



NetWorld2020 5G PPP Expert Group Optical Networking Challenges

Alexandros Stavdas
University of Peloponnese



- ❑ The NetWorld2020 ETP Expert Group produced a **Strategic Research and Innovation Agenda (SRIA)** report on the research priorities in optical networking for 2018-2020
- ❑ There were 75 contributors with a strong participation from the European Industry and Academia.
 - Members of 5G Expert Advisory Group
 - Major European Operators (BT, Telefonica, TelecomItalia)
 - Major EU-based Vendors (Nokia, Ericsson, ADVA, Coriant, Huawei)
 - The CaON cluster
 - Representatives from the "Photonics21" initiative
- ❑ The report identified **key convergence actions** that will enable a ubiquitous **Digital Environment** fostering economic activity by serving **Industry 5.0** priorities



Convergence to a ubiquitous Digital Environment

- ❑ The **convergence** of all networks in Access
 - Exploiting the **synergy** of fixed and wireless technologies for creating a technology-agnostic, last-drop framework

- ❑ Dynamic Clouds through the **convergence** of Networks and DCs
 - DCs necessary to support Cloud services while Clouds postulate a dynamic and flexible network between remote locations
 - Exploit of **virtualization** to its full extend ie to utilize virtualized resources regardless of location

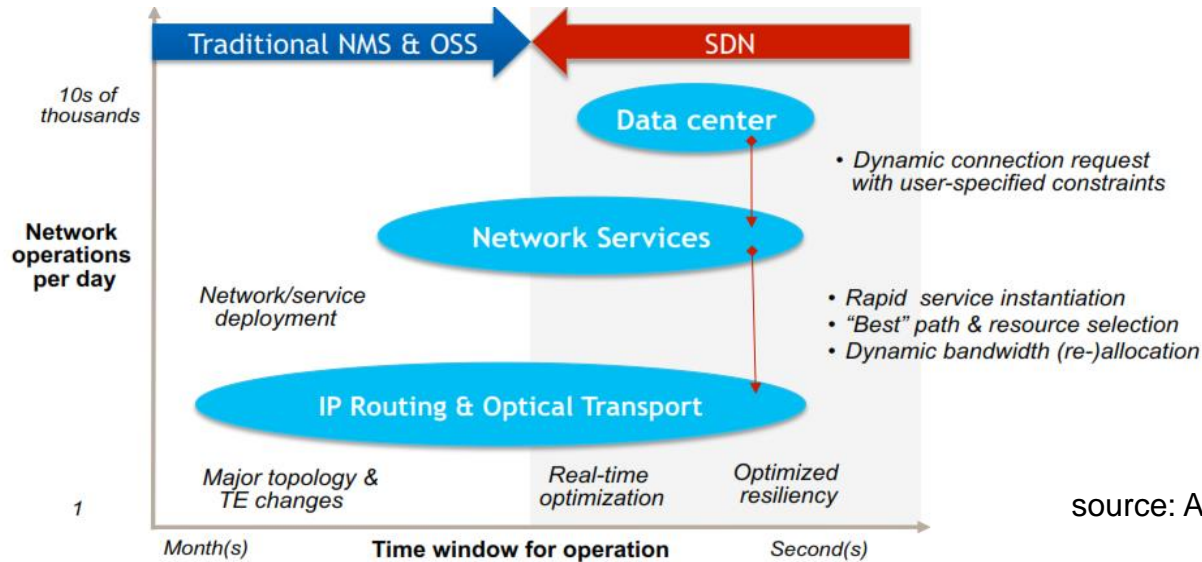
- ❑ **Integration** of Clouds and Machines
 - The “death of distance” requires integrated “global” and “local” scale networks for a seamless resource coordination
 - An **overarching** OS for both networks and machines
 - Integration of Access and Core networks through novel architectures



Research Priorities (1)

□ Focus on Manageability

- Bridging the response times between DCs and Networks in a converged Digital Environment
 - Programmability of the data-plane and an open software- based control plane
 - Automation exploiting cognition and self-organization principles



source: Alcatel-Lucent



Research Priorities (2)

❑ Focus on Decentralization

- Exploitation of distributed, Cloud-based, processing and traffic forwarding architectures, bringing the “edge” closer to the end-user

❑ Focus on Homogenization

- Use of common standard and scalable technologies across all network segments, adapted to the specific performance goals
- Example: standard processing systems, standard and self-adapted “optical modems”, global encapsulation/framing technologies orchestrated by a new, open, automated control paradigm and operated by means of open software etc.

❑ Focus on Performance

- Network performance-oriented instead of technology-oriented, objectives
- No primacy of one technology over another; set-up **e2e KPIs** across the entire chain of interconnected systems

