



## ERS POSITIONS AND INDIVIDUAL RESEARCH PROJECTS (IRP)

<b>Fellow</b>  <i>ESR13</i>	<b>Host institution</b>  PDM	<b>PhD enrolment</b>  Y	<b>Duration</b>  <i>36 months</i>
<p><b>Project Title:</b> Design of Privacy Preservation Mechanisms and Secure Authentication in small cell networks.</p>			
<p><b>Objectives:</b> The goal of this project is to design efficient and effective privacy preservation mechanisms for small cell networks (SCN) that feature secure authentication algorithms. Authentication and privacy-preserving schemes for (5G or otherwise) SCN entail serious security and privacy issues, where it is important to protect user identity, location privacy, among others. Challenging issues with the increasingly dense SCNs include the need for a distributed and scalable access point association protocol while, in addition, the reduced cell size makes it easy for an adversary to map out the geographical locations of the mobile users, and hence breaching their location privacy. An architecture will be proposed, simulated and validated with a general assessment of the proposed methods for various SCNs scenarios and implementation in an open source simulator. The advantages and trade-offs will be identified.</p>			
<p><b>Expected Results:</b> New privacy preservation and authentication algorithms and cumulative methodologies, specifically developed for SCN that will mitigate the security and privacy issues inherent in SCNs while allowing for their advantages to remain. Development of authentication algorithms and validation of results. Implementation of the proposed methods in an open source simulator. Identification of advantages and trade-offs of the proposed methods.</p>			
<p><b>Enrolment in Doctoral degree(s):</b> ISCTE</p>			
<p><b>Main (host) supervisor/Contact:</b> Dr. Luis Miguel Campos (PDMFC)</p>			