



# SHEFFIELD ROBOTICS



## RAM2016 Workshop

Inviting key strategic thinkers and innovators in the Mining, Robotics and Autonomous Systems Sectors to: form collaborative networks and identify key future research strategies for Robotics and Autonomous Systems (R&AS) in Mining.

**Date:** March 2nd 2016

**Venue:** Millennium Gallery,  
Arundel Gate, Sheffield, S1  
2PP ([view on google maps](#))

**Time:** 9.00am - 16.45pm  
(with lunch)

**Registration:**  
[ram2016.eventbrite.com](http://ram2016.eventbrite.com)

Sheffield Robotics is pleased to announce a highly collaborative, hands-on workshop involving global players in the development of R&AS to solve major Mining Sector challenges.

The aim is to formulate a R&AS research strategy involving all stakeholders. Jointly prioritising key areas crucial to optimising impact from R&AS, supporting the Mining Sector to reach its full potential economically, productively and increasing safety and sustainability.

### Attending this event will help you;

- Understand priority needs within the Mining Industry and their use of technology.
- Learn about the latest developments in R&AS Research. (Speakers and poster exhibition).
- Meet with key stakeholders across the sectors; identifying shared interests and shared benefits.
- Work collaboratively across the Mining and Research Sectors and influence the research agenda.
- Ensure that the R&AS research agenda includes critical areas to achieve the step changes companies require.
- Join a consortium, form networks and new partnerships to develop research projects around Mining Sector challenges, exploiting R&AS systems.
- Access resources such as funding and research support structures.
- Shape, prioritise and get involved in R&AS for mining research.

**This one day event will progress the groundwork established by recent initiatives both globally and within Europe, such as SPARC, to become part of and shape the implementation of key strategic plans - <http://sparc-robotics.eu/roadmap/>**

**Morning session** - keynote speakers defining current achievements, aspirations and funding opportunities. Followed by facilitated group working sessions, focusing on research and innovation mapping/planning.

**Afternoon session** - dedicated entirely to exploring the challenges and opportunities for R&AS in mining, ensuring your organisation achieves the tough safety, production and profit targets necessitated by current minerals and metals markets and longer term visions for global performance, by applying R&AS.

**Networking** – make links within the Sector to progress quick-win projects, access services or research activities to suit your needs.

R&AS Researchers from across the globe and our Organisational Innovation experts will be on-hand throughout the day to answer any questions.

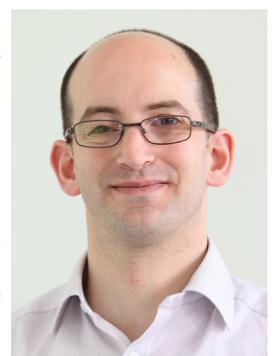
## The lead workshop facilitators at this event are:

**Dr Kamal Birdi** brings over 20 years' experience of working with industry, training hundreds of people from a wide variety of private, public and third sector organisations\* in defining opportunities for innovation, generating more creative ideas and co-creating strategies for practical implementation of novel solutions. He developed the CLEAR IDEAS model in 2005 as a research-based vehicle for improving organisational innovation and won the British Psychological Society's DOP Academic Contribution to Practice Award in 2010 for his efforts to improve organisational processes. He is a Chartered Occupational Psychologist and a Senior Lecturer at The University of Sheffield.

*\*Rolls-Royce, Tetra Pak, BOC Ltd, the BBC, NHS, WWF, SEAMS Ltd, Thames Water, Yorkshire Water, Sellafield Ltd, Sightsavers International, Health and Safety Executive (HSE), Department of Business, Innovation and Skills (BIS)*



**Professor Tony Dodd** is Professor of Autonomous Systems Engineering in the Department of Automatic Control and Systems Engineering, University of Sheffield. As a member of Sheffield Robotics he works extensively on autonomous systems with an emphasis on applications to condition monitoring, inspection, surveillance and manufacturing. He is currently involved in three major EPSRC grants on condition monitoring for railways (NEWTON) and buried infrastructure (Assessing the Underworld and TWENTY 65). He previously led the EPSRC Cargo Screening Ferret project developing new techniques for inspecting cargo containers in ports. He also receives funding from Innovate UK, MoD ASUR programme, DEFRA and EU in the area of autonomous systems. He is the Deputy Director of the Rolls-Royce University Technology Centre in Control and Monitoring Systems and a founding member of Sheffield Robotics..



**Event Organisation** - This workshop is organised by Sheffield Robotics and the STFC Boulby Underground Laboratory and is funded by EPSRC. Sheffield Robotics is a leading interdisciplinary research institute with more than 100 researchers in the area of Robotics and Autonomous Systems. Working across both universities in Sheffield, one of their core research interests is working in remote or hazardous environments. STFC Boulby Underground Laboratory is the UK's deep underground science facility operating in a working Potash mine in the North East of the UK. Funded by STFC and supported by the Boulby mine operators ICL-UK. The Boulby lab hosts a range of research studies from astrophysics to astrobiology, including robotics development for space exploration and mining.

# Programme

(Keynote Speakers: David Bisset, Joy Global, Camborne School of Mines and more.)

| Time         | Topic  | Delivered By                                     |
|--------------|--|--|
| <b>9.00</b>  | <b>Arrival and Coffee - Poster Exhibition</b>  |  |
| 9.30         | Welcome & overview of the day  | Professor Mike Hounslow & Professor Tony Dodd    |
| 9.45         | Review of mining around the world/introduction to the future of mining.  | Camborne School of Mines                         |
| 10.05        | An overview of the opportunity for R&AS in Mining SPARC and European Robotics - David Bisset (involved in creating the new Strategic REsearch Agenda (SRA) and <b>Multi-Annual Roadmap (MAR)</b> December 2015.    | David Bisset, SPARC                              |
| 10.20        | Robotics in Mining, European Vision for deep mines.  | Professor Juha Röning                            |
| 10.45        | The state of the art (Case study) – current achievements in R&AS applications and current/future operational challenges - International Mining Company.  | t.b.c  |
| <b>11.05</b> | <b>Coffee - Poster Exhibition</b>  |  |
| 11.25        | Learning from other industries – academics and companies who co-created research presenting potentially transferrable applications of Robotics and Autonomous Systems (R&AS).                                      | Sheffield Robotics and other UK R&AS researchers |
| 11.45        | R&AS research and facilities at Boulby Underground Laboratory and Boulby Mine, UK.   | Professor Sean Paling, STFC                      |
| 11.55        | Recent achievements developing R&AS equipment for mining. Plus outlining the mining sector supplier's appetite to grow their global position by applying R&AS solutions to the technology they create and provide. | Joy Global                                       |
| 12.10        | Brief on the types of research funding opportunities currently available – including the alliance which should be built between H2020/ICT area and H2020 in SC area.   | Dr Vanessa Speight                               |
| 12.20        | R&AS Research priorities scoping - Road map for Mining- What next – Introducing the tasks for today's workshop   | Professor Tony Dodd                              |
| 12.25        | Working in facilitated small groups on, 'What are the most important problems facing the mining sector over the next 50 years that requires new research to solve them?'   | Dr Kamal Birdi                                   |
| <b>13.15</b> | <b>Lunch (opportunity to network and view Poster Exhibition)</b>   |  |
| 13.55        | Group working continues, ranking and prioritising themes   | Dr Kamal Birdi                                   |
| <b>14.45</b> | <b>Coffee - Poster Exhibition</b>  |  |
| 15.05        | Opportunity to work collaboratively on your priority theme (multiple theme groups)   | Dr Kamal Birdi facilitating                      |
| 15.45        | Theme Groups report back and vote on priorities  | All  |
| <b>16.15</b> | <b>Wrap up / going forward</b>   | <b>Professor Tony Dodd</b>                       |

*Visits to Boulby mine and the STFC Underground Science Facility are possible for those interested and can be arranged independently from this workshop. For details please email [boulby@stfc.ac.uk](mailto:boulby@stfc.ac.uk)*

## Who is it for?

People from all nations, companies and universities, interested in achieving step change within the Mining Sector and meeting company targets: Mine and Quarry Owners/Managers, Operations Directors/Research and Innovation Leads, Suppliers to the Mining Sector, including companies new to this market and entrepreneurs (with a view to increasing awareness of what is possible), Researchers in Robotics and Autonomous Systems.

## Registration

Places are subsidised by the UK's EPSRC, therefore there is no attendance fee, however places are limited so please book early.

Please register by visiting [ram2016.eventbrite.com](http://ram2016.eventbrite.com).

## Travel & Accommodation

The venue is visible from Sheffield's Train station and is 5 minutes walk (one block), After leaving the station, cross the road and walk straight up Howard Street, passing Sheffield Hallam University and entering the Millenium Gallery from Arundel Gate.

Discount train tickets for people starting their journey from or travelling via London are [available here\\*](#)

*\*Reservations must be made prior to the 18th February. Please note that these rates only apply to East Midlands Train routes, restrictions do apply (detailed online) and there is a deadline for when overseas and UK tickets must be booked by – as we have to physically post the tickets.*

Parking: Q Parks (50% discount vouchers available on registration) 73 Charles St, St Paul's, Sheffield, S1 2NJ access off Arundel Gate just by the Roebuck Pub.

## Accommodation

Conference rate accommodation available nearby, please [click here](#) for details.

## Enquiries

For further information, please contact Charlotte Swain (Partnership Development, Sheffield Robotics) Email: [charlotte.swain@sheffield.ac.uk](mailto:charlotte.swain@sheffield.ac.uk)



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