



## Raffaele Bolla

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### WORK EXPERIENCE

31/10/2013 - CURRENT Genova, Italy

**UNIVERSITY FULL PROFESSOR IN TELECOMMUNICATIONS (ING-INF/03) UNIVERSITY OF GENOA (ITALY)**

Raffaele Bolla is a Full Professor of Telecommunications Networks at the University of Genoa and belongs to the Department of Naval, Electrical, Electronic and Telecommunications Engineering (DITEN). Prof. Bolla holds numerous lectures in telecommunications networks, offers several Master's Degree courses in Engineering, and is the Coordinator of the Master's Degree course in "Internet and Multimedia Engineering". He is also Vice-President of the National Consortium of Telecommunications Universities (CNIT). Prof. Bolla is the founder and head of a laboratory and research group called Telecommunications Networks and Telematics (TNT, [www.tnt-lab.unige.it](http://www.tnt-lab.unige.it)) and has been and is responsible for numerous important research projects and contracts (including nine FP7 and H2020 European projects) for DITEN and CNIT, both with public institutions (Italian Ministries, regional authorities, European Union, ...) and with private companies operating in the telecommunications sector (Telecom Italia, Selex Communications, Alcatel Lucent, Ericsson, Intel, ...). He also boasts significant activity within standardization bodies such as ETSI and ITU-T, where he is involved in various Technical Committees and working groups. He is a reviewer for international journals, projects, and congresses. He is a co-author of more than 200 scientific publications in international journals, books, and congresses. He (2023) has an h-index (Scopus) of 21 and a citation count of more than 2500. His current research interests are mainly focused on i) mechanisms and techniques for the reduction of energy consumption in TLC networks, ii) "Softwarization" approaches of networks through NFV and SDN in the context of 5G and behind, iii) Integration between Fog, Edge Computing, and telecommunication networks, iv) architectures for cybersecurity in Cloud environments.

31/10/2003 - 30/10/2013 Genova, Italy

**UNIVERSITY ASSOCIATE PROFESSOR UNIVERSITY OF GENOA (ITALY)**

31/10/1996 - 30/10/2003 Genova, Italy

**UNIVERSITY RESEARCHER UNIVERSITY OF GENOA (ITALY)**

31/12/2016 - 31/12/2022 Genova, Italy

**VICE PRESIDENT (WITH FUNCTIONS OF DEPUTY DIRECTOR) OF THE MEMBERS ASSEMBLY AND MEMBER OF THE BOARD OF DIRECTORS OF CNIT UNIVERSITY OF GENOA AND CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI (CNIT)**[www.cnit.it](http://www.cnit.it)

01/01/2023 - CURRENT Genova, Italy

**DIRECTOR OF THE NATIONAL CNIT LABORATORY OF SECURE AND SMART NETWORKS (S2N) LOCATED IN GENOA CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI (CNIT)**

01/01/2023 - CURRENT

**VICE PRESIDENT OF THE SCIENTIFIC COUNCIL AND MEMBER OF THE BOARD OF DIRECTORS OF CNIT CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI (CNIT)**

### EDUCATION AND TRAINING

31/10/1990 - 11/1994

**PH.D. IN TELECOMMUNICATIONS University of Genoa**

### LANGUAGE SKILLS

Mother tongue(s):

Other language(s):

**UNDERSTANDING**

**SPEAKING**

**WRITING**

Listening

Reading

Spoken production Spoken interaction

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user

**PUBLICATIONS**

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2024

**Toward Sustainable O-RAN Deployment: An In-Depth Analysis of Power Consumption**

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IEEE Transactions on Green Communications and Networking  
DOI: 10.1109/TGCN.2024.3426108

G. Baldini; R. Bolla; R. Bruschi; A. Carrega; F. Davoli; C. Lombardo; R. Rabbani

2023

**Adaptive Reliability for the Automated Control of Human-Robot Collaboration in Beyond-5G Networks**

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IEEE Transactions on Network and Service Management, Volume 20, Issue 3, Pages 2489 - 25031  
DOI 10.1109/TNSM.2023.3298171

R. Bolla, R. Bruschi, F. Davoli, C. Lombardo, A. Mohammadpour, R. Trivisonno

2022

**Multi-site Resource Allocation in a QoS-Aware 5G Infrastructure**

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R. Bolla, R. Bruschi, F. Davoli, C. Lombardo, J. F. Pajo; Doi= 10.1109/TNSM.2022

IEEE Transactions on Network and Service Management, 2022, available on line.

2021

**An Autonomous Cybersecurity Framework for Next-generation Digital Service Chains**

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M. Repetto, D. Striccoli, G. Piro, A. Carrega, G. Boggia, R. Bolla; Doi= 10.1007/s10922-021-09607-7.

Journal of Network and Systems Management, vol. 29, art. 37, pp. 1-34, May 2021

2020

**A Model-Based Approach towards Real-Time Analytics in NFV Infrastructures**

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R. Bolla, R. Bruschi, F. Davoli, J. F. Pajo; doi= 10.1109/MCOM.2019.1800425

IEEE Transactions on Green Communications and Networking, vol. 4, no. 2, pp. 529-541, June 2020.

2019

**Mobile Edge Vertical Computing over 5G Network Sliced Infrastructures: An Insight into Integration Approaches**

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R. Bruschi, R. Bolla, F. Davoli, A. Zafeiropoulos, P. Gouvas; doi= 10.1109/MCOM.2019.1800425.

IEEE Communications Magazine, vol. 57, no. 7, July 2019

2019

**SDN&NFV contribution to IoT objects virtualization**

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L. Atzori, J. L. Bellido, R. Bolla, G. Genovese, A. Iera, A. Jara, C. Lombardo, G. Morabito; doi= 10.1016/j.comnet.2018.11.030.

Computer Network, Elsevier, Computer Networks, Vol. 149, 11 February 2019, Pages 200-212

## ● PROJECTS

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31/12/2009 – CURRENT

### **Most relevant European Projects**

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Among the most recent and impactful activities in the European context, I can mention:

- 1) the coordination for CNIT of the ECONET (Low Power CONsumption NETworks) project, an integrated European project of the 7th FP (with a cost of about 10 million Euros),
- 2) the responsibility of the CNIT research unit in the FP7 Network of Excellence (NoE) TREND (Towards Real energy-efficient Network Design),
- 3) the responsibility of the CNIT research unit in the H2020 of  
ARCADIA (A Novel Reconfigurable By Design Highly Distributed Applications Development Paradigm Over Programmable Infrastructure),  
MATILDA (A flexible network applications' development, verification and orchestration framework),  
ASTRID (AddreSing ThReats for virtualiseD services),  
GUARD (A cybersecurity framework to GUArantee Reliability and trust for Digital service chains) and  
SPIDER / a Cybersecurity Platform for vltualiseD 5G cybEr Range services).

## ● STANDARDISATION

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31/12/2001 – CURRENT

### **Roles in the standardization arena**

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For several years now, he has been playing leading roles in the field of Standardisation within ETSI (European Telecommunication Standard Institute) and ITU (International Telecommunication Union), where he has been and still is a referee and editor (rapporteur and/or editor) in several Working Items, as well as part of specialized task forces of selected ETSI experts (Specialist Task Force -STF) and ITU study groups.

One of the Working Items led by Prof. Bolla led to the definition of ETSI Standard (ES) 203 237 - 'Green Abstraction Layer' (GAL), a reference standard for optimizing network equipment consumption.

It is also worth mentioning the significance of the activities carried out within the ETSI Specialist Task Forces 516 (Mandate M/462 Efficient energy use in fixed and mobile ICT networks) and 515 (Specialist Task Force on Design and Development of Teaching Materials for Education on ICT Standardisation). STF 515 produced, among other things, a book entitled "Understanding ICT Standardization" published by ETSI and a set of over 400 slides, of which I was one of the authors. STF 516 gave rise to several European standards in the field of Energy Efficiency of TLC networks.

Prof. Bolla is also a member and contributor, through ETSI, of the Cyber Security Technical Committee.

## ● ACADEMIC ACTIVITY

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31/12/2017 – CURRENT

### **Relevant roles**

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From 2018 to 2020 Coordinator of the master's degree course, delivered in English, of Engineering for Natural Risk Management.

From 2020 Coordinator of master's degree course, also provided in English, of Internet and Multimedia Engineering.

From 2024, the secretary of the Association GTTI and board member.