

# Perspectives



Research and Enterprise at the University of Salford

Vol. 1: Issue. 1 | May 2013

## Exploring soundscapes

Citizen scientists help map the auditory landscape

## Design to fight crime

Centre involves young people to find solutions

## Digging Greater Manchester

Local excavations engage the community

## What's in your fish dish?

Mislabelling contributes to fisheries' decline

## How to create a dream team

The stats behind the sports



# Welcome from the Vice-Chancellor

Welcome to the first edition of Perspectives magazine, which sets out to demonstrate the impact of the University of Salford's research and enterprise activity on the communities we serve, while also highlighting our engagement with, and relevance to, issues of direct concern to you.

It is named Perspectives because we are taking an evidence-informed view on current issues, and giving an insight into our work and those of fellow community members that you may not otherwise have known about. It does not set out to be a comprehensive overview of all our activity over the past six months, but rather is simply a selection to show the breadth, and depth, of activity. Hopefully you will find it interesting reading.

The University's research pedigree is a long one, arguably dating as far back as Joule's research in the basement of an unassuming Georgian redbrick terrace – what is now known as Joule house, pictured on the front cover and home to some of our enterprise units.

At the heart of any university lies research; indeed some would argue that research defines what differentiates a university from any other teaching and learning establishment. However, this is not a zero-sum game: learning and teaching and research are not mutually exclusive. On the contrary, they reinforce each other, and in the best universities they are completely intertwined.

Enterprise, or what was once called "third mission" activity, now also underlies so much of what we do, whether it's launching a new research-informed course for practitioners, or a Knowledge Transfer Partnership to share research and expertise between the University and industry, or research and development commissioned by business – enterprise, research and innovation are seamless concepts here, and this is what the University is particularly well known and respected for.

We are always eager to engage with you further on projects such as these, or through volunteering to take part in a research study, or coming to the University for one of our free public lectures. Our doors are open and we hope that you will join us.

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# Research centre has designs on crime and community solutions

If good design can be described as maximising function with form, then the pioneering work taking place at the Design Against Crime Solution Centre is having a major impact on some of society's biggest blights.

**D**esign Against Crime was established at the University of Salford in 1999 via a project funded by the UK Design Council and the Home office, as part of a national programme of policy initiatives to embed crime prevention in design practice and education.

In 2003 the Design Against Crime Solution Centre was established, which is a unique partnership with Greater Manchester Police and the Dutch research and planning consultancy, DSP-groep. The Solution Centre provides leadership in design-led and sustainable practice to improve crime prevention and community safety, and works in partnership with police forces, governments, planning authorities, the voluntary sector, service users and communities.

"The research cluster here at the Design Against Crime Solution Centre offers a distinctive approach, and considers 'design' as referring not simply to the physical design of environments or products, but includes research, analysis, evaluation and the formulation of integrated systems of delivery and value adopted by stakeholders," explains Dr Caroline Davey, Co-Director of the Centre. "Our approach is very much informed by human-centred design and systems design, and we adopt a focus on the constituent systems of meaning, learning, delivery [practice] and value [impact]. The impact of our work is underpinned by research that has taken place in a number of key projects."

### **The youth of today... have got lots to say**

One of these projects is Youth Design Against Crime (YDAC), a programme to engage young people in design-led crime prevention, developed by the Design Against Crime Solution Centre and national young people's charity, Catch22. Supported by youth workers and teachers, and mentored by local police officers, the project sees multiple teams of up to nine young people challenged to address issues of crime and community safety in their neighbourhoods, and the ideas generated are presented to senior local stakeholders from agencies including the police, planning authorities and local councils. YDAC is novel in its approach because it is aimed at young people who have come to the attention of schools or police authorities due to behavioural problems, and who may be excluded from school and following an alternative curriculum.



Dr Caroline Davey and Andrew Wootton, Co-Directors of the Design Against Crime Solution Centre

## **Using these challenges really improves young people's confidence, knowledge, qualifications and skills, and fosters better relationships with the adult participants, including police mentors.**

"People are starting to realise the value in encouraging young people to participate in projects that have a direct impact on decisions about environments and spaces, including the public realm of towns and cities," says Andrew Wootton, also Co-Director of the Solution Centre. "YDAC challenges young people considered 'at risk of offending' to address problems in their neighbourhoods, using a process of research and design to help generate innovative and evidence-based solutions to crime problems. Using these design challenges really improves young people's confidence, knowledge, qualifications and skills, and fosters better relationships with the adult participants, including police mentors. The young people we work with develop creative solutions to problems, and are able to convince stakeholders involved in policing, community safety and urban planning of the value of their ideas."

With YDAC structured to run over ten to 12 weeks, young people completing the programme and associated workbook have the opportunity to gain an ASDAN Wider Skills Level 2 problem-solving qualification, which in turn can be a springboard to further study. During the first three weeks of the programme the participants undertake team-building

activities, including identifying individual strengths and weaknesses, creating a team name and choosing an area to focus on. The scanning and mapping stage (weeks four to six) involves researching the focus area, considering why it is important to the team members, looking deeper into the issues and understanding how they can be addressed. A police mentor assists this process and works with the teams to research problems in the area, as experienced by other users, and then a 'problem profile' is produced.

During weeks six to ten the groups develop design concepts in response to their research, which are then evaluated in terms of their potential impact on users, crime and anti-social behaviour. A final design concept is then selected and in weeks ten to 12 the young people develop drawings, models, presentation materials and arguments to communicate to the judging panel at the YDAC showcase evening. At this event each group is given ten minutes to present their finished design to the judging panel and an audience of friends, family and invited stakeholders, before taking questions for five minutes. One group is then selected by the judging panel as the YDAC winner, and receives a trophy, while all runners up are awarded medals and certificates of completion.

Five YDAC projects have been initiated to date: Greater Manchester (2009), the London borough of Southwark (2010), the London borough of Lambeth (2011), Salford (2011) and Bolton (2012). Together, these projects have directly involved over 200 young people aged between 12 and 19 years from schools and youth groups, with the majority generally coming from poor educational backgrounds, and some having been excluded from school or involved in anti-social behaviour and identified as 'at risk of offending'.

community members, the four teams of young people participating in the Greater Manchester YDAC identified four main problem areas on which to focus their efforts. The first of these was an isolated subway close to the team's school that had become a magnet for robbery, anti-social behaviour and serious crime; the second was a pedestrian route to a local shopping precinct where groups of street drinkers congregated and created a climate of fear; the third was an underused public park and playground; while the fourth was the

"It is so important to give young people the chance to be involved in the decisions that affect their local community, especially as so often their voices are ignored," Glen Barkworth, General Manager at Manchester Arndale and member of the Greater Manchester YDAC judging panel, said at the time of the project. "We owe it to all of the groups who have been involved in this project to start making these really simple and relatively inexpensive changes happen right now. It may only be the tip of the iceberg when it comes to eradicating crime in these areas, but changing a handful of young people's futures for the better is most certainly worth the effort," he added.

This sense that something special had been achieved, which would actually make a real difference, was echoed by Nicola Wood, a youth worker from North Manchester Youth Inclusion Project, who said: "The young people have developed and grown in their ability to work together as a team, learn about issues that affect their local community and grew in confidence throughout the project, especially through delivering the presentation."



The panel reviews the students' design ideas at the Southwark showcase

"Designers and other stakeholders are aware of the power of creativity, but much of the creativity possessed by young people often goes untapped," adds Wootton. "Design doesn't necessarily mean art though, but rather is focused on the intelligent use of creative thinking to solve problems and meet identified needs in an elegant way, which means that really understanding problems and needs is key to developing successful new designs. It is for this reason that we believe that the research process is central to the success of YDAC and its creative challenge nature in general is vital. The young people taking part develop a strong team spirit, improve their communication skills, demonstrate their ability to help each other and take responsibility for the decision-making process. On top of that, because the process requires the participants to consult with and understand the behaviour of all the users of an area, both legitimate users and offenders, it helps to forge community cohesion and build bridges between these various groups."

As an example of the project proving a catalyst to address crucial issues that affect all

playing field next to the team's youth centre, which had become a hotspot for drug dealing.

At the showcase evening, Kevin Mulligan, Chief Superintendent of Salford, pledged to secure funding for the implementation of the winning team's ideas, which was to deal with the isolated subway close to Albion High School. As a result, the team was invited to act as young advisers to Urban Vision Engineering Design, who met with the group to discuss their ideas to improve the Pendleton Roundabout subway. Staff at Urban Vision were stunned with the creativity of the ideas and very keen to incorporate these into the new design of the subway. Money was made available for making improvements to the subway and Urban Vision, appointed by the council, completed the renovations in summer 2010.

"The young people demonstrated a clear understanding of the issues relating to the improvement of the Pendleton subway," Max Griffiths, Structures Manager at Urban Vision, said at the time of the design work.

The success of the YDAC programme has convinced those involved that further research is needed into developing the project to a wider audience. In partnership with Catch22 and partners in several EU states, staff at the Solution Centre are now exploring ways in which YDAC might be rolled out as a national programme in the UK, as well as considering pilots in other European contexts.

### International impact

One of the main reasons why the successful YDAC programme is being considered in a European context is due to the impact other projects and research undertaken by the Solution Centre is having not only in the UK, but further afield in Europe and beyond.

One example is the Design Against Crime Evaluation Framework, which was created in 2005 to support the implementation and evaluation of crime prevention in design development. Providing designers, manufacturers and developers with detailed guidance on integrating crime prevention within the development cycle, it was validated

against ten design development projects in the UK, Netherlands, Austria, Greece and Poland. "This framework is transferable between different contexts and design disciplines, and covers the entire product lifecycle, including maintenance, monitoring and business learning when the development is in use. It enables researchers and crime prevention experts to conduct rigorous evaluations of design solutions within products, services and environment," explains Wootton.

More recently the Centre has also been contributing to the development of a common European policy platform on urban security, leading to a policy position on the future of crime prevention, which was communicated via a manifesto arising from the European Forum for Urban Security (EFUS) conference in Paris – an event that was attended by delegates from more than 180 cities in 40 countries. EFUS is the oldest non-governmental organisation of local authorities working in the field of urban security and acts as a focus for research, dialogue and co-operation between its 300 local authority members. It has inspired numerous national forums throughout Europe, Africa and Latin America, and the Paris conference, held in December 2012, was entitled Security, Democracy and Cities: The Future of Prevention.



Caroline Davey was invited to speak at the 'Planning shared public space' session and presented scientific evidence on the links between design and security, highlighting reductions in crime across Europe attributed to effective design intervention. "I recommended that crime prevention be considered within the early stages of the design process to increase the cost-effectiveness of solutions and avoid the retrofitting of unsightly security measures,"

## The Solution Centre evaluated Greater Manchester Police's Architectural Liaison Service, which resulted in the re-branding of the service as Design for Security, and the embedding of crime prevention within urban design and planning in Manchester.

she explains. "I described approaches from across Europe that enable crime and related social issues to be integrated within urban planning, design and development, and drew on findings from the Centre's recently completed EU Planning Urban Security (PLuS) project, which was led by the [the German Federal police.

### On the PLuS side

Over the past decade, the Solution Centre has developed a network of partners across Europe that includes DSP-groep, the European Designing Out Crime Organisation (Netherlands) and the University of Applied Sciences, Cologne.

The PLuS project provided an opportunity to continue working with existing partners in Austria and Germany, as well as to establish new police crime prevention contacts in Poland. Through these European partners, the Solution Centre has been able to examine the effect of contextual factors on crime prevention measures, and a strong presence in Germany has been developed through participation in conferences and seminars on design and crime prevention.

The PLuS project conducted empirical research into the urban context in partner countries, with a quantitative survey of the residents in each PLuS study area carried out, followed by qualitative interviews with residents' groups and other stakeholders. The results revealed significant differences between residents in each of the three European countries in terms of demographic details, lifestyles and attitudes. In 2007, the Solution Centre evaluated Greater Manchester Police's Architectural Liaison Service, which resulted in the re-branding of the service as Design for Security, and the embedding of crime prevention within urban design and planning in Manchester. This project resulted in the service being awarded the 2010 Secured By Design

Innovation Award, as well as journal publications, guidance materials and process models that have been disseminated across Europe.

"Through the PLuS project, we have been able to track the ongoing development of the Design for Security service and identify aspects of their working process – what has become called the 'Manchester Model' – that may act as examples of good practice for other European countries. In parallel, research conducted by PLuS partners has revealed alternative approaches and examples of good practice from which organisations in the UK might learn. This has also enabled us to reflect on the underpinning ideas, assumptions and paradigms that inform the UK approach to crime prevention," Andrew Wootton said.

In a previous European project, the Solution Centre developed a method to promote the exchange of best practice across Europe, and the PLuS project has allowed Salford researchers to progress this work and develop the 'Planning Urban Security Capability Maturity Model'. This model is tailored to the European approach to crime prevention, and is now helping to guide efforts to improve crime prevention delivery in Germany. Development of the model has benefited greatly from the feedback of European partners who are also practitioners in the field and, together, the PLuS project team has been able to develop a model that functions across different European contexts and languages.

### Impact into the future

Due to the impact that the Solution Centre has had so far, both at home and abroad, it is little surprise that their innovative work is leading to new opportunities all the time. Several exciting new initiatives are either underway or planned, which means that the future promises to be both busy and varied.



Much current activity also relates to addressing emerging national and European policy imperatives of civil security and community resilience.

“I have been nominated as the UK representative on the Management Committee of the European Commission COST Action TU1203 Crime Prevention Through Urban Design and Planning, while Dr Davey will be a representative on one of the working groups,” says Wootton. “COST is an inter-governmental framework for European Co-operation in Science and Technology, which allows the co-ordination of nationally funded research at a European level, and so to represent the UK is a real privilege and a very exciting opportunity. We are actually holding the first meeting of COST here in Salford at MediaCityUK in May 2013, and the action leaders specifically chose this venue because they wanted experts from across Europe to learn from the best practice that has already been developed

and taken place in Greater Manchester. In collaboration with this group of experts, here at the Solution Centre we will support the implementation of best practice in design-led urban crime prevention and community safety throughout Europe.”

Much current activity also relates to addressing emerging national and European policy imperatives of civil security and community resilience, and a priority for the immediate future is to grow doctoral research in the area of design-led approaches to crime prevention, security and resilience.

“This is an area we’re really keen to develop,” says Dr Davey. “While we are justifiably proud

of all that has been achieved so far at the Solution Centre, as well as the ongoing work we are undertaking, we know that there is still so much more that can be done. Every impact we make at the centre is underpinned by the research that has taken place, and so we need to encourage new and innovative activity in order to continue to influence improvements and enhance the capacity to deliver crime prevention and community safety in the UK and Europe.”

To find out more about the Design Against Crime Solution Centre, please contact: [info@designagainstcrime.org](mailto:info@designagainstcrime.org)





With experimental poetry becoming increasingly popular, and alternative dance classes springing up in church halls and community centres across the country, new research is examining the close links between movement and language.

# Poetry in motion



Mac Low's 40 dancers (© Ian Douglas, used with permission)

Last September, Dr Scott Thurston, a Senior Lecturer in English and Creative Writing, visited New York as part of the 50th anniversary celebrations of the Judson Dance Theater. This pioneering studio championed the concept of multi-disciplinary arts, including work by the likes of Yoko Ono and John Cage, who went on to become huge international artists.

"The New York art scene in the 1960s was characterised by multi-generic work," says Thurston, "with dancers, musicians, poets, artists and film-makers working in collaboration to produce films and performances."

Thurston, who is based at the School of Humanities, Languages and Social Sciences, was amazed to see such huge audiences watching performances of pieces like *The Pronouns: A Collection of 40 Dances for the Dancers*. The piece features a series of 'dance-instruction' poems by the poet Jackson Mac Low (b. 1922), which were composed algorithmically

using 56 index cards, each bearing one to five different actions. As befitting experimental art, says Thurston: "There were a wide range of interpretations, some of which were very close to the words on the page, and some which were completely abstract responses to those pieces. They were written to be performed but it's very open as to how you interpret them." And now he believes we could see similar interest in Britain, too.

"There was a period in the 60s and 70s when experimental poetry was more visible over here," he explains, "but it's been 'underground' for the last 40 years.

"Now, work that has previously been seen as more marginal is reaching a wider poetry audience and people are beginning to take more of an interest in non-traditional approaches," he continues. "I think things are poised to go almost mainstream in the UK too, so now seems to be the perfect time to explore the connection between postmodern dance and experimental writing."

Thurston's research is part of a bigger enquiry into genre and how different art forms often work together, such as poetry and dance, poetry and visual art and dance and sculpture. It will feed directly into the University as part of the MA Creative Writing: Innovation and Experiment course, and Thurston has also lectured on his findings at both Edinburgh and Bedfordshire universities, and performed his creative work at Liverpool's famous Bluecoat Arts Centre.

"The research is generating important new knowledge about the field, and furthers the University's reputation as a research-informed institution that produces original work," he explains. Thurston is also exploring ways in which writing and language can be linked to the practice of movement therapy which, among many things, can be used to help people suffering from depression and emotional problems.

To find out more about research in the humanities and the MA in Creative Writing, visit: [www.salford.ac.uk/humanities](http://www.salford.ac.uk/humanities)

# How to create a dream team

With the BBC and several major football teams on our doorstep, the University's latest research centre, the Centre for Sports Business, is well positioned to help sporting organisations get a head start.

**A**nd they're off to an auspicious start with Rick Parry, the former Chief Executive of the Premier League, kicking off the proceedings at the launch, with a speech about how and why the Premier League was created.

## Research and consultancy

The Centre for Sports Business is particularly strong in analysing the statistics of sport, which has led to a tie-in with global video game company EA SPORTS. Several years ago, a call went out to universities asking about rating players in the Premier League. The rating system needed to be objective and the mathematical model proposed by statisticians in the Centre was accepted by the Premier League. The rating system now known as the EA SPORTS Performance Index (PPI) is the official player rating system for the Barclays Premier League, the most-watched league in global football with an estimated TV audience of 4.7 billion people. This is the kind of high-profile work that has made the new Centre a leader in its field.

The PPI, which is also used for the second-tier league in English football – The Championship – is cleverly constructed so that it can compare players from different positions, looking at the contribution each player makes to the success of his team. The highest ranked player doesn't need to be a goal scorer or even be in the top team. The best player is simply the player that would hurt any team the most if they were to lose him.

The key to being able to set up success stories such as EA's PPI is the revolution in the mathematical analysis, or 'analytics', of football. Several things have come together to make this possible. Naturally, there has been the rise of computer processing power – a general trend in all data analysis. However, you must have data in the first place to be able to process it. This is where the most significant change has occurred. Companies such as Opta and Prozone now collect astonishing amounts of data for every Premier League match. Each game generates a 1,500 row by 200 column spreadsheet of match facts and figures. It looks at the X-Y coordinates (position on pitch)

## The key to success stories such as EA's PPI is the revolution in mathematical analysis.

of shots and passes, and their destination. Z coordinates even tell you how high the ball travels. Everything imaginable is logged: from the position of the ball to recording if a tackle is sliding or standing. There are even companies that now record the positions of all 22 players four times a second, which means you can get data on not just the speed but also the acceleration of players. All this information, and the computers to handle it, means that it is now possible to mathematically model a continuous, fluid, dynamic game like football.

The statisticians at the Centre take this data, feed it through their computer models and produce analysis of games and players. The 'stats' are essentially the collection of

data, perhaps given a very rudimentary level of analysis; for example, the average number of goals per game, but the real power comes from analytics – using the statistical modelling on large data sets to offer insights into teams and the effect of individual players.

Just how powerful this knowledge can be is shown by its impact on North American sport. It was first demonstrated successfully with an American baseball team called Oakland Athletics, which wasn't very successful and relatively speaking didn't have much money. A statistician suggested to them that instead of using old-fashioned scouting techniques for identifying talent, they should use an analytical model of baseball matches to find players who are statistically undervalued by the market. They used the model, and with a fraction of the budget of the top-rated New York Yankees, beat them. The model looked at what attributes players bring that can have the biggest impact on the probability of being successful, and then looked for gaps in the market to sign up promising but 'cheap' players.

The next stage in the evolution of sports analytics is to ensure UK sports management get the buy-in of UK sports, like football, so that the owners and management can appreciate what analytics offer. It is far more than just choosing new players. Devising strategies and working out which players in a team work well together are the kind of problems that analytics is good at helping to solve. In Britain, football's popularity makes it a big focus for the Centre's work, but researchers are also looking at other sports. Tennis and golf are amenable to similar models



"The highest ranked player doesn't need to be a goal scorer or even be in the top team. The best player is simply the player that would hurt any team the most if they were to lose him."

Dr Ian McHale, Director of the Centre for Sports Business

that examine a player's strengths and progress over time and work is ongoing in these sports.

### Fighting corruption and match fixing

An area of growing interest is detecting and preventing match fixing. One of the Centre's researchers is heavily involved with a Qatar-based organisation called the International Centre for Sports Security. Qatar, having recently won the rights to host the World Cup, is serious about preventing corruption in sport.

It's not easy to spot a fixed match but one approach is to use models of match outcomes based on what is going on in the match, and compare the predicted match outcomes with betting market activity. The point is that when a match is fixed, somebody somewhere puts a lot of money on a particular outcome that the crooked better knows is more likely to happen than the prediction model. When this happens, bookmakers move the odds to protect themselves. So, if you watch the odds, and know the probabilities inferred by the model, which is based only on what's going on in the match, then it should be possible to flag up an event that doesn't ring true, possibly by a large volume of abnormal betting caused by dishonest insider knowledge. This is not pointing the finger at bookies, rather highlighting red flag events revealed by their reacting to betting levels. From there, depending on the circumstances and the level of suspicion, a report to football governing bodies such as UEFA or FIFA could be generated.

That's the analytical approach, but the Centre is also looking at other aspects of match fixing. The basic economics of crime say a player will choose to commit a crime if it's worth his while. In a sport like football it's generally not worth it for a Premier League striker to fix a match. He's paid very well, has excellent sponsorship and would risk losing a fortune. On the other hand, referees are not paid very much, so from an economic point of view, a referee could be offered a 'realistic' amount of money and he might start thinking about cheating.

It's not just football, other sports can be even more vulnerable to match fixing. For example, in snooker some top players are not paid a great deal of money. The first prize in an international snooker



Rick Parry speaks at the opening of the Centre

competition is just a week's wage for a top Premier League footballer. Couple that with the enormous amounts of money involved in betting on snooker in the Far East and the risks are serious. Last, but not least, it's not difficult to hide cheating in snooker – a player just has an 'off day'.

Analysing which sports and what form corruption can take is an important aspect of the Centre's research.

Good analysis needs a whole season before it can start to see what is really happening.

## The National Lottery

Analytics can also be used to demonstrate that match fixing or other forms of malpractice have not been taking place. A good example is the Centre's work for the UK National Lottery via the Gambling Commission. Given the size of the lottery, it is not surprising that a small number of people develop varying levels of conspiracy theories about the appearance of certain numbers or combinations of numbers. Someone might call up and say '36 has appeared three times in the last four weeks, this is clearly impossible and the lottery must be a fix'. So, the Lottery uses statisticians at the Centre to run a series of tests to show it is random and nobody is cheating or being cheated. People tend to think it's extremely unlikely that two consecutive balls will appear in the lottery and complain if this happens on a regular basis.

**It should be possible to flag up an event that doesn't ring true, possibly caused by a large volume of abnormal betting.**

In fact, quite simple probability theory reveals that the odds of consecutive numbers appearing is actually nearly 0.5 and so will happen nearly every other week in the long run.

## MBA in Sports Business

The intention of the new Centre is to be more than a hub for research, however. From January 2014 it will offer an MBA in sports business, designed to produce tomorrow's leaders of the sporting world. While a few other British universities offer an MBA in sports management, no other Centre is able to offer the range and depth of expertise; for example, Salford was ranked second worldwide for sports economics research in a 2009 review.

The Centre is fortunate in that the reputation of its members has attracted prominent industry figures right from the start. As well as his launch lecture, Rick Parry has agreed to give a series of talks to MBA students. So, as well as traditional lecturers drawn from academia, leading representatives from the sporting world will teach modules and give lectures to



MBA students. Perhaps the last word on the new Centre for Sports Business should go to its director, Dr Ian McHale.

"You only have to look at the interest and excitement last year's Olympics brought to the UK to see how much sport matters to us. And of course it is not just here that sport means so much – sport is a global business and to me, there is no doubt about it, it is the most exciting business there is.

"Here at Salford we are extremely fortunate in having a group of academics who, during the last ten years and more, have earned a global reputation for high-quality research in each of our subject disciplines when applied to sport. This group of people now form the Centre for Sports Business.

"So who are we? We have expertise in statistics, economics, business and management and law. We already constitute what is arguably the leading collection of researchers into quantitative analysis in sports from around the world.

"But it is not just research we do – we are heavily involved in consultancy projects within the sports and betting industry. From developing the EA SPORTS Player Performance Index to advising governments and sport's governing bodies on strategies to detect and prevent

## Centre for Sports Business

The Centre for Sports Business promotes research and consultancy in sports statistics and analytics, sport finance, sports law and the economics of sport. It boasts a continued record of world-renowned research with its members publishing their work in top-rated academic journals.

To discuss a PhD, business or study proposal, please contact the Director, Dr Ian McHale on +44 (0)161 295 4765 or [i.mchale@salford.ac.uk](mailto:i.mchale@salford.ac.uk).

Co-Director Professor Chris Brady can be contacted on +44 (0)7956 575278.

To receive research findings, reports and papers, please send your details to [sportsbusiness-sbs@salford.ac.uk](mailto:sportsbusiness-sbs@salford.ac.uk)

[www.salford.ac.uk/sports-business](http://www.salford.ac.uk/sports-business)

match fixing, the Centre for Sports Business is already at the heart of the sports business.

"The primary concern of a university is its students and teaching. We are currently developing an MBA in Sports Business – designed to produce tomorrow's chief executives and leaders in the sports industry."

# Solving the right problems

Professor Nigel Mellors is the newly-appointed Pro-Vice-Chancellor of Enterprise at Salford, but he has a long history with the University and in business, which dates back to even before his undergraduate student days...

## Why did you choose Salford as a student?

I began my career as an entrepreneur developing my first enterprise venture from leaving high school, which I sold 10 years later and took the opportunity to study at University. I visited several places and considered my choice carefully before deciding to come to Salford for a physics degree.

## What is your research about?

I started out looking at nano-transmitters and the "Joule effect" – it was fascinating to be studying what James Joule posited right here at Salford, 150 years later. I'm currently very interested in energy reduction and how to reduce the amount of waste. It's a topical issue and one which affects everyone on the planet. Did you know we lose 2 kilowatts (kw) of energy for each kw used – so if your kettle uses 3kw, it actually costs the system 9kw because it takes 3kw of wasted energy to produce each kw used? We don't need more power if we can address this energy loss.

When I started work in this area I thought it was all about the technologies and improving those, but actually there is much more to consider in terms of people's behaviour and behaviour change. In effect, it's the connection between technology and people which matters – houses themselves don't use energy, people do.

## How does a business know where to start in terms of working with the University?

It could feel like searching for a needle in a haystack trying to find out who out of our 800-strong academics would be the right person to approach. So we're building a gateway into the University and a responsive team behind that. It has to be a two-way partnership between business and researchers – even "pure" research funding agencies are interested in the impact research can have and how technologies can be exploited and commercialised for everyone's benefit.



Nigel Mellors outside the Energy House

We are keen to develop long term relationships with key partners and stakeholder both at regional and national level and a more integrated approach of both research and enterprise. I believe this approach will lead to a more meaningful and sustainable relationship for both the university and our partners. We have a number of great cases studies where this has worked extremely well including the partnership with Greater Manchester Fire Service where a number of academics from across the University are engaged in developing and supporting the Fire Services goals (see page 24).

## Tell me more about Energy House

Energy House is a unique facility for people to easily see how research and business come together and get industry in to the University. Right now some of the projects we have underway look at thin materials to insulate buildings, particularly retrofitting old stone or listed buildings with easily installed energy saving measures including double-glazing or new external cladding and internal insulations because of space restrictions or aesthetics. There are many disciplines needed to develop new technologies including nanotechnology, physics, engineering, the built environment and architecture, but we need to also include

end users and installers. If these technologies are not installed correctly then they can work 10-20% less efficiently than predicted which has a significant impact when the UK has 26 million houses to make more energy efficient within this decade if it is to meet its carbon reduction commitments.

## What's your vision for the future of enterprise at the University?

I want the University to be a place business can connect with academics and real-world research. To do this we need to understand academics' needs as well as what industry needs. It should be a place where public, commercial, and contract research funding come together as the model for going forward. We need to make sure all parties understand their shared goals and how they're going to achieve them. Salford is in a really good position to capitalise on its heritage in terms of real world research. We have a long history of connecting industry and public sector, and have been doing this for over 50 years. As a University, we're very good at solving problems, but we need to work with business to ensure we're solving the right problems.

To find out more about Energy House and some of our consultancy work with industry, visit: [www.salford.ac.uk/energy](http://www.salford.ac.uk/energy)

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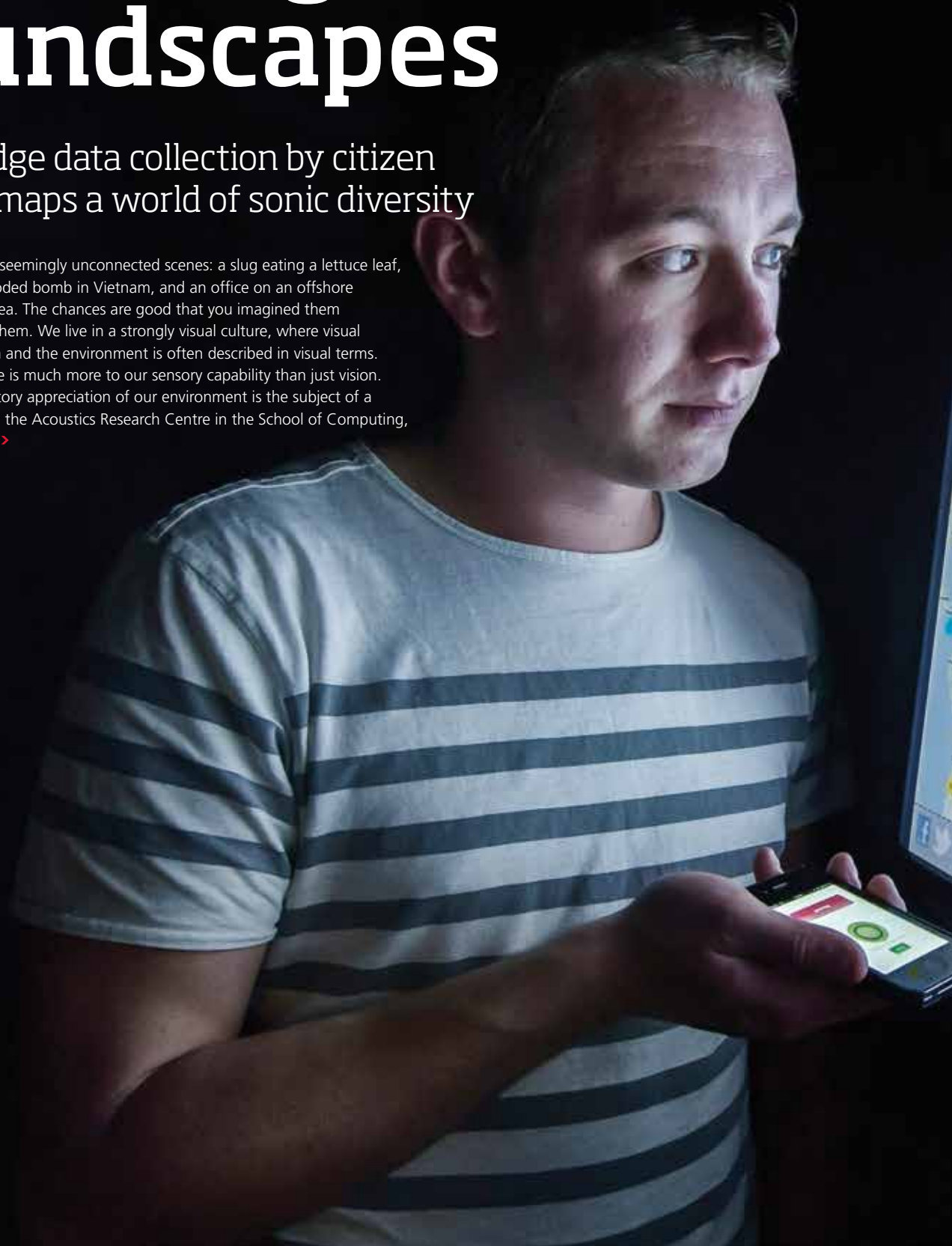
[www.salford.ac.uk/sbs/mba](http://www.salford.ac.uk/sbs/mba)



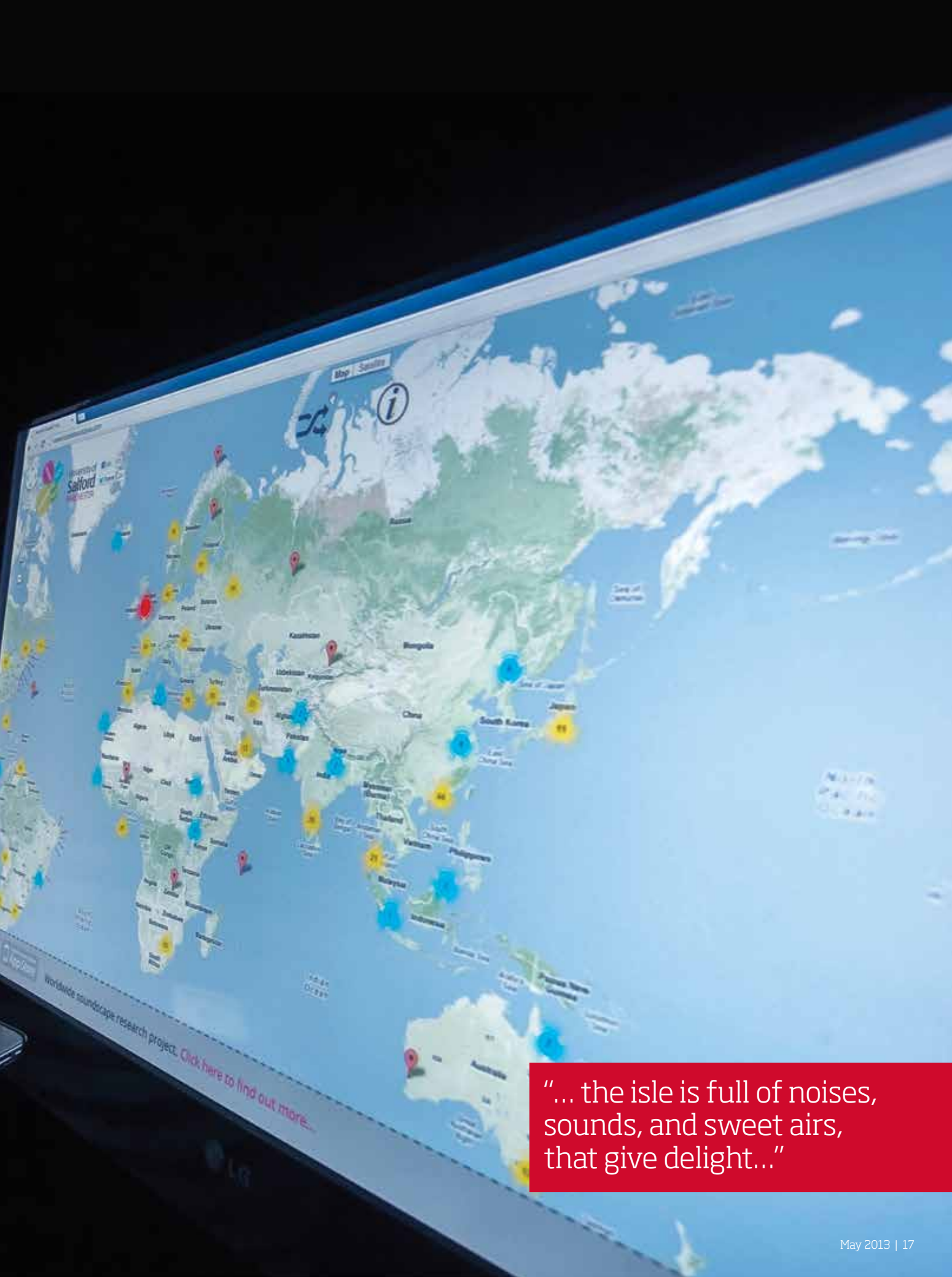
# Exploring soundscapes

Cutting-edge data collection by citizen scientists maps a world of sonic diversity

Consider the following seemingly unconnected scenes: a slug eating a lettuce leaf, disposing of an unexploded bomb in Vietnam, and an office on an offshore platform in the North Sea. The chances are good that you imagined them visually, you 'pictured' them. We live in a strongly visual culture, where visual information is the norm and the environment is often described in visual terms. Yet, we know that there is much more to our sensory capability than just vision. Exploring people's auditory appreciation of our environment is the subject of a pioneering project from the Acoustics Research Centre in the School of Computing, Science & Engineering. >







worldwide soundscape research project. [Click here to find out more...](#)

"... the isle is full of noises, sounds, and sweet airs, that give delight..."

The “sound map of Britain” project is an interactive examination of soundscapes and the construction of an online sound map. The apparently random examples mentioned earlier are just three of the 1,700 soundscapes that have been uploaded to the project. It has received high-profile coverage by participants from around the world including the BBC, Times2, The Daily Telegraph, The Guardian and local papers.

### Soundscapes

A soundscape is the aural equivalent of a visual landscape. It’s the sum of all sounds at a particular place and time. In some ways, it is more all-embracing than a landscape, because it represents 360 degrees of stimulus, not just the view ahead. You can turn away from a landscape, but a soundscape completely surrounds you.

When it started, the project was limited to just the Manchester area, but the widespread use of smartphones and the all-pervasive reach of the Internet meant that the researchers received submissions from all around the UK. Then, as online publicity took off, the project became global, with data coming in from around the world. This set the research apart from traditional sound data gathering, which used to be highly localised.

The project was careful not to be prescriptive about collecting a specific kind of sound because the aim was to gather as broad a range as possible. A soundscape could even be silence, although that is difficult to find outside an anechoic chamber.

### Terminology

- Soundscape – the total sounds of a location in time and space
- Sound map – a graphical collection of soundscapes
- Citizen scientist – a non-professional participant in scientific research
- iPhone app – a computer program designed for a specific purpose that runs on Apple’s smartphone – iPhone

A soundscape is the aural equivalent of a visual landscape. It’s the sum of all sounds at a particular place and time. In some ways, it is more all-embracing than a landscape.

One word that was avoided in any publicity inviting people to submit soundscapes was ‘noise’. If the project had been ‘noise’ oriented then it would have biased submissions towards negative sounds and environments. The term ‘soundscape’ is neutral; it reflects both negative and positive sound experiences.

There was an important objective beyond creating an interesting collection of soundscapes – a public engagement brief. The aim was to raise public awareness of soundscapes and the research potential around them. Participants not only captured the recording of the soundscape, but also rated the soundscape using different semantic scales: from good to bad, how exciting, eventful, tranquil and other descriptors. They were also invited to explain why they chose to record their particular soundscape.

### The impact of the smartphone

One of the hallmarks of this project is the collection of data by smartphones – in this case Apple’s iPhone. In fact, iPhones proved to be so useful that the project in its current form would have been impossible just six or seven years ago.

As early as 2006, Salford researchers were looking at using smartphones to collect soundscapes. Relatively simple mobile phone technology had already been used to collect research data. Health workers had implemented schemes in countries without a landline infrastructure, using SMS texting to transmit data. However, the collection of soundscapes was a more complicated undertaking, which needed the power of more sophisticated smartphones. These have many advantages for soundscape collection: they are widely used, include a microphone,

are powerful in terms of processing power and have the potential to record and upload research data.

This approach was tried; the predecessor of the current iPhone app was written for the previous generation of smartphones using a Java mobile edition. The problem was not a technical failure to operate, but the number of hoops users had to jump through to successfully send a soundscape. In those ‘early’ pre-iPhone days, the process of uploading directly from many phones was greatly hindered by a lack of bandwidth – people simply didn’t have good enough data contracts, so they had to go to a computer, plug in the phone, copy over the files and upload to the project’s website via their computer’s Internet connection. It was a real hassle, and the longwinded process killed the spontaneity of capturing a soundscape on the spur of the moment. It put off most people and only a few determined individuals sent in submissions.

In 2009, PhD student Charlie Mydlarz needed a new mobile and bought himself an iPhone. He realised that the simple interface and increased data allocation of iPhone subscribers meant all the technical and human interface pieces were now in place for an easy-to-use system that enabled users to upload soundscapes straight from their phone. A worrying lack of submitted data for his thesis was the final spur he needed to develop the iPhone app. Fortunately, it worked – before the iPhone and its app arrived there were about 300 to 400 submissions, but at last count there were over 1,700, thanks in no small way to the iPhone. To upload a soundscape, users now need an iPhone, the bespoke Salford recording app and a few taps on the screen.

Apple operates a closed system for its iPhone apps – all apps, even free ones, must be submitted to them for approval before they can become available for users to download. It can be a slow process, and the Salford app's first submission took three weeks for approval. Any subsequent update, whether to iron out bugs or to simply add new functionality can take another two weeks for each new iteration of the system.

This was one of the few drawbacks with an otherwise vastly improved soundscape capture tool. If a fault develops, it can create real problems. After the iPhone app was launched, the project was covered by BBC click, which ran a story focusing on the app. Unfortunately, there was a system fault. Although it was a relatively small error, the effect was devastating for the project, because if an app is downloaded but doesn't work first time then online feedback can be extremely negative, putting off potential new users.

Fortunately for the project, the medium for this feedback produced the ideal solution to bypassing system problems and communicating easily and directly with users – social media.

### Social media

In terms of dissemination, social media played a big part in the growth and continued success of the project. It's not enough to have a good data collection tool, even one that is easy to use, you need to be able to engage with and respond to your field 'researchers'. The power and flexibility of social media meant that it also became a useful recruitment tool and helped to reduce user attrition if there were problems or glitches in the system.

The soundscape project uses all the usual social media outlets. There's a Facebook page, which is active as a discussion board for people to debate sounds and talk about soundscapes. In the app itself, you can click a button so that when you upload the recorded soundscape, it will automatically post to Facebook and Twitter.

From a technical point of view, the social media aspects of the project are pretty much self-sustaining, requiring only occasional system management. However, the key to

running a successful social media system, and ultimately a responsive and successful public engagement project, is you have to remain active. You have to strike up conversations and be very quick to respond to questions, suggestions for improvements and updates on any problems. Facebook became the official project discussion board, the social hub of the system. So even if there was an app problem that might take a couple of weeks to sort out, users could be reassured and kept in the loop over progress.

### Soundscapes online

- [www.soundaroundyou.com](http://www.soundaroundyou.com) – the Salford soundscape project sound map
- 'cmydlarzSAY' collection on YouTube – videos associated with the Sound Around You soundscape project
- [www.facebook.com/soundaroundyou](https://www.facebook.com/soundaroundyou) – the Facebook page and social media hub of the Salford soundscape project
- [https://twitter.com/say\\_project](https://twitter.com/say_project) – updates and tweeting from researcher Charlie Mydlarz and soundscape senders
- 'i-say' iPhone app from Salford University – Search for 'i-say' in the iTunes store, or alternatively go to: [www.soundaroundyou.com](http://www.soundaroundyou.com) and click on the App Store link at the bottom. The app lets users quickly and easily record a soundscape, add a brief explanation and upload it to the project's sound map. Facebook and Twitter options are included.

Twitter also proved its worth for fault finding. Users tweeted about the project: 'this doesn't seem to work', or 'how do I do this?' and helpful replies often bounced back from other users in real time. Another useful aspect of social media was providing positive feedback. It 'opened my ears' was one quote, which helped to keep up the morale of hard-pressed researchers. It showed that users were starting to engage with the project and understand the difference between hearing and listening, really appreciating and thinking about the sounds around them.

Although it does not fit the conventional definition of 'social media', the sound map lets users listen to each other's soundscapes and helps to reinforce the shared community aspect of the project. The interface is easy to use, and is one that most Internet users are familiar with – Google Maps.

Soundscape locations are precisely placed on the sound map, thanks to the app including the phone's GPS data. For the occasional submissions that don't use the smartphone and instead opt for upload via the website, then you still have to enter the location of the soundscape.

**The term 'soundscape' is neutral; it reflects both negative and positive sound experiences.**

### Demographics - a trade off

Despite the success of using the iPhone, it did limit data submissions to people who use the Apple device. This had two effects; the first was regular requests for a version of the soundscape app for people who don't use iPhones, in particular a version that runs Google's operating system – Android. Such enthusiasm from non-iPhone users was encouraging, but expanding the system would have doubled the software element. Sticking with just iPhones meant that data was submitted in a consistent manner, using essentially the same hardware and distribution platform. That said, the team is considering writing an Android version, but it's fundamentally a question of time and funding.

The second effect was that just using iPhones meant users were a self-selecting demographic. The results were undoubtedly male biased and the age range that took part in the project closely mirrored that of smartphone use, roughly 24 to 34. It was essentially a trade off between the widest possible range of participant versus maximising the number of people who can easily access the project. Groups who tended to miss out were the over 65s and the under tens; those who tend not to have smartphones.

### Places of interest on the sound map and the comments submitted

- Berlin – ‘People enjoying and exploring acoustics of large sphere that belonged to a former soviet radar station. Now a famous ruin’
- Mecca, the call to prayer – ‘Best sound in the world’
- Tel Aviv – ‘Missile bomb siren’
- Antarctic – ‘Colonies of Adelie and Gentoo penguins, occupying the same physical space; this is the sound of the edge of Antarctica.’
- Stockport – ‘I can’t believe a kitten so small can make such a loud noise!’
- Manchester – ‘At the opera house waiting for panto to start ...’
- Athens Georgia – ‘Football game day in Athens!’
- Addis Ababa, Ethiopia – ‘Religious celebration’
- Vietnam – ‘In my first week of work in Vietnam, I went to my first bulk demolition where a 750lb bomb was destroyed. I thought this would be an interesting and unique contribution to the project – and I think it’s important for people to understand the power of unexploded ordnance, even 40 years after it was originally dropped... Enjoy!’
- Isle of Eigg, Scotland – ‘The Singing Sands are famous on Eigg, but many don’t know this phenomenon can be heard in Scotland. It’s a weird sound, but it doesn’t convey the physicality of creating it. You have to kick through the sand, or jump into it.’
- Bermuda – ‘Unusual sound at first as the tree frogs chirp every night, but after a few nights you can’t sleep without their sound’

### Citizen scientist

One of the most successful aspects of the project was a key requirement of funding – public engagement and the concept of the ‘citizen scientist’. When the Salford team rebid for funding, they included a public engagement element to their proposal. They got the funding from the EPSRC, as part of a Partnerships for Public Engagement (PPE) grant and the remit was to produce research

whose main aim was to raise public awareness of the topic of soundscapes and the sound environment. Rather than talking about people who take part as ‘subjects’, the Salford team viewed them as participants – everyone who makes a submission is a part of the research team. In some ways it is a little like amateur astronomy, where anyone can make a valuable contribution. The data is ‘crowd-sourced’.

This has three important advantages. First, it engages the public. People who might otherwise have had no opportunity to take part in a serious academic project at a leading research centre can make a valid contribution. Second, submissions were received from all over the world; from places a small research team could never have the time or resources to reach: from Antarctica to northern Norway, and from Kabul to Burkina Faso and Paraguay, people have supplied soundscapes.

## Humans like to be around other people and prefer to be in places where there is human sound.

Unique access is not just a question of distance from Salford, but also privacy. One submission from the Mid-West in the States is a family watching television. You only get that kind of data from citizen scientists. The classic researcher, with a microphone and recorder would never get such intimate access to people’s lives and the soundscapes they inhabit. Third, and perhaps most important, if a group of paid researchers are used then you will only get what they are interested in. By using the public, you get a vast range of submissions, from the mundane to the truly extraordinary.

Soundscape research is ultimately about people, so it makes sense for the collection of data to be human centred. The project worked because it’s about members of the public. You need to have the public playing a central role, enfranchising them with choice. Normally, academics would choose to focus narrowly or set the agenda but with the public taking part, they make the decisions.

### Schools

Many of the early submissions were from schools, particularly ones that helped pilot the project. Collecting soundscapes fitted in nicely with their curricula because of the active element of going out and collecting data. Teachers bought into the project and gave their students iPads to map their school and surrounding area.

The project team also worked directly with local schools using ‘sound walks’. Participants walk around a pre-set route in silence and actively listen to their environment. There are stop points where the researchers record and write down what they’ve heard. The walks range from a 10-minute city stroll to a one-hour tour.

The work with secondary schools proved tough but useful. Some of the best beta testers were school students aged 14 to 16. If they didn’t like an aspect of the pilot software they had a real no-nonsense attitude in expressing their views on usability and functionality. Quite a few changes were based on the feedback from school pilots.

### Charlie Mydlarz - background to a PhD researcher

"While I was at school I became interested in audio equipment – designing and making small projects like radio station speakers. When the time came to choose a university course acoustics looked perfect for my interests, so I studied audio technology at Salford. The course covered the mathematics and physics of sounds, a lot of electroacoustic and transducer design, psychoacoustics (human response to sound); and even radio production.

My main strength was psychoacoustics and programming, which led neatly to the soundscape project and my PhD at Salford. My role started in 2007, and now I’ve just handed in my thesis. I’m hoping to get follow-on funding to do more soundscape work."



Charlie Mydlarz in the University's anechoic chamber

### Project findings

Not surprisingly, when people are at a site of relaxation or taking part in recreation then generally they rate the soundscape higher. One might assume that people like to be surrounded by natural sounds, birdsong and waterfalls, but the data and feedback from users of the sound map show that it seems that humans like to be around other people and prefer to be in places where there is human sound. It seems our natural disposition is to be social beings, even in our choice of environment.

Taking part in the project also helped people discover more about their sound environment. Participants tweeted or emailed that they would take a different route to work because of a more pleasing soundscape.

Mydlarz said: "It was fun watching the soundscapes come in; you never knew what was going to turn up next. The slug eating lettuce was good, totally unexpected and just bizarre. The bats in the basement of a palace in India are great. You can hear them chirp, since not all of their sounds are above the bandwidth of smartphone – I assume it's just 'bat chitchat' and not echo-location. Even the mundane soundscapes can be fascinating; there's a tattoo parlour in Toronto, with background chatter and the sound of a needle. Last, but not least, I enjoyed the Antarctic penguins, but then everyone likes a penguin."

As the world gets busier and ever more mechanised, there is a perception that urban soundscapes are becoming increasingly degraded, particularly with the phenomenal

rise in car ownership. In the study, the most common negative sound is car and traffic noise. While this has certainly been true over the past few decades, things may now be slowly changing. One of the major reasons for optimism is the advent of electric cars. As more and more electric cars displace the internal combustion engine, the overall rise in noise pollution should reverse. This will increase the dynamic range of the soundscape because the general background level will drop, allowing more pleasant sound to come to the fore.

However, it is not necessary to wait the decades that the electric car revolution will need to improve the urban soundscape; positive steps can be taken immediately. A good example where the sound environment has been factored into design is by Sheffield train station. A large fountain was built into the square in front of the station and helped to create an attractive public space where people meet and sit. This square is by main roads, but the addition of a positive soundscape helped to offset the negative impact of traffic noise. In the longer term, as new built environments are constructed, the Salford research team wants to encourage the inclusion of soundscapes at all stages of urban design. Modern public spaces often look good, but the soundscape is generally not considered as much as it could or should be. The hope is that soundscape projects will start to generate and promote appreciation of the sound environment so that it can become a driver and a factor in urban design. By engaging the public in soundscape research, you can get the public to comment, discuss and talk about soundscapes;

thereby raising awareness. Research can also be used to influence policy, building standards and legislation, because it provides a firm body of evidence.

### Acoustics Research Centre, University of Salford

The Acoustics Research Centre at the University of Salford is a world-renowned acoustics research centre funded by research councils, government bodies and industry. Its specialities include human response to vibration, vibration research, low-frequency noise, environmental noise, sound reproduction, building and architectural acoustics, outdoor sound propagation and the study of soundscapes.

You can find out more about their activities at:

[www.acoustics.salford.ac.uk](http://www.acoustics.salford.ac.uk)

### The future of the soundscape project

Subject to time and funding, the next stages of the soundscape project will look at more focused studies. One of the strengths, but also drawbacks, of the project so far is that submissions were very varied. Such a wide range of place types and sounds made analysis of significance difficult. The researchers are hoping to set 'virtual fences' around urban parks in major cities and focus on the soundscapes of sites of relaxation. This should give a more focused approach and tone down the amazing, but hard-to-analyse variety generated so far.

The virtual fences or 'geo-fences' let you trigger someone's phone to alert them when they walk into a certain area. Again, the research will make heavy use of the power of smartphones to know their location thanks to in-built GPS technology. The study of soundscapes offers a new and fascinating perspective on our environment, both natural and manmade. The pioneering work at Salford has engaged a huge range of contributors, from local school students to a penguin spotter in Antarctica. It has made an important contribution to raising awareness of the opportunities that careful and considerate design can offer when building, inhabiting and using the world around us.

# Salford Analytical Services

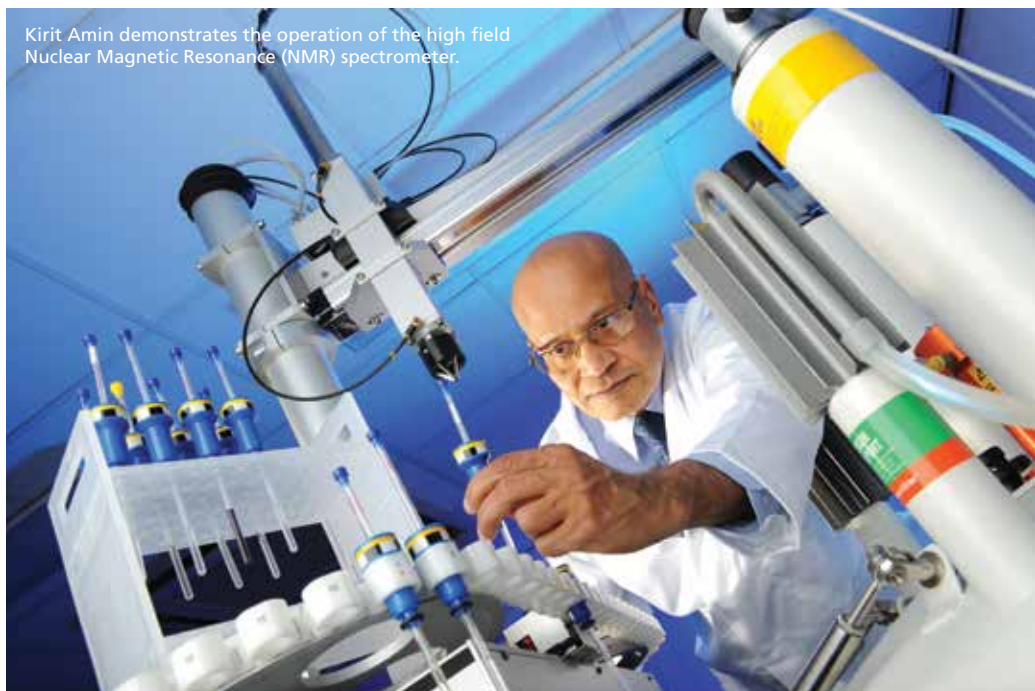
Take a peek inside one of our enterprising labs

**S**alford Analytical Services (SAS) is a unique facility on the University campus. Located in the Cockcroft Building, from the outside the SAS laboratories are very unassuming but inside they are a showcase of some of the most sophisticated scientific equipment the institution owns. Within the SAS laboratories there are a range of high-tech microscopes and analytical instruments that can examine materials at the 'nano' scale. They have recently invested in a state-of-the-art Transmission Electron Microscope (TEM) that has a magnification range over 1,000,000 and can produce images of atomic structures down to a few nanometres (nm) in size. A nanometre is a millionth of a millimetre and, to give a sense of scale, a human hair is about 60,000 nm thick and a single flu virus is typically about 100 nm in diameter.

Other equipment in SAS includes a Nuclear Magnetic Resonance (NMR) spectrometer and an X-ray Diffractometer, which are used to accurately determine the chemical composition of a wide variety of materials such as pharmaceuticals, paints, minerals and plastics. Not only does SAS provide a service to students, researchers and academics but they also undertake a large amount of commercial analytical work for external companies. For example, they have recently been working with a car manufacturer to determine why the seat coverings were wearing out prematurely. Other projects have included the analysis of pharmaceutical products to determine if they were genuine or counterfeit.

The highly sophisticated equipment and the extremely experienced technical staff within SAS make for a very powerful combination. How samples are prepared has a huge influence on the results; it takes a great deal of skill to prepare samples for the new TEM machine, which requires very thin slices about 50nm thick and samples for other microscopes have to be coated with a thin layer of a metal such as palladium. There is a small close-knit team at SAS comprising two analytical chemists, Joe McMahon and Kirit Amin, with Geoff Parr managing the whole

Kirit Amin demonstrates the operation of the high field Nuclear Magnetic Resonance (NMR) spectrometer.



operation. All the SAS team have come from industry and between them they have over 95 years' experience in materials and analytical chemistry.

Geoff Parr commented: "We are an unusual laboratory in the University in that we don't have researchers or academics. Our philosophy is very much about offering a professional service both internally to researchers and externally to business. Our equipment is state-of-the-art and expensive to run, so the income from the external commercial work is crucial since it makes a major contribution to our running costs. If it weren't for the commercial work, we would not be able to operate much of this equipment and our researchers would lose out. The commercial work is also a great challenge for us – we have no idea what will come through the door next, but given our experience we have usually come across a similar problem before."

Much of the commercial work comes from local companies, many of whom are small and could not justify purchasing their own analytical equipment. One such company is Manchester-based Lofrix, who manufacture

additives for use in lubricating oils. Ian Sibbick, a director at Lofrix, said: "I am very impressed with the range of equipment, the knowledge of the team and the set up at SAS. We are based in Manchester and, as a small company, it's really valuable to us to be able to access this type of capability."

Professor Nigel Mellor, Pro-Vice-Chancellor Enterprise, concludes: "Since SAS established in 2009, Geoff and his team have achieved an excellent reputation within the College of Science and Technology for their technical expertise and ability to solve problems. They also have an impressive range of commercial clients and have established themselves as the first choice for analytical services with a number of multinational medical device manufacturers. Moving forward, they will be playing a key role in the development of our innovation cluster, which will be working closely with business in the Bio Sector."

For more information about SAS, visit:  
[www.analytical-services.salford.ac.uk](http://www.analytical-services.salford.ac.uk)  
t: + 44 (0) 161 295 3343 / 5703 or  
e: SAS@salford.ac.uk

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# Joining forces

## University and the Greater Manchester Fire Service team up to address challenges

Overall, more than 20 potential projects are currently being assessed in what Paul Sharples, the Fire Service's Head of Intelligence and Knowledge, describes as: "a ground-breaking, all encompassing partnership." The Fire Service is the largest outside London, with over 2,500 employees and 41 fire stations, covering an area of nearly 500 square miles and a culturally diverse population of 2.5 million people.

"Our aim is to build this relationship into a strategic partnership, underpinned by our proven relationship management methodology," explains Mike Taylor, a partnership consultant at the University.

"The secret is really understanding what they do and how they do it, what keeps them awake at night and what their strategic aims and business objectives are.

"Equally important is enabling the Fire Service to fully understand how the University's funding mechanisms work, what we do in the laboratories and how this world-leading scientific expertise can help their organisation become more efficient and effective."

### Project control

Current projects include work with sports scientists from the University's College of Health & Social Care, who have developed fitness programmes specifically for firefighters, as well as specialised rehabilitation and occupational health services. Continuous professional development is another key element of the partnership. A new business within the University, Salford Professional Development, is creating bespoke courses which include management and leadership training, while the University's Energy Hub team will be teaching firefighters how to use thermal imaging cameras.

"The technology was originally used to help us assess and measure the impact of insulation on properties, as part of the Green Deal," says Taylor. "But we discovered that it can also be used by firefighters to help locate a fire's hot-spot."

The partnership is also developing a virtual reality 'City' at the University's facilities at MediaCityUK as part of a Knowledge Transfer Partnership, which addresses another very real need, says Taylor. "The fire service is attending less and less house fire call outs due to the success of its prevention strategy, so training fire fighters is becoming increasingly difficult."

What these projects show is how the University can apply the scientific research and ideas developed by our academics for use in one industry to something completely new, in this case helping the emergency services.

The project is designed to embed the use of mixed reality learning in the way in which both incident management and firefighting are taught. It also addresses the fact that future budgets require new and innovative ways of delivering training, which currently involve exercises with actual buildings and vehicles, which are both costly and resource heavy. What has particularly impressed Sharples is that: "the University is able to develop a virtual Greater Manchester, with exact 3D replica street layouts, buildings and even firefighters and engines. If we were to buy an off-the-shelf virtual reality system, it would be very expensive to tailor it to our exact needs.

"So what we're getting is a system that's fit for purpose, embedded within the organisation and, from the public's perspective, is good value for money."

The organisations are also looking at a possible link up around robotics and artificial intelligence, with the University working on a drone which could be used to give firefighters an aerial view and thermal images of an incident. They are also developing an autonomous robot called a 'Husky', which is capable of independently entering and assessing the inside of a building, before sending live 3D thermal images back to officers to help improve decision making. The University is assisting with environmental management too, helping the fire service to manage issues such as water use, urban diffuse pollution and the effect on the watercourse of the chemical-based foam often used to fight fires.

### Innovative thinking

The sheer breadth of the partnership is shown by one last initiative, involving the University's Salford Housing and Urban Studies Unit, which is carrying out culture and community mapping for the fire service.

"We're aware that certain communities across Greater Manchester have traditional cultural issues which could make them more vulnerable to the dangers of fire," says Sharples. "By finding out exactly where these communities are, we can develop a more targeted campaign of prevention." And Taylor adds: "What these projects show is how the University can apply the scientific research and ideas developed by our academics for use in one industry to something completely new, in this case helping the emergency services."

Pro-Vice-Chancellor of Enterprise, Dr Nigel Mellors, said: "We are establishing a system where we approach a business as a complete university, rather than one department offering one service."





Chief Fire Officer Steve McGuirk with Vice-Chancellor Martin Hall

University of  
**Salford**  
MANCHESTER

## **Are you interested in being involved in our health and rehabilitation research?**

The School of Health Sciences at the University of Salford is the largest of its kind in the country, and we are always looking for people to take part in our research.

This often involves both people with the conditions we are studying and 'healthy' people. By volunteering, you could play an important part in helping to improve the health and welfare of your community.

To help us contact potential volunteers, we have established a register of people who have expressed an interest in our work but we are always looking for more participants.

If you are interested in finding out more about joining the register please contact us for an information pack.

Please note you must be aged 18 years or over.

**For more information contact:**

**t:** 0161 295 7016 **e:** [hsresearch@salford.ac.uk](mailto:hsresearch@salford.ac.uk)

[www.salford.ac.uk/health-sciences/research](http://www.salford.ac.uk/health-sciences/research)

# Making small spaces seem bigger

The unique properties of activated carbon, a substance that has been around for centuries, are central to the plans of a new spin-out company.

**A**ctivated carbon is commonly found in products such as odour eaters, gas masks and loud speakers, and has also been used for water filters.

But now its ability to absorb noise, and to seemingly make smaller spaces appear much bigger, is being harnessed for a whole new range of uses.

Carbon Air was set up on the back of a study by the University's Acoustic Research Group, explains the company's Managing Director, John Coakley. The research group was checking out some startling claims about the acoustic properties of activated carbon that had been made by a loud speaker manufacturer. And although they set out to disprove them, they ended up proving the ideas.

## Research councils that fund R&D are increasingly looking for impact.

"The unique properties of activated carbon are its amazing ability to eat up low frequency noise and to make small spaces behave as if they are much larger," says Coakley. Activated carbon is created by driving steam through lumps of charcoal at high temperatures and at high pressure. This removes all its impurities, leaving a 'scaffold' of millions of pores and holes. "It's like a sponge at a microscopic level" continues John. "It's just riddled with holes, and each hole is riddled with holes, and so on. It's got a huge surface area."

And it's these properties which allow it to soak up noise, and absorb gas and air, making smaller spaces seem bigger.

The company's Technical Director is University alumnus Dr Rodolfo Venegas, continues Coakley. "He developed some amazing software that can simulate the behaviour of carbon, both acoustically and mechanically, and it's this magic algorithm that we are now putting to use."



## Carbon which has been activated by high pressure steam is like a sponge at microscopic levels, and has a huge surface area.

The company is in discussions with a range of businesses to commercialise their findings, so specifics are confidential. But Coakley says that activated carbon has a wide range of uses in transportation, with its ability to make small spaces seem bigger, particularly useful when developing air-spring suspension for cars, trucks and even trains. Components can also be made lighter and smaller, which appeals to the automotive sector, he adds. In construction, it will allow developers to install noise absorbers which are considerably thinner and more efficient than many current solutions.

"Carbon's not just the future, it's the past too," says John. "Activated carbon has been known about for centuries and its behaviour too but no-one has ever done much commercially with its capacity to change the behaviour of air. From all our patent searching, it would appear that we are now at the forefront of a new technology."

### The commercialisation process

Carbon Air is the latest example of a successful University spin-out, a phenomenon which is becoming increasingly important within higher education, explains Dr Blake Prime, Commercialisation Associate at the University. "Research councils that fund a lot of R&D are increasingly looking for impact," he says. "And that means taking the research out of the lab and putting it into an industrial environment."

When the University decides not to take an idea forward alone, continues Prime, they approach investors. "We explain that we've got an opportunity and we want to take it out of the University so that it's managed professionally in a commercial way. This is where spin-out companies come in. The way the deal works is that in return for the intellectual property - the basis of the company - we will take a shareholding in it."

The University has a strong track record of developing spin-outs. Among them are coating specialists CVD Technologies, which was created in 2000, and Onco-NX, a far newer business that is helping to commercialise anti-cancer therapeutics developed at the University.

"The other way we work is to licence something ourselves," continues Prime. For example, the University's Spray Research Group has developed a new valve design which could play an important role in helping to phase out VOCs (Volatile Organic Compounds), which were introduced during the 1980s to replace CFCs in aerosols. The new valve will allow manufacturers to use compressed air as a propellant instead.

"A good track record of spin-out companies and licensing agreements makes the University much more attractive to research councils and makes them more likely to fund further research," says Prime.

"If you can demonstrate that you are trying to get research out there into society, via commercialisation, you're more likely to get further research grants, too.

"And it is also good for staff, as it gives them experience of the real needs of industry, which in turn helps to inform their future research."

The Technology Transfer team are also working on a diverse range of other projects reflecting the breadth of research at Salford, including:

- A new type of biological microscope for real-time imaging of live cells
- New drug candidates for treatment of cancer and vascular disease
- Sports footwear designed to reduce player injuries
- A welding torch that minimises the operator's exposure to hazardous fumes
- An improved fabrication step in the production process for semiconductors and solar cells.

If you're interested in finding out any more about projects or technologies the University is looking to spin-out, visit: [www.salford.ac.uk/business/technology](http://www.salford.ac.uk/business/technology) or contact Dr Blake Prime at [b.m.prime@salford.ac.uk](mailto:b.m.prime@salford.ac.uk)

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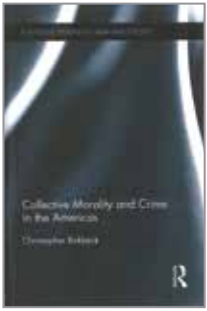
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# On our reading list...

This list is not meant to be exhaustive, but rather give you a sense of the breadth of the published work being undertaken at the University.



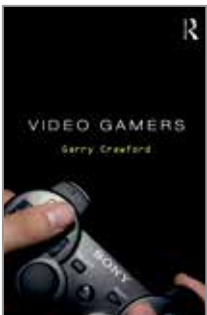
Professor of Criminology, Chris Birkbeck, wrote *Collective Morality and Crime in the Americas*, which was published by Routledge in 2012. This study examines the ways in which the moral community is talked into being in relation to crime, and the objects of concern that typically occupy its attention. He also published *Comparative Criminology: Case studies of Crime, Social Control and Morality* in Spanish, with Editorial Dykinson in Madrid. This book brings together 15 of his articles on Criminology published since 2000, which deal with varied topics relating to crime and criminal justice, many of them using data from Venezuela.



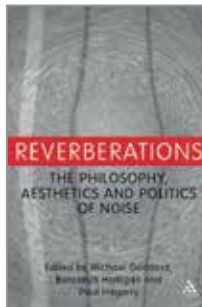
Ralph Darlington, Professor of Employment Relations and Director of Postgraduate Research in Salford Business School, wrote *Radical Unionism*, published by Haymarket Books. It provides a comparative analysis of the dynamics and trajectory of the syndicalist movement that swept the world during the first two decades of the twentieth century, which was committed to revolutionary trade union struggle and raised fundamental questions about the need for new democratic forms of power through which workers could collectively manage industry and society.



Drs Ben Halligan and Kirsty Fairclough-Isaacs authored *The Music Documentary*, which offers a comprehensive discussion of the history of music documentaries, insights in their production and promotion, close studies of documentaries relating to favourite bands or performers, and approaches to questions of music documentary and form, from the celluloid to the digital age.



*Video Gamers* by Professor Garry Crawford is the first book to explicitly and comprehensively address how digital games are engaged with and experienced in the everyday lives, social networks and consumer patterns of those who play them. He also wrote *Online Gaming in Context*: The social and cultural significance of online games to explore the opportunities, challenges and patterns of gameplay and sociality afforded by the Internet and online gaming.



*Reverberations* by Ben Halligan and Michael Goddard, of the School of Arts and Media, is the first of two books arising from a conference convened at Salford in Summer 2010, called "Bigger than Words, Wider than Pictures: Noise, Affect, Politics". It considers noise from political, sociological, architectural, legal and artistic perspectives. It is the first such study to expand methodological and analytical approaches across a number of fields. Its sister volume, *Resonances: Noise and Contemporary Music*, will be published this summer.

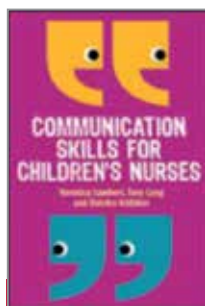


Gill James, Programme Leader and Lecturer in English, had five titles published in 2012, including *Otherwhere and Elsewhen: tales of alternative realities*. If you weren't convinced before that there were other realities, you certainly will be after you've read this collection of stories that take place in another time and another space, light years from here. James also wrote two young adult novels including *Spooking* and *A Gallery for Nick*. *On This Day* is a collection of short stories about everyday lives and how they are gently connected with a day's world shattering event, from President Kennedy's assassination and the death of Princess Diana to 9/11. A percentage of the author's royalties are being donated to International Rescue Training Centre Wales (IRTCW), who provide search and rescue dogs to the emergency services.

Along with Deb Hobz-Wyatt, James also co-edited **Café Lit**. Each story in this little volume is the right length and quality for enjoying as you sip the assigned drink in your favourite creative café. You need never feel alone again in a café. Also available as an e-book from Kindle.



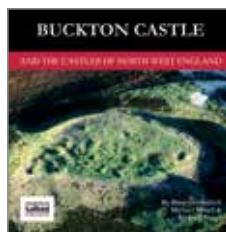
**Safeguarding children from abroad: refugee, asylum-seeking and trafficked children in the UK**, co-edited by **Emma Kelly**, Lecturer in Social Work, examines the issues and problems faced by 'separated' children, that is children from abroad who are alone in the UK. With contributions from practitioners and academics, the book considers the safeguarding needs of separated children and how these needs should be met.



**Communication skills for Children's Nurses**, edited by **Veronica Lambert, Professor Tony Long and Deirdre Kelleher**, will help children's nurses to communicate with confidence, sensitivity and effectiveness; to meet the individual needs of children and their families. The book emphasises the importance of listening to and respecting children's views and rights, in addition to respecting parent responsibility, rights and duty to act in the child's best interests.



**Family Interventions in Mental Health** by **Neil Withnell and Neil Murphy**, lecturers in the **School of Nursing Midwifery and Social Work**, addresses the importance of working with families and staging effective family interventions as an important and logical aspect of promoting recovery in mental health nursing.



The results of a painstaking 15-year study into one of Tameside's most historic sites have been published in a new book by University of Salford archaeologist **Dr Michael Nevell**. **Buckton Castle**, which overlooks Stalybridge, was built in the 12th Century by the Earls of Chester to consolidate their lands and protect them from the threat of incursion by the Scots. It was occupied for around a hundred years, but until now little has been known of it.



**The Structure of Mehri**, by **Professor Janet Watson**, is a comprehensive linguistic description of two major Mehri dialect groups: Mahriyöt, the eastern Yemeni dialect of Mehri spoken in Hawf, and Mehreyyet, the Mehri of the Omani Najd. Mehri is the most widely spoken of the six Modern South Arabian languages, with populations in eastern Yemen, western Oman, the southern fringes of Saudi Arabia, and parts of the Gulf. The Structure of Mehri provides the first description of Mahriyöt,

and based on fieldwork conducted by the author and material in Sima it provides one of the first studies of any non-state language to include data from new technology.

**Photography & the Artist's Book** was edited by **Theresa Wilkie, Jonathan Carson & Rosie Miller**, all of the **School of Arts & Media**, to highlight the renewed interest in the relationship of photography and the artist's book, both as a work of art and as an alternative means of exhibition and dissemination. The theorising of the photographic essay, and notions of "conceptual documentary", have become important areas of discourse for practitioners and theorists alike who are interested in working with the photograph in book form.



**Professor Igor Shabalina** published **Ultra-High Temperature Materials** as part of the Springer Series in Material Science.

The work is a thorough treatment of ultra-high temperature materials with melting points over 2,500°C. The reader is provided with the full qualitative and quantitative assessment for the materials, which could be applied in various engineering devices and environmental conditions at ultra-high temperatures, on the basis of the latest updates in the field of physics, chemistry, materials science and engineering.

**Note:** Only books published in the past 12 months have been included. For an up-to-date list of all publication activities, including conference proceedings, book chapters and reports, as well access to many peer-reviewed journal articles, visit our open access online repository at [www.salford.ac.uk/usir](http://www.salford.ac.uk/usir)

Educational archaeologist Kirsty Whittall and a young volunteer



# Do you dig it?

Dig Greater Manchester is a major community archaeology programme led by Salford's Centre for Applied Archaeology and is the largest project of its kind in England

**T**he project, which began in 2011 and is funded by the Association of Greater Manchester Authorities (AGMA) and the borough of Blackburn with Darwen, is being led by staff from the Centre for Applied Archaeology and managed by members of all project partners. The overall aim is to involve thousands of people from local communities in the investigation of their local history under the theme of: 'Accessing, Exploring and Celebrating your Heritage.'

Over the course of the project to date more than 6,000 people across Greater Manchester, ranging from absolute beginners and schoolchildren to experienced archaeology volunteers, have become involved in their own history and heritage through taking part in an archaeological excavation.

All of this contributes to the project's three overarching research aims, which are to examine the significance of community archaeology, the practice of community archaeology and the archaeology of industrialisation in the Manchester city region.

"We finalised the detailed project design for Dig Greater Manchester in March 2011," explains Dr Michael Nevell, Head of Archaeology at CfAA, the only university-based archaeology organisation which is also located within a School of the Built Environment. "This contained all of the detailed project activities, delivery outputs, milestones and added value for the whole five-year project. Based on the initial pilot study list of suitable archaeological sites we decided that each local authority should have one evaluation of three weeks' duration during the first three years and then two flagship large-scale, five-week archaeological excavations would be chosen for the final two years.

This choice would be based on the most successful evaluation results in terms of archaeological findings, schools participation and volunteer numbers."

#### **Adding value through community cohesion**

From the outset, Dig Greater Manchester had to be about far more than simply increasing numbers involved in archaeological work; it had to have real, tangible community benefits.

In October 2009 the Department of Communities and Local Government published its *Building Cohesive Communities: what frontline activities need to know* report, which called on volunteer, charity and local government bodies to 'develop a shared story of place that takes into account the history of the locality and its communities'.

It was with this inspiration to view the exploration of the past as an endless and significant quest which empowers people that the project was founded, and a number of themes and key target groups were adopted.

At its heart the project aims to improve community cohesion, increase youth participation, reduce worklessness, promote healthy living and increase learning outside of the classroom. This is achieved through targeting volunteer archaeologists, local groups and associations, local communities, schools, people not in employment and those with disabilities to become involved. Volunteers receive in-depth training in various non-intrusive archaeological techniques such as historical research, geophysical surveys, archaeological building surveys, graveyard surveys and finds processing.

.....  
To find out more about the Dig Greater Manchester project or to volunteer, contact Senior Archaeologist, Brian Grimsditch on **0161 295 3821** or email **b.grimsditch@salford.ac.uk**



The project aims to improve community cohesion, increase youth participation, reduce worklessness, promote healthy living and increase learning outside of the classroom. This is achieved through targeting volunteer archaeologists, local groups and associations, local communities, schools, people not in employment and those with disabilities to become involved.

While these in themselves are worthy aims, it is also vital that the involvement of these groups adds quantifiable value. It is expected, for instance, that the number of volunteer days by the time the project is complete will number over 5,000, which in itself is estimated to be worth over £375,000 at Heritage Lottery Fund estimates of £75 per volunteer day.

To complement this, it is anticipated that the increased participation and publicity created by the project will also lead to a number of new local history and archaeology societies being created, which will be supported through the loaning of equipment and provision of training.

#### By the numbers

- Over 6,000 local people involved to date with over 10,000 expected in total

#### Including:

- 6,500 schoolchildren
- 4,000 local volunteers putting in 5,000 days

Indeed, proof of this aim has already been provided with the creation of the Bury Local History Group, set up by one of the volunteers whose interest in the subject was fuelled while helping out at the Bury excavation in Radcliffe's Close Park.

The enthusiasm of youth, meanwhile, is being tapped through extensive work with local schools. "This is a key aspect of the programme, as archaeology is an excellent subject for both formal and informal learning," explains Brian Grimsditch, Senior Archaeologist at CfAA.

Bury Council recently made a bid to the Heritage Lottery Fund to undertake further work at the site of Radcliffe Tower within Close Park. The Dig Greater Manchester work already undertaken at the site has uncovered a great deal of evidence, resulting in much local public interest, and so it is hoped that, if successful, the funds will be used to develop this, involve more community volunteers and conserve the remains. This approach will be based on the Dig Greater Manchester methodology and should result in the provision of greater public access to the tower, a listed building and Ancient Scheduled Monument.

#### Evaluations to date

- March 2012 – Etherstone Hall, Leigh – Wigan
- July 2012 – Close Park, Radcliffe – Bury
- September 2012 – Chadderton Park – Oldham
- October 2012 – Reddish Vale Country Park, Reddish – Stockport
- March 2013 – Moss Bank Park, Halliwell – Bolton
- June 2013 – Balderstone Park, Rochdale
- July 2013 – (Exact location to be confirmed) – Manchester
- October 2013 – Buile Hill Park, Salford
- 2014 – Tameside Borough
- 2014 – Trafford Borough
- 2014 – Blackburn with Darwen Borough



### Great excavations

At the time of writing, five excavation evaluations have taken place, the first of which was at Etherstone Hall, Wigan in March 2012. The same year saw excavations completed near Radcliffe Tower in Bury, Chadderton Hall in Oldham and Wood Hall in Stockport.

The Wigan evaluation explored the archaeology of a medieval house, which was rebuilt by a local cotton merchant during the early 19th Century. After the house was demolished the site became overgrown with woodland and was blighted by fly-tipping, vandalism and anti-social behaviour. As a direct result of the archaeological evaluation and community interest generated, the local council cleared the area and made it safe, creating footpaths and a performance space for long-term community use in the process.

The second evaluation in Bury's Close Park explored the area around the medieval Ratcliffe Tower and the later workers' housing, which was built as part of a bleach works that occupied the site in the 19th and 20th centuries. This successful excavation uncovered much evidence and generated a great deal of public interest, resulting in the creation of the Bury Local History Group and the Heritage Lottery Fund bid due to be decided this summer. Meanwhile, the close relationship that developed with the local council as part of the Oldham project has resulted in the team being asked to design a project for further work on the site, and the Stockport evaluations saw park rangers working closely with school groups which has led to further joint initiatives between these two departments.

"We are extremely pleased with the response we've had to the evaluations so far," says Grimsditch. "Seeing the community so enthusiastic at the first excavation in Wigan set the tone for the rest of the year, and directly resulted in the council taking an active interest in the site and making it fit again for public use. These are tangible outcomes on top of the targets we have set internally for the project, and it is so pleasing to know that the work we are doing is making a real difference.

"On site at Moss Bank Park in Bolton, which was the first dig of 2013, we identified the remains of an 18th century mansion house belonging to the owner of the bleach works, and Higher Bank, a row of workers' cottages.



"Once again, we've had an excellent response from the community and it was so pleasing to see that all of the volunteer places were fully booked more than four weeks prior to the start of the dig. While we are extremely sorry to have to turn anyone away due to lack of places, but we believe that this shows what interest there is out there in local heritage, and so hopefully that interest can be harnessed into the future."

With further excavations planned for 2013 in Rochdale, Salford and Manchester, it certainly seems that this sense of community enthusiasm for local heritage is set to continue.

### Past and future come face-to-face

Since the very first excavation in Wigan, the project has seen several undergraduate and postgraduate students from local universities volunteering on site, keen to improve their fieldwork skills and boost their portfolios. Students from the nearby universities of Manchester and Bolton, Leicester and Sheffield have also taken part, while from further afield students have travelled from Scotland and even Australia and New Zealand to gain some on-site experience.

"As an archaeology student from another country who has not yet had the chance to participate in an archaeological excavation, my experience with the Dig Greater Manchester project has been fantastic," said Ryna from Australia during the time she took part in the Etherstone and Newton Hall excavations. "I received a tremendous amount of help, guidance, support and care from everyone on board. I was also allowed to participate in various tasks and learned quite a lot about excavation methods and techniques, the methods of conducting an archaeology research project and what is required in terms of surveying, gathering information and working as a team. Dig Greater Manchester also gave me many opportunities to meet other like-minded people and establish some useful contacts for my future endeavours in archaeology. I would highly recommend this volunteering opportunity to students of archaeology who are building up their fieldwork experience, archaeology enthusiasts and all who have an interest in local heritage. I found it highly rewarding and enjoyable to be part of this project."

One of the schools that visited the Wigan excavation in 2012 was St Joseph's Primary School in Leigh, and headteacher Anne McNally, who organised the activity, says that the children found it extremely worthwhile. "Our children have been inspired by the dig and the work they

have been doing. During the warm weather just before we finished for Easter the children were allowed on the school field. A number of them came to me with handfuls of pottery that they had dug up from just below the surface of our land and were talking about what they thought they were and who had used them. The school is built on land where terraced houses and a mill used to be, and these treasures are now on display in class!"



By accessing, exploring and celebrating the city region's unique heritage, we are helping communities to understand and enjoy their local history in a very hands-on way, leading to it being cherished more and, therefore, protected by those communities.

### Opening access to all

To complement this capturing of youthful enthusiasm and to make the project accessible to as many people as possible, opportunities to participate have also been made available to people with learning disabilities and other special needs.

One example of how this has been enthusiastically received is provided by the way the Manchester Learning Difficulties Partnership has attended all five digs so far. "The partnership deal with people with learning difficulties and

it has been wonderful to welcome them to all of our sites up to now," says Brian. "There are two groups within the partnership: one that uses art work to improve and create learning opportunities, and another that does more physical work on the sites, including some excavation. During their time with us the therapists and supervisors said that they've observed improvements in their clients as a result of the work they've been doing, which is another extremely worthwhile result that, while difficult to quantify in a report, is what Dig Greater Manchester is all about.

"Related to this, and also less tangible in terms of quantifiable outputs, we have also had several people work on site with us who have difficulties mixing with others, including a keen archaeology student who was going to leave her course due to these issues. We were contacted by her tutor and mentor and provided a placement for her on the digs, which included further practical training, and we're told that this has really contributed to her catching up with her coursework and refocusing on her studies.

"We've also welcomed a local resident with dyslexia who has been unable to find permanent employment, and who was noticeably reticent to talk or mix with other volunteers on the first Wigan dig. As a result of the satisfaction he gains from being part of the project he has since been to every dig, and the vast improvement in his confidence is noticeable to the point where we're now able to place inexperienced volunteers with him for training," he adds.

### Exploring, understanding, inspiring into the future

With further excavations in 2013 still to come in Rochdale, Salford and Manchester, it also seems certain that this good work will continue, and the benefits will continue to be shared.

"By accessing, exploring and celebrating the city region's unique heritage, we are helping communities to understand and enjoy their local history in a very hands-on way, leading to it being cherished more and, therefore, protected. This definitely cultivates a sense of place and distinctiveness," explains Dr Nevell. "What Dig Greater Manchester is doing is creating an opportunity for local communities to become involved in their own history and heritage in a number of ways. We are already seeing the project act as a catalyst to inspire further analysis, presentation and, most importantly, enjoyment, of local heritage."

# Social Care news

## Study investigates welfare conditions and behavioural change

The University of Salford is leading a major research study into the conditions attached to welfare benefits and whether they are successful in changing the behaviour of claimants.

The Economic and Social Research Council (ESRC) is funding the five-year £2.5m project which brings together leading researchers from the University of Salford, University of Sheffield, Sheffield Hallam University, Heriot-Watt University and the University of Stirling. The study will explore the ethics and efficacy of welfare conditionality which has increased over the last 20 years to encourage the 'positive' behaviour of welfare recipients, for example undertaking a training or work programme in order to claim Job Seekers' Allowance or complying with conditions related to family intervention projects.

In addition to influencing future welfare policy and practice, the study aims to contribute towards training the next generation of social researchers by establishing eight PhD studentships.

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## Project to bring almost 1,000 empty homes back into use

Working with the Association of Greater Manchester Authorities, the University hopes to find new ways to trace and communicate with the owners of 930 empty homes across the region. Experts from the University's Housing and Urban Studies Unit and Salford Business School will be using innovative ways to trace absentee owners and encourage them to bring their property back into use.

The problem of empty homes in Greater Manchester is a pressing one. There are 25,000 empty properties in the region and if they were all brought back into the market they would help address the 100,000-strong social housing waiting list. However the reasons for being the owner of an empty home are diverse and even more difficult to address. Homeowners can be located almost anywhere, be of any ethnic or age profile and may be unwilling or unable to do anything with the house due to finance, emotional attachment or family breakdown.

The aim is to bring 930 homes back into use during the project, but more importantly, to learn lessons that can be applied in Greater Manchester



and, eventually, further afield. To help solve the problem the researchers will be working with officers from Tameside Metropolitan Borough Council to develop new techniques. This includes exploring how social media could engage with empty home owners, as well as linking owners to housing organisations that will be able to manage the empty home on their behalf.

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## Salford researchers secure major EU Roma grant to reduce racism

The University is the lead research partner in a Europe-wide project to reduce discrimination against Roma and promote better integration of this marginalised group with the rest of society.

Approximately six million Roma live within the EU and they make up the continent's biggest ethnic minority. However, they continue to face marginalisation, with the European Roma Rights Centre recently reporting on issues such as forced evictions in Romania and Italy and segregated education in the Czech Republic. Led by Migration Yorkshire, the Roma MATRIX project spans ten European countries and

comprises 19 partner organisations. Salford will be conducting a number of research activities within the project to meet the objective of reducing discrimination against Roma. The University will conduct fieldwork across Europe to evaluate and compare the effectiveness of existing policies and structures to reduce anti-Gypsyism.

Closer to home, the Salford team (made up of Professor Peter Dwyer, Dr Philip Brown and Dr Lisa Scullion) will develop a UK network of interested policy makers, practitioners, academics and researchers, end users and other stakeholders to improve integration by influencing both policy and practice. A Roma mentoring scheme will also be established by Salford, partnering with a public authority, to provide training, support and experience around working within this sector.

The project is the second consecutive EU grant that Salford will deliver in partnership with Migration Yorkshire, building on previous and ongoing projects that focus on Central and Eastern European Roma. Roma MATRIX is a two-year project commencing in April 2013 and will complete in early 2015.



# Go global with social media

Could social media be the key to helping companies and students overcome the challenges of working in different business cultures? This is the premise behind a new body of research carried out at the University in conjunction with seven European partners, called Passport to Trade 2.0.

**T**he project has been designed to help small and medium-sized businesses (SMEs) looking to expand into foreign markets, as well as students wanting to take work placements or jobs abroad. It provides an extensive and free guide to business culture in 31 European countries, and covers social media etiquette, advice about online and face-to-face networking, and tips for trading in these countries. By exploring the ways in which business is carried out in different countries, the guides are setting out to demystify business etiquette and protocol, explains Dr Aleksej Heinze, from the Centre for Digital Business at the Salford Business School.

“We want to give businesses and individuals the knowledge and support they need to succeed abroad,” he says.

The project has been funded by the European Commission and evolved from an earlier project, which looked at business culture in 25 European countries and offered online business support for SMEs interested in developing links with companies in other EU countries. The project team is now working with universities and companies from around Europe to precisely map out the use of global social media networks in Europe.

The research is based around interviews with over 240 SMEs and nearly 1,400 students, and focus groups with the survey covering the issues and obstacles they face when trying to trade or work abroad. All country guides produced are peer reviewed by students and companies from the countries being studied. Based on this research, a European Mobility Framework structure has been developed,

which highlights key elements to be considered for businesses and students who wish to be successful in other European countries.

This Framework highlights country-specific attitudes to punctuality, business meetings, business negotiations, use of social media networks and student placements, amongst others.

## Free trade

More than half the SMEs that responded to the survey reported using social media as a way of generating leads and developing business partnerships, a figure which greatly encourages social media-based innovations and business development. The predominant use of social media networks across Europe is for increasing customer awareness of the business. A top tip for any business is to set up basic social



media monitoring to survey comments that are published about their business. For example, any establishment that has reviews on TripAdvisor has to reply to any negative comments and take actions where needed.

### Top Tip: set up social media monitoring to survey comments that are published about your business.

Around 99% of business within the EU is carried out by SMEs but just 8% of these companies are involved in the, often lucrative, export markets. The team suggest that harnessing the power of social media could help to radically change this because social networks increase the potential for international collaboration by making the whole process faster and simpler. Their research can help SMEs to develop new social media strategies and provide them with the social media marketing tools and techniques they need to effectively engage with new business opportunities and expand into new markets.

#### Social mobility

The research also highlights that although there are some common social networks amongst

businesses, such as LinkedIn and Twitter, other country-specific networks are also popular, such as Xing in Germany and Vladeo in France. The vast majority of students, on the other hand, use Facebook. "Social media can help to play an important role in fostering mobility and breaking down cultural barriers," says Aleksej. "For young people, traditional country borders are no longer obstacles when it comes to developing their networks."

Further details about the project, including the social media guides and details about the various European partners, are available at: [www.businessculture.org](http://www.businessculture.org). Aleksej recently presented the project at the monthly Research, Innovation and Enterprise Exchange, powered by PechaKucha, and the slides are available online at: [www.slideshare.net/unisalford](http://www.slideshare.net/unisalford)

Meet Aleksej and other Salford Business School colleagues at the launch of the Centre for Digital Business on 5 June at MediaCityUK (see Events listing on page 56 for more details).



This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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# Digital news

## Salford data-mining knowledge helps not-for-profit lending

A two-year Knowledge Transfer Partnership (KTP), funded with the help of the Economic and Social Research Council, as well as the Engineering and Physical Sciences Research Council, has been helping people on low incomes access finance more readily. East Lancashire Moneyline (IPS) Ltd, a not-for-profit industrial and provident society that provides access to credit, savings and advice, is set to increase its lending by 50%, topping £10 million this year.

“Benefit claimants and others on low incomes typically have difficulty in obtaining loans because they fall outside the lending criteria of high street banks and building societies,” explains Diane Burridge, Chief Financial Officer of Moneyline.

“Our typical customer relies wholly or partially on benefits and has no alternative but to manage their finances from week to week, so when an unexpected item of expenditure occurs they often have little or no disposable income or savings to meet that need.” To help tackle the financial exclusion experienced by low income groups, as well as reduce the risk of bad debts, researchers from the University of Salford worked in partnership with Moneyline to develop a consistent and objective framework of risk assessment for use in the process of loan approval. Professor Sunil Vadera, from the School of Computing, Science and Engineering at the University of Salford, explains: “The main aim of the KTP was to create a framework to assist loan approval at East Lancashire Moneyline by applying data mining methods to a real-world problem where success would have a positive impact on improving financial inclusion.”

Data mining is the process of detecting patterns in data which can be used to inform decision-making models. “For this project we were able to combine our expertise in data mining with Professor Karl Dayson’s knowledge of microfinance and Dr Jia Wu’s experience of data analysis to understand the socio-economic factors and personal circumstances that can influence loan approval for those on low incomes,” Professor Vadera concludes.

Identifying patterns of data in, for example, cash machine use enabled researchers to create a web-based Credit Risk Assessment Tool (CRET) for use in the objective assessment of loan applications. Using this tool has enabled East Lancashire Moneyline to move from a relatively simple and informal means of assessing loan applications to a consistent framework for risk management.



Participants playing the Volcano Simulation Game



## THINKlab develops Volcano Simulation Game for BBC Learning

In collaboration with the University’s THINKLAB, BBC Learning is exploring how interactive digital media could be used to introduce scientific and nature subjects in a more exciting manner. As a first part of a series of interactive learning programmes, THINKLAB has been commissioned by the BBC Learning team to produce an interactive learning platform to introduce the science behind volcanic explosions.

The novel platform produced by the THINKLab team allow two players to enter into a volcanic island and, using body gestures, change the parameters such as gas content, crystal content, silica and magma flow to affect the type and intensity of the volcano eruptions. The final score is calculated based on the time taken to complete the task and the height of the eruption. The game has been successfully trialed by a group of children invited by the BBC to experiment with the controls.

This gaming platform will be part of the ‘tool kit’ for the BBC Learning events run throughout the year. The audiences for these events vary from children to adults depending on the subject matter and THINKLAB will continue working with BBC Learning to modify this gesture-based gaming platform to present suitable data for each audience.

For more information on the THINKLAB, including how your business could use the venue and its technology, visit: [www.thinklab.salford.ac.uk](http://www.thinklab.salford.ac.uk)

**T**he mislabelling of fish is now a major international concern. Fish stocks around the world are being over-exploited – in the last 50 years nearly one in four of the world’s fisheries has collapsed – and there has also been a dramatic rise in so-called IUU (illegal, unreported and unregulated) fishing. Worth as much as €20 billion a year, it’s an industry that is putting further pressure on the sustainability of our fisheries in part due to mislabelling.

Led by Dr Stefano Mariani, a marine biologist from the School of Environment & Life Sciences, a team is investigating how to optimise and standardise the way in which seafood products are genetically identified, and ultimately make it easier to prosecute mislabelling offenders. According to Mariani, part of the problem stems from the fact that most fish are now processed at sea, where many of the features that set individual species apart are removed.

As a result, fish is sold in such a processed state that it’s hard to know exactly what type of fish it is. This can lead to product substitution, when less valuable, more common species are mislabelled as rarer and often more expensive fish. As well as breaking quotas for certain species, and putting a further strain on the sustainability of fish stocks, it’s a practice that also cheats the consumer and may also expose them to the risk of food allergies. “But don’t blame the fisherman,” says Mariani. “It’s a complicated supply chain and it’s the big processing plants, supermarket chains and suppliers that will decide the fate of different batches and orders of fish.”

**A recent survey in America showed shocking levels of mislabelling, with over 50% of fish wrongly marked.**

**Worldwide issue**

It’s a problem that is rife all over the world. A recent survey in America showed shocking levels of mislabelling, with over 50% of fish wrongly marked. And despite the strong regulations introduced by the EU, there’s evidence that tuna and swordfish caught in the Mediterranean, as well as North Sea cod, are also being mislabelled. What Mariani believes is needed is a forensic test that will enable investigators to check whether fish have been caught illegally, or whether a product in a supermarket or restaurant has been mislabelled. DNA testing is central to this, and offers a quick, cost-effective and reliable method, which can distinguish between species and provide the forensic evidence needed to take a case to court. However, at the moment, a variety of different methods are being used.



Dr Stefano Mariani of the School of Environment & Life Sciences

# Fish mislabelling

A team of researchers at the University of Salford is working on a process to stop an insidious practice that is contributing to the mismanagement of fish stocks worldwide.

“The ultimate aim of the research is to produce a simple, standardised process that allows you to take a piece of fish, subject it to the extraction of the DNA, and then the sequencing of a particular portion of the DNA that identifies the actual species that you are dealing with,” explains Mariani. “It’s a process that is very similar to that which has been used in the recent horse meat scandal.”

“We want to ensure that in terms of procedure, collecting, delivery and reproducibility of all the results, regardless of what country or laboratory you’re in, it’s going to be 100% reliable.

“Ultimately,” he adds, “I would love to see national, compulsory and well-enforced genetic testing, and random spot checking of products along the production chain in every country.”

Mariani’s research is part of a European project called LABELFISH, which includes partners in Ireland, Portugal, Spain, France and Germany, and will focus on eight of the most popular species - Atlantic cod, haddock, hake, monkfish, plaice, tuna, ling and sardine. The research will also test the effectiveness of EU legislation.

Below: Dr Mariani performs a demonstration at the Manchester Science Festival in October 2012

Mariani’s team, and those in the partner countries, have been testing shop-bought samples of fish using a variety of different DNA testing technologies.



“Traditionally different countries and different governments had different control labs that were using different techniques to achieve the same results, and there was a lot of inconsistency. This can be a problem with potential legal cases.

“We are aiming to standardise this whole process as much as possible and hopefully this will then become a model used around the world.

# The Optimal Dartboard

To many people, darts is already a fiendishly difficult game, but now David Percy, Professor of Mathematics at the University of Salford, has made it even harder.

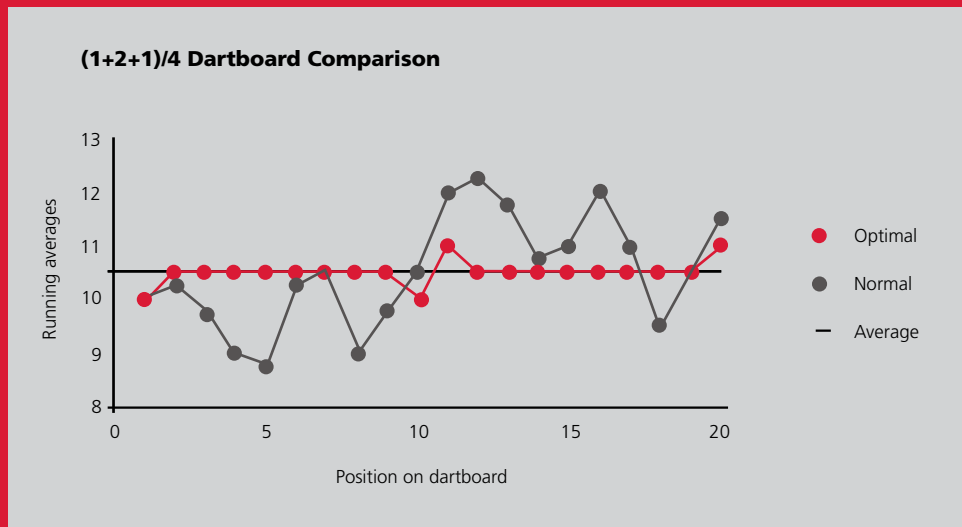
He has created the 'Optimal Dartboard' by re-arranging the numbers in such a way that they minimise the chances of a high-scoring random throw. As well as alternating odd and even numbers, Percy's board also groups the numbers in similar scoring clusters.



Normal dartboard



Optimal dartboard







“**P**eople have been looking at this problem for the last 30 years, but only as a bit of fun,” Professor Percy explains. “But they were using the wrong optimality measure and also ignored the importance of having alternating odd and even numbers. The idea is to make the dartboard as hard as possible.”

“What they were looking at was trying to make the difference between adjacent numbers as large as possible, so that if you miss a big number, you get a small number. But what you actually need to do is look at the total score of two adjacent numbers and try and make that as similar as possible all the way around the board.”

Percy analysed the traditional board by totting up the average scores for different sections of the board and laid out the plans for the new board in a paper published in the journal *Mathematics Today*.

“The average of all the numbers on a dartboard is 10.5, so put simply, you can gain by targeting those sections where the average is higher than that,” he explains. He showed that it was easier for a lucky throw to score highly in the left-hand side of the board, where there is a section containing 12-9-14, with an average of 11.7, as well as 16-7-19, with an average score of 14.

It is easier for a lucky throw to score highly in the left-hand side of the board, where there is a section containing 12-9-14, with an average of 11.7, as well as 16-7-19, with an average score of 14.

With players traditionally trying to get from 301 or 501 down to zero, the layout of the optimal board also makes a big difference at the end of the game, when players have to go out on a double. If they're on an odd number, they'll need to hit another odd number before being able to go for a double. On the old board, even the worst player had a good chance of hitting one close to the bottom of the board, with its cluster of four adjacent odd numbers 7, 19, 3 and 17.

Percy's new alternating arrangements has put pay to this, along with another favourite, double 16. On the traditional board 16 and 8 are next to each other, so if you miss double 16 and hit single 16 instead, you then require double 8, theoretically making it easier to hit as you already have your sights set on that part of the board. Similarly, the 10 and 6 are no longer adjacent, which makes finishing harder when players are on an even number.

The dartboard was trialed at the BDO World Professional Darts Championships in January by darts legend Bobby George, and several prototypes have been developed by leading dartboard manufacturer Winmau. However, there are no plans to replace the traditional board, the numbering of which is thought to date back to the 19th century.

Modestly, Percy adds: “Maths is often about finding the optimal solution to a problem and this is the optimal solution to that particular problem. I lay no further claims – it was just an interesting piece of work!”

# Built Environment news

For the latest on the School of the Built Environment, visit: [www.salford.ac.uk/built-environment](http://www.salford.ac.uk/built-environment)

## Salford develops guide for implementation of Building Information Modelling and Lean Construction

**Expertise from the University of Salford's School of the Built Environment has been used in compiling a definitive and free guide to Building Information Modelling (BIM) and Lean Construction for the industry.**

Five of the world's leading academics in the development of the latest efficient and digital methods of construction have written a guide for CIRIA, the Construction Industry Research and Information Association.

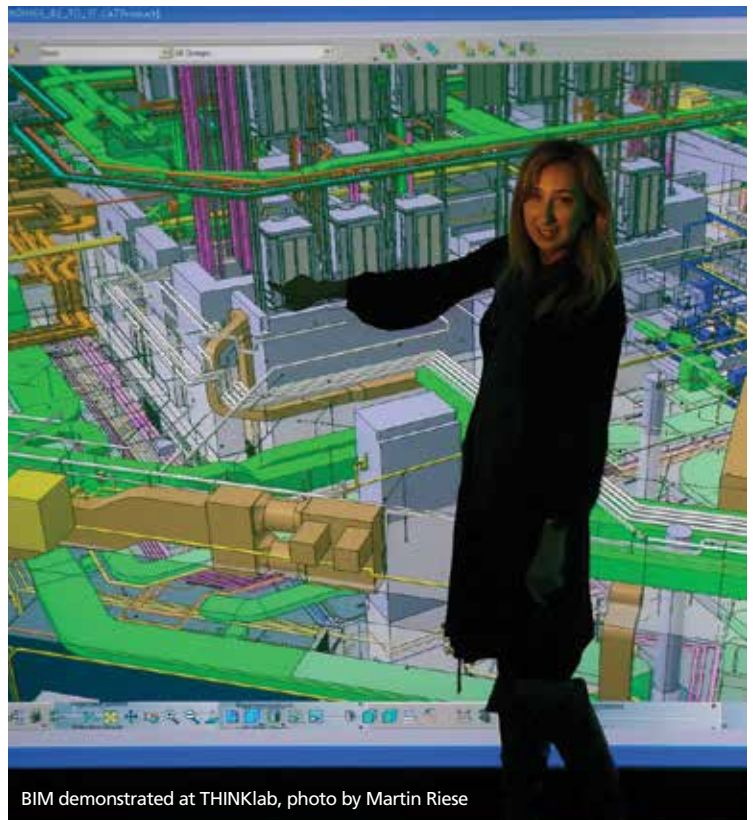
Designed for practical use by clients, designers and construction companies, the guide covers the entire lifecycle of implementing and embedding these more efficient methods into a company or project – resulting in lower costs and quotes during hard economic times.

In particular, the University is working hard within the UK to make the construction industry aware of the benefits of BIM

ahead of the Government's imminent requirement for the whole industry to trial it and Lean on public sector projects.

As a result, the guide not only contains advice but also successful examples sourced from the authors' experience around the world in countries where BIM and Lean is much more firmly entrenched in the sector. These examples include facilities management at Maryland General Hospital and planning techniques for the Skanska Headquarters in Finland.

Professor Lauri Koskela from the School of the Built Environment led the writing of the guide along with colleagues Professor Arto Kiviniemi, Bhargav Dave and Dr Patricia Tzortzopoulos, alongside former Salford academic Robert Owen from the Queensland University of Technology. The guides can be downloaded from the CIRIA website – [www.ciria.org](http://www.ciria.org)



BIM demonstrated at THINKlab, photo by Martin Riese

## In search of innovation



**Innovation is one of the key drivers of economic development and a key source of new employment opportunities. Indeed, the Regional Innovation Scoreboard shows that 35% of the variation in regional per capita income (at the EU level) can be explained by differences in innovative performance.**

Encouraging innovation is, therefore, a key policy objective at the regional level. The scope for expansion in innovative activity is considerable in areas with a strong higher

education-based knowledge infrastructure. Innopolis is co-financed by the European Regional Development Fund (ERDF) and made possible by the INTERREG IVC programme, which aims to identify and disseminate best practice in innovation policy in university city-regions. More specifically, the project focuses on regional policy that can facilitate knowledge transfer between universities and enterprises. It involves universities and regional authorities in four diverse European university city-regions: Greater Manchester, Helsinki, Lodz and Thessaloniki.

This three-year project is led by the University of Salford. So far the project has mapped 20 existing policies and identified 125 best practices in its four partner regions. The project will also study the US, where policies have been particularly successful in supporting knowledge transfer, and Prague as the most innovative post-socialist city region. Video case studies of ten such practices can be viewed on the project website at:

<http://knowledgecities.eu/intro>

# Study proves classroom design really does matter

In a pilot study by the University of Salford and architects Nightingale Associates, it was found that the classroom environment can affect a child's academic progress over a year by as much as 25%.

The year-long pilot study was carried out in seven Blackpool LEA primary schools. 34 classrooms with differing learning environments and age groups took part. The study took two lines of enquiry. The first was to collect data from 751 pupils, such as their age, gender and performance level in maths, reading and writing at the start and end of an academic year.

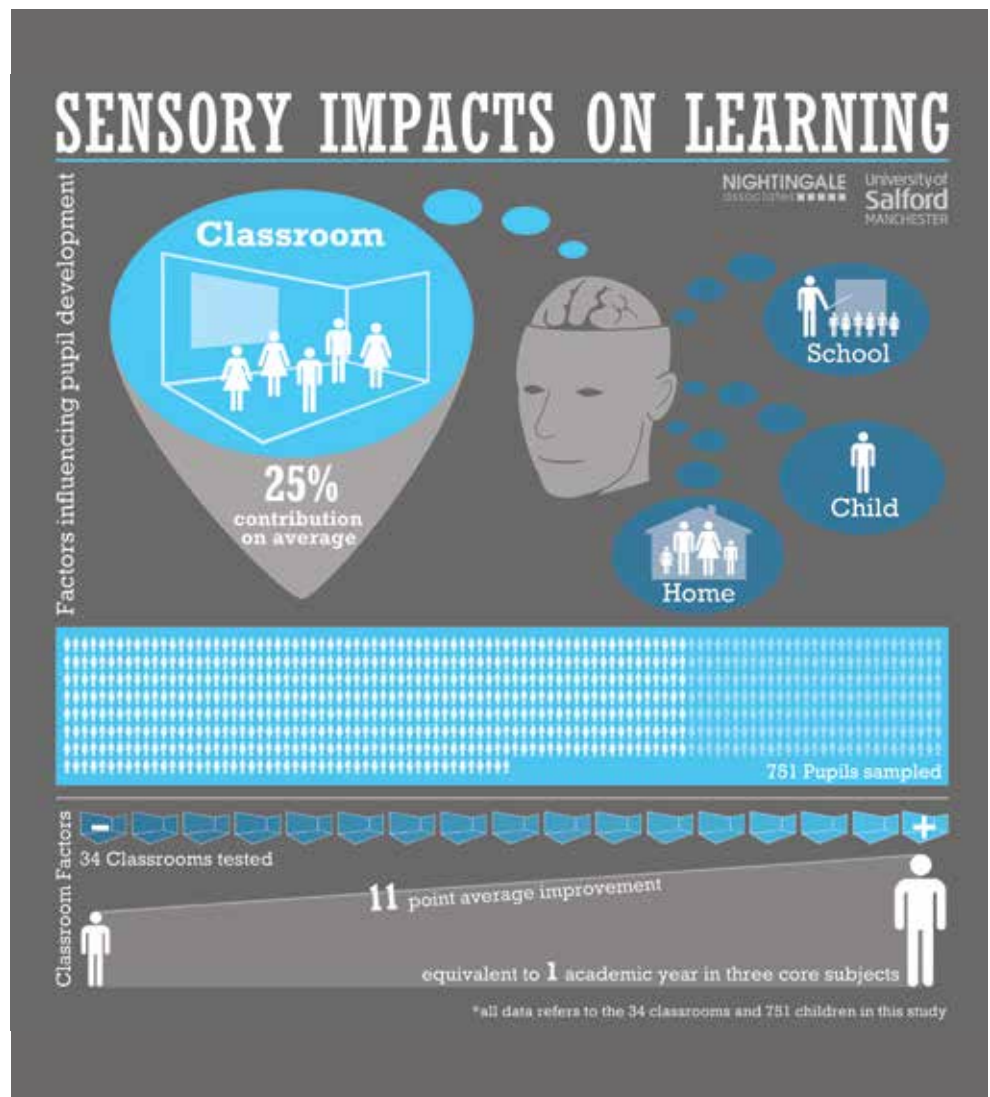
The second evaluated the holistic classroom environment, taking into account different design parameters such as classroom orientation, natural light and noise, temperature and air quality. Other issues such as flexibility of space, storage facilities and organisation, as well as use of colour, were evaluated.

This holistic assessment includes both classroom design and use factors to identify what constitutes an effective learning environment.

Notably, 73% of the variation in pupil performance driven at the class level can be explained by the building environment factors measured in this study.

Current findings suggest that placing an average pupil in the least effective, rather than the most effective, classroom environment could affect their learning progress by as much as the average improvement across one year.

Through these promising findings, the study will continue for a further 18 months and cover another 20 schools in different areas of the UK. This study is being funded by the Engineering and Physical Sciences Research Council (EPSRC) and the Principal Investigator is Professor Peter Barratt.



73% of the variation in pupil performance driven at the class level can be explained by the building environment factors measured in this study.

# Flooded small businesses relying too much on insurance cover

## Floods in Cockermouth

New University of Salford research carried out among businesses in Cockermouth in Cumbria following catastrophic floods in 2009 has found that very few have taken flood protection measures – despite an average 1,750% rise in insurance excesses being reported among the businesses surveyed.

The research team from the University's Centre for Disaster Resilience is now calling for businesses to make greater use of trained professionals such as chartered surveyors who can recommend effective mitigation and prevention improvements to their facilities. In the study, of the businesses which had implemented at least one measure, the most common action was to review insurance. Comparatively, only 11% had installed flood-resilient wall finishes and a similarly low percentage had moved stock and equipment above floor level.

In light of the current guidance, it is important that communities at risk of flooding learn to live and adapt to flooding by implementing adjustments to their property and processes rather than totally relying on insurance.

These issues are not only relevant to Cockermouth. In 2009, the Environment Agency identified that 5.2 million (or one in six) properties in England are at some risk of flooding, and in 2013 an agreement between the government and insurance industry is set to expire – potentially resulting in much higher premiums.

As a result, the researchers are keen for there to be more surveyors who have knowledge of flood prevention and resistance techniques and more businesses taking up advice which can prevent significant costs, damage and disruption.

Researchers are keen for there to be more surveyors who have knowledge of flood prevention and resistance techniques.



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# Technology news

## Salford PhD student develops revolutionary elderly care robot



**A University of Salford doctoral researcher has come up with a novel way of dealing with stretched resources caused by us all living longer – an interactive care robot for elderly people.**

Antonio Espingardeiro, who is studying in Salford Business School and the School of Computing, Science & Engineering, has created the P37 S65 robot, which has the ability to remind elderly people to

Antonio and his robot prototype

take their medication and exercise, and can even tell jokes. It can also provide 24-hour emergency notifications and will directly connect to carers or GPs through video conference or SMS. As resources to care for the elderly become more strained, Antonio believes that his robot can supplement the intensive care required by many care home residents and conduct routine tasks without significantly reducing the human contact that people need. Crucially, one person can monitor many robots – requiring fewer trained staff at each site.

In fact, based on his earlier studies in care homes, he believes that his robot can actually improve the quality of life for the elderly by promoting exercise, playing games and acting as a video link to family and loved ones. It will also support carers by following them around with meals and alerting them to emergencies and regular appointments. His robot can be programmed with many routine health interventions that are designed for people with dementia – such as speech therapy and object recognition exercises. Through face recognition it can also remember the preferences and requirements of each patient, as programmed at the instruction of a human worker.

Antonio conducted initial fieldwork with existing commercially available robots and discovered that residents found them to be highly stimulating and a break from their normal environment. He feels that, with his bespoke P37 S65, there is even more scope for the robot to support the work of human professionals in the exercise of care.

## Gamma invests millions in intelligent systems

**Research taking place at the University could help develop the use of intelligent and autonomous systems in small and medium-sized enterprises (SMEs), potentially creating new jobs in the engineering sector.**

Growing Autonomous Mission Management Applications (GAMMA) is a three-year, £9.1m project, aimed at driving SME engagement and developing technology within the autonomous systems markets. Autonomous systems are technologies that replace humans in tasks that are mundane, dirty or dangerous, or that require levels of detail and precision that are beyond direct human capabilities. You can see this growing technology in the driverless trains such as in the Docklands Light Railway or the militarised drones we hear about on the news, together with the almost automated processes that produce cars on production lines, for example.

There is significant market growth forecast in autonomous systems across sectors including healthcare, transport, aerospace, nuclear, manufacturing and petrochemicals. These systems should provide a sustainable business for SMEs in software upgrades, maintenance and sensing technology. Salford is one of five universities in the North West to be involved in the project.

Other partners include North West Aerospace Alliance (NWAA), BAE Systems and National Nuclear Laboratories. Salford will be leading work on Intelligent Tasking and Mission Management, which includes control systems applications for small-scale vehicle demos, onboard mission, collaborative planning and task allocation, optimisation, intelligent decision making and sensing systems, fault diagnosis systems, and safety management and fault tolerance.

Professor Samia Nefti-Meziani and her colleagues in the School of Computing, Science & Engineering will be key contributors to the programme. Samia said: "GAMMA will primarily focus on the end users of autonomous and intelligent systems, ensuring that the UK is in a strong position to capitalise on this developing market. The three key areas will be technology development and business growth, job creation in SMEs and development of a future generation supply chain."

## Prosthetics study to improve mobility of amputees

**When walking with a single prosthetic leg, above-knee amputees typically use up to 60% more energy than people who are able-bodied, causing fatigue and a 40% slower walking speed. These difficulties can hinder an amputee's mobility and, as a result, affect their quality of life.**

The energy storage and return capabilities of prosthetic legs are crucial to improving an amputee's gait and mobility,

but most prostheses only store and return significant energy below the knee and in an uncontrolled way. To overcome these problems, the team of engineers and prosthetists will explore the potential for using hydraulic technology to harvest and store energy from the parts of the prosthesis that absorb power, and then return that energy to the parts that do useful propulsive work. The results will be used to develop new prosthetic leg designs which have increased functionality

and require less energy from the amputee. Salford is the only provider of prosthetics and orthotics higher education in England, focusing on teaching, research and enterprise. Many of its graduates are now leaders in the profession, both nationally and internationally.

The three-year study is supported by a grant of £672,000 from the Engineering and Physical Sciences Research Council.

# Science news

For up-to-the minute science news, follow our Twitter feed @SalfordScience

## Reverse swerve to blame for unpredictable modern footballs

**Aspiring Premier League stars can gain just as much from studying Wasim Akram as Gareth Bale, now that aeronautics researchers at the University have discovered that cricket-style reverse swerve is an important factor in how modern footballs behave in the air.**

The addition of rough surfaces intended to make balls go faster has had the unintended side-effect of creating the same aerodynamics as a cricket ball that's been used for 40 or more overs, the researchers say in a study that has won the Catherine Richards prize for the best paper published in journal *Mathematics Today* in 2012.

The researchers, led by Dr Edmund Chadwick from the School of Computing, Science & Engineering, found that if a high degree of spin is applied to the football which is similar to the



forward velocity of the ball, then an unexpected pressure difference will be created, leading to strange movement in the air.

Older footballs didn't experience this kind of issue since they had a more uneven surface, with seams and smooth surfaces creating a more complex flow of air. Instead the researchers compare the new footballs to cricket balls which

gradually get rough on both sides, producing reverse swing, such as those originally used by Pakistani cricketers such as Wasim Akram and Waqar Younis.

Although the Salford team would require simulations to prove individual cases, they do believe that it might exonerate Robert Green from his 'howler' against the USA in 2010.

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## PhD student discovers new species of parasite

**A postgraduate student from the University of Salford has discovered a new species of parasite which infects voles.**

Kellyanne Boyce was studying the parasites affecting rodents in the complex ecosystem of Malham in the Yorkshire Dales when she found a parasite which could not be identified using traditional guides and papers.

Following the collection of a large number of samples, careful measurement of the parasites, characterisation using DNA-based forensic techniques and an exhaustive search of the scientific literature, Kellyanne was able to prove she had discovered a new species.

The parasite has been named *Notocotylus malhamensis* and preserved type specimens are housed at the University and the Natural History Museum in London. Its DNA has also been stored on international databases.

Professor Geoff Hide of the School of Environment & Life Sciences said: "We have recorded knowledge of around one million species on the planet, but there are probably nine million more in existence. Kellyanne's discovery shows that it is possible to discover a new species in our local environment, despite our detailed knowledge of its biodiversity.

"This is a unique experience for Kellyanne – very few biologists can claim to have discovered a new species in their careers!"

Kellyanne said: "I was really excited when I discovered that I had found a new species. It's amazing to think that my PhD has added a new species to our catalogue of the natural world and that my name will be associated with it in future scientific literature."



*Notocotylus malhamensis*

## Arts news

# Lecturer wins international poetry competition

**English professor Antony Rowland has triumphed in a major poetry competition, which attracted over 1,500 entries, to snatch a £10,000 prize.**

Antony's portfolio of four poems won the Manchester Poetry Competition – a biennial event sponsored by Poet Laureate Carol Ann Duffy and organised by Manchester Metropolitan University for an international audience. Judges Ian Duhig, Frances Leviston and Adam O'Riordan selected a shortlist of six poets from the 1,500 entrants before

announcing Antony as the final winner at a gala event in Manchester on Friday 19 October.

Announcing the winner, chair of judges Adam O'Riordan said: "In the end, the selection of the winner felt very clear and natural and unanimous. We admired the dynamic intense musicality of the winning poems, the poet's evident relish for the vocabulary they were employing, how well the tone was controlled, and the ease with which the poems moved between the contemporary and the historical."



# Fashion students' designs hit the high street

**Two graduates from the School of Art & Design will see their fashion designs and photography in clothing stores nationwide after scooping both first prizes in a prestigious fashion industry competition.**

Natalie O'Hare, who graduated with a BA (Hons) in Fashion Design, won the design award of the fourth Warehouse Design Competition, while BA (Hons) Fashion Image Making and Styling graduate Rachel Hannaway was chosen as winner of the photography category. Organised by clothing label Warehouse and the British Fashion Council (BFC), the competition was open to students from the 34 institutions across the UK which are members of the BFC's Colleges Council, who were invited to submit their graduation year portfolios.

A judging panel, including representatives from Warehouse, the BFC and Grazia magazine, chose the winners for their impressive design ability and creativity, and Natalie and Rachel joined Warehouse for a six-month paid design placement. Natalie will then see designs from her collection produced and sold in selected Warehouse stores across the UK, while Rachel will be responsible for photography for the collection's campaign.

Image: Natalie O'Hare and Rachel Hannaway





# Peter Kay launches new comedy course

**One of Salford's most famous graduates, Peter Kay, returned to the University in October to launch its new dedicated comedy course for budding writers and performers.**

Household name Peter Kay first discovered a talent for stand-up comedy back in the 1990s when he studied for an HND in Media Performance at Salford. Since winning the North West Comedy Award in 1996, he has gone on to achieve huge popularity with *That Peter Kay Thing*, *Phoenix Nights*, *Max and Paddy's Road to Nowhere* and has sold out national stand-up tours.

Peter was at the University's MediaCityUK campus to launch its new comedy pathways course for performance students who want to develop their skills in sketch writing, physical comedy and clowning, sitcom and stand-up while investigating the roots of what makes people laugh, the business of a career in comedy and the cultural importance of the art form.



## Commercial news

# University and Key103 launch crisis and media training courses

**Salford Professional Development (SPD) and Manchester's No. 1 commercial radio station – Key103 – have formed a partnership to deliver expert media training at the University's MediaCityUK campus and Key103's studios.**

SPD, a wholly-owned subsidiary of the University, is working with Key103 to offer bespoke crisis PR and media training to meet the needs of individual organisations. The courses will be delivered by Key103's award-winning journalists who are also trained professionals in reputation management and crisis PR. They will provide expert guidance, practical solutions and presentation skills so that organisations can shine in the glare of media attention and stay calm under pressure.

SPD has already helped hundreds of people keep up with the changing demands of the workplace with its continuing professional development programmes that draw upon over 100 years of educational excellence.

Key103 is a market leader in commercial radio, part of the Bauer Media Group, whose portfolio of brands includes 42 radio stations in the UK's largest cities, TV stations including Heat, Box, Kerrang! and magazines such as *Heat*, *Closer* and *Grazia*.



## The need for research into the pest industry sparks KTP

**Today's pest management industry in the UK is changing. Traditional divisions are disappearing. The services once offered by local authorities are increasingly shifting to the private sector and the role of local authorities may one day be restricted to serving enforcement notices.**

As a result, it is becoming ever more essential that research is carried out into how this will affect the provision of those services which protect public health and housing, as well as prevent inner city areas from becoming degraded.

The National Pest Advisory Panel (NPAP) of the Chartered Institute of Environmental Health (CIEH) believes that many of today's changes in urban pest management will have an adverse effect on public health unless they are recognised and ministers introduce or encourage measures to minimise them. This concern was set out in the CIEH publication *The Perfect Storm*.

The body of evidence-based research is growing but needs to be interpreted and presented in an accessible form. To address this, Killgerm Group formed a KTP with the University. Knowledge Transfer Partnerships (KTPs) are joint projects

between companies and universities who work together to carry out research and, at the same time, transfer their knowledge and expertise to each other. Joanne Fozzard, who has an honours degree in environmental health from Salford, is employed by the university but works with Killgerm. The aim of this particular project is to ensure that research capacity is embedded into the work of the company and that the evidence-based information generated presents a clear case to local and central government departments and agencies about the need for sound public health pest management.

Killgerm's strategic KTP aim is to develop the collection of better data and present it in a way which can be used to bring about changes in the provision of public and environmental health. This will allow Killgerm to lead in this area, gain recognition and raise the profile of the pest industry, not just in the UK but also within Europe. Working in a commercial

environment with a company such as Killgerm provided Joanne with a unique opportunity to carry out her research. Killgerm is looking to strengthen its future management team and views this KTP as an excellent way of introducing new expertise in the areas of research and development in the promotion of the public health pest control industry.

For more information about the University's leading KTP programme, visit: [www.salford.ac.uk/ktp](http://www.salford.ac.uk/ktp)



# Energy news

Stay up to date with the Energy at: [www.salford.ac.uk/energy](http://www.salford.ac.uk/energy)

## Government minister opens leading European research lab

Business and Enterprise Minister Michael Fallon opened Europe's most advanced facility for creating energy efficient glass. Mr Fallon met with leaders of businesses working on low carbon technology during a visit to the University in October.

Mr Fallon, who is also the Minister for the low carbon economy and construction, officially opened the University's new Wolfson Chemical Vapour Deposition (CVD) Laboratory, which has been funded by a £250,000 Wolfson Foundation Grant from the Royal Society. The new labs will allow research and product development for depositing thin coatings onto glass that reduce heat loss from windows.



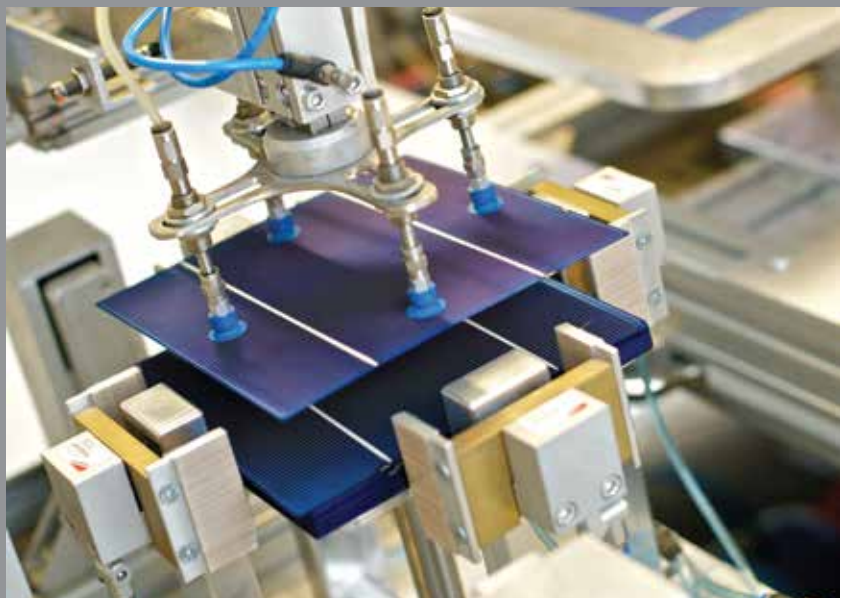
Michael Fallon, Minister for Business and Enterprise visits the Wolfson CVD Laboratory

# New solar power research facility produces first panel

**Clean energy businesses in the North West are set to receive a major boost as the University opened a new £400k research facility for solar power.**

Offering free consultancy and R&D based on the University's expertise in the energy sector, the new facility will give businesses in the region a space where they can test new designs, configurations and installation methods for solar cells.

The Salford-based site is fully equipped with industry-standard production machinery imported from Italy, and is staffed by experienced academics and technicians. While it is capable of turning out a production line of panels, the University believes that it can be most effectively used in the same manner as the Salford Energy House, where a rebuilt terraced property has been installed inside a climate-controlled lab and is used by businesses to test the latest in energy-efficient technology. For example, charity Solar Aid is working with Salford to provide solar lamps to help children in remote African communities study at night.



# Health news

For the latest news, visit: [www.salford.ac.uk/chsc](http://www.salford.ac.uk/chsc)

## Award for nurse's contribution to organ donation

**A postgraduate student who works as a transplant co-ordinator was voted Best Nurse 2013 by British Malayali (a group for South Indians living in the UK).**

Agimol Pradeep works at Central Manchester University Hospitals NHS Foundation Trust in the Renal Transplant Unit where she regularly witnesses the shortage of organs donated by people of South Asian descent. National figures show that South Asians wait three times longer than white people for a kidney transplant due to the difficulties in finding a successful match.

Agimol's PhD project aims to tackle the problem by exploring the views of South Asian people to understand why they are reluctant to become donors. She is working with community and religious leaders, GPs and intensive care units to implement strategies to increase donation, educating Asian people about the benefits of organ donation and joining the donor register.

For more information go to: [www.southasianorgandonor.org.uk](http://www.southasianorgandonor.org.uk) and [www.facebook.com/southasianorgandonor](http://www.facebook.com/southasianorgandonor)



## Boxing champion tests fitness at Salford

**Professional boxer Scott Quigg spent a day at our Human Performance Laboratory, testing his strength and fitness in the run-up to his world title match in November.**

Undefeated British champion Quigg, 24, from Bury, has been training for a rematch against Rendall Munroe for the interim WBA world super-bantamweight title. He was at Salford with his coach to undergo a series of strength and conditioning tests.

The Human Performance Laboratory is one of the best in the country with an extensive range of biomechanical and physiological equipment. It is regularly used by professional sports clubs, including Salford City Reds and Sale Sharks.

Senior Lecturer in Health and Exercise, Paul Sindall, said: "We carried out a range of tests which showed that Scott Quigg's fitness is higher than most boxers and on a par with elite endurance athletes." Quigg was recently named Young Boxer of the Year.

## Acute illness nursing course first of its kind

**Care of acutely ill patients being taught across Europe.**

The early recognition of an acute deterioration in patients is crucial if they are to receive the best quality care and timely admission to critical care areas. The award from the European Commission's Lifelong Learning Programme will be used to provide student nurses with the knowledge, skills and experience to recognise and respond appropriately when a patient's vital signs indicate that they are becoming acutely unwell.

Students from partner universities in Finland, Germany, Spain, Cyprus, Slovakia and Winona in the USA attended the course, and each country's academics will participate in teaching on the course as it moves around Europe on an annual basis.

The programme engages Greater Manchester Critical Care Skills Institute to teach the management of acute illness, North West Ambulance Service for an exploration of the emergency services and the RAF for the treatment of military personnel in conflict zones.

Students participated in clinical scenarios in the University's hi-tech Simulation Laboratory, which contains computer-controlled mannequins in a hospital ward environment. The simulation of human patients means that students can develop their skills in a realistic environment before coming into contact with real people.

They also examined pertinent issues such as the use of physical or chemical restraining methods in rapidly deteriorating patients.



# International news & awards

## Salford and RICS join forces to launch Indian school

**The University has signed an agreement to support research, course development and student exchanges with the newly established Royal Institution of Chartered Surveyors' (RICS) School of the Built Environment, Amity University in India.**

Under the memorandum of understanding signed by RICS, Amity University and Salford, the University will bring its world-leading expertise in the construction and built environment to India alongside RICS in a venture which is the first of its kind.

The new school will be part of Amity University and will be based at its campus in the National Capital Region of Delhi. It will teach subjects such as construction management, real estate management and quantity surveying.

Salford will contribute to a number of areas for the new school such as course development and collaborative research. There will also be opportunities to conduct student and staff exchanges between the two institutions.

Professor Mohammed Arif of the University's School of the Built Environment has led a significant initiative in India in the last five years. As part of this, Salford has conducted research and several industry outreach workshops and seminars on issues such as green construction, offsite construction and low cost housing. More recently, the School of the Built Environment has been developing and delivering continuous professional development courses in India with RICS.

With rapid economic growth in India, and an estimated spending on infrastructure to be USD 1 trillion, the country has a fast expanding construction sector and there is currently an acute skills shortage which the RICS school will go some way to addressing when it starts enrolling students in September.



## Salford work praised at Times Higher Education and Guardian awards

The University of Salford finished runner-up in the Guardian University and Times Higher Education Awards for its international work in post-war disaster recovery efforts.



### In Iraq

Salford's team, led by Professor Mustafa Alshawi of the School of the Built Environment, worked closely with the Iraqis to set up a dynamic educational, multi-disciplinary research centre – the Basra Centre for Development and Innovation (BCDI).

Using Internet-based communications, Iraqi students and academics interact, access international expertise and participate in real-time global collaboration, including live seminars. This success sparked the development of a Science and Technology Park in Basra working with global companies Arup and Lyle & Partners.

### In Sri Lanka

Following Sri Lanka's ethnic war, which ended in May 2009, communities needed to be rebuilt physically, socially and economically. The conflict had restricted the capacity of universities in the North and East of the country to undertake essential research for the reconstruction.

The Salford-led Conflict Prevention through Infrastructure Reconstruction project ([www.reconstructionforpeace.org](http://www.reconstructionforpeace.org)) brought together a creative international collaboration which improved understanding of the relationships between physical infrastructure reconstruction programmes and social cohesion among people affected by conflict, helping local stakeholders deliver conflict-sensitive reconstruction programmes.



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YOU TO GO FOR  
YOUR  
SMEAR TEST

[www.thecatthatgotthescreen.org](http://www.thecatthatgotthescreen.org)

# Campaigns in rude health thanks to social media

Using applications like Facebook and YouTube means we can provide health promotion messages with humour, rather than just relying on static posters in GPs' waiting rooms.

**T**here really are massive opportunities for increasing the public's engagement in health using social media," says Professor Paula Ormandy, from the University's School of Nursing, Midwifery & Social Work. "The University has a long history of promoting public health across the region and Ormandy, along with her colleague Professor Ben Light from the College of Arts & Social Sciences, has recently been working on awareness campaigns that have harnessed the power of social media.

Their work with Brook Manchester, a charity that provides free and confidential sexual health services and advice for young people under 25, was part of a wider campaign to help reduce Manchester's high youth pregnancy rates.

It looked to change the way they delivered health care education for young men and instead of relying on practical demonstrations to show young men how to use a condom, the campaign used a mobile phone app instead. Developed in conjunction with Brook staff and service users, it proved a huge success. "It's allowed Brook staff to deliver the information in a much more sensitive way, taking away much of the embarrassment," says Light.

The University has also been working with the Lesbian and Gay Foundation (LGF) to raise awareness about the importance of cervical screening for women in same sex relationships across the North West of England. Such women face a number of additional barriers to screening because of their sexuality, so a focused mixed media campaign was developed with the LGF around a Hollywood 'screen test' theme.

"We found the site certainly increased people's engagement," says Light, "and the LGF has since been asked to take the campaign forward on a national basis.

"Of course there are lots of digital campaigns promoting health but what's innovative about this project is that it embedded an evaluation mechanism into it so that we could constantly audit its performance, and change things if they weren't working or became tired."

The University's biggest, and current, campaign is *The Cat That Got the Screen*. Commissioned by the NHS Cervical Screening Quality Assurance Reference Centre in the North West, it aims to encourage 24-29 year olds to go for a cervical screen, and pushes the message that early detection is critical.

**What's innovative about this project is that it embedded an evaluation mechanism into it so that we could constantly audit its performance.**

The campaign was developed in collaboration with students from the School of Arts & Media, the project team and women in the campaign's target age group.

As Light explains, the ads are designed to get people talking about, and engaging with, cervical screening. It rests on the 'internet meme culture' (a concept that spreads from person to person via the internet) and engages

seriously with ideas of user-generated content and user participation.

As the campaign moves forward it will, for example, deploy short promotional videos, mash-ups of cat images (because funny cat pictures are some of the most viral and most searched for on the internet), and an app to allow users to create their own health education promotional materials – 'the Mogatron.' The campaign also uses a monitoring system called Brandwatch alongside other software such as Google Analytics to collect real-time evaluation data.

Maria Rossall-Allan, the campaign's project officer, explains: "Such an approach allows you to see who's talking about the topic you are campaigning about online and then follow up those links, to push the campaign within targeted groups."

And word has spread about the innovative nature of the projects, with extra funding now coming from Heywood, Middleton and Rochdale Primary Care Trust, to create a targeted cervical screening campaign for ethnic minority communities.

Ormandy can see many other applications for the technology and is currently working with Cristina Vasilica, a PhD student at the University, who is developing a new interactive patient hub for people with chronic kidney disease.

"Like the cervical campaigns, it places a huge emphasis on interaction, encouraging people to leave their own comments about their experience so the site actually starts to generate its own content, rather than simply relying on the words of health care professionals," she adds.

# Upcoming events

## Final Year Classical Elective Performers Recitals

Wednesday 22 May 11.00am - 1.00pm  
Peel Hall, Peel Building



Performance elective students from within the University's Music Directorate present their final recitals to an examination panel in an arena open to the public. Each programme will represent the culmination of their time here at Salford and their own personal development as performers. This free event is the climax to the Repertoire Studies and Performance Practice component of each student's academic profile and provides each performer with an open platform to demonstrate their musicianship.

## FascinatE Showcase: Immersive Broadcast Technology

Thursday 30 May from 10.15am  
MediaCityUK



FascinatE (Format-Agnostic SCript-based INterACTIVE Experience) is a €9.35m EU-funded research project to examine the technologies for producing and delivering ultra-high resolution panoramic content of live events, to offer the viewer a more interactive experience tailored to different devices. FascinatE has developed a full system to allow end users to interactively view and navigate around an ultra-high resolution video panorama with accompanying audio changing to match the selected view.

Interaction methods are tailored to the device, e.g. hand gestures for big devices and touch gestures for the smaller ones – come see it in action!

Register online at: <http://fascinate.eventbrite.co.uk>

## Research, Innovation & Enterprise Exchange, Powered by PechaKucha

Thursday 23 May 1.00pm - 2.00pm



Staff, students and the public are invited to hear from three members of the University community, speaking on a common theme related to their area of expertise. They will each give six-minute PechaKucha-style presentations (20 slides of 20 seconds each) aimed at stimulating discussion and prompting collaboration and new ideas. Networking and informal discussions will follow for the last half an hour.

The theme for May is Soundscapes.

Admission: Free – register online at: <http://uosoundexchange.eventbrite.com>

Previous presentations are online at our slideshare account at [www.slideshare.com/unisalford](http://www.slideshare.com/unisalford), or videos can be found at our new Research & Innovation Youtube channel.

## The Time and The Place Festival of the Humanities

Thursday 30 May - Friday 1 June 2013  
Kings Place London



Professor Tony Whyton, Director of the Salford Music Research Centre, is working in partnership with Serious (who run the London Jazz Festival and delivered the BT River of Music for the Cultural Olympiad) to curate a three-day festival of the humanities in London at the end of May. The event, 'The Time and The Place,' marks the end of the first Humanities in the European Research Area's Joint Research Programme and will be showcasing the work of 15-19 funded projects.

What is the connection between Bronze Age artefacts, European jazz, medieval manuscripts and photography which captures Europe's complex colonial past? And how do artists as diverse as gipsy band Budapest Bár, or saxophonist/MC/rapper Soweto Kinch, or the hauntingly beautiful Sami voice of Mari Boine fit into the picture? These seemingly disparate subjects form part of a series of concerts and creative interventions from a Europe-wide choice of artists whose music acts as a counterpoint to the themes of a wide-ranging and fascinating group of research projects that reach their conclusion this year.

Ticket prices start at £9.50 – for more details visit: <http://bit.ly/Y9Zf4g>

## Launch of Centre for Digital Business

Wednesday 5 June 5:30 - 7:30pm  
MediaCityUK Room 3.29

Join us for the official launch of the Centre for Digital Business, with guest speaker Mike Ryan, a Digital Futurist (@mikemanchester and <http://uk.linkedin.com/in/mikemanchester>)

Contact [M.griffiths@salford.ac.uk](mailto:M.griffiths@salford.ac.uk) for details or visit [www.salford.ac.uk/digital-business](http://www.salford.ac.uk/digital-business)

## Create at Salford Festival 2013

Wednesday 12 - Sunday 16 June 2013  
MediaCityUK and Salford Quays

Create at Salford Festival brings together more than 800 creative students in a number of exclusive events taking place over a five-day period at MediaCityUK and Salford Quays. The Festival will mark the launch of the new School of Arts & Media, celebrating individual and School successes, as well as showcasing why we are one of the UK's most successful higher education providers in arts and media.



Admission: Free. Full Festival programme information will be announced soon – for the latest news go to: [www.salford.ac.uk/create](http://www.salford.ac.uk/create)

**North West Brass Band Collaboration**  
Wednesday 19 June 7.30 - 9.30pm  
MediaCityUK and Salford Quays



Royal Northern College of Music Brass Band, conducted by John Miller, together with the University of Salford Brass Band, conducted by Dr Howard Evans. We are pleased to present a follow up to last year's collaboration with the Royal Northern College of Music (RNCM) here at the University of Salford. This will be the first visit to Salford by the RNCM Brass Band. This event provides a unique opportunity to hear the ensembles of both institutions come together to perform individually and as a massed ensemble. The concert will draw upon their respective archival material, featuring some of the early brass band arrangements and transcriptions and putting this into a contemporary context.

Admission: Free. For more information email Duncan Winfield [d.winfield@salford.ac.uk](mailto:d.winfield@salford.ac.uk)

**Research, Innovation & Enterprise Exchange, Powered by PechaKucha**  
Thursday 20 June 1.00 - 2.00pm  
MediaCityUK, Egg Suite

The theme for June is Dementia Design

Admission: free – register online at: <http://uosdementiadesignexchange.eventbrite.co.uk>

### **Undergraduate Open Day**

Friday 28 - Saturday 29 June  
10.00am - 4.00pm  
Maxwell Building, Allerton Building and MediaCityUK

Come along to our university-wide open days to learn more about the opportunities on offer at Salford.

You will learn about the courses we have on offer, view our specialist facilities and meet the tutors from your subject area of interest. You can take a tour of the campus, accommodation and our brand new facilities at MediaCityUK, as well as attend a variety of talks. Parking is available at the Irwell Place car park.

### **Digital Economy (DE) 2013: Open Digital**

Wednesday 6 November 2013  
MediaCityUK, Salford



An event which brings together innovative thinkers and researchers to share ideas about how to transform society through the design and deployment of information and communications technologies. The two-and-a-half-day event will feature keynote, themed sessions, paper presentations, workshops and technology demonstrators.

Submissions are welcome from anyone in the research or industrial community whether funded by the RCUK Digital Economy theme or not; doctoral student submissions are particularly welcome.

Visit: [www.de2013.org](http://www.de2013.org)

.....  
**These events are open to the general public but are subject to change. Check [www.salford.ac.uk/events](http://www.salford.ac.uk/events) for a comprehensive list of all events held in association with the university, including conferences.**

## The Editorial Board of Perspectives magazine comprises:

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Head, School of Nursing, Midwifery & Social Work

**In addition, a huge thank you to all the colleagues – not already mentioned above – who suggested stories or submitted their work and engaged with writers to get their stories told, as well as any others we may have missed.**

Prof Chris Birkbeck

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John Croakley

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Dr John Eccles

Dr Brian Grimsditch

Dr Ben Halligan

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Plus others who submitted their own images, which were credited where possible.

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