COST CA15104 ACTION
Project Summary

Inclusive Radio Communication Networks for 5G and Beyond

Management Committee

Chair:	Claude Oestges, Université catholique de Louvain, Belgium
Vice-chair:	Narcis Cardona, Universitat Politècnica de València, Spain
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About COST IRACON

Radio Communications have become one of the pillars on which our Society relies for performing many daily tasks. Today, the number of connected devices is increasing exponentially, reflecting not only enthusiastic smartphone adoption but also increasing connectivity of machines, sensors, vehicles and other devices for health and smart environments, among others.

The Inclusive Radio Communications (IRACON) concept defines the technologies aimed to support wireless connectivity at any rates, for any communicating devices, and in any type of scenarios. The Wireless Internet of Things beyond 2020 will require revolutionary approaches in radio access technologies, networks and systems. Some theoretical foundations have to be revisited and breaking technologies are to be discovered during the coming decade.

This COST Action aims at scientific breakthroughs by introducing novel design and analysis methods for the 5th-generation (5G) and beyond radio communication networks. Challenges include i) modelling the variety of radio channels that can be envisioned for future inclusive radio, ii) capacity, energy, mobility, latency, scalability at the physical layer, and iii) network automation, moving nodes, cloud and virtualisation architectures at the network layer, as well as iv) experimental research addressing Over-the-Air testing, Internet of Things, localisation and tracking and new radio access technologies.

The group of experts supporting this Action comes from both academia and industry, from a wide spread of countries all over Europe, with the support of some non-COST institutions, R&D associations and standardisation bodies worldwide. The members have also a long experience on COST Actions in the Radiocommunications field.

This COST Action started on March 2016 and will end on March 2020.

http://www.iracon.org

http://www.facebook.com/CA15104

http://www.linkedin.com/company/cost-ca15104-inclusive-radio-communication-networks-for-5g-and-beyond-iracon

@IRACONAction

http://www.youtube.com/channel/UCQR8f3UhQg4JzVjWXfbtg4w

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The activities of IRACON are organised according to two types of working groups (WGs): disciplinary (DWG) and experimental (EWG).

DWG1 - Radio channels: The goal of DWG1 is to develop more accurate radio channel models for inclusive deployment scenarios, using carrier frequencies above UHF, up to Terahertz, as well to co-develop antenna systems that can cope with the inclusive aspects of the targeted deployments.
WG Chairs: Sana Salous (Durham Univ., UK) and Katsuyuki Haneda (Aalto Univ., Finland).

DWG2 - PHY (Physical) Layer: The goal of DWG2 is to propose improved theoretical frameworks to study inclusive radio networks, to investigate new PHY layer algorithms to face capacity/energy/mobility/latency challenges and to confront the proposed solutions to real experiments in the EWGs. DWG2 will also address system level simulation issues because other test beds will not achieve the required scale to properly test some types of network.
WG Chairs: Hanna Bogucka (Poznan Univ. of Technology, Poland) and Jan Sykora (Czech Technical Univ., Czech Republic).

DWG3 - NET (Network) Layer: The goal of DWG3 is to investigate the network layer aspects that will characterise the merger of the cellular paradigm with the IoT architectures, in the context of the evolution towards 5G-and-beyond.
WG Chairs: Silvia Ruiz Boqué (Univ. Politècnica de Catalunya, Spain) and Hamed Ahmadi (Univ. College Dublin, Ireland).

EWG-OTA - Over-The-Air testing: The goal of this EWG is to investigate and validate new OTA testing methods, channel models (in coordination with WG1) for implementation in advanced OTA testing set-ups for inclusive networks; development of advanced metrics for device and system performance; experimental determination of the required degree of sophistication of models, metrics, and implementations, in line with current standardisation.
WG Chairs: Wim Kotterman (Technical Univ. of Ilmenau, Germany) and Moray Rumney (Keysight Technologies, UK).

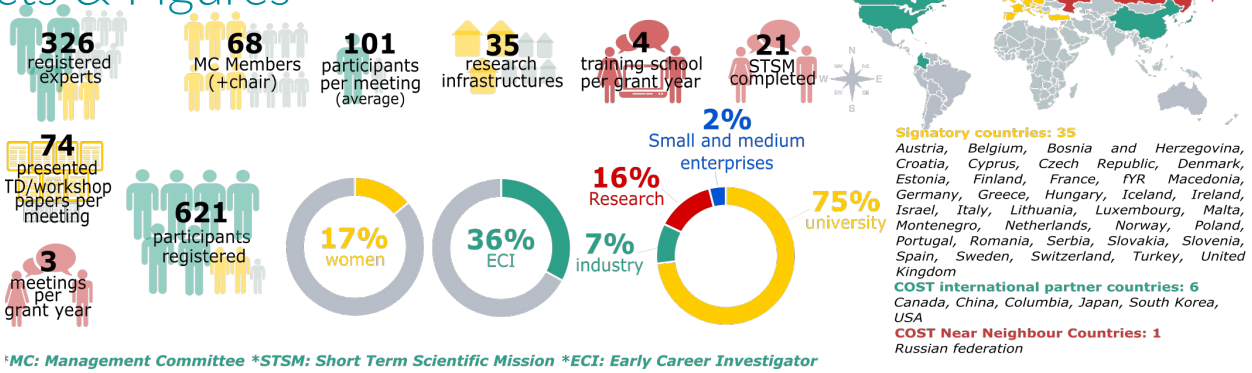
EWG-IoT - Internet-of-Things: The goal of this EWG is to support the evolution of 5G networks through the inclusion of the IoT component, via the investigation and assessment of network architectures, the comparison among the many approaches currently devised for the development of an ecosystem of the IoT platforms and applications in terms of operating systems, and the experimental validation of different protocols for large scale applications of the IoT.
WG Chairs: Erik Ström (Chalmers Univ. of Technology, Sweden) and Chiara Buratti (Univ. of Bologna, Italy).

SEWG-IoT - Internet-of-Things for health: This Sub Working Group of EWG-IoT aims to focus on the design, development, performance evaluation, and experimentation of IoT in healthcare applications such as health monitoring and telemedice.
Sub WG Chairs: Kamran Sayrafian (National Institute of Standards & Technology, USA), Slawomir J. Ambroziak (Gdansk Univ. of Technology, Poland).

EWG-LT - Localisation and Tracking: The goal of this EWG is to follow the development of 5G standardisation, taking advantage of the new techniques implemented and defined) to design and test new localisation and tracking techniques for devices, working in both outdoor and indoor environments.
WG Chairs: Carles Anton-Haro (Centre Technològic de Telecomunicaciones de Catalunya, Spain) and Klaus Witrisal (Graz Univ. of Technology, Austria).

EWG-RA - Radio Access: The goal of this EWG is to experimentally validate the many techniques that will be implemented at the PHY and MAC layers of the radio access part of 5G, especially those developed within DWG2. New waveforms, cognitive radio approaches, or massive MIMO, are possible examples.
WG Chairs: Florian Kaltenberger (EURECOM, France) and Mark Beach (Univ. of Bristol, UK).

Facts & Figures



*MC: Management Committee *STSM: Short Term Scientific Mission *ECI: Early Career Investigator