

# ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

## 5G - Robust Real-Time Reconfigurable Radio Stack

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<b>Context of the research activity</b>	<p>There is a great deal of interest in the possible applications of 5G and other communication technologies in so-called tactical contexts. All these situations require mission-critical communication, for which 3GPP has introduced the concept of "Tactical Bubble": an autonomous, robust, and secure dedicated private network facility that can be swiftly deployed to ensure mobile network coverage. In the context of B5G networks, the emergence of O-RAN lends itself to solving some of these issues.</p>
<b>Objectives</b>	<ul style="list-style-type: none"><li>• Design of a joint research-industry framework based on O-RAN principles for real-time network reconfiguration in a tactical bubble.</li><li>• Modification and adaptability of standard interfaces to specific market requirements.</li><li>• Development of AI/ML algorithms in support of threat detection and network reconfiguration, including data-driven solutions through online training without compromising the RAN performance, and usage of real, unreliable input, that can generalize to different conditions.</li></ul>

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**Skills and competencies for the development of the activity**

- Good programming skills
- Knowledge of mobile networks
- Knowledge of algorithms and protocol design