- **Are you an ICT graduate in computer science or cognate discipline looking to pursue a PhD?**
- **Do you want to make a real contribution in the area of customised networks and specifically trustworthiness for OPEN RAN?**
- **Do you want to undertake your studies as part of the world leading SFI CONNECT Research Centre?**

The Science Foundation Ireland (SFI) Centre for Future Networks and Communications in partnership with Munster Technological University (MTU) and University College Dublin (UCD) is seeking to recruit a PhD student to contribute to the area of customised networks and specifically trustworthiness for OPEN RAN.

The student will be a member of the SFI CONNECT Research Centre and will be based in MTU, jointly supervised by Dr. Susan Rea (MTU), Dr. Bernd Ludwig Wenning (MTU), Dr. Nima Afraz (UCD) and Dr. Fatemeh Golpayegani (UCD).

This is a 4 year fully funded (includes full fees and an annual stipend of €18,500) structured PhD position with an expected start date of September 2022.

An overview of the post is presented below:

- As network virtualisation technology matures, it enables operators to experiment with very flexible network architectures, including Cloud-RAN and has introduced the possibility for more split options across the RAN. This has allowed network operators to place RAN virtualised components across geographical and computational spaces, from the Core to the Edge and the Radio units enabling customized architectures to achieve higher cost efficiencies and meet application specific stringent 5G performance requirements such a latency, jitter, and scalability. Network operators along with vendors and standardisation authorities including 3GPP, O-RAN Alliance, IEEE and others have identified the lack of built-in interoperability in current virtualised networks and have looked towards Open-RAN to address the need for interoperability between the virtual components that are to be provided by a plethora of vendors through standardised open network interfaces. This project will focus on a 'Post Open-RAN' ecosystem where the traditional RAN market ecosystem with a handful of known major vendor-operators will be replaced by a substantially more diverse ecosystem made up of unconventional vendors, new operators and resource providers. This will mean that the traditional known and trust relationships between established market actors will be inadequate and will require a rethinking of the definition of trust and the approaches to re-establish trust in these environments. This PhD project will consider trusted collaboration in Open-RAN from the perspective of the trust relationships between vendors to operators as a means of guaranteeing trusted interoperability and between vendors & resource (cloud-edge infrastructure) providers to enable participation in trusted orchestration.

The PhD student will be expected to contribute to CONNECT's Education and Public Engagement (EPE) activities to promote awareness and engagement of the public with science, technology, engineering and maths (STEM) research. The successful candidate will be expected to carry out a minimum of 2 engagement activities per year and engage with the

EPE activities for the Centre. For example, this can include participating in public events to promote research, writing media articles or contributing to educational activities.

Qualifications Required

- A minimum of 2.1 honours undergraduate degree, Masters degree, or equivalent, in Computer Science, Computer Engineering or Telecommunications or cognate discipline.
- **English Language Proficiency**
  Non-native English speakers require at least:
    - IELTS: An average score of 6.5 over all components and a minimum of 6.0 in each band on the Academic Version.

Essential Criteria

- Strong background in computer/telecommunications networks (e.g., OSI Model, Wireless Communication);
- Working knowledge of at least one programming language such as python, Java, and C++ and of Linux operating system;
- Confident in mathematical modelling and evaluation both analytically and in computer simulation;
- Experienced in software development for computer simulation and experimentation with a hands-on approach;
- Understanding of the scientific method: design of experiments, running experiments, critical analysis of results, etc.

To Apply
Please send a single PDF file consisting of the following to susan.rea@mtu.ie, **the deadline for receipt of applications is June 24th 2022:**
1. Resume/Curriculum Vitae (CV), including:
    a. Education History;
    b. Programming/Computing skills (GitHub profile etc.) and;
    c. Research projects/publications;
2. A cover letter (2-pages max) including a description of the applicant's research interests, reasons for applying for the position. The Cover letter must clearly indicate how the applicant's profile and skills fit the requirements of this PhD position;
3. Scanned copies of relevant academic transcripts and English language certificates;
4. A minimum of two recommendation letters and/or their contact information.

Shortlisted applicants will be contacted to arrange an **online** interview.