

## Department of Electrical and Computer Engineering

Title: «*A Tutorial on the Flexible Optical Networking Paradigm:  
State-of-the-Art, Trends, and Research Challenges*»

Dr. Ioannis Tomkos

Thursday, 16<sup>th</sup> October 2014, 17:00 – 18:00  
Room ΠΤΕΡ. E116, Old Campus  
University of Cyprus

### Abstract:

Rigid fixed-grid WDM optical networks can no longer keep up with the emerging bandwidth-hungry and highly dynamic services in an efficient manner. As the available spectrum in optical fibers becomes occupied and is approaching fundamental limits, the research community has focused on seeking more advanced optical transmission and networking solutions that utilize the available bandwidth more effectively. To this end, the flexible/elastic optical networking paradigm has emerged as a way to offer efficient use of the available optical resources. In this work we provide a comprehensive view of the different pieces composing the "flexible networking puzzle" with special attention given to capturing the occurring interactions between different research fields.

Only when these interrelations are clearly defined, an optimal network-wide solution can be offered. Physical layer technological aspects, network optimization for flexible networks, and control plane aspects are examined. Furthermore, future research directions and open issues are discussed.

### Biography:



Dr. Ioannis Tomkos is a Fellow of the IET (2010) and OSA (2012) for "outstanding contributions to the field of transparent optical networking". He was elected "Distinguished Lecturer" of IEEE Communications Society (2007). He has co-authored over 550 journal articles & conferences/workshops papers. He is one of the most published Greek authors at IEEE Journals/Conferences (with over 325 entries). His Google Scholar profile cites over 4000 citations with an h-factor of 32 and an i10-index of 108. He is the co-recipient of the 2014 IEEE/OSA JLT Best Paper Award. He served as the Chair of the "Optical Networking" Technical Committee of IEEE Communications Society and a member of the IEEE ComSoc's Technical Activities Council. He was also Chairman of the IFIP Group on "Photonic Networking" and the Chairman of the "Optical Communications" Group at OSA. He is the Chair of the Greek chapter of IEEE Photonics Society. He has been Chair or member of the organizing committees for major conferences in telecommunications/networking (more than 130). In addition he is a member of the Editorial Boards of IEEE/OSA Journal of Lightwave Technology (Deputy Editor), the OSA/IEEE Journal of Optical Communications and Networking, the IET Proceedings of Optoelectronics and the Springer "Photonic Networks Communications". Ioannis is an experienced manager

of large-scale, multi-organization, multi-national, multi-million-\$ R&D teams/projects. At AIT he manages a team that participates/ed in many projects (over 25) with a consortium-wide leading role (including Project Leader/Technical Manager of 8 EU projects). Based on his innovative research ideas, he has attracted for AIT an amount of funding in excess of 7.5M Euros. Besides his academic activities, he is offering C-level consulting on techno-economic studies, business planning and technology evaluation, while he acts as policy and innovation management adviser."