

EXIST

Exeter Initiative for Science & Technology

insight

A focus on science,
technology & innovation
for the business community

JULY 17 **ISSUE 04**



Exeter Chamber
of Commerce & Industry

EXETER

√ CITY OF MATHS

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ABOUT EXIST AND INSIGHT

The Exeter Initiative for Science and Technology (ExIST) is a sub-group of Exeter Chamber of Commerce and Industry. The group was founded in June 2011 by a group of business leaders in Exeter and the sub-region. The group's aims to optimise interaction between science and technology businesses trading in the area, to increase awareness of Exeter as a centre of science and technology, to build relationships between education at all levels and business, and to encourage investment in the STEMM industries in the region.

ExIST Insight is the newest project from the group and aims to raise recognition of the STEMM organisations and its community within Exeter and the local region. The quarterly newsletter enables us to share information within the network and for external promotion to encourage increased visibility of Exeter as a science city.

Find out more
www.existexeter.co.uk

 **EXIST_Exeter**

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ISSUE 04 WELCOME TO ISSUE 4 OF EXIST INSIGHT

In this edition, we are proud to concentrate on Exeter's growing status as a centre for Maths. With a focus on Maths education across the city, and across all ages, Exeter is the leading the way in generating home-grown talent. The major investments seen from Exeter College and Exeter University, as well as our specialist Exeter Maths School, are paying off and Exeter has been recognised as a blue-print for Maths education across the UK. In business, the Met Office employs more than 200 Maths specialists and there are an increasing number of young companies and start-ups, whose businesses depend on talented maths professionals – read more about the ones to watch on page 5.

Many of you will know Dr Robin Jackson, a founding member of ExIST and an individual who has been fundamental in leading and managing our events programme. In good news, for Cornwall, Robin has accepted a post as Director of a key Agritech programme based in the county. Even though Robin will no longer be so closely involved with ExIST we have



Robert Mcllwraith with Robin Jackson, co-founder and steering group member of ExIST

no doubt we will continue to work together on specific projects. We would like to thank Robin for his hard work and his efforts with ExIST and wish him well in this exciting, new challenge.

As always, I hope you enjoy reading this edition – and once again thank our sponsors for their support in enabling us to publish Insight. Find out more about them on our website
www.existexeter.co.uk



Robert Mcllwraith.



Exeter Chamber
of Commerce & Industry

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HOW VIRTUAL REALITY HEADSETS ARE BEING DEVELOPED TO TRAIN METEOROLOGISTS

The Informatics Lab has been working alongside the Met Office College to deliver a virtual-reality (VR) prototype application that it is hoped can further enrich and inform the students of the College's courses. The Met Office College delivers bespoke training courses and programmes to people from around the world for anything weather and climate related, including the 'Aeronautical Meteorological Observing Course'. This course is delivered numerous times a year predominantly to customers from UK civil and military airports and airfields, but also to the Met Office's own trainee meteorologists. There is a large practical element to the course: trainees must be able to recognise different cloud types, amounts of sky coverage and cloud base height, along with weather types and intensities, and associated visibilities. When delivering this type of recognition training, the College is at the mercy of the weather and often during a course there is limited variation in the sky conditions which limits the learners' exposure to different conditions.

Tom Powell, a technologist at the Informatics Lab, who is seeking to solve the challenge set said: "Using low-cost VR headsets (e.g. Google Cardboard) we will be able to immerse the students in various weather scenarios chosen at will from an online catalogue, all delivered on-site in the classroom. Further to this we have been experimenting with curating these experiences so we can further guide users to look where we want, and when we want, them to. The project is still very much in its infancy but we are already convinced that by using VR we can give the learner a more complete and immersive learning experience."

www.revel.org.uk

EXETER ENTREPRENEURS ON EXCLUSIVE LIST OF TOP 50 HONOURED AT HOUSE OF COMMONS

On 29th March 2017 eight entrepreneurs from Exeter celebrated being recognised within the Top 50 entrepreneurs of 'Global Number One University Business Incubator', SETsquared, at a reception held at the House of Commons, Palace of Westminster.

The Exeter entrepreneurs honoured are Olivia Champion of BioSystems Technology, Andrew Stamp of Brain in Hand, Darren Westlake and Luke Lang of Crowdcube, Jacob Marsh of ModMyPi, John James of SeeDATA, Philippe Young of Simpleware, and Iain Fairbairn of Theta Technologies.

The entrepreneurs were named on an exclusive list selected from over 1,000 entrepreneurs who have been supported by SETsquared during the last 15 years.

In addition, three Exeter entrepreneurs were listed as 'Ones to Watch': Matt Morley of Explaain, Toby Mottram of Milkalyser, and Oliver Blackwell of Thalamus Health.

Joe Pearce, Head of Business Support at SETsquared's centre in Exeter, said: "Tech entrepreneurs and high-growth companies are vital to the future of the UK economy. Exeter has always had a vibrant and thriving culture of innovation but without the right support these companies will not grow into global leaders. SETsquared has played a key role in supporting tech companies in the south of England, helping put Exeter on the global innovation map."

To see the full top 50 list, visit: www.setsquared.co.uk/top50



GROWING YOUNG ENTERPRISE SEEKS BUSINESS LINKS

Young Enterprise Devon helps teams of young people in schools across Devon to develop their enterprise skills over an eight month programme. More schools are coming on board this September and therefore more business advisers are required to assist the school teams, helping them to develop their skills within this structured programme.

Business advisers should have business experience and, equally, lots of enthusiasm, and be able to invest a few hours per week over the length of the programme.

There is particular interest from schools in Exeter and East Devon so, if your business is close to Exeter, Cullompton, Honiton, Ottery, Sidmouth, or Exmouth we particularly would like to hear from you! Some of the schools will want to work closely with your business, not only through the business adviser opportunity, but potentially in creating opportunities for publicity or recruiting new staff.

Please contact Marian Weston, Young Enterprise Manager, marian.weston@y-e.org.uk for further information.

AN INTERVIEW WITH **KERRY BURNHAM**

OVERSEES EXETER MATHEMATICS SCHOOL'S OUTSTANDING BEGINNINGS

Opened in September 2014, Exeter Mathematics School (EMS) has quickly made its mark in STEMM education. As one of two state funded mathematics schools in the country (the other one is Kings College London Maths School), in March 2017 Education Secretary, Justine Greening MP, proclaimed that "EMS should lead the way for cities across the country". In a piece for The Telegraph, she went on to describe it as "pioneering" and as "a school that enables talented maths A level students to focus and excel in a subject they love. It was inspiring to see." The School had its first Ofsted inspection in January 2017 and achieved the Outstanding rating across all the categories.

For the students of EMS, the results have been excellent. With the first cohort going on to achieve almost half a grade higher per subject than expected based on achievement in GCSEs, 94% have secured University places with 18% of those at Oxbridge. EMS's progress score places it in the top 75 of all schools, both state and private, and in the top three across Cornwall, Devon, Dorset and Somerset. Based on these measures, EMS is the highest performing state school in the region.

INSIGHT TALKS TO HEADTEACHER, KERRY BURNHAM, ABOUT THE ACHIEVEMENTS OF EMS

Kerry was employed twelve months prior to EMS opening and had a hand in practically every aspect of launching – from picking the paint for the walls, to recruiting each member of staff, and developing the curriculum, policies, and procedures. The result? The listed City centre property on the edge of Rougemount Gardens has been



EXETER

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transformed into a buzzing, creative, environment for 120 gifted students. Aged between 16 and 19, students come from Cornwall, Devon, Dorset, and Somerset to attend the School, with around a third boarding in the city during the week. Students can take maths and physics A-levels at EMS, and can then attend other courses at partner establishment Exeter College.



A tour with Kerry around the building shows us that the lessons are relaxed and informal, and the building itself bright and cheery, with facilities for lessons, private study, research, and relaxation. Throughout the School, posters, crammed with detail, line the walls.

The posters are the result of a stand-out scheme, which Kerry believes builds the students' confidence and communication skills particularly. On arriving at EMS, all students are set an academic challenge by a University professor. In their first term, the students work in groups to research and tackle that challenge – by Christmas they must be ready to present their solutions to an audience of 400 peers, parents, and tutors on stage at the University of Exeter's auditorium. In the student's second term, EMS partners

with businesses to set the students real-life challenges. Recent industry partners include the Hydrographic Office, Dyson, ATASS sports, the Met Office and Kinetic. As part of this challenge the students must visit the business and at the end of the term present their reports and pitch their solutions back to the business.

In the second-year students propose their own individual research projects, which are peer reviewed, and finally present their findings in a conference. Recent examples include 'Automated Translation of Poetry', 'Meteor Detection', 'Mathematics of Origami', 'Quantum Algorithms', and 'Face Recognition on Social Network Sites'.

Kerry said: "For students, the projects give them the chance to fail and to learn – working on these real-life challenges builds the students' resilience.

Kerry continued: "I hope the partnerships with industry could become a model for engagement between industry and schools, and ultimately help schools equip students for both University and the workplace."

What about encouraging more students into STEMM subjects from school age? EMS works across the South West to engage younger pupils in maths with various outreach programmes taking place from primary age up to a GCSE enhancement course. For example, students from across the region are able to join the school's Maths Student Community – a programme that enables able students to meet together

on a regular basis, attending workshops at EMS, and receiving online support designed to enrich their experience of mathematics and develop their problem solving.

Girls at EMS currently make up one third of the student numbers; there is an ambition to reach gender parity. Kerry said: "We have submitted a funding bid for research which will help us to understand how to attract more female students into mathematics subjects. It is my belief that making children more aware of the careers opportunities open to them via maths will influence this, as would helping children understand that maths is creative. It is about perseverance and problem solving."

With Justine Greening suggesting the Exeter Maths School model as a blue print for maths education in the future, what is next for EMS? The School is working with other state schools across the region to build a network for teachers and to provide specialist subject training for teachers, who have found themselves teaching maths, when it is not their specialism. Kerry said: 'It is through the teachers we can have the most impact, and reach the most students.'

www.extermathematicsschool.ac.uk

WHAT IS NEXT FOR EMS STUDENTS?

Name: Owen Rowell

Subjects: Maths, Further Maths, Physics, Computer Science

Next Steps: University, not sure exactly what course but probably Engineering

Industry Project: National Hydrographic Office – developing 'trust values' for ships.

How has EMS helped?: I've been stretched more here and have developed good problem-solving.

Name: Beth Womack

Subjects: Maths, Further Maths, Physics, English Literature

Next Steps: University, not sure exactly what course yet

Industry Project: Met Office – investigating climate change models.

How has EMS helped?: better awareness of opportunities at University and in Industry.

Name: Helena Read

Subjects: Maths, Further Maths, Physics, Biology

Next Steps: University, Mathematics degree

Industry Project: Dyson – modelling gears.

How has EMS helped?: it has widened my horizons and made me more aware of what you can do with maths.

Name: Felix Freeman-Davies

Subjects: Maths, Further Maths, Computer Science, Politics

Next Steps: University, Mathematics degree

Industry Project: ATASS Sports – predicting the Premiership

How has EMS helped?: it has developed me as a whole person and it's good to work with people that have similar interests to me.

Name: Caitlyn Clement

Subjects: Maths, Further Maths, Physics, Chemistry

Next Steps: University, Aeronautical Engineering

Industry Project: Quinetic – Modelling planetary orbits

How has EMS helped?: lots of opportunities and I'm more aware of degree options for my subjects.

ONES TO WATCH FIVE TOP EXETER ORGANISATIONS WITH MATHS AT THEIR CORE

Atass Atass Sports is a statistical research consultancy who aim to provide modelling and analysis for the sports industry. They are a leader in the application of statistical modelling in sports and have created a number of statistical and mathematical models that allow sporting outcomes to be accurately predicted. www.atass-sports.co.uk

Black Swan Black Swan work to solve marketing problems for their clients by using available data to create digital solutions. They aim to anticipate changes in consumer behaviour by analysing data, and through this can work with clients to predict what their customers will want. They help to transform the way their clients reach, satisfy and engage their consumer base. www.blackswan.com

The Met Office Since the first Numerical Weather Prediction (NWP) in 1952, and the first operational computer forecast on 2 November 1965, numerical models have been at the heart of the Met office forecasts and products as well as research and development. The Met Office currently employs some 150 graduate and post-graduate staff with mathematical skills for their data management, analysis, and forecasting capabilities. www.metoffice.gov.uk

Select Statistics Select Statistics delivers a professional statistical consultancy service. They use high quality statistical tools to achieve greater understanding, improve decision making and solve problems for their clients. Select Statistics aim to provide the best products and services, as well as being happy to educate and advise their clients so that they can use the same techniques themselves. www.select-statistics.co.uk

Sparx Sparx use technology, data and real world classroom observation to scientifically investigate the way young people learn, employing a skilled team of developers, and statisticians to improve education. www.sparx.co.uk



INSPIRING THE NEXT GENERATION AT EXETER COLLEGE'S INNOVATIVE MATHS AND SCIENCE CENTRE

The next generation of leaders in maths and science are being inspired at Exeter College's state of the art Maths and Science Centre – cementing the college's reputation as a leader in STEM education.

The Centre, which has been open for just over a year and was an investment of £8.2m to support growth in STEM (Science, Technology, Engineering and Maths), provides inspirational and inspiring academic science labs and classroom spaces.

Students from all four corners of Devon and beyond are now taking advantage of the excellent facilities and teaching on offer at the Centre.

The facilities include six maths classrooms, a computer science suite and twelve purpose built science labs covering biology, chemistry, physics, environmental science, geology and forensic science.

All of the teaching and learning spaces have been designed to the highest specifications to support inspirational and innovative teaching. The Centre also houses a student cafe, learning hub, interview rooms and a staff room.

Subjects on offer range from A Levels in maths, physics, geology, environmental studies, computer science, chemistry, biology, and further maths, as well as the Applied Science (with forensic science and biomedical pathways) BTEC Extended Diploma, and Access to Higher Education courses. The Maths and Science Faculty also provides the opportunity for nearly a thousand students in the college who struggled

with maths or the sciences at school to gain these vital qualifications at GCSE level.

Students studying at the Centre have enjoyed recent award winning national success, with Exeter College student physicists achieving Gold at the British Physics Olympiad earlier this year. The British Physics Olympiad has run for 25 years and is entered by more than 1,600 talented young physicists. The college had two second year A Level physicists, Tom Knapton and Matt Fry, in the top 130 candidates in this year's contest with both achieving Gold. For Matt this goes alongside Gold in the year one Chemistry Challenge.

Lecturer Ashley Dyer said:

“THE STUDENTS HAVE WORKED REALLY HARD OVER THE LAST TWO YEARS, TAKING PART IN PHYSICS CLUB AND EXTRA-CURRICULAR EVENTS. THEY HAVE CHALLENGED THEMSELVES ON A WEEKLY BASIS AND THIS HAS PAID OFF WITH THEM GOING ON TO ACHIEVE GOLD.”

Exeter College also entered its largest ever team into the recent Biology Olympiad, with ten students being awarded medals: Gold for Jack Hepper as well as six Silver and three Bronze. The Maths and Science Centre is located in the former JobCentre Plus building on Queen Street, which had

been unoccupied for many years until the college acquired it in 2013. The building, occupying more than 2,000 square metres, is located on one of the major gateways into the City.

The building was officially opened by Professor Sir Steve Smith, Vice Chancellor of the University of Exeter, in November 2015. The project saw the installation of passive ventilation systems, as well as photovoltaic panels to improve the building's energy efficiency. There are also additional cycle racks, showering and drying facilities to support the growing number of students and staff opting for the environmentally friendly ways of getting to the Centre.

Exeter College is recognised as a leader in the provision of STEM subjects. The College is also creating a multimillion pound Centre of Excellence in Robotics and Engineering at its landmark Technology Centre, on the edge of Exeter. The Centre is due to open in September 2017 and will feature eight new, world-class, manufacturing robots, 3D printers, and a virtual welding facility.

Meanwhile, in line with its reputation for academic excellence, thirteen Exeter College students have been offered places at the world-leading universities of Cambridge (seven) and Oxford (six). The offers cover a range of subjects including the STEM subjects biochemistry, mathematics, and engineering sciences.

www.exe-coll.ac.uk

MOIRA MARDER TED WRAGG TRUST CEO

TALKS MATHS...



The Ted Wragg Trust was established in 2010 with the aim of creating an outstanding educational experience for all Exeter's children. Moira Marder, formerly headteacher of St James School, is Chief Executive Officer of the Trust, which has grown by 2017 from one school to a five school Multi Academy Trust (MAT) responsible for the education of over 3000 children aged 2-16 years. The Trust works with both Exeter College and the University of Exeter as education partners.

Insight speaks to Moira Marder about how the Trust prioritises maths and focuses on developing students' core skills.

The five schools that form the Trust are secondary schools, St James, Isca Academy, and West Exe, all-through campus Cranbrook, and large primary school Exwick Heights. Currently all of the schools are graded as good with improvements identified in every school since they joined the Trust. 2016 exam results saw the secondary schools placed in the top 20% of all schools nationally for progress and in the top 15% for maths attainment.

Mathematics outcomes for Ted Wragg MAT schools have been consistently

excellent. In 2015-16 Isca Academy and St James school were in the top five schools in Devon for progress and St James also for attainment. St James was also in the top 10% of schools nationally. Students of all ability perform well.

Moira said: "Our academies are driven by an absolute determination to improve life chances for every child no matter what their ability. Our academies are identified by inspirational leadership and rich learning experiences.

Since the inception of the Trust I can see more and more of our students achieving their very best and making aspirational life choices which is now allowing them to flourish in any context and as result I feel hugely proud to be the CEO of this values driven MAT.

Developing students' core skills is the number one priority for all our schools. Ensuring that our students leave with outstanding literacy and numeracy skills will equip them with the skills to be successful at Exeter College.

We have worked very hard to attract and then retain the very best maths teachers at all levels. We were one of the first Devon Trusts to appoint Maths Advanced Skills Teachers and now have five lead practitioners in maths working across our MAT.

We prioritise maths across the curriculum and give students time to tackle mathematical topics in greater depth and develop their resilience. Our success is based on quality teaching first, excellent staff continual professional development, state of the art teaching facilities, no excuses for any student, and the innovative



use of technology. One of our biggest successes has been the strong performance of white working class middle and low attaining students, particularly those from disadvantaged backgrounds.

FOR SEVERAL YEARS WE HAVE BEEN WORKING WITH A LOCAL, INNOVATIVE SOFTWARE COMPANY CALLED SPARX TO DEVELOP GROUND BREAKING TECHNOLOGY THAT ADAPTS ITSELF TO THE INDIVIDUAL LEARNING STYLE OF EACH STUDENTS.

Students use iPads to complete tasks, games, and quizzes that build on their learning. We can then analyse the results using the monitoring software. This data helps us to understand the unique way a student learns so that subsequent questions and activities can be tailored to improve a student's understanding of each particular topic. The Sparx platform gives real-time data analysis to teachers so they can focus their attention on the students that need it the most.

Working in partnership with such an innovative company, alongside our outstanding teachers, has transformed the way we teach maths. It is interesting, fun and challenging and because maths is such an important subject the success that students are experiencing here is helping to develop their confidence in other subjects."

www.tedwraggtrust.co.uk

PROFESSOR JOHN TERRY

is Professor of Biomedical Modelling, Director of the EPSRC Centre for Predictive Modelling in Healthcare and Co-Director of the Wellcome Trust Centre for Biomedical Modelling and Analysis.

Professor Terry's research is focussed on the development and application of mathematical and computational methodologies for understanding the dynamics of biomedical systems, with particular interests in the transitions between healthy and diseased states in the human brain and also in the dynamics of endocrine systems. Since 2003 John has supervised the research training and development of thirty individuals, including twelve PhD students.

Graduating in Mathematics in 1997, John studied for a PhD in Applied Mathematics. Following postdoctoral positions he was appointed Lecturer in Mathematical Sciences at Loughborough University in 2002. From 2006–2010, he rose from Lecturer to Reader within the Department of Engineering Mathematics at the University of Bristol. A Readership in Theoretical Neuroscience at the University of Sheffield in 2010 followed before joining the University of Exeter in 2012.

John is now part of the University of Exeter's new Living Systems Institute (LSI), which will pioneer novel approaches to understanding diseases and how they can be better diagnosed. The LSI enables the physical colocation of scientists with very broad skills, and the provision of high-specification technologies.

Insight caught up with John, to find out more about his work.

What's your current research focus?

I have two main areas of research focus, which I am seeking to combine into one. The first revolves around epilepsy – a serious neurological condition that affects around 1% of the UK population. The second involves the human stress response, which is regulated by a neuroendocrine system that governs the secretion of the hormone cortisol. Both systems are highly dynamic and so mathematics has an important role to play. Intriguingly the most common cause of the seizures that people with epilepsy quote is stress and stressful situations, so by combining these two areas we may be able to make new breakthroughs in our understanding. Building on this research we are currently working towards establishing a spin-out company that will provide a diagnostic service for neurologists. We will be taking part in the final of a 'shark tank' competition in mid-May (the equivalent of Dragons' Den in the USA) that would fund us to start this spin-out.

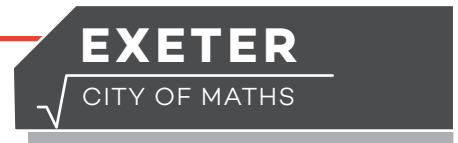
How did you move into biomedical modelling? Was this a deliberate decision?

I'm not sure it was entirely deliberate, more a sequence of

events. I was just completing my PhD back in 2000 and on the day of departure, an Australian arrived to spend some time with my PhD supervisor. He was a psychiatrist interested in mathematical modelling and cricket – something we both had in common! We stayed in touch and I was lucky enough to receive a Royal Society travel award to start a collaboration which focused on the use of mathematical algorithms to understand how different regions of the brain communicate. It all kind of went from there.

As a Professor with a large research group, how do you maintain a personal research focus - how do you make sure you fit in this time?

It's important that you find time to keep up to date and exposed to new ideas. In fact, I've just returned from a week-long visit to Porto Alegre in Brazil, where we spent time in an epilepsy surgery unit. Observing surgery in person, and understanding how the surgeons were using the data they had collected to make decisions about which region of the brain they would operate on, gave me a wealth of new ideas, as well as redoubling my focus to make a difference to people with this debilitating condition. Mathematical models offer an important additional source of information about which regions of the brain are implicated in seizure generation and thus should be targets for surgery.



How many mathematicians are there at Exeter? How many work in pure maths, and how many in applied? What other groups do they link up with?

The department has grown significantly in the past few years and there's now around 60 academics (from lecturers through to professors). We are a very applied focused discipline (around 50 of our staff face applications areas). We have strong groups in climate science, statistics, systems biology and medicine, and geophysical and astrophysical fluids. We also have growing expertise in the mathematics of big data, which is becoming increasingly important in almost every application area.

What are the current 'hot topics' in Maths at Exeter?

I'm enthusiastic about all mathematics, so everything's "hot" to me. I guess if I had to make a choice of four they would be climate modelling and climate change, quantifying risk and uncertainty, algorithms for big data, and healthcare technologies and the diagnosis of disease. All areas for which collaborations beyond academia, such as with industry, are essential.

How do mathematicians contribute to the Living Systems Institute?

Mathematicians have a critical role to play in an institute such as Living Systems. Mathematics effectively underpins everything we do. From the algorithms that enable us to make sense of the images we record from single cells or

from whole organs (like the brain), through to the models needed to make predictions that we can test biologically. As our ability to observe and to manipulate biological systems has grown exponentially, mathematics based predictions are becoming increasingly important to guide our choice of experiments.

How do you start an interdisciplinary project?

To me it's all about the 3 Es: Energy, Enthusiasm and Engagement. In the early stages, it's critical that you spend a lot of time sat around a table, often in mutual ignorance, as you try and build an understanding. During this period, it can be really easy to get frustrated or to become disengaged, so it's really important that you bring positive energy and enthusiasm for the research project in hand. It's also essential that everyone in the collaboration respects and values the contributions that each member of the team brings. We are increasingly seeing that to tackle some of the most pressing challenges facing us in this Century, we can only make progress by bringing together people with deep expertise from different disciplines and help them to interact and think in new ways.

In this, our Exeter City of Maths issue, we want to know how people's interest is sparked in STEMM subjects - why did you decide to study maths?

I guess it goes back to schooldays. Mrs Farley – my mathematics teacher – noted in my school report when I was 14: "With some effort John should be able to get a GCSE, however I strongly advise against him continuing any further". From that point on I was determined to prove myself as a mathematician. I'm still trying now!





AN INTERVIEW WITH DR SALLY BASKER

NEW CEO'S VISION FOR EXETER SCIENCE PARK

Dr Sally Basker was appointed Chief Executive Office of Exeter Science Park in April 2017. She is a qualified engineer with 15 year's senior level research and innovation experience in the aerospace, defence, energy, and navigation sectors over her 25-year career. She has been responsible for crafting business cases, attracting funds and procuring multimillion-pound research facilities, as well as creating and implementing growth and diversification strategies for high-value technology products and services.

Dr Basker has extensive international experience working with decision makers in the European Union, USA, Russia, the Far East, and South Africa. Recent roles have included leading business development for a new, private-sector, space-based service in South Africa and Head of Business Development at the UK Atomic Energy Authority, where she established and incubated five technology special business units.

Having recently completed an MBA, Dr Basker has also led and delivered a number of successful projects for organisations such as the General Lighthouse Authorities of the United Kingdom and Ireland, the Royal Institute of Navigation (RIN), Traxis Ltd, and Helios Technology Ltd.

In Dr Basker's first month in post, Insight posed a few questions...

What are your priorities now that you are in post? My immediate priorities include developing a growth strategy for the Park; building and letting nearly 50,000

square feet of top-quality space for STEM-based businesses, maximising opportunities from the new Enterprise Zone, and increasing our engagement and impact across the region.

Although high-profile new buildings and highly-successful tenants may be the headline story, Exeter Science Park needs to be much more than this. The Science Park needs to engage with STEM-based companies across the region and I want the Science Park to become a 'watering hole' where companies come to network, to learn, and to collaborate.

If you could have one dream client who would it be? My dream client would be one of those mythical unicorns – a start-up valued at over \$1 billion like Uber, Dropbox, or Pinterest. It would challenge 'business as usual' not least in terms of ambition, growth, employability, funding, and business accommodation. It would place the spotlight on Exeter Science Park and the wider region as a great place for business and would inevitably drive growth. I hope we will recognise a potential unicorn when we meet it and look forward to helping it achieve its potential.

How will the further development of the Science Park affect Exeter? Further development of the Science Park has clear benefits for Exeter and the region in terms of attracting and growing STEM-based businesses and enhancing productivity. The links between businesses and the knowledge base at the University of Exeter and elsewhere

should help to drive a creative and innovative science-based economy, in tune with the ethos of the region. Service businesses, such as accountants and lawyers, will inevitably develop new products and services to support their growth. All of this means a wide range of job opportunities for students and graduates from the University and the Further Education colleges. I can see the new degree-apprenticeship scheme being hugely attractive.

What is your vision for the Science Park, five years from now? The next five years is going to be interesting given the imminent BREXIT negotiations and we will need to set our sails to take advantage of opportunities and manoeuvre swiftly to minimise risks. I am hoping that the cluster within the Science Park Centre and the Global Environmental Futures cluster will be largely complete and that there will be a vibrant and collaborative community based around these. It would be great to have a hotel under construction at this strategic location. I also hope that a third cluster will be well under way and that private sector developers will have started to appreciate the opportunities from investing at the Science Park.

I would like to see STEM-based businesses across the region becoming frequent visitors benefiting from enhanced networking, collaboration opportunities, and continuous professional development.

www.exetersciencepark.co.uk

EXIST EVENTS

EXIST EXPLORES THE SMART HEALTHCARE INNOVATIONS IN EXETER

On Thursday 13th July, Exeter Initiative for Science and Technology (ExIST) will be looking into smart healthcare and how innovations from local companies and researchers are working to help enable better informed decisions in the healthcare sector.

The event will be taking place at the Flybe Training Academy from 8:30am - 11am.

Confirmed speakers for July's quarterly event will include Jason Williams, Business Development Director of Seedata, Colin Richman, Founder and co-Director of Rx-info and Piers Kotting, Programme Director for Office of the NIHR National Director for Dementia Research.

EXIST QUARTERLY EVENT – JULY 2017

Business opportunities and climate change

- ▶ Thursday 13th July 2017
- ▶ 8.30am - 10.30am
- ▶ Flybe Training Academy

SPEAKERS include:

Quality Improvement - there's plenty more to Life
Jason Williams, Business Development Director, SeeDATA

Life QI is the collaboration platform, developed by SeeDATA, for people working to improve health and social care. It makes it easy for teams to run quality improvement projects, share their work, and learn from the work of other teams. Life QI is currently in use in 25 countries and has been shortlisted as a finalist in this year's HSJ Patient Safety Awards, in the 'Best Product or Innovation for Patient Safety - Private Sector' category.

<https://seedata.co.uk/>

The £7.6bn drug problem

Colin Richman, Founder and co-Director, RX-info

Rx-info's pharmacy software platform provides secondary care professionals with accurate and up-to-date information about medicines use. Discover how, across the UK, Rx-info enables NHS Hospital Trust pharmacies, clinicians and finance departments analyse medicines usage, track budgets, and flag any unexpected trends.

<https://www.rx-info.co.uk/>

Engaging, Effective, Research

Piers Kotting, Programme Director, Office of the NIHR National Director for Dementia Research

Join Dementia Research is a UK-wide service that makes it easy for anyone, with or without memory problems, to take part in dementia research and help accelerate progress in this vital area: helping scientists and doctors to understand dementia and test potential new treatments. Discover more about the services and how the platform technology behind it can be used to facilitate the research and treatment of other clinical conditions. <https://www.joindementiaresearch.nihr.ac.uk/>

The Future of Clinical Decision Making

Professor John Terry, University of Exeter Professor John Terry, is a Professor of Biomedical Modelling, Director of the EPSRC Centre for Predictive Modelling in Healthcare and Co-Director of the Wellcome Trust ISSF2 Centre for Biomedical Modelling and Analysis.

John is now part of the University of Exeter's new Living Systems Institute (LSI), which will pioneer novel approaches to understanding diseases and how they can be better diagnosed. Find out more about how the work Prof John Terry is involved with is aiding clinical decision making and how his research in epilepsy diagnosis created the opportunity for a spin-out company.

**FOR A FULL LIST OF STEMM EVENTS VISIT
WWW.EXISTEXETER.CO.UK**

TO BOOK VISIT EXETERCHAMBER.CO.UK

TECH NATION 2017 REPORT



IN 2016 UK DIGITAL TECH INVESTMENT REACHED £6.8BILLION **50% HIGHER** THAN ANY OTHER EUROPEAN COUNTRY

DIGITAL BUSINESS TURNOVER HAS INCREASED FOR BUSINESSES IN EXETER, **UP BY 30%.**



READING AND BRISTOL & BATH HAVE A HIGHER DENSITY OF DIGITAL TECH BUSINESSES THAN LONDON 0.86, AT 7.26% AND 4.35%. **EXETER SCORED A MEDIUM RANKING OF 0.47% FOR TECH BUSINESS DENSITY.**



EXETER RANKS NUMBER ONE

EXETER RANKS NUMBER ONE CITY IN THE UK AT **98%** FOR QUALITY OF LIFE AND AVERAGE HOUSE PRICES OF **£263,439** VERSUS LONDON'S **59%** FOR QUALITY OF LIFE AND HOUSING PRICE AVERAGE OF **£582,816.**

THE ECONOMIC CONTRIBUTION OF THE UK DIGITAL TECH SECTOR IS NEARLY DOUBLE THE EUROPEAN NATIONAL AVERAGE



THE OVERALL ECONOMIC OUTPUT GVA OF THE DIGITAL TECH INDUSTRIES ACROSS THE UK IS **£97BILLION**, WITH EXETER CONTRIBUTING **£150MILLION** OF THAT TOTAL FIGURE.



EXETER STATISTICS



14,018

NUMBER OF DIGITAL JOBS
(Bristol & Bath- 35,924)



82

NEW START-UP BUSINESSES
(Bristol & Bath- 225)



79%

TECH SECTOR
GROWTH POTENTIAL
(Bristol & Bath- 88%)



£38,204

AVERAGE DIGITAL SALARY
(Bristol & Bath- £47,063,
London- £61,803)



**WHAT LOCAL START UPS
SAY IS GOOD**

98%

OVERALL QUALITY
OF LIFE

79%

TECH SECTOR GROWTH
POTENTIAL

50%

COST OF LIVING



**WHAT LOCAL START UPS
SAY IS A CHALLENGE**

65%

LACK OF SUPPLY OF
HIGHLY SKILLED
WORKERS

35%

LIMITED OPPORTUNITIES
TO ACCESS FINANCE

32%

LOW LEVEL AWARENESS
OF A LOCAL DIGITAL
INDUSTRY

A focus on science, technology
& innovation for the business community

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