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## IT in AEC

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### Assignment Minor Research Thesis

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**TOPIC:** Supporting Co-operative work scenarios in Facilities Management through decentralised information management using RFID-technology

**MOTIVATION:** Co-operative project development patterns, such as Public Private Partnerships (PPP) are gaining importance. In those scenarios SME<sup>1</sup> usually act as sub-contractors of larger construction companies. Especially, in facility management-scenarios those subcontractors are insufficiently integrated into the "information cycle." Therefore, process and product documentation remains incomplete and inconsistent. Thus, efficient tools and mechanisms to flexibly organize and control collaborative activities and information sharing are needed.

The usage of RFID-technology has the potential to improve this situation. Especially by integrating RFID Technology in a virtual 3-D environment service crews can (i) identify building components, (ii) access technical and process documentation, and (iii) use the 3D-environment as interface for Computer Supported Cooperative Work Scenarios (e.g. chat, audio & video interaction).

<sup>1</sup> SME: =small and medium sized enterprises

**TASK:** The candidate shall develop a methodology how to integrate RFID-based information (representing “real world components”) into a 3-D, web enabled model of a built artefact to finally support CSCW<sup>2</sup>-scenarios. Furthermore, the candidate shall specify the advantages, disadvantages and limitations of HF and UHF RFID-technology in Facilities Management scenarios.

**PROTOTYPE:** The candidate shall implement a prototypical solution based on available building product models of “SCENE LAB 2” at University College Cork and RFID-toolsets available at UCC. The demonstrator shall support the classification, identification and management of audio visual and service components in the Lab through RFID and PDA-readers. The representation of the components in the 3D model shall be used as “entry point” to different information and communication spaces, such as manuals, inspection documentation and “snag”-lists.

**RECOMMENDED HARDWARE & SOFTWARE:**

ORACLE Database Management System  
CAD “Microstation” (Bentley Inc.)  
HF and UHF RFID environment (tricon, identec)

Supervisor (CEE): Prof. Dr.-Ing. habil. Karsten Menzel  
Ext. Supervisor: Doz. Dr. rer.nat. Hilko Donker (TU Dresden, Germany)

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<sup>2</sup> CSCW: Computer Supported Collaborative Work