BIM for Heritage:

Stepping into the Future with the Past

Conference Abstracts

A COTAC REPORT: December 2017

Ingval Maxwell OBE

RAMBOLL

COTAC

COTAC Conference and AGM: 8 December 2017

Venue: Ramboll Office, 240 Blackfriars Road, London, SE1 8NW

BIM for Heritage: "Stepping into the Future with the Past"

Speakers Bio's + Presentation Abstracts

Sponsored by Ramboll and IHBC, the 2017 COTAC Conference will be held in the context of significant developments having occurred in the sector during 2017. Increasingly, BIM is influencing the conservation world through a more specific Historic Building Information Modelling (HBIM) approach.

The event will explore how this is being promoted through recent publications and emerging case studies to review the challenges and benefits offered from such a greater uptake of knowledge transfer and related developments.

Ingval Maxwell OBE Chair COTAC
December 2017

Welcome and Introduction by

Jeremy Foster, Project Director and Conservation Engineer, Ramboll

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COTAC, the Council on Training in Architectural Conservation
COTAC, originated in 1959 as the 'Conference on Training in Architectural Conservation' in response to the need for training resources for practitioners so they could properly specify and oversee work involved in repairing and conserving historic buildings and churches. Since its inception COTAC has successfully, persistently and influentially worked to lift standards, develop training qualifications and build networks across the UK's conservation, repair and maintenance (CRM) sector, estimated at over 40% of all construction industry activities. This has involved working partnership with national agencies, professional and standard setting bodies, educational establishments and training interests.

Ramboll
Ramboll works across the areas of Buildings, Transport, Planning and Urban Design, Water, Environment and Health, Energy, Oil and Gas, and Management Consulting. Founded in Denmark in 1945, it is a leading engineering, design and consultancy company, employing 12,300 experts and has a strong presence in the Nordics, North America, the UK, Continental Europe, Middle East and India, supplemented by a significant representation in Asia, Australia, South America and Sub-Saharan Africa.

IHBC, The Institute of Historic Building Conservation
The IHBC is the professional body for building conservation practitioners and historic environment experts working in England, Northern Ireland, Scotland and Wales, with connections to the Republic of Ireland. The Institute exists to establish, develop and maintain the highest standards of conservation practice, to support the effective protection and enhancement of the historic environment, and to promote heritage-led regeneration and access to the historic environment for all.

BIM for Heritage: "Stepping into the Future with the Past"

A COTAC Conference, Friday 8 December 2017, London

Programme

09.30	***Coffee on Arrival and Registration***
10.00 – 12.30	**Session 1: 2017: A Year of Developments!**
10.00	***Welcome and Introduction*** Jeremy Foster, Ramboll
10.10	***2D to 4D - Oh! How we have changed: A COTAC Perspective*** Ingval Maxwell, COTAC
10.40	***Historic England BIM for Heritage Guidance*** Paul Bryan, Historic England
11.10 -11.30	***Break***
11.30	***Hybrid Modelling in the BIM Process*** Carl Brookes, Ramboll
12.00	***Glasgow School of Art – Macintosh Restoration Case Study*** Marianna Partyka, Page Park
12.30 – 13.30	***Lunch and Networking***
13.30 – 15.00	**Session 2: Where Will 2018 Take Us?**
13.30	***The Practical Application of Digital Technologies in the Fields of Conservation and Asset Management*** Joann Russell, Historic Environment Scotland
14.00	***Classifying and Linking the Condition of the Asset*** Brian Johnston, Topscan
14.30	***Is there a Need for an HBIM Objects Library?*** Ingval Maxwell, COTAC
15.00 -15.30	***Break***
15.30	***The BIM4Heritage Group - Future Intentions*** Edonis Jesus, Lendlease
16.00	***Discussion***
16.30	***Close and COTAC AGM***

Benefits of attending:
BIM is influencing the conservation world through a more specific Historic Building Information Modelling (HBIM) approach. The event will explore recent publications and emerging case studies to review the challenges and benefits offered in the greater uptake of knowledge transfer and related developments.

Who will benefit:
Heritage organisations, the BIM, Conservation, Repair and Maintenance industry sectors, and Education and Training providers.

Delegate Attendance Fee:
£75.00 Booking on Eventbrite

Venue:
Ramboll Office,
240 Blackfriars Road,
London, SE1 8NW

Nearest Tube:
Southwark: Jubilee Line

Sponsors:

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Organised by:

COTAC
Council on
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Conservation

COTAC

Speaker Biographies and Abstracts

Ingval Maxwell OBE, Chair: Council on Training in Architectural Conservation

Ingval Maxwell's architectural career in the conservation of Scotland's Ancient Monuments and Historic Buildings spanned 40-years, until retirement from Government service in 2008. He represented the UK in the EC COST Action C5: Urban Heritage, Building Maintenance, and initiated the 22-country strong COST Action C17: Built Heritage: Fire Loss to Historic Buildings programme.
He has since been involved as the EU Cultural Heritage Identity Card Advisory Committee Chairman; an EC Expert evaluating FP7 Research Proposals; a ICOMOS/UNESCO World Heritage Site Expert; a Charles Wallace India Trust Trustee; and a University of Plymouth External Examiner.

He currently sits on the RIBA Conservation Group and Conservation Accreditation Steering Group; is Vice-Chair of the BIM4Heritage Group; and is Chairman of the Council on Training in Architectural Conservation (COTAC), authoring 5 related on-line HBIM publications, amalgamating its BIM4Conservation Group with the BIM4Heritage initiative in 2016.

Presentation Abstract:

2D to 4D - Oh! How we have changed: A COTAC Perspective

If an underlying aspect of the BIM initiative is the offering of easy access to numerous building elements and details through the compilation of a BIM Objects Library it could be reasonably claimed that the Great Exhibition of 1851 initiated its genesis. Following this display of the power of the Empire, numerous manufacturers' product catalogues followed. Similarly, the birth of stereoscopically recording building (and 'saucy' scene) imagery can rightly be traced to the Victorian invention of photography and hand-held stereoscopic viewers.

Thereafter, resorting to scrutinising various editions of building construction manuals can readily plot the post-1919 changes from traditional solid wall construction, through hybrid forms and emerging technologies, to the loss of the architects' Arts and Crafts design approach that was only just still in place during the late 1950's and early 1960's. With a re-awakening awareness of the significance and value of the past also being recognised during the late 1960's, this faced stiff competition through compounding technology accelerating the growth in IT and its derivatives.

In consequence, the current construction industry actually operates in two almost equal halves, yet one half is generally not recognised, being commandeered by the new-build world - leaving the conservation, repair and maintenance (CRM) sector well behind, save a few lone voices calling out for its needs to be better understood too.

Paul G Bryan BSc, Geospatial Imaging Manager, Remote Sensing Team, English Heritage, York

Paul Bryan is the Geospatial Imaging Manager within the Imaging Team of Historic England. Based in York he heads up the Geospatial Imaging team which carries out metric surveys of historic objects, buildings, sites and landscapes using laser scanning, photogrammetry and multi-image based 'Structure-from-Motion' survey approaches.

Awarded Fellowship of the RICS in 2014 Paul has extensive knowledge of image-based survey approaches and advises the sector on the heritage application of RPAS/UAV/drone platforms and Building Information Modelling (BIM)

Presentation Abstract:

Historic England BIM for Heritage Guidance

Historic Building Information Modelling (BIM) is, by definition, a multi-disciplinary process that requires the input and collaboration of professionals with very different skillsets. It is also a fast-developing field in terms of research, official guidance, standards and professional practice.

To help address the issues surrounding the production and use of BIM for historic buildings Historic England, the public body that looks after England's historic environment, has recently published their first technical guidance document on BIM. Entitled "BIM for Heritage: Developing a Historic Building Information Model" this presentation will consider the development and scope of this document and how by combining guidance and information on the heritage application of BIM with a series of case studies that demonstrate its real-world application, it aims to offer guidance on BIM for building owners, end-users, heritage and construction professionals.

Carl Brookes, Team Director, Engineering Simulation
Ramboll, Advanced Engineering and Geomatics Unit, Southampton

Carl has over 30 years' experience in the assessment and analysis of Civil, Building and Industrial structures and leads Ramboll's Engineering Simulation Team based in Southampton. Specializing in Engineering Analysis using numerical methods and particularly those based on Finite Element techniques, Carl regularly lectures and talks about advanced engineering, simulation and geomatics at institution and seminar events.

He is expert in performance-based design and assessment with considerable experience in structural appraisal and testing, assessment of historic structures, dynamic analysis (vibration, earthquake, collision, blast), and also is responsible for studies requiring the use of computational fluid dynamics. He is actively involved in research and development projects including the application of BIM in a heritage context, laser aided modelling (LAM®), masonry serviceability, and the application of new construction materials including MgO composites and UHPFRC. Earlier work on masonry arch bridges earned his team a Queen's Award for Enterprise and Innovation.

Presentation Abstract:

Hybrid Modelling in the BIM Process

Using case studies of modest complexity, the presentation will look at the process of combining existing asset information captured through point clouds with proposed alterations using new-build BIM methodologies. The process is increasingly described as hybrid, and tends to focus BIM on interfaces between old and new.

Marianne Partyka, Architect. Page/Park, Glasgow

Marianne joined Page\Park in January 2013, after obtaining a Masters with Distinction in Advanced Architectural Design at the University of Strathclyde. Since obtaining her professional qualifications in 2016, Marianne has gone on to act as project architect on a number of award winning education buildings, including new teaching facilities for both Glasgow Academy and Dollar Academy.

She is the Architect and Information Manager, on the Category A listed Glasgow School of Art restoration project, and Project Architect on a new Architecture and Built Environment facility for Northumbria University. As Head of BIM within Page \ Park, Marianne oversees training, development and implementation of BIM protocols and standards. She is a member of BIM4Heritage, a special interest group established within the BIM4Communities to champion Building Information Modelling (BIM) within the Historic Environment.

Presentation Abstract:

Glasgow School of Art – Mackintosh Restoration

The modern world is all about data; we have the ability to access and manipulate huge amounts of information in a way that was previously unimaginable. The opportunities presented by BIM, are the key to efficiently harnessing and exploiting large amounts of information for the betterment of a project, both in build quality and throughout its lifecycle.

The reconstruction of the Glasgow School of Art attempts to exemplify how this modern technology can be effectively applied to a heritage project.

Joann Russell, Head of Estates, Historic Environment Scotland, Edinburgh

Joann Russell is Head of Estates at Historic Environment Scotland, responsible for the conservation and maintenance of the 336 properties in the care of Scottish Ministers. She is a conservation architect with a particular interest in how digital data linkages can improve strategic investment and management decisions for the

historic built environment.

Others areas of expertise include assessing and mitigating the impacts of Climate Change on the historic built environment, managing visitor safety in the historic built environment and working with communities to explore the challenges and opportunities presented by the built heritage.

Presentation Abstract:

Practical Applications of Digital Technologies in the Conservation and Asset Management Fields by Scotland's National Heritage Body

As early adopters, Historic Environment Scotland (HES) continues to pioneer practical applications for digital technologies in conservation and asset management. HES are currently leading the heritage application of BIM in Scotland; exploring and developing BIM as a holistic tool to manage and access relevant inter-related digital datasets both for project delivery and asset management. As part of its organisational BIM strategy, several pilot HES-BIM projects are being delivered to determine the most appropriate use of BIM across a diverse cross section of the properties portfolio, ranging from Edinburgh Castle to Neolithic standing stones.

In the absence of a commercially available heritage asset management system that is not based on asset obsolescence or asset renewal HES has developed a bespoke digital national asset management system to manage operations, inform decisions and prioritise investment. BIM is one of the key strands of this Asset Management System.

The Properties in Care Asset Management System (PICAMS) will provide a portal to access, link and integrate the myriad of internal and external datasets that HES hold for the properties in care. It will include information relating to designation, significance, condition, facilities management, archaeology, climate change, digital image and drawing archives.

The development of a new digital condition monitoring tool, HES - SIGMA, is another critical component of PICAMS. The innovative system uses a geospatial relational database on an ArcGIS system to record condition and provide a versatile planning tool for scheduling works, specifying materials, identifying skills needed for repairs and allocating resources. Linking this data into BIM and PICAMS is currently under development.

Brian Johnston, Business Development Manger, topscan

Brian jointed 'topscan' as its newest business development manager in July 2017, having spent the previous decade assisting numerous NHS Trusts with recruitment for their construction and estates projects, working closely with Directors of Estates, Directors of Capital, Facilities Managers and Finance Directors to see these through.

He has helped Trusts such as Central Manchester University Hospitals, Guy's and St

Thomas', Great Western Hospitals and Shrewsbury and Telford Hospital. He has done so through big challenges such as the Premises Assurance Model re-launch in 2013 and capital spending changes in 2015 and 2016.

Presentation Abstract:

Classifying and Linking the Condition of the Asset

At present 'topscan' is delivering an asset survey of the British Library including fabric for use in a BIM enabled CAFM package, during this project it will classify the condition of the asset or structure and supply that information alongside a Revit Model.

Ingval Maxwell OBE, Chair: Council on Training in Architectural Conservation

Presentation Abstract:

Is there a Need for an HBIM Objects Library?

In the opening presentation, the background to the current imbalance that exists in the construction industry was rehearsed. The question remains, what can be done to ameliorate the situation? Over the past two decades a variety of reports, including a comprehensive series covering the country published by the (now unsupported) National Heritage Training Group, have set out to reveal what has been lost and what might be done about it. Inevitably, each focuses on the scale of the issue with over 6 million pre-1919 buildings, and the need to integrate knowledge, appropriate skills and relevant materials if the existing stock is to be properly attended to.

Whilst the challenge is considerable, there is a way of initiating that understanding by, once again, referring to building construction manuals of the past. In them, building details of the era are well illustrated and described to such an extent that what goes on behind the surface is readily explained. Given that they informed the construction processes of the past, numerous comparative examples can be found in the field.

Might then a digitisation of these details provide the base line upon which an HBIM Object Construction Library emerge? Others appear to be thinking in much the same direction. In the 2012 European *"Commission recommendation on the digitisation and online accessibility of cultural material and digital preservation*", the "*Orphan Works Directive"* (Directive 2012/28/EU) and the *"Memorandum of Understanding on Out-of-commerce Works"* aims at facilitating the digitisation and access to it.

Time will tell if such an approach can become a reality in offsetting the present imbalance created by the heavy promotion of 'new-build orientated' object library BIM data.

Edonis Jesus, BIM Leader, Lendlease, London

Edonis is a highly experienced Architect with BIM and project management experience, with a deep understanding of integrated design approaches to the delivery of buildings with improved financial, environmental and social performance throughout their whole lifecycle. Edonis has been previously involved in a number of projects most notably the HM Government BIM implementation, the Ministry of Justice BIM Implementation and the 2012 Olympics Athlete's Village.

Edonis has developed a thorough understanding of BIM strategies, standards and processes, which has led to her being appointed as the main consultant for the delivery of the UK Ministry of Justice BIM libraries and BIM Manager for major projects such as the Gutenborg Development, the St. Petersburg University Medical Complex and the Strand East regeneration scheme.

Edonis founded and chairs BIM4Heritage, which is a special interest group established within the BIM4Communities to champion Building Information Modelling (BIM) within the Historic Environment. Edonis also chairs the LOD group within BIM4Rail, which is looking at developing standard levels of detail and information for the rail sector and is a BIM4 communities' liaison within the UK BIM Alliance. In the past, Edonis was a member of the Ministry of Justice special interest group focused on the application of BIM for Asset Management (BIM2AIM) and a member of the steering group developing the British Standard for Construction Operations Building Information Exchange (BS1192-4). Edonis holds a Post Graduate Diploma in BIM and Integrated Design and a BIM Level 2 practitioner certificate.

Presentation Abstract:

The BIM4Heritage Group - Future Intentions

BIM4Heritage is a special interest group established within the BIM4Communities to champion Building Information Modelling (BIM) within the Historic Environment. The group is formed of various specialists, including those from within the AEC industry, Conservation, Heritage Organisations, Academic Departments, and end-users.

The vision of the BIM4Heritage Group is to provide a forum for organisations and industry professionals to share knowledge and lessons learnt on BIM applied to historic structures. Its purpose is to promote the learning, awareness and understanding of BIM within the conservation and heritage sector of the built environment, and to influence and integrate this with wider industry needs.

Involving a range of disciplines and conservators who have the current stewardship of the existing building stock, it will also aim to enable industry to understand the importance of information relating to conservation requirements.

Group Goals

- Develop consistency of messaging, support and standards of BIM Implementation within the Historic Built Environment. Provide opportunities for communicating best practice, and debating issues concerning the adoption of BIM in both private and public sectors, and with increasingly advanced

applications of BIM.

- Collaborate with other BIM4 Communities to advance knowledge and influence understanding in the broader context of the industry and built environment, and to initiate the culture change necessary to fully benefit from digital and information technologies and processes.
- Provide leadership in establishing how BIM can be used for heritage conservation, repair and maintenance processes.
- Promote historic structures BIM case studies to demonstrate best practice.
- Establish collaborative links to academia.
- Ensure that the group activity and outputs are coordinated and integrated with the other BIM4 community groups and CIC regional hubs.
