

09.30 **WELCOME:** Ian Bush, Conference Chairman & Director, BIM, Black & Veatch

The role of geospatial technology and services in the digital world

09.35 - 11.30 Facilitator: Andrew Coote, Chief Executive, ConsultingWhere Ltd

KEYNOTE

Smart cities, BIM, drones, AI, 3D printing, off-site construction.
What can the industry expect from the future and how can it prepare to face it?

Tom Cheesewright, Applied Futurist

PANEL DEBATE

Emerging technology and applications - how to maximise the societal benefits of what we do

Digital transformation is appearing as necessary strategy in both public and private sector businesses. At its heart is enabling new types of innovation and creativity in a particular domain. So if transformation is more to do with mindset and culture than technology, what does geospatial bring to the party? Also after many decades of seeking to solve the problem of lack of data, businesses are now drowning in it. How can geospatial technology and systems best help them 'mine' actionable knowledge? How will this impact the role of the National mapping agencies in the era of real time, high resolution data, from autonomous cars and satellites?



The changing delivery of geospatial information to the mass consumer.
The next stage and evolution of the Google platform

Ed Parsons, Geospatial Technologist, Google

Ed Parsons is the geospatial technologist of Google, with responsibility for evangelising Google's mission to organise the world's information using geography. In this role he maintains links with universities, research and standards organisations which are involved in the development of geospatial technology. He is currently co-chair of the W3C/OGC Spatial Data on the Web Working Group.



Digital transformation and the impact on future infrastructure

Prof Gianvito Lanzolla, Head of the Faculty of Management & Professor of Strategic Leadership, Cass Business School

Professor Lanzolla's research is around competitive advantage, and its persistence, in rapidly changing technological and institutional environments. Specifically, he has focused on value capturing from digital transformation, first mover advantage and business model scalability. His articles have appeared in leading journals and he has been widely featured in the business media.



3 words to help Building Information Modelling

Gary Gale, Chief Technology Officer, What3Words

The construction industry has seen an explosion in the volume of available data, bringing great benefits, but also many challenges – one is the accuracy and source of location data. This talk will describe What3Words location reference solution that uses 3 words to uniquely identify any 3x3 metre square on the planet and look at its application to BIM.

11.30 Tea and Coffee Break

GEO INNOVATION: How advanced geomatic solutions are being applied in the workplace

Session Chair: Derry Long, Business Development Manager, MBS Survey Software

12.00

Innovative, efficient and value driven geospatial solutions at the forefront of the UK's largest infrastructure projects



Matt Blackwell, Digital Operations Director, Costain

Providing innovative engineering and technology-enabled solutions working on some of the UK's largest infrastructure projects, including Thames Tideway, London Bridge Station Redevelopment, Crossrail and contracts for Highways England and TfL. With GIS, laser scanning, 360 videos, UAVs and mobile technology, Costain demonstrate how innovative solutions are being implemented to solve significant construction industry challenges.

12.25

Ordnance Survey Geovation Hub - One Year On

Alex Wrottesley, Geovation Hub Manager, Geovation



In a move to energise innovation in the UK geospatial industry, Ordnance Survey opened the London-based Geospatial Innovation Hub in May 2015. It is now home to a multifunctional team of entrepreneurial thinkers drawn from OS's own talent pool and the broader geospatial industry, as well as those new to the industry that have been selected from developer, new media space and creative and design communities. When launched the idea was for OS to assemble a range of skills that when applied to the process of innovation would complement and push each other towards achieving the goal of step change in geospatial products and services.

12.50

Geoscape - Capturing Australia's Built Environment

Dan Paull, PSMA Australia



Geoscape is a new initiative for Australia that will capture the observed built environment for the entire continent and anchor it in a reliable geospatial base. 3D city models have been developed for a number of Australian cities, providing very high quality detail but for very small geographic areas. The dataset includes 3D building attributes, land cover, tree heights, and elevation as well as roof materials, swimming pools and solar panels. Geoscape will link together numerous attributes to build up a greater understanding of what exists at every address in Australia - buildings, building attributes and landcover. The first capture phase for the Adelaide region covers some 16,000 square kilometres and includes a mix of urban, peri-urban and rural areas. The availability of Geoscape is an exciting milestone supporting Australia's digital economy.

GEO ECONOMICS: Geospatial data - essential element of economic development and good governance

Session Chair: James Kavanagh, Director Land Group, Royal Institution of Chartered Surveyors

14.15

Driving efficiencies with streamlined workflows through all phases of major infrastructure projects

ARUP

Ellis Blackmore, Digital Specialist, Ove Arup & Partners

Geospatial information is an inherent element of civil engineering and on large scale infrastructure projects streamlined workflows are key to time and cost savings. Traditional methods of data capture, processing and visualisation are time consuming and resource intensive. Using examples from the rail and highways industries, this talk will outline innovative methods which increase efficiencies and maximise value throughout scoping, indicative and detailed design through to construction.

14.40

Interoperability in surveying

kadaster



Ron Bloksma, Information Consultant, Dutch Land Registry (Kadaster)

Interoperability is essential to SDI's (Spatial Data Infrastructures), in exchanging and using geo-information between and within organisations. The world of surveying can still be restricted in solutions and datasets being provided from a single software package or a single software reseller. The Dutch Land Registry (Kadaster) employs it's own surveyors and is bound to E.E.C. agreements regulating the competition for the provision of individual contracts for software, IT-hardware and surveying equipment and therefore want an interoperable solution in which they can use standard tablets independent of chosen surveying equipment and field data collection and geo-processing software. Learn more about their search for a solution, their specific requirements and the direction they have chosen.

15.05

Mapsearch allowing customers better access to map data with significant financial benefits to Land Registry

Land Registry



Local Land Charges

John Taylor, Product Owner - MapSearch, Land Registry

Land Registry have launched MapSearch, a free to use digital service allowing customers self-service access to an online web mapping tool. It allows the user to quickly establish whether land and property in England or Wales is registered, view the location and obtain title numbers, details of freehold or leasehold tenures. Compared with the traditional method of obtaining this information via the Search of the Index Map (SIM) this new method has been a huge success for customers: 95% of customers surveyed said that it was easy to use, intuitive and saved them time. The benefits to Land Registry have been significant: with over 4 million enquiries in 2015/16. MapSearch now receives 10 times more enquiries on average per day compared with SIMs when the project started. A £4.5 million total saving in staff costs by redeploying 60 staff into other key operational areas; 65% reduction in SIMS received from over 600,000 to 277,000 in 2015/16 and with a return on investment achieved one year ahead of schedule.

15.30

Tea and Coffee Break

GEO SUSTAINABILITY: The impact on infrastructure and the environment

Session Chair: Steven Eglinton, Director, GeoEnable & AGI Representative

16.00

Innovative solutions and creative engineering at the forefront of flood risk management

Environment Agency

Kate Marks, Deputy Director, Mapping and Modelling, Environment Agency

Utilisation of Innovative geospatial mapping tools and solutions are central to the management of flood risk including analysing the impact on infrastructure, handling the emergency response, inspection of asset damage and repair and planning for the future.

16.25

GIS in the delivery of HS2's EIA

hs engine for growth

Mike White, Environment GIS Manager, Technical Directorate, HS2 Ltd

The Environmental Impact Assessment for Phase One of High Speed Two was the biggest EIA delivered in the UK. This presentation focuses on how GIS was integral to its successful delivery and how the data was used for other purposes. It aims to highlight best practice and share lessons learned on how to capture, manage and disseminate data across a major infrastructure project's supply chain.

16.50

Open Source based SDI for sustainable agri-environmental management

ENVITIA

Stefano Cavazzi, Geospatial Intelligence Consultant, Envitia

The Rural Payment Wales (RPW) system demonstrates how policy makers can support a thriving farming sector. Ensuring sustainable agricultural practices, avoiding environmentally harmful activities and how the geospatial technologies and information used, enabled policy makers to provide incentives for environmental beneficial public goods and services. Hear about the experiences gained from the development of the open source based SDI for the Welsh Government, including an appraisal of its successes and challenges and how successful sustainable land management is strengthened by the use of geospatial technologies and information. The next step must be the integration with other domain SDI (water management, housing, energy, etc.) in national and international federated SDIs allowing to solve the complexity of sustainable development at a global scale.

17.15

Chairman's Closing Remarks

09.30

WELCOME: Ian Bush, Conference Chairman & Director, BIM, Black & Veatch

The impact of large infrastructure on UK PLC:
The opportunity facing the geospatial sector to leverage new tools and new skills to deliver better outcomes for clients

Sponsored by



09.35 – 11.30

Facilitator: Antony Oliver, Editorial Consultant and Infrastructure Specialist

KEYNOTE

Infrastructure delivery - The state of the industry



Amanda Clack FRICS, President Elect at Royal Institution of Chartered Surveyors & Partner EY

Large infrastructure projects have a number of potential ingredients for major headaches: large scales, complexity, long timeframes, multiple stakeholders, complicated private and/or public financing and essential specialists. In addition, proponents of the projects often oversell the benefits and undersell the costs and time required for the project. Risk management should be emphasized, but often finds itself lower on the list of priorities. This keynote will examine how the industry moves towards better project performance and will highlight how the integration of geospatial information and the use of data will become increasingly essential for infrastructure delivery.

PANEL DEBATE

How will the geospatial sector embrace the opportunity presented by the UK's commitment to invest in large infrastructure projects?



Amanda Clack FRICS, President Elect at Royal Institution of Chartered Surveyors & Partner EY

Alex Bywaters, Head of BIM for Highways England

Peter Vale, Engineering Information Manager, Tideway

HS2 Speaker invited



Tideway



Across all industry sectors the use of digital technology, business intelligence and big data and predictive data analytics is becoming the norm when it comes to driving forward efficiency and boosting decision making ability across the lifecycle of large infrastructure.

In the geospatial sector, inevitably the focus continues to move towards leveraging the opportunities from better data management and driving value from the interface between the digital models and the physical assets on the ground. Success will flow from finding the new skills and tools to leverage the longer term value from the significant investments being made to digitally model the real world during construction and across the asset lifecycle. Experience from past projects demonstrates the critical value of engagement with the project supply chain early and deep to exchange ideas and promote the vital innovative thinking needed to deliver a world class customer experience. The discussion will focus on critical issue facing the sector.

11.30

Tea and Coffee Break

GEO INFRASTRUCTURE: Cutting edge innovation and infrastructure

Session Chair: Chris Preston, Senior Survey Engineer, Network Rail

12.00

Virtualising Infrastructure



Ioannis Brilakis, Director, Construction Information Technology Laboratory, University of Cambridge
and **Laing O'Rourke** Lecturer in Construction Engineering

Vertical and horizontal infrastructure is comprised of large assets that need sizeable budgets to design, construct and operate/maintain. Cost reductions throughout their lifecycle can generate significant savings. Creating and maintaining an up-to-date electronic record of these assets in the form of rich Bridge Information Models (BIM) can help generate cost-saving improvements. New research is being conducted at the University of Cambridge on inexpensive methods for generating object-oriented infrastructure geometry, detecting and mapping visible defects on the resulting BIM, automatically extracting defect spatial measurements, and sensor and sensor data modelling.

12.25

Infrastructure Today! Business as usual – but where will we be tomorrow?



Mark Lawton, Chief Engineering Surveyor, Skanska

The UK's construction industry is already incorporating the use of cutting edge geospatial technologies that up until recently may still have been viewed as innovative experimental technologies. With this rapid pace of development and adoption, Mark Lawton looks at how far we have come in the past thirty years and provides some insight as to what the future requirements will be. How will our industry continue to adapt to meet these needs and how are we going to be able to benefit UK PLC.

12.50

Innovative Wireless real-time remote conditioning monitoring on the Great Western Main Line Electrification Programme



Paul Clarke, Technical Director, Europe, Civil & Infrastructure, Geophysics & Monitoring, AECOM

Simon Maddison, Chief Operating Officer, Senceive



AECOM's multidisciplinary Rail Asset Management and Tunnelling Teams established a detailed ground and deformation model of Brunel's iconic 3km long Box Tunnel in order to develop an innovative wireless monitoring regime as part of the Great Western Main Line electrification. During a six week track lower and closure of the line, AECOM worked within an integrated team alongside the Contractor and Network Rail. The result was real-time remote condition monitoring in order to verify predicted structural behaviour, mitigate risks of structural instability, and optimise safe construction methodologies and productivity as works passed through different sections of the tunnel.

GEO INNOVATION: Pioneering developments in Geospatial technology

Session Chair: David Henderson, Director of Products & Innovation at Ordnance Survey

14.00 Next Generation BIM: New Tools and Services to Validate Construction Accuracy

Plowman Craven Michael Johnson, Senior BIM Consultant, Plowman Craven
Kevin Williams, Chief Scientist, ClearEdge3D



Larger construction projects in the UK and beyond are increasingly using a PAS1192-specified BIM which demands LOD500 or an 'as built model' of the completed facility. As such, the use of laser scanning in construction is about to explode. This gives Virtual Design Construction (VDC) and BIM managers a great new data tool to validate the accuracy of recently completed work against the design model. Plowman Craven will showcase new hardware and software tools to help them identify out-of-tolerance or poorly constructed work during the construction process. This new workflow has the potential to change the way construction projects large and small are executed, saving the industry millions of pounds on mistakes, change orders, and costly reworks.

14.25 The use of GIS as a platform to allow Highways England to access information and make better decisions



Alex Bywaters, Head of BIM for Highways England

The use of GIS as a platform to allow access to a vast amount of information both within Highways England but also accessing open source information. A 'live' environment which will be able to use GIS to view the network in terms of performance; design standards (how many departures were granted in the particular section); congestion (real-time traffic information); safety (Accident Statistics). In addition other information can be linked such as air quality management areas, land ownership, traffic regulations orders, noise sensitive areas, history of incidents etc. An extremely powerful medium that will allow Highways England to access information to make better decisions.

14.50 Case study demonstrating a new mobile mapping train-borne survey system that provides absolute track position and rail geometry



Rollo Rigby, Associate Director, Severn Partnership

The introduction of a new train-borne survey system named RILA, is providing survey grade absolute track position and rail geometry using a train mounted system that is deployed at line speed and removes the need for surveyors to enter the track for the purposes of surveying. Severn Partnership working in joint venture with Fugro RailData are successfully delivering the 2016 survey contract for High Output in Scotland, and more recently have been awarded Route Sections 8, 9 and 10 of the Great Western Route Modernisation Programme. Severn Partnership examines how the system performs in relation to accepted standards, how traditional methods can be updated to exploit the data available and the impact mobile mapping has on key safety, quality and productivity metrics.

15.15 Photogrammetry surveying for the architecture, engineering and construction industry - Making point cloud magic from UAVs and photos



Mike Turpin, Head of BIM, Capita Property and Infrastructure

Surveying for the AEC industry, what do we need, how much is too much, can we use new tech to improve the process? This presentation will discuss a real life case study of how standard digital photos were collected by a UAV drone to generate a pointcloud comparable to any laser scanner. See how the resulting point cloud can be used to enhance your 3D design modelling. By using photogrammetry, this project was quicker, safer, more accurate and with less cost than before. The presentation will run you through the practical uses of photogrammetry on a real life project including live demonstrations of some of the processes involved.

15.40 Comparing properties and quality of data from linear LIDAR and from Geiger-mode LIDAR



Andreas Ullrich, CTO, RIEGL Laser Measurement Systems

LiDAR technology is constantly evolving. In more than 20 years since laser scanners acquiring 3D data many evolutionary and revolutionary steps have taken place. More recently LIDAR manufacturers have managed to unleash airborne laser scanners solving an ambiguity issue when measuring fast over long ranges, frequently addressed as multiple pulses in the air. Geiger-mode LiDAR systems, previously employed for military applications, caused the latest stir in the commercial market by claiming higher point acquisition speeds from longer ranges compared to conventional techniques, now often referred to as 'linear LiDAR'. Fundamental differences between the two technologies make a fair comparison not an easy task. This presentation seeks to identify limitations imposed by physics on both approaches. Furthermore the differences in the resulting data products are discussed and advantages of linear LiDAR over the photon counting approach are pointed out.

16.05 Chairman's Closing Remarks