

ONFIRE Plenary Meeting Tuesday 29^h January 2018 , Castelldefels (Barcelona), Spain	
AC and SB meeting – (Alpha room - B4)	
9:00-9:30	Welcome message (Raul Muñoz)
9:30-12:00	AC meeting (20 min presentations of both ESR)
12:00-12:50	Supervisory Board Meeting Secondment discussion, upcoming documents to be produced, etc.
12:50-14:10	Lunch Break (Campus Restaurant)
Consortium Symposium – (Auditorium - B4)	
14:10-14:55	Invited Speaker 1: Ramon Casellas (CTTC) Title: Control of Disaggregated Optical Networks Abstract: Traditional optical transport networks are proprietary, integrated and closed, acting as a highly coupled, single vendor managed domain. They can export high-level interfaces and open NBI, yet the internal details and interfaces are hidden from the operator. On the other hand, dis-aggregation involves composing and assembling open, available components, devices and sub-systems (with partial or total dis-aggregation, down to each of the optical components) and is a trend driven by aspects such as the mismatch between the needs of operators and the ability to deliver adapted solutions by vendors; the increase in hardware commoditization; the different rate of innovation for different components; the promised acceleration on the deployment of services and the consequent reduction in operational and capacity expenses. There are opportunities due to the new degree of flexibility, allowing component migration and upgrades without vendor lock-in, yet dis-aggregated optical nodes may not have the same level of integration and performance than those of integrated systems. In any case, from the point of view of control and management, such networks are a clear use case for the use of open interfaces exporting hardware programmability and unified, model driven development. This talk is an introduction to Software Defined Networking (SDN) for dis-aggregated optical networks. In particular, the course will present basic architectures and common trends such as the use of Netconf/Restconf protocols, Model Driven development, and the use of Yang as a unified data modeling language. The Metro-Haul and ODTN projects will be presented as examples combining open source projects (e.g. the ONOS SDN controller) and related initiatives (e.g. OpenROADM)
14:55-15:40	Invited Speaker 2: David Gregoratti (CTTC) Title: Convex optimization for big-data problems: the role of sparsity Abstract: (WindMill ITN) The availability of cheap sensing devices and of capacious storing solutions have lead researchers to build gigantic data sets. However, the more is not always the better: finding our way through such a great amount of information may be tough from the point of view of practical algorithms, due to memory and computational requirements. Moreover, interpretability may also become an issue, since intuition is hardly effective when dealing with thousands of parameters. This talk is a brief introduction to convex optimization techniques

	that promote a sparse representation of large-dimensional problems, meaning that they favor parsimonious solutions that only involve a considerably reduced subset of inputs.
15:40-16:00	Coffee Break (Hall – B4)
16:00-16:45	<p>Invited Speaker 3: Paolo Dini (CTTC) Title: Energy Sustainability in Mobile Networks: a Learning Perspective Abstract: We are now living the digital era. Dematerialization is becoming a reality, and everybody and everything, including machines, is globally connected through the Internet. The trend is of a further increase in traffic demand, number of offered services and connected devices, especially mobile. However, the massive use of Information and Communication Technologies (ICT) is also increasing the level of energy consumed by that system and its footprint on the environment. In 2030 ICT is expected to consume 51% of the electricity generated and will be responsible of 23% of the carbon footprint by human activity. Sustainable design of ICT, and specially of mobile networks, is, therefore, a key and challenging sector for societal prosperity.</p> <p>In this talk, we will elaborate on the architecture of the future mobile networks (5G) and its interaction with the electricity grid. The integration of the radio access network with a distributed renewable energy system will be discussed, by reporting the main building blocks and methods to achieve the self-sustainability of the integrated system.</p> <p>The focus will be given to the network control architecture and algorithms to ensure efficient deployment and operation of the available spectrum, energy and computational resources. In particular, tools such as Machine Learning (ML) and Dynamic Programming (DP) will be discussed to be incorporated in the control functions of the future RANs to analyze the environment, take the appropriate actions and balance many, often conflicting, goals. In fact, ML and DP may include an end-to-end knowledge of the system to achieve a proactive optimization, able to exploit the huge amount of data available and to even incorporate additional dimensions, such as the characterization of end user experience and behavior, the energy consumed and harvested.</p>
16:45-17:30	<p>Invited Speaker 4: Wolfram Lautenschlaeger (NOKIA Bell Labs) Title: The Optical Ethernet Networking Prototype Abstract: Optical Ethernet is a framework for Tbit/s scale metro networks. It is targeting leading edge coherent optical transmission in combination with light-weighted packet add/drop. The architecture involves various newly designed procedures and protocols. For proof of concept, we implemented a prototype network of 6 Optical Ethernet nodes at switching data rates of 10Gbit/s on all interfaces. We verify our assumptions with respect to switching performance, implementation complexity, scalability to large node counts, and completeness and consistence of the design.</p>
17:30-18:15	<p>Invited Speaker 5: Konstantinos Christodoulopoulos (NOKIA Bell Labs) Title: Accurate Quality of Transmission Estimation using Machine Learning Abstract: In optical transport networks the Quality of Transmission (QoT) is</p>

	<p>estimated before provisioning new or upgrading existing connections. Traditionally, a physical layer model (PLM) is used for QoT estimation coupled with high margins, used to account for the uncertainty in the evolving physical layer conditions. Reducing the margins increases network efficiency but requires accurate QoT estimation. We present two machine learning (ML) approaches to formulate an accurate QoT estimator. We gather physical layer feedback, by monitoring the QoT of existing connections, to understand the actual physical conditions of the network. This data is used to train either the input parameters of a PLM or a machine learning model (ML-M). The proposed ML methods account for variations and uncertainties in equipment parameters, such as fiber attenuation, dispersion and nonlinear coefficients, or EDFA amplifier noise figure per span, which are typical in deployed networks.</p>
18:15-18:45	Visit to the CTTC Labs.
20:00	Social Dinner (TBC)

Day 2: Wednesday 30th of January 2019	
WP1 and WP2 Networking Workshop Session	
9:00- 10:30	<p style="text-align: center;">(Auditorium - B4) Discussion of activities and research topics of ESR1</p>
10:30- 10:50	Coffee Break (Hall – B4)
10:50- 12:20	<p style="text-align: center;">(Auditorium - B4) Discussion of activities and research topics of ESR2</p>
WP3 Networking Workshop Session (Auditorium - B4)	
12:20-12:50	<p>Invited Speaker 6: Roman Dischler (NOKIA Bell Labs) Title: Experimental facilities for optical physical layer research of NOKIA Bell Labs, Stuttgart Abstract: The presentation will give an overview of experimental facilities of the 'Smart Network Fabric' group of NOKIA Bell Labs in Stuttgart, dedicated to the research on optical transmission systems for the physical layer. We will introduce our hardware equipment and typical experimental setups for coherent and direct detection systems.</p>
12:50-14:10	Lunch Break (Campus Restaurant)
14:10-15:00	<p>Invited Speaker 7: Michela Svaluto Moreolo (CTTC) Title: Optical transmission and subsystems research at CTTC: technologies, solutions and experimental activities Abstract: Optical transmission systems and subsystems exploiting multiple dimensions and photonic technologies enable to support future optical networks, meeting the challenging demand for higher capacity/reach at reduced cost, power</p>

	consumption and footprint. Programmable modular transceivers and advanced monitoring techniques are crucial in view of an integration in software defined optical networks and towards more flexible, scalable and disaggregated paradigms, where the infrastructure can be suitably sized and adapted on-demand. This talk focus on enabling technologies and proposed solutions investigated and developed within the Optical Transmission and Subsystems research line at CTTC, with special focus on experimental activities.
15:00-16:30	Discussion on potential joint experimental activities between ESR1 and ESR2 leveraging available experimental platforms