The first international workshop on “Intelligent Network Orchestration and Interaction in 5G and Beyond”

Network virtualization, software-defined networking and cloud-based technologies, which are key drivers in the design of the 5G network architecture, allow flexible dynamic network composition and lower the entry barriers to the market for both emerging network resource providers and niche virtual network operators (VNOs). Future networks will be dynamically composed from a shared pool of heterogeneous resources (computational resources, core, transport and access infrastructure, spectrum) potentially provided by different entities, and resources will be dynamically allocated to services and released according to the users’ demands. In such scenario network composition and orchestration mechanisms will take into account economic aspects as well as technical aspects and the interactions between different resource providers, when mapping use cases into physical resources. This workshop will focus on: i) mechanisms for orchestration within a network to optimally allocate resources to different services; ii) methods to analyse and design the interaction between different network providers and service providers.

Recently, the telco community has started to assess the potential of adopting the blockchain technology. This workshop will focus on the application of the blockchain as a means to enhance network orchestration mechanisms with the aim of fostering interoperability between the different resource providers within the telco ecosystem. Among other aspects, contributions on the use of smart contracts to implement service level agreements between different players (e.g. small cell providers and MNOs) and to streamline network operations and management (e.g. NFV deployment and management) will be solicited.

In addition to blockchain, of particular interest are techniques like mechanism design, optimization, evolutionary computation, game theory, auction theory, and distributed intelligent multi-agent solutions.

This creates an interdisciplinary research area that needs a variety of expertise including knowledge of network architecture, game and auction theory, mechanism design, two-side pricing and billing, user behavior analysis, blockchain, and smart contracts.

**Topics of interest:**
This workshop will bring together academic and industrial researchers to identify and discuss technical and economic challenges and recent results related to intelligent network orchestration and interaction in 5G and beyond. The topics of interest include, but are not limited to the following:

- Economic aspects of network orchestration
- Blockchain and smart contracts for network orchestration and interaction between service and resource providers
- Distributed intelligent multi-agent systems for network management and interaction between service and resource providers
- Wireless network virtualization
- Network neutrality
- Theories, models and analyses of access sharing
- Game theory, auction and mechanism design for network slicing and orchestration
- Network optimisation for E2E slicing
- Theories, models and analyses of spectrum sharing frameworks for 5G and beyond.

**IMPORTANT DATES**
- Review paper submission: 1 July 2018
- Notification of acceptance: 31 July 2018

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**Workshop Co-chairs**
- Prof Linda Doyle, Trinity College Dublin, Ireland
- Dr Irene Macaluso, Trinity College Dublin, Ireland
- Dr Mehdi Bennis, CWC, Oulu University, Finland
- Dr Hamed Ahmadi, Sheffield Hallam University, UK