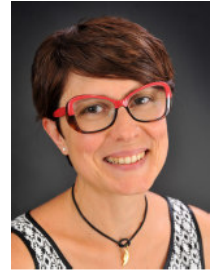# BARBARA MARTINI

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PROFILE OVERVIEW

→ Barbara Martini is **Associate Professor** at Universitas Mercatorum in Software Engineering (ING-INF/05), Italy since January 2022. She is also Affiliate Professor with Scuola Superiore Sant'Anna, Italy. After her Master Degree at University of Florence in Electronic Engineer, she worked as software engineer and product integrator for two large telco companies, Italtel and Marconi Communications (currently, Ericsson), from 1999 to 2003. She was with the Italian University Consortium for Telecommunication (CNIT) from 2003 to 2022 developing and coordinating research activities in the field of **network virtualization and orchestration in 5G, network control/management architectures and programmability, service platforms for networking, and security solutions for multi-domain networks and NFV deployments**.

→ She is the **Coordinator** of the PhD Programme "Big Data and Artificial Intelligence" at the Universitas Mercatorum. She is an **Affiliate Professor** with the **Sant'Anna School of Advanced Studies** and formerly Adjunt Professor with **University of Pisa**, Pisa, Italy, teaching courses to PhD and MS programs. She co-authored over **120+ papers** in top-notch scientific journals and international conference proceedings.

→ She is active in industrial research with projects and job orders carried out in collaboration with leading ICT manufacturing companies and service providers in Europe. She has been involved in several national/EU research projects, the recent ones 5GPPP 5GEx, 5GTRANSFORMER, 5GROWTH in 5G/SDN/NFV, ICONET in Physical Internet for Logistics, and in several FIRE projects (OFELIA, Fed4FIRE+, TRIANGLE, 5GINFIRE) with leading roles. Overall, I have been involved in **11 commissioned jobs** funded by ICT industries and in **16 research projects** funded by both the European Union and National Institutions, the most recent ones as **Principal Investigator**.

→ She is also active in the scientific community, supporting dissemination activities with conference, journal special issues, workshop and conference organization, and contributing to expert panel discussions in international conferences. She is very active in the scientific community as Organizing Committee member (with also as **general chair** roles) and Technical Program Committee member of several IEEE/OSA flagship conferences, Associate Editor for IEEE/OSA/Frontiers scientific journals, and Reviewer for IEEE/Elsevier/OSA journals in my research area. In addition, she is a member of the Steering Commettee of the International Conference on Network of the Future (NoF) and voting member of Industry Community Board of the IEEE Communications Society.

→ Research interests:
  » Service-oriented networking
  » Service platforms and network management for next-generation 5G/6G networks
  » Network virtualization and abstraction in cloud networking
  » Access control in next-generation networks
  » Intent-based networking
  » Software-Defined Networks (SDN) and Network Function Virtualization (NFV)
  » Network slicing in SDN/NFV infrastructures and virtualized 5G networks
  » Edge/Fog and Cloud Computing and IoT Networks
  » Resource orchestration in SDN data center networks
  » SDN/NFV orchestration for E-health, Industry and Logistics applications
  » Modeling, simulation and experimentations for performance evaluation of communication networks and services

2022-current	
Position	**Associate Professor**
Univeriisty	**Universitas Mercatorum**
Sector	Academia -
Overview	• **Associate Professor** in Information Engineering (ING-INF/05) • **Coordinator of the PhD Programme** "Big Data and Artificial Intelligence" acknowledged by the Italian Minister of University and co-funded by industries since 2022 (38th and 39th cycle) • Fundrising activities: partecipation in partnership to **competitive calls** launched by EU (under Horizon Europe program) and MUR (under PNRM program), PI of research project funded by Universitas Mercatorum after a internal competitive call and positive outcome from a external reviewers. • **General chair** at IEEE 10th Internation Conference on Network Softwarization (NetSoft) 2023 and IEEE-sponsored 27th Conference on Innovation in Clouds, Internet and Networks (ICIN) 2024. • **Member of Steering Commettee** of Network of Future Conference since 2023 and Voting **Member of Industry Community Board** of IEEE Communications Society since 2022
Research areas	• Intent layer for 5G/6G networks and services – 2) Dynamic netowrk slicing for vertical applications (indus[...] 4.0, logistics) – 3) Federated Leraning in dynamic and heterogeneous environments. – 4) Human-centered Artificial solutions in Industry 5.0
Teaching	• Teaching and course holder of Software Engineering (L8 – Computer engineering), Enterprise Information Systems (LM31- Engineering and Industrial Management, Enabling Technologies for Industry 5.0 (PhD Programme "Big Data and Artificial Intelligence")
Main achievements	• Obtained **30Keuro budget** from Universitas Mercatorum for studies on Human-centered Artificial Intelligence in industrial environments after internal competitive call
2018-2022	
Position	**Head of Research**
Research Institution	**Consorzio Nazionale Inter-universitario per le Telecomunicazioni (CNIT)** (www.cnit.it)
Sector	Telecommunications/Computer Engineering – Research
Overview	• Resposible for "**Network Softwarization**" research actrivities and software network developments in collaboration with universities and coorporate research centers worldwide and coordinating junior researchers, PhD students, master students in the area of novel 5G service infrastructures leveraging network virtualization and softwarization and serving different application domains (Industry 4.0, Logistics) • Ensured the sustainability of the research activities by establishing and managing **fundraising** activities targeting both public and private funding instruments by EU, ESA and initiating technology transfer activities in collaboration with major ICT companies (Telecom Italia) • Contributed to **standardization activities** IETF/IRTF su multi-level intent-based network managemet (NMRG group) e ETSI su NFV management • Disseminated research outcomes by delivering **oral presentations** of research achievements and outcomes, by publishing high-quality **scientific papers** to top-notch conferences and journals, by participating in the **organizing commetee** of IEEE/IFIP/OSA conferences and in **editorial boards** and IEEE/Elsevier/OSA journals • Carried out teaching classes of "Network Management and Services" as **adjunct professor and course holder** appointed by the Sant'Anna School of Advanced Studies and University of Pisa.
Research areas and strategic/ core skills	**1)** Flexible and programmable networks through the paradigms of Software Defined Networking (SDN) and Network Functions Virtualization (NFV) – **2)** Dynamic allocation of network and cloud/edge resources in 5G infrastructures – **3)** Network service composition and orchestration for industries (e.g., Logistics, E-health, Genomics) – **4)** Management and orchestration in SDN data center networks – **5)** Industrial IoT and cloud-based services for advanced ICT in Logistics and Physical Internet paradigm – **6)** Security in

	multi-domain networks and NFV
Fundraising	I obtained **4 research grants** as job orders or in response to open calls launched by the European Community (330k EUR) playing the role of principal investigator and coordinating project management and technical leading activities.
Reporting	**1)** Presented research results to international committees to discuss the results produced in relation to the set objectives (European Commission auditing commissions, CNIT board or Sant'Anna School board, University system evaluation bodies) - **2)** Technical and administrative reporting in European projects: finalization of agreements; periodic reports on the carried out activities, achieved objectives and publications; drafting of deliverables on project output, data management for expences (months/person) and spending resources (travel, equipment) and reporting critical issues encountered during the reference period and expected in the following quarter
Teaching	**1)** Taught in courses for "Laurea Magistrale" (Master's Degree) in Computer Science and Networking (jointly with University of Pisa) as course holder. – **2)** Member of the Degree Committee for Graduation, PhD and Master's Degree at the Sant'Anna School of Advanced Studies, University of Pisa, **Unicamp Univesity** (Brazil), Telecom Sud Paris (France)
Main achievements	**1) Prototyping** of control systems for self-configuration, adaptation and automation of the network infrastructure for network operators to provide reliable and on-demand connectivity to the 5G applications. – **2) Best Demo Award** at 3rd Fed4Fire Engineering Conference (FEC3) for demonstration of an orchestrator prototype for dynamic network slicing and service composition in 5G scenarios – **3) Best Demo Award** at the IEEE Conference of Network Function Virtualization and Software-Defined Networking 2018 for demonstration of an integrated management systems for both SDN networks and clouds aiming at dynamic service chaining for 5G platforms.

2009 - 2018	
Position	**Lead Researcher**
Research Institution	**Consorzio Nazionale Inter-universitario per le Telecomunicazioni (CNIT)** (www.cnit.it)
Sector	Telecommunications/Computer Engineering – Research
Overview	- Coordinated groups of junior researchers, PhD students and trainees consistently composed of 3-4 people with planning research activities for a period of a semester/year and up to three years in the field of PhDs - Investigations and development of advanced solutions for Softwarized Infrastructure and Next Generation network services for 5G and to **run projects** with Companies or Research Institutions worldwide (either public or private) in order to improve the performance of networks and 5G application platforms. - Managed **industrial contracts**, Italian and European Research Projects and personally follow **fundraising** activities (IT-EU) from writing the proposal to partner engagement. - Pursued university teaching, oral presentations, writing scientific articles for IEEE, OSA, ITU, reviewing works, and organizing/attending international conferences and workshops (http://o4sdi.unibo.it/o4sdi3) - Active participation in international standardization groups (IETF , IEEE) - Achieved objectives according to strategies provided by the Steering and Evaluation Committees in order to raise qualitative research standards and stimulate the achievement of funding sources in Europe and Italy. - Supervision of students in PhDs, thesis works, and internships
Research Areas and strategic/ core skills	**1)** Network Operating Systems for software-based network infrastructures (i.e., softwarized networks) developed in SDN/NFV technology for 5G Service Scenarios (e.g., Genomics, Cloud Robotics, Smart Cities) - **2)** Orchestration of connectivity services in IP/(G)MPLS transport networks and/or local datacenter networks in distributed clouds - **3)** Advanced security solutions for access control and confidential data protection in transport networks managed by different operators - **4)** Advanced solutions for electric vehicles recharge in high mobility and Smart Cities scenarios.

Fundraising	**1)** Contributed to the drafting of over 20 research proposals also with formation of partnerships in response to invitations to tender by the Region of Tuscany and Casse di Risparmio banks, the Ministry of Research and Economic Development, the European Community and private ICT companies (TIM) - **2)** Contributed to 14 research activities funded by individuals and Institutions with coordination of activities in the 4 lines of research being developed. – **3)** Obtained **4 research grants** in response to open calls launched by the European Community with negotiation activities for the allocation of the budget among the partners (budget: € 250k) - **4)** Obtained a 20 kEUR research contract financed by TIM and funds for 2 Ph.D.s in the area "Softwarized networks for 5G applications and security" financed by TIM.
Reporting	**1)** Presented research results to international CNIT board or Sant'Anna School board to discuss the results produced in relation to the set objectives - **2)** Technical and administrative reporting in European projects: finalization of agreements; periodic reports on the carried out activities, achieved objectives and publications; drafting of deliverables on project output.
Teaching	**1)** Taught in courses for "Laurea Magistrale" (Master's Degree), PhD degrees and International Master's degrees at Sant'Anna School of Advanced Studies with frontal lessons and exercises in classroom workshops consisting of 15-20 mostly foreign students (Pakistan, Germany, Sri Lanka, India) - **2)** Member of the Degree Committee for Graduation, PhD and Master's Degree at the Sant'Anna School of Advanced Studies, University of Pisa, Polytechnic University of Turin
Main achievements	**1)** Developed and/or coordinated research activities in 6 industrial contracts funded by ICT companies (TIM, NATO, Ericsson), in technology transfer initiatives and 8 research projects funded by the Italian Region of Tuscany and the European Community – **2)** Developed prototypes for the self-configuration, adaptation and automation of the softwarized network infrastructure across and within cloud computing datacenters. These systems are designed for network operators and service providers to optimize resource usage (e.g., energy saving) and provide reliable connectivity to the dynamic 5G services. A prototype of orchestrator for datacenter was demonstrated at international conferences - **3)** Developed a network simulator for distributed clouds with generalized characterization of network (connectivity) and computing (processing) resources. This simulator is designed for network and/or cloud operators to dimension the infrastructure control and management systems according to specific targets (e.g., optimization of energy consumption) - **4)** Contributed to a new version of the IEEE NGSON 1903 standard with also SDN and NFV.
2003 - 2009	
Role	**Senior Researcher**
Research Institution	**Consorzio Nazionale Inter-universitario per le Telecomunicazioni (CNIT) (www.cnit.it)**
Sector	Telecommunications/Computer Engineering – Research
Overview	I have mainly been active in the ambit of advanced control of optical transport networks by developing service-oriented solutions and prototypes that are more efficient for novel high-demanding application scenarios and, in particular, for creating on-demand network services for applications (e.g., multimedia, scientific grids). I have worked closely with the industrial world in Italian, European and private research projects, and I have been able to work concretely on really innovative projects for next-generation optical networks. I attended IEEE and OSA International conferences of reference for the developed research areas. I served as reviewer of peer-review research work by IEEE, OSA, ITU.
Research Areas and strategic/ core skills	**1)** Network protocols for the generalized control of optical and IP/MPLS transport networks - **2)** High-performance reconfigurable telecommunication network management systems - **3)** Service platforms for application-oriented telecommunication networks – **4)** Development of research activities in the field of 5 industrial contracts funded by ICT companies (Ericsson, Marconi Communications) and 7 research projects funded by the Ministry of Research and the European Community
Reporting	Presentation of research results at a Steering Commette of the Sant'Anna School of Advanced Studies and CNIT board composed of international experts in order to evaluate the scientific objectives and the results produced
Teaching	**1)** Taught in Master Degree's courses at Scuola superiore di Sant'Anna with frontal lessons in classrooms consisting of 15-20 mostly foreign students (Tunisia, Cina) – **2)** Supervision of students in Phd and thesis work

Main achievements	**1)** Development of a prototype platform for automatic configuration of connectivity services in optical and IP/MPLS networks and on-demand delivery of application connectivity services - **2)** Development of a prototype for a dynamic protocol control configuration platform for Optical Transport Networks and IP/MPLS - **3)** Contributed to 10 research activities funded by private individuals and institutions with the 3 developed research lines).

2000- 2003	
Role	**Software Engineer and Product Integrator**
Company	**Marconi Communications** (http://www.marconi.com/)
Department	Optical Product Research & Development Laboratory – **Pisa**
Sector	**TLC – Research and Development**
Overview	• Selected as a member of a pool of engineers to start up a Laboratory of Excellence designed to collaborate with innovation-oriented Research Institutes in high-capacity optical networks (Sant'Anna School of Advanced Studies, CNIT, Consorzio Pisa Ricerche) • Involved in the design and development of software for telecommunication equipment used in the high-capacity transport networks of main telecom operators (TIM, British Telecom) and contributed to the development and integration of new product features and testing tools • Contributed to the installation of an optical network testbed infrastructure for the development and validation of network equipment before their deployment and operation in the production networks. • I mainly managed the high complexity of telecommunication systems, software modules, and standards that support countless equipment features, including remote management of the same systems.
Main tasks / Technical skills	**1)** High-capacity transport networks and operation of photonic equipment ("SmartPhotonix" family) - **2)** Multiplexing traffic data structures in the electronic domain (SDH) and the photonic domain (DWDM) used to aggregate the data transmitted in the high-capacity transport networks – **3)** ITU-T and USBellCore standards for integrated transport management and information modeling specifications in accrodance with ITU-T recommendations - **4)** Design of functionalities for the remote management of the SmartPhotonix family of photonic network equipement used in the high-capacity transport networks (DWDMs) from main Telco operators (TIM, British Telecom) - **5)** Set-up and operation of photonic equipment: configuration of DWDM / SDH traffic cards, transmission and monitoring of traffic, alarm management - **6)** Installation, configuration and maintenance of an optical network testibed with composed of SmartPhotonix equipment: set-up of a cluster of photonic devices, configuration of equipment traffic cards, consistent setting of traffic parameters (e.g., wavelenghts) – **7)** Testing of the photonic equipment and traffic cards (analysis of the criticality and correlation of alarms).
Main achievements	**1)** Designed and developed software component for the TCP/IP protocol stack integration into DWDM photonic equipment designed to support interfaces for remote management in accordance with the US BellCore standards – **2)** Designed and developed a performance monitoring system of a Line Terminal used at the entrance of a DWDM photonic network to route client SDH traffic according to ITU-T standard (layered network model, functional description of resources and interconnection capabilities).- **3)** Designed and developed a software tool (according to the ITU-T G.709 standards) for the generation and the configuration of traffic stream for photonic networks in support of software integration and testing activities.

1999- 2000	
Role	**Firmware Engineer**
Company	**Italtel** (http://www.italtel.com/)
Department	Fixed Networking – **Milano**
Sector	**TLC – Research and Development**
Main tasks / Technical skills	**1)** Telephone networks and structure of UT family equipment used in telephone switching networks (telephone switching principles, network architectures and protocols, Intelligent Network principles, structure of a telephone exchange) - **2)** Embedded system and software design for Ethernet cards (programming of registers, interfacing between peripheral devices and processors, timing, real-time operating systems for embedded systems) - **3)** Designing and developing of firmware for an Ethernet switch used in telephone switching nodes from the "UT" Family – **4)** Acquired familiarity with the high

	complexity of a software project for a newly developed card and field deployed telecommunication systems
Main achievements	**1)** Desined and developed firmware components for switching and interfacing features of Ethernet switch cards (CPUs, NICs, I/Os) via PCI bus - **2)** Desined and developed software components for the integration of the TCI/IP protocol suite into an Ethernet switch to support network applications (monitoring, card configurations)

SCIENTIFIC PUBLICATIONS

I have published **120+ "*peer-reviewed*" scientific articles** on journals, book chapters, and international conference papers. Publications cover all the research areas I have been investigating. I have also written numerous technical and deliverable reports as outputs of the activities carried out under the funded projects, not listed in the publication file. For more details about citations and other indicators, refer to Google Scholar profile (https://scholar.google.it/citations?user=84hv6OMAAAAJ&hl=it&oi=ao) and to the Annex A.

CERTIFICATION AND FELLOWSHIP

2021	**National habilitation as Full Professor –** Academic Field and Discipline: **Mathematics and Informatics** (INF/01) – Competition Sector: **Informatics** (01/B1)
2021	**National habilitation as Associate Professor –** Academic Field and Discipline: **Information Engineering** (ING-INF/05 – Competition Sector: **Information processing systems** (09/H1)
2018	**National habilitation as Associate Professor –** Academic Field and Discipline: **Mathematics and Informatics** (INF/01) – Competition Sector: **Informatics** (01/B1)
2018	**National habilitation as Associate Professor –** Academic Field and Discipline: **Telecommunication Engineering** (ING-INF/03) – Competition Sector: **Telecommunication** (09/F2)
2006-current	**Affiliate Professor** at Sant'Anna School of Advanced Studies in Pisa, Italy Contribution to funded projects, delivery of courses to Masters, Graduate and Ph.D. Programs, supervision of students, PhDs, thesis works, and internships.
2004	**Research fellowship** at the Royal Institute of Technology (KTH) in Stockholm, Sweden (June 2004). As visiting researcher I was in charge of extending KTH experimental facilities with the Service-Oriented Optical Network testbed capabilities I formerly set-up at CNIT for validating the novel service-oriented concept I elaborated for optical networks on the basis of the Intelligent Network Conceptual Model.
1999	**Licence** for the profession of Engineer, final mark 105/120

HONORS AND AWARDS

2018	**Best Demo Award** at 3rd Fed4Fire Engineering Conference (FEC3) held in Paris for demonstration of an orchestrator prototype for dynamic network slicing and service composition in 5G scenarios. The competition took place between more than 30 demonstrations developed as part of the work of 2 EU Future Internet Research & Experimentation (FIRE) projects (Fed4Fire+ and SoftFire projects)
2018	**Best Demo Award** at the IEEE Conference of Network Function Virtualization and Software-Defined Networking 2018 for demonstration of an integrated management systems for both SDN networks and clouds aiming at dynamic service chaining for 5G platforms. The competition took place between 15 demos presented by scientists from world-wide univisities and industries working on 5G softwarized newtorks

RESEARCH PROJECTS

Taken active part in research projects funded by the European Union and National Institutions by bringing my technical knowledge, acquiring expertise in technical and financial management issues and contributing favorably to technical reviews. Coordinated working groups from the point of view of technical/scientific management . Many of the projects have been carried out in collaboration with leading TLC ICT manufacturing companies and service providers in Europe, and hence I have been able to gain familiarity with the industrial world as well.

2023   **HUMANIST 5.0** funded by Universitas Mercatorum as high-ranked proposal of an internal competitive call (with external reviewers). **Role:** Coordinating inter-disciplinary studies on Human-centered Artificial Intelligence in industrial environments. **Position: PI and Project coordinator (budget 30keuro)**

2019-2022   **5GROWTH** funded under the 5G PPP initiative of the European Union's H2020 Framework Program as follow-up of 5G-TRANSFORMER to extend the orchestration platform across multiple federated domains and leveraging advanced techniques (e.g., machine learning) to increase efficiency, robustness and reliability demonstrated in field-trials of vertical industries. **Role:** Coordinated activities to (i) develop an advanced software manager able to support orchestration of network resources, and (2) integrate network orchestration into the federated platforms. **Position: CNIT PI as third party partner (budget 25keuro)**

2018-2021   **ICONET** funded under "Mobility for Growth" initiative of the European Union's H2020 Framework Program on integrated ICT infrastructures for advanced Logistics & Transport services under the novel paradigm of "Phisical Internet". The experimentations are carried out on field trials named Living Labs. **Role:** Coordinated activities on Technology Transfer of project results involging stakeholders. **Position: CNIT PI and task leader (budget 140keuro)**

2018-2019   **SLICENET-5G** winner project of the "open call" competition launched by 5GinFIRE funded under the Future Internet Research & Experimentation (FIRE) initiative of the European Union's H2020 Framework Program. **Role:** I was responsible to carry out experimentations on network slicing orchestration on top of virtualized network and cloud infrastructures to enable 5G service scenarios for vertical industries. The experimentations were carried out using the 5GinFIRE European testing platform and achievements have been reported to 5GinFIRE coordinator. The activitites also led to the integration of tested orchestration functionalities into the 5GinFIRE platform. **Position: PI and Project coordinator (budget 60keuro)**

2017-2020   **5G-TRANSFORMER** funded under the 5G PPP initiative of the European Union's H2020Framework Program to design future next generation mobile softwarized networks for 5G scenarios and generalized orchestration techniques for various application domains (e.g., smart cities, multimedia content distribution, e-health). **Role:** Coordinated task activities on software design and development of a Service Orchestrator for 5G networks in the cloud. **Position: Task Leader**.

2017-2018   **LASH-5G** winner project of the "open call" competition launched by Fed4FIRE+ funded under the Future Internet Research & Experimentation (FIRE) initiative of the European Union's H2020 Framework Program. **Role:** I was responsible to coordinate activities of CNIT, UniBo and UniPI to carry out experimentations on resource orchestration techniques with the provision of services with minimization of latency for mission-critical 5G applications. The experimentations were carried out using the Fed4Fire European testing platform and achievements have been reported to Fed4FIRE+ coordinator. **Position: PI and Project coordinator (budget 100keuro)**

2017-2018   **DiMoVis** winner project of the "open call" competition launched by TRIANGLE funded under the Future Internet Research & Experimentation (FIRE) initiative of the European Union's H2020 Framework Program. **Role:** Responsible to manage experimentations with UniCT on Mobile Video Surveillance in software-defined and virtualized network infrastructure to enable 5G service scenarios like Pervasive Vodeo applications for Smart Cities. The experimentations were carried out using the TRIANGLE experimental platform. **Position: co-PI and Project coordinator (budget: 20keuro)**

2014-2015   **EVIDENCE** winner project of the "open call" competition launched by Fed4FIRE and funded under the Future Internet Research & Experimentation (FIRE) initiative of the 7th European Union Framework Program. **Role:** Coordinated experimentations on a software-defined network orchestrator for combined deployments of cloud computing resources (i.e., Virtual Machines in datacenter servers) and network resources (i.e., virtual links) toward different targets (e.g., minimize energy consumption, provide reliable services to users). The experimentation have been carried out using the European Fed4Fire testing platform and achievements have been reported to Fed4FIRE coordinator. **Position: PI and Project coordinator (Budget 50keuro)**

2012-2013 **EMOTICON** funded under the Future Internet Research & Experimentation (FIRE) initiative of the 7th European Union Framework Program. **Role:** I was responsible to coordinate experimentations on datacenter traffic engineering techniques using Software-Defined Networking (SDN) approach and to contribute to the set-up of a federated European SDN-based experimental facility OFELIA. **Position: PI and Work Package Leader (budget 80keuro).**

2012-2014 **GEMMA** on intelligent management of electric vehicles and microgrids for sustainable mobility related to the "Formation for applied and technological research (FORTEC)" co-financed by the Region of Tuscany under the "POR CRO FSE 2007-2013" program and in collaboration with Scuola Superiore Sant'Anna and CNR. **Role:** Managed the study activities using a traffic simulator concerning optimized power supply techniques for charging electric cars. **Position:** Network scientist expert in software platform and service management

2008-2010 **BONE** within the research framework for scientific cooperation (Networks of Excellence) funded by the 7th Framework Program of the European Community. **Role:** Coordinated research activities on a software middleware for multi-service transport networks in collaboration with european univiersities and research centers (UEssex, UniBo, FUB). **Position: Task leader.**

2004-2008 **E-photon/ONE** (2004-2006), **E-photon/ONE+** (2006-2008) within the framework of the research programs for scientific cooperation (networks of excellence) funded by the European Community of the 6th Framework Program. **Role:** Carried out research activity on service platforms for multi-service transport networks in collaboration with the Royal Institute of Technology (KTH) in Stockholm and the University of Bologna. **Position**: Network scientist expert in software platforms and software developer

2004-2008 **NOBEL** (2004-2006), **NOBEL-phase 2** (2006-2008) funded under the 6th EU Framework Program to design new technologies and architectural solutions for high performance networks. **Role:** Carried out activities to investigate innovative features of multi-service networks and for advanced management of transport networks in close collaboration with the leading telco industries and manufacturing companies in Europe (es. DT, Nokia). **Position**: Network scientist and software developer

2005 **"Software and Communication Platforms for High Performance Collaborative Grids"** funded by the Ministry of University and Research under the FIRB program for Italy-Tunisia cooperation. Role: Carried out software design and development activities for E-learning distributed platforms taking care of connectiviy aspects for computational grids. **Position**: Network specialist and software developer

2003-2006 **ICT Action COST270** "Reliability of Optical Components and Devices in Communications Systems and Networks" funded under the EU COST programs in support of scientific and technological cooperation. **Role:** Designed advanced connectivity solutions for reliable service-oriented networks. Started up a collaboration with KTH to develop solutions in a local experimental testbed as visiting researcher. **Position**: Network specialist and software developer

2002-2005 **GRID.IT** funded by the Ministry of University and Research under the FIRB program for the study of distributed computing architectures and services (computational grids) on high capacity networks. **Role:** Designed advanced network architecture for on-demand connectivity services across distributed computational grids. **Position**: Network specialist and software developer.

JOB ORDERS

Carried out research and/or coordination activities taking active part in technical meetings and reporting in the following jobs funded by ICT industries (whenever referred to, the budget is to be understood as personally managed).

2021-2023 **European Spatial Agency (ESA)** commissioned job "*5GSENSOR@SEA*" funded under the ARTES 4.0 Technology & Product Developments program launched by European Spatial Agency (ESA) to develop a service platform for innovative services in the context of the maritime transport and logistics leveraging 5G technologies Industrial IoT (NB-IoT, software network and programmability, OneM2M software platform). **Role:** Coordinated activities on network softwarization in collaboration with TIM, MBI, Azcom to provide end-to-end programmable services for contrainer tracking. **Position: CNIT PI and Work Package Leader (budget 100kEUR)**

2014-2018 **Telecom Italia (TIM)** collaborative activities with TIM within the Joint Open Lab initiative for the creation of a federation of University labs (*JOLnet*)[1] for innovative experiments in softwarized networks (SDN/NFV). Collaboration begins in 2014 with the support to the requirement specifications and continues with research and experimental activities funded through two Industrial PhDs at Sant'Anna School of

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[1] http://www.telecomitalia.com/tit/it/notiziariotecnico/numeri/2014-2/capitolo-05/approfondimenti-02.html

Advanced Studies on "*5G scenarios and security software networks*" ending September 2018. **Role:** Coordinated activities and served as PhD supervisor. **Position**: **Task Leader** and Supervisor of two PhDs (150K EUR).

2015-2016   **Telecom Italia (TIM)** commissioned job (upon competitive call)"*Dynamic Composition of Multi-Level Network Services*" to carry out studies on novel solutions for multi-service 5G networks through network orchestration functionalities working with appropriate abstractions (and related interfaces) and dealing with different levels of service dynamicity. **Role:** Coordinated a group of young researchers at the Sant'Anna School of Advanced Studies and at the University of Bologna. **Position: PI (20K EUR).**

2014   **Ericsson (TEI)** commissioned job "*SDN-based Transport Network Controller for multi-layer networks*" on the design of a network controller according to the Software-Defined Networking (SDN) approach for IP/optical transport networks. **Role:** Coordinated activities on comparative studies on different available software SDN controllers (OpenDayLight, ONOS, Ryu). **Position: Task leader**.

2013   **Ericsson (TEI)** commissioned job "*Data center networking*"on the design of platforms to provide cloud networking services leveraging IP/optical networks. Role: Design software management platforms for on-demand connectivity among distributed data centers following dynamicity required by cloud applications. **Position**: **Task leader.**

2011   **NATO Agency NC3A:**   commissioned job "*Investigation on grid technology suitable to enhance the NATO Network Enabled Capabilities (NNEC): Market survey and validation of Grid Technologies*" on the analysis of emerging distributed computing technologies. **Role:** Coordinated investigations on Cloud Computing as candidate technology to expand and develop the ICT infrastructures. **Position: Task leader.**

2008-2009   **Ericsson (TEI):** commissioned job "*Definition of a software architecture and traffic engineering algorithms for optical networks planning*" for the design of an optical transport network planner with data processing logic oriented towards greater extensibility, portability and general validity. **Role:** Carried out definition of the generalized data model and design of a configuration rule conversion tool for optical equipment. **Position**: Task leader

2007-2008   **Ericsson (TEI):** commissioned job "*Service Layer Automation and Extension of GMPLS Concepts to Service Layer*" on the design of a distributed signaling software platform for multi-service optical networks. **Role:** Carried out the definition of requirements, the architecture specification, the signaling structure between the platform nodes for providing reliable and QoS-enabled network services. **Position**: Task leader.

2006-2007   **Ericsson (TEI):** commissioned job "*Convergent management information model for generalized transport applications*" on the definition of an extended information model for the generalized and integrated management of multi-layer transport networks. **Role:** Carried the definition of the generalized model of data and analyzed solutions to improve communication reliability for the management of Ericsson equipment. **Position**: Task leader.

2005-2006   **Marconi Communications:** commissioned job "*ASTN enhancement: Information modeling to support GMPLS management*" on the management of Marconi's network equipment featured with a generalized control plane. **Role:** Carried out architectural studies and the definition of a roadmap for generalized management of optical transport networks. **Position**: **Network specialist and software developer.**

2003-2004   **Marconi Communications:** commissioned job "*A Generalized Multi-Protocol Label Switching (GMPLS) Framework*" on the generalized control plane for multi-layer optical transport networks. **Role:** Developed a software platform for general development of XML-based control and signalling protocols. **Position: Network specialist and software developer.**

INVITED TALKS/PAPERS

2023   **Invited panelists** at International Conference on Network of the Future (NoF) 2023 (Izmir, Turkey) discussing on "How do we get from the current networks to the 5G vision?"

   Paper on invitation entitled "Intent-Based Networking: Current Advances, Open Challenges, and Future Directions" (M.Gharboui, B. Martini P. Castoldi) at the International Conference on Transparent Optical Networks 2023 (Bucarest, Romania).:.

2022   **Invited panelist** at the IEEE Conference on Network Softwarization (NetSoft) 2022 (Milan, Italy) discussing on "Network Softwarization Coming of Age: New Challenges and Opportunities"

2021   **Invited panelist** at the IEEE International Mediterranean Conference on Communications and Networking 2021 (Athens, Greece) discussing on "Computing at the edge: opportunities, challenges, and evolution"

2020   **Invited demonstration** at the meeting NMRG 58 @ IETF 108 Hackathlon titled "*A Multi-Level Approach to Intent-based Networking*" on orchestration of network and cloud resources of 5G infrastructures for vertical applications.

   Invited panelist at Smart City Now (www.smartcitynow.it) organized within the Technology Cluster for Smart Cities & Communities in Lombardia - Italy discussing on "5G: the revolution in progress in the network of future"

2019   **Invited talk**   titled "*Intent-based Networking in the NFV ecosysem*" (B. Martini) at the IRTF Network Management Research Group meeting co-located with the 10th International Conference on Network of the Future (NoF'19) Conference (Roma, Italy). The Internet Research Task Force (IRTF) promotes research of importance to the evolution of the Internet protocols, applications, architecture and technology

2018   **Invited panelist** at the IEEE International Conference on Network Function Virtualization and Software Defined Networks 2018 (Verona, Italy) discussing on "*Accelerating Computation for Network Function Virtualization*".

   Keynote presentation entitled "*Latency-aware and self-adaptive service chaining in reliable 5G/SDN/NFV infrastructures* " at the Workshop "SR+SFC" co-located with IEEE International Conference of Network and Service Management 2018 (Rome, Italy).

   Paper on invitation entitled "Latency-aware Network Service Orchestration over an SDN-controlled Multi-Layer Transport Infrastructure" (B. Martini, S. Fichera, M. Gharbaoui, P.Castolid) at the International Conference on Transparent Optical Networks 2018 (Bucarest, Romania).

2017   **Paper on invitation** entitled "Network Orchestration in Reliable 5G/NFV/SDN infrastructures" (B. Martini, S. Fichera, M.Gharbaoui, P.Castoldi) at the International Conference on Transparent Optical Networks 2017 (Girona, Spain).

2016   **Paper on invitation** entitled "Network and datacenter resource orchestration strategies for mobile virtual networks over telco clouds" (B. Martini, M.Gharboui, I. Cerutti, P. Castoldi) at the International Conference on Transparent Optical Networks 2016 (Trento, Italy).

2015   **Paper on invitation** entitled "Cross-Functional Resource Orchestration in Optical Telco Clouds" (B. Martini, S.Fichera, M.Gharboui, P. Castoldi) at the International Conference on Transparent Optical Networks 2015 (Budapest, Hungary).:.

   Invited talk at the IEEE SDN Initiative Standards Committee at IEEE Head Quarters (Piscataway, New Jersey, USA) titled "Context-aware Service Composition and Delivery in Next Generation Service Overlay Networks "

2009   **Presentation on invitation** "Challenges for enabling Cloud Computing Computing over optical networks over optical networks" (P. Castoldi, B. Martini, F. Baroncelli) at the International Workshop on the Cloud/Grid/Utility Computing over Optical Networks durante la conferenza OFC/NFOEC, San Diego, USA

2008   **Presentation on invitation** "Service Plane Capabilities and Challenges" (P. Castoldi, F. Baroncelli, B. Martini, V. Martini, L. Valcarenghi) al "FEDERICA-Phosphorus tutorial and workshop" at the TERENA Networking Conference 2008, Bruges, Belgium

2004   **Seminar on invitiation** entitled "Optical Networking: Advanced Architectures and Protocols" (B.Martini) at Marconi Communications, Future trends in Network Restoration and Resilience in All-Optical Netowrks, Coventry (UK).

   Paper on invitation entitled "New concepts, research tools and protocol extensions for optical switching" (N. Andriolli, F. Baroncelli, B. Martini, P. Castoldi, F. Cugini, M.Ghizzi, A. Giorgetti, Ramesh Kumar Manickam, P. T. Kulkarni, L. Valcarenghi) at the Indo-Italian One-day Workshop on Photonic Technologies, Networking and Applications, Indian Institute of Technology (IIT), Kharagpur, India

1999   **Seminar on invitation** titled "TMS320C6x-family devices for digital signal processing at 250MHz" (B.

Martini) at the course "Applied Electronics 3" at the Faculty of Engineering of the University of Florence

TEACHING ASSIGNMENTS

2022-current	**Coordinator** of PhD Programme "Big Data and Artificial Intelligence" at Universitas Mercaoturm funded by a plethora of industries and the the Italian Minister of University (under the PNRR framework).
2023-current	**Couse holder** of "Enabling technologies for Industry 5.0" for the PhD Programme "Big Data and Artificial Intelligence" at Univesitas Mercatorum
2022-current	**Course holder** of "Software Engineering" course (9 CFU, L8 – Computer engineering) at Universitas Mercaoturm.
2022-current	**Course holder** of "Enterprise Information Systems" course (6 CFU, LM31- Engineering and Industrial Management) at Universitas Mercaoturm.
2022-2023	**Course holder** of "Software Engineering" (12 CFU) as Adjunct Professor appointed by Università Pegaso for the of Software Engineering (12 CFU, L31 Informatics for Digital Enterprises)
2022	**Adjunct professor** appointed by the Sant'Anna School of Advanced Studies, Italy for the "5G for Logistics" course (2 hours) at the Seasonal School "ARTIST: 5G/6G networks transforming the Digital Society"
2012-2020	**Course holder** of the "*Telecommunication Networks and Technologies*" (80 hours) course as Adjunt Professor appointed by **Sant'Anna School of Advanced Studies** and **University of Pisa** for the MS Program in Computer Science and Networking.

2012-2018 **Adjunct professor** appointed by the Sant'Anna School of Advanced Studies, Italy for the "*Network Management Systems*" course (30 hours/year) of the following Ph.D.Programmes:

- a.y. 2012-2013 Ph.D. in Innovative Technologies
- a.y. 2013-2014 Ph.D. in Emerging Digital Technologies
- a.y. 2014-2015 Ph.D. in Emerging Digital Technologies
- a.y. 2015-2016 Ph.D. in Emerging Digital Technologies
- a.y. 2017-2018 Ph.D. in Emerging Digital Technologies

2012-2016 **Adjunct professor** appointed by the Sant'Anna School of Advanced Studies, Italy for the "*Resource Virtualization for Data Centers and Cloud Computing*" course (4 hours/year) of the following Masters:

- a.y. 2012-2013: "Smart Solutions - Smart Communities"
- a.y. 2014 -2015: "Smart Solutions - Smart Communities"
- a.y. 2015-2016: "Digital Life – Smart Living"

2005-2020 **Adjunct professor** appointed by the Sant'Anna School of Advanced Studies, Italy for the "*Network Management Systems*" course module (30 hours/year) within the following courses/programs/masters:

- a.y. 2019-2020: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa)
- a.y. 2018-2019: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa)
- a.y. 2017-2018: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa)
- a.y. 2015-2016: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa)
- a.y. 2014-2015: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa) and International Master on Communication Networks Engineering
- a.y. 2013-2014: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa), "*Network Management and Simulations*" in the MS Program in Computer Science and Networking (jointly with University of Trento) e International Master on Photonic NETworks Engineering
- a.y. 2012-2013: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa), "*Network Management and Simulations*" in the MS Program in

Computer Science and Networking (jointly with University of Trento) e International Master on Photonic NETworks Engineering

- a.y. 2011-2012: "*Telecommunication Networks and Technologies*" in the MS Program in Computer Science and Networking (jointly with University of Pisa), "*Network Management and Simulations*" in the MS Program in Computer Science and Networking (jointly with University of Trento) e International Master on Photonic NETworks Engineering, International Master on Photonic NETworks Engineering e International Master on Communication Networks Engineering

- a.y. 2009-2010: International Master on Communication Networks Engineering

- a.y. 2007-2008: International Master on Communication Networks Engineering, International Master in Information Technology

- a.y. 2006-2007: International Master on Communication Networks Engineering, International Master in Robotics and Mechatronics

- a.y. 2005-2006: International Master on Communication Networks Engineering

SERVICES TO UNIVERSITY AND SCIENTIFIC COMMUNITY

2023-current

Member of the **Steering Commettee** of the (IEEE-sponsored) International Conference on Network of Future (NoF) conference

2020-current

Associate Editor of the following journals:

- IEEE Transaction of Network and Service Management (**TNSM**) since 2020 (https://www.comsoc.org/publications/journals/ieee-tnsm/ieee-transactions-network-and-service-management-editorial-board)

- Frontiers in Communications and Networks since 2020 (https://www.frontiersin.org/journals/communications-and-networks/editors)

- Wiley International Journal of Network Management (**IJNM**) since 2021 (https://onlinelibrary.wiley.com/page/journal/10991190/homepage/editorialboard.html).

2018-2021

Associate Editor of OSA/IEEE Journal of Optical Communications and Networking (**JOCN**)

2021

Guest Editor of Special Issue "Smart Management of Future Softwarized Networks" for IEEE Transactions on Network and Service Management (TNSM) (https://www.comsoc.org/publications/journals/ieee-tnsm/cfp/smart-management-future-softwarized-networks)

Guest Editor for the Special Issue "Advances in Pervasive and Ubiquitous Computing" of Wiley Internet Technology Letters (https://onlinelibrary.wiley.com/page/journal/24761508/homepage/special_issues.htm)

2020

Guest Editor of Special Issue "Advanced Management of Softwarized Networks" for IEEE Transactions on Network and Service Management (TNSM) (https://www.comsoc.org/publications/journals/ieee-tnsm/cfp/advanced-management-softwarized-networks)

2019

Guest Editor of Special Issue "Latest Developments for the Management of Softwarized Networks" for IEEE Transactions on Network and Service Management (TNSM) (https://www.comsoc.org/publications/journals/ieee-tnsm/cfp/latest-developments-management-softwarized-networks)

2018-current

Member of the **Organizing Commettee** of the following conferences:

- 2024 (IEEE-sponsored) International Conference on Innonvation in Clouds, Internet and Networks (ICIN) – **General Chair**

- 2023 IEEE International Conference on Network Softwarization (NetSoft) – **General Chair**

- 2023 (IEEE-sponsored) International Conference on Network of Future (NoF) – **Turorial Chair**

- 2023 (IEEE-sponsored) International Conference on Innonvation in Clouds, Internet and Networks (ICIN) – **Demo Chair**

- 2022 IEEE International Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)– **Doctoral Symposium Chair**

- 2022 (IEEE-sponsored) International Conference on Network of Future (NoF) – **Pubblicity Chair**

- 2022 IEEE International Conference on Network Softwarization (NetSoft) – **Pubblicity Chair**

- 2022 (IEEE-sponsored) International Conference on Innonvation in Clouds, Internet and Networks (ICIN) – **Workshop Chair**

- 2021 IEEE International Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)– **Keynote Chair**

- 2021 IEEE International Conference on Network Softwarization (NetSoft) - **TPC Chair**

- 2021 (IEEE-sponsored) International Conference on Innonvation in Clouds, Internet and Networks (ICIN) - **TPC Chair**

- 2021 IFIP/IEEE International Conference on Network and Service Management (CNSM 2021) - **Workshop Chair**

- 2020 IEEE International Conference on Network Softwarization (NetSoft) - **Tutorial Chair**

- 2020 (IEEE-sponsored) International Conference on Innonvation in Clouds, Internet and Networks (ICIN) **- Tutorial Chair**

- 2020 IEEE International Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)– **Doctoral Symposium Chair**

- 2020 IFIP International Conference on Network and Service Management (CNSM) - **Student Travel Grants Chair**

- 2019 IEEE International Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)– **Workshop Chair**

- 2019 IEEE/IFIP International Symposium of Internet Management (IM)– **Demonstration Chair**

- 2018 IEEE International Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN) – **Secretary**

2016-2020   **Organizer and Steering Commettee member** of the "Orchestration in Software-Defined Infrastructures" Workshop (http://www.o4sdi.unibo.it/) on issues, challenges and practical experiences in network and service infrastructures in 5G technology. The workshop is endorsed by main EU projects on SDN/NFV and orchestration topics (SONATA, 5GEx, 5G-TRANSFORMER).Woskhop cames to the third edition and was held in conjunction with the following Interational conferences:

- IEEE/IFIP International Conference NOMS 2020

- IEEE International Conference NFV-SDN 2018, 2017, 2016

- IEEE International Conference on Communications (ICC) 2016

2009-current   **Member of technical committee** at the following conferences, workshops and international journals for which I carry out article reviews and contribute to the selection of research works:

- IEEE Optical Networks Design and Modelling (ONDM) 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021
- IEEE 5G World Forum 2018, 2019, 2020, 2021
- IEEE/IFIP Conference on Network Operations and Management Symposium (NOMS) 2020
- (IEEE-sponsored) Conference on Innonvation in Clouds, Internet and Networks (ICIN) 2020, 2021, 2022, 2023, 2024
- IEEE International Conference on Network Softwarization (NetSoft) 2017, 2018, 2019, 2020, 2021, 2022, 2023
- IEEE International Conference on Communications(ICC)-Next Generation Networking and Internet Symposium 2020
- IEEE Conf. on Network Function Virtualization and Software Defined Networks (NFV-SDN) 2016, 2017, 2018, 2019, 2020, 2021
- IEEE/IFIP Asia-Pacific Network Operations and Management Symposium (APNOMS) 2015, 2016, 2017, 2019, 2020
- IEEE Globecom - Next Generation Networking and Internet (NGNI) Symposium 2017, 2018, 2019
- IEEE International Conference on Network and Service Management (CNSM) 2017, 2018, 2019, 2020

- Global Information Infrastructure and Networking Symposium (GIIS) 2019
- IEEE International Conference on Communications (ICC) - Optical Networks Symposium 2016, 2017
- IEEE International Conference on Communications (ICC)-SAC on NFV-SDN 2017
- IEEE International Conference on Connected Vehicles & Expo (ICCVE) 2013, 2014, 2015, 2016, 2019
- ITU Kaleidoscope Conference 2011
- International Workshop on Network Intelligence @ IEEE International Conference on ComputerCommunications (INFOCOM) 2019, 2020
- International Workshop on Security for Emerging Distributed Network Technologies (DISSECT) @IEEE/IFIP IM/NOMS 2015, 2016, 2017
- Workshop on Slicing in end-to-end Networks including Wireless: Orchestration & Management (SLICEWOMAN) @ IEEE/IFIP IM 2019
- Workshop on Performance Issues in Virtualized Environments and Software Defined Networking (PVE-SDN) @ IEEE NetSoft 2018, 2019

2009-current **Reviewer** for the following journals and magazines relevant in the field: Wiley International Journal on Network Management, Wiley International Journal of Communication Systems, AIRCC Journals of Computer Networks and Communications, IEEE/OSA Journal of Lightwave Technology, IEEE/OSA Journal of Optical Communications and Networking, IEEE Transaction on Network and Service Management, IEEE Communication Magazine

2007-current **Committee Member** in the following evaluation/selection procedures:

- **Member of the Graduation (Ph.D.) Committee** of Dr. Roman-Valentyn Tkachuk at the Blekinge Institute of Technology (Sweden) - 2023
- Member of the Committee appointed by the Politecnico di Torino and Scuola Superiore Sant'Anna for a selection procedures to cover a Assistant Professor (RTDA) positions - 2023
- Member of the Committee appointed by the Pegaso University for a selection procedure to cover a Assistant Professor (RTDA) position - 2022
- Member of the Committee appointed by the Fondazione Bruno Kessler (FBK) for a selection procedure to cover a Tenure Track position for a senior researcher in the field of Edge-Cloud Computing at FBK Center for Digital Society - 2021
- Member of the Committee for the final exam (thesis defense) of the First Level Master on Photonic Integrated Circuits, Sensors and Networks (PIXNET) of the Sant'Anna School of Advanced Studies, a.y. 2020-2021
- **Member of the Graduation (Ph.D.) Committee** of Dr. Danny Lachos Perez at the **Unicamp Univesity** (Brazil) - 2021
- Member of the Committee for a public selection at Sant'Anna School of Advanced Studies for one technology expert required to design, organization and coordination of the activities of a software laboratory for telecommunications networks - 2020
- Member of the Committee for the selection for awarding Research Scholarship (Assegno di Ricerca) on "Wireless networks for control system in railway systems" at Sant'Anna School of Advanced Studies – 2020
- **Member of the Graduation (Ph.D.) Committee** of Dr. Shanay BEHRAD at the **Telecom SudParis** (Francia) - 2020
- Member of the Committee appointed by the Fondazione Bruno Kessler (FBK) to assess the tenured senior researcher along the track in the field of multi-layer networks and infrastructures – 2019-2022.
- **Member of the Graduation (Ph.D.) Committee** of Dr. Silvia Fichera at Sant'Anna School of Advanced Studies, Pisa – 2019
- **Member of the Graduation (Ph.D.) Committee** of Dr. Francesco Marino at Sant'Anna School of Advanced Studies, Pisa – 2018
- **Member of the Committee for the final exam (thesis defense) of the Master Program "Computer Science and** Networking " at the University of Pisa and Sant'Anna School of Advanced Studies, Pisa, Italy – 2018
- **Member of the Graduation (Ph.D.) Committee** of Dr. Francesco Lucrezia at **Polytechnic University of Turin**, Turing, Italy - 2018
- Member of the Committee appointed by the Fondazione Bruno Kessler (FBK) for the selection of a senior researcher to cover a Tenure Track position in the area of Multi-layer Networks and

Infrastructures at the CREATE-NET Research Center - 2018

- **Member of the Graduation (Ph.D.) Committee** of Dr. Molka Gharbaoui and Gianluca Raponi at Sant'Anna School of Advanced Studies, Pisa – 2012
- **Member of the Graduation (Ph.D.) Committee** of Dr. Karim Torkman at Sant'Anna School of Advanced Studies, Pisa – 2011
- **Member of the Graduation (Ph.D.) Committee** of Dr. Valerio Martini at Sant'Anna School of Advanced Studies, Pisa - 2009
- Member of the Committee for the assignment of a Research Scholarship (Assegno di Ricerca) on "Study and design of optical interconnection networks with high energy efficiency" at Sant'Anna School of Advanced Studies
- Member of the Committee for the final exam (thesis defense) of the International Master on Communication Networks Engineering (IMCNE) of the Sant'Anna School of Advanced Studies, a.y. 2007-2008

PROFESSIONAL ASSIGNMENTS

2022	**Evaluator** appointed by the **European Community** for evaluation of research proposals submitted to Horizon Europe program
2018	**Evaluator** appointed by the **European Institute of Technology (EIT)** of research proposals submitted to the EIT as part of Business Plan 2019 portfolio of research, innovation management and education activity portfolio.
2016	**Evaluator** appointed by the **European Community** for evaluation of research proposals submitted to the call ICT-13-2016 under the FIRE + initiative aimed at building a european infrastructure for Future Internet Experimentation on 5G services (Contract Number: CT-EX2006C159994-103). **Reviewer** appointed by the **European Community** for the final review of the SMARTFIRE research project funded under FIRE+ initiative, Final Revision (Contract Number: CT-EX2006C159994-101).
2015	**Reviewer** appointed by the European Community for the mid-term revision of the SMARTFIRE research project funded under the FIRE + initiative. (Contract Number: CT-EX2006C159994-102).

TECHNOLOGY TRANSFER AND STANDARDIZATION

2022-current	**Voting Member of Industry Community Board of IEEE Communications Society** https://www.comsoc.org/about/boards/industry-communities-board
2022	Seminar to **Chambres of Commerce**, Italy on 5G: challenges and opportunities for enterprises
2022	**Member of panel experts** at IoThingsAwards appointed by **Innovability** to select the most innovative IoT solutions and products from Small-Medium Enterprses in different application domains, such as e-health, smart cities (https://www.iothingsawards.com/giuria-2022/)
2021	**Member of panel experts** at IoThingsAwards appointed by **Innovability** to select the most innovative IoT solutions and products from Small-Medium Enterprses in different application domains, such as e-health, smart cities (https://www.iothingsawards.com/giuria-2021/)
2021-2023	**Member of the User Committee** of SLICES Research Infrastructure (RI) projects: "Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies – Design Study" (SLICES-DS) and "Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies – Starting Community" (SLICES-SC), to promote the SLICES RI and provide input on how to enlarge the plathora of potential users and best deliver research infrastructural services to them (http://slices-ri.eu/).
2018-2021	**Coordination of transferability and capacity building actions** during EU-funded project ICONET. Managed activities to foster knowledge consolidation and impact generation from ICONET outcomes toward enabling the "Physical Internet" paradigm in Transport & Logistics (T&L). I set-up a structured set of initiatives to transfer project results in the T&L ecosystem and let them to reach out stakeholders and institutions (e.g., European Shippers' Council, Chartered Institute of Logistics and Transport (CILT)). I

arranged dissemination and training initiatives (e.g., workshops, design of CILT qualifications on the topic Phisical Internet, training programs) and formulate best practices from project experimentations to foster advanced IoT- and cloud-based solutions in future Supply Chain services.

2018 **Evaluator and independent expert** appointed by the European Institute of Technology (EIT) for the **Business Plan 2019** of the Knowledge and Innovation Communities (KICs), a portfolio of research, innovation management and education activities submitted for evaluation to the EIT. I focused on research and innovation activity proposals in the area of Digital Infrastructure to evaluate the their potential impact on the business generation. (see also Professional Assignments section).

2014-current I was/am part of the following **standardization** initiatives:

- Contributing to the Internet Research Task Force (IRTF) Network Management Research Group (NMRG) on intent-based management and intent classification – 2020

- Contributed to the NMRG 58 @ IETF Hackathlon 108 with a demonstration of a prototype for "A Multi-Level Approach to Intent-based Networking" (https://trac.ietf.org/trac/ietf/meeting/wiki/108hackathon) - 2020

- Member of the Research Group "Future Networks in 2030 and beyond" at the IEEE Computer Society – 2019

- Contributed as reviewers to the Internet Research Task Force (IRTF) Request for Comment (RFC) on network virtualization research challenges (https://tools.ietf.org/html/rfc8568) - 2019

- Member of the IEEE ComSoc Research Group on Future Networks in 2030 and Beyond (2019)

- Contributed to the Internet-draft IETF "draft-bernardos-nmrg-multidomain-01" on multi-domain network virtualization titled "*Multi-domain Network Virtualization*" (https://tools.ietf.org/html/draft-bernardos-nmrg-multidomain-01) - 2016

- Contributed to the finalization of **IEEE 1903 standand** on Next Generation Service Overlay Network (NGSON) with SDN and NFV insights.- 2016

- Contributed to the IETF "draft-deng-nfvcon-nb-use-cases" Internet-draft on open issues and case studies on NFV configurations titled "*NFV configuration north bound use cases* " https://tools.ietf.org/html/draft-deng-nfvcon-nb-use-cases-00 - 2014

2009-2018 Aiming at advanced training as a mean of capacity building on future network technologies, I contributed to advanced education programs at the Scuola Superiore Sant'Anna designed with close interactions with ICT industry. I contributed with courses on cutting-edge technological contents in the field of softwarized 5G networkand and with tutoring of students attending both frontal lectures as well as internships in partner ICT companies. More specifically, I

- taught to the Second Level Master "Smart Solutions - Smart Communities" e "Digital Life – Smart Living" and supervised students in their intership in TIM while carrying out joint research activities as result of long-established collaborations between Scuola Superiore Sant'Anna and TIM –

- supervised 2 Ph.D. students within a PhD program set-up with fundings from TIM to carry out studies on 5G networking and beyond

- tutored students of the Second Level Master "Master of Service Management, Innovation and Engineering" (MAINS) during the Technology Innovation Laboratory named "*Marketing & Strategy: Economic Impact of Developing an NGN on the Country System. Convergence scenarios between Telco and Braodcast TV*" with activities carried out in collaboration with Telecom Italia, Ericsson, Vodafone (see also Teaching Assignments and Job Orders sections).

SUPERVISION ACTIVITY

2005-current **Supervision of students** in Ph.D., Graduate and Master Programs:

- Fabio Liberti, Modestino Matarazzo, Enrico Zanardo, Mattia Fontana, PhD students in Big Data and Artificial Intelligence at Universitas Mercatorum, 2022-current

- Eddi Lorenzi, master student at the Graduate Program in Computer Science and Networking at the Sant'Anna Scool of Advanced Studies and University of Pisa – Thesis in progress on use of Blockchain technology for cargo tracing in Transport and Logistics.

- Silvia Fichera, Ph.D student in Emerging Digital Technologies at the Sant'Anna Scool of Advanced Studies funded by Telecom Italia (TIM) – Thesis title: "Resource Orchestration in Softwarized Networks" - (Main Supervisor) - 2019

- Francesco Marino, Ph.D student in Emerging Digital Technologies at the Sant'Anna Scool of Advanced Studies funded by Telecom Italia (TIM) - Thesis title: "Towards a Softwarized and Secure Internet of Thinkgs" - 2018

- Serkalem Abebe, master student at the Graduate Program in Computer Science and Networking at the Sant'Anna Scool of Advanced Studies and University of Pisa – Thesis title: "Topology discovery in distributed SDN network domains" - (Main Supervisor) - 2018

- Hagos Lemlem, master student at the Graduate Program in Computer Science and Networking at the Sant'Anna Scool of Advanced Studies and University of Pisa – Thesis title: "Graphical interface for an SDN monitoring platform" - (Main Supervisor) - 2018

- Daniele Calchi, student of Master "Smart Digital Life & Smart Living" at the Sant'Anna Scool of Advanced Studies during the intenship at the Telecom Italia (TIM) Marketing Business Unit in Milan – Thesis title: "Platform as a Service solutions for Cloud Computing" (Accademic Supervisor) - 2016

- Maurizio Rametta, student of Master "Smart Digital Life & Smart Living" at the Sant'Anna Scool of Advanced Studies during the intenship at the Telecom Italia (TIM) Marketing Business Unit in Milan – Thesis title: "Support the development of solutions Cloud Computing Open Source" (Accademic Supervisor) – 2016

- Silvia Fichera, student of Master "Smart Solutions – Smart Communities" at the Sant'Anna Scool of Advanced Studies during the intenship at the Telecom Italia (TIM) JolNet Lab di Pisa – Thesis title: "Software Defined 5G Controlling Autonomous Machine" (Accademic Supervisor) – 2015

- Ahmed Ali Mohammed, during an intership at CNIT for the development of an orchestration appliance for network and cloud resources in data centers (Main Supervisor) – 2015

- Ahmed Ali Mohammed, master student at the Graduate Program in Computer Science and Networking at the Sant'Anna Scool of Advanced Studies and University of Pisa – Thesis title: "Application-driven Network Service Composition and Delivery Using SDN" (Main Supervisor) – 2014

- Shamim Ahmed, master student at the Graduate Program in Information and Communication Technologies at the Sant'Anna Scool of Advanced Studies and University of Trento – Thesis title: "Network-Assisted Virtual Machine Migrations" (Main Supervisor) - 2014

- Molka Gharbaoui, Ph.D student in Innovative Technologies at the Sant'Anna Scool of Advanced Studies – Thesis title: "Dynamic Resource Provisioning and Security solutions in Service-Oriented Networks" (Main Supervisor) - 2012

- Karim Torkman, Ph.D student in Innovative Technologies at the Sant'Anna Scool of Advanced Studies – Thesis title: "On-demand service provisioning in GMPLS networks" (Co-Supervisor) - 2011

- Valerio Martini, Ph.D student at the Sant'Anna Scool of Advanced Studies – Thesis title: "Service Oriented Optical Network (SOON) Architecture" (Co-Supervisor) – 2009

- Molka Gharbaoui, master student at International Master on Communication Networks Engineering (IMCNE) at the Sant'Anna Scool of Advanced Studies – Thesis title: "Study and Implementation of QoS techniques in IP/MPLS networks" (Main Supervisor) – 2008

- Karim Torkman, master student at International Master on Communication Networks Engineering (IMCNE) at the Sant'Anna Scool of Advanced Studies – Thesis title: "Evaluation of the on-request approach for the service provisioning in IP/MPLS networks" (Co-Supervisor) - 2007

- Sammi Ajina, master student University of Tunis – Thesis title: "Service Plane-aided Visualization of Virtual Topology in transport networks" - 2007

- Angelica Aprigliano, master student University of Florence – Thesis title: "Analysis, design and implementation of a software module for network and grid applications interworking" – 2005

EDUCATION

a.y. 1998-1999	**Degree in Electronic Engineering** at the University of Florence (final mark: 107/110) Thesis: "TMS320C6x digital processing at 250MHz: application of the 'software pipelining' technique". The thesis work has been developed under the Texas Instruments DSP "Elite" Program and elaborated firmware code optimizations for ultra-fast FFT algorithms running in Digital Signal Processors (DSPs) for both biomedical and radar applications. Ressarch results has been published in a conference paper.

FOREIGN LANGUAGES

English	B2/C1 level in both written and spoken language, acquired through teaching foreign students, writing scientific articles and research reports and presentations in English, frequent attendance at international meetings and numerous stays abroad (the most extended stay in the US for around 2 months, host of a family, in 1999)
French	Basic
Italian	Mothertongue

MATERNITY LEAVE AND PART-TIME WORK PERIODS

In compliance with the Italian legislative decree no. 1204 dated 30/12/1971 I used two compulsory full-pay maternity leaves from CNIT and in compliance with the Italian legislative decree no. 199/2011 I took two parental leaves from CNIT for overall 360 days (in fractional way). More specifically, I stopped working due to **maternity leaves** for the following two main periods: **June 2006-April 2007 and February 2010-October 2010**.
I have been working at **part-time** (66%) at CNIT from **November 1st 2019 to April 30th 2021**.

Lastra a Signa (FI), 15 gennaio 2024

In compliance with the Italian legislative decree no. 197 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document (only for appliances on the Italian territory)

ANNEX A: PUBLICATIONS – BARBARA MARTINI

2024

Conference papers:

1. E. Zanardo, **B. Martini**, Secure and authorized data sharing among different IoT network domains using Beez Blockchain, to appear in Proc. of 27th Conference on Innovation in Clouds, Internet and Networks (ICIN) 2024, Paris, France

2. E. Zanardo, **B. Martini**, Elias Iosif, A New Blockchain-Based Meritocratic Marketplace for Distributed Machine Learning Model Training, Numerical Computations: Theory and Algorithms (NUMTA), to appear in Lecture Notes in Computer Science (LNCS), 2024

2023

Journal papers:

3. S. Noto, M. Gharbaoui, M. Falcitelli, **B. Martini**, P. Castoldi, P. Pagano, Experimental Evaluation of an IoT-Based Platform for Maritime Transport Services, Special Issue Software Engineering for IoT: Latest Advances and Prospect, 6(3):58, Applied System Innovation, vol. 6, ISSN: 2571-5577, https://doi.org/10.3390/asi6030058

4. **B. Martini**, M. Gharbaoui, P. Castoldi, Intent-based network slicing for SDN vertical services with assurance: Context, design and preliminary experiments, Future Generation Computer Systems, Volume 142, 2023, Pages 101-116, ISSN 0167-739X, https://doi.org/10.1016/j.future.2022.12.033.

Conference papers:

5. M. Gharbaoui, **B. Martini**, P. Castoldi, Intent-Based Networking: Current Advances, Open Challenges, and Future Directions, 23rd International Conference on Transparent Optical Networks (ICTON), Bucharest, Romania, 2023, pp. 1-5, doi: 10.1109/ICTON59386.2023.10207407.

6. R. Caldelli, P. Castoldi, M. Gharbaoui, **B. Martini**, M. Matarazzo and F. Sciarrone, "On helping users in writing network slice intents through NLP and User Profiling," 2023 IEEE 9th International Conference on Network Softwarization (NetSoft), Madrid, Spain, 2023, pp. 545-550, doi: 10.1109/NetSoft57336.2023.10175400.

2022

Journal papers:

7. **B. Martini**, M. Gharbaoui, P. Castoldi, Intent-based Zero-touch Service Chaining Layer for Software-defined Edge Cloud Networks, Computer Networks, Volume 212, July 2022, ISSN 1389-1286, https://doi.org/10.1016/j.comnet.2022.109034

8. M. Gharbaoui, C. Contoli, G. Davoli, D. Borsatti, G. Cuffaro, F. Paganelli, W. Cerroni, P. Cappanera, **B. Martini**, An experimental study on latency-aware and self-adaptive service chaining orchestration in distributed NFV and SDN infrastructures, Computer Networks, Volume 208, May 2022, ISSN 1389-1286, https://doi.org/10.1016/j.comnet.2022.108880.

9. N. Andriolli, A. Giorgetti, P. Castoldi, G. Cecchetti, I. Cerutti, N. Sambo, A. Sgambelluri, L. Valcarenghi, F. Cugini, **B. Martini**, F. Paolucci, Optical networks management and control: A review and recent challenges, Optical Switching and Networking, Volume 44, May 2022, ISSN 1573-4277, https://doi.org/10.1016/j.osn.2021.100652 .

2021

Journal papers:

10. C. -Y. Chang, T. G. Ruiz, F. Paolucci, M. A. Jiménez, J. Sacido, C. Papagianni, F. Ubaldi, D. Scano, M. Gharbaoui, A. Giorgetti, L. Valcarenghi, K. Tomakh, A. Boddi, A. Caparrós, M. Pergolesi, **B. Martini**., "Performance Isolation for Network Slices in Industry 4.0: The 5Growth Approach," in IEEE Access, vol. 9, Dec 2021, doi: 10.1109/ACCESS.2021.3135827.

11. M. Gharbaoui, **B. Martini**, G. Cecchetti and P. Castoldi, "Resource Orchestration Strategies With Retrials for Latency-Sensitive Network Slicing Over Distributed Telco Clouds," in IEEE Access, vol. 9, Sept 2021, doi: 10.1109/ACCESS.2021.3115173

12. X.Li, C.F.Chiasserini, J.Mangues-Bafalluy, J.Baranda, G.Landi, **B.Martini**, X.Costa-Perez, C.Puligheddu, L.Valcarenghi, "Automated Service Provisioning and Hierarchical SLA Management in 5G Systems", IEEE Transaction on Network and Service Management, vol. 18, no. 4, pp. 4669-4684, Dec. 2021, doi: 10.1109/TNSM.2021.3102890.

Conference papers:

13. M. Gharbaoui, **B. Martini**, P. Castoldi, "Implementation of an Intent Layer for SDN-enabled and QoS-Aware Network Slicing", in IEEE Conference on Network Softwarization (NetSoft), 2021, Tokio, Japan

2020

Journal papers:

14. S. Fichera, **B. Martini**, R. Martínez, M. Gharbaoui, R.Casellas, R. Vilalta, R. Muñoz, P. Castoldi, "Experimental evaluation of dynamic resource orchestration in multi-layer (packet over flexi-grid optical) networks". Photonic Network Communications July 2020, https://doi.org/10.1007/s11107-020-00899-4

15. **B. Martini**, P. Mori, F. Marino. A. Saracino, A. Lunardelli, A. La Marra, F. Martinelli, P. Castoldi, "Pushing forward security in Network Slicing by leveraging Continuous Usage Control", IEEE Communications Magazine, Vol. 58, No. 7, July 2020, pp. 65-71, doi: 10.1109/MCOM.001.1900712

Conference papers:

16. M. Gharbaoui, **B. Martini** and P. Castoldi, "Programmable and Automated Deployment of Tenant-Managed SDN Network Slices," NOMS 2020 - 2020 IEEE/IFIP Network Operations and Management Symposium, Budapest, Hungary, 2020, pp. 1-6, doi: 10.1109/NOMS47738.2020.9110302.

2019

Journal papers:

17. S. Fichera, R. Martínez, **B. Martini**, M. Gharbaoui, R. Casellas, R. Vilalta, R. Muñoz, and P. Castoldi, "Latency-Aware Resource Orchestration in SDN-Based Packet Over Optical Flexi-Grid Transport Networks," Journal of Optical Communications and Networking, vol. 11, no. 4, pp. B83-B96, April 2019 - ISSN: 1943-0620, doi: 10.1364/JOCN.11.000B83

18. **B. Martini**, M. Gharbaoui, D. Adami, P. Castoldi and S. Giordano, "Experimenting SDN and Cloud Orchestration in Virtualized Testing Facilities: Performance Results and Comparison," in IEEE Transactions on Network and Service Management, vol. 16, no. 3, pp. 965-979, Sept. 2019 - ISSN: 1932-4537, doi: 10.1109/TNSM.2019.2917633

19. G. Castellano, I. Cerrato, M. Gharbaoui, S. Fichera, **B. Martini**, F. Risso, P. Castoldi, "A model-based abstraction layer for heterogeneous SDN applications", International Journal of Communication Systems, vol. 32, July 2019 - ISSN: 1074-5351, doi: 10.1002/dac.3989

Conference papers:

20. P. Castoldi, S. Fichera, M. Gharbaoui, A. Giorgetti, **B. Martini** and F. Paolucci, "Disaggregated optical network control and orchestration of heterogeneous domains," 2019 24th OptoElectronics and Communications Conference (OECC) and 2019 International Conference on Photonics in Switching and Computing (PSC), Fukuoka, Japan, 2019, pp. 1-3.

21. S. Fichera, **B. Martini**, R. Martínez, R. Casellas, R. Vilalta, R. Muñoz, P. Castoldi, "Experimental Evaluation of Dynamic Resource Orchestration in Multi-Layer (Packet over Flexi-Grid Optical) Networks", in Proceeding of the 23rd Conference on Optical Network Design and Modelling (ONDM 2019), 13-16 May 2019, Athens (Greece), ISBN 978-3-030-38085-4.

22. A. L. Marra, A. Lunardelli, F. Martinelli, P. Mori, A. Saracino, P. Castoldi, F. Marino, **B. Martini**, "Demonstration of secure slicing using ETSI MANO enhanced with Usage Control Capability," 2019 IEEE Conference on Network Softwarization (NetSoft), Paris, France, 2019, pp. 254-256 (demo paper)

23. J. Mangues-Bafalluy J. Baranda, I. Pascual, R. Martínez, L. Vettori, G. Landi, A. Zurita, D. Salama, K. Antevski, J. Martín-Pérez, D. Andrushko, K. Tomakh, **B. Martini**, X. Li, J. X. Salvat, "5G-TRANSFORMER Service Orchestrator: design, implementation, and evaluation," 2019 European Conference on Networks and Communications (EuCNC), Valencia, Spain, 2019, pp. 31-36.

24. A. La Marra, A. Lunardelli, F. Martinelli, P. Mori, A. Saracino, P. Castoldi, F. Marino, **B. Martini**, "Enhancing Security in ETSI Open Source MANO with Usage Control Capability," 2019 IFIP/IEEE Symposium on Integrated Network and Service Management (IM), Arlington, VA, USA, 2019, pp. 25-29.

25. A. Sgambelluri, M. Capitano, S. Fichera, K. Kondepu, A. Giorgetti, F. Giannone, **B. Martini**. F. Ubaldi, P. Iovanna, G. Landi, L. Valcarenghi, "Experimental Demonstration of a 5G Network Slice Deployment exploiting Edge or Cloud Data-Center", 2019 Optical Fiber Communications Conference and Exibition (OFC), San Diego, CA, USA, 2019, pp1-3 (demo paper)

2018

Conference papers:

26. X. Li, J. Mangues-Bafalluy, G. Landi, L. Valcarenghi, K. Antevski, C. J. Bernardos, C. F. Chiasserini, F. Moscatelli, I. Pascual, **B. Martini**, C. E. Casetti, D. Andrushko, N. Serrano, A. Ksentini, "Service Orchestration and Federation for Verticals", 2018 COMPASS Workshop, co-located with IEEE Wireless Communications and Networking Conference, 15-18 April 2018, Barcelona (Spain)

27. P. Iovanna, T. Pepe, F. Moscatelli, C. F. Chiasserini, C. E. Casetti, L. Valcarenghi, **B. Martini**, X. Li, C. Guerrero, A. Ksentini, J. Mangues-Bafalluy, G. Zennaro, "5G Mobile Transport and Computing Platform for verticals", 2018 COMPASS Workshop, co-located with IEEE Wireless Communications and Networking Conference, 15-18 April 2018, Barcelona (Spain)

28. S. Fichera, R. Martínez, R. Casellas, **B. Martini**, R. Vilalta, R. Muñoz, P. Castoldi, A. Manzalini, "Experimental Evaluation of Orchestrating Inter-DC QoS-enabled VNFFG Services in Packet/Flexi-Grid Optical Networks", in Proceedings of 44th European Conference on Optical Communications (ECOC 2018), 23-27 September, 2018, Roma (Italy).

29. S. Fichera, R. Martínez, **B. Martini**, M. Gharbaoui, R. Casellas, R. Vilalta, R. Muñoz, P. Castoldi, "Latency-aware Network Service Orchestration over an SDN-controlled Multi-Layer Transport Infrastructure", in Proceedings of 20th International Conference on Transparent Optical Networks (ICTON 2018), 1-5 July 2018, Bucharest, Romania (invited paper).

30. L. Valcarenghi, **B. Martini**, K. Antevski, C. J. Bernardos, G. Landi, M. Capitani, J. Mangues-Bafalluy, R. Martinez, J. Baranda, I. Pascual, A. Ksentini, C. F. Chiasserini, F. Malandrino, Xi Li, D. Andrushko, and Konstantin Tomakh. 2018. A Framework for Orchestration and Federation of 5G Services in a Multi-Domain Scenario. In Proceedings of the Workshop on Experimentation and Measurements in 5G (EM-5G'18). ACM, New York, NY, USA, 19-24, https://doi.org/10.1145/3286680.3286684 .

31. M. Gharbaoui, C. Contoli, G. Davoli, G. Cuffaro, **B. Martini**, F. Paganelli, W. Cerroni, P. Cappanera, P. Castoldi, "Experimenting latency-aware and reliable service chaining in Next Generation Internet testbed facility," 2018 IEEE Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN), Verona, Italy, 2018, pp. 1-4.

32. K. Antevski, J. Martín-Pérez, N. Molner, C.F. Chiasserini, F. Malandrino, P. Frangoudis, A. Ksentini, X. Li, J. Salvat Lozano, R. Martínez, I. Pascual, J. Mangues-Bafalluy, J. Baranda, **B. Martini**, M. Gharbaoui, "Resource Orchestration of 5G Transport Networks for Vertical Industries," 2018 IEEE 29th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Bologna, Italy, 2018, pp. 158-163.

33. I. Vaishnavi, J. Czentye, M. Gharbaoui, G. Giuliani, D. Haja, J. Harmatos, D. Jocha, J. Kim, **B. Martini**, J MeMn, P. Monti, B. Németh, Wint Yi Poe, A. Ramos, A. Sgambelluri, B. Sonkoly, L. Toka, F. Tusa, C. J. Bernardos, R. Szabo, "Realizing services and slices across multiple operator domains," NOMS 2018 - 2018 IEEE/IFIP Network Operations and Management Symposium, Taipei, Taiwan, 2018, pp. 1-7.

34. M. Gharbaoui, C. Contoli, G. Davoli, G. Cuffaro, **B. Martini**, F. Paganelli, W. Cerroni, P. Cappanera, P. Castoldi, "Demonstration of Latency-Aware and Self-Adaptive Service Chaining in 5G/SDN/NFV infrastructures", 2018 IEEE Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN), Verona, Italy, 2018, pp. 1-2 (demo paper)

35. M Capitani, F Giannone, S Fichera, A Sgambelluri, K Kondepu, E Kraja, B Martini, G Landi, L Valcarenghi, "Experimental Demonstration of a 5G Network Slice Deployment Through the 5G-Transformer Architecture", in Proceedings of 44th European Conference on Optical Communications (ECOC 2018), 23-27 September, 2018, Roma (Italy) (demo paper)

2017

Journal papers:

36. Guerzoni, R., Vaishnavi, I., Caparros, D.P., Galis, A., Tusa, F., Monti, P., Sganbelluri, A., Biczók, G., Sonkoly, B., Toka, L., Ramos, A., Melián, J., Dugeon, O., Cugini, F., **Martini, B**., Iovanna, P., Giuliani, G., Figueiredo, R., Contreras-Murillo, L.M., Bernardos, C.J., Santana, C., Szabo, R., "Analysis of end-to-end multi-domain management and orchestration frameworks for software defined infrastructures: An architectural survey," Transactions on Emerging Telecommunications Technologies, vol. 28, no. 4, art. no. e3103, April 2017 – ISSN: 2161-3915, doi: 10.1002/ett.3103

37. D. Adami, **B. Martini**, A. Sgambelluri, L. Donatini, M. Gharbaoui, P. Castoldi, S. Giordano, "An SDN Orchestrator for Cloud Data Center: System Design and Experimental Evaluation," Transactions on Emerging Telecommunications Technologies, vol. 28, no 11, art. no. e3172, November 2017 - ISSN: 2161-3915, doi: 10.1002/ett.3172

Book's Chapter:

38. Santos M.A.S., Ranjbar A., Biczók G., **Martini B**., Paolucci F. (2017) "Security Requirements for Multi-operator Virtualized Network and Service Orchestration for 5G", Guide to Security in SDN and NFV, Computer Communications and Networks book series published by Springer, Cham, pp 253-272, November 2017 - doi: 10.1007/978-3-319-64653-4_10

Conference papers:

39. A. Manzalini, D. Lopez, H. Lonsethagen, L. Suciu, R. Bifulco, M.P. Odini, G. Celozzi, **B. Martini**, F. Risso, J. Garay, V. Foteinos, P. Demestichas, G. Carullo, M. Tambasco, G. Carrozzo, A unifying Operating Platform for 5G end-2-end and multi-layer orchestration, 2017 IEEE NetSoft Conference and Workshops, Bologna, Italy, July 2017

40. M. Gharbaoui, S. Fichera, **B. Martini**, P. Castoldi, Network Orchestrator for QoS-enabled Service Function Chaining in reliable NFV/SDN infrastructure, 2017 IEEE NetSoft Conference and Workshops, Bologna, Italy, July 2017

41. S. Fichera, M. Gharbaoui, **B. Martini**, P. Castoldi, A. Manzalini, "On experimenting 5G: Testbed set-up for SDN orchestration across network cloud and IoT domains," 2017 IEEE NetSoft Conference and Workshops, Bologna, Italy, July 2017

42. **B. Martini**, M. Gharbaoui, S. Fichera, P. Castoldi, "Network Orchestration in Reliable 5G/NFV/SDN infrastructures," 2017 19th International Conference on Transparent Optical Networks (ICTON), Girona, Spain, July 2017 (invited paper)

43. A Sgambelluri, F Tusa, M Gharbaoui, E Maini, L Toka, JM Perez, F Paolucci, **B Martini**, WY Poe, J Melian Hernandes, A Muhammed, A Ramos, OG de Dios, B Sonkoly, P Monti, I Vaishnavi, CJ Bernardos, R Szabo., "Orchestration of Network Services across multiple operators: The 5G Exchange prototype," 2017 European Conference on Networks and Communications (EuCNC), Oulu, Finland, June 2017, pp. 1-5.

2016

Journal papers:

44. M. Gharbaoui, **B. Martini**, D. Adami, S. Giordano, P. Castoldi, "Cloud and network orchestration in SDN data centers: Design principles and performance evaluation," Elsevier Computer Networks, vol. 108, no 24, pages 279-295, October 2016 - ISSN 1389-1286, doi: 10.1016/j.comnet.2016.08.029

45. M. Gharbaoui, **B. Martini**, C.J. Fung, F. Paolucci, A. Giorgetti, P. Castoldi, An incentive-compatible and trust-aware multi-provider path computation element (PCE), Elsevier Computer Networks, vol. 108, no 24, pages 40-54, October 2016 - ISSN 1389-1286, doi: 10.1016/j.comnet.2016.07.013

46. C.J. Bernardos, G.B. Péter, M. Di Girolamo, A. Kern, **B. Martini**, I. Vaishnavi, "5GEx: realising a Europe-wide multi-domain framework for software-defined infrastructures," Transactions on Emerging Telecommunications Technologies, Vol. 27, No. 9, Pages 1271-1280, July 2016 - ISSN: 2161-3915 doi: 10.1002/ett.3085

47. **B. Martini**, F. Paganelli, "A Service-Oriented Approach for Dynamic Chaining of Virtual Network Functions over Multi-Provider Software-Defined Networks," MDPI Future Internet, Vol. 8, No. 2, June 2016 - ISSN 1999-5903, doi: 10.3390/fi8020024

Conference papers:

48. **B. Martini**, M. Gharbaoui, I. Cerutti and P. Castoldi, "Network and datacenter resource orchestration strategies for mobile virtual networks over telco clouds," 2016 18th International Conference on Transparent Optical Networks (ICTON), Trento, 2016, pp. 1-4 - doi: 10.1109/ICTON.2016.7550703 (invited paper)

49. M. Gharbaoui, **B. Martini**, D. Adami, P. Castoldi and S. Giordano, "Experiments on SDN-based network and cloud resource orchestration in FED4FIRE," 2016 IEEE NetSoft Conference and Workshops (NetSoft 2016), Seoul, 2016, pp. 131-135 - doi: 10.1109/NETSOFT.2016.7502449

50. A. A. Mohammed, M. Gharbaoui, **B. Martini**, F. Paganelli and P. Castoldi, "SDN controller for network-aware adaptive orchestration in dynamic service chaining," 2016 IEEE NetSoft Conference and Workshops (NetSoft 2016), Seoul, 2016, pp. 126-130 - doi: 10.1109/NETSOFT.2016.7502458

51. M. Gharbaoui, I. Cerutti, **B. Martini** and P. Castoldi, "An orchestrator of network and cloud resources for dynamic provisioning of mobile virtual network functions," 2016 IEEE NetSoft Conference and Workshops (NetSoft 2016), Seoul, 2016, pp. 98-101 - doi: 10.1109/NETSOFT.2016.7502452

52. **B. Martini**, D. Adami, M. Gharbaoui, P. Castoldi, L. Donatini and S. Giordano, "Design and evaluation of SDN-based orchestration system for cloud data centers," 2016 IEEE International Conference on Communications (ICC 2016), Kuala Lumpur, Malesya, Apri 2016, pp. 1-6 - doi: 10.1109/ICC.2016.7511144

2015

Journal papers:

53. W. Cerroni, M. Gharbaoui, **B. Martini**, A. Campi, P. Castoldi, F. Callegati, Cross-layer resource orchestration for cloud service delivery: A seamless SDN approach, Elsevier Computer Networks, Volume 87, 20 July 2015, Pages 16-32 - ISSN 1389-1286, doi: 10.1016/j.comnet.2015.05.008

Conference papers:

54. **B. Martini**, F. Paganelli, P. Cappanera, S. Turchi, P. Castoldi, "Latency-aware composition of Virtual Functions in 5G," IEEE Conference on Network Softwarization (NetSoft 2015), 13-17 April 2015, London - UK doi: 10.1109/NETSOFT.2015.7116188

55. **B. Martini**, F. Paganelli, A.A. Mohammed, M. Gharbaoui, A. Sgambelluri, P. Castoldi, "SDN controller for context-aware data delivery in dynamic service chaining," IEEE Conference on Network Softwarization (NetSoft 2015), 13-17 April 2015, doi: 10.1109/NETSOFT.2015.7116146

56. D. Adami, **B. Martini**, A. Sgambelluri, M. Gharbaoui, P. Castoldi, C. Callegari, L. Donatini, S. Giordano, "Cloud and network service orchestration in Software Defined Data Centers," in 2015 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS), 26-29 July 2015, Chicago, IL – USA - doi: 10.1109/SPECTS.2015.7285284

57. **B. Martini**, M. Gharbaoui, P. Castoldi, "Cross-Functional Resource Orchestration in Optical Telco Clouds", 17th IEEE International Conference on Transparent Optical Networks (ICTON 2015), July 5-9, 2015, Budapest - Hungary (invited paper)

58. S. Ahmed, **B. Martini**, M. Gharbaoui, A. Sgambelluri and S. Shariful Alam, "Orchestration algorithms for network-assisted virtual machine migrations using OpenDayLight Controller," 2015 2nd International Conference on Electrical Information and Communication Technologies (EICT 2015), Khulna, Bangladesh, doi: 10.1109/EICT.2015.7391931

2014

Journal papers:

59. F. Paganelli. M. Ulema, **B. Martini**, "Context-aware Service Composition and Delivery in NGSONs over SDN", IEEE Communications Magazine, vol. 52, no. 8, pp. 97-105, August 2014 – ISSN: 0163-6804, doi: 10.1109/MCOM.2014.6871676.

Conference papers:

60. D. Adami, **B. Martini**, M. Gharbaoui, A. Sgambelluri, L. Donatini, A. Del Chiaro, S. Giordano, P. Castoldi, "An OpenFlow Controller for Cloud Data Centers: Experimental Setup and Validation", 2014 International Conference of Communiations (ICC 2014), Sydney, Australia, June 2014.

61. C. J. Fung, **B. Martini**, M. Gharbaoui, F. Paolucci, A. Giorgetti, and P. Castoldi "Quality of Interaction among Path Computation Elements for Trust-aware Inter-Provider Cooperation", 2014 International Conference of Communiations (ICC 2014), Sydney, Australia, June 2014.

62. M. Gharbaoui, **B. Martini**, D. Adami, G. Antichi, S. Giordano and P. Castoldi, "On Virtualization-aware Traffic Engineering in OpenFlow Data Centers networks", 2014 IEEE/IFIP Network Operations and Management Symposium (NOMS 2014), Krakow, Poland, May 2014

63. A. Sgambelluri, D. Adami, L. Donatini, M. Gharbaoui, **B. Martini**, S. Giordano and P. Castoldi, "IT and network SDN orchestrator for Cloud Data Center "2014 IEEE/IFIP Network Operations and Management Symposium (NOMS 2014), Krakow, Poland, May 2014

64. **B. Martini**, D. Adami, A. Sgambelluri, M. Gharbaoui, L. Donatini, S. Giordano and P. Castoldi, "An SDN Orchestrator for Resources Chaining in Cloud Data Centers", 2014 European Conference on Networks and Communications (EuCNC 2014), Bologna, Italy, June 2014.

2013

Journal papers:

65. M. Gharbaoui, F. Paolucci, A. Giorgetti, **B. Martini**, Piero Castoldi, "Effective Statistical Detection of Smart Confidentiality Attacks in Multi-domain Networks", IEEE Transactions on Network and Service Management (TNSM), vol.10, no. 4, pp. 383-397, December 2013 – ISSN: 1932-4537, doi: 10.1109/TNSM.2013.111113.130482

Conference papers:

66. D. Adami, **B. Martini**, M. Gharbaoui, G. Antichi, S. Giordano, P. Castoldi, "Effective Resource Control Strategies using OpenFlow in Cloud Data Center(2013) 2013 IFIP/IEEE International Symposium on Integrated Network Management (IM 2013), art. no. 6573034, pp. 568-574, Ghent, Belgium, April 2013

67. M. Gharbaoui, F. Paolucci, **B. Martini**, A. Giorgetti, P. Castoldi "Guaranteeing Confidentiality in Multi-domain Networks: the PCE Anomaly Detector (PAD)", 2013 IFIP/IEEE International Symposium on Integrated Network Management (IM 2013), art. no. 6573022, pp. 485-491, Ghent, Belgium, April 2013

68. W. Cerroni, F. Callegati, **B. Martini**, P. Castoldi, "Design Trade-offs for Anycast Service Provisioning in Optical Data Center Interconnections", 2013 IEEE International Conference on Transparent Optical Networks (ICTON 2013), art. no. 6602677, Cartagena; Spain, June 2013

69. Gharbaoui, M., **Martini, B.**, Bruno, R., Valcarenghi, L., Conti, M., Castoldi, P., "Designing and evaluating activity-based electric vehicle charging in urban areas," 2013 IEEE International Electric Vehicle Conference (IEVC 2013), art. no. 6681140, Silicon Valley, CA; United States, October 2103

70. Gharbaoui, M., **Martini, B.**, Bruno, R., Valcarenghi, L., Conti, M., Castoldi, P. "Policies for efficient usage of an EV charging infrastructure deployed in city parking facilities," 13th International Conference on Inteligent Transport Systems (ITS) Telecommunications (ITST 2013), art. no. 6685577, pp. 384-389.

2012

Journal papers:

71. Gharbaoui, M.; **Martini, B**.; Castoldi, P., "Anycast-based optimizations for inter-data-center interconnections [Invited]," IEEE/OSA Journal of Optical Communications and Networking, vol.4, no.11, pp.B168,B178, Nov. 2012 – ISSN: 1943-0620 doi: 10.1364/JOCN.4.00B168

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72. M. Gharbaoui, **B. Martini**, P. Castoldi, "Dynamic Network Resource Allocation for Inter-Data Centers Communications", IEEE Optical Fiber Communications (OFC) conference, Los Angeles, California, USA, March 2012 – **_Finalist at Corning Outstanding Student Paper Competition_**

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Dichiaro sotto la mia responsabilità che tutto quanto affermato nel curriculum corrisponde a verità, ai sensi degli artt. 46 e 47 del D.P.R. n. 445 del 28 dicembre 2000

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196.

Lastra a Signa (FI), 15 gennaio 2024