

Curriculum Vitae

MARIO MARCHESE

1. Personal Information

surname: Marchese
name: Mario
born: 27/04/67 in Genova, Italy
nationality: Italian
e-mail: mario.marchese@unige.it

Education

University

“Università degli Studi di Genova”

Laurea Degree in Electronic Engineering - 9/4/92 – final evaluation: 110/110 com laude.

Thesis title and Tutor:

“Design and performance analysis of resource allocation strategies in ATM networks”

Tutor: Prof. Franco Davoli.

Enabled as Professional Engineer in 1992.

PhD

1993-1996

PhD obtained in Rome on 14/07/1997, in Telecommunications.

Thesis title and Tutors:

“Study and performance evaluation of Call Admission Control and Routing schemes at call level in ATM networks”.

Tutors: Prof. Franco Davoli, Prof. Giacomo Mario Bisio.

Foreign languages

- English: very good (level 9 Trinity College, with Distinction).
- French: basic knowledge.

Main scientific and professional experiences (evidencing research tasks)

Since 01/02/2005:

University of Genova, Engineering School, Department of Communications, Computer, and System Science (DIST), up until Dec. 31st, 2011, and Department of Electrical, Electronic, Telecommunications Engineering, and Naval Architecture, since Jan. 1st, 2012.

Associate Professor, Telecommunications.

From 01/07/2002 to 31/01/2005:

CNIT (Italian National Consortium for Telecommunications), Parma, Italy.

Genoa Research Unit.

Head of Research

Requested Duties: “Skill to manage National and International research projects so to reach fixed aims, skill to manage research scientists at the Research Unit under his responsibility, skill to produce advances in specific research sectors”.

Operative duties: scientific and financial management of research projects at National and International level; preparation and organization of research projects proposals; individuation and organization of research topics;

organization and coordination of structures and personnel at Genoa Research Unit (Laboratory of Satellite Communications and Networks).

Scientific topics: Heterogeneous communications networks, protocols, satellite and terrestrial communications and devices.

From 16/01/2001 to 30/06/2002:

CNIT (Italian National Consortium for Telecommunications), Parma, Italy.

Genoa Research Unit.

Research Scientist

Requested Duties: “Scientific and organization skill concerning experimental research programs, skill to organize research assistants. Skill to develop research activities requiring complex devices and techniques so to reach specific aims”.

Operative duties: management of research projects; preparation of research projects proposals; individuation and organization of research topics; organization and coordination of structures and junior personnel at Genoa Research Unit (Laboratory of Satellite Communications and Networks).

Scientific topics: Heterogeneous communications networks, protocols, satellite and terrestrial communications and devices.

From 16/01/1999 to 15/01/2001:

CNIT (Italian National Consortium for Telecommunications), Parma, Italy.

Genoa Research Unit.

Research Scientist

Requested Duties: “Scientific and organization skill concerning experimental research programs, skill to organize research assistants. Skill to develop research activities requiring complex devices and techniques so to reach specific aims”.

Operative duties: research; WP responsible; preparation of research projects proposals; individuation and organization of research topics; organization and coordination of structures and junior personnel at Genoa Research Unit (Laboratory of Satellite Communications and Networks).

Scientific topics: Heterogeneous networks protocols.

From 07/09/1997 to 15/01/1999:

CNIT (Italian National Consortium for Telecommunications), Parma, Italy.

Genoa Research Unit.

Research assistant “to test network protocols for multimedia satellite applications”.

Duties: research and design.

Scientific topics: Satellite networks, TCP/IP protocols, HDLC, PPP, routing multicast, Quality of Service measures.

From 09/06/1998 to 15/01/1999:

DIST (Department of Communications, Computer and System Science), University of Genoa, Italy.

Post-doc research grant.

Duties: research, education assistance, “Laurea” thesis co-tutoring, exercises at lesson, exams.

Scientific topics: Telecommunications networks, ATM and best-effort networks, signal processing for the environment.

From 19/12/1997 to 30/05/1998:

DEI (Department of Electronic and Computer Science), Polytechnic of Milan, Telecommunications Networks Research Group.

Research Assistant.

Duties: research; education assistance.

Scientific topics: Wireless ATM, guaranteed services over IP networks.

From 01/11/1996 to 08/06/1998:

DIST, University of Genoa, Telecommunications Network Research Group.

Research Assistant.

Duties: Research, “Laurea” thesis co-tutoring, exercises at lesson, exams.

Scientific topics: Telecommunications networks, ATM and best-effort networks, signal processing for the environment.

From 01/11/1996:

Consulting activity with industries in the field of telecommunications, electronics, computer science, and transportation systems such as SIRTI S.p.A., Milan, Italy, ELEA S.p.A., Turin, Italy, Sciro Electra, Genoa, Italy).

Duties: Lecturing, revision of projects.

Scientific topics: ATM, SDH, Frame Relay, DQDB, X.25, Error Correction Codes (FEC-ARQ), Technologies for heterogeneous networks integration.

From 01/11/1993 to 31/10/1996:

DIST, University of Genoa, Telecommunications Network Research Group.

PhD Student.

Duties: Research, Software programming, “Laurea” thesis co-tutoring, exercises at lesson, exams.

Scientific topics: ATM networks, access control in broadband networks, traffic sources models, routing strategies for broadband networks.

From 10/04/1992 to 31/10/1993:

DIST, University of Genoa, Telecommunications Network Research Group.

Research contract.

Duties: Research and software programming.

Scientific topics: implementation of a software simulator in C language to test the designed routing schemes.

From 12/06/1992 to 12/10/1992:

MARCONI S.p.A., Genoa, Italy

Industry grant.

Duties: Software programming.

Scientific topics: software development in language C and C-embedded SQL for Oracle Database interaction.

Research Activity by Foreign Institutions

- German Aerospace Centre (DLR), Oberpfaffenhofen, Germany, Guest Scientist, September, 6th-29th, 2004.
- German Aerospace Centre (DLR), Oberpfaffenhofen, Germany, Visiting Professor / Guest Scientist, October, 3rd-14th, 2005.
- German Aerospace Centre (DLR), Oberpfaffenhofen, Germany, Visiting Professor / Guest Scientist, July, 10th-28th, 2006.
- German Aerospace Centre (DLR), Oberpfaffenhofen, Germany, Visiting Professor / Guest Scientist, from July, 6th, to August, 8th, 2007.
- German Aerospace Centre (DLR), Oberpfaffenhofen, Germany, Visiting Professor / Guest Scientist, July, 7th-22nd, 2008.

- SPECTS 2010 / Summer Simulation Conference, Keynote Speaker, Genoa, Italy, “The Evolution of Internet Technology, From Pervasive to Cloud Computing”, Monday, July 9th, 2012.

2. Bibliometric indexes

Mario Marchese’s bibliometric indexes computed on November, 12th, 2012, are certified in the following. The computation has been carried out by using the information available in Scopus and Web of Science databases, integrated as follows, and the method proposed by ANVUR. Such self-certification is necessary because on November 12th, 2012, data available in Scopus and Web of Science were not updated even if the mistakes had been signalled by the end of September, 2012. Data considered in the reported computation include all citations available in Scopus and Web of Science on November, 12th, 2012, integrated with the missing citations (overall number 121, for a mistake of the database, that will be corrected in the future, as assured by Scopus) indexed in Scopus, of Mario Marchese’s papers, obviously also indexed. It is important to remark that the corrections concern citations, not considered by Scopus, from indexed papers, of Mario Marchese’s indexed publications. The computation has been completed without considering the book “QoS over Heterogeneous Network” (which, if indexed by Scopus, would have 42 indexed citations), papers in press, and considering the number of journals in the last 10 years since the approval of the selection “Abilitazione Nazionale” and not for the entire year 2002. Concerning the papers indexed on Scopus, which reference Mario Marchese’s papers but for which Scopus do not report erroneously on-line citations, the original pdf of such papers has been sent to Scopus for update. Such pdfs are also available to the Commission for possible control at:

<http://www.scnl.dist.unige.it/owncloud/public.php?service=files&token=b3ffac70ae393379d64b411245d2e1131e8c5306&file=/indexedpapers>

Scopus assured update in the next few months. Enclosed to the pdf version of the CV a detailed explanation of the reported computation has been inserted as well as the detail of each single missing citation to allow a deep control.

The first scientific paper authored by Mario Marchese is dated 1993. The academic age has been considered 20 years as done in Scopus.

- I declare that Mario Marchese bibliometric indexed on November, 12th, 2012, were:
 - Number of journals in the last 10 years: 43
 - Overall number of citations: 466
 - Overall number of citations divided for the academic age (if considered 20 years): 23.4
 - Contemporary index $h=H_c=8$

3. Summary of the technical-scientific coordination activity and of the education and training of research personnel – Results of special importance

(detailed activity concerning research projects is reported in the proper sections)

- Foundation and technical-scientific and personnel coordination of the Satellite Communications and Networking Laboratory (SCNL) at the University of Genoa, Italy, in collaboration with the Italian Consortium for Telecommunications (CNIT).
- Technical-scientific and personnel coordination of the Laboratory of “Digital Signal Processing” (DSP) at the University of Genoa, since November, 2009, together with Prof. Fabio Lavagetto.
- Education and training: PhD students, Research Grants (“Assegni di Ricerca” in italian), Research Contracts, for an overall number of 13 scientists, funded through the following tools:
 - Overall number of tutored PhD Students since February, 2005: 8
 - Overall number of coordinated “Research Grants - Assegni di Ricerca” since February, 2005: 13
 - Overall number of coordinated “Research Grants - Borse di Ricerca” since February, 2005: 2
 - Overall number of coordinated Research Contracts: 8
- It is worth mentioning that the coordination and personnel education activity developed by Mario Marchese has allowed to follow the career evolution of the following important scientists, of special scientific and technical quality, always using funds whose scientific and/or economic responsibility was assigned to Prof. Marchese (including Dr Bisio and Dr Mongelli PhD funding, Research Grants, and CNIT positions):
 - **Dr. Igor Bisio**
Since 2002: PhD Student, Research Grant - “Assegnista di Ricerca”, Assistant Professor at the University of Genoa, Italy.
 - **Dr. Tomaso de Cola**
Since 2001: Research Contract, PhD Student, Research Scientist in CNIT (2002-2008), Scientist researcher at DLR (Deutsches Zentrum für Luft- und Raumfahrt) – German Aerospace Centre.
 - **Dr. Maurizio Mongelli**
Since 2000: PhD student, Research Grant – “Assegnista di Ricerca” (2005-2009), Research Scientist in CNIT (2010-1011), Research Scientist at CNR – National Research Scientist.
 - **Dr. Giancarlo Portomauro**
Since 2001: Research Contracts, Research Grant – “Borsa di Ricerca”, Research Grant – “Assegnista di Ricerca”, and Professional Engineer.
- Concerning scientific, technical, and financial management of research projects, referenced in the proper sections, it is important to remind the overall amount of attracted and managed funds both at institutional (EU and National) and at industrial level, as well as the obtained patents.
 - Overall funds from research projects: 2.821.198,87

- Funds from EU and National research projects : 897.189,53 (coordinator) +790.000 (financial coordinator and participation in the scientific responsibility)
- Funds from industrial research projects: 1.134.792,34
- Number of patents: 4
- Individuation of research themes of high scientific quality and practical application and consequent number of scientific publications (see the overall list of publications).
 - Overall number of publications: more than 230 (1 international book and 59 papers on international journals/magazines)
- To keep a high scientific and technical profile allowing an average-long-term management of research themes and allowing proper research personnel training, as clear from what said above about personnel training and education, list of coordinated projects, and list of publications almost entirely linked to EU/National and industrial research, as certified by the presence of co-authors from the industry.
- Implementation (C and VHDL languages) and Implementation Supervision of prototypes, simulators and emulators aimed at performance evaluation of algorithms and solutions related to ATM networks (CAC and routing), IP networks, satellite, wireless and heterogeneous networks, DTN networks, Smartphone applications.

Activity within the Evaluation Board to assign scholarships

Member in 7 procedures to assign scholarship.

4. Summary of the Activity related to PhD

- Number of PhD Courses leaded as a Coordinator: 1 (since 2012)
- Number of PhD Courses leaded as a Member of the Teaching Board: 1 for each year since 2001.
- Number of PhD exams joined as a Member of the Selection Board for the Admission to the PhD Course: 8 (3 come President of the Selection Board)
- Number of PhD exams joined as a Member of the Evaluation Board for the PhD final exam: 4 (1 International)

5. Summary of Teaching Activity

(detailed description reported in the proper section)

Activity at the University

Number of Courses at University lectured as a Professor since February, 1st, 2005: 30

Number of Exams since February, 1st, 2005: 438

- Systems and Technologies for Telecommunications 1, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy : 54
- Principles of Telecommunications 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy: 1
- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy: 157
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy: 50
- Architectures and Applications for Telecommunications Networks, “Laurea Specialistica” degree in Multimedia Signal Processing and Telecommunications Networks, provided in English, Faculty of Engineering, University of Genoa, Italy: 21
- Telecommunications Networks, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy: 44
- Telecommunications Networks and Telemedicine, “Laurea Specialistica” degree in Biomedical Engineering, Faculty of Engineering, University of Genoa, Italy: 36
- Computer Networks, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy: 27
- Telematic and Internet Technologies, “Laurea” degree in Electronic Engineering and Information Technologies, Faculty of Engineering, University of Genoa, Italy: 50

- Number of “Laurea” and “Laurea Specialistica” Thesis coordinated as a Tutor since February, 1st, 2005: 41
- Coordinator of many “Laurea” and “Laurea Specialistica” Thesis as a “Co-Tutor”, since 1992/1993.
- Number of Courses at University lectured as a “Temporary Professor”: 5
- Number of teaching support tasks : 6
- Number of “Laurea” joined degree evaluation committees (since 2005):
 - 32 as Effective Member
 - 33 as Substitute Member

Master

- Number of Masters (II level) managed as a President of the Teaching Board (since 2008): 5
- Number of Masters (I level) managed as a President of the Teaching Board (since 2008): 4
- Number of Master Courses (II level) lectured as a Professor (since 2008): 11
- Number of Master thesis coordinated as a Tutor since 2008: 13 (5 concerning Master II level in Telecommunications, Armed Forces Telecommunications School, Chiavari, Italy; and 8 concerning Master II level in ICT&S)
- Activity aimed at designing and organizing Master and Training Courses as a Member of the Executive Board responsible for managing the framework program between the University of Genoa, Italy and the Armed Forces Telecommunications School, Chiavari, Italy:
 - Overall number of Masters designed, organized and proposed in the framework program 2008-2011 (4 years): 8
 - Overall number of Training Courses designed, organized and proposed in the framework program 2008-2011 (4 years): 17
 - Overall number of Masters designed, organized and proposed in the framework program 2012-2015 (4 years): 11
 - Overall number of Special Training Courses designed, organized and proposed in the framework program 2012-2015 (4 years): 1 (former Master of Telecommunications I level in the framework program 2008-2011)
 - Overall number of Training Courses designed, organized and proposed in the framework program 2012-2015 (4 years): 25
 - Attracted funds - Overall amount received and managed by the Executive Board since 2008: euro 1,989,821.51, structured as follows,
 - 2008 (18 training courses and 6 masters activated): Euro 498,874
 - 2009 (16 training courses and 4 masters activated): Euro 410,028
 - 2010 (18 training courses and 5 masters activated): Euro 482,627
 - 2011 (5 training courses and 2 masters activated): Euro 202,850.25
 - 2012: (12 training courses e 4 masters activated and currently managed): Euro 395,442.26 (assured by contract, to be reported at the end of the activity)

Tutorials by Foreign Institutions

- Overall number of lectured Tutorials: 5

Teaching activity in professional training courses

- Number of lectured courses by telecommunications industries also providing the documentation necessary for the course: 10

6. Acquired skills

Through the activity in scientific projects, Mario Marchese has developed the skill: to prepare and manage complex research projects both from scientific and financial viewpoint, also at international level; to organize and coordinate professors and scientists involved in the projects; to individuate highly relevant theoretical and applicative research themes; to set up and solve complex problems so to develop original advances in the state of the art.

Coordinating the Satellite Communications and Networking Laboratory at the University of Genoa has allowed acquiring the skill to organize research structures aimed at keeping a high and permanent research level and at training new scientists in this context.

Through the research activity, the organization role in international journals, magazines, and conferences, as well as the speaker role in many conferences, through the leading role in international institutes and committees, and through the roles concerning the PhD, also as a Coordinator, has acquired experience to organize research, to write scientific articles and reports, and to valorise the work done through detailed presentations. Moreover, through the mentioned activities, he is in touch and friendship with professors, scientists and personnel of great capacity and experience at International level, both in the academic and industrial world.

The activity as Department vice-chair, as Member of the Managing Board and of different Committees both within the Department and the Faculty has allowed acquiring relevant coordination and mediation skills to solve problems within academic entities.

The activity of teaching coordination, both as PhD course coordinator, and as Master and Training courses coordinator and designer, has allowed acquiring skill to organize education proposals and to coordinate a relevant number of both professors and students.

The teaching activity, as a professor, as well as the number of coordinated thesis, PhDs, fellowships, and research contracts, has allowed acquiring experience to teach and lead groups of students, ranging from undergraduate students to expert scientists.

Through the design and supervision activity of simulation tools he has reached a deep knowledge of main application and development environments and a deep experience to lead projects aimed at prototype development and implementation.

7. Scientific responsibilities and Research Activity in Peer-Reviewed Research Projects (EU / Ministry / Public Institutions)

The list of Peer-reviewed projects as well as Mario Marchese role in the project is reported specifying also the overall amount of the funds and the amount managed by Mario Marchese where meaningful.

Projects where Mario Marchese had a coordinator role (Overall funds managed by Mario Marchese: euro 897,189.53)

- Ministry of Industry, Project “Industry 2015”, SLIMPORT (Resp. SELEX ELSAG S.p.A, Genoa, Italy), sub-project SLIMCOMMS (Resp. SELEX ELSAG S.p.A), WP 246 “Study of the Link Box” (Resp. for Italian Excellence Centre on Integrated Logistics (C.I.E.L.I.), University of Genoa, Italy: Prof. Mario Marchese), 2010-2012
Role: coordinator of the research unit WP 246 and responsible of the funds
Managed amount: 250,250.00 Euros (funded 50% 125,125.00 Euros).
- European Space Agency – ESA, Project "EMULATOR FOR AN ETSI BSM-COMPLIANT SI-SAP INTERFACE", ESA ITT AO/1-5615/08/NL/JK, Item 07.153.16 -- ARTES-5, Work plan 2007 (Prime Contractor: DLR; Coordinator for CNIT (Italian National Consortium for Telecommunications): Prof. M. Marchese), May 2008 – July 2009
Role: national coordinator for CNIT and responsible of the funds
Managed amount: 148,580.00 Euros.
- University of Genoa, Projects “Ateneo”, 2007 and 2008 (Resp. Prof. M. Marchese), funds from the University of Genoa “to define a formal approach aimed at introducing an access interface selection method for network nodes given specific performance requirements (vertical handover)”.
Role: coordinator and responsible of the funds
- EU, Project “OPTESS - Offshore Platforms Telemedicine Service via Satellite” (Prime Contractor: D’Appolonia S.p.A, Resp. for CNIT Prof. M. Marchese); Area: eHealth; Sub-area: Telemedicine; Technology: Satellite systems; Duration: 09/2004 - 02/2006 (extended to 09/2006), total amount: 2,570,550 € - EC Contribution: 1,399,981 €
Role: national coordinator for CNIT and responsible of the funds
Managed amount: 243,688.00 Euros – (funded 50%: 121.844 Euros)
- MIUR, Project PRIN “Bora-Bora” (National Resp. Prof. A. Bianco, Research Unit Resp. Prof. M. Marchese), 2006-2007, Design of a QoS-based Open Router.
Role: Genoa Research Unit coordinator and responsible of the funds.
Managed amount: 50,000.00 Euros.

- Italian Space Agency – ASI, Project “DAVID phase B”, 2001, (National Resp. Prof. Marina Ruggieri, Research Unit Resp. Prof. Mario Marchese).
Role: Genoa Research Unit coordinator and responsible of the funds.
Managed amount: 20,038.53 Euros.
- European Space Agency – ESA, Project “Transport Protocol and Resource Management for Mobile Satellite Networks” (Resp. Prof. Sergio Palazzo, Research Unit Resp. Prof. Mario Marchese), 2001-2003.
Role: Genoa Research Unit coordinator, WP responsible, and responsible of the funds.
Managed amount: 36,152.00 Euros.
- Italian Space Agency – ASI, Project “Emulation of satellite on-board switching systems” (Resp. Prof. Guido Albertengo, Research Unit Resp. Prof. Mario Marchese), 2000-2003.
Role: Genoa Research Unit coordinator and responsible of the funds.
Overall amount: 624,913.00 Euros.
Managed amount: 148,481,00 Euro.

Projects where Mario Marchese had the role of economic manager and participated in the scientific coordination

(Overall amount managed by Mario Marchese: 790,000.00 Euros)

- European Space Agency – ESA, Project Satellite Network of Excellence III – Satellite Network of Experts, Call of Order 2, period 2010-2012.
Role: economic manager and participation in the scientific coordination for CNIT
Managed amount: 40,000.00 Euros.
- EU, European Project SatNEx2, Network of Excellence (NoE), Satellite Network of Experts, 2007-2009
Role: economic manager and participation in the scientific coordination for CNIT
Managed amount: 400,000.00 Euros.
- EU, European Project SatNEx1, Network of Excellence (NoE), Satellite Network of Experts, 2005-2007
Role: economic manager and participation in the scientific coordination for CNIT
Managed amount: 350,000.00 Euros.

Projects where Mario Marchese developed a very meaningful part of the financial and scientific proposal

(Overall amount prepared by Mario Marchese: 1,789,914.00 Euros)

- MIUR, PON Project “FORM-SAT, Extension of CNIT satellite network over southern Italy for education”, 2003-2004.
Role: preparation of the financial and scientific proposal
Overall amount: 371,664.00 Euros.
- MIUR, Project “DIDANET – Satellite Network for Education”, 2002-2004
Role: preparation of the financial and scientific proposal
Overall amount: 377,000.00 Euros.
- Italian Space Agency – ASI, Project “Study, design and implementation of a QoS guaranteed reconfigurable satellite network for multimedia applications”, 2001-2004.
Role: preparation of the financial and scientific proposal, WP responsible
Overall amount: 680,000.00 Euros
- Region “Emilia Romagna”, European Social Fund, Project MYTHOS “International Distance Learning for Opera Theatres”, 2000-2003.
Role: preparation of the financial and tecnica proposal
Overall amount: 361,250.00 Euros.

Projects where Mario Marchese contributed to develop the financial and scientific proposal

- Italian Space Agency - ASI, Project “Integration of multimedia services over satellite heterogeneous networks”, 1998-2001
Role: contribution to the financial and scientific proposal, WP TCP/IP Transport over Satellite responsible

Overall amount of the project: 1,224,003.00 Euros.

- MURST, Project TelePhD, “Distance Learning for PhD students in Telecommunications”, 2000-2002.
Role: contribution to the financial and scientific proposal, research unit scientific coordinator.
- MURST, Project LABNET, 2000-2003.
Role: contribution to the scientific proposal
- MURST, Project CNR 5%, “Multimedia” Line 3, “Satellite Interactive Multimedia Network”
Role: contribution to the financial and scientific proposal, research activity

Projects where Mario Marchese developed research activity

- MURST, Project CNR 5%, “Multimedia” Line1 “Mobile Networks”, 1998-2001.
Role: research activity
- CNR, Coordinated Project, “Control, management, and experimentation of multimedia applications distributed over heterogeneous networks”, 1996-1997.
Role: research activity and contribution to the scientific proposal
- CNR, Project “Transportations 2”, PFT2, “Telecommunications for Transportations”, 1996.
Role: research activity
- MURST 40% 1996: “ATM broadband networks for multimedia applications: architectures, protocols, models, and performance”
Role: research activity and contribution to the scientific proposal
- MURST 40% 1995: “ATM broadband networks for multimedia applications: architectures, protocols, models, and performance”
Role: research activity and contribution to the scientific proposal
- MURST 40% 1994: “Integration and management of multimedia services in ATM networks”
Role: research activity and contribution to the scientific proposal

8. Scientific responsibilities and Research Activity in Industrial Projects (direct funds from the industry) and Patents linked to developed research activity

Patents

[B1] Igor Bisio, Vincenzo Gesmundo, Mario Marchese, Giancarlo Portomauro, “Architecture and Method for Traffic Management of a Monitoring Sensor Network”, Joint Patent between DIST – University of Genoa and Selex Communications S.p.A., Genoa, Italy. Turin Commerce Chamber, May 16th, 2008, TO2008A370.

[B2] Igor Bisio, Vincenzo Gesmundo, Mario Marchese, Giancarlo Portomauro, “Architecture and Method for Traffic Management of a Monitoring Sensor Network”, Joint Patent between DIST – University of Genoa and Selex Communications S.p.A., Genoa, Italy. U.S.A., November, 19th, 2009, United States Patent Application Publication, Pub. No. 2009/0258154A1.

[B3] Alberto Civardi, Mario Marchese, Maurizio Mongelli, Giancarlo Portomauro, Achille Sogliani, Luca Spinacci, "Generation of a coverage tree of the links in a communication network with improved reaction time", Joint Patent between DIST – University of Genoa and Selex Communications S.p.A., Genoa, Italy. Turin Commerce Chamber, Dec. 2nd, 2009, TO2009A000947.

[B4] M. Marchese, M. Mongelli, V. Gesmundo, “Measurement-based Bandwidth Control of Layer 3 to Layer 2 QoS Mapping over Gateway Devices”, Joint Patent between DIST – University of Genoa and Selex Communications S.p.A., Genoa, Italy. Turin Commerce Chamber, May, 24th, 2010, TO2010A000429.

**Research Projects funded by the industry where Mario Marchese had the coordinator role.
(Overall amount managed by Mario Marchese: 1,134,792.34 Euros)**

- SELEX ELSAG S.p.A, Genoa, Italy, project MOBILNET, Research Contract with the Department of Electrical, Electronic, and Telecommunications Engineering, and of Naval Architecture (DITEN), University of Genoa, “Architectural study, definition and analysis of an LTE-based Selex Elsag network solution for broadband professional services integrating heterogeneous access technologies”, June 2012 - August 2013.
Role: coordinator and responsible of the funds
Managed amount: 93,000.00 Euros.
- CTIF, Memorandum of Understanding among CTIF, CTIF-ITALY, Department of Communications, Computer and System Science, DIST – University of Genoa “to cooperate with each other to promote cooperation in the area of Information and Communication Technology (ICT) and in particular in the framework of the ICT for Energy to improve the business development and the technological awareness of each party and wish to establish the appropriate friendly relationship”, May 2010 - May 2012.
Role: coordinator of Genoa Research Unit
- Ansaldo STS S.p.A., Genoa, Italy, Research Contract with the Department of Communications, Computer, and System Science, DIST, University of Genoa, “Study and design of an interface system for railway systems for security reasons”, January-June 2010.
Role: coordinator and responsible of the funds
Managed amount: 15,000.00 Euros.
- Selex Communications S.p.A., Genoa, Italy, Research Contract with the Department of Communications, Computer, and System Science, DIST, University of Genoa, “Study and functional design of gateways for radio and satellite infrastructures”, 4 months in the period, 2008-2009.
Role: coordinator and responsible of the funds
Managed amount: 36,000.00 Euros.
- Selex Communications S.p.A., Genoa, Italy, Research Contract with the Department of Communications, Computer, and System Science, DIST, University of Genoa, “Analysis and implementation of QoS-oriented architectures and protocols for multi-platform systems”, 2006-2009.
Role: coordinator and responsible of the funds
Managed amount: 217,000.00 Euros.
- Selex Communications S.p.A., Genoa, Italy, Research Contract with the Department of Communications, Computer, and System Science, DIST, University of Genoa, “Study, simulation, and implementation of prototypes over OTE devices of QoS assuring end-to-end solutions for IP networks”, 18 months, period 2007-2009.
Role: coordinator and responsible of the funds
Managed amount: 167.500,00 Euros.
- Selex Communications S.p.A., Genoa, Italy, Research Contract with the Department of Communications, Computer, and System Science, DIST, University of Genoa, "Study, design and experimentation of data link, network, transport, and application protocols in QoS-oriented multi-platform systems", (Resp. Prof. M. Marchese and Prof. R. Zoppoli), 2002-2005.
Role: coordinator and responsible of the funds
Managed amount: 511.292,34 Euros.
Important note: this research contract has been used to endorse an Associate Professor position at the University of Genoa, taken by Prof. Mario Marchese.
- CIMA (Italian Centre for Environmental Monitoring) “Memorandum of Understanding between CIMA (Italian Centre for Environmental Monitoring) and CNIT (Italian Consortium for Telecommunications) to design the telecommunication system of the National radar network and to provide technical and scientific consultancy in the realization, test, and management phases”, 2002-2005.
Role: coordinator and responsible of the funds
Managed amount: 95.000,00 Euros.

9. Journals and Magazines Editing / Conference Chairing

- International Journal of Communications Systems, Wiley & Sons: Associate Editor since 2000.

- IEEE Wireless Communications Magazine: Technical Editor from January, 1st, 2006 to December, 31st, 2011.
- Editor of the following “Special Issues”:
 - o S. Kota, M. Marchese, Guest Editors, International Journal of Satellite Communications (Wiley InterScience), Special Issue on “Quality of Service (QoS) over Satellite Networks”, vol. 21, n. 4-5, 2003.
 - o A. Jamalipour, S. N. Verma, J. Neale, M. Marchese, H. Cruickshank, Guest Editors, IEEE Journal on Selected Areas in Communications, Special Issue on “Broadband IP Networks via Satellites”, Part I, vol. 22, n. 2, February 2004.
 - o A. Jamalipour, S. N. Verma, J. Neale, M. Marchese, H. Cruickshank, Guest Editors, IEEE Journal on Selected Areas in Communications, Special Issue on “Broadband IP Networks via Satellites”, Part II, vol. 22, n. 3, April 2004.
 - o M. Marchese, A. Jamalipour, Guest Editors, IEEE Wireless Communications, Special Issue on “Key Technologies and Applications of Present and Future Satellite Communications”, IEEE Wireless Communications, vol. 12, Issue 5, October 2005.
 - o M.S. Obaidat, M. Marchese, Computers and Electrical Engineering Journal, Special Issue on “Recent Advances in Wireless Networks and Systems”, Elsevier, vol. 32, Issue 1-3, January-May 2006.
 - o M.S. Obaidat, M. Marchese, IEEE Systems Journal, Special Issue on “Recent Advances in Global Navigation and Communication Satellite Systems (GNSS)”, vol. 2, no. 1, March 2008, pp. 3-6.
- Edited Books
 - [1] Kandeepan Sithampanathan, Mario Marchese (Eds.), “Personal Satellite Services”, Springer, Berlin Heidelberg, 2009.
 - [2] Kandeepan Sithampanathan, Mario Marchese, Marina Ruggieri, Igor Bisio (Eds.), “Personal Satellite Services”, Springer, Berlin Heidelberg, 2010.
- Member of the Organizing Committee of Globecom 2010, Miami, USA.
- Member of the Steering Committee of the following international conferences:
 - o 3rd International ICST Conference on Personal Satellite Services 2011 - PSATS’11, Malaga, Spain
 - o 4th International ICST Conference on Personal Satellite Services 2012 - PSATS’12, Bradford, UK
 - o 5th International ICST Conference on Personal Satellite Services 2013 - PSATS’13, Toulouse, France
- General Co-Chair of the following international conference:
 - o 2nd International Conference on Personal Satellite Services 2010-PSATS' 2010 Rome, Italy, February 2010.
- Technical Program Co-Chair of the following international conferences:
 - o SPECTS 2005, Philadelphia, USA
 - o IEEE Globecom 2006 - Satellite and Space Communications Symposium, San Francisco, USA
 - o IEEE Globecom 2007 - Wireless Networking Symposium, Washington DC, USA
 - o ICC'08 - General Symposium, Beijing, China
 - o IEEE Globecom 2008 Symposium on Selected Areas in Communications, New Orleans, USA
 - o ICC'09 - Wireless Networking Symposium, Dresden, Germany
 - o International Conference on Personal Satellite Services 2009-PSATS' 09, Rome, Italy, March 2009
 - o SPECTS 2013, Toronto, Canada
- SPECTS 2010 / Summer Simulation Conference, Keynote Speaker, Genoa, Italy, “The Evolution of Internet Technology, From Pervasive to Cloud Computing”, Monday, July 9th, 2012.

10. Participation in technical program committees for international conferences

- Member of the Technical Program Committee of the following international conferences:
 1. Globecom 2003, San Francisco, USA.
 2. VTC 2003 Fall, Orlando, USA.
 3. SPECTS 2003, Montreal, Canada.
 4. WPMC 2003 (Wireless Personal Multimedia Communications), Yokosuka, Kanagawa, Japan.

5. ICC 2004, Paris, France.
6. VTC 2004 Fall, Los Angeles, USA.
7. SPECTS 2004, San Jose, USA.
8. Globecom'05, St. Louis, USA.
9. ICC'05, Next Generation Networks for Universal Services, Seoul, Korea.
10. MASS 2005, Washington DC, USA.
11. WCNC 2005, New Orleans, USA.
12. ISWCS2005, Siena, Italia.
13. ICC'06, Next Generation Mobile Networks, Istanbul, Turkey.
14. SPECTS 2006, San Diego, USA.
15. TIWDC'06, Ponza, Italia.
16. ASMS'06, Herrsching, Munich, Germany.
17. Globecom 2006, Satellite Communications Symposium, San Francisco, CA, USA.
18. WCNC 2006, Las Vegas, USA.
19. IWSSC 2006, Madrid, Spain.
20. ICC 2007, CQR, Communications QoS and Reliability Symposium, Glasgow, Scotland, UK.
21. SPECTS 2007, San Diego, USA.
22. INNSS'07, Budapest, Hungary.
23. Globecom 2007, Wireless Networking Symposium, Washington D.C., USA.
24. WRECOM 2007, Roma, Italia.
25. WCNC 2007, Honk Kong, China.
26. IWSSC'07, Salzburg, Austria.
27. SPECTS 2008, Edinburgh, Scotland, UK.
28. ISSSTA 2008, Bologna, Italia.
29. ASMS 2008, Bologna, Italia.
30. ICC 2008, General Conference Symposium, Beijing, China.
31. ICC 2008, Wireless Communications Symposium, Beijing, China.
32. IWCMC'08, Crete, Greece.
33. IWSSC'08, Toulouse, France.
34. Globecom 2008, Selected Areas in Communications Symposium, New Orleans, USA.
35. ICC 2009, Wireless Networking Symposium, Dresden, Germany.
36. Globecom 2009, Wireless Networking Symposium, Honolulu, USA.
37. Globecom 2009, Selected Areas in Communications Symposium, Honolulu, USA.
38. IWSSC 2009, Siena, Italia.
39. ISWPC 2010, Modena, Italia.
40. ICC 2010, Selected Areas in Communications Symposium, Cape Town, South Africa.
41. ICC 2010, Wireless Networking Symposium, Cape Town, South Africa.
42. ICC 2010, Workshop on Vehicular Connectivity, Cape Town, South Africa.
43. Globecom 2010, CSSMA, Communication Software, Services and Multimedia Applications Symposium, Miami, FL, USA.
44. Globecom 2010, Selected Areas in Communications Symposium, Miami, FL, USA.
45. Globecom 2010, SaCoNAS (Smart Communications and Network Technologies applied in Autonomous Systems) Workshop, Miami, FL, USA.
46. ICC 2011, CSMA - Communication Software and Multimedia Applications Symposium, Kyoto, Japan.
47. Globecom 2011, Selected Areas in Communications Symposium, Houston, Texas, USA.
48. Globecom 2010, SCPA-SaCoNAS (Smart Communication Protocols & Algorithms - Smart Communications and Network Technologies applied in Autonomous Systems) Workshop, Houston, Texas, USA.
49. ICC'12, CSSMA - Communication Software, Services and Multimedia Applications Symposium, Ottawa, Canada.
50. ICC'12, Selected Areas in Communications Symposium, Ottawa, Canada.
51. ICC'12 Workshop - SaCoNet-III, (3rd IEEE International Workshop on SmArt COmmunications in NETwork Technologies), Ottawa, Canada.
52. SaCoNeT 2013 (4th International Conference on Smart Communications in Network Technologies 2013).
53. ICC 2013, CSS - Communication Software and Services Symposium, Budapest, Hungary.
54. GLOBECOM 2013, SAC Satellite & Space Communication, Atlanta, USA.
55. GLOBECOM 2013, AHSN Symposium, Ad Hoc and Sensor Networking, Atlanta, USA.

11. Other scientific activities in International Journals/Magazines/conferences

- Session Organizer in the following International conferences:
 - IEEE ICC 2002, New York, April 2002.
 - 38th Annual Conference of the Italian Operations Research Society Optimization and Decision Sciences, Genova, September 2007.

- Session Chairman in the following International conferences:
 - 2000 Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS00) - Session: Optical Networks
 - IEEE ICC 2002, New York, April 2002
 - Coordinator of the Session “Internet/Intranet Network, wireless networks and telecommunications for the health”, TIMED, Genoa, Italy, June, 2003 (national conference)
 - Globecom 2003, San Francisco
 - ICC 2004, Paris
 - Globecom'05, St. Louis
 - ICC'05, Seoul
 - SPECTS 2005, Philadelphia
 - TIWDC 2005, Sorrento, Italy
 - ICC'06, Istanbul
 - ISCC'06, Pula (Cagliari)
 - Globecom 2006, San Francisco
 - ICC 2007, Glasgow

- Reviewer activity for many Journal / Magazines (among the others IEEE Communications Letters, IEEE Transaction on Networking, Elsevier Computer Networks, Elsevier Computer Communications, IEEE Wireless Communications Magazine, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Wireless Communications, Wiley International Journal of Communication Systems, Wiley International Journal of Satellite Communications and Networking) and international conferences.

- Speaker in the following International conferences:
 1. IEEE International Conference on Communications (ICC '94), New Orleans, LA, May 1994
 2. Internat. Conf. on Computer Communications and Networks (ICCCN'94), San Francisco, CA, September 1994
 3. 2nd ACM Workshop on Advances in Geographic Information Systems, Gaithersburg, MD, December 1994.
 4. The European Symposium on Advanced Network and Services , RAI, Amsterdam, The Netherlands, March 1995
 5. 8th International Conference on Image Analysis and Processing (ICIAP ' 95) , Sanremo, Italy, September 1995
 6. Internat. Conf. on Computer Communications and Networks (ICCCN'95), Las Vegas, Nevada, September 1995
 7. IEEE Globecom '95, Singapore, November 1995
 8. 4th IFIP Workshop and Performance Modelling and Evaluation of ATM Networks, Ilkley, U.K., July, 1996 (2 papers)
 9. Third IEEE International Conference on Electronics, Circuits, and Systems (ICECS'96), Rhodes, Greece, Oct. 1996
 10. ECMAST'97, May 1997, Milano, Italy, Lecture Notes in Computer Science
 11. 5th IFIP Workshop and Performance and Evaluation of ATM Networks, Ilkley, U.K., July, 1997
 12. Fifth Ka-Band Utilization Conference, October 1999, Taormina, Italy (2 papers)
 13. IEEE International Conference on Communications (ICC2000), New Orleans, Louisiana, June 2000
 14. Proc. Sixth Ka-Band Utilization Conference, June 2000, Cleveland, Ohio (3 papers)
 15. Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS00), July 2000, Vancouver, Canada (2 papers)
 16. IEEE Globecom2000, San Francisco, CA, (2 papers).

17. IEEE International Conference on Communications (ICC 2001), Helsinki, Finland, June 2001, (2 papers).
18. Seventh Ka-Band Utilization Conference, Santa Margherita Ligure, Italy, September 2001, (2 papers).
19. IEEE Globecom 2001, San Antonio, Texas, November 2001
20. IEEE International Conference on Communications (ICC2002), New York, April 2002
21. Eighth Ka-Band Utilization Conference and EMPS2002, Baveno, Italy, September 2002 (2 papers)
22. 9th Ka and Broadband Communications Conference, Ischia, Italy, November 2003
23. IEEE Globecom 2003, San Francisco, CA, December 2003
24. IEEE International Conference on Communications (ICC04), Paris, France, June 2004
25. 10th Ka and Broadband Communications Conference, Vicenza, Italy, September 2004 (2 papers)
26. IEEE International Conference on Communications (ICC 2005), Seoul, South Korea (2 papers)
27. Symposium of the Information Systems Technology (IST-054) on Military Communications, Rome, Italy, April 18-22, 2005. (2 papers)
28. Tyrrhenian International Workshop on Digital Communications 2005, 4-6 July, Sorrento, Italy
29. International Symposium on Performance Evaluation of Computer and Telecommunication Systems, (SPECTS2005), July 2005, Philadelphia, PA, USA (3 papers)
30. International Workshop on Satellite and Space Communications 2005, IWSSC 2005, 8-9 September 2005, Siena
31. Proc. 11th Ka and Broadband Communications Conference, September 2005, Rome, Italy
32. IEEE Globecom 2005, St. Louis, MO, 28 Nov.-2 Dec. 2005.
33. IEEE Symposium on Computers and Communications, ISCC'06, 26-29 June 2006, Pula (Cagliari), Italy
34. IEEE International Conference on Communications 2006, ICC 2006, 11-15 June 2006, Istanbul, Turkey
35. IEEE Globecom 2006, San Francisco, 27 Nov. -2 Dec. 2006 (2 papers)
36. IEEE International Conference on Communications 2007 - ICC 2007, 24-27 June 2007, Glasgow, Scotland (2 papers)
37. IEEE Globecom 2007, Washington D.C., USA, 26. -30 Nov. 2007.
38. IEEE International Conference on Communications 2008 - ICC 2008, 19-23 May 2008, Beijing, China.
39. IEEE Globecom 2008, New Orleans, USA, 30 Nov- 4 Dec. 2008.
40. IEEE International Conference on Communications - ICC 2009, Dresden, Germany, 14-19 June 2009.
41. Globecom 2010, Miami, USA, Dec 2010.

- Speaker in the following national conferences:
 - o Telecommunications Group National Meeting, Como, Italy, June, 1998.
 - o CNIT National Meeting, Orvieto, Italy, June, 2001.
 - o TIMED, Genoa, Italy, June 2003.
 - o "Information Engineering Summer School" (Director Prof. S. Pupolin) years '94, '95, '96, during the PhD.
 - o Invited Speaker for "The migration process of IP technologies of the systems for the Defence" and for "IP and ATM for applications convergence within the networks for the Defence", AFCEA, Rome, March, 2nd, 2006.

12. Activity related to PhD

Coordinator of the PhD in "Computer Science, Electronic, Robotic and Telecommunications Engineering" at the University of Genoa, Italy, since October, 11th, 2012. [Activity already referenced for the direction of institutes]

Member of the Teaching Board of the PhD in "Computer Science, Electronic, Robotic and Telecommunications Engineering" at the University of Genoa, Italy, since 2005.

Member of the Teaching Board of the PhD in “Electronic and Computer Science Engineering” at the University of Genoa, Italy, from 2001 to 2004.

Member of the Evaluation Board for the admission test of the PhD in “Computer Science, Electronic, Robotic and Telecommunications Engineering” at the University of Genoa, Italy, for years 2005, 2006, 2007, 2008, 2009, 2010 (as President), 2011 (as President), 2012 (as President).

Member of the Evaluation Board for the final exam of the PhD in “Space Science and Engineering” at the University of Genoa, Italy, 2007.

Member of the Evaluation Board for the final exam of the PhD in “Computer Science, Multimedia, and Telecommunications Engineering” at the University of Florence, Italy, 2007.

Member of the Evaluation Board for the final exam of the “European Ph.D program in Information Technology”, at the Advanced Research Center on Electronic Systems for Information and Communication Technologies "Ercole De Castro" (ARCES), University of Bologna, Italy, 2010, Evaluation Board for Marco Papaleo Thesis Defense.

Member of the Evaluation Board for the final exam of the PhD in “Information engineering”, University of Pisa, Italy, 2012.

13. Teaching responsibilities and tasks

University

2004/05

Professor of the following courses

- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy.

2005/06 Professor of the following courses

- Systems and Technologies for Telecommunications 1, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Principles of Telecommunications 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy.

2006/07 Professor of the following courses

- Systems and Technologies for Telecommunications 1, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Principles of Telecommunications 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy.

2007/08 Professor of the following courses

- Systems and Technologies for Telecommunications 1, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Principles of Telecommunications 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;

- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy.

2008/09 Professor of the following courses

- Systems and Technologies for Telecommunications 1, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Principles of Telecommunications 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Signal processing and transmissions 1, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy.

2009/2010 Professor of the following courses

- Telecommunications Networks, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Telecommunications Networks and Telemedicine, “Laurea Specialistica” degree in Biomedical Engineering, Faculty of Engineering, University of Genoa, Italy.

2010/2011 Professor of the following courses

- Telecommunications Networks, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Advanced architectures and applications for telecommunications networks 1, “Laurea Specialistica” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Telecommunications Networks and Telemedicine, “Laurea Specialistica” degree in Biomedical Engineering, Faculty of Engineering, University of Genoa, Italy.

2011/2012 Professor of the following courses

- Telecommunications Networks, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Architectures and Applications for Telecommunications Networks, “Laurea Specialistica” degree in Multimedia Signal Processing and Telecommunications Networks, provided in English, Faculty of Engineering, University of Genoa, Italy;
- Telecommunications Networks and Telemedicine, “Laurea Specialistica” degree in Biomedical Engineering, Faculty of Engineering, University of Genoa, Italy;
- Computer Networks, “Laurea” degree in Electronic Engineering, Faculty of Engineering, University of Genoa, Italy;
- Telematic and Internet Technologies, “Laurea” degree in Electronic Engineering and Information Technologies, Faculty of Engineering, University of Genoa, Italy.

2012/2013 Professor of the following courses

- Telecommunications Networks, “Laurea” degree in Telecommunications Engineering, Faculty of Engineering, University of Genoa, Italy;
- Architectures and Applications for Telecommunications Networks, “Laurea Specialistica” degree in Multimedia Signal Processing and Telecommunications Networks, provided in English, Faculty of Engineering, University of Genoa, Italy;
- Telecommunications Networks and Telemedicine, “Laurea Specialistica” degree in Biomedical Engineering, Faculty of Engineering, University of Genoa, Italy;
- Telematic and Internet Technologies, “Laurea” degree in Electronic Engineering and Information Technologies, Faculty of Engineering, University of Genoa, Italy.

University Master

Coordinator (as a Member of the **Executive Board** composed of 3 professors, responsible for managing the framework program between the University of Genoa, Italy and the Armed Forces Telecommunications School, Chiavari, Italy, aimed at providing Masters and Training Courses: period 2008-2011: 8 masters e 17 training courses; period 2012-2015: 11 masters, 1 special training course (equivalent to a master) and 25 training courses. Overall amount received and managed by the Executive Board since 2008: 1,989,821.51 Euros, structured as follows,

2008 (18 training courses and 6 masters activated): 498,874 Euros

2009 (16 training courses and 4 masters activated): 410,028 Euros

2010 (18 training courses and 5 masters activated): 482,627 Euros

2011 (5 training courses and 2 masters activated): 202,850.25 Euros

2012: (12 training courses e 4 masters activated and currently managed): 395,442.26 Euros (assured by contract, to be reported at the end of the activity)

President of the Teaching Board: Master (II level) in “ICT&S. ICT and Security, to innovate productive contexts and develop new markets”, 1 year, 2009-2010, Executive Program European Social Fund 2007-2013.

President of the Teaching Board: Master (II level) in Telecommunications, Armed Forces Telecommunications School, Chiavari, Italy, years 2008-2009-2010-2011.

Member of the Teaching Board: Master (I level) in Telecommunications, Armed Forces Telecommunications School, Chiavari, Italy, years 2008-2009-2010-2011.

Professor of the Master course “Telematic Networks” (33 hours +3 hours for the exam), Master (II level) in Telecommunications, Armed Forces Telecommunications School, Chiavari, Italy, years 2008-2009-2010-2011.

Professor of the Master course “Satellite Communications Technique” (15 hours +3 hours for the exam), Master (II level) in Telecommunications, Armed Forces Telecommunications School, Chiavari, Italy, years 2008-2009-2010-2011.

Professor of the Master course “New generation IP networks” (16 hours), Master (II level) in Advanced Technologies for Integrated Intelligent Systems, year 2008.

Professor of the Master course “Advance solutions for service guarantee in telecommunications networks” (10 hours), Master (II level) in “ICT&S”, 2009-2010.

Professor of the Master course “New generation infrastructure and networks” (2 hours out of 10), Master (II level) in “ICT&S”, 2009-2010.

Tutorials

German Aerospace Centre (DLR):

Tutorial on QoS and TCP over Satellite Provisioning

Presenter: Prof. Mario Marchese, University of Genova

Date/Duration: July, 26th - 27th, 2007, 2 days tutorial

International Workshop on Satellite and Space Communications 2005, IWSSC 2005, Siena

Tutorial on Transport Layer and QoS Issues over Satellite

Presenter: Prof. Mario Marchese, University of Genova

Date/Duration: September, 8th, 2005, ½ day tutorial

EU Project, SatNEx Summer School, Pisa, 2005

Tutorial on Transport Protocols over Satellite

Presenter: Prof. Mario Marchese, University of Genova

Date/Duration: August, 24th, 2005, ½ day tutorial

ESA – European Space Agency / ESTEC Satellite Broadband Networks

Tutorial on Practical study cases for IP service implementation over satellite networks

Study case 1: Web Browsing over Satellite Networks

Study case 2: End-to-end QoS Provisioning over Satellite Networks

Presenter: Prof. Mario Marchese, University of Genova

Date/Duration: February, 4th, 2004, ½ day tutorial

Member of the Evaluation Board for the final exam to provide the “Laurea” degree in Telecommunications Engineering - University of Genoa, Italy

From May 2005 to October 2005 as Effective Member
From November 2005 to April 2006 as Substitute Member
From May 2006 to October 2006 as Effective Member
From November 2006 to April 2007 as Substitute Member
From May 2007 to October 2007 as Effective Member
From November 2007 to April 2008 as Substitute Member
From April 2008 to September 2008 as Effective Member
From October 2008 to March 2009 as Substitute Member
From April 2009 to September 2009 as Effective Member
From October 2009 to March 2010 as Substitute Member
From April 2010 to September 2010 as Effective Member
From October 2010 to March 2011 as Substitute Member
From April 2011 to September 2011 as Effective Member
From October 2011 to March 2012 as Substitute Member
From April 2012 to September 2012 as Effective Member
From October 2012 to March 2013 as Substitute Member

Activity as temporary Professor

- Temporary Professor of “ATM technology” within the official course of “Telematic 1” “Laurea” degree of Telecommunications Engineering and, jointly, of Computer Science Engineering, University of Genoa, Italy, academic year 2002-2003.
- Temporary Professor of “Control of the quality of service over integrated networks” within the official courses of “Telematic 1” and “Telematic 2”, “Laurea” degree of Telecommunications Engineering, University of Genoa, Italy, academic year 2001-2002.
- Temporary Professor of “Control of the quality of service over integrated networks” within the official courses of “Telematic 1” and “Telematic 2”, “Laurea” degree of (Jointly) Telecommunications Engineering, Computer Science Engineering, and Electronic Engineering, University of Genoa, Italy, academic year 2000-2001.
- Temporary Professor of “Control of the quality of service over integrated networks”, “Diploma” degree of Electronic Engineering, University of Genoa, Italy, academic year 1999-2000.
- Temporary Professor of “ATM networks”, “Diploma” degree of Electronic Engineering, University of Genoa, Italy, academic year 1997-1998.

Teaching support

- Responsible of “Exercises of Telecommunications Networks and Assistance to students for the exam preparation”, within the course of Telecommunications Networks, University of Genoa, Italy, “Diploma” degree of Electronic Engineering, academic year 98-99.
- Tutor activity and teaching support within the course of Telecommunications Networks, “Diploma” degree of Electronic Engineering, University of Genoa, Italy, 42 hours, academic year 96-97.
- Assistance to teaching experimental activity within the course of Communications, University of Genoa, Italy, 70 hours, academic year 95/96.
- Coordination of the teaching experimental activity within the course of Communications, University of Genoa, Italy, 50 hours, academic year 94/95.
- Assistance to teaching experimental activity, services and simulations of network protocols, within the course of Telecommunications Networks, University of Genoa, Italy, 50 hours, academic year, 94/95.
- Laboratory exercises, course of Telecommunications Networks, “Diploma” degree in Electronic Engineering, University of Genoa, Italy, 30 hours, academic year 94/95.

Activity within the Evaluation Board (where Mario Marchese is not responsible of the course)

- Member of the Evaluation Board of the course “Telematic 1”, University of Genoa, academic year 02/03.
- Member of the Evaluation Board of the course “Telematic 2”, University of Genoa, Italy, academic year 02/03.

- Member of the Evaluation Board of the course “Telematic”, University of Genoa, Italy, academic years 01/02, 00/01, 99/00.
- Member of the Evaluation Board of the course “Telecommunications Networks” (Laurea), University of Genoa, Italy, since academic year 95/96.
- Member of the Evaluation Board of the course “Telecommunications Networks” (Diploma), University of Genoa, Italy, since academic year 94/95.
- Member of the Evaluation Board of the course “Telecommunications Networks” (Laurea), University of Parma, Italy, IV exam session, academic year 95/96.
- Expert of “Telecommunications Networks”, Faculty of Engineering, Como, Polytechnic of Milan, academic year 97/98.

Lecturer in professional courses

- Lecturer of the following professional courses with development of educational material:
 - “QoS over Telecommunications Networks: technologies and solutions”, Italian Naval Academy, Livorno, Italy, June, 26th, 2003.
 - “QoS over Telecommunications Networks: technologies and solutions”, Chief Defence Staff, Rome, Italy, May, 7th, 2003.
 - “Introduction to telecommunications networks”, SALT S.p.A., Viareggio, Italy, April, 5th, 6th, 11th, 2001.
 - “Network Architectures”, Genoa Centre for Education, Genoa, Italy, November, 30th, 1998.
 - “SDH”, ELEA S.p.A., Education and Consulting, Turin, Italy, October, 23rd -24th, 1997.
 - “High speed network technologies”, ELEA S.p.A., Education and Consulting, Turin, Italy, October, 16th-17th, 1997.
 - “Introduction to ATM and B-ISDN techniques”, SIRT I S.p.A., Training Centre, Milan, Italy, March, 13th, 1997.
 - “ATM: technology and applications”, ELEA S.p.A., Education and Consulting, Turin, Italy, February, 20th-21st, 1997.
 - “Introduction to ATM and B-ISDN techniques”, SIRT I S.p.A., Training Centre, Milan, Italy, September, 26th, 1996.
 - “Broadband ATM networks”, SIRT I S.p.A., Training Centre, Milan, Italy, March, 7th-8th, 1996.

14. Activities linked to Direction of Institutes and Research Centres

University

- Coordinator of the PhD in “Computer Science, Electronic, Robotic and Telecommunications Engineering”, University of Genoa, Italy, since October, 11th, 2012.
- Vice-Chair of the Department of Communications, Computer and System Science (DIST), University of Genoa, Italy, from December, 13th, 2010 to December, 31st, 2011.
- Member of the Managing Board of the Department of Electrical, Electronic, and Telecommunications Engineering and of Naval Architecture (DITEN), University of Genoa, Italy, since 04-07-2012.
- Member of the Managing Board of the Department of Communications, Computer and System Science (DIST), University of Genoa, Italy from 13-12-2010 to 31-12-2011.
- Member of the Managing Board of the Department of Department of Communications, Computer and System Science (DIST), University of Genoa, Italy, from 15-07-2009 to 12-12-2010.
- Member of the Board of Directors of the Italian Excellence Centre on Integrated Logistics (C.I.E.L.I.), University of Genoa, Italy since 01/08/ 2010.
- Member of the Managing Board (responsible of "Research Groups Organization") of the Italian Excellence Centre on Integrated Logistics (C.I.E.L.I.), University of Genoa, Italy since January, 24th, 2011.
- Member of the “Department Governance” Commission of the Department of Electrical, Electronic, and Telecommunications Engineering and of Naval Architecture (DITEN), University of Genoa since January, 1st, 2012.
- Member of the “Department Organization” Commission of the Department of Electrical, Electronic, and Telecommunications Engineering and of Naval Architecture (DITEN), University of Genoa since January, 1st, 2012.

- Member (as focal point) of the “Data Networks and Computer Assistance” Commission of the Department of Electrical, Electronic, and Telecommunications Engineering and of Naval Architecture (DITEN), University of Genoa since January, 1st, 2012.
- Member of the “Department Planning” Commission of Department of Communications, Computer and System Science (DIST), University of Genoa, Italy since January, 1st, 2010 to December, 31st, 2011.
- Member of the Engineering Faculty Commission for “Monitoring, Classification, and Recruiting of Engineers”, Engineering Faculty, University of Genoa, Italy, since February, 1st, 2005, to October, 31st, 2008.
- Member of the Engineering Faculty Commission for “Classifying and promoting the historical-artistic heritage of Engineering Faculty of the University of Genoa, Italy”, from February, 1st, 2005 to June, 30th, 2007.

International Institutes

- **IEEE COMSOC - IEEE Satellite and Space Communications Technical Committee (SSC TC) :**
 - Chair from July, 1st, 2006 to June, 30th, 2008
 - Vice-Chair from July, 1st, 2004 to June, 30th, 2006
 - Secretary from July, 1st, 2002 to June, 30th, 2004
 - Past-Chair since July, 1st, 2008
- **ETSI – European Telecommunications Standard Institute**
 - CNIT Official Representative at ETSI (European Telecommunications Standard Institute) from 2001 to 2005
 - Full Member ETSI SES BSM Work Group (Satellite Earth Station, Broadband Satellite Multimedia).

15. Other Activities linked to Institutes and Research Centres

- **IEEE**
 - IEEE Senior Member since June, 1st, 2004
- **SCS - The Society for Modeling & Simulation International**
 - Member

16. Awards

- IEEE Communications Society, Satellite and Space Communications (SSC) Technical Committee, “2008 Satellite Communications Distinguished Service Award” in “recognition of significant professional standing and contributions in the field of satellite communications technology”.
- Best Paper Award, IEEE Global Communications 2012 (Globecom 2012), Selected Areas in Communications Symposium, Igor Bisio, Stefano Delucchi, Fabio Lavagetto, Mario Marchese, “Capacity Bound of MOP-based Allocation with Packet Loss and Power Metrics in Satellite Communications Systems”.
- Best Paper Award, Second International Conference on Advances in Satellite and Space Communications 2010 (SPACOMM 2010), Igor Bisio, Fabio Lavagetto, Mario Marchese, “Introduction to Multi Attribute Decision Making-Based Application Layer Joint Coding for Image Transmission over Deep Space Channels”.
- Best Student Paper Award (Category Physical Communication System), Global Communications 2006 (GLOBECOM 2006), Igor Bisio, Mario Marchese, Giancarlo Portomauro, “Performance Evaluation of Sink Selection Techniques in Satellite Sensor Networks”.
- Best Ph. D. Paper Award, International Workshop on Satellite and Space Communications 2006 (IWSSC 2006), Igor Bisio, Mario Marchese, Giancarlo Portomauro, “Multi Attribute Sink Selection Techniques in Satellite Sensor Networks: Study and Performance Evaluation”.
- Recipient through "Decreto Rettoriale" n. 2781/S - 1.4.1998 of a Post-doc Grant by the University of Genoa, Italy.
- Classified in the National test as Senior Scientist at CNR, for “Electronics, Telecommunications and Electromagnetic fields”, 25.2.1999.
- Grant for improving knowledge in “Protocols for computer networks” given by MARCONI S.p.A., Genoa, Italy, from 12/06/92 to 12/10/92.

17. Description of the developed research activity

As evident from the list of publications, the most relevant contribution of Mario Marchese's scientific activity has been in the field of satellite, space, and heterogeneous communications. He has been one of the first to understand the problems of the TCP and of transport layers over satellite links also providing algorithms and architectural solutions to solve them. He has studied and applied control strategies for telecommunications systems to dynamically assign channel bandwidth for satellite communications and for heterogeneous networks getting scientific results published in the most prestigious journals of the sector. He has published the book "Quality of Service over Heterogeneous Networks", Wiley, 2007, which contains a new vision of the quality of service in telecommunications networks, composed of satellite, radio and cable links. His research activity has always aimed at keeping a high scientific level but, in the same time, it has been always linked to issues of great applicative and industrial interest, as evident both from the list of managed Projects and from the list of Patents. The main reference of his research activity has been Quality of Service – QoS management over heterogeneous networks, which, often, include satellite and wireless network portions, as well as interplanetary deep space link for which suitable schemes for data transmission have been studied in his research.

Offering QoS-guaranteed services over integrated heterogeneous networks, both concerning physical support (terrestrial, satellite, and radio portions), and concerning employed protocols and solutions, is very challenging because it implies the solution of complex research projects involving different disciplines. The transmission of information through such an integrated system much appear as transparent to the users. In other words, the scientific-technological aim is cancelling the differences among the network technological portions through the definition and the use of proper interfaces and algorithms, which make the interconnection of the network components transparent.

Each network portion can use a suitable protocol stack and each protocol must be fully involved in quality provision transparently to the final user. Network nodes must communicate through common rules for information and data exchange and control; each single functional layer must provide a service to higher layers and the integration must come from the cooperation of each layer and portion, both satellite, radio, and terrestrial.

These concepts are the base of the developed research activity and represent scientific challenges not yet solved for the technology currently in use. Communicating through QoS-guarantee heterogeneous networks is the future of telecommunications within the framework defined by GII – Global Information Infrastructure, where multiple networks composed of different transmission media, such as fibre optic cable, coaxial cable, satellites, radio, and copper wire, will carry a broad range of telecommunications and information services and information technology applications into homes, businesses, schools, and hospitals, also through Smartphones terminals. These networks will form the basis of evolving national and global information infrastructures, in turn creating a seamless web uniting the world in the emergent Information Age. The result will be a new scientific and technological base, providing opportunities and challenges for individuals, industry, and governments.

The design of proper interfaces assuring integrated solutions for fixed and mobile network nodes is a way to implement network convergence, where different transmission means such as satellite and wireless channels, cable networks, but also links in the deep space operate together so to compose an overall telecommunication network for information transport, transparently to the final users. The interfaces will allow cancelling the artificial line between different technologies and protocols, and creating a global structure for information transmission.

QoS management over heterogeneous networks requires the introduction of network control solutions both concerning architectures and algorithms. The book [1] contains precise indications, also at numerical level, about the need of network control schemes. Reported results and relative conclusions are a direct consequence of the research activity developed by the author during his scientific career.

The research activity carried on represents the scientific evolution over time of the research developed since 1992 and initially dedicated to call admission control [5, 7] and routing [8] in multiservice ATM networks. Studied control techniques have been the scientific-cultural base for the future scientific activity and, in particular, for bandwidth allocation and control. The solutions studied for ATM have been used as a background to develop solutions over TCP/IP networks. In this case the research, initially dedicated to cable networks [10], has been focused, since 1998-1999, on satellite and space networks, where suitable protocols and solutions have been studied both to offer a specific level of Quality of Service over native best-effort networks, if possible, and to improve the quality offered by the network through the implementation of specific solutions. Such a research concerns the measure of the quality of service, the study of the TCP over satellite and it is strictly linked to research projects funded by the Italian Space Agency (ASI) as certified by the consequent publications ([15,

16]). The research in this sector has been carried on together with International level scientists and has reached important joint initiatives and publications.

Concerning TCP over satellite, the importance of the developed activity is in its innovation, not only from the analysis and performance evaluation viewpoint but also from the research topic viewpoint, because Mario Marchese, as said, has been one of the first scientists to tackle the issue at International level. Protocol modifications have been practically implemented over Linux operating system; performance evaluation has been carried out over a real satellite network, integrated, where necessary, with simulations. Objective measures have been compared with the quality really perceived by the final users (P-QoS, Perceived Quality of Service) so to check the practical effect of the implemented solutions over real users. Results are reported in [16]. The study has been extended through a functional modification proposal concerning TCP control algorithms by adding a dynamic function that provides a relevant performance increase through a multi-threshold solution applied within a totally new architecture [23]. The paper [34] contains a proposal about a new function providing very good results. Paper [65] shows a new protocol architecture aimed at isolating the satellite portion within heterogeneous networks while keeping the source-destination features of the transport layer. This architecture, evaluated through simulations, is of particular originality and, in the same time, of practical applicability. For its features it has been included within an ETSI technical report referred to possible architectures to be used for "IP over satellite" solutions. More recent results concerning TCP transport layer and new architectures are contained in [37] e [49], which report also experimental results of special interest.

Later and, since 2003, together and correlated with the transport layer activity, research about channel bandwidth allocation for satellite communications has been carried on. In such a context the experience acquired thanks to ATM networks at the beginning of the career was precious concerning mathematical and simulation tools. The approach to the problem can change depending on the needs. The research activity began with the creation and development of a model for the TCP behaviour over satellite links, published in [22] and, in the same time and on the base of the mentioned model, of the algorithm called CAP-ABASC (Constrained Average Probability - Adaptive Bandwidth Allocation in Satellite Channels), published in [27] and providing very satisfying results. Its performance analysis has shown a good efficiency also in the case of heavy channel degradation due to fading, which has been considered through real data taken from [17]. On the base of this first idea Mario Marchese has proposed solutions that use 1) perturbation analysis (initially in [28] and, with more detail concerning fading, in [33] and [69]), 2) neural networks applied to satellite environment [29] and 3) novel functional costs [27, 44], aimed at fixing a precise objective for the benefit of the entire satellite network. The scheme proposed in [27] and extended in [44] is aimed at allocating bandwidth among different satellite earth stations so minimising the average probability of losing information, analytically computed as in [22]. The average probability of losing information is a metric of common interest but, in general, even if a metric seems to summarise fairness needs, it could penalise specific earth stations. This is the rationale under the paper [38] where, by using a family of techniques well known in the economic world and called MOP (Multi Objective Programming), channel bandwidth is allocated so that the performance of each earth station is as closest as possible to an ideal situation. The solution is made complex but also very interesting from the practical viewpoint by the possible contrast among the metrics. For example, increasing transmission power implies decreasing the information loss but also implies spending more. MOP solution chooses the bandwidth configuration assuring the best compromise. Considering transmission power and, in the same time, performance metrics such as information loss has been an important step forward published in [59].

Solutions based on multi-objective techniques, conceptually similar to MOP but applied to take a decision among multiple choices (MADM – Multi Attribute Decision Making) have been applied in [43], whose idea is extended in [47], to select the outgoing interface of a sensor network, which is the access portion of a heterogeneous network where the mentioned interface is a satellite earth station and the network backbone the satellite link itself. Also in this case the considered metrics are in contrast with each other and the outgoing interface choice is the best compromise. Reference network is represented by a Cluster of satellite earth stations that convey information coming from sensors to a Remote Monitoring Host (RMH), which is also a satellite earth station. All stations, or a portion of them within the cluster, receive information from sensors but only one of them is authorised to send information towards the destination through the satellite channel so to save bandwidth and energy. The main aim of the research activity and of the papers [43, 47], whose content is also object of two patents [B1, B2], is to propose a method to select the transmitting earth station so to minimise the distance from a condition considered ideal in terms of a set of metrics, such as the information loss probability, the average transmission delay, and the average energy employed by the overall data transmission system.

The experience acquired concerning transport layers and channel bandwidth allocation has been a key point to extend the research to interplanetary networks. In this context large delays not only penalise data transfer but make not applicable extremely widespread solutions such as TCP. Within the interplanetary environment Mario Marchese has modified the transport layers by proposing alternatives algorithms [31] for space networks and, then, has extended his research to signal processing and has applied the concept of transport layer coding over

CCSDS protocol stacks [40] so to define a complete system for processing and transmitting information in the deep space [50].

The research activity, both related to interplanetary networks [46] and, more in general, to satellite communications [45], has been related with recent application and technological advances of navigation systems. The joint vision of communications and navigation systems is extremely promising also from the point of view of projects and has recently given origin to the paper [61]. The research developed in the past and the acquired experience has allowed maturing the proposal of an extended Internet (in the framework of already existing Future Internet) including also deep space portions so to create a global communications network. This idea is reported [55]. The natural extension of the studies about interplanetary communications has been the application of the DTN (Delay and Disruption Tolerant Networks) solutions originating recent publications [57] e [58].

The idea of satellite and space networks as a part of a heterogeneous communication network has originated over time, as said, and from the solution of specific research and standardization problems. In this context a first important step, described in [1], is represented by the definition of a formal relation among services, protocols, and physical supports, and by the design of solutions where the physical information transport and the protocols acting at higher layers are separated by formal interfaces. The reference is represented by the architecture “Broadband Satellite Multimedia – BSM”, developed, with the contribution of Mario Marchese, by ETSI (European Telecommunication Standard Institute). This architecture separates the layers identified as “SD - Satellite Dependent” from the “SI - Satellite Independent” layers and defines the interface SI-SAP (“Satellite Independent – Service Access Point”) between SD and SI layers. This interface, practically implemented by Mario Marchese and his research group within an ESA Project together with the DLR-German Aerospace Center, should be located in each satellite network access node, defined as Relay Node. An important result of the research activity has been the complete definition of the SI-SAP interface and the consequent generalization [1] of the interface for non-satellite components, so getting a functional separation of the protocols and a common management of the physical interface both for radio, satellite, and terrestrial portions, proposed in [1], specified in [48] and called TI-SAP (Technology Independent – Service Access Point). Implementation aspects of the TI-SAP are also object of patent [B4].

The operative solution implies the use of queuing models and the definition of algorithms to dynamically allocate the bandwidth, which represent the more theoretical part of this research activity. The only definition of the interfaces proposed in [1] is not sufficient to create a hybrid radio-satellite-terrestrial network, composed of fixed and mobile nodes. The interface design implies also the definition of new protocols and schemes to manage channel bandwidth, which act both at technology dependent layer (physical, MAC, and LLC layer) and at technology independent layer (IP), so that the services between layers could be seen as a bandwidth channel dedicated to information transport. This implies the application of dynamic channel bandwidth allocation schemes at MAC and LLC layer. Algorithm and basic idea are presented in [32] for the SI-SAP – Satellite Independent Service Access Point interface. The paper [41] applies the same concepts to the “IP over ATM” satellite environment describing the action of the SI-SAP to keep a planned service level, and to the “IP over DVB” operative satellite environment, which is also the reference in [53].

The study of the interface SI-SAP / TI-SAP has allowed studying problems and getting results applicable in a wider context concerning the concept of equivalent bandwidth [42], architectural solutions [48], pricing mechanisms [51], bandwidth allocation with delay constraints [52], and CAC – Call Admission Control as in [56] e [60]. Recently a specific study about sensor networks has been activated [62]. This is the overall scientific evolution of Mario Marchese research that may be structured and summarised into the following issues, which have given origin to the following overall list of publications.

The publications are numbered as in the following list and are evidenced in brackets for each studied scientific topic. Only the publications on international book, journal, magazine, and book chapter are evidenced. “Edited Book Contributions”, which publish extended versions of conference papers, and the “Edited Book” [2, 3], which focus on satellite communications, and international conferences are not numerically evidenced in the following list of topics.

- A. Architectures and protocols for Quality of Service - management over heterogeneous and satellite networks [1, 5, 7, 8, 9, 10, 12, 14, 15, 16, 18, 19, 20, 21, 24, 25, 26, 30, 35, 51, 56, 60, 63, 64]
 - a. CAC - Call Admission Control and dynamic resource allocation [5, 7, 56, 60]
 - b. Mathematical models for ATM sources and packet loss and packet delay probability estimation in a traffic multiplexer [12, 64].
 - c. Routing and planning [8, 9, 14, 63].
 - d. P-QoS - Perceived - Quality of Service and flow control techniques to maximize QoS over best-effort networks [10].

- e. Control schemes at network layer aimed at QoS assurance over IP best effort networks for multimedia applications [15, 16, 18, 19, 24, 25, 26].
- f. Pricing mechanisms [20, 21, 51]
- g. Architectural and protocol solutions [1, 26, 30, 35]
- h. Sensor networks [62]
- B. Quality of Service mapping over integrated satellite-radio-terrestrial networks [1, 41, 42, 48, 71]
- C. Resource allocation and power control over satellite, radio, and terrestrial networks [1, 17, 22, 27, 28, 29, 32, 33, 38, 39, 41, 44, 51, 52, 53, 59, 67, 69]
- D. Satellite interface selection for wireless and sensor networks [43, 47]
- E. Information transport protocols for satellite and radio communications [1, 11, 13, 16, 18, 19, 23, 34, 36, 37, 49, 65, 68]
- F. Delay Tolerant Networks / Architectural solutions for interplanetary communications / Data transmission for space communications [31, 40, 45, 46, 50, 55, 57, 58]
- G. Design and implementation of simulation and emulation tools for telecommunications networks (planning, control, and performance evaluation) [6, 66, 70]
- H. Network security [54]
- I. Smartphones applications: context-aware communication, localization/positioning algorithms, audio fingerprints [61, 72]
- J. Algorithms and solutions for tracking and prediction of high intensity rainstorms [4]

18. Overall list of scientific publications

International Books

1. M. Marchese, "Quality of Service over Heterogeneous Networks", Wiley & Sons, Chichester, UK, 2007.

Edited Books

2. Kandeepan Sithampanathan, Mario Marchese (Eds.), "Personal Satellite Services", Springer, Berlin Heidelberg, 2009.
3. Kandeepan Sithampanathan, Mario Marchese, Marina Ruggieri, Igor Bisio (Eds.), "Personal Satellite Services", Springer, Berlin Heidelberg, 2010.

International Magazines and Journals

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13. M. Marchese "Performance Analysis of the TCP Behavior in a GEO Satellite Environment", *Computer Communications Journal*, Special Issue on the Performance Evaluation of Telecommunication Systems: Models, Issues and Applications, vol. 24, Issue 9, May 2001, pp. 877-888.
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Book Chapters

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