

2012 *Ingenious* grant awardees, by region and nation

South West

Cheltenham Festivals

FameLab Engineering

FameLab is one of the UK's leading competitions to find, develop and mentor science and engineering communicators. Set up in 2004 by Cheltenham Science Festival in partnership with NESTA, the competition has grown significantly. In 2012, 20 countries and NASA will be taking part in the competition. FameLab Engineering tailors the existing successful FameLab model to strategically target 1) Engineers and 2) Women engineers. Working with organisations such as the Women's Engineering Society and the IET we will deliver two bespoke heats of the competition ensuring at least 40 engineers participate in the competition, with at least two progressing to receive MasterClass training and an opportunity to compete in the UK final.

MS S BISHOP, sharon.bishop@cheltenhamfestivals.com

Graphic Science Ltd

Everyone's Energy

What is the solution to sustainable energy security for the UK? Should off-shore wind be powering our kettles and computers? Should we embrace nuclear power to meet our needs? Everyone's Energy is an opportunity for community groups across the South West to explore the ways we could meet our growing energy needs and come up with their own solutions. Developed by Graphic Science and Professor Martyn Pavier at the University of Bristol, Everyone's Energy workshops will be run by expert engineers working in the field of energy generation, each of whom will receive training to develop their engagement skills. The experts will facilitate and inform in-depth discussions of the potential, problems and controversies associated with each technology. The workshops will allow participants to reach their own conclusions about how the UK should address future energy security, as well as discovering the impacts of engineering on energy generation in the UK.

MR B JOHNSON, ben@graphicscience.co.uk

South East

Spacefund

The Biggest Rocket Ever Built!

"The Biggest Rocket Ever Built" is a new, exciting project that will enable undergraduate engineers to participate in a fun and interactive educational show that will educate and inspire school and family audiences in the world of engineering and science. Training alongside the award winning science theatre group "Spacefund", engineering undergraduates will play a key role in communicating engineering and science through this innovative show. The Biggest Rocket Ever Built is a show which tells the story of Man's epic journey to the moon by looking at the complexity and innovation behind the mighty Saturn V rocket. This show will provide the opportunity to stimulate and develop future engineers' communication and engagement skills while also creating debate and raising awareness of the huge impact engineering had on this great achievement and our daily lives.

MRS J FOX, spacefund@hotmail.com

Museum of the History of Science, University of Oxford

Objects of Invention

The Museum of the History of Science houses a unique collection of scientific objects which include devices designed for practical everyday use such as clocks, cameras, sundials, telescopes, calculators and counting devices, navigational instruments, and early radio technology from the Marconi Collection. This project aims to bring together engineers, young people, and historic objects creating opportunities for dialogue and interpretation of objects of invention, old and new, drawing on comparisons between 'ancestors' and their 'descendants'. This will take place through a series of events for school age audiences and family theme days which focus on object handling in the museum as a stimulus for discovery, and activities which highlight the creative processes involved in engineering and invention in the past and present.

MR C PARKIN, christopher.parkin@mhs.ox.ac.uk

London

Young Engineers

Meet the Parents

This project will allow practising engineers to work alongside Young Engineers staff and to engage both students and their parents at after school science and engineering club sessions at a number of selected London schools. By utilising their invaluable engineering experience, the practising engineers will be able to build into the sessions key messages about the value of their particular specialism. It will also allow the engineers to talk about their company's role in society and is an important step in directing the next generation of students towards a career in engineering. The project will allow parents as well as students the opportunity to meet practising engineers, to learn about some of the many STEM interventions that are available to them, to take part in a number of practical and engaging activities and to be made aware of engineering career opportunities. After school science and engineering sessions will allow engineers to communicate their expertise to Young Engineers encouraging pupils to consider engineering as a career option.

MR S ELLINS, stuart-ellins@youngeng.org

British Science Association

Strictly Engineering

Strictly Engineering is a poster exhibition with a difference. Engineers from across the UK are challenged to turn their research into an exciting, eye-catching poster to spark conversation about the social and ethical implications of their work and draw attention to the world-class engineering going on in the UK. Engineers will be supported and mentored by experienced public engagement experts and graphic designers throughout the process, finishing at the British Science Festival in September 2012. Participants will be encouraged to develop their ideas about engineering in society, graphic design and talking to the public and take their new skills back to their home institutions to raise the standard of engineering public dialogue. The primary aim of Strictly Engineering is to challenge stereotypes around engineering and celebrate the contributions made by the diverse UK engineering community.

MS M LOBO, Monica.Lobo@britishscienceassociation.org

Science Museum

Engineering London 2012: exploring Olympic engineering through exhibits and events

The Science Museum will work closely with six engineers to develop a range of exhibits and events that explore how cutting-edge engineering is contributing to the Olympic and Paralympic Games in London 2012. Hosted in the Science Museum's science news gallery, Antenna, and timed to coincide with the Olympic and Paralympic Games, the project will involve a mixture of live dialogue events, interactive experiences, and object displays. These outputs will offer Museum visitors the chance to meet engineers whose work relates to the Olympics and Paralympics. The connection need not be sport related exclusively: engineers could also focus on topics such as drug testing, sustainable transport, etc. Participating engineers will be given training and experience of developing public events and exhibits, as well as writing about and presenting their work to a lay audience.

MS K NILSSON, kat.nilsson@sciencemuseum.org.uk

West Midlands

The Black Country Living Museum

Newcomen Festival and Conference

A festival and conference celebrating the 300th anniversary of the Newcomen atmospheric steam engine – the world's first engine to successfully use the power of steam to produce mechanical work and which first operated just a mile away from the Black Country Living Museum in Dudley, West Midlands. The Museum possesses the only full size working replica of this feat of engineering which paved the way for the Industrial Revolution. Local scientists and engineers will feature heavily in the festival, demonstrating exciting real world engineering projects that have germinated from this early steam technology, and enhancing the profile of the industry through workshops at the school and college conference as well as public activities and presentations. The Museum will provide an atmospheric backdrop for the festival, showcasing many engines in steam from the 18th - 20th centuries in celebrating the engineering heritage and industrial significance of the Black Country.

MS M WEATHERLEY, mel.weatherley@bclm.com

East of England

Camouflaged Learning

Engineering the Landscape; How wind power has changed our lives

Engineering the Landscape is an innovative new project seeking to explore the impact of engineering on the Norfolk Broads and Coast as manifest through the harnessing of wind power. Tracing the uses of wind power throughout the centuries, from small medieval windmills through to giant offshore wind farms, the project will engage informal adult learners with engineers to trace the history, technology, purposes and impact of wind power over time. The project will also look at the economic and social impact of windmills and wind turbines as well as their place within the cultural landscape. In bringing engineers together with adult learners and partners from a range of cultural and heritage organisations, the project will create a touring photographic exhibition, open and accessible to the general public at a range of venues, exploring the participants encounters with the engineered landscape of the Norfolk Broads and Coast.

MR M BAGLEY, matt@camouflaged-learning.com

Yorkshire and the Humber

West Yorkshire STEM - University of Bradford

West Yorkshire Engineers Engage!

Engineers from industry and academia will be invited to take part in a year long project to learn or enhance their public engagement skills, and to put these skills into practice during National Science and Engineering Week 2013. Engineers wishing to take part will attend three workshops to provide them with the opportunity to learn the necessary skills for public engagement, and also to bolster the engineers' confidence in doing such activities, as well as supporting the development of a public engagement tool for each engineer around their job, their company or an engineering interest of theirs. The final workshop will be of an evaluative nature and will encourage the engineers to put plans in place for future engagement, either through existing networks or on behalf of their employer.

DR K J BAKER, kerry@wystem.co.uk

Sheffield Hallam University

Sports Lab 2012 – A public discourse in sports engineering

Sports Lab is a major exhibition that tells the story of sports engineering through historical and contemporary objects and interactive challenges. It will be hosted at the V&A Museum of Childhood throughout the Olympic period and will attract an audience of 250,000. This project adds value to the existing Sports Lab exhibition by providing opportunities for engineers to talk about their work through a linked programme of public events, and the development of a high quality blog where specific questions, asked by Sports Lab visitors, will be answered by a nationwide group of expert sports engineers.

DR D JAMES, D.James@shu.ac.uk

North East

Flowmill Project Ltd

~Flow engineering engagement programme

~Flow is a tidemill - a floating building on the River Tyne that generates its own power using a tidal water wheel. The building houses electro acoustic musical machinery and instruments that respond to the constantly changing environment of the river, generating sound and data. ~Flow (launched March 2012) is part of *Artists taking the lead*, one of twelve public art commissions funded by the UK Arts Councils for the London 2012 Cultural Olympiad to help celebrate the London 2012 Olympic and Paralympic Games. The project spans artforms, blending contemporary and traditional methods. It has wide appeal, combining sculpture, cutting edge technology, hand crafted wooden instruments, architecture, boat-building, precision engineering, and electronic music to create an astonishing audio-visual public artwork. We aim to extend the current engagement programme plans in order to introduce audiences to the range of highly skilled engineers involved in every stage of the project.

MR E CARTER, ed@modular.org.uk

North West and Wales

Techniquest Glyndŵr

Bridging the Gap

Techniquest Glyndŵr will engage with schools and engineers across the Cheshire, South Wirral and North East Wales areas and will link the schools with engineers to work together to design and model a bridge to traverse the Mersey. The aim of the project is to highlight the range of engineering careers and disciplines involved in the Mersey Gateway project.

The task will allow year 10 students to make decisions about the materials used, design, and environmental concerns as if they were heading up the construction of the Mersey Gateway bridge project. Following a training session to improve science communication skills the project will enable the link engineers to highlight their work and careers to the students. The project will be run as a competition with the final presentation taking place at Glyndŵr University as part of a STEM day that will showcase the work of the students and link engineers.

MR S OWEN, scot@tgg.org.uk

Wales

College of Engineering, Swansea University

STEM schools-based public engagement based on the BLOODHOUND SSC

This project will set out to enhance and develop new schools-based public engagement activities related to the BLOODHOUND SSC Land Speed Record (LSR) project at The College of Engineering, Swansea University. The applicants are crucial members of the BLOODHOUND SSC design team, and have been providing the 'mission-critical' aerodynamic design support for the design of this ambitious vehicle since 2007. The programme of work will involve the extension of our existing key stage 3 schools show to a broader audience than has been possible to date, encompassing key stages 2 and 4, and an enhancement of the activities on offer. The centrepiece of the schools engagement will be a travelling show and rocket car workshop.

DR B EVANS, B.J.Evans@swansea.ac.uk

Scotland

National Mining Museum Scotland

Engineering Scotland's Energy Future

This project will create a new and unique space at the National Mining Museum Scotland dedicated to engaging primary school children with innovative engineering solutions for Scotland's energy future. The museum will acquire the workshop where wave and tidal energy research began at Edinburgh University and allow primary school pupils to investigate their own energy solutions in the same space. The activities will be designed by active learning specialists working directly with engineers from industry and academia. The project will determine a model for on-going participation by working engineers in the schools' experiences provided in the new workshop. The space, interactions with engineers and the supporting schools materials will be built around the creativity inherent in engineering and the four capacities of the Curriculum for Excellence: to enable each child or young person to be a successful learner, a confident individual, a responsible citizen and an effective contributor.

MS R J BROWN, director@nationalminingmuseum.com

Edinburgh International Science Festival

InMotion and Make a Move

Edinburgh International Science Festival is one of the UK's biggest and most successful science festivals, engaging with 130,000 people every year. In 2012, in partnership with engineers and researchers, we will develop a new large-scale event, InMotion. InMotion will bring engineering alive, in relation to its role within the science of human movement and sporting performance. A multi-faceted project, exploring everything from fitness and power to the aesthetics of movement, InMotion will comprise an interactive exhibition, live

performances and topical debates. It will be staged for two weeks within Edinburgh's National Museum of Scotland and will attract 100,000 visitors.

MR S GAGE, Simon@scifest.co.uk

University of Glasgow

Torqueing Turbines

Torqueing Turbines will create a public performance delivered through dance, music and drama but led by engineering concepts in renewable energy generation and specifically wind turbines. The performance will be developed collaboratively by a team of engineers and performance artists and delivered in 4 major public venues across Scotland during autumn 2012. In parallel with the performances there will be a series of participatory engagement events for school pupils age 11-14. Pupils will attend in-school workshops to prepare for a taster version of the main performance in which they will actively participate.

DR J MAGILL, Jane.Magill@glasgow.ac.uk

The University of Edinburgh

Games Robots Play

Games Robots Play is an exciting and varied programme designed around the core theme of educating people about the promise and potential of human-robot interaction, at all levels from physical to social. Drawing on exciting research in domains ranging from robotic soccer to prosthetic devices, and through events including the Royal Society Summer Science Exhibition, RoboCup, Edinburgh International Science festival and an engagement event with local schools where children participate in extended play with robots in creatively designed games, we will raise awareness about the ways in which intelligent robots can improve and enrich our lives. In addition to showcasing the role of engineers in robotics research, and the role of robotics in our lives, we will also explore how working in this inter-disciplinary area allows engineers to contribute in a much wider way – taking on questions regarding how we make decisions, how we strategize about interacting with others, etc.

DR S RAMAMOORTHY, s.ramamoorthy@ed.ac.uk

The University of Edinburgh

Renewable energy in SCI-FUN, the Scottish Science and Technology Roadshow

With a targeted leap from 31% of electricity generated by renewables to 80% by 2020, there will be an increased public interest in marine renewables, and engineers will therefore require a platform from which to communicate their ideas in this field. The SCI-FUN Roadshow will provide such a platform, through the development and integration of materials related to renewables within its existing outreach scheme. SCI-FUN will collaborate with an art-science project focused on coastal power, and with other engineering partners. The new exhibits and presentations will stimulate discussion between engineers and the public. Engineers will deliver these materials at events in locations where the technology is already deployed. The project's key legacies will be: a cohort of engineers in a variety of roles with new engagement skills and experience; and a cluster of engineering exhibits which will be used by SCI-FUN and be available to the local marine renewables community.

MR P REID, peter.reid@ed.ac.uk

Northern Ireland

Sentinus

Engineering Solutions

Up to twenty undergraduate/post graduate engineering students from the two local universities in Northern Ireland will be linked, for a period of 8 – 10 weeks, with ten post

primary level schools in the Greater Belfast area in a programme designed to promote debate and creative thinking on current and future engineering issues, across a range of disciplines. During this time the young engineers will engage pupils in an engineering project and encourage them to examine key aspects of engineering, carry out investigative research and propose innovative solutions to significant challenges of the future. In addition, ten practicing engineers from local companies will engage in dialogue and debate with both the undergraduate/post graduate engineers and the pupils from the schools. Through the involvement of undergraduate/post graduate engineering students in the management and delivery of these projects we will create links between the next generation of engineers and their local schools and inspire pupils to consider the impact of engineering on our lives.

MR B CONNOR, bill.connor@sentinus.co.uk