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Modern technology explores Medieval room

Building experts from Northumbria University, Newcastle, have used the latest in 3D laser scanning technology on a 900-year-old room at Durham Cathedral featured in the Harry Potter films.

The Chapter House dates back to 1083 and has been chosen as a pilot project to demonstrate the benefits of the Building Information Modelling (BIM) process, which will see the historic room turned into a 3D model.

Northumbria University and BIM Academy experts spent two days scanning

the historic room and will now create a 3D BIM, which will provide the Cathedral with a new digital toolkit for understanding and managing the building.

This is a huge contrast to the architectural drawings the World Heritage Site has previously relied on for assessing the state of The Chapter House.

Professor Steve Lockley said: “BIM Academy at Northumbria University is working with Durham Cathedral Property to capture and preserve information about the fabric of the historic monuments.

“They are using the latest developments in 3D laser scanning to record accurate details of a part of Durham Cathedral that was used as Professor McGonagall’s classroom in the Harry Potter films

“If successful, this new method may greatly simplify how the physical condition of our monuments is recorded for preservation and maintenance by future generations.”

BIM Academy is a globally-renowned joint venture between Northumbria and Ryder Architecture, which has won a host international awards and has worked on iconic buildings such as the Sydney Opera House.

Northumbria University research fellow in Architecture and Built Environment James Charlton and Senior Lecturer Stuart Eve from the department of Architecture and Built Environment undertook the 3D laser scanning, while BIM Academy senior project manager Graham Kelly and BIM technologist Ben White will create the BIM of The Chapter House. Property and Facilities Manager at Durham Cathedral Tom Billington was also on hand for the scanning.

Tom said: “Using modern BIM technology on a building like this is very exciting and the potential of such a survey is huge. There are two sides to our work here, the running of a world famous, well visited, large site and the conservation and protection of an ancient monument. The BIM and 3D laser scanning will help with all of this.

“Not only will it give us up to date images of the building in its current state and layout, which will help us when planning things such as the installation

and upgrade of new services but it will give us accurate information about the building which we have never had before.

“Things like the dimensions and ‘thickness’ of the vaulted ceilings and walls, which has implication when it comes to historical records and archaeological surveys. The scanning will give us an accurate stone survey as well, which will allow us to track the deterioration of the stonework and help us plan the next stage of conservation.

“It may answer a few questions about the application of the technology itself also. There is no doubt that this type of scanning should be the way forward in all new build construction, but its implementation on existing buildings has been questioned throughout the construction sector. I think we may be about to put those queries to bed.”

The project with Durham Cathedral follows the launch of a new BIM for facilities and asset management consultancy service (BAFM) being offered by BIM Academy.

BIM Academy’s approach supports clients in their transition from traditional facility and management procedures to a process that ensures the effective use of digital information and 3D models to deliver greater value to businesses.

This includes creating 3D models of existing buildings or estates through laser scanning or 2D to 3D conversion. These models can then be used to support operation and maintenance.

BIM Academy senior project manager Graham Kelly said: “The creation of a 3D model is exactly what BIM Academy is doing on its project with Northumbria and Durham Cathedral. Northumbria is laser scanning a section of the building and BIM Academy will convert this into a BIM.

“As a result, Durham Cathedral will have an easily accessible data rich model which will allow them to plan and showcase adaption scenarios of the building, attach and visually represent condition survey data to the model, take accurate measurements and volumes for restoration works, create accurate plans, section and elevations, and utilise mobile technology to explore the model whilst on site.”

BIM Academy's BIM for facilities and asset management consultancy service (BAFM) is on offer to companies. For more information, contact Barry Errington, Business Development Manager, on 0191 227 3933 or barry.errington@northumbria.ac.uk.

Northumbria University, Newcastle has a limited number of places for high-performing students on Architecture, Surveying and Construction courses through this year's Clearing. Full details and advice for students can be found by visiting www.northumbria.ac.uk/clearing.

Northumbria is a research-rich, business-focussed, professional university with a global reputation for academic excellence. To find out more about our courses go to www.northumbria.ac.uk

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