Title: System architectures and networking solutions for highly constrained networked systems

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Salón de Grados, Ed. Quorum V, 23 de Mayo, 17h.

Abstract: Service-Oriented Architectures (SOA) are increasingly considered as a cornerstone to address the complexity, heterogeneity and interoperability challenges of nowadays information systems. In the first part of my talk, I will present the outcome of 3 years of applied research that I initiated on a multi-level service-oriented architecture for Wireless Sensor/actuator Networks (WSN). This architecture bridges the gap between heterogeneous devices and that supports network dynamicity, auto-configuration, service discovery, dynamic repurposing and interoperability with legacy systems. I will highlight the benefits of this work when applied to force protection solutions aiming at rapidly and efficiently protect areas (camps, compounds, forward operated bases, etc.).

In the second part of the talk, I will present my contributions on Disruption Tolerant Networking (DTN), a research field where I have been active for 6 years. In tactical military ad hoc networks, the network suffers from frequent connectivity disruptions, making the topology intermittently and partially connected. End-to-end paths can exist temporarily, or may sometimes never exist, with only partial paths emerging. These disruptions could be caused by node mobility, radio perturbations, or the existence of very long delay links. Due to these disruptions, regular networking approaches to routing and transport do not fully work. New solutions must be proposed.

Biography: Dr. Jérémie Leguay is a research team leader at Thales Communications, in Colombes, France. He received his Engineering Degree (2003) from EFREI (École Française d'Electronique et d'Informatique) and a Master of Science (2004) in Computer Science from Linköping University in Sweden. From 2004 to 2007 he was a Ph.D. candidate at the Computer Science laboratory (LIP6) of Pierre & Marie Curie University and at Thales Communications where he conducted research on tactical ad hoc (MANET) networks and Disruption Tolerant networking (DTN). After 2 years working as a research engineer, he is currently managing a research team on network protocols and communication services in the contexts mobile networks, sensor networks and large-scale distributed systems. He is also coordinating the FP7 iTETRIS and the French ANR CROWD projects.