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**Cartagena, Spain
9 – 12 May 2016**



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Program

	Monday, May 9	Tuesday, May 10	Wednesday, May 11	Thursday, May 12	Friday, May 13
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9:15 - 9:30	Registration	K2: Keynote Lecture 2	K3: Keynote Lecture 3	K4: Keynote Lecture 4	WS2: 1st International Workshop on Elastic Networks Design and Optimisation
9:30 - 10:00					
10:00 - 10:15		S2: Datacenter Networking	S6: Optical Access	S10: Spatial/Spectral Elastic Optical Networks	
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10:30 - 11:00	Opening				
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11:30 - 11:40					
11:40 - 11:45				S11: Resource Allocation (II)	
11:45 - 12:30	S1: Multilayer Networking	S3: Network Orchestration (I)	S7: Metro/ Core Networks	Closing and Presentation of ONDM2017	
12:30 - 12:55					
12:55 - 13:00					
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13:15 - 14:15					
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14:30 - 15:00					

15:00					
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15:25					
15:25					
-		Coffee Break	Coffee Break		
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15:55			S9: Resource Allocation (I)		
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16:55					
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-		S5: 5G-Enabled Metro-Access			
17:15					
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19:00			Social Event		
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20:00	Welcome Cocktail				
20:00					
-					
21:00		Gala Dinner			
21:00					
-					
23:00					

Monday, May 9

Monday, May 9, 11:00 - 11:45

K1: Keynote Lecture 1

Moving Optical Dynamicity to the Edge

Juan Pedro Fernández Palacios (Telefónica I+D, Spain)

Chair: Pablo Pavon-Marino (Technical University of Cartagena, Spain)

Monday, May 9, 11:45 - 13:15

S1: Multilayer Networking

Chair: Marc Ruiz (Universitat Politècnica de Catalunya, Spain)

11:45 A Survey of Multi-layer Network Optimization....1

Ćiril Rožić (Athens Information Technology, Greece); Dimitrios Klonidis (AIT, Greece); Ioannis Tomkos (Athens Information Technology, Greece)

Invited

12:15 Joint Fault Tolerant and Latency-Aware Design of Multilayer Optical Networks....7

Jose-Juan Pedreno-Manresa and Jose-Luis Izquierdo-Zaragoza (Universidad Politècnica de Cartagena, Spain); Pablo Pavon-Marino (Technical University of Cartagena, Spain)

12:35 Routing Post-Disaster Traffic Floods in Optical Core Networks....13

Zaid Nasralla and Taisir El-Gorashi (University of Leeds, United Kingdom); Mohamed Musa (University of Leeds, LS2 9JT, United Kingdom); Jaafar Elmoghani (University of Leeds, United Kingdom)

12:55 On the Impact of Transmission Technologies in Metropolitan Networks....18

Tamara Jiménez (University of Valladolid, Spain); Victor Lopez (Telefonica, Spain); Felipe Jiménez (Telefónica I+D, Spain); Oscar González de Dios (Telefonica I+D, Spain); Juan P. Fernández-Palacios (Telefónica I+D, Spain)

Tuesday, May 10

Tuesday, May 10, 09:15 - 10:00

K2: Keynote Lecture 2

Drivers and principles in the design of a large-scale multi-layer backbone network for datacenter interconnection

Josué Kuri (Facebook, USA)

Chair: Pablo Pavon-Marino (Technical University of Cartagena, Spain)

Tuesday, May 10, 10:00 - 11:10

S2: Datacenter Networking

Chair: Josue Kuri (Infinera Corporation, USA)

10:00 Resource Orchestration in SDN-based Future Optical Data Centres....24

Salvatore Spadaro (Universitat Politècnica de Catalunya (UPC), Spain); Albert Pagès (Universitat Politècnica de Catalunya (UPC), Spain); Fernando Agraz (Universitat Politècnica de Catalunya, Spain); Rafael Montero and Jordi Perelló (Universitat Politècnica de Catalunya (UPC), Spain)
Invited

10:30 Dynamic Routing and Bandwidth Assignment for Live Virtual Machines Migrations....30

Omran Ayoub, Luca Pace, Francesco Musumeci and Achille Pattavina (Politecnico di Milano, Italy)

10:50 112-Gbit/s Passive Optical Pod Interconnect for Small Data Centers Using Pulse Amplitude Modulation....36

Bárbara P Dumas Feris (Télécom Bretagne & ENIB, France); Philippe Gravey (Télécom Bretagne, France); Pascal Morel (ENIB, France); Marie-Laure Moulinard and Michel Morvan (Telecom Bretagne, France); Ammar Sharaiha (ENIB, France)

Tuesday, May 10, 11:40 - 13:00

S3: Network Orchestration (I)

Chair: Marco Ruffini (CTVR, Trinity College Dublin, Ireland)

11:40 Orchestration of IT/Cloud and Networks: From Inter-DC Interconnection to SDN/NFV 5G Services....42

Ramon Casellas (Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Spain); Raul Muñoz, Ricard Vilalta and Ricardo Martinez (CTTC, Spain)
Invited

12:10 *Dynamic Support and Demonstration for Orchestrated Multi-domain Software-defined Optical Networks....48*

Xiaoyuan Cao (KDDI R&D Laboratories, Inc., Japan); Noboru Yoshikane (KDDI R&D Laboratories, Japan); Takehiro Tsuritani (KDDI R&D Laboratories, Inc., Japan); Itsuro Morita (KDDI R&D Laboratories, Japan)
Invited

12:40 *Management of Sliceable Transponder with NETCONF and YANG....54*

Matteo Dallaglio and Nicola Sambo (Scuola Superiore Sant'Anna, Italy); Filippo Cugini (CNIT, Italy); Piero Castoldi (Scuola Superiore Sant'Anna, Italy)

Tuesday, May 10, 14:15 - 15:25

S4: Network Orchestration (II)

Chair: Stephan Pachnicke (Kiel University (CAU), Germany)

14:15 *Pioneering Hardware Modeling and Software Design for Optical Infrastructure in the Autonomous Network Project....60*

Miquel Garrich (Centro de Pesquisa e Desenvolvimento em Telecomunicações, Brazil); Anderson Bravalheri, Matheus Magalhães, Heitor Carvalho, Juliano Assine, Henrique Rusa, Hugo Yamamura and Fabian Hooft (CPqD, Brazil); Uiara de Moura (CPqD & University of São Paulo, Brazil); João Januário (Centro de Pesquisa e Desenvolvimento em Telecomunicações – CPqD, Brazil); Marcelo Nascimento and Leonardo Mariote (CPqD, Brazil); Juliano Rodrigues Fernandes de Oliveira (CPqD Foundation & University of Sao Paulo, Brazil)
Invited

14:45 *End-to-end Service Orchestration From Access to Backbone....66*

José Manuel Gran (Telefónica I+D, Spain); Victor Lopez (Telefonica, Spain); Frank Slyne (Connect Research Centre - Trinity College Dublin, Ireland); Marco Ruffini (CTVR, Trinity College Dublin, Ireland); Ricard Vilalta, Arturo Mayoral and Raul Muñoz (CTTC, Spain); Ramon Casellas (Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Spain); Ricardo Martinez (CTTC, Spain)

15:05 *FLATLAND: A Novel SDN-Based Telecoms Network Architecture Enabling NFV and Metro-Access Convergence....72*

Frank Slyne (Connect Research Centre - Trinity College Dublin, Ireland); Marco Ruffini (CTVR, Trinity College Dublin, Ireland)

Tuesday, May 10, 15:55 - 17:25

S5: 5G-Enabled Metro-Access

Chair: Philippe Gravey (Télécom Bretagne, France)

15:55 *Impact of Fixed-Mobile Convergence....78*

Stephan Pachnicke (Kiel University (CAU), Germany); Bogdan Andrus (Technical University of Denmark, Denmark); Achim Autenrieth (ADVA Optical Networking, Germany)
Invited

16:25 *Optical vs. Electronic Packet Switching: Myth and Advantage in 5G Time-Critical Applications....83*

Pablo Jesus Argibay-Losada (Osaka University, Japan); Yuki Yoshida (National Institute of Information and Communications Technology, Japan); Akihiro Maruta (Osaka University, Japan); Ken'ichi Kitayama (The Graduate School for the Creation of New Photonics Industries, Japan)

16:45 *A Beam-Forming Network for 5G Systems Based on Precise Optical Clock and Phase Shifting....89*

Giovanni Serafino (Scuola Superiore Sant'Anna, Italy); Claudio Porzi (CNIT); Sergio Pinna (Scuola Superiore Sant'Anna, Italy); Muhammad Malik (CNIT, Italy); Jonathan Klamkin (University of

California Santa Barbara, USA); Antonio D'Errico (Ericsson, Italy); Marzio Puleri (ERICSSON, Italy); Antonella Bogoni and Paolo Ghelfi (CNIT, Italy)

17:05 Study of the Centralization Level of Optical Network-Supported Cloud RAN....93

Adrian Asensio (Universitat Politècnica de Catalunya (UPC), Spain); Poompat Saengudomlert (Bangkok University, Thailand); Marc Ruiz (Universitat Politècnica de Catalunya, Spain); Luis Velasco (Universitat Politècnica de Catalunya (UPC), Spain)

Wednesday, May 11

Wednesday, May 11, 09:30 - 10:15

K3: Keynote Lecture 3

Quasi-Passive Optical Infrastructure for 5G Optical/Wireless Networks

Leonid G. Kazovsky (Stanford University, USA)

Chair: Vinod M. Vokkarane (University of Massachusetts Lowell, USA)

Wednesday, May 11, 10:15 - 11:15

S6: Optical Access

Chair: Leonid Kazovsky (Stanford University, USA)

10:15 Analysis of the Maximum Balanced Load in Long-Reach PONs....99

Pedro Alvarez (CTVR, Trinity College, Ireland); Alan Hill (CTVR, Trinity College Dublin, Ireland); Nicola Marchetti (CTVR Trinity College, Ireland); David B Payne (Trinity College Dublin, United Kingdom); Marco Ruffini (CTVR, Trinity College Dublin, Ireland)

10:35 On the Performance of Hybrid-PON Scheduling Strategies for NG-EPON....105

Lin Wang, Xinbo Wang and Biswanath Mukherjee (University of California, Davis, USA); Hwan Seok Chung, Han Hyub Lee and Soomyung Park (ETRI, Korea)

10:55 Comparing Tree and Chain Topologies for Designing Resilient Backhaul Access Network....110

Alejandro Arbelaez (Insight Centre for Data Analytics, Ireland); Deepak Mehta (Insight Centre for Data Analytics & University College Cork, Ireland); Barry O'Sullivan (University College Cork, Ireland); Luis Quesada (Insight Centre for Data Analytics, Ireland)

Wednesday, May 11, 11:45 - 12:55

S7: Metro/Core Networks

Chair: Lena Wosinska (KTH Royal Institute of Technology, Sweden)

11:45 Link Load Driven Signal Power Control Strategies in WDM Networks....116

Xue Wang (The University of Texas at Dallas, USA); Yue Fei and Miguel Razo (University of Texas at Dallas, USA); Andrea Fumagalli (UTD, USA); Miquel Garrich (Centro de Pesquisa e Desenvolvimento em Telecomunicações, Brazil)
Invited

12:15 A Data-Driven QoT Decision Approach for Multicast Connections in Metro Optical Networks....122

Tania Panayiotou and Georgios Ellinas (University of Cyprus, Cyprus); Sotirios Chatzis (Cyprus University of Technology, Cyprus)

12:35 Hierarchical Versus Flat Optical Metro/Core Networks: A Systematic Cost and Migration Study....128

Christian Raack (Atesio GmbH, Germany); Roland Wessaely (atesio GmbH, Germany); David B Payne (Trinity College Dublin, United Kingdom); Marco Ruffini (CTVR, Trinity College Dublin, Ireland)

Wednesday, May 11, 14:15 - 15:25

S8: Optical Switching Architectures

Chair: Annie Gravey (Institut Mines Telecom - Telecom Bretagne & UMR CNRS 6074 IRISA, France)

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Marija Furdek (KTH Royal Institute of Technology, Sweden); Ajmal Muhammad (Royal Institute of Technology (KTH), Stockholm & Linköping University, Sweden); Georgios Zervas (University of Bristol, United Kingdom); Nabih Alloune (University of Quebec, ETS, Canada); Christine Tremblay (Ecole de technologie supérieure & Université du Québec, Canada); Lena Wosinska (KTH Royal Institute of Technology, Sweden)
Invited

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Murtuza Ali Abidini and Onno Boxma (Eindhoven University of Technology, The Netherlands); Ton Koonen (COBRA, Eindhoven University of Technology, The Netherlands); Jacques Resing (Eindhoven University of Technology, The Netherlands)

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Tomohiro Ishikawa and Hiroshi Hasegawa (Nagoya University, Japan); Suresh Subramaniam (The George Washington University, USA); Ken-Ichi Sato (School of Engineering - Nagoya University, Japan)

Wednesday, May 11, 15:55 - 16:55

S9: Resource Allocation (I)

Chair: Ramon Casellas (Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Spain)

15:55 Demonstration of Dynamic Traffic Allocation in an SDN-enabled Metropolitan Optical Network Test-bed....152

Miquel Garrich (Centro de Pesquisa e Desenvolvimento em Telecomunicações, Brazil); Anderson Bravalheri, Matheus Magalhães and Matheus Svolenski (CPqD, Brazil); Xue Wang (The University of Texas at Dallas, USA); Yue Fei (University of Texas at Dallas, USA); Andrea Fumagalli (UTD, USA); Davide Careglio (Universitat Politècnica de Catalunya, Spain); Josep Solé-Pareta (UPC, Spain); Juliano Rodrigues Fernandes de Oliveira (CPqD Foundation & University of Sao Paulo, Brazil)

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Pegah Afsharlar, Jeremy M. Plante, Arash Deylamsalehi, Juzi Zhao and Vinod M. Vokkarane (University of Massachusetts Lowell, USA)

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Maninder Singh and Maninder Lal Singh (Guru Nanak Dev University, Amritsar, India)

Thursday, May 12, 09:15 - 10:00

K4: Keynote Lecture 4

The Future of Optical Networking: Challenges, Pitfalls, and Common Sense
Jane M. Simmons (Monarch Network Architects, USA)

Chair: Brigitte Jaumard (Concordia University, Canada)

Thursday, May 12, 10:00 - 11:00

S10: Spatial/Spectral Elastic Optical Networks

Chair: Jane Simmons (Monarch Network Architects, USA)

10:00 Bin-Packing Based Optimisation of EON Networks with S-BVTs....170

Amaro F. de Sousa (Institute of Telecommunications, University of Aveiro, Portugal); Artur Tomaszewski (Warsaw University of Technology, Poland); Michał Pióro (Lund University, Sweden)

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Sandeep Kumar Singh (TU Braunschweig, Germany); Admela Jukan (Technische Universität Carolo-Wilhelmina zu Braunschweig, Germany)

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Federico Pederzoli and Domenico Siracusa (CREATE-NET, Italy); Jose Manuel Rivas and Behnam Shariati (Athens Information Technology, Greece); Elio Salvadori (Create-Net, Italy); I Tomkos (AIT Greece, Greece)

Thursday, May 12, 11:30 - 12:30

S11: Resource Allocation (II)

Chair: David Larrabeiti (Universidad Carlos III de Madrid, Spain)

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Brigitte Jaumard and Maryam Daryalal (Concordia University, Canada)

11:50 Reward-based Connection Admission Control in Flex-grid Optical Networks....194

Ronald Romero Reyes (Technische Universität Chemnitz, Germany); Thomas Bauschert (Chemnitz University of Technology, Germany)

12:10 Adapted and Constrained Dijkstra for Elastic Optical Networks....200

Ireneusz Szcześniak (AGH University of Science and Technology, Poland); Bożena Woźna-Szcześniak (Jan Długosz University, Poland)