

Proposed workshop title:

**Exploring the mutual role of Building Information Modelling (BIM),
Distributed Ledger Technology (DLT), and Internet of Things (IoT) in changing
the design, construction and operation of built assets:
An ARCOM doctoral workshop**

Abstract

The construction sector is facing many challenges including low productivity, poor regulation and compliance, lack of adequate collaboration and information sharing, and late payment practices. Many new technology and process innovations are being brought by the digital transformation with the potential to improve the performance of the construction sector.

Three key innovations that are considered as key catalysts of the digital transformation are Building Information Modelling (BIM), the Internet of Things (IoT), and Distributed ledger technology (DLT, e.g. Blockchain, the underpinning technology for cryptocurrency Bitcoin). BIM is a process, involving various tools and technologies, to create and manage information when designing, constructing or operating a building or infrastructure asset. IoT is a system of interrelated smart devices with identifying, sensing, networking and processing capabilities that allow them to communicate with one another and with other devices and services over the internet. DLT are append-only ledgers that chain blocks of information through a cryptographic hash function where transactions (anything of value), grouped into blocks, are verified and validated through a consensus mechanisms.

A high level of expectation is witnessed in the construction sector and built environment about the benefits of BIM, IoT and DLT. However, adoption levels, value proposition, and changes required across regulatory (legal, procurement), education and learning, and culture is different for each of the three innovations and are not yet fully understood. Additionally, the complementarity among BIM, IoT, and DLT still lack theoretical foundation and empirical evidence despite the growing prerogative about their mutual role found in many national and international industry reports.

This workshop is proposed to support doctoral candidates and early career researchers share their research and network with peers to broaden their knowledge and understanding of the application and mutual role of BIM, DLT and IoT in construction through. Participants will have the option to submit an abstract, present an academic paper, or propose an interactive breakout session to support data collection on one or more of the themes detailed below.

Abstracts should be themed on the application of one, or preferably a combination, of these technologies/topics in the construction industry:

- Building Information Modelling (BIM)
- Internet of Things (IoT)
- Digital Twins
- Construction supply chain
- Digital construction
- Payments
- Smart contracts
- Smart technologies

Application for ARCOM Funding

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**Northumbria
University**
NEWCASTLE

- Smart buildings
- Smart cities
- Health and safety
- Automation
- Data provenance
- Industry 4.0

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Proposed date: Thursday, 21st November 2019