

# CONNECT

Centre for Future Networks

Position Title	PhD Studentship in Blockchain based Decentralised Energy Services for Sustainable Cities
Project Abstract	<p>Who left the light on? A question that is often asked when looking at energy management within the home, which in itself may seem an innocuous question but energy management at residential level has shown itself to be a challenging problem. Now addressing energy management at city level further compounds this problem with the growing demand for energy being a key challenge for cities. The traditional hierarchical architecture of energy markets together with its dependence on centralised generation is inflexible and limits scalability. Localised energy production is rapidly evolving because of distributed energy assets (solar thermal, photovoltaics and battery storage for example). This shifting landscape makes it more difficult for cities to manage their energy at a district scale and identify who are the primary consumers and prosumers. Opportunities for the energy sector view Blockchain technology as offering the ability to manage distributed energy management. Blockchain is a distributed ledger technology and is seen as a disruptive technologies with potential across many industries by enabling open and trusted exchanges over the Internet without using central servers or an independent trusted authority. Currently a large number of pilots looking at the application of blockchain in the energy sector are mostly in the B2C marketplace supporting peer-to-peer energy trading and demonstrate the ability of blockchain to disrupt the current business models in the energy sector. Rather than develop another energy trading platform this PhD topic looks to investigate the application of blockchain to decentralised IoT networks for district scale energy auditing and verification, development of synchronisation protocols to support IoT network to Blockchain network interaction and to provide district scale energy services (executed via smart contracts) based on auditing for consumption, certification (for renewable production for example), traceability of energy assets and assessment of interventions, alert management for connected items and transparency of exchanges.</p>
Location	Cork Institute of Technology
Experience	<p>The PhD position is funded for 4 years, including a monthly stipend and a travel budget to present at international conferences, workshops and seminars. The successful candidate will be hosted at the Nimbus Centre in Cork Institute of Technology, Bishopstown, Cork, Ireland.</p> <p>The successful applicant should hold an Honours Bachelor Degree (Level 8) with a performance equivalent to at least a second class upper division</p>

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	Honours in Electronic Engineering, Computer Engineering, or Computer Science or a closely related cognate area and will have excellent knowledge of some of the following: blockchain, wireless network design and optimisation, wireless/mobile communication protocols, protocol development, network management, computer simulation of wireless networks and protocols, Internet of things. Practical experience in object orientated software development is essential, experience with computer simulation and modelling of communication and computer networks and mathematical modelling is desirable. Excellent communication skills and the ability to work well in an interdisciplinary team are essential.
Funding / Stipend	The studentship will cover fees up to 5,500k pa and a stipend of 18,500k pa
Closing Date	Friday 15 <sup>th</sup> June 2018
Contact	Dr. Susan Rea, <a href="mailto:susan.rea@CIT.ie">susan.rea@CIT.ie</a>
Application Process / Additional Information	<p>Interested candidates should apply via email to Dr. Susan Rea (<a href="mailto:susan.rea@cit.ie">susan.rea@cit.ie</a>), based in the Nimbus Centre, at Cork Institute of Technology.</p> <p>Early applications are encouraged. Applications should include: 1) a cover letter (1 page) explaining their interest in the project topic and mentioning any relevant background and/or experience; 2) a Curriculum Vitae. Academic transcripts and two academic references will be required after a shortlisting process takes place.</p>