Title: The use of BIM and sensing technologies in Infrastructure Assets Performance Management

Type of award: PhD Research Studentship

Department: Civil Engineering

Scholarship Details: Scholarship covers full UK/EU (EU applicants who have been resident in the UK for 3 years prior to 1 September 2017) PhD tuition fees and a tax-free stipend at the RCUK rate (£14,553 in 2017/18).

Duration: 4 years

Eligibility: UK/EU applicants only

Start Date: Before 1 October 2017

PhD Topic Background/Description

With the use of Building Information Modelling (BIM) mandated for all public infrastructure projects, many questions arise about how to make the most of the technology in relation not only to the design, but also to the operation of infrastructure assets. As sensors and connectivity and the Internet of Things (IoT) can provide access to near-real time conditioning data, through this project we will investigate how these technological advances can be leveraged to improve infrastructure management.

In particular we are interested in exploring how they can be linked to BIM and emerging visualisation technologies such as Virtual/Augmented Reality (VR/AR) applications, in order to develop novel insights into infrastructure assets performance management.

In summary, the key research questions can be seen as:

- What are sustainable system architectures to link real time data feeds with BIM models given technological and design constraints (e.g. connectivity, data processing needs, power requirements, design code constraints etc.)
- How can BIM be complemented with VR/AR technologies to improve understanding of relevant stakeholders by enhanced visualisations of sensing data
- What are the potential impacts on the design process and the practice of infrastructure asset performance management in general (e.g. economic, operational/business process, social etc.)
Candidate Requirements
We are looking for an enthusiastic student with at least a 2:1 Honours degree or equivalent in Civil Engineering, Computer Science or Engineering Mathematics.

Candidates will have a good understanding and use of sensing technologies, statistical processing and visualisation of sensor data. Experience in MATLAB coding and 3D modelling with AutoCAD is also desirable.

Informal enquiries
Please contact Dr Theo Tryfonas at theo.tryfonas@bristol.ac.uk

For general enquiries relating to the application procedure, please email gsen-pgrs@bristol.ac.uk

Application Details
To apply for this studentship submit a PhD application using our online application system [www.bristol.ac.uk/pg-howtoapply] and select the Civil Engineering programme

Please ensure that in the Funding section you tick “I would like to be considered for a funding award from the Civil Engineering Department” and specify the title of the scholarship in the “further details” box below with the name of the supervisor Dr Theo Tryfonas.

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