**BIO**

Dr. Jordi Joan Gimenez is Project Manager at the Institut für Rundfunktechnik (IRT). He has been involved in several research projects in the domain of media distribution and contribution being the H2020 5G-Xcast and 5G-Solutions the most recent, where he has taken the role of work package leader and task leader, respectively. He has been contributing to the 3GPP RAN1 working group for the standardization of LTE/5G broadcast. He is also participating in different project groups of the EBU Strategic Programme on Distribution, in particular, MTS and, 5G-Deployments where he acts as chairman. Dr. Gimenez has a wide experience on terrestrial broadcast technologies (DVB-T2/NGH, ATSC3.0, DAB+), having contributed to several DVB and ATSC technical groups on next-generation terrestrial broadcast. He obtained a Ph.D. degree in Telecommunications by the Universitat Politècnica de València (UPV) in Spain, where he was a Research Engineer at the iTEAM Research Institute. During his doctoral studies he was an invited researcher at Teracom, KTH Royal Institute of Technology and IRT.

**ABSTRACT**

3GPP is currently studying the implementation of multicast and broadcast capabilities for 5GS and NG-RAN. The 5G-PPP 5G-Xcast project has designed the 5G architecture to include multicast and broadcast with minor modification to the existing unicast framework defined in 3GPP from Release 15. With this, it is possible to use multicast and broadcast as network optimization tools (e.g. to adapt to user and traffic load) and also to deliver terrestrial broadcast services such as TV and radio stations with a pre-defined quality of service and coverage. In our paper, we have developed the way to configure 5G-NR (New Radio) carriers in order to convey terrestrial broadcast services that can be delivered by the 5G system according to requirements defined by broadcasters and received free-to-air (in a receive-only mode) by users. The proposal goes beyond the recent developments in 3GPP around LTE-based 5G Terrestrial Broadcast (also known as FeMBMS) as it considers the possibility of implanting a 5G Broadcast system fully integrated with 5G-NR and 5GS, avoiding the inefficient legacy from LTE at the RAN. This leads to a less complex architecture fully embedded with the recent developments around 5G but also with drawbacks such as limited SFN support to avoid deviating from unicast numerologies. The solution is applicable to cellular networks and also traditional broadcast infrastructure.