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# 5th GreenNet Seminar



From the 2<sup>nd</sup> to the 3<sup>rd</sup> of July 2013

1<sup>st</sup> Day – 2<sup>nd</sup> July

## Seminar 2: Real life experimental tools of wireless protocols

Module I	Speaker	Title	Syllabus
14:00-16:00	Gerrit Schulte	Real Life Wireless Protocol Stack Software Development	Protocol Stack Development: Sources of Information Development Tools & Environments Methodology: Requirements and Specifications, Realization Testing: Developer level, Case driven, Black box testing, and Continuous Integration Development Cycle: Issues and Releases, and Support Services
16:00-16:15		Coffee Break	
16:15-18:00	Lambros Sarakis	Practices, methodologies and tools for wireless network testbed realization and support of experimental research	Design and parameterization of network testbed infrastructures. Heterogeneous wireless testbed for vertical handover evaluation. Network emulation in experimental testbeds. Traffic generation and monitoring tools. Facilities for measuring energy consumption Network performance metrics and analysis of experimental data. Federated and virtualized network testbeds. Examples of relevant experimental facilities in Europe.

2<sup>nd</sup> Day – 3<sup>rd</sup> July

## Seminar 2: Real life experimental tools of wireless protocols - cont'd.

Module I	Speaker	Title	Syllabus
9:00-11:00	Felix Alonso (Agilent)	Practical verification of wireless protocol compliance	1/ Device Wireless Conformance ecosystem 2/ Conformance Tests and Measurement: Principle and Solution 3/ Functional Tests : Principle and Solution 4/ Typical measurement scenario.
11:00-11:15		Coffee brek	

<b>11:15- 13:00</b>	<b>Brian Berry</b>	<b>Determining Over-The-Air performance of wireless devices</b>	OTA measurement techniques; Standardisation; SISO and MIMO OTA performance; OTA Test systems; Future wireless device OTA testing.
<b>13:00- 14:00</b>		<b>Lunch</b>	



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## Joint Seminar on

# “Network Virtualization for LTE-A Networks / Energy-aware wireless networking through self-adaptation and virtualization as a tool for energy efficiency”

From the 3<sup>rd</sup> to the 4<sup>th</sup> of July 2013

1<sup>st</sup> Day – 3rd July

Time	Speaker	Tentative Title	Syllabus
14:00-16:00	Roberto Riggio	Refactoring Heterogeneous Mobile Networks with SDN: The Road to Network Virtualization – Part I	<ul style="list-style-type: none"> <li>• Role of abstractions in networking</li> <li>• Network virtualization as a tool to enable co-existence of multiple operators over the same infrastructure</li> <li>• Using SDN to program heterogeneous wireless access networks, ranging from WiFi to 4G and 5G networks</li> <li>• Energy programmable wireless networking</li> <li>• Virtualizing the Mobile Packet Core: Towards Light EPC</li> <li>• Service flexibility in the wireless cloud</li> </ul>
16:00-16:30	<b>Coffee Break</b>		
16.30-18.30	Roberto Riggio	Refactoring Heterogeneous Mobile Networks with SDN: The Road to Network Virtualization – Part II	<ul style="list-style-type: none"> <li>• Role of abstractions in networking</li> <li>• Network virtualization as a tool to enable co-existence of multiple operators over the same infrastructure</li> <li>• Using SDN to program heterogeneous wireless access networks, ranging from WiFi to 4G and 5G networks</li> <li>• Energy programmable wireless networking</li> <li>• Virtualizing the Mobile Packet Core: Towards Light EPC</li> <li>• Service flexibility in the wireless cloud</li> </ul>

2<sup>nd</sup> Day – 4th July

Time	Speaker	Tentative Title	Syllabus
09.00-10.30	Andreas Timm-Giel	Mobile Network Virtualization	<ul style="list-style-type: none"> <li>• Network virtualization concept</li> <li>• Virtualization in fixed networks (applications and solutions)</li> <li>• Virtualization of wireless resources (requirements and approach)</li> </ul>

			<ul style="list-style-type: none"> <li>• Current state of the art</li> <li>• Challenges and future directions</li> </ul>
10.30-10.45	<b>Coffee Break</b>		
10.45-12.30	<b>Claude Chaudet</b>	<b>Software Defined Networks in WLAN: Challenges and Opportunities</b>	<ul style="list-style-type: none"> <li>• Separation of the control and forwarding planes in IP networks</li> <li>• Multi-criteria policy rules defined by external applications called controllers</li> <li>• Virtual independent networks on the same physical infrastructure</li> <li>• Implementation of SDN in the wireless domain and radio-specific problems related to link isolation or to channel estimation</li> <li>• Foster cooperation and enhance resource utilization by reducing interferences and improve security</li> </ul>
12.30-13.30	<b>Lunch Break</b>		
13.30-14.45	<b>Toktam Mahmoodi</b>	<b>Virtualisation and the role of OpenFlow in the Mobile Networks</b>	<ul style="list-style-type: none"> <li>• Network Functions Virtualisation (NFV) and its role in simplifying the network functions and services</li> <li>• Virtualisation in 4G/LTE mobile network and decoupling of network services from the mobile infrastructure</li> <li>• Virtualisation and new value-added services</li> <li>• SDN and its potential role in the evolution of mobile network</li> <li>• Integration of OpenFlow (SDN standard communications interface) in the 4G/LTE mobile networks</li> </ul>