Capability Statement
Introduction

Co founded in 2010 by Northumbria University and Ryder Architecture, BIM Academy is a global centre of excellence for BIM and digitisation of the built environment. Through consultancy, research and training, we have built an international reputation as an independent, trusted support organisation for the real estate and infrastructure sectors.

For further information please contact:
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About Us

We help transform our client’s business through the intelligent application of smart processes and digital technologies. Impartial, research based expertise is combined with practical industry experience to deliver real value through the whole life cycle. We provide consultancy, research and training.

We maintain close links with all major software vendors but at the same time offer objective advice and support to organisations on their path to digital adoption and deployment, adding value and reducing risk. We have no hidden agenda. We start from first principles. We get under the skin of your business. We drive real value for you.
Services

Consultancy
- Business case development and feasibility studies including gap and SWOT analysis
- BIM strategy and implementation planning
- BIM for FM strategy and deployment planning
- 4D construction simulation for dispute resolution
- Forensic advice and peer review
- Process and systems diagnosis
- Risk analysis and stress testing
- Company protocols and procedures
- Training strategies and staff development programmes
- Cultural change management
- Business performance measurement and KPIs
- Digital collaboration workshops (Virtual Project)
- Design for Manufacture and Assembly (DfMA) and Off Site Manufacture (OSM) strategies
- Bid support, capability statement development
- Accreditation advice
Management services

- BIM project manager
- Client information manager and auditor
- Model management planning
- Digital buildability assessment
- Staff mentoring and secondment
- 3D model coordination and clash avoidance strategies
- Digital design modelling best practice
- Construction simulation modelling (4D) and model based programme optimisation
- Cost modelling (5D)
- Digital room loading and room data sheets
- Design and construction management advice, lessons learnt and feedback reporting
Technology services

- IT infrastructure evaluation
- Software assessment and research
- Bespoke software development
- Digital capture (LiDAR and Photogrammetry)
- 3D digital modelling and coordination
- BIM object library consultancy and creation
- Digital environmental analysis
- Computational design analysis
- Data classification and validation
- Virtual and augmented reality
- Visualisation and animation
- Digital city modelling
- Model based embodied carbon assessment
- Open source (IFC) technologies
- Common Data Environments (CDE)
- Pedestrian movement simulation
- Legacy IT system analysis and integration
- Technical specification writing
- System compatibility evaluation
- 3D model reconfiguration for FM
- GIS integration
- RFID integration
- Data cleansing and regularisation
- Data migration strategies
- Asset data definition
- COBie data advice and support
- Data input support
- Data analytics and trend analysis.
Clients

We are proud of our work. We have helped our clients transform their working practices and achieve genuine value and reduce risk through the intelligent application of digital tools and processes. Our clients include:

"The support BIM Academy provided to the Council on live projects such as the Manchester Town Hall scheme was reflected in the Building Magazine Award for ‘Best Use of BIM’ in 2011. The Council acknowledges their expertise, knowledge and practical experience”

Liam Brady, Manchester City Council

"RIBA Enterprises and NBS have worked with BIM Academy on a number of key industry research initiatives which have borne considerable benefits in the advancement of BIM adoption”

Helen Whitfield, Executive Director, RIBA Enterprises

"BIM Academy combined technical excellence and industry experience to create a comprehensive technical specification for our bespoke BIM for FM solution”

Bob Moffat, Business Strategy and Planning Manager, Sydney Opera House

"Not only does it give us up to date images of the building in its current state which helps plan things such as the installation and upgrade of new services, but gives us accurate information on the building we have never had before.”

Tom Billington, Property and Facilities Manager, Durham Cathedral
Peter Barker  
Managing Director

Managing Director at BIM Academy  
BA(Hons), FRSA  
Visiting Professor, Northumbria University

Role
 Responsible for leading consultancy and commercial enterprise at BIM Academy, Peter has a construction industry background and as a Partner at Ryder Architecture, initiated and oversaw BIM technology and innovation within the business from 2003. Peter has over 30 years practical experience in leading and delivering projects in a number of sectors including commercial, education, healthcare, leisure, defence, process engineering, conservation and refurbishment.

Profile
 Peter graduated with a degree in Classics from Leeds University in the early 1980s before studying architectural technology at Northumbria University. He joined Ryder in 1995 after several years in practice where he gained a solid grounding in technical design and design management on a range of complex and challenging process engineering projects which required diligence, responsiveness, proactive planning and cost control. Peter was responsible for research and innovation initiatives including Knowledge Transfer Partnerships with universities and was responsible and maximising the potential of new technologies such as BIM. Peter also developed and managed business systems including commercial, education, healthcare, leisure, defence, process engineering, conservation and refurbishment.

Relevant Project Experience
 Sydney Opera House, BIM4FM project  
 M+ Museum Hong Kong, BIM management  
 Hong Kong Hospital Authority, Feasibility study on applicability of BIM  
 Midland Metropolitan Hospital, BIM strategy  
 Legal and General Homes Modular, BIM strategy and implementation plan  
 Dumfries and Galloway Infirmary, BIM strategy  
 Cleadon Park Primary Care Centre, Project Director  
 Wembley Park, BIM strategy and management  
 Greenwich Peninsula Riverside, BIM strategy  
 WRAP studies on BIM for resource efficiency  
 National BIM Library development  
 Brink Groep, Netherlands, BIM strategy  
 Carillion plc, UK BIM strategy  
 Abu Dhabi Midfield Terminal, BIM Execution Plan  
 Laing O’Rourke BIM and CDM working parties  
 South Tyneside College Redevelopment  
 South Tyneside and Gateshead Schools BSF  
 Redcar and Cleveland Grouped Schools PFI  
 Victoria Hall student accommodation  
 Bannatyne Fitness Health Clubs (30 UK wide)  
 Northumberland Academy and Schools  
 Scottish Courage Breweries, Edinburgh, Manchester, Newcastle  
 GKN Defence, Telford redevelopment  
 Build New York Live 2015, Overall Winner  
 Build Sydney Live 2013, Overall Winner  
 Build Qatar Live 2012, Overall Winner

Areas of Expertise
 Business case development  
 BIM strategy and implementation  
 Systems analysis and reconfiguration  
 Project management  
 Technical design, procurement and delivery  
 Integrated management systems  
 Low carbon design and resource efficiency  
 Specification writing  
 Cost / benefit, risk analysis and stress esting  
 Health, safety and environmental management

Career Interests
 Peter derives great satisfaction from understanding client needs and applying creativity and innovation to deliver solutions which bring value through enhanced productivity, quality and reduced risk.
John Lorimer  
Chairman

Chairman and Consultant at BIM Academy  
BSc Civil Engineering  
Visiting Professor, Salford University

Role
In his former senior leadership role as a client and long track record in construction, John has developed strategy and implemented BIM on projects and programmes and understands the need to change culture, the importance of good procurement and how to build effective relationships with suppliers. Identifying and managing risk is fundamental to the successful roll out of BIM and John has developed a robust model business case for clients seeking to use BIM.

Profile
As capital programme director of Manchester City Council from 2002 to 2012, John led the procurement, management and delivery of the Manchester City Council £300m pa capital programme including the redevelopment of Manchester Town Hall and Library, the £500m Building Schools for the Future programme and social housing programmes such as 172 new build houses and apartments in West Gorton. John led the introduction of BIM within the authority including the town hall and library and on West Gorton (construction value £23m) which gave a 2.5 to 1 return on investment. John’s leadership in introducing BIM into the industry began in 2004 and he played a leading role in the UK Government BIS BIM steering group of which he was a founder member. Prior to his career at Manchester CC, John spent 30 years as a contractor on a diverse range of projects in the UK and overseas. He has been an operations director for major construction companies including structural engineering company Cleveland Bridge where he was based at the factory. He established and led a joint venture with BAE Systems.

Relevant Project Experience
Redevelopment of Manchester Town Hall complex and library  
New build houses and apartments, Manchester  
New build retirement homes, Manchester  
New build houses and major refurbishment / remodelling to terrace houses, Manchester  
New build and refurbishment to secondary, primary, and special needs schools  
New leisure complex, Manchester  
Commercial and retail developments in the UK  
Suspension bridges in Hong Kong, China and Germany  
Airport structures and power stations  
A vast range of projects ranging from new dog kennels for the police authority to roads / bridges and care homes

Areas of Expertise
Developing business strategy and client business case  
Leading culture change  
BIM strategy and implementation planning  
Linking BIM to facilities management  
Programme and project management  
Procurement  
Supply chain management  
Increasing efficiency through standardisation / prefabrication  
Benchmarking

Career Interests
Founder member of UK Government BIS BIM steering group  
Chair of Constructing Excellence Digital Theme Group  
Client representative council member of the CITB collaborative working  
Procurement strategy and implementation, managing the supply chain  
Risk management
Nahim Iqbal
Director

Director at BIM Academy
BSc (Hons), MSc

Role
Nahim is responsible for leading the delivery of digital transformation workstreams in the UK and across the rest of the world. He has 10 years’ industry experience specialising in directly managing implementation of BIM and GIS on some of the largest and most enduring global mega events. He is also skilled in providing technical leadership in the development of programme standards, technology implementation and direct management of delivery teams through design and construction phases for both building and infrastructure projects. Outside of work, Nahim enjoys spending time with his family and travelling.

Profile
Nahim studied computer aided product design at the University of Hertfordshire. He originally joined Ryder in 2009 and was integral to the establishment of BIM Academy, which is now a pioneering global centre of Excellence. Nahim also completed his Master’s Degree in Project Management and went on to gain international experience on major programmes across the Middle East.

Relevant Project Experience
Expo 2020 Dubai, UAE
High Speed Two (HS2)
Jaguar Land Rover
2022 FIFA World Cup Qatar™
Olympic Stadium 2012
Greenwich Peninsula Quays
Abu Dhabi Airport Midfield Terminal
Manchester Central Library
WRAP Study on BIM for Waste Reduction
Avon and Somerset Police
Hong Kong Healthcare
Grimsby University Centre
Lanhill Residential
Harton Primary
NHS Bowburn
Purley Fire Station
M&S Malvern Walsall
Hospital Earth Sciences Oxford

Areas of Expertise
BIM / GIS / Information Management
Programme and Project Management
BIM Strategy, Execution Plans and Standards
Change Management
Construction Logistics
Remote Camera Monitoring Technology
Virtual and Mixed Reality / Visualisations
3D/4D Modelling
IFC and COBie
Quality Control and Assurance
Design Coordination and Interface Management
Construction Sequencing
Facilities Management
Common Data Environments (CDE’s)
Training and Education

Career Interests
Nahim has a passion for supporting advancement of digital technologies and artificial intelligence to provide greater value for client organisations.
Graham Kelly
Director

Direct at BIM Academy
BSc (Hons), PhD, CBIFM

Role
Graham is responsible for leading strategy and implementation of BIM applications specific to clients real needs. He has nearly 12 years’ experience in construction and academia, completing a PhD in appropriate feedback to architectural practices to improve early design decisions in 2015. Outside of work, Graham coaches American Football to international level and travels across Europe for competitions.

Profile
Graham graduated from Loughborough University in 2008 with a degree in construction engineering management and gained experienced in industry working for Morgan Sindall and AMEC on a number of construction projects. Graham completed his PhD in 2015. Graham has specialist knowledge in BIM enabled facilities management, BIM Level 2 processes and procedures, architectural practice, feedback, knowledge transfer techniques and adaptability.

Career Interests
Graham has gained an interested in the theory and practical application of how effective feedback from facility management can aid an architect’s future design decisions through his PhD. He is continuing to develop his knowledge in the utilisation of BIM within the operational phase of a building, hence aiding FM teams to improve the utilisation of their buildings. His goal is to optimise all projects through the use of technology and smart processes.

Relevant Project Experience
BAE Systems
Brink Groep, Netherlands
Durham Cathedral
Durham University
Greenwich Peninsula Riverside
Historic Environment Scotland
Laing O’Rourke, Dumfries and Galloway Royal Infirmary
Leeds Beckett University
M+ Museum, Hong Kong
Newcastle University
Northumbria University CIS Building
Northumbria University Sutherland Building
Sydney Opera House
The FA

Areas of Expertise
Adaptability
Architectural research
BIM for asset and facilities management
BIM strategy and implementation
Facilities management
Knowledge management
Operational data integration
PAS 1192 Part 2 and 3 implementation
Project planning and risk management
Scan to BIM and BIM for heritage buildings
Whole life costing

Publications
• Building Information Modelling: Protocols for collaborative design processes, 2014
• BIM in facilities management applications: A case study of a large university complex, 2014
• A theoretical comparison of traditional and integrated project delivery design processes on international BIM competitions, 2013
• BIM for facilities management: a review and a case study investigating the value and challenges, 2013
• Improving the design of adaptable buildings through effective feedback in use, 2011
David Greenwood
Director

Role
David was an original co-founder of BIM Academy and part of the academic side of the joint venture, which he now serves as a director. He is a professor at Northumbria University where his main areas of research include the uptake of Building Information Modelling, construction supply chains and their organisation, management, and contractual administration. Before entering academia he worked for some 10 years as site engineer and senior estimator in the construction industry.

Profile
David graduated from Cambridge University and his postgraduate qualifications include an MSc in Construction Management (Heriot-Watt), and a PhD from the Department of Construction Engineering & Management (Reading). He is a Fellow of the Chartered Institute of Building and was a board member of Constructing Excellence North East from 2003 to 2007. He has authored over 100 publications and held research funding from the EPSRC, AHRC, and other UK and international government agencies. He has carried out training and consultancy for over 30 industry and professional organisations in the UK, continental Europe, the Far East, and Middle East, including the International Centre for Agricultural Research in Dry Areas (ICARDA) and the Egyptian National Housing and Building Research Centre, for whom he produced the ‘Green Pyramid’ Building Sustainability Rating System, Egypt’s first sustainable assessment tool for building design. He has previously chaired the Association of Researchers in Construction Management (ARCOM) and is a member of the Conseil International du Bâtiment (CIB) W117 (Performance Measurement) and TG80 (Legal & Regulatory aspects of BIM) groups.

Areas of Expertise
Adoption and application of BIM
Construction procurement and supply chain management
Project planning and risk management
Construction contracts
Sustainability

Relevant Project Experience
Innovate UK. “Tier2Tier: A collaboration interface between construction main contractors and their supply chain specialist sub-contractors” (2015-17)
Innovate UK. “DECC-MR: Digital Engineering for Customised Compliance in Maintenance Regimes” (2015-16)
Engineering & Physical Sciences Research Council, UK, “COPIC: Costs of procurement in the construction industry” (2002-05)

Selection of most recent relevant publications
Mark Crowe
Associate

Associate at BIM Academy
BSc (Hons)

Role
Mark is a multi skilled and highly motivated team player who operates across a wide range of our consultancy, research and training services, including BIM project management, information management, strategic advice and implementation planning, technological research, BIM for FM, 3D 4D and 5D modelling and management. Mark also played a role in the development of the National BIM Library, including expertise in Bentley AECOsim, Revit, IFC and ArchiCAD; delivering Revit training courses to a wide range of clients; developing our BIM for asset and facilities management strategy and ensuring BIM Academy remains at the forefront of technological capability and awareness. Mark’s technology interests also extend outside of work, where he is in the process of creating his own smart home.

Profile
Following work experience in architectural practice, Mark graduated with a First Class BSc (Hons) degree in architectural technology from Northumbria University before joining BIM Academy. Throughout his studies and his experience gained in industry, Mark has worked on a variety of projects ranging in scale and complexity, and particularly focused on delivering practical solutions that provide long term benefits to users. This approach influenced his research into social sustainability and the built environment which not only questioned how we evaluate projects post completion but how we establish end user requirements before construction.

Mark has always maintained a self driven motivation to investigate software to support innovation and efficiency in the built environment, having accrued expert knowledge.

Career Interests
Mark is particularly interested in the broadening of the BIM scope to provide social, economic and environmental modelling, allowing designers to not only tailor projects to provide a real gain for their Built Environment but also to address the long term use of the buildings / site to ensure projects maintain or gain value post completion.

Relevant Project Experience
- BAE Systems MAI, RAF Marham
- Build Sydney Live 2013 (award winner)
- Durham University Business School
- Forest City
- Greenwich Peninsula
- BAE Systems (Maritime Services) Portsmouth
- Midland Metropolitan Hospital
- Midlands Schools PFI
- Milburngate
- National BIM Library development
- Newcastle Civic Centre
- Sir Robert McAlpine
- Sydney Opera House
- Sydney Opera House
- Tidal Lagoon Swansea Bay
- Virtual Project workshops for contractors
- Winchburgh and Calderwood Schools

Expert lectures for Northumbria and Newcastle Universities, Tsinghua and Jiaotong Universities in China

Areas of Expertise
- ArchiCAD
- Autodesk Navisworks, Cost X, Sefaira, Model coordination and validation, Bentley AECOsim, Autodesk Revit (Certified Instructor and Professional)
- BIM for FM integration
- BIM strategy and information management implementation planning
- Industry Foundation Classification (IFC) /COBie
Kieran Stapleton
Senior Project Manager

Senior Project Manager
MSc Building Design Management and BIM
BSc (Hons) Architectural Technology

Role
Kieran is a highly qualified BIM specialist experienced in BIM management, technology, consultancy and training. Typical duties include project management, assisting in BIM strategy, protocol and workflow development, BIM execution planning, systems integration research, model audits, model authoring and object library creation, laser scan to BIM modelling, software and process training and contributing to online media and events. He is also a qualified Revit trainer.

Profile
Kieran achieved a Distinction in the MSc program in Building Design Management and BIM and a First Class BSc(Hons) degree in Architectural Technology at Northumbria University. During his studies he was awarded the CorePeople Recruitment “Best Achievement Award" and APM North East Branch “Highest Dissertation Award” for his efforts in his BSc and MSc respectively. As well as his academic background, he has worked within the built environment industry since 2005, starting as a student engineer for a large multidisciplinary practice, then developing and working as an architectural assistant at Ryder, an assistant project coordinator, a graduate architectural technologist, a 3D modeller / architectural technologist, a design management and BIM specialist before joining BIM Academy.

Consistently looking to improve workflow integration and interoperability, Kieran seeks to bridge the gap between theory and practice to optimise the value of BIM to clients and users.

Relevant Project Experience
M+ Museum Hong Kong, BIM Manager
Highland Council Strategic BIM Implementation
Liverpool Football Club Model Audit Program
AMEC Foster Wheeler BIM Implementation
Carillion BIM Protocols Development
Laser Scan to BIM projects, Canada, Scandinavia
AMEC Guernsey Waste Treatment Facility
National BIM Library Object Authoring
Various Scan to BIM Projects
Howard Russell BIM Implementation
Webforum Peer Review for Software Developer
Owen Pugh Strategic BIM Roadmap
Build Earth Live: New York
Build Earth Live: Newcastle
Virtual Project Workshop Courses for Industry
Teaching Authorised Autodesk Training Courses
Teaching Northumbria University Degree Courses

Areas of Expertise
Autodesk Revit and Navisworks
BIM protocols (eg PAS1192, BS1192, AIA)
4D Construction Simulation
Tekla BIMsight
Graphisoft ArchiCAD
Solibri Model Checker
BIM Execution Planning
Design Management
Project Management and Governance
Risk and Value Management
Information and Knowledge Management

Career Interests
Kieran enjoys studying how to successfully integrate and manage the organisation and taxonomy of data and geometry to deliver maximum business value. He has published a paper for the 32nd eCAADe conference “Understanding technological interoperability through observations of data leakage in BIM based transactions”.

Kieran Stapleton
Senior Project Manager
Will Joske
Senior Project Manager

Role
A registered architect based in Sydney and Melbourne, Will brings over 20 years of industry experience for BIM Academy in Australia. Will is joint lead for BIM Academy business development and consultancy services in Australia working closely with the base hub in Northumbria University, UK.

Profile
Will's involvement in BIM over the last decade has followed a number of parallel streams. First as an agent of change, working within organisations to align culture and business practices to derive benefit from BIM. Second has been to lead and manage the various tasks needed to produce BIM outputs to deliver value to organisations, including content, standards, training and research. Lastly, Will remains a hands on practitioner and Revit expert who continues to focus on what is possible, practical and achieve results.

Will's role arose from his BIM leadership for i2C Design and Management, an Australia based BIM enabled architectural practice working predominantly in the commercial and retail sectors and part of the Ryder Alliance.

Prior to these roles, Will worked in computer visualisation, tertiary architectural software education as well as commercial and residential architecture. Prior to i2C and BIM Academy roles, Will was Architectural BIM Leader at GHD, an international multidisciplinary engineering firm.

Relevant Project Experience
Strategic consultation and development role with John Holland on the asset information strategy for Metro Tunnel Project.
Strategic consultation role with Sodexo (bid stage) on the asset information strategy for Grafton Correctional Centre PPP.
Authoring and delivering BIM education events to professionals and students in various modes and venues.
Co author of ACIF and APCC initiative: BIM Knowledge and Skills Framework, designed to guide and assist industry stakeholders in the adoption and implementation of BIM.
Involvement in the delivery of multiple large scale, multiple stakeholder building projects.

Areas of Expertise
Strategic BIM implementation
Linking skilled professionals to BIM concepts and workflows
Project data management
Project planning and risk management
Knowledge management
Training authoring and delivery
Creative and practical problem solving
Revit architecture
Experienced architect

Career Interests
Throughout his career, Will has had a passion for three things: learning, teaching and how technology can be used effectively and creatively. This is the foundation for his approach to BIM, where success comes from breaking down the barriers to understanding BIM, aligning business processes, and finding solutions that balance practicality and innovation.
Chris Linning
Digital Engineering Consultant

Consultant

Role
A world recognised construction industry leader in the development, implementation and commissioning of digital engineering solutions, primarily focussed on the Facilities Management (FM) operational side. With 15 years of exposure to BIM at the iconic Sydney Opera House (SOH), he joins BIM Academy to share his hands on experiences and practical industry knowledge.

Profile
Chris’s involvement with Digital Engineering and BIM over the last decade and a half has included engagement with many challenges and their resolution. His primary task has been the establishment and documentation of standards, training materials and contractual policy items. He has been an agent of change, working to achieve BIM benefits by aligning cultural and business practices, and has been an industry champion, both within and outside Sydney Opera House, to foster the awareness of FM goals from BIM and Digital Engineering processes.

With a broad exposure to multiple engineering disciplines over his working career, he can extract and collate user requirements and implement solutions. His working career has covered civil aviation, irrigation documentation, petrochemical bulk distribution systems, cartographic systems implementation, bulk high quality printing and warehousing logistics, geological exploration documentation, event development, computer system management and the development and implementation of the Sydney Opera House Facility Management solution – the BIM4FM project.

Career Interests
Throughout Chris’s career he has encouraged collaboration and knowledge sharing within his working teams to ensure consistency in project development and delivery. Although now not in full time occupation, his passion for development of BIM and digital engineering has ensured that he is still available as a industry reference point for the initiatives that he has co developed and implemented.

Relevant Project Experience
Analysis, development, implementation, commissioning of the Sydney Opera House Facility Management Solution – BIM4FM project. Participation on multiple industry panels, boards and research groups in the development and roll out of BIM as an industry solution within Australia. Co authoring and peer review of CRCci, SBEnrC project papers. Co authoring a chapter of the book: Delivering Value with BIM – a Whole of Life Approach.
Representing Sydney Opera House at multiple national and international conferences on the topic of BIM, Facility Management within BIM and the development of the SOH BIM solution. Delivery of private presentations to a wide, industry focussed audience on the SOH solution and how it would apply within their organisations.

Areas of Expertise
Strategic BIM analysis and implementation
Project data management
Standards development
Training authoring and delivery
Coordinated project delivery
Knowledge sharing
Change implementation and management
Champion for BIM and Digital Engineering
Graham Coulby
Computer Scientist

Computer Scientist at BIM Academy
BSc (Hons)

Role
Graham’s role in BIM Academy is to apply computer science to optimise business systems and deliver enhanced productivity, client service and design excellence for clients. Although the primary focus of Graham’s role is software development, he has also been involved in consultancy, data management and research roles within the company.

Profile
Graham graduated with first class honours in Applied Computing at Northumbria University and was awarded the Ede and Ravenscroft Award for Academic Excellence in Computer Science and Design Technologies. Immediately after his graduation he was offered a research assistant role at the university, working within BIM Academy. This post led Graham into the world of BIM where he utilised his computing skills in a multidisciplinary team to solve problems within the built environment sector. Prior to his studies, Graham spent four years volunteering as an English teacher in a remote village on the west coast of the Republic of Georgia where he met his wife and began studying computer science and electronics. Graham is very methodical and has a strong understanding of BIM technologies as well as having a keen interest in software development and data management.

Relevant Project Experience
- Sydney Opera House, Document management system development
- Sydney Opera House, Spatial database system development
- Legal & General Homes Modular, BIM strategy and implementation plan
- Scottish Futures Trust, Queensferry High School - low carbon initiative
- BAE Systems MAI, CAFM future operating model
- Sydney Opera House, asset data migration strategy
- Ryder Architecture and BIM Academy, model compliance tools
- Ryder Architecture and BIM Academy, modelling efficiency add-ins for Revit
- Northumbria University, DECCMR, Researching the Automation of Asset Classification
- Northumbria University, Tier2Tier, researching asset identification using machine learning

Areas of Expertise
- Computer science
- Machine learning
- Data science
- Systems analysis
- IFC
- xBIM model viewer technology
- Solibri model checker
- Revit add in development
- Website and web-app development
- .NET development
- Programming languages; C#, ASP.NET Java, C, XML, SQL, PHP and JavaScript

Career Interests
Graham is particularly focused on data management and the optimisation of business processes through digital solutions. He has a keen interest in applying his expertise in computer and data science to the construction industry. Graham is highly driven and aspires to become more focused on research projects that apply computer science and data science to change and ultimately improve the construction industry.
Sarah Marshall
BIM Manager

BIM Manager at BIM Academy
BSc(Hons) ACIAT

Role
Sarah delivers key BIM and information management and technical specialist roles for client teams. She has industry based expertise in technical design, 3D model and data authoring in the building and infrastructure sectors as quality control, model and data audits and the establishment and management of Common Data Environments (CDE) and BIM object library development. Sarah is also an experienced trainer for several BIM software solutions.

Profile
Sarah graduated from Northumbria University with a degree in architectural technology and has over four years’ experience working in architectural practice in the UK using BIM software to design and deliver construction information. Since joining BIM Academy in 2016, Sarah has managed projects for a range of clients in the building and infrastructure sectors in UK and Asia. Most recently, Sarah has delivered specialist 4D construction simulation commissions for major infrastructure projects in Hong Kong including Kai Tak Sports Park, Airport Terminal 1 Extension and new Third Runway. She has also undertaken BIM information management roles where she has established protocols for project teams, audited compliance of the consultant team’s delivery of models and data to achieve the required levels of quality to the client and set up and managed a number of common data environments. Sarah has a strong team ethos and is a keen rugby football player and has captained teams in the UK and Hong Kong.

Relevant experience
Kai Tak Sports Park, Hong Kong, 4D construction and infrastructure simulation.
Hong Kong Airport Terminal 1 Extension and Car Park, BIM coordination and quality control.
A19 Highways Intersection, BIM execution planning and 4D simulation of highways construction and logistics planning.
BAE Systems, BIM strategy and implementation for Portsmouth Naval Base.
Hong Kong Airport Third Runway, 4D construction and infrastructure simulation
Wolverhampton University, SOABE building, BIM management.
Newcastle University Park View Student Village, BIM management.
Northumbria University Computer Information Sciences Building, BIM management.
Sutherland Building, Northumbria University, BIM management.
Newcastle University Sports Hall, BIM management.
Carillion UK, BIM workflow development
Lego factory, Hungary, BIM model auditing and management.
Greenwich Peninsula Development, BIM model auditing and management.
Scarborough Leisure Village, model authoring.
Lakeside Academy, model authoring.
Virtual Project collaborative BIM workshops, facilitation and training.
Advanced BIM software training for industry clients.

Technological skills
Autodesk Revit Suite
Autodesk Navisworks
Solibri Model Checker
Synchro
Industry Foundation Classification (IFC) / COBie
Ecodomus BIM for FM integration
Ensage
Thomas Lund
BIM Manager

BIM Manager at BIM Academy
BSc(Hons) ACIAT

Role
Thomas is responsible for BIM and information management roles for clients and their consultant teams. He has expertise in technical design, 3D model and data authoring and coordination, as well as developing BIM protocols. He has a keen interest in researching new and emerging software solutions and applying these to enhance project delivery in the building and infrastructure sectors. He is also committed to understanding and improving how organisations implement BIM within their working practices to deliver enhanced quality, value and certainty in meeting project aims.

Profile
Thomas completed his architectural technology degree between at Copenhagen and Northumbria Universities, including a placement year in industry where he worked on a range of projects including a leisure development in Lyons, France and BIM consultancy in Vancouver, Canada. With over four years’ experience in industry, his interests lie in using BIM software to maximise efficiency and working collaboratively, he has a specialism in Revit and coordination and quality control tools such as Solibri and Navisworks. Since joining BIM Academy he has been involved in a diverse range of projects within the infrastructure, education, heritage and residential sectors. Outside of work, Thomas has a strong interest in Scandinavia, enjoys long distance running, cooking, and discovering new places.

Thomas is particularly interested in how BIM tools and processes can drive better communication and collaboration between stakeholders on a project. He seeks to add value to projects by looking at how different software applications and solutions can increase efficiency.

Relevant experience
Calderdale Council, BIM strategy and implementation
Carré de Soie, Lyons, France
CÉH Engineering, Hungary, BIM for infrastructure consultancy.
Durham University Business School, BIM management and auditing
Durham University MCS Building, BIM management and auditing
Grimsby Leisure Centre, BIM modelling and management
Historic Environment Scotland, BIM training
Newcastle University Park View Student Village
Newcastle University Sports Centre, BIM management and auditing
Northumbria University CIS Building Northumbria University Sutherland Building
Premier Inn Sunderland City Centre Hotel
Queensferry High School
Scarborough UTC
St. Andrew’s Wesley Church, Vancouver, Laser Scan to BIM specialist consultancy
The Heath School, UK, BIM modelling and auditing.
Advanced BIM software training for industry clients.

Technological skills
Autodesk Revit Suite
Autodesk Navisworks
Solibri Model Checker
Industry Foundation Classification (IFC) / COBie
Enscape
Dynamo
STEPS pedestrian modelling software
Scott Clark
BIM Manager

BIM Manager at BIM Academy
BSc(Hons) CIOB

Role
Scott is a BIM and information management specialist who has a strong technical design background. He has over five years industry based expertise in BIM protocols, 3D modelling, coordination and data authoring in the building and infrastructure sectors as well as quality control experience through undertaking model and data audits programmes to ensure consultant teams’ compliance with client BIM standards. Scott has established BIM protocols for building and infrastructure projects, managed Common Data Environments (CDE) and undertaken BIM best practice and object library development. Scott is experienced in many industry standard and more specialist BIM software solutions.

Profile
Following graduation from Northumbria University, Scott has been involved in a range of projects including highways infrastructure, education, office and public authority projects. His interests lie in using BIM to promote a collaborative approach to achieving excellent project outcomes including low carbon sustainable solutions. He has been actively involved in driving BIM development and implementation within consultant and contractor organisations and has gained valuable insights into how to get the best out of digital tools. Scott has worked for extended periods in Australia and Canada, as well as the UK supporting the implementation of BIM processes and technologies. Outside of the working environment, he enjoys travelling and following Bradford City Football Club.

Relevant experience
Tombola Headquarters, UK, technical design and project manager, BIM authoring and coordination.
Avon and Somerset Constabulary PFI Development, UK, BIM model authoring and coordination.
A19 Highways Intersection, UK, BIM strategy, BIM execution planning and 4D simulation of highways construction and logistics planning.
Newcastle Rail Academy, UK, technical design and project manager, BIM authoring and coordination.
Best practice BIM libraries, Ryder Architecture Wick High School and East Caithness Community Facility, Scotland, technical design and project manager, BIM authoring and coordination.
Midlands School PFI Development, UK, technical design and project manager, BIM authoring and coordination.

Technological skills
Autodesk Revit Suite
Autodesk Navisworks
Solibri Model Checker
Industry Foundation Classification (IFC) / COBie
Synchro
Enscape
Dara Mc Nally
Technologist

Career Interests
Dara is interested in the effective implementation of key BIM processes during the design phase, and how this can aid in improving project performance and sustainability. He has been able to develop his knowledge and understanding in this area during his time at BIM Academy, as he has undertaken various coordination and auditing roles on projects.

Relevant Project Experience
Durham University Business School
Forest City
Milburngate
Newcastle University Park View Student Village
Newcastle University Sports Centre
Northumbria University CIS Building
Northumbria University Sutherland Building
Queensferry High School
Winchburgh and Calderwood Schools

Areas of Expertise
Asset Information Management
Industry training
Model Coordination
Software research and development

Technologist at BIM Academy
BSc(Hons) due for completion 2019

Role
Dara provides key BIM and information management roles for several clients. He has expertise in technical design and model authoring as well as 3D model and data audits and establishing common data environments.

Profile
Dara is currently in his final of undergraduate study at Northumbria University, undertaking a BSc in Construction Engineering Management. He is also a student member of the Chartered Institute of Building (CIOB). Before moving to the UK, Dara studied Architectural Technology and Construction Management at the Copenhagen School of Design and Technology. During this time, he was also able to gain industry experience working for Jaja Architects.
Jackey Chan
Technologist

Relevant Project Experience
Kowloon East Police HQ, Hong Kong
M+ Museum of Art. West Kowloon, Hong Kong
Hong Kong University of Science and Technology, Queen Mary Hospital, Hong Kong
New Bridge Street Development, Newcastle upon Tyne UK

Areas of Expertise
Autodesk Revit Architecture
Autodesk Navisworks
Model Auditing, Validation and Federation
Clash Detection and Analysis
Architectural Detailing
Technical Design
Design Coordination

Technologist at BIM Academy
BSc (Hons) HKIBIM

Role
An experienced architectural technologist by background, with 5 years’ experience in use of Autodesk Revit and other authoring platforms, Jackey also provides consultancy to industry on BIM protocols, model federation and auditing, data extraction and validation. Jackey specialises in working closely with the project team in the development of bespoke BIM execution plans, clash detection analysis reports and advising on design authoring in BIM software, model management and best practice.

Profile
Jackey is an experienced Technologist and Revit expert based in the Hong Kong team. He joined the practice in 2016 having gained an in-depth knowledge of BIM technologies on industry projects, including use of design coordination and analysis tools within Hong Kong companies such as Intelibuild and Luen Fung Contractors Ltd. Jackey originally graduated from Northumbria University with a degree in Architectural Technology before relocating to Hong Kong and applying his digital skills on complex projects in the region. Jackey is currently studying for a Master's degree in BIM at Hong Kong University.
Sydney Opera House
BIM4FM Project

Following this initial project, the Opera House asked us to tender for the delivery of our technical specification. BIM Academy teamed with leading software developer EcoDomus, and global multidisciplinary consultancy AECOM, to tender and subsequently win the delivery of the BIM enabled FM platform. Rolled out over two years the project was executed in two stages. The first stage involved successfully retrieving and linking information from existing and new databases via the digital 3D model, while the second introduced a broader range of functional modules that can be added to the BIM interface over time.

What we did
Business analysis, structured research, information systems review, technical and IT infrastructure review, systems integration design, stress testing of potential solutions, model management planning, technical report writing, software delivery and implementation, user acceptance testing and training.

Key achievements
We translated the Opera House vision of a BIM for FM solution into a specification which could be realised in the market. We have delivered and implement a viable solution.

“What BIM Academy combined technical excellence and industry experience to create a comprehensive technical specification for our bespoke BIM for FM solution”

Bob Moffat, Business Strategy and Planning Manager, Sydney Opera House
Hong Kong Hospital Authority
Feasibility Study on Applicability of BIM

Hong Kong SAR, China

Description
The primary duty of the Hong Kong Hospital Authority is to deliver beds and high quality health services to the community of Hong Kong.

The Authority was faced with the challenges of an ageing population and an ageing building stock and in 2016 announced a major redevelopment programme.

The Authority recognised this is a challenging initiative and it must be proactive and innovative in seeking solutions to help deliver it.

The Authority commissioned BIM Academy to undertake this study to research the specific applicability and value of BIM and identify opportunities and timescales to apply BIM to deliver improved service and care to the community.

What we did
The study involved face to face interviews with a wide cross section of Authority personnel and external industry bodies and drew upon BIM Academy’s experience and research in the adoption of BIM in industry. Interviews with the external bodies particularly examined the readiness of the Hong Kong market.

The final report contained thorough analysis of the business value of BIM to the Authority’s activities, a clear understanding of the readiness of the market and a set of prioritised recommendations to allow the Authority to proceed.

Key achievements
We established that BIM can deliver great value to the Authority and there is capability in the local and international market to deliver the following services to support the Authority’s capital and maintenance programmes. In addition we advised on the contractual implications of BIM implementation and delivered BIM awareness training and software training to key Authority personnel

- Improved design coordination through use of 3D digital models from each discipline to resolve potential clashes and errors at an early stage, to de-risk project delivery.
- Improved visualisation of the design through 3D modelling during early user engagements and regulatory approvals to achieve better user understanding, rapid sign-off and reduced time to market.
- Improved cost estimating and value engineering, based on quantities from digital models.
- Digital simulation of construction processes to optimise and programme and costs
Description
A pilot project undertaken on behalf of Hong Kong Mass Transit Rail Corporation (MTR). The purpose was to investigate the feasibility and business case for collating and linking asset data from various 3D digital and 2D conventional formats derived from ongoing rail infrastructure projects and migrating this data to the corporation’s asset and facilities management systems.

The study also investigated the business case and return on investment for adopting this approach on future projects.

What we did
BIM Academy were invited by MTR to develop a pilot project to demonstrate how disparate asset management data could be accrued from existing 3D models and 2D document formats produced as part of ongoing programme to extend and develop the rail network in Hong Kong and then integrated this with the Corporation’s computer aided facilities management (CAFM) systems.

BIM Academy worked closely with Ecodomus and the client to source 3D geometric models, metadata and documents from the construction and maintenance team working on the Kwun Tong Line extension, in particular a section of tunnel track and signalling systems and the Wiley Road Ancillary Building. Our team then reconfigured the data nomenclature and hierarchy for compatibility prior to successfully testing the migration of data to the client’s CAFM systems.

Also as part of the study, BIM Academy studied the business case for adopting such an integrated BIM for FM solution and were able to demonstrate practical savings in time and cost in relation to the response times and efficiency of the operational teams.

Key achievements
The pilot project has served as a demonstrable proof of concept and delivery for the further expansion of the BIM for FM approach across the Corporation and demonstrates the feasibility of applying BIM methodologies to infrastructure projects.
M+ Museum of Art, West Kowloon
BIM Management

West Kowloon Cultural District Authority
M+ Museum of Art
West Kowloon, Hong Kong

Description
The HK$4.7 billion M+ Museum is the result of an international design competition held in 2013 and won by Herzog & de Meuron, TFP Farrell and Arup.

M+ is the new museum for the 20th and 21st century art and visual culture in the West Kowloon Cultural District (WKCD). It is an ambitious project, to create a museum on the physical scale of the world’s largest museums of visual culture, aspiring to over time attain an international status comparable to that of MoMA in New York, Centre Pompidou in Paris or Tate Modern in London. It aims to be a museum rooted in and shaped by its location and the unique culture of the city.

WKCD has shown vision in demanding the use of BIM and a Common Data Environment throughout the life of the project, to improve project communication and collaboration amongst design team, stakeholders and contractors and ultimately support asset and facilities management (FM) during operation.

What we did
BIM Academy were appointed to the subconsultant role of BIM Specialist to support and advise the M+ design team Joint Venture of Herzog & de Meuron, TFP Farrell and Arup. This BIM specialist role was to coordinate and facilitate the production and management of Building Information Modelling activities throughout the design stage of the project, together with provision of clash detection and analysis peer review at key milestones. Our role included the development of BIM protocols and the BIM Execution Plan and leadership of BIM workgroups. We also undertook model management, including federation, auditing and clash detection.

Post-contract, BIM Academy were appointed by Hsin Chong Construction as BIM Manager for the construction phase. Based on site since construction activities commenced this highly responsible role involved the coordination with the contractor’s discipline leads and subcontractors review and analysis of design team information and the development of production information including Combined Services Drawings (CSDs) and Combined Builders Works Drawings (CBWDs) from the digital 3D modelling processes. In addition BIM Academy led the development of 4D construction simulation models and advised on the structure of models and data for the Asset Information Model (AIM).

Key achievements
- Facilitation and leadership of BIM workshops with the design team and client in Switzerland and Hong Kong
- Analysis of design team capabilities
- Analysis of client’s information and requirements. Creation of project BIM and collaborative working standards
- Authorising of project model Level of Development (LOD) and responsibility matrix
- Advice to JV partners on best practice and BIM working methodology
- Advice to the WKCD via the JV regarding the Authority’s BIM and CAD standards
- Revit model auditing against the BIM Execution Plan
- On site BIM management during construction, including model federation and clash detection reporting and model based production information, including 4D construction simulation to support logistics planning during construction and close liaison with construction management team.
Country Garden Pacific View
Forest City Landmark Building Phase 1

What we did
BIM Academy were commissioned by Country Garden Pacific View to develop a strategy and oversee the creation of a digital asset information model, comprising a coordinated 3D geometry model of the building fabric, structure and services, combined with non-graphical data on the maintainable assets of the fabric and systems. BIM Academy worked closely with the project management, modelling and contractor teams to devise a strategy for the development of the geometric models and classification of asset data and means to combine this in a holistic digital information model for improved management of the building and infrastructure in use. BIM Academy then worked with the client team and software developer to realise this BIM for FM solution.

Key achievements
BIM Academy worked closely with the project management, modelling and construction teams on site in Johor Bahru and developed the BIM protocols which enabled the structured development of coordinated 3D geometric models and data for the Landmark Building (Phase 1) which would allow their integration with future FM systems (CAFM and CMMS) following handover. This has the potential to deliver high value in terms of operational efficiency and enhanced user experience. The project was developed as a proof of concept within the greater Country Garden Pacific View’s Forest City smart city development in south west Johor which will be replicated across the entire development.

Country Garden Pacific View
Johor Bahru, Malaysia

Description
The Landmark Building is the focal point of the first phase of Country Garden Pacific Views’ Forest City in Johor Bahru, Malaysia.

Forest City itself consists of four man-made islands, total land area of 1,386ha. Forest City will offer international buyers luxury homes, a 3D multi-layered urban planning concept flush green surroundings with no vehicles travelling. The Integrated City with 8 major industries (Foreign Investment, Tourist Attractions, Education Hub, Entrepreneurial base, MICE, Retirement Community, E-Commerce Centres and Financial District), will be a Smart Eco-City that will accommodate an estimated population of 700,000 residents.
Sultan Ibrahim Larkin Stadium
Digital Asset Information Strategy

Description

Sultan Ibrahim Larkin Stadium is a new stadium for the relocated Johor Darul Ta’zim FC in the Malaysian Super League. The 40,000 seater stadium has an estimated cost of 200M MYR and extends over a site 140,000 sqm with a total built area of 70,000 sqm. Chinese developer Country Garden Pacificview Sdn Bhd has been given the responsibility to build the stadium. Upon its completion, the new stadium will house the main squad of the club and will also incorporate the club’s headquarters, training centre and megastore. Construction commenced in 2017 with handover in 2018.

What we did

BIM Academy were commissioned by Country Garden Pacific View on behalf of the client to develop a strategy and oversee the creation of a digital asset information model, comprising a coordinated 3D geometry of the building fabric, structure and services, combined with non-graphical data on the maintainable building assets. BIM Academy worked closely with the project management, modelling and contractor teams to devise a strategy for the development of the geometric models and classification of asset data and means to combine this in a holistic digital information model for improved management of the building and infrastructure in use.

Key achievements

BIM Academy worked closely with the project management, modelling and construction teams on site in Johor Bahru and developed the BIM protocols which enabled the structured development of coordinated 3D geometric models and data for the stadium and its systems which would allow their integration with future FM systems (CAFM and CMMS) following handover. This has the potential to deliver high value in terms of operational efficiency and enhanced user experience. The project was developed in tandem with BIM Academy’s commission supporting Country Garden Pacific View’s Forest City smart city development in south west Johor which involves the development of a similar approach which will be replicated across the entire development.
The Football Association
Asset Information Strategy

BIM Academy are now supporting the FA in the delivery of their asset information strategy through peer review workshops and information audits during the asset survey.

What we did
Asset information definition workshop leading to creation of Asset Information Requirements (AIR) documentation, review of current information and systems, tender support, tender interviews, information management support.

Key achievements
Enabling the FA to specify their asset information in a standardised format and then ensuring the appointment of a competent supplier. We are now supporting the FA in the delivery of this asset information strategy.

The Football Association
London, United Kingdom

Description
The Football Association (FA) are in the process of resurveying their two key assets, Wembley Stadium and St. Georges Park. They are interested in utilising BIM processes and technology to do this, to future proof their information.

BIM Academy were approached by the FA to support them in the creation of an asset information requirement (AIR) document. The AIR document stipulated what information they wanted on specific assets in a define format. The overall goal is that the asset information can be directly uploaded into the FA’s operational systems. The FA wanted the asset information to be created in a standardised format. BIM Academy created the AIR utilising BS1192-4.

The AIR and asset survey project was put out to tender. BIM Academy supported the FA in evaluating the tenders for the delivery of the asset survey, this including reviewing bid documents and interviewing tenderers. The critical aspect was the use of technology to capture asset information.
BAE Systems
Strategy and Implementation

Description
BAE Systems approached BIM Academy to undertake a peer review of the application of BIM processes and technologies for various divisions of their business. There was particular interest in leveraging BIM to enhance asset and facilities management activities as well as meeting the organisation’s obligations when working on projects subject to the UK Government BIM mandate and responding to emerging BIM requirements in international markets.

The initial project comprised a research exercise into organisational structures, capabilities and needs followed by the development of a proposed strategy. This then developed into a project developing a Future Operating Model for the business over 5 years. Activities included on-site business, technical systems and process discovery workshops with various departments and locations and production of reports with guidance for next steps.

The deliverables included a bespoke learning outcomes framework BIM capability development strategy. Both of these documents acknowledge two different strands of BIM implementation: internal projects and projects for third parties, both in the UK and internationally.

What we did
Business analysis, structured research, information system review, organisational review, process mapping, gap analysis, SWOT analysis, employee interviews, and questionnaires, thematic analysis and coding, strategic report production, prioritised recommendations and action plan.

Key achievements
An independent appraisal of the business value of BIM processes and technologies and the relevance of BIM uses and how these should be applied. Clear and objective recommendations to maximise efficiency and productivity within the capital and operational program and across several subdivisions of the business. This took account of essential considerations such as security, structured learning and skills development and compliance with legislation and governments standards.
Brink Groep
Strategy and Implementation

What we did
Business analysis, structured research, technical and information system review, organisational review, gap analysis, SWOT analysis, employee interviews thematic analysis, strategic report and implementation plan.

Key achievements
- Developed a corporate vision for BIM and an operational strategy for the delivery of BIM
- Completed a SWOT analysis and gap analysis
- Recommended a structured training plan.
- Developed a technology diagram showing integration of BIM software and relationships to business functions
- Showcased methods of demonstrating capability and expertise to clients
- Produced a method of assessing the competence and resources of the supply chain
- Developed a budget with indicative estimated costs for implementation including staff resource
- Provided examples of emerging best practice elsewhere in industry
- Identified pilot projects and a methodology for initiating them
- Created metrics to determine and measure the progress and effectiveness of BIM adoption.

Brink Groep
Amsterdam, Netherlands

Description
Brink Groep are a well established Netherlands-based property and project management group who commissioned BIM Academy to examine how the implementation of Building Information Modelling (BIM) within the group would enhance business growth and identify opportunities to expand into BIM-enabled services for the European property and construction market.

Following intensive research based in all the company’s offices, BIM Academy developed a strategy and implementation plan this began with a BIM enabled vision for Brink Groep, with an understanding of enhanced services and potential new clients for the Brink Groep companies. The new opportunities presented by BIM were identified and SWOT and gap analysis was developed. This was followed by a breakdown of opportunities and the key initial services and technologies Brink Groep should explore and recommendations of how these could be implemented. Finally budget costs were identified to assist the financial planning of BIM implementation. The overriding recommendation was that Brink Groep was well placed to be the market leader in delivering BIM processes through a whole life cycle approach and hence significantly increase turnover.
Durham Cathedral
Scan to BIM for FM

Description
The estates team at Durham Cathedral were seeking to apply digital solutions to improve the curation and management of this 900 year old World Heritage Site.

After carrying out a LIDAR scan of the entire building, The Chapter House was chosen as a pilot project to demonstrate the benefits of BIM processes to existing heritage buildings. This saw the historic structure turned into a digital 3D model to support the improved management of this well visited facility. The project demonstrated how digital building technology can improve the efficiency in management and operations of buildings, through the transition from traditional FM procedures to the utilisation of digital information and 3D models to deliver greater value to heritage buildings. Previously, reliance was placed on architectural drawings dating from the last century as a base for decision making and assessment of condition of the fabric. These are frequently inaccurate and often misplaced. The traditional restoration processes for the building are very labour intensive and costly and therefore impacted by budget constraints. Architects and contractors have had to be paid to make bespoke studies due to limited access to files; documents are usually missing or stored at a remote location in filing cabinets. Traditional surveying methods are often too intrusive for the sensitive nature of the building.

What we did
Laser scanning, scan to BIM digital 3D model creation, model configuration for FM uses, high quality visualisations. Building fabric condition coding within BIM model.

Key achievements
BIM Academy surveyed the building using the latest 3D laser scan (LIDAR) technology to produce 3D geometric images, known as point clouds with an accuracy of a few millimetres. After surveying was completed, the individual scans were processed to produce a single linked model of the whole building.

The point cloud was then exported to Revit, within which we modelled the entire building solely from the point cloud, before adding to the model data parameters tailored to client’s needs. This resulted in an central data rich model available for everyday use, as well as traditional outputs: sections and elevations, dimensions and volumes of ceilings and walls at no additional cost and within seconds. This allowed the creation of condition surveys interlinked with models with the history of each element, creation of maintenance schedules, accurate stone surveying, visual walk-throughs, scaffolding simulation for refurbishment planning, scenario planning and simulation (eg plan an exhibition inside a room) field tool use utilising mobile technology to explore and update the model on site.

“Not only does it give us up to date images of the building in its current state which helps plan things such as the installation and upgrade of new services, but gives us accurate information on the building we have never had before.”

Tom Billington, Property and Facilities Manager, Durham Cathedral
Description
Durham University Estates and Buildings Department procure, acquire, manage, maintain and operate around 370 built assets that host over 3,000 staff and 17,500 Students. The vision for the University’s estate and the landscape in which it is set is that it should be of a quality which befits a leading international university.

The main purpose of the project was to examine how to improve the implementation of Building Information Modelling (BIM) within Durham University and recommend a BIM enabled vision and BIM implementation Roadmap.

What we did
Our commission was to deliver the following:

- An analysis of the business value of BIM relevant to Durham University to inform decision making on potential BIM adoption
- A corporate vision aligned to the organisations business values and business plan, articulated through a mission statement
- An operational strategy including the recommended structure of revised management processes to be developed during the implementation phase
- SWOT analysis, identifying strengths, weaknesses, opportunities and threats.
- A gap analysis identifying areas requiring development to bridge existing deficiencies in skills, process and technology
- A structured training plan to support the realisation of the roadmap

Key achievements
The overriding recommendation was for the university to adopt BIM enabled processes to drive efficiencies in their maintained estate and capital programme.

In essence, the recommended long term strategy was to develop a digital representation of the campus in which the geometry of the estate is modelled with associated metadata about all maintainable assets, held in a consistently named format and linked to existing and future building management systems (CAFM, CMMS and BMS).

This digital ‘single source of truth’ will be at the heart the effective future management of the estate. It was acknowledged that such a transformation will not happen overnight and an incremental and prioritised approach was recommended with priority given to those sections of the estate with greatest business and educational impact.
Greenwich Peninsula Riverside
BIM Management

Quintain / Knight Dragon
Greenwich Peninsula Quays and Riverside Phases 1 and 2 London, United Kingdom

Description
A high quality mixed use regeneration scheme for Quintain and subsequently Knight Dragon in partnership with the Greater London Authority and the Royal Borough of Greenwich.

The 190 acre proposed scheme is in a prominent riverside location adjacent the O2 Arena and Canary Wharf financial district, comprising:
- 10,000 new homes which include high rise luxury apartment blocks and social housing
- 3.5milion sqft commercial space including office space and shops
- Bars, restaurants and other entertainment options
- Iconic attractions
- 48 acres of green space to include communal parks and greens

What we did
As the client advisor and BIM manager, BIM Academy:
- Developed the client BIM brief, including Employer's Information Requirements
- Developed the BIM Execution Plan
- Chaired BIM workgroup meetings
- Led the model management process
- Produced model audits and recommendations
- Carried out design coordination and clash detection
- Provided software training
- Supported with data property set definition for FM
- Provided capability assessment of the supply chain
- Offered procurement advice and support
- Undertook peer reviews of the design teams and contractors performance.

Key achievements
Recognising the value BIM could bring to their project through improved quality of the end product and reduced risk, the client also valued the improved transparency to the design process and the potential for efficiencies during the operational stage following handover.

BIM Academy actively supported the client and project team, several of whom were early adopters of BIM adoption, by establishing the right protocols and management processes, acting as client trusted adviser during the development of modelled information and providing support and advice as well as training where needed.

As a result the contractor was able to adopt and develop the models to deliver improved coordination and quality control on site, including the use by specialist subcontractors.
Quintain / Knight Dragon
Greenwich Central Marketing Hub

Quintain / Knight Dragon
Greenwich Peninsula,
London, United Kingdom

Description
A prestige marketing and visitor facility set at the heart of a major urban regeneration scheme adjacent one of London's iconic landmarks.

The Greenwich Peninsula redevelopment comprises a major high quality mixed use regeneration scheme by Quintain and subsequently Knight Dragon, in partnership with the Greater London Authority and the Royal Borough of Greenwich.

The 190 acre scheme is in a prominent riverside location adjacent the world famous O2 Arena and Canary Wharf financial district and comprises 3.5million sq ft of commercial space including retail and office space. 10,000 new homes which include high rise luxury apartment blocks and social housing.

The scheme also includes bars, restaurants and other entertainment alternatives, iconic attractions, infrastructure and transport integration, 48 acres of green space to include communal parks and greenspaces.

What we did
Developed client BIM brief, including Employer’s Information Requirement, Developed BIM Execution Plan, BIM workgroup leadership, Model management, model federation and auditing, software training, data property set definition for FM. Capability assessment of supply chain. Procurement advice and support. Peer review of the application of BIM processes and technologies.

Key achievements
The client understood the value BIM could bring to their project through improved quality of the end product reduced risk, improved transparency to the design process and the potential for operational efficiencies following handover.

In realising this vision, BIM Academy supported the client and project team, several of whom were at an early stage of BIM adoption, by establishing the right protocols and management processes, acting as client trusted adviser during the development of modelled information and providing support and advice as well as training where needed. As a result the contractor was able to adopt and develop the models to deliver improved coordination and quality control on site, including the use of the models by the contractor and specialist subcontractors to improve productivity and programme certainty.
Leeds Beckett University
BIM for Estates Strategy

Leeds Beckett University
Leeds, United Kingdom

Description
Leeds Beckett Estates Services procure, acquire, manage, maintain and operate 108 built assets that host 2,900 staff and 29,000 Students. The estates strategy is to improve the condition of their estate, improve space utilisation and reduce carbon emissions.

The main purpose of the project was to examine how to improve the implementation of Building Information Modelling (BIM) within Leeds Beckett University and recommend a BIM enabled vision and BIM implementation roadmap. The project also examined the procurement of a new CAFM system and advised on how this could be BIM enabled.

What we did
- A review of Leeds Beckett’s current process and workflows
- Breakdown of BIM opportunities and recommendations
- Roadmap and indicative budget detailing how Leeds Beckett should implement the recommendations and future costs for the BIM implementation
- A corporate vision for BIM aligned to the organisation’s business values and business plan
- An operational strategy including the structure of revised management processes to be developed during the implementation phase.
- A SWOT analysis
- A gap analysis
- A structured training plan to support the realisation of the roadmap
- A technology diagram showing integration of BIM software and relationships to organisational departments
- Supporting information that was included in the information to tender (ITT) for new CAFM system
- Supporting information for the development of the internal process maps for capital and estate management
- Methods of assessing the competence and resources of the supply chain
- An example Employers Information Requirements (EIR) document
- Examples of current and emerging best practice elsewhere in industry
- Identification of pilot projects and methodology for initiating them
- Metrics to determine the progress and effectiveness of BIM adoption during the implementation phase and thereafter

Key achievements
The overriding recommendations for delivering BIM allowed Leeds Beckett to drive efficiencies out of their new and existing estate, through the maximisation of space utilisation, the potential reduction in carbon and enhanced user experience. It also positioned the university as leading the adoption of BIM within large estate owners in the UK. The industry is on the cusp of a significant digital change and Leeds Beckett can drive this forward from a client’s perspective.
Legal and General Homes Modular
Strategy and Implementation

Description
In 2016, Legal and General Homes Modular Ltd (LGHM) embarked on an ambitious programme to meet the needs of a UK housing sector which was demanding affordable high quality sustainable housing to meet the chronic undersupply in the market. Adopting a volumetric modular approach using Cross Laminated Timber (CLT), LGHM recognised that off-site manufacturing techniques and procurement processes could be streamlined by the intelligent application of digital technologies and commissioned BIM Academy to undertake an objective review of their current processes and establish a strategy and implementation plan to achieve an integrated digital approach.

Working closely with the LGHM team at their manufacturing facility in Yorkshire, BIM Academy studied the application of software platforms and workflows, applied best practice from their experience in industry and created a workflow aligned with appropriate software which could optimise the design, procurement, manufacture, assembly process.

The underlying principle adopted, aligned to UK government BIM policy, was that integrated data-rich 3D models derived from optimised object libraries will be developed and maintained as a single source of truth from project inception through off-site manufacture to site assembly and linked to procurement and cost management systems. The ultimate aim is to maximise value to the business and its customers.

What we did
Over a five month period, specialists from BIM Academy worked closely with the LGHM and retained design teams to evaluate design to manufacture processes and technologies and identified opportunities to streamline or reconfigure these workflows and integrate them with other processes such as estimating (Bill of Material automation) and procurement (ERP). The result was a comprehensive BIM strategy and implementation plan, with prioritised actions, supported by a BIM protocol to guide practical application on projects. A clear long-term vision was first established, to recognise the business value of BIM and clearly communicate the approach to be adopted. To facilitate this an early BIM awareness workshop was held to establish consensus and address any inconsistencies in understanding the relevance of BIM to the business and its context in UK industry, including the government policy on BIM Level 2. The workshop also covered the functionality and value of the commonly used BIM software tools. This was followed by a review of organisational structure, relationships with the supply chain and analysis of current design to manufacture processes and the technical systems applied to support it. This identified risks and opportunities which were clarified through SWOT and gap analysis and shaped into strategic recommendations and a BIM protocol. Technology diagrams showed interrelationships and dependencies between software which were then tested. This was supplemented with an evaluation of Common Data Environment (CDE) systems, supplier assessment, QA and model auditing protocols and a prioritised training strategy.

Key achievements
BIM Academy delivered a comprehensive strategy and implementation plan to support the digitisation of the design to manufacturing process as part of an integrated holistic process. This was accompanied with hands-on technical support from the BIM Academy data scientists who were able to advise on the sometimes challenging issues of interoperability between software and streamline workflows which would otherwise have become overcomplex.
Manchester Central Library
BIM Consultancy

Manchester City Council
Manchester Central Library
United Kingdom

Description
The £170M comprehensive refurbishment of a Grade 2* listed building as part of the larger redevelopment of the town hall complex. Constructed in 1934, the 172,000sqft building had suffered from progressive structural failure, time expired systems and fabric and high asbestos content.

This challenging project was seen as a catalyst for BIM adoption by Manchester City Council. The local authority saw significant benefits in ultimately using the model to manage the completed facility as well as efficiency benefits during design and delivery stages.

The project was a pathfinder for progressive BIM adoption across the authority's property portfolio. The project commenced on site in 2010 and was successfully handed over in early 2014.

What we did
Strategic BIM planning, independent client advisory role and peer review, implementation support to design team and contractor.

Key achievements
Originally part of the Ryder Architecture project team, BIM Academy worked with Manchester City Council client team from project inception in 2009 to develop the strategic vision for BIM on the project and plan its implementation.

This included supporting the consultant team in understanding relevant BIM uses and their practical application, engaging external specialists and software vendors where required and advising the client during contractor selection. During construction stage we have continued to facilitate the implementation of BIM uses for design coordination, logistics planning and asset management.

A key component of the project’s success was that the project was managed in a truly collaborative environment with a fully integrated project office. This environment, coupled with the client’s experience over the past seven years using framework arrangements, allowed the team to cut across many of the perceived obstacles to BIM adoption, such as ownership of the model and contractual liability and management of risk.

Applying BIM to a complex refurbishment when the industry was at the beginning of its learning curve was a challenging, but ultimately successful, enterprise.

The benefits accrued in terms of improved efficiency, safety and asset management are testament to the team’s tenacity, practical knowledge of BIM technologies and collaborative ethos.

The project was closely monitored by the UK government BIM working party and was praised as ‘Most BIM friendly Project’ by Building magazine in its ‘Projects of 2011’.

“Trying to explain this two-dimensionally to English Heritage was almost impossible, we had workshops and using the model built it up piece by piece to identify exactly how much structure we needed to take out. BIM was a great advantage”

Graham Fenton, Laing O’Rourke.
Newcastle Civic Centre was opened in 1968 and is a Grade II* listed heritage building. As a result, the building presents two particular difficulties for management;

Firstly all the listed elements of the building need to be managed and tracked to prevent damage or removal during the building’s extensive refit. Secondly the building contains asbestos which not only requires extremely careful management but also results in significant costs for repeated surveying works.

Your Homes Newcastle manages 30,000 homes across the city on behalf of Newcastle City Council and a number of other housing trusts, including being involved in the procurement of additional properties within the Council’s estate. Your Homes Newcastle engaged with BIM Academy at the suggestion of Newcastle Civic Centre with the desire to investigate more effective ways of managing their extensive estate.

What we did
BIM Academy engaged with both organisations to raise their understanding of the value BIM could and the specific opportunities to deliver this.

BIM Academy identified that the current asbestos surveying processes within each organisation were extremely costly and delivered little value. It was demonstrated that asbestos records could be delivered directly into respective 3D asset models allowing more accurate, understandable and useful information to be developed that wouldn’t as a result require as extensive continuous resurveying. This additionally led to BIM Academy’s engagement with a number of asbestos surveying providers.

The Council team were trained by BIM Academy in the Revit Architecture to begin development of the core of the Civic Centre building. Following development of the model, the team took over modelling of the building with support provided as requested.

A model of a series of apartment blocks were developed for Your Homes Newcastle to demonstrate the ability to aid in the management of voids as well as to allow planning of reworks and regeneration of assets. The models developed provided for a significantly improved record of the buildings and the managed assets.

Key achievements
Developed model authoring skills within Newcastle City Council.
Developed asset information models for a number of existing assets.
Worked with clients to gain accurate information on existing estate.
Developed process for recording asbestos information in a more accessible and usable way.
Developed process for recording and tracking listed building elements more effectively.
NewcastleGateshead City Model

Virtual NewcastleGateshead
Newcastle upon Tyne, United Kingdom

Description
Virtual NewcastleGateshead (VNG) is a joint venture between Northumbria University, Newcastle City Council and Gateshead Council to create a three dimensional digital model of the urban areas, around Newcastle and Gateshead.

The VNG model offers a unique opportunity by providing developers and architects with the means to accurately assess the impact of design proposals within their urban context.

The model also supports VNG’s host partner, Northumbria University, in their research activities into city modelling and spatial data management and manipulation. The project, managed jointly by the three partners, has analysed the benefits that the model will bring to a range of stakeholders and is researching into the latest digital and computing technologies to create a more efficient and effective way of achieving better design quality. It aims to place Newcastle Gateshead at the forefront of virtual city modelling.

What we did
The model to date is based upon aerial photogrammetry and laser scanning survey techniques. The future will require the model to be based upon a database structure to facilitate regular update procedures and efficient management. Northumbria University’s current research is investigating how developments in Building Information Modelling could be used to update the model and open modelling standards such as CityGML, Collada and the Industry Foundation Classes are being used to develop a semantically rich and extensible database structure.

Key achievements
The aim of the VNG project has been from the outset to seek ways to create one definitive, accurate, interactive model of Newcastle and Gateshead with the potential to be used for a range of applications. It has recognised that in order to be successful and sustainable a digital model needs to be effectively managed, regularly updated, and integrated into existing working practices and processes. These organisational requirements are as important as having appropriate technical solutions in place.

“The Virtual Newcastle Gateshead City Model provided a platform for many uses from design development and improvement through to promotion and marketing”

Michelle Percy, Director, Silverlink Holdings Ltd
Newcastle University
BIM for Estates Strategy

Description
BIM Academy were invited by Newcastle University Estates Support Services (ESS) to review the relevance of BIM processes and technologies to the university estates department’s day to day activities and future strategy and to prepare a high level needs assessment, gap analysis and adoption strategy for consideration.

What we did
Organisational and operational review, estate strategy review, analysis of existing information systems, software and skills, identification of improvements, proposal for potential BIM uses, option appraisal and prioritised recommendations and risk analysis.

Key achievements
As the owner of a diverse portfolio of property types including several heritage and complex technological facilities, the client understood the potential value of utilising BIM across the entire estate, both on its new capital program or existing estate. At the time of commission however they did not know how to start implementing BIM in a structured manner within their interdependent processes. Our research and subsequent report detailed a series of practical and pragmatic steps to introduce BIM based on an estate wide strategy.

We also identified that, contrary to some perceptions in industry, a high level of geometric detail is not required in the graphical model. Simple geometry models, produced relatively quickly and cheaply, can provide most of the essential functionality and data-readiness. This was seen as a favourable starting point to reduce the potential level of investment in the scheme. This project has led to ESS mandating BIM on all of their new capital projects.

BIM Academy personnel
Peter Barker, Graham Kelly, Ashley Murray
Newcastle University
COBie to CAFM

Newcastle University
Newcastle Upon Tyne

Description

Having recently procured a proprietary CAFM system, Newcastle University wanted to create a solution that would take appropriate asset information from all future capital projects in a consistent, verified COBie format and then load this information into their CAFM system. To do this, the University approached BIM Academy to support them in creating this solution.

A pilot project was identified to test the solution before the process would be utilised on all large capital projects.

To ensure the delivery of good quality information from the capital delivery phase BIM Academy also carried out regular audits of the information as it was developed on the pilot project, providing direction for gradual improvement. This included providing tailored guidance and support to the project team as needed.

BIM Academy created a bespoke tool that provides a translation between the data from construction delivered following the COBie schema to the schema required by their CAFM system. This allows the University at the end of each capital works project to load their CAFM system directly from construction information. An activity that used to take them months to complete, can be done immediately after handover.

What we did

- Audited the output from the design team
- Provided support and training to ensure the COBie data was compliant with the COBie schema.
- Provided guidance and clear practical explanation of how COBie should be used to all members of the project team across the whole lifecycle.
- BIM Academy developed a translation tool that converted information from a COBie schema into the format required for importing into the CAFM system.

Key achievements

The key achievement on this project was that we were able to analyse the import requirements of the University’s CAFM system and create a tool that extracts information from a COBie information exchange and maps the data directly into a format accepted by their CAFM system which can be used on future projects and saves the University a considerable amount of time and money.
Northumbria University
Digital Campus Model

University of Northumbria
Newcastle upon Tyne, United Kingdom

Description
Supported by BIM Academy, Northumbria University Estates Department is using BIM processes and technologies to support the management of its city campus which comprises 32 disparate non residential buildings totalling over 120,000 sqm.

Starting in 2010, BIM Academy supported the University Estates Department campus in determining its vision for BIM usage to deliver efficiencies in the management of its assets. We developed the detailed requirements for appropriate BIM uses, eg aerial photogrammetry, laser scanning and scan to BIM and 2D to 3D data conversion and then delivered these on behalf of the estates team resulting in a federated model in Revit and IFC format.

The model has also been used as a test bed to explore the analysis of environmental performance and carbon emissions, as well as a valuable communication and marketing aid for the university and its users.

Through detailed discussion with the university operations and estates teams, the key strategic issues were business value and justification, ownership and maintenance, change management, technology platforms, content creation and methods of deployment.

Amongst our findings associated with this work to date are that BIM enabled asset and facilities management can offer major efficiency gains in the retrieval and maintenance of drawings and record information; understanding client specific requirements prior to initiation is important and multi technology platforms are required, based on open standards (IFC). It is also vital that the processes for updating the model are carefully considered at the outset.

What we did
Laser scanning, Revit model creation, object library creation, FM data integration, visualisation, Data property set development for FM use.

Key achievements
The cost efficient creation of a comprehensive intelligent 3D model of the estate which serves as a valuable digital resource to enable workflow efficiencies for the maintenance of asset data. The project is a test bed for further benefits for the measurement of environmental performance and management of critical systems.

“The approach to developing campus building information models should be that “Content is King” How much information is used? Is it in the right format? How much detail needs to be added or omitted? The decision should lie in what the business needs”

Professor Steve Lockley, Northumbria University
Sir Robert McAlpine
BIM Skills Development Programme

Multiple Locations
United Kingdom

Description
BIM Academy was approached by Sir Robert McAlpine, the major UK based contractor, to create a bespoke skills development training programme for their UK business. Scoping took place through workshop style sessions which allowed staff in different roles and backgrounds in the McAlpine business to take part and work out what they wanted to gain from the BIM courses and how this should be structured. Four completely bespoke programmes were then created by BIM Academy through analysis of the results from the workshops and trial runs of courses.

The feedback gained from these sessions and demo courses allowed the final four course outlines and content to be created and then delivered to approximately 100 staff over a one year period.

BIM Awareness – introductory course for all
BIM Management – for design and project managers
BIM Commercial – QS and estimators
BIM Planning – for construction managers and planners

To make the training more interactive and to allow the staff to get involved with the training, the use of a ‘virtual project’ format was constant throughout the two days. This allowed staff to work through a project scenario and visualise and understand the application of the information they were being trained on.

What we did
Bespoke skills development and training programme for major contractor, including all disciplines - design management, QS, construction management and planning.

Key achievements
McAlpine staff can now work practically and effectively on projects utilising BIM skills. They can apply their knowledge of BIM and understand the implication of BIM government mandates on both public and private projects. The benefit is the reduced risk on projects and the increased benefit to McAlpine and their clients. The two day workshops involved a combination of hands on technical tool training, didactic teaching and workshop based discussion. We utilised voting buttons as a key part of the training.

BIM Academy has received extremely positive feedback from McAlpine staff taking part in the training programmes. with most responding with excellent or very good ratings. BIM Academy were subsequently retained by McAlpine to develop and repeat delivery of the training in the subsequent year.
Greater Manchester Chamber of Commerce
BIM Awareness and Skills Workshops

**Description**
BIM Academy joined forces with Greater Manchester Chamber of Commerce (GMCC) to create the concept of free BIM Awareness training for Small and Medium Enterprises (SMEs) in NW England.

Gaining funding from the European Social Fund meant that GMCC could raise awareness of the value of BIM upskill regional SME designers, manufacturers, clients and contractors in this field.

In early 2015 funding was been secured for 40 SME’s to receive BIM training and this was rolled out through ten one day courses in Spring 2015.

**What we did**
Working together BIM Academy and GMCC developed a course that would benefit all of the delegates taking part by introducing them to the basics of BIM and its potential business value, advancing to modules on the UK Government’s Level 2 BIM mandate.

From this the delegates learnt how a small investment in change management and upskilling of employees can benefit their businesses and the quality and value of their service offering.

**Key achievements**
There were a series of training sessions which were split into two sessions; morning and afternoon.

**Session 1**
Introduction to BIM, Evolution of BIM in the construction industry, BIM Maturity Levels The UK Government Mandate, BIM processes and uses, Multidisciplinary collaborative working and technical challenges, The BIM Execution Plan, Business self assessment, Brief guidance and provision of a self-assessment template to use following the course to assess your business’ next steps.

**Session 2**
An introduction to and awareness of the current requirements of Level 2 BIM, an introduction to and awareness of PAS1192 Part 2 and other Level 2 documentation and standards, The Common Data Environment, Employers Information Requirements, Introduction to COBie.

A wide range of managerial and technical staff with various levels of experience and knowledge participated in the sessions allowing them to engage with the information needed regarding the government standards.
Multiple Clients
Virtual Project

Multiple locations - UK, China, Australia

Description
As a centre for excellence, BIM Academy is supporting the UK and other governments BIM strategies to deliver value through reduced cost, improved programme certainty, reduced carbon emissions and safer environments. BIM Academy has developed an innovative, engaging and collaborative multidisciplinary course to allow industry professionals to experience the value of BIM.

Based on a sample project, this is achieved through workshops, demonstrations and hands on training to experience the benefits of using BIM processes and software tools for design, construction and operation.

The intensive course is designed to allow a project team or organisation to experience BIM in a real time collaborative environment. It enables participants to explore the BIM process and software tools with few of the risks or costs which the uninitiated could encounter on a real project. The two or three day course is delivered by a multidisciplinary team of experienced and skilled practitioners at any suitable location.

What we did
Virtual Project encompasses a range of practical and engaging techniques such as presentations, demonstrations, workshops and software tools training to support the delegates. The course begins by teaching the basics of strategic BIM implementation, explaining government and client strategies including UK Level 2 BIM which was mandated on all public projects in UK in 2016.

Our tutors then demonstrate how to plan a BIM project, starting with an employer’s information requirements (EIR), then developing a BIM execution plan (BEP) and detailing how deliverables will be achieved.

Delegates then progress through the design process engaging a variety of available software tools to support delivery, but most importantly, working in a cross discipline collaborative team, following considered processes in the most effective way possible.

Our experienced staff are on hand throughout the full course to support the delegates and answer any questions that arise. Finally delegates present back to the tutors their project identifying where they have gained benefit from the process and what they will be taking back to their respective organisations and peers.

Key achievements
Delivery of practical and rewarding experience of the BIM process. Provides a unique multidisciplinary learning experience. Provides a safe and risk free opportunity for experiencing the BIM process. Gives visibility of a wide range of BIM software tools to support efficient processes. Delivered off site at client locations.

“The team not only enjoyed it but now feel well prepared to discuss, champion, promote and use BIM as an FM tool wherever they can. It is not often training can motivate and capture the creative imagination of so many people from different professional backgrounds.”

Tony Smith, Managing Director, Mears FM Group

“Worthwhile, important for the future, groundbreaking”

Andrew MacIver, Highland Council
Innovate UK Research Project
Smart Connected Buildings

What we did
As part of an Innovate UK research project, a web application able to link building information contextual data with operational performance data was developed.

The product is a flexible and scalable web hosted dashboard which acts as a centralised HUB where data can be sent, collected and analysed.

The application links data inputs to building elements such as apartments or rooms to give context, additionally, the same inputs are used in conjunction with customisable alerts and advice libraries to inform stakeholders of problems and give practical actionable advice to help minimise complaints and switch to a more proactive building management approach.

The target audience is Social Housing Providers, offering monitoring in both new and existing building stock to address business needs highlighted below:

- Reducing tenant complaints by being able to set alerts such as for high humidity or cold environments.
- Compare ‘as design’ performance against ‘in use’ to highlight performance gaps.
- Compare performance before and after building improvement work takes place, to quantify success and value for money.
- To enable proactive maintenance regimes based on the feedback provided by the platform.

Key achievements
We have delivered an intelligent data platform containing building design information, sensor data and user feedback producing meaningful, actionable advice for occupiers, building owners and those who build and maintain properties was created.
Queensferry High School
Low Carbon Innovation

Queensferry High School
Edinburgh, United Kingdom

Description
Scottish Futures Trust have observed that the reported operational energy costs in existing new build schools is up to 3 times higher than the predicted energy usage. This study involved exploring the factors that are impacting this increased energy usage. This involved exploring the current legislation and design standards being implemented in new build schools, how the usage of existing new build schools has differed from the predicted usage as well as exploring the existing methodologies used to create energy models.

The team felt that there were many real impacts that affected the difference between predicted energy usage and operation energy usage. The aim of this project was to explore these impacts and create a set of design measures and improvements to previously adopted BIM work flows in order to bridge the gap between design and operation Queensferry High School and future Scottish new build schools.

One of the key impacts from a design standard point of view, was that the traditional approach to converting architectural models into energy simulation models involved taking 2D plans and elevations from the architects and recreating geometry manually, or drastically simplifying the model before exporting. It was agreed that despite using a BIM model, in both scenarios the model is only used as a reference resulting in a lot of wasted effort and an unoptimised BIM work flow.

What we did
BIM Academy's approach was to run workshops that analysed the existing work flows in place and assess the modelling practices in use both from an architectural and an engineering standpoint. Throughout the workshops an optimised work flow was explored that provided a more efficient method of obtaining an energy model that was derived from architectural model and did not involve either the recreation or simplification of the original geometry.

The workshops conducted involved collaborative effort from the architects, the engineers and ourselves. Each party involved had an equal say in the workshop proceedings and as a result many methodologies and work flows were explored and documented quickly and efficiently.

BIM Academy also provided quality assurance throughout the investigation, ensuring the design practices and work flows explored in the workshops were implemented on the project. BIM Academy also made use of their in house computer science capabilities and produced plugins for Revit that enable architects to issue models faster and rule based quality assurance checks to allow BIM Coordination to be audited quickly and consistently before every handover.

As a result of the direct collaboration between the architects and the engineers, within the workshops, as well as improved innovative work flows, new optimised design options were incorporated into Queensferry High School’s design that made use of computational design tools to provided a more informed cost benefit analysis.

Key achievements
Through the conducted workshops, BIM Academy created a strong collaboration and working relationship between the design team. As a result of the workshops; the rigour, work flow optimisations and collaborative effort by all involved resulted in the design team delivering a more informed design coupled with an energy simulation model that is directly derived from the architectural model, considerably reducing the overall wasted effort on the project.
RIBA Enterprises (NBS)
National BIM Library

Key achievements
BIM Academy played a leading role in the creation of this essential source of digital information for the supply chain to aid the construction industry in BIM adoption. The library promotes the application of consistent quality standards to support data continuity and reliability throughout the entire project lifecycle.

“We commissioned BIM Academy due to our confidence that the team work between BIM Academy and NBS would be able to do some pretty special things. BIM Academy combines practical experience from Ryder Architecture with their application of BIM in industry since 2003 and Northumbria University with their academic expertise, software skills and bespoke IFC tool kits”

Stephen Hamil, Director of Innovation, NBS

Description
Commissioned by RIBA Enterprises (NBS), BIM Academy were responsible for scoping and authoring National BIM Library as the UK’s first platform neutral, free to use library of high quality generic and proprietary BIM objects, data rich, best practice generic and proprietary BIM components for use by industry professionals. The library is available online and enables designers, contractors and other construction professionals to locate and download generic BIM objects for a wide range of systems and products.

All objects are available in IFC and the main BIM software file formats. The objects contain parameters derived from industry best practice including COBie to support asset management.

Following its initial launch in 2012, the generic library has been joined by a substantial list of proprietary manufacturers’ objects which have also be scoped and authored by BIM Academy as part of NBS specialist supply chain.

What we did
Research and scoping of requirements, consultation with manufacturers. Data property set definition.

Generic and proprietary object authoring in multiple native formats (Revit, ArchiCAD, Bentley AECOsim, Vectorworks) and IFC. Interoperability testing. User manual authoring and object maintenance.
HM Government BIM Taskgroup
BIM Toolkit and Digital Plan of Work

“BIM Toolkit allows industry to enforce discipline and rigour across design and delivery that doesn’t exist at present”
Alistair Kell, BDP

“The Toolkit provides a common language across different infrastructure types and the ability to identify the documentation, the graphical data and the non-graphical data to be provided at each work stage by the supply chain.”
Terry Stocks, Ministry of Justice, HM Government

HM Government BIM Taskgroup
United Kingdom

Description
The free to use BIM Toolkit developed by NBS on behalf of the UK government BIM Taskgroup provides step by step help to define, manage and validate responsibility for information development and delivery at each stage of the asset lifecycle.

The toolkit provides step-by-step help to define, manage and validate responsibility for information development and delivery at each stage of the asset lifecycle.

What we did
Use case analysis and market testing, bespoke software development, data configuration, systems integration, product testing and user feedback.

Key achievements
BIM Academy were part of the development team alongside NBS, RICS, Microsoft, BDP, Mott MacDonald, Newcastle University and Laing O’Rourke. Billed as the “last piece of jigsaw in the UK Government’s Level 2 suite of BIM tools”, the BIM Toolkit is an interface that allows all project teams to interact with one another and state what work they will carry out at various stages of a development. The online resource guides project teams through their development of the project and its information requirements from the briefing and strategy stages to handover and operational stages and provides a guideline to get the most out of multidisciplinary Level 2 BIM.