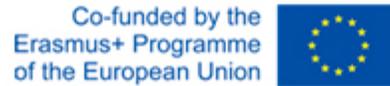




LINK EDU-RES project  
Joint Programmes at doctorate level  
*linking education and research*

Staff week MARCH 2022



# European Training Network, MSC Action. “New RAN Techniques for 5G ultra-dense mobile networks” (TeamUp5G)

**Ana García Armada (Coordinator and Project Leader at uc3m)**  
**David Alejandro Urquiza (ESR, Doctoral Candidate at uc3m)**



# What is TeamUp5G?

H2020 Marie Skłodowska-Curie Innovative Training Networks (MSCA ITN)



TeamUp5G project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie project number 813391.



# The key ingredients of TeamUp5G

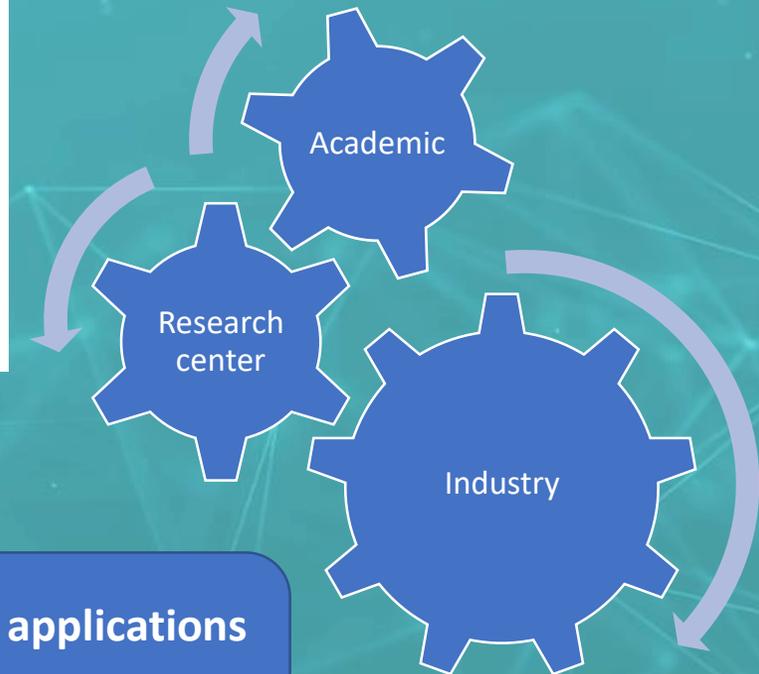
INTERNATIONAL

INTERSECTORAL

INTERDISCIPLINARY

- **Coordinated** by uc3m
- **Beneficiaries:** Aarhus University, International Hellenic University of Thessaloniki, Eclxys, Instituto de Telecomunicações, Nokia Spain, PDMFC and IS-Wireless.
- **Partner organisations:** Spanish Patent Office, Telefónica Investigación y Desarrollo, TELENOR, CTTC and several Universities.

- from mobile communications to video applications
- from research to industrialization
- operation, entrepreneurship, intellectual property ...



# What is TeamUp5G about?



TeamUp5G = “New RAN TEchniques for  
5G UltrA-dense Mobile networks”

SMALL CELLS

RADIO ACCESS NETWORK

- Must be able to meet the requirements of **very different types of applications.**
- Nowadays SC solutions have **technical limitations**



# Challenges in 5G New Radio Ultra Dense Networks

- *Interference Management, waveforms and Massive MIMO (mMIMO)*
- *Dynamic Spectrum Management and Optimisation*
- *Energy Consumption Reduction*

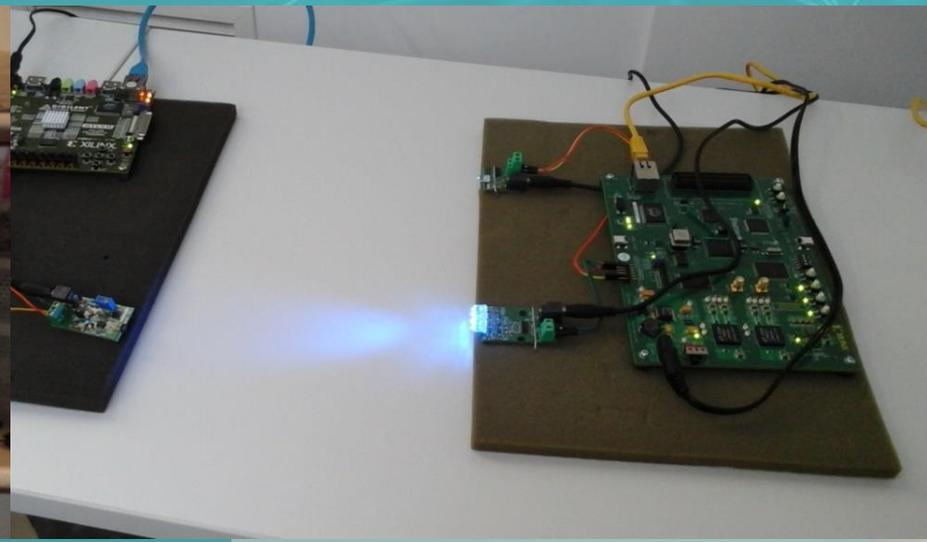
# Prototyping

- Massive MIMO
- Visible Light Communications
- Immersive video



# Use cases

- Emergency Drone
- Predictive Maintenance
- Jump Travelling
- Multiplayer Game and Live events with VR
- Safe Family Traveling



# Network-wide training activities

**Initial Workshop** for ESRs to meet and discuss their research topics. Presentation of the joint research program. Presentation of main concepts of Open Science.

**Workshop** on Testbeds and VLC.

**Women in Telecommunications Engineering Workshop**, in collaboration with IEEE Communications Society Women in Communications Engineering (WICE) committee.

**Big Industrial Workshop** to present the results of the project to the industrial community.

**Summer and Winter schools**, in collaboration with other ETNs and programs. Including business creation based on Innovation. Visit to the premises of Telefonica and Nokia.

**Seminar on Patents and IPR** with support of Spanish Patent Office

**Doctoral Conference and course** on public policies, innovation and design thinking, how to create business models, marketing aspects, finance for entrepreneurship and legal framework.

**1<sup>st</sup> Training on Standardization**, about the procedures to define international standards and recommendations.

**2<sup>nd</sup> Training on Standardization**. collocated with 5G Summit

**3<sup>rd</sup> Training on Standardization**

**Online courses/talks/seminars** offered through web-based cooperative and training tool (Topics: research oriented and soft skills)

**MOOC** (of 6 weeks) about advanced techniques in mobile networks and including the output from the TeamUp5G activities, on edX platform.



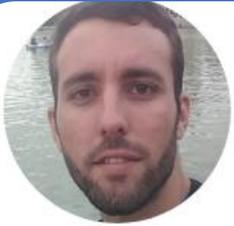
# The Team

- Supervisors



# The Team

- 15 Early Stage Researchers (ESRs)



David A. Urquiza



Manuel J. López



Ahmed G. Al-Sakkaf



Ayman A. Sabah



Farinaz Kooshki



Pedro Luiz Magalhães  
Cumino



Bahram Khan



Leonardo Leyva



Nidhi



Ilias-Nektarios Seitanidis



Daniele Medda



Aboubacar Mchangama



Hamed Farkhari



Joseanne Viana



Diego Gonzalez

Could you tell us about the training that the ETN offers and how it has been / will be useful for you to progress in your career?





**What has been your experience with mobility and secondments? Did you establish collaboration with different European Universities?**



**What experience with industry did TeamUp5G bring you and how has it improved your research or other abilities?**

**How was the internal organization and distribution of the work? How have you participated in the implementation of the ETN activities?**



Thank  
you



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