

2nd ONFIRE Plenary Meeting Day 1 - Monday, February 24, 2020 NOKIA Bell Labs Stuttgart, Germany	
13:45-14:00	Welcome and coffee (Raul Muñoz and Lars Dembeck)
14:00-15:00	Project Management Board Meeting
15:00-18:00	WP1 workshop – (Room 08.02.052)
15:00-15:40	<p>ESR presentation:</p> <p>Fabiano Locatelli</p> <p>Title: Data plane architectures and monitoring techniques for system margins reduction in disaggregated optical networks</p> <p>Abstract: In an optical network, an ideal scenario would include omnipresent and powerful optical performance monitoring (OPM), i.e. before and after every network element. However, in reality this solution is not feasible because of its cost. Using cheap/low resolution optical spectrum analyzers (OSA) as OPM, we study how their placement inside the network changes the possible monitorable parameters.</p>
15:40-16:00	Coffee Break
16:00-16:20	<p>Invited Speaker 1:</p> <p>Josep Maria Fàbrega (CTTC)</p> <p>Title: Integration of transmission systems and subsystems with control plane in a laboratory environment</p> <p>Abstract: In this talk we will review the challenges to be solved when integrating transmission systems and subsystems with a control plane. In fact, we will focus in a lab environment, where data plane elements are simple proofs-of-concept with limited functionality and made of discrete components/prototypes. Furthermore, we will detail the CTTC approach to tackle with this challenge and describe future directions.</p>
16:20-17:20	Discussion on on-going and next activites
17:20	End of meeting Day 1
18:45	Social dinner, Brauereigaststätte Dinkelacker, Tübinger Str. S60 Train at 18.15

2nd ONFIRE Plenary Meeting Day 2 - Tuesday, February 25, 2020 NOKIA Bell Labs Stuttgart, Germany	
9:00-12:00	WP2 workshop – (Room - 08.02.052)
9:00-9:40	<p>ESR presentation:</p> <p style="text-align: center;">Ankush Mahajan</p> <p>Title: Improving QoT Estimation Accuracy with Machine Learning</p> <p>Abstract: For reliable and efficient network planning and operation, accurate estimation of Quality of Transmission (QoT) before establishing or reconfiguring the connection is necessary. In optical networks, a design margin is generally included in a QoT estimation tool (Qtool) to account for modeling and parameter inaccuracies, ensuring the acceptable performance. We present two machine learning (ML) models to formulate an accurate QoT estimator. In particular, we present two separate ML models to predict the penalties generated due to i.) Erbium Doped Fiber Amplifier (EDFA) gain ripple effect, and ii.) filter spectral shape uncertainties at Reconfigurable Optical Add and Drop Multiplexer (ROADM) nodes. We gather physical layer feedback, by monitoring the QoT of existing connections, to understand the actual physical conditions of the network. Enhancing the Qtool with the proposed ML regression models yields estimates for new or reconfigured connections that account for these two effects, resulting in more accurate QoT estimation and a reduced design margin</p>
9:40-10:00	<p>Invited Speaker 1:</p> <p style="text-align: center;">Kostas Christodoulopoulos (Nokia)</p> <p>Title: The ORCHESTRA network closed control loop</p> <p>Abstract: An optical network, like any system, has to be observable before being controllable and subject to optimization. This is the main concept of the ORCHESTRA network, where we make use of the coherent optical transceivers as software defined optical performance monitors (soft-OPM). We developed state-of-the-art digital signal processing (DSP) OPM algorithms and a novel hierarchical monitoring plane to carry and process the physical layer information. ORCHESTRA's control and management plane uses data analytics/correlation methods to understand the physical conditions, and to feed advanced cross-layer optimization algorithms. ORCHESTRA closes and automates the observe-decide-act control loop, enabling maximal capacity efficiency and true network dynamicity. In this talk we focus on the the ORCHESTRA closed loop control plane</p>

10:00-10:20	<p>Invited Speaker 2: Ulrich Gebhard (NOKIA) Title: High Accuracy Network Synchronization</p> <p>Abstract: New applications and services require synchronization of large numbers of spatially distributed devices with an accuracy orders of magnitude higher than what can be achieved with traditional data transport and communication protocols. Deterministic data transport with guaranteed bandwidth and constant latency is an enabler for this kind of services. This talk will provide some background on the applications, the challenges they present, and potential technical solutions.</p>
10:20-10:40	<p style="text-align: center;">Coffee Break</p>
10:40-12:00	<p style="text-align: center;">Discussion on on-going and next activities</p>
12:00-13:00	<p style="text-align: center;">Lunch Break</p>
13:00-17:00	<p style="text-align: center;">2nd ONFIRE Symposium – (Room 08 GR 311)</p>
13:00-13:15	<p style="text-align: center;">Welcome (Raul Muñoz and Lars Dembeck)</p>
13:15-14:00	<p>Invited Speaker 1: Michela Svaluto Moreolo (CTTC) Title: Facing the Challenges of Future Optical Metro Networks: Programmable Modular Multi-Tb/s Photonic System Architectures</p> <p>Abstract: The metropolitan area network (MAN) segment is becoming one of the most challenging due to the ever increasing volume and dynamicity of traffic, induced by novel and bandwidth-hungry services and applications as well as the need for instant data access in our globally-networked and hyperconnected society. In addition to the ultra-high capacity and dynamic scenario, another challenge is related to the stringent requirements in terms of both capital and operational expenditures (CAPEX/OPEX). Particularly in the MAN, the reduction of cost, power consumption and footprint is of paramount importance. In order to efficiently and cost-effectively support the required ultra-broadband transport featuring dynamic capacity adaptation, suitable technologies should be specifically designed and tailored for the MAN segment. In this talk, programmable modular architectures and photonic technologies to address the challenges of future ultra-high capacity and agile MAN will be presented. In particular, an overview of the solutions envisioned and developed within the H2020 European PASSION project will be described, with special emphasis on the programmable modular system architecture adopting vertical cavity surface emitting laser (VCSEL) technology, coherent receiver and photonic integration. By exploiting both spectral and spatial dimensions multi-Tb/s capacity can be attained in a dynamic MAN scenario.</p>

14:00-14:40	<p>Invited Speaker 2: Dimitris Zervas (NOKIA) Title: Nokia Technologies, an overview Abstract: TBD</p>
14:40-15:20	<p>Invited Speaker 3: Dieter Beller (NOKIA) Title: The Role of Optical Transport Network Standardization - an Overview Abstract: TBD</p>
15:20-15:40	<p>Coffee Break</p>
15:40-16:20	<p>Invited Speaker 4: Salvatore Spadaro (UPC) Title: Disaggregated datacenters: opportunities and challenges Abstract: The talk firstly introduces the concept of resource disaggregation-based data center, analyzing some of its benefits. However, on the other hand, some technical challenges needs to be solved to avoid severe performance degradation. In particular, the talk discusses some of them highlighting potential solutions for optically interconnected data centers.</p>
16:20-17:00	<p>Invited Speaker 5: Tobias Enderle (IKR, University of Stuttgart) Title: Matching Actual and Required Delay in Transport Networks Abstract: End-to-end delay of network connections is an important quality of service parameter for today's network applications and hence a means for service-level agreement differentiation. However, due to shortest path-oriented routing, which is typically applied in transport networks, delay requirements are often overfulfilled. In this talk, we present a routing approach that reduces the overfulfillment of delays by incorporating non-shortest paths. In that way, it matches actual and required delay of network connections. We evaluate our approach by simulation and compare it to a shortest path-oriented routing scheme. We show that a reduction in delay overfulfillment is possible, which suggests that a service differentiation during regular network operation is feasible.</p>
17:00	<p>End of meeting Day 2</p>

<p style="text-align: center;">2nd ONFIRE Plenary Meeting Day 3 - Wednesday, February 25, 2020 NOKIA Bell Labs Stuttgart, Germany</p>	
9:00-10:30	<p style="text-align: center;">WP3 workshop – (Part I) (Room - 08.02.052)</p>
9:00-9:40	<p>ESR presentation: Fabiano Locatelli and Ankush Mahajan Title: Integrating the work of the 2 ESRs</p> <p>Abstract: Monitoring optical spectra at network nodes provides information about network’s actual state. We propose an integrated cost-efficient in-band OSNR estimation scheme from node installed OPMs. Leveraging this scheme, we implemented machine learning regression model to predict end-to-end gain ripple and filtering penalties for more accurate QoT estimation of future connections.</p>
9:40-10:00	<p>Invited Speaker 1: Raul Muñoz (CTTC) Title: The enhanced CTTC ADRENALINE testbed: architectural overview and use cases</p> <p>Abstract: This talk will provide an overview of the enhanced architecture, both at the control and data plane levels, of the ADRENALINE testbed developed by the Optical Networks and Systems department. This talk will also present some use cases developed on ADRENALINE testbed in the framework of some European 5GPP projects.</p>
10:00-10:20	<p>Invited Speaker 2: Kostas Christodoulopoulos (NOKIA) Title: Experimental demonstration of the ORCHESTRA network</p> <p>Abstract: An optical network, like any system, has to be observable before being controllable and subject to optimization. This is the main concept of the ORCHESTRA network, where we make use of the coherent optical transceivers as software defined optical performance monitors (soft-OPM). We developed state-of-the-art digital signal processing (DSP) OPM algorithms and a novel hierarchical monitoring plane to carry and process the physical layer information. ORCHESTRA’s control and management plane uses data analytics/correlation methods to understand the physical conditions, and to feed advanced cross-layer optimization algorithms. ORCHESTRA closes and automates the observe-decide-act control loop, enabling maximal capacity efficiency and true network dynamicity. We discuss experiments in labs and a field trial of the ORCHESTRA network</p>
10:20-10:30	<p style="text-align: center;">Coffee Break</p>

10:30-11:50	Advisory Board Meeting
11:50-13:00	Lunch Break
13:00-14:30	WP3 workshop – (Part II) (Room - 08.02.052)
13:00-14:30	Discussion on on-going and next activities
14:30	End of meeting Day 3