resources were picked up and conversations recorded. The ‘Guess the Number of Sweets in the Jar’ activity recorded over 1800 guesses.



Thanks to Rod Cannon of Imagineering for his generosity in allowing us to bring the stand at no charge, and for Sarah Stead and the volunteers from the University of Bath.

## Great Exhibition of the North, Newcastle Upon Tyne, June 2018



Whilst this one off festival went on between 22 June and 9 September 2018, my own involvement was during the first weekend only, where I set up (and left) a stand of information in the Institute of Mining museum, which opened its doors on the weekend of 22 June. This attraction had 34,000 through the door over the period of the Exhibition, and whilst the display was unstaffed during that time, resources were replenished regularly, and were very popular with visitors. The Year of Engineering banner remained in situ for the whole exhibition too.

Thanks to Liz Mayes from the Institute of Mining for allowing this exhibition to remain at this venue over the course of the exhibition.

## Girls in Engineering Day, University of Hertfordshire, 30 June 2018



This one day activity organised to celebrate International Women in Engineering Day saw over 100 girls and their families come to the University of Hertfordshire for a day of activities and workshops. I was asked to give the keynote address to the conference, and I brought the Year of Engineering stand along to inform the parents and the girls themselves (and their siblings) about careers in engineering. The Year of Engineering resources were compiled and given to the girls in a goodie bag on leaving. This was an

excellent event with participants who had chosen or been chosen to attend by their school, so were highly engaged and motivated to learn more, as were their parents. The feedback from this event was extremely positive.

Thanks to Susan Murray and the University of Hertfordshire for inviting me to this event.

## RIAT, July 2018

This enormous annual airshow which attracted 160,000 visitors in 2018 is the biggest of the events I have attended this year. The Year of Engineering stand was hosted in the hugely popular Technozone, where many other science, engineering and technology companies display their best outreach materials and activities, and this popular marquee attracts practically all of the young visitors to the show. The electronic tangram puzzles (Osmo) we managed to secure for use on the stand were very popular with visitors, and we engaged with a huge number of parents at this event. Parents here – unlike the Royal Bath and West show, for example – have a high degree of science and engineering capital, and their children often show a high preference for STEM careers.



A huge thank you to the team at RIAT for allowing me a free stand at this event, and to Nicole and Will Saunders and their two children for their amazing help as volunteers.

## Shuttleworth Air Display and Heritage Show, 2 September 2018



An amazing line up of aircraft and a beautiful day meant that this heritage museum event was extremely well attended (for a small airshow) with almost 3000 attendees. The Year of Engineering stand was positioned outside under a gazebo and had a prominent position adjacent to the runway, and enjoyed many visitors. We also managed to attract many younger visitors with the stixx machines that formed part of the stand, and a large structure (aircraft tower) was built over the course of the day.

Thanks to Matthew Studdert-Kennedy and the Shuttleworth volunteers for their support in allowing us to be part of this event, and also for taking the remaining resources at the end of the year to the Shuttleworth museum for future visitors to enjoy.

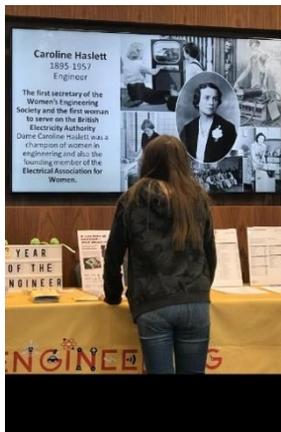
## Abergavenny Food Festival, September 2018

Abergavenny hosts an annual food festival and attracts 30,000 visitors to this small market town on the Welsh border. I was lucky enough to secure a stall in the main High Street of the town, where all visitors pass to get to the various events that are scheduled throughout the weekend.



This was a truly diverse range of attendees – not particularly with any science or engineering capital – and this event allowed me to engage with a large number of non-typical ‘engineering parents’. This was exactly the type of event that the stand was aimed at, and the various food related engineering resources that I had on the stand seemed particularly appropriate for this event.

## Thames Festival. Taking Off: The IET Opens its Doors, September 2018



Taking place during the weekend of Open House London, and coinciding with the annual Thames Festival which takes place throughout September, this free event at the Institution of Engineering and Technology attracted visitors from both directions. Taking over the whole of the Riverside Room at Savoy Place, an ambitious activity day – in collaboration with the Year of Engineering activity – celebrated the role of women construction workers who built Waterloo Bridge (adjacent to IET) during World War 2, and also hosted a number of activities around the achievements of Amy Johnson. Visitors at this exhibition were very interested in watching the rolling slideshow which featured the work of women in engineering. 420 visitors came into the building on this day.

Thanks to the IET staff, in particular Sean Spencer, for enabling this activity to take place, and for making the room available at no cost, and to Anne Locker and the Concrete History team.

## IET Presidential Lecture, 2018

The inaugural lecture of the new IET President, Mike Carr, took place on 11 October 2018 and the Savoy Place lecture theatre was packed to capacity with members and guests attending this event. A small number of stands were given the opportunity to set up in the reception room where drinks were served before the lecture started, and I was lucky enough to have one of these stands. Members were very impressed with the range of



materials on the stand, and very interested in the year long activity that had been undertaken, and the learning I had gained. This event was attended by 500 guests.

Thanks to Zena Tunbridge for the opportunity to host the stand at this event.

## World Federation of Engineering Organisations and Global Engineering Congress, ICE, October 2018



This global event was a great opportunity to promote the resources that I had accumulated for the Year of Engineering stand to an International audience, and to promote the Year of Engineering more widely. Whilst the delegates were not the demographic I had been aiming at with the other events, nevertheless it was still worth attending, and promoting the year. **All** of the resources that I took to this event were taken, and I also gave away 300 Year of Engineering lapel pins, courtesy of the Department for Transport.

Thank you to the team at ICE, particularly Alexandra Milsom, for permission to exhibit at this event at no cost.

## Future Engineers, National Railway Museum, 3 November 2018

This half term activity to attract our next generation of engineers through a range of activities at the National Railway Museum in York brought in a steady stream of youngsters and their parents throughout the day. This stand had more of an activities and games focus, and the organisers wanted things that related to engineering that visitors could do, as well as providing information. These activities attracted parents just as much as they did children!



Thanks to Andrew Lickley volunteers for hosting the Year of Engineering stand at this show.

## Visitor Numbers

Whilst it is not possible to say exactly how many visitors the stand attracted throughout the year, a rough estimate is shown below, based on the footfall at the show, the number of resources which were given away, and the number of people who made a guess at the number of sweets in the jar:

Show	Estimate of Visitors to stand
Association of Science Education Conference, Liverpool, 4-6 January 2018	400
Girl Guiding Anglia Ready for Take Off, 17 March 2018	600
Get up to Speed with STEM (GUTS), Sheffield, 18 April 2018	600
Girls in Engineering Day, University of Hertfordshire, 30 June 2018	150
Great Exhibition of the North, Institute of Mining, Newcastle upon Tyne, 23 June 2018	500
Royal Bath and West Show, 30 May-2 June 2018	3000

Royal International Air Tattoo, 13-15 July 2018	800
Shuttleworth Air Show and Heritage Day, 2 September 2018	80
Abergavenny Food Festival, 15 September 2018	350
Thames Festival. Taking Off: The IET Opens its Doors, 22 September 2018	250
IET Presidential Address, 11 October 2018	250
WFEO Meeting and Global Engineering Congress, Institution of Civil Engineers, London 24 October 2018	500
Future Engineers, National Railway Museum, York, 3 November 2018	350
<b>Total</b>	<b>7830</b>

## Resources

The following resources were available on the stand. These were replaced throughout the years as necessary.

<b>Tomorrow's Engineers</b>	Parents' Guide	A5
	From Idea to Career	A5
	Make a difference to the world - Apprenticeships	A5
	Make a difference to the world - University	A5
	What is Engineering?	A5
	Career Route Map	A4
	Future Lifesavers Postcards	A5
	10 Great Reasons to become a scientist or engineer	poster
	Saves Lives as an Engineer	poster
	Inspiring the Engineers of the Future	postcard
	Getting into Engineering	poster
<b>WES</b>	Generation XX	A4
	Cupcake	poster
	WES general	a5
	INWED2018	postcard
	Amy Johnson Postcard	postcard
	Engineering a Better World	A4 booklet
	Engineering a Better World	poster
	Girls Can't What stickers	A4 stickers
	Women in Engineering Postcard	Postcard
<b>Smallpiece Trust</b>	Small Talk issue 31 Dec 2017	A5
	2018 Course Timetable	A4
<b>ICE</b>	En-Genius	A5
	Everything you need to know guide to civil engineering	A5
	Quest sponsorships: Technician	A5
	Quest sponsorships: Undergraduate	A5
	Invisible Superheroes	A4 booklet
<b>WISE</b>	10 Steps	A5
	People Like Me	
<b>Other</b>	Nextgen Futures	A5
	EqualEngineers Careers Fairs	postcard
	Join the Creative Industry, IMechE	A4
	If you were an engineer, what would you do? Primary Engineer	A4

	Target Jobs: Internships	a4
	Inspiring Interns leaflet	A5
	Apprenticeship posters (Success at School)	posters
	Baked Bean booklet - RAEng	A5
	Four Reasons to Study Electronics (UKESF)	A4
	UK Electronics pictogram	A4
	UKESF Scholarship Scheme	A4
	Naval Engineering Competition flyer	
	EDT Let us help you choose the right Routes Into STEM	A4
	National Railway Museum Activity Cards	A5
	Stemettes leaflet	A5
	InterEngineering postcard	Postcard
	The Guardian UK 300 Careers Book	
	Cosmopolitan Magazine (featuring article on Women in Engineering)	
	Ingenia magazine	
	STEM Careers (Reference Only)	
	IMechE Join the Creative Industry	
	Primary Engineer If you were an Engineer - What would you do?	A4 Poster
	Gradcracker: Your STEM career starts here	
	Target Jobs Internships Booklet (Reference only)	
	2018 Airbus GEDC Diversity Award Leaflet	
	Talent 2030 Competition leaflet	
	RAEng This is Engineering Set of Posters	A2
	EDF Pretty Curious - Inspiring a generation of girls to discover the future through STEM	
	Celebrating Women Engineers A2 poster (IET)	
	You and Engineering Poster (IET)	
<b>Government</b>	A guide to apprenticeships	a4
	Higher and Degree Apprenticeships	a4
	A Parent's guide to apprenticeships.	a4
	A-Z of Apprenticeships	
		a5
<b>Year of Engineering</b>	Year of Engineering Postcard	Postcard
	'I did it!' sticker, 5cm diameter	sticker
	'Take a closer look' stickers, 5cm diameter	sticker
	'Future engineer' stickers, 5cm diameter	sticker
	Fortune teller leaflet, 21cm x 21cm	
	External communications posters	A4
	Summer of Engineering Poster: Back to School	A2
	Improving Lives Through Engineering Poster	A2
	Engineering in Sport Poster	A2
	Summer of Engineering Poster: Going on Holiday Poster	A2
	Think Like an Engineer Activity Books (Usborne)	booklet
	Can You Step Through This Paper activity leaflet	A5

## Feedback and Evaluation

At each event the feedback form below was available on the stand, and visitors to the stand were encouraged to complete it when there was an opportunity. The questions were changed to reflect the fact that this activity was aimed at parents. I was unable, however, to distinguish the gender of the respondents as multiple responses were added to each form. In addition, there were only 3 choices of response rather than 4. I judge that more women visited the stand with their children than men, but for the purposes of reporting I have split the number of responses equally between men and women for the feedback evaluation. A maximum of 370 people responded to this questionnaire.

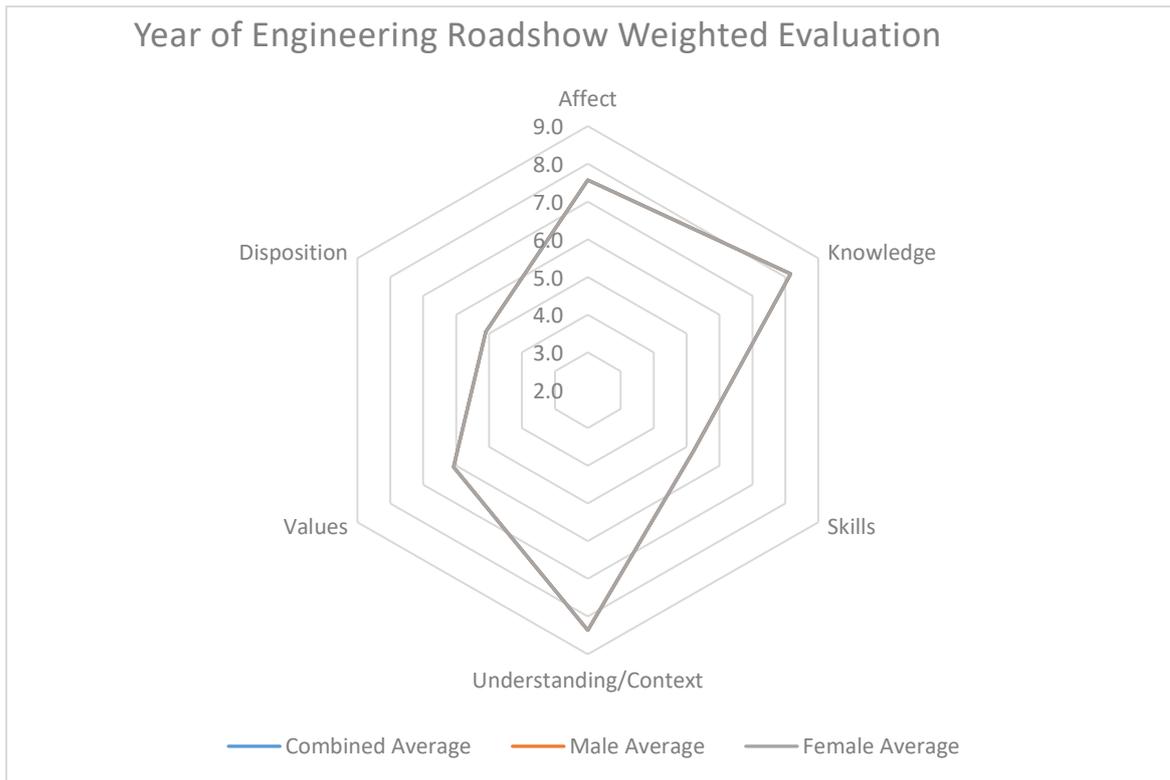
	Questions			
1	I / we enjoyed the information and activities on the stand	9	74	278
2	I/we found the information comprehensive and useful	12	34	312
3	I/we know where to find further information about engineering if I need it	66	145	158
4	I now know that 2018 is the Year of Engineering	16	18	336
5	I/we understand the reasons for encouraging my child to consider a career in engineering	58	76	181
6	I would, or think my child would consider a career in engineering	81	133	157

Questions relate to:

1. Affect
2. Knowledge
3. Skills
4. Understanding/Context
5. Values
6. Dispositions

The weighted evaluation can be seen below, indicating areas of strength and weakness of the activity. It can be seen that understanding, context and knowledge were areas the strength, which fits in well with the aim of the activity to be an information giving resource.

Whilst it has not changed necessarily had the effect of changing opinions, it has certainly given help to very many people who would not have had access to these resources from other sources.



## Conclusions Drawn

In conclusion, the Year of Engineering Roadshow set out to take engineering careers information out to meet parents and students face to face through a non-technical, non-threatening leisure based public engagement, in order to spread the word about the Year of Engineering Campaign and to signpost parents and students towards further resources. Over 7500 people were reached with this campaign, and it is felt that the engagement was successful in what it set out to do. A number of conclusions became apparent throughout the year, the main one being that much more can be done to support parents who do not have a high degree of engineering capital but who nevertheless want to find ways to support their children into STEM careers. This will hopefully be the focus of further work.

## Recommendations

The Year of Engineering Campaign was successful in positioning engineering as a career with a high profile which is valued and important to the nation. This, however, is only the start of what needs to be a longer term campaign to convert the huge amount of work that has been done over recent years to raise the profile of engineering, by way of helping students and parents successfully convert this inspiration into positive career choices. A dedicated careers provision is needed for the engineering sector alone, which brings all of our careers resources under one roof and provides a one-stop-shop for young people and their parents to find their way into the labyrinth of career choices that are available in engineering, including technical and academic routes.

More innovative ways are needed to reach and support parents without science/engineering capital who are keen to support their children into these future careers. There needs to be a sustained and strategic form of engagement.

# Photo Gallery

ASSOCIATION OF SCIENCE EDUCATION, LIVERPOOL, JANUARY 2018



**READY 4 TAKE OFF, GIRL GUIDING ANGLIA, 17 MARCH 2018**



**GET UP TO SPEED WITH STEM, MAGNA IN SHEFFIELD, 18 APRIL 2018**



**ROYAL BATH AND WEST SHOW, MAY 2018**



**GREAT EXHIBITION OF THE NORTH, 23 JUNE 2018**





**GIRLS IN ENGINEERING DAY, UNI OF HERTFORDSHIRE, 30 JUNE 2018**





**ROYAL INTERNATIONAL AIR TATTOO, JULY 2018**







### Shuttleworth, 2 September 2018





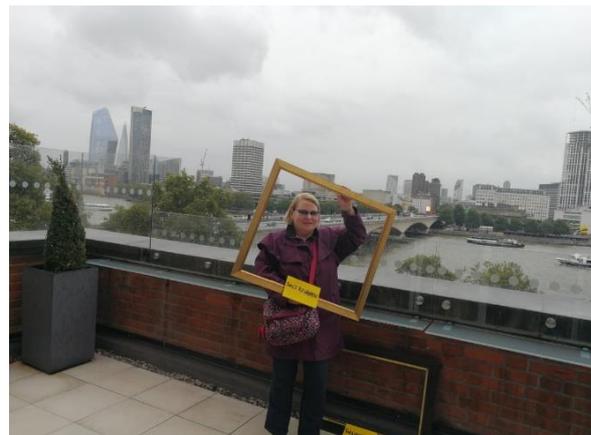


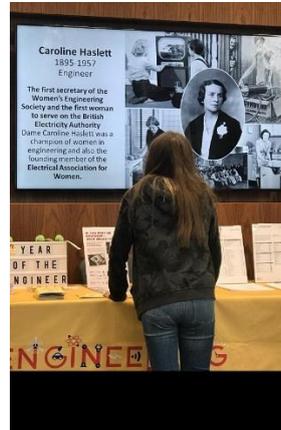
**ABERGAVENNY FOOD FESTIVAL, 15 SEPTEMBER 2018**





# TOTALLY THAMES FESTIVAL, TAKING OFF, THE IET OPENS ITS DOORS, 22 SEPTEMBER 2018





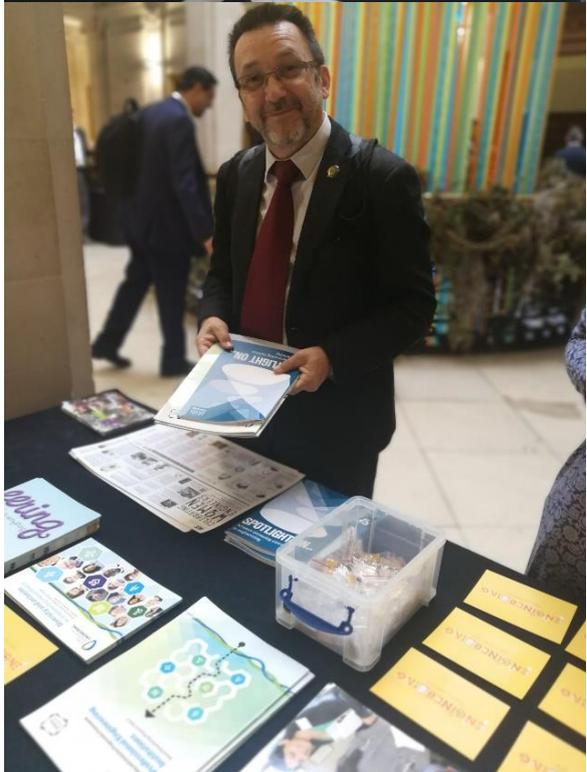
**IET PRESIDENTIAL LECTURE, 11 OCTOBER 2018**





**World Federation of Engineering Organisations and Global Engineering Congress, 21-25 October 2018**







**Future Engineers, National Railway Museum, York. November 2018**





