

**PERSONAL INFORMATION** Mauro a. Campanella**WORK EXPERIENCE**

- 2000 - today **International and National Research and Innovation in networks**  
Consortium GARR, Rome, <http://www.garr.it> - Seconded by INFN  
Main activities are related to innovation and development of the Italian National Research and Education Network GARR and to the European NREN backbone GÉANT.  
During these years I constantly participated to the series of GÉANT projects with various management roles. Within the GEANT project I coordinated various a research task. Currently the research is on the use of Data Plane Programming using the P4 language.  
Since 2014, I am a member the committee that plans the new GEANT projects and I coordinates GARR participation to GÉANT project.  
I am a member of the committees that defined the Framework Partnership agreements between NRENs and the European Commission for Horizon2020 and Horizon Europe, recently signed.  
In this period, I participated in parallel to other EC project in networking and ICT (SEQUIN, MUPBED, NOVI, FIRESTATION, EUMEDconnect).  
Between 2008 and 2010 I coordinated FEDERICA, and EC project with the objective to create and manage a large European testbed for researchers in Future Internet based on the virtualization paradigm in networks and computing systems.  
I am collaborating to the European Open Science Cloud and I represent Italy in the EOSC Association in the role on Mandated Organization.  
I am a member of the Executive Committee of the BELLA private to public partnership project, which engineered and installed in 2021 the first direct submarine cable between Europe and Latin America.  
Within GARR I participate to planning and engineering of the evolution of the GARR network of which its last generation (GARR-T), just started to be deployed.  
somce 1/1/2023 I am the PI of the PNR project TeRABIT, which develops and networks three large Italian Research infrastructures (GARR-T, PRACE -Italy, HPC-BD-AI).  
Between 2003 and 2007 I held an annual course on computer networks for the Computer science department of University of Insubria, Como, Italy  
Between 2010 and 2021 I held short courses on Informatics applied to medicine for the Specialization school of Medical physics course of University of Milano, Italy  
Since 2000, on behalf of the European Commission, I am participating as expert to the review of various EC projects and calls in ICT.
- 1999 - 2000 **Hardware Engineer III Level 8**  
Cisco Systems, San Jose (CA) USA  
I spent the year of leave of absence form INFN working in the engineering team for the development of packet switching equipment, focusing the use of the TCP/IP protocol
- 1992 - 1999 **Technologist level I**  
Istituto Nazionale di Fisica Nucleare, Italy  
Management of the Computing centre of the INFN Section in Milano, research in network technologies for local area environment (ATM, Ethernet, TCP/IP). Development of the GARR national network, as author of the GARR-B proposal and manager of its point of presence in Milano.  
Participation to testing, development and operation of first research and education backbone TEN-34. Contributed to initial engineering of the High Energy Physic computing model for LHC experiments.
- 1986 - 1991 **Grants for research in physics and computing**  
Istituto Nazionale di Fisica Nucleare, Italy  
Contributed to Physics experiments in neutrino physics, with Montecarlo simulation and data acquisition systems engineering. Collaborated with the Computing centre management and its expansion of INFN Milano

**EDUCATION AND TRAINING**

1989 - 1995 **Laurea in Physics**  
University of Milano, Milano, Italy

## PERSONAL SKILLS

Mother tongue(s) Italian

Other languages	UNDERSTANDING		SPOKEN		WRITING
	Listening	Reading	Interaction	Oral production	
English	C2	C2	C2	C2	C2
French	C2	C2	C2	C1	B2

## ADDITIONAL INFORMATION

### Main Publications

1. M. Campanella et al, "TCP-UDP performance at high speed over ATM", Proceedings of the 2<sup>nd</sup> International Data Acquisition Workshop, DAQ 96, Osaka, Japan 13-15 Nov 1996
2. MONARC Collaboration, "Distributed applications monitoring at system and network level", October 2001 Computer Physics Communications, Volume 140, Issues 1–2, 15 October 2001, Pages 219-225, [https://doi.org/10.1016/S0010-4655\(01\)00280-6](https://doi.org/10.1016/S0010-4655(01)00280-6)
3. C. Bouras, M. Campanella, A. Sevasti, "SLA definition for the provision of an EF-based service", Proceedings of 16th International Workshop on Communications Quality and Reliability (CQR 2002), p.17-21, Okinawa, Japan, May 14-16 2002
4. Campanella, M.; Krzywania, R.; Reijs, V.; Wilson, D.; Sevasti, A.; Stamos, K.; Tziouvaras, "Bandwidth on Demand Services for European Research and Education Networks", C. Proceeding of the 1st IEEE International Workshop on Bandwidth on Demand, 2006, San Francisco, USA, Volume 1, Nov. 2006 pp. 65–72
5. Mauro Campanella; Massimo Carboni, "Consortium GARR and the European National Research and Education Networks Optical Infrastructure Developments", Fiber and Integrated Optics, Volume 27 Issue 4, July 2008, pag. 205 – 209
6. G.Maier, M.Campanella et al, "MUPBED: A Pan-European Prototype for Multi-Domain Research Networks", IEEE Communications Magazine, Multi-Domain Optical Networks: Issues and Challenges, vol: 47, issue: 5, pp. 62-71, May 2009, (ISSN: 0163-6804, DOI: 10.1109/MCOM.2009.4939278)
7. D. Young Kim, L. Mathy, M. Campanella, R. Summerhill, J. Williams, S. Shimojo, Y. Kitamura, H. Otsuki, "Future Internet: Challenges in Virtualization and Federation", Fifth Advanced International Conference on Telecommunications, AICT 2009, May 24-28, 2009 - Venice/Mestre, Italy, DOI: 10.1109/AICT.2009.8
8. P. Sezgedi, S. Figuerola, M. Campanella, V. Maglaris, C. Cervello-Pastor. "With Evolution for Revolution: Managing FEDERICA for Future Internet Research", IEEE Communications Magazine Vol.47 No.7 pp. 34-39, July 2009, 10.1109/MCOM.2009.5183470
9. M.Campanella, "The FEDERICA Project: creating cloud infrastructures", Selected Papers of First International Conference Cloudcomp, October 19-21, 2009, Munich, Germany, LNICST, May 11, 2010, p.XIII-XXII, ISBN 978-963-9799-77-6,
10. M. Campanella, V. Maglaris, M. Potts, "Virtual Infrastructures in Future Internet", Towards the Future Internet, FIA book 2010, IOS Press, 2010, p.63-73, doi:10.3233/978-1-60750-539-6-63
11. L. Lymberopoulos, M. Grammatikou, M. Potts, P. Grosso, A. Fekete, B. Belter, M. Campanella and V. Maglaris, "NOVI Tools and Algorithms for Federating Virtualized Infrastructures", Future Internet – From Technological Promises to Reality Lecture Notes in Computer Science / Information Systems and Applications (LNCS), Springer, Vol. 7281, May 2012, p. 213-224
12. L. Prete, F. Farina, M. Campanella, and A. Biancini, "Energy efficient minimum spanning tree in OpenFlow networks," in Proc. European Workshop on Software Defined Networking (EWSDN 2012), Darmstadt Germany, Oct. 2012, pp. 36–41. DOI: 10.1109/EWSDN.2012.9
13. M. Campanella , F. Farina "The FEDERICA infrastructure and experience", Computer Networks 61, March, 2014, special issue on Future Internet Testbeds – Part I, 176–183, DOI:10.1016/j.bjp.2013.12.029

14. M. Gerola, M. Santuari, E. Salvadori, S. Salsano, P. L. Ventre, M. Campanella, F. Lombardo, G. Siracusano, "Bridging Open-Flow/SDN with IP/MPLS", Poster, Terena Networking Conference 2014 - 19-22 May 2014 Dublin.
15. M. Gerola, M. Santuari, E. Salvadori, S. Salsano, P. L. Ventre, M. Campanella, F. Lombardo, G. Siracusano, "ICONA: Inter Cluster Onos Network application", Proceedings of the 2015 1st IEEE Conference on Network Softwarization (NetSoft), 13-17 April 2015, Londra, DOI:10.1109/NETSOFT.2015.7116173
16. V. Maglaris et al, "Toward a holistic federated future internet experimentation environment: the experience of NOVI research and experimentation", IEEE Communications Magazine, Volume: 53, Issue: 7, July 2015, Pag 136 – 144, DOI: 10.1109/MCOM.2015.7158277
17. S. Salsano, P.L. Ventre, F. Lombardo, S. Siracusano, M. Gerola, E. Salvadori, M. Santuari, M. Campanella, L. Prete, "Mantoo - A Set of Management Tools for Controlling SDN Experiments", Fourth European Workshop on Software Defined Networks (EWSDN), 30 settembre - 2 ottobre 2015, Bibao, DOI:10.1109/EWSDN.2015.79
18. S. Salsano, P. L. Ventre, F. Lombardo, G. Siracusano, M. Gerola, E. Salvadori, M. Santuari, M. Campanella, L. Prete, "Hybrid IP/SDN networking: open implementation and experiment management tools", IEEE Transactions on Network and Service Management, 2016, Volume: 13, Issue: 1, Pages: 138 - 153, DOI:10.1109/TNSM.2015.2507622
19. M. Gerola, F. Lucrezia, M. Santuari, E. Salvadori, P.L. Ventre, S. Salsano, M. Campanella, "ICONA: Inter Cluster Onos Network application", Fifth European Workshop on Software-Defined Networks (EWSDN), 10-11 Oct. 2016, L'Aia, DOI:10.1109/EWSDN.2016.12
20. M. Savi, F. Pederzoli, M. Campanella and D. Siracusa, "In-network volumetric DDoS victim identification using programmable commodity switches", *IEEE Trans. Netw. Service Manag.*, Apr. 2021

## **EDUCATION AND TRAINING**

- 2002-2006 PhD in Physics (University of Bologna)
- 1997-2002 Master Degree in Physics (University of Bologna)

## **WORK EXPERIENCE**

- Feb 2019 to present: Associate Professor, Bologna University, Department of Physics and Astronomy “Augusto Righi”
- Feb 2017 to Feb 2019: Senior Fixed Term Researcher (RTD-B) Bologna University, Department of Physics and Astronomy “Augusto Righi”
- Apr 2016 to Feb 2019 Junior Fixed Term Researcher (RTD-A), Bologna University, Department of Physics and Astronomy “Augusto Righi”
- 2012 to 2014 Lecturer at Bologna University, Department of Physics and Astronomy “Augusto Righi”
- Jan 2008 to Jun 2012 Research Associate (Assegno di Ricerca) INFN-CNAF
- Sep 2006 to Dec 2007 Post-Doc (DESY fellow) DESY Laboratory, Hamburg (Germany)

## **SCIENTIFIC ACTIVITIES**

- Member of the International Computing Board of the ATLAS experiment (since 2021)
- “Incarico di Ricerca Scientifica”, National Institute for Nuclear Physics (Since 2016)
- CERN Collaborator, member of the ATLAS Collaboration, Experimental Physics Dept., European Organization for Nuclear Research, Geneva (CH) (Since 2008)
- Member of the Italian Computing User Support team of the ATLAS experiment (since 2008)
- Collaboration with HEPiX benchmark group for the development of a fast HEP-benchmark procedure (2019 - 2020)
- development of tracking and trigger algorithms on General Purpose computing on Graphics Processing Units (GPGPU), and integrating such pattern recognition techniques within the software-framework of the ATLAS trigger system (2016-2019)
- optimization of the access to the LHC data using the Grid and Cloud Computing approach (2014-2016)
- member of the INFN-CNAF User Support team (2008-2012)

- optimization of the computing activities of the ATLAS experiment at INFN Tier-1 computing center (2008-2012)
- technological association with INFN (2008-2012)
- study of leading baryon production in DIS electron-proton collision at HERA with the ZEUS detector (2002-2007)
- Study of  $W^{+-}$  boson production in DIS events at HERA with the ZEUS detector (2002)

### **COORDINATION ROLES**

- Co-Coordinator of the Italian Tier-2 Federation for the computing activities of the ATLAS experiment (since 2021)
- Management and coordination of the ATLAS Conditions Database distribution on Grid infrastructures and on the ATLAS HLT farm (since 2014)
- In charge of the Tier-3 computing farm of the INFN-Bologna for the computing activities of the ATLAS experiment (since 2012)

### **PERSONAL SKILLS**

Mother tongue: Italian

Other languages: English (C1), Spanish (B2)

### **JOB-RELATED SKILLS**

Digital skills:

Operating systems: Unix/linux, Win and MacOS; programming languages: FORTRAN, C, C++, Python, html, CUDA, shell scripting; Scientific tools: ROOT, PAW, MATLAB; ML/DL programming tools: TensorFlow, Keras, Pandas etc...; batch systems: HTCondor, LSF, SLURM ; distributed computing middleware: SRM clients, GFAL utilities, Rucio; productivity SW: MS office, Latex

Very good scientific communication and public speaking skills. Experience in operations and on-duty shift (teamwork and problem solving).

Use of ML/DL techniques for automating cell counting in fluorescent microscopy.

### **BIBLIOMETRICS** (November 2022)

H-index (15 years): 122

Citations (15 years): 69285

Number of publications (past 10 years) 886

### **CONFERENCES AND WORKSHOPS**

Participation in national and international conferences in the field of High Energy Physics and Scientific Computing.

- LOW-X 2005 Sinaia (Romania) 2005 June 29th July 2nd;  
Talk: “Leading Baryon production at HERA”
- DIFFRACTION 2006 Milos (Greece) 2006 September 5th-10th ;  
Talk: “Leading baryon production in ep collisions”
- SMALL-X and DIFFRACTION FERMILAB - Batavia (USA) 2007 March 28th -31st ;  
Talk: “Leading baryon production in ep collisions”

- LOW-X 2007 Helsinki (Finland) 2007 August 29th September 2nd,  
Talk: “Leading Baryon production at HERA”
- DIS 2008 Londra (United Kingdom) 2008 April 20th -27th ;  
Talk: “Leading Proton production at HERA”
- CHEP2012 New York (USA) 2012 May 21st -25th  
Poster: “ATLAS computing activities and developments in the Italian Grid cloud”;
- TIPP14 Amsterdam (The Netherlands) 2014 June 2nd - 6th  
Poster: “GPU for triggering in High Energy Physics”
- GPU Computing in HEP Pisa (Italy) 2014 September 10th - 12th ;  
Talk: “GPGPU for track finding and triggering in High Energy Physics”;
- CHEP2016 San Francisco (USA) 2016 October 10th -14th  
Talk: Collecting conditions usage metadata to optimize current and future ATLAS software and processing  
Posters: First use of LHC Run 3 Conditions Database infrastructure for auxiliary data files in ATLAS, Elastic extension of a local analysis facility on external clouds for the LHC experiments
- CHEP2018 Sofia (Bulgaria) 2018 July 9th -13th  
Talk: Conditions evolution of an experiment in mid-life, without the crisis (in ATLAS) Poster: Optimizing access to conditions data in ATLAS event data processing

## **GRANTS and PROJECTS**

- Dec 2017: Eligible for the annual research funding program (Legge 11 dicembre 2016, n.232, art.1, commi 295-302); Scientific production score: 100
- 2014-2016: Participation to the project PRIN "Development of technologies for the optimization of access to LHC data, transferable to other scientific domains, through the grid and cloud computing approach", UniBo Local Unit

## **TEACHING AND ACADEMIC ACTIVITIES**

Supervision of Degree and PhD Thesis in Computing Engineering, Physics, Data Science and Computation.

Since 2018: Co-lectureship in Software and Computing for Nuclear and Subnuclear Physics (Physics)

Since 2017: Lectureship in General Physics (Computer Engineering)

Since 2014: Co-lectureship in General Physics and Electromagnetism (Physics)

From 2012 to 2014: Lectureship in General Physics (Management Engineering and Land and Environmental Engineering)

From 2010 to 2014: Tutorship in General Physics and Electronic Laboratory (Physics)

Delegate for Guidance of the School of Science and Physics and Astronomy Dept. of Bologna University (Since 2019) Member of “Terza Missione” Commission of Physics and Astronomy Dept. of Bologna University (Since 2021)

## **OUTREACH**

- Participation in “Notte dei Ricercatori” Outreach Event in 2018 and 2019 editions
- Organization of “Alternanza Scuola Lavoro” activities (2019)

## **EVENTS ORGANISATION**

Member of the Local Committee of the ICHEP2022 conference (Bologna 6-13 July 2022)

## **Curriculum professionale Maria Cristina Vistoli.**

### **Curriculum studi**

Laurea in Ingegneria Elettronica conseguita a pieni voti e con lode, Facoltà di Ingegneria, Università degli studi di Bologna, il 24/7/1986.

### **Curriculum professionale**

09/1986-08/1990 progettista software presso società di progettazione hardware e software.

09/1990-12/1995 Tecnologo INFN

01/1996-12/2004 Primo Tecnologo INFN

01/2005- Dirigente Tecnologo INFN

All'inizio dell'attività presso l'INFN, il centro nazionale CNAF si occupava principalmente di attività legate alla progettazione e alla gestione della infrastruttura di rete per la trasmissione dati geografica e locale delle sedi dell'istituto. Ha collaborato attivamente alla progettazione ed alle diverse fasi di realizzazione delle infrastrutture di rete GARR in collaborazione con gli altri istituti ed enti di ricerca sia italiani che internazionali.

Ha partecipato a partire dal 1999 alle prime valutazioni tecniche dei diversi sistemi di calcolo distribuito per arrivare alla definizione e svolgimento di tutta la serie dei progetti infrastrutturali europei basati sulle GRID: DataGrid, EGEE, EGEE-II, EGEE-III. Ha contribuito definizione della proposta di progetto speciale INFN-GRID ed è stata membro del comitato esecutivo del progetto. Ha avuto la responsabilità tecnica del progetto europeo DataTAG (2002-2004). Ha avuto la responsabilità del coordinamento tecnico delle attività INFN nel progetto nazionale MIUR, GRID-IT. Ha avuto la responsabilità della Grid di Produzione Italiana a partire da Aprile 2004 al 2007. E' stata responsabile per l'INFN dei progetti europei ETICS ed ETICS 2 dal 2006 al 2010, dove si è sviluppato un ambiente per il test e la configurazione del software. Dal 2007 al 2011 ha ricoperto l'incarico di responsabile al Unità Funzionale Data Center TIER1 realizzando una infrastruttura tecnica ed informatica del Data Center completamente nuova. Nell'ambito dell'esperienza EEE, Extreme Energy Events, con il Centro Fermi coordina la partecipazione del CNAF all'esperienza e la definizione del sistema informatico realizzato per raccogliere, ricostruire ed analizzare i dati sperimentali raccolti dai telescopi. Attualmente è responsabile dell'unità funzionale Progetti Esterni e Trasferimento Tecnologico ed ha impostato la creazione dell'INFN TTLab, Laboratorio di Trasferimento Tecnologico per la Regione Emilia Romagna che attualmente dirige. E' responsabile nazionale per INFN dei progetti europei Harmony ed Harmony Plus IMI2-Enabling Better and Faster Treatment for Patients with Hematologic Malignancies ed in particolare ha coordinato la definizione della Big Data Platform del progetto. Ha curato la definizione del sistema di gestione con sicurezza della informazioni ISO27001:2014. Nell'ambito dell'INFN TTLab ha curato la redazione dei progetti di ricerca industriale strategica presentati alla regione Emilia Romagna ed è responsabile nazionale dei progetti Smartchain e We-Light.

Bologna, 27 Dicembre 2021