EUCNC

EUROPEAN CONFERENCE ON NETWORKS AND COMMUNICATIONS
BOLOGNA, ITALY, JUNE 23/26, 2014

FINAL PROGRAM

Technically Co-Sponsored by the IEEE Communications Society

IEEE COMMUNICATIONS SOCIETY

EUCNC 2015

European Conference on Networks and Communications | Paris, France

JUNE 29 – JULY 02, 2015

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ANNOUNCEMENT

EuCNC 2015 is the 24th edition of a successful series of a technical conference in the field of telecommunications, sponsored by the European Commission. The conference is open to the entire world research community and it focuses on communications systems and networks, reaching applications and services. While it aims at showcasing the results of projects from successive European R&D programs co-financed by the European Commission, it also targets to bring together researchers from all over the world to present the latest research results in networks and communications and the new developments in this field.

The conference program will include:

- Regular sessions with papers from the Open call (to be submitted for uploading to IEEE Xplore);
- Workshops;
- Special sessions;
- Poster sessions;
- Panels;
- Demos and exhibitions.

Key dates:

06 February 2015 – Deadline for submission of papers, workshops, and special sessions
20 March 2015 – Deadline for submission of poster abstracts
10 April 2015 – Deadline for submission of exhibitions
10 April 2015 – Notification of acceptance (papers and posters)
24 April 2015 – Deadline for final (camera-ready) papers
15 May 2015 – Draft program available
29 May 2015 – Early bird registration
29 May 2015 – Final program available

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Welcome from the General Chairs

MARIO CAMPOLARGO

ANTONIO MANZALINI

It is a great pleasure to welcome you to the 23rd edition of the European Conference on Networks and Communications (EuCNC 2014). We have no doubt that once again, this conference will be a most enjoyable and memorable event.

The host city, Bologna, has always been an important urban centre, first under the Etruscans and the Celts, then under the Romans, then again in the Middle Ages (for one century it was the fifth largest European city based on population). Home to the oldest university in the western world, the Alma Mater Studiorum Università di Bologna, founded in 1088, Bologna hosts about 100,000 students who enrich the social and cultural life of the city. Famous for its towers and lengthy porticoes, Bologna has a well-preserved historical centre and is the capital of its Region, Emilia-Romagna, one of the richest and more productive in Italy, where many important mechanical, automotive electronic and nutritional industries have their headquarters. Modern Telecommunications have their roots in Bologna, as Guglielmo Marconi more than one hundred years ago tested successfully for the first time ever the reception of radio waves in his Villa, few Kilometres outside the city borders.

As we are entering into the new Horizon 2020 era, EuCNC is a very timely event to further strengthen European research and innovation in the strategic domain of future communication and ICT services infrastructures. The future ubiquitous, ultra-high bandwidth infrastructure, also known as 5G, will be the focus of EuCNC 2014. 5G will be the first instance of a truly converged infrastructure, integrating IT and Networks resources and where wired and wireless communications will be undistinguishable. European telecommunications Research Constituency plays a crucial role in successfully developing 5G technologies, and in making Europe the leader in the field. This is a must to ensure a sustainable economy, to improve quality of life and job of European Citizens and to successfully compete in a global digital economy. These efforts will also pave the way towards the "softwarization" of networks and ICT architectures, thus boosting the creation and development of new ecosystems, in emerging areas such as the Internet of Things (IoT). On these issues, prominent initiatives are being initiated worldwide and the programme assembled for this conference will provide valuable insight into the global research and innovation avenues. The conference will showcase European funded research at the leading edge of these global developments.

As usual, sessions, workshops, exhibitions and posters as well as an exciting social program will allow you to have a memorable stay.

We wish you a very fruitful and enjoyable EUCNC 2014. Welcome to Bologna!

Mario Campolargo and Antonio Manzalini

Conference General Co-Chairs

Welcome from the Technical Chair

ROBERTO VERDONE

Dear participant, it is my pleasure to warmly welcome you at EuCNC'14, both as a local organiser and TPC Chairman.

EuCNC'14 is the 23rd edition of a conference that, under the auspices of the European Commission, allows all European projects to showcase their results and achievements; however, the new brand "European Conference on Networks and Communications" is used for the first time here in Bologna, to emphasise that the conference wants to go further, becoming a reference scientific event in Europe for all scientists in the field.

EuCNC'14 offers a large set of opportunities to meet scientists, researchers and engineers, to make the participation to EuCNC'14 a successful event in your professional life, either as a student, a researcher, or a professional.

EuCNC'14 has two souls. On one hand, it represents the major European event where projects funded by the European Commission report on their achievements, disseminate their results, or even just the preliminary concepts to be further developed; twelve workshops and nine technical special sessions have been included in the final program, mainly organised by projects, while twenty-nine exhibition stands enrich the conference allowing the attendees to better get in touch with the project achievements. On the other, EuCNC'14 aims through the call for papers at a high quality programme of technical sessions, with papers submitted by the whole scientific community and published on IEEE Xplore after a selective peer review process; seventeen technical sessions with five oral presentations each, plus about fifty posters, make the overall conference program extremely attractive for both industry and academic representatives.

Furthermore, the final conference programme includes five keynote speeches given by key people of the leading industry context, and three panels, dedicated to topics that represent the most interesting technological trends in the area of communications and networks nowadays: 5G, cloud infrastructures and the Internet of Things.

Bologna is an enjoyable city of Medieval flavour, strong traditions, that hosts about 100,000 University students who enrich its social and cultural life. I invite you to learn more about Bologna through the Welcome message I have delivered later in this booklet.

I feel honoured to host you at EuCNC'14 in Bologna. On behalf of all members of the Steering and Organising Committee of EuCNC'14, to whom I am extremely grateful for the support I received during the past months, I wish you to enjoy the conference and the city.

Roberto Verdone

TPC Chair

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Alex	Olivieri	Haute Ecole Spécialisée de Suisse Occidentale	Switzerland
Jorge	Ortín	University of Zaragoza	Spain
David	Palma	OneSource	Portugal
Francesco	Pantisano	European Commission - Joint Research Centre	Italy
Shuping	Peng	University of Bristol	United Kingdom
Mahdi	Pirmoradian	Islamic Azad University	Iran
Gabriele	Rigamonti	SIAE Microelettronica	Italy
André	Riker	University of Coimbra	Portugal
Michele	Rondinone	UMH University Miguel Hernandez of Elche	Spain
Ahmad	Rostami	Ericsson Research	Sweden
Lida	Sadeghioon	Orange Lab	France

G. Enrico	Santagati	University at Buffalo	USA
Vincenzo	Sciancalepore	Institute IMDEA Networks	Italy
David	Soldani	Huawei Technologies Duesseldorf GmbH	Germany
Velio	Tralli	University of Ferrara - Italy	Italy
Thanh-Dien	Tran	University of Coimbra	Portugal
Tommi	Tuovinen	University of Oulu	Finland
Anna	Umbert	University Politecnica of Catalunya	Spain
Alessandro	Vanelli-Coralli	University of Bologna	Italy
Christian	Vitale	Institute IMDEA Networks	Spain
Andrea	Vitaletti	DIS Sapienza Universita' di Roma	Italy
Philip	Wette	University of Paderborn	Germany
Jason	Whelan	Waterford Institute of Technology	Ireland
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Exhibitors

Exhibition stand 1: The EMPhAtiC objective is to develop, evaluate and demonstrate the capability of enhanced multicarrier techniques to make better use of the existing radio frequency bands in providing broadband data services in coexistence with narrowband legacy services. The project addresses the Professional Mobile Radio (PMR) application, especially the evolution of the Public Protection & Disaster Relief (PPDR) service currently using TETRA systems for voice and low-speed data services. Our main emphasis is on filter bank based multicarrier (FB-MC) and single-carrier (FB-SC) waveforms for utilizing effectively the available fragmented spectrum in such heterogeneous environments. The core idea is to develop a multi-mode radio platform, based on variable filter-bank processing, which is able to perform modulation/detection functions simultaneously for different signal formats with adjustable center frequencies, bandwidths and subchannel spacings.

Exhibition stand 2: WiserBAN - Smart Miniature Low-Power Wireless Microsystem for Body Area Networks". WiserBAN concerns Wireless Body Area Networks (WBAN) and is about improving personal sensing capabilities by using miniature, unobtrusive, long-lifetime sensor nodes. WiserBAN will deliver innovative wearable and implantable radio microsystems which will enable concrete exploitation perspectives in a broad range of industrial segments such as healthcare, bio-medical, wellness, and lifestyle. The WiserBAN project will address the following industrial-driven wearable and implantable use cases: hearing instruments, cardiac implants, insulin pumps, cochlear implants, and further use cases beyond healthcare.

Exhibition stand 3: Fed4FIRE: In recent years numerous projects for building FIRE facilities have been launched, each targeting a specific community within the Future Internet ecosystem. The goal of the Fed4FIRE project (www.fed4fire.eu) is to federate these different facilities using a common federation framework. This enables innovative experiments that break the boundaries of these domains. Besides, infrastructure developers can utilize common tools of the federation, allowing them to focus on their core testbed activities.

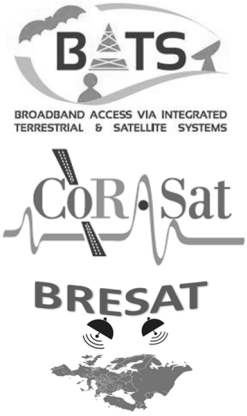
FIRE: The Future Internet Research and Experimentation - FIRE - Initiative is addressing the need to experiment with networks, creating a multidisciplinary test environment for investigating and experimentally validating highly innovative and revolutionary ideas for new networking and service paradigms. FIRE is creating a dynamic, sustainable, large-scale European Experimental Facility, which is constructed by gradually connecting and federating existing and upcoming testbeds for Future Internet technologies. More information: http://www.ict-fire.eu/. FIRE introduction video on YouTube at: http://youtu.be/YITSyn5iHCU.

AmpliFIRE: AmpliFIRE focuses on developing a sustainable 2020 vision for Future Internet research and experimentation, setting out a transition path by identifying current gaps that need to be filled to meet long-term demands and identifying how capabilities must evolve. It also serves as an aggregator of all FIRE facilities, research projects and activities, www.ict-fire.eu/home/amplifire.html.

Exhibition stand 4: The SODALES project (SOftware-Defined Access using Low-Energy Subsystems) aims to converge Layer-2 Ethernet and wireless (LTE, 60-GHz and beyond) over a unique stat multiplexer over WDM-PON that offers interconnection to fixed and mobile subscribers in a unique, green, simplified, optimized and easy-to-manage access infrastructure. The SODALES interconnection service integrates a heterogeneous set of different access infrastructures and proposes an innovative Open Access layer-2 interconnection service that interfaces with the physical substrate for fixed subscribers offering a novel ultra-high bandwidth wavelength-division-multiplexed passive-optical-network (WDM-PON) architecture combined with fixed-radio access, and offers a standardized interface for long-term evolution (LTE) and beyond mobile users.

Exhibition stand 5: The FABULOUS European Project is a STREP (Small or medium scale focused research project) that was presented for evaluation to the EU commission on the 16th of January 2012, at the 8th call for proposals of the ICT sector of the 7th Framework Program (FP7), under the Challenge 3.5: Core and Disruptive Photonic Technologies. The proposal was in particular addressing the following objective: Core photonic technologies, "Application-specific photonic components and subsystems", that was also addressing, for access networks, an "affordable technology enabling 1-10Gb/s data-rate per client." FABULOUS will design, develop and characterize new Silicon Photonics components for application in next-generation passive optical networks (NG-PON2), particularly in a WDM/FDM architecture based on reflective ONU. These components will be integrated onto a multi-functional optoelectronic chip that will then be the core of a full-blown system demonstrator.

Exhibition stand 6: 5GNOW ('5th Generation Non-orthogonal Waveforms, project supported by the European Commission) is questioning the design targets of LTE and LTE-Advanced and the obedience to strict synchronism and orthogonality are challenged. The project develop new PHY and MAC layer concepts being better suited to meet the upcoming needs with respect to service variety and heterogeneous transmission setups. It is expected that wireless transmission networks following the outcomes of 5GNOW will be better suited to meet the manifoldness of services, device classes and transmission setups present in envisioned future scenarios like smart cities. The integration of systems relying heavily on MTC into the communication network will be eased.



Exhibition stand 7: The research projects BATS, CORASAT and BRESAT, all funded under the European Union 7th Framework Programme, aim to bridge the potentially widening Broadband divide between urban and rural areas with Satellite Broadband communications systems, in order to meet the objective set forth in the EC Digital Agenda: universal availability of Broadband speeds of at least 30 Mb/s throughout Europe. Given the fact that accelerated deployment of current terrestrial Broadband technology will not be able to satisfy this requirement in the most difficult-to-serve locations, these different initiatives are investigating novel systems and techniques to ensure that satellite systems will play a role in providing the expected Broadband QoE in the un- and under-served EU areas.

Exhibition stand 8: ABSOLUTE (Aerial Base Stations with Opportunistic Links for Unexpected & Temporary Events) aims to provide a rapidly deployable network to provide broadband services. The most important elements that ABSOLUTE will pioneer are:

- 3GPP Long Term Evolution – Advanced (LTE-A) base station embedded in Low Altitude Platform (LAP) enabling wide coverage for broadband services.
- Portable land mobile base stations interoperable with conventional Public Safety (PS) networks.
- Advanced multi-service professional terminals for first responders.
- The usage of satellite communications for both broadband backhauling as well as narrowband ubiquitous messaging services.

Exhibition stand 9: SELECT is a research project carried out with financial support from the Seventh Framework Program (GA.257544). The objective of SELECT is the design of a cheap, smart wireless network composed of several wireless cooperating microsystems where detection, identification, and location/tracking of objects are integrated, going beyond the limitation of the existing techniques for automatic identification (AutoID) and Real Time Location Systems (RTLS). The focus of SELECT is in the area of intelligent transportation and intelligent manufacturing, with special focus on Supply Chain Management (SCM). Envisioned technologies to overcome existing limitations include radio frequency identification (RFID), ultra-wideband (UWB) radio and radar, as well as real-time data fusion. SELECT uses backscattered UWB radio signaling in the uplink communication from the tag, enabling the creation of low-cost tags, and UHF as a glue technology for the integration with standard RFID technologies. The Consortium is composed of research institutes (Armines, CEA-LETI, CEIT, CNIT, Fraunhofer IIS) as well as industrial partners (Datalogic, Iskra, Novelda). The project is coordinated by Datalogic, a worldwide leader in Automatic Data Capture and Industrial Automation markets.

Exhibition stand 10: The European Laboratory of Wireless Communications for the Future Internet addresses two separate goals: on one hand it aims at supporting industries, providing an *Open Platform for Innovation*; on the other it fosters a new generation of scientists willing to perform research through both theoretical and experimental approaches, under the motto *"Fundamental Research Through Experimentation"*. The EuWin facilities are distributed over three sites: at CTTC in Barcelona (Spain), at the University of Bologna (Italy) and at the Eurecom institute in Sophia-Antipolis (France). They are open for access by any scientist worldwide. EuWin is funded by EC through FP7 / the NoE in wireless communications Newcom#, for the first three years of its activity, till October 2015. EuWin addresses topics and techniques related to the systems and networks that will drive the evolution of wireless communications in the years to come: LTE/4G, the Internet of Things, GNSS. Digital signal processing, radio access and network protocol aspects, are studied through the available lab facilities.

Exhibition stand 11: iCore is an EU FP7 collaborative project that aims to address some of the key challenges posed by an increasingly widespread Internet of Things. In particular the project produced solutions on how to deal with the technological heterogeneity of vast amounts of connected objects and how to make these more autonomous over time and ensure they can progressively exhibit so called self-x capabilities. The project results therefore contribute features that, following an IoT service request, enable the automated selection of objects, facilitate discovery and reuse of objects beyond context for which they were deployed, and leverage on the use of cognitive technologies to adapt resulting IoT applications according to the various situational context in which these are bootstrapped and / or executed.

Exhibition stand 12: Today the Telco industry fails to seize the vast commercial potential of cloud computing, and this, oddly enough, in view of the inherent reliance on communications for cloud access. Instead, cloud computing catalyses the pressure on networking. Mobile Cloud Computing lacks an accepted definition. This poses a unique opportunity for Europe. The top-level objective of Mobile Cloud Networking is to seize this opportunity. It will leverage on Europe's excellence in mobile communications and extend it into the cloud arena, which is almost exclusively in the hands of US companies. Mobile Cloud Networking project will define and evaluate Europe's vision of mobile cloud computing. It will enable European Telco industry to take and sustain leadership in mobile cloud computing and thus a fundamental pillar of the Future Internet. One issue is that cloud computing is an invention of the software industry and frequently not well understood by Telco experts. Meanwhile cloud is too often turned into a buzzword to prettify old ideas, which rightfully poses questions on any cloud proposal. It is therefore important to understand the distinct concepts, both technological and economical, of Cloud Computing in order to penetrate the innovative vision of Mobile Cloud Networking, which establishes a sound vision driven by technological concepts and business drivers, clearly beyond the combination of two buzzwords. The top-most motivations of the Mobile Cloud Networking project are to:

- Extend the Concept of Cloud Computing beyond data centres towards the Mobile End-User (as shown in the figure below)
- One Service (atomic): Mobile Network + Computing + Storage
- On-Demand, Elastic, and Pay-As-You-Go
- Enable a Novel Business Actor, the Mobile Cloud Provider
- The Mobile Network Architecture for Exploiting and Supporting Cloud Computing
- Deliver and Exploit the Concept of an End-to-End Mobile Cloud for Novel Applications

Exhibition stand 13: Autonomic Network Management (ANM) and Software Defined Networking (SDN) have appeared as promising technologies for simplifying the management and control of today's highly interconnected and complex networks. Although it seems that there is a strong link among these two technologies that can result in an efficient and useful interplay, consistent justification and positioning is still missing in the existing literature and industrial/research studies. We indent to extend the GÉANT testbed towards an AUTOnomic openFLOW (AUTOFLOW) facility and perform focused research and experimentation in order to demystify this relationship and showcase that SDN/OpenFlow capabilities can bring "customizable ANM" into reality.

Exhibition stand 14: OneSource Consultoria Informática Lda. (ONE) is a Portuguese SME specialized in the areas of data communications, security, networking and systems management, including the consultancy, auditing, design, development and lifetime administration of specialized IT solutions for corporate networks, public-sector institutions, utilities and telecommunications operators. OneSource is a start-up and technological spin-of the Instituto Pedro Nunes, a non-profit private organization for innovation and technology transfer between the University of Coimbra and the industry and business sectors. Faithful to its origins, OneSource keeps a strong involvement in R&D activities, participating in joint research projects with academic institutions and industrial partners, in order to be able to provide its customers with state-of-art services and solutions.

The advancements in software engineering impacting communication technologies have recently leaded to the revelation of the need for a synthetic research approach in the area of software engineering and its applications in mobile services, pervasive and ubiquitous computing, reconfigurable systems, autonomic computing and communications. Autonomic and Self-Managing Networks is emerging as a significant strategic and holistic approach to the design of object oriented, computer-based systems and communications. Its goal is the production of systems that are self-managing through key aspects such as self-configuring, self-healing, self-protecting and self-optimizing, in effect bringing pre-emptive and proactive approaches to all areas of computer-based systems and networks. SCA-Networking is a new and pioneering Lab focusing on software based autonomic and reconfigurable systems in the Dept. of Informatics and Telecommunications. The SCA-Networking Lab (Software Centric & Autonomic Networking) will operate under the supervision of the Professor Nancy Alonistioti.

Exhibition stand 15: METIS (*Mobile and wireless communications Enablers for the Twenty-twenty Information Society,* ICT-317669) is the EU flagship 5G project with the objective of laying the foundation for 5G systems and building consensus prior to standardization. The project is developing a system concept to fulfil the requirements of the beyond-2020 connected information society and to extend today's wireless communication systems for new usage scenarios. In this framework, based on two available hardware/software platforms, a test-bed activity is conducted in order to provide a proof-of-concept of few selected key technology components illustarting some of the many defined new chanllenges and functionalities.

Exhibition stand 16: CONCERTO main objective is to provide the necessary technology to enable a wider use of telemedicine applications, as well as the support of innovative applications in the field. The project is studying and designing a new media delivery platform, even for emergency contexts on the move, to overcome the current technical limitations still addressing the medical contents peculiarities. The solutions developed in CONCERTO are expected to have a fundamental impact to the progress of telemedicine applications. CONCERTO will offer the possibility to physicians, patients or, more generally, individuals, to capture media content, send it wirelessly with the required guarantees and navigate through it thus improving remote assistance. Currently, CONCERTO pject has submitted more than 30 standard contributions and generated eight patent applications going from wireless transmissions to image and video coding.

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Exhibition stand 17: Bologna University will be present at the EuCNC 23rd edition for the whole duration of the exhibition in the Hall area. The great experience of Bologna University on networks and communications will be exposed through several demonstration kits, prototypes and actual results reached in a relevant number of European and national funded projects. Two demonstrations activities will be turning every half day by our research groups. Research activities and results that will be presented during the exhibition include: , SUPREME - A New Non-invasive Measurement Wireless Network for Electrical Parameters and Power Quality is a novel Wireless Smart Meter Network for Non-Intrusive monitoring energy usage in different kind of commercial and residential buildings, STEM-NET: Self-Organizing Mobile Cognitive Radio Networks for Disaster Recovery Operations: investigated the possibility to realize a novel generation of wireless devices -called Stem Nodes (SNs) to emphasize their similarity with the biological counterparts- which are able to autonomously re-configure in order to assume multiple network roles, on the basis of specific system requirements and needs, Planning electric mobility in urban scenarios: an urban traffic simulation framework reproduces dynamic aspects of electric vehicles (EVs), charging stations and associated services. Communication between EV sand charging stations are modeled by an event-based simulator. A semantic information broker enables any simulated EV to access a service platform and interact with mobile applications, The MIROR Platform: an advanced system for young children music and dance education, based on the paradigm of "reflexive interaction", ParticipAct: an UNIBO project aimed at studying the still under-explored potential of collaboration among people exploiting smartphones as interaction tool and interconnection medium, Intelligent tutoring system for gait rehabilitation of Parkinsonian patients via inertial sensors and audio-biofeedback, Self-organisation for smart-devices: this demonstrator focusses on the potentials of self-organisation techniques when applied at large scale on pervasive computing devices, Robust and easy to deploy wireless sensor networks for landslides integrated monitoring: we show a wireless sensor network (WSN), designed for landslides monitoring, Wireless technologies for indoor localization and imaging: a wireless network of smart nodes permits to perform short range localization and imaging by jointly exploiting ultra-wideband radio signals and multi-static ultrasound sonar.

METIS

Exhibition stand 18: METIS (*Mobile and wireless communications Enablers for the Twenty-twenty Information Society,* ICT-317669) is the EU flagship 5G project with the objective of laying the foundation for 5G systems and building consensus prior to standardization. The project is developing a system concept to fulfil the requirements of the beyond-2020 connected information society and to extend today's wireless communication systems for new usage scenarios. In this framework, based on two available hardware/software platforms, a test-bed activity is conducted in order to provide a proof-of-concept of few selected key technology components illustrating some of the many defined new challenges and functionalities. This demonstration is designed by Department of Communications and Networking (Comnet) from Aalto University (Finland). The demonstration illustrates Device to Device (D2D) communication operating under control of a LTE Base station.

CREW

Exhibition stand 19: The main target of FP7 project CREW (http://www.crew-project.eu) is to establish an open federated test platform, which facilitates experimentally-driven research on advanced spectrum sensing, cognitive radio and cognitive networking strategies in view of horizontal and vertical spectrum sharing in licensed and unlicensed bands. The CREW federated platform incorporates 5 individual wireless testbeds incorporating diverse wireless technologies (heterogeneous ISM, heterogeneous licensed, cellular, wireless sensor, heterogeneous outdoor) augmented with State-of-the-Art cognitive sensing platforms. The combined expertise, software and hardware that is available in the CREW federated platform allows for experimental optimization and validation of novel cognitive radio and cognitive networking concepts in a diverse range of scenarios, including but not limited to: radio environment sensing for cognitive radio spectrum sharing, horizontal resource sharing between heterogeneous networks in the ISM bands, cooperation in heterogeneous networks in licensed bands, robust cognitive sensor networks, and measuring the impact of cognitive networking on primary cellular systems. Examples of successful experiments using the CREW facilities can be viewed at http://www.crew-project.eu/demos.

Exhibition stand 20: Wireless Networking Laboratory (WNL) is a world-class experimental research environment at the Centre for Wireless Communications (CWC), University of Oulu, Finland. The aim of the laboratory is to provide a straightforward and easily accessible environment for research and development, both nationally and internationally. The main components of the WNL infrastructure builds on Wireless Open-Access Research Platform (WARP) and CWC Wireless Sensor Network (CWC-WSN) systems. The functions of the WNL infrastructure are already utilized in several CWC's projects. The objective is to allow efficient demonstration and evaluation of algorithms and technologies on all OSI layers and to provide a flexible platform for interoperability and capacity-related measurements.

Exhibition stand 21: FP7 LIGHTNESS (http://www.ict-lightness.eu/) has the objective to design, implement and experimentally demonstrate a high-performance all-optical hybrid DCN infrastructure for future data centers. Optical switching technologies based on space, time, and wavelength multiplexing can implement fast reconfiguration and large port count switches. Harnessing the power of optics is expected to enable data centres to effectively cope with the emerging requirements of cloud, high performance computing, and distributed applications. An SDN-based unified network control plane on top of the hybrid optical flat fabric is conceived to offer to the data centre management dedicated dynamic and flexible procedures to provision and re-configure the data centre network resources.

Exhibition stand 22: The project aims at building and managing heterogeneous Internet of Things Networks where involved Actors (e.g., users through their mobile devices) and Smart Objects automatically and without any configuration can connect/disconnect to and from the network, discover other "things", and consume data and services, through the use of standard and shared protocols, in order to implement a target behavior or reach the application goal. The demo shows an application scenario for real-time monitoring of dynamic environment where Smart Objects may join or leave abruptly and transparently and automatically interact with the environment and with the active users. The demo involves:
- Heterogenous Smart objects involving Arduino, Contiki-based devices and Linux-based Single board computers
- Multi Application-Layer protocols management (e.g., CoAP and HTTP)
- Service discovery procedures in local networks and distributed overlays
- IoT Hub implementation with Protocol Translation (HTTP & CoAP); Resource Directory; Proxy functionalities.

Exhibition stand 23: SUNRISE is an FP7 FIRE Integrated Project addressing the challenges behind building the **Internet of Underwater Things**. It is the first project that develops this concept, by combining advancements in underwater robotics and sensing systems, a novel communication paradigm based on the concepts of software defined communication acoustic modem and communication stack. SUNRISE federates three existing underwater testing infrastructures, that will be significantly extended in the project, and two novel testing infrastructure, overall spanning all relevant deployment environments (lakes, Ocean, mediterranean Sea, Black Sea, Canals). It thus provides a large scale, modular, flexible, remotely accessible testing infrastructure for underwater communication and networking so far unavailable world-scale.

Exhibition stand 24: CROWD promotes a paradigm shift in the future Internet architecture towards global network cooperation, dynamic network functionality configuration and fine, on demand, capacity tuning. The project targets very dense heterogeneous wireless access networks and integrated wireless-wired backhaul networks. The CROWD architecture offers the tools to orchestrate the network elements in a way that intra-system interference is mitigated, channel opportunistic transmission/reception techniques can be enabled, and energy efficiency can be boosted. Moreover it accounts for innovative mobility management mechanisms. To achieve optimal performance at all locations at any time, reconfiguration of the network elements is required and to tackle this issue an SDN based approach to network control is proposed.

Exhibition stand 25: iJOIN introduces the novel concept RAN-as-a-Service (RANaaS), where RAN functionality is flexibly centralised through an open IT platform based on a cloud infrastructure. iJOIN aims for a joint design and optimisation of access and backhaul, operation and management algorithms, and architectural elements, integrating small□cells, heterogeneous backhaul and centralised processing. This solution will optimise the RAN system throughput and provide services instantly and efficiently in cost, energy, complexity and latency wherever and whenever the demand arises. Additionally to the development of technology candidates across PHY, MAC, and the network layer, iJOIN will study the requirements, constraints and implications for existing mobile networks, specifically 3GPP LTE□A.

Exhibition stand 26: The rationale for this project stems from the widespread diffusion of smartphones, tablets, and other mobile devices with diverse networking and multimedia capabilities, and the associated blossoming of all kinds of data-hungry multimedia services. The trend of the traffic demand is exponentially increasing, while the improvements at the physical layer are bounded by the famous Shannon theorem and by the fact that the licensed spectrum is a limited and scarce resource. This poses dramatic challenges to mobile telecom operators which are experiencing severe problems in coping with the mobile data traffic generated by their users. Clearly, LTE and LTE advanced will help in reducing the problem, but this is neither sufficient nor cost-efficient to accommodate all the increase in data service demand. The FP7-MOTO project proposes a traffic offloading architecture that exploits in a synergic way a diverse set of offloading schemes, including offloading from cellular to other wireless infrastructures (such as Wi-Fi), and also offloading to multi-hop ad hoc communications between users devices.

Exhibition stand 27: Imagine… An ecosystem of Internet connected devices (smart phones, appliances with intelligence, sensors, etc) offering their functionality as services and then you focus only on adding real value to those services rather than worrying on cost and deploying about the technology. "An Ecosystem of Horizontal services for the Internet of Things where all players are able to select devices and deploy real-time services on demand". OpenIoT is an implemented OPEN SOURCE horizontal platform to enable interoperability between IoT verticals and Data silos for a unified IoT world by getting information from sensor clouds, without worrying what exact sensors are used. By means of Linked Data, Cloud Computing and Autonomic Service Management this demonstration showcase a realistic operative Internet of Things (IoT) Open Source Platform enabling DIY services from world-wide distributed sensors. The demonstration will outline the easy-to-do services creation and deployment for the IoT and the benefits of having IoT registered sensors data in the cloud.

Exhibition stand 28: Huawei Technologies is a leading global ICT solutions provider serving 45/50 of the world top carriers and connecting more than 1/3 of the world population. The Huawei European Research Centre (ERC) consists of more than 800 ICT experts located in Germany, Sweden, Italy, Finland, France, Belgium and UK based on competencies. In 2012, the R&D investment in Europe was approximately €137m (€14m for collaborations with selected EU partners). Since 2006, we have been working on more than 10 EU funded projects with leading EU partners in the ICT sector. Looking at H2020, Huawei will collaborate with government and private sector companies and contribute to crucial technologies, especially, in the field of 5G Wireless, Networks, IoT and Optics, within the 5G Public Private Partnership (PPP) scope and beyond. We will leverage our strong presence of R&D in EU and contribute to test-beds and facilities for a maximal exploitation of results in Europe. Significant effort will be placed in implementing an effective communication plan and in disseminating the attained results.

Exhibition stand 29: European Commission.

Welcome to Bologna

Bologna is a city whose history whispers to the tourists and its citizens while they are walking through its Medieval streets. Famous for its towers (up to 180 in the XII century) and lengthy porticoes (42 Km), Bologna has a well-preserved historical centre, one of the largest and most beautiful in Italy. Many facades, buildings and porticoes date back to the XIV or XV centuries; the most widely known symbols of the city are the "two towers": *Torre Garisenda* and *Torre degli Asinelli*. The latter, built on the XII century, is about 100 mt tall and open to tourists all days; you can climb it and, if you succeed in reaching the top through the internal stairs, you will deserve an amazing view on the city from there! I recommend you to get lost after dinner walking through the narrow streets, visiting *Piazza Maggiore*, *Piazza della Mercanzia*, *Piazza Santo Stefano*, and the narrow alleis around. Don't be afraid: you'll find safely your way back to the hotel in one or another way. Lucio Dalla, one of the most famous Italian pop singers and author of magnificent Italian songs, years ago sang: "… nel centro di Bologna non si perde neanche un bambino …" – "… in the centre of Bologna nobody gets lost, not even a child …".

However, Bologna is much more than a Medieval city. Its traditions, and those of Emilia Romagna, the Region of which Bologna is capital, are strong, and characterise its lifestyle.

Bologna "la grassa" – "the fat". Bologna and Emilia Romagna are famous for their cuisine and gastronomical traditions; *Parmigiano Reggiano*, *Mortadella*, *Aceto Balsamico Tradizionale* and others, are products known at world level, which are native of this Region. You cannot leave Bologna before you try one of its most reknown plates of pasta: *tortellini*, *tagliatelle alla Bolognese*, *lasagne*. Despite many attempts to duplicate them in other parts of the word, the way they taste here, accompanied by a glass of *Sangiovese* wine, has no rivals. There are tens of Restaurants and *Trattorie* in Bologna where you can have an excellent dinner based on traditional cuisine; how to choose? Just ask us! In any case, if you see on the menu *Spaghetti alla Bolognese*, then turn your shoulders and escape – that is a place for tourists, as no one who really loves Bologna would ever offer you spaghetti with meat!

However, the appellation "the fat" is also due to the lifestyle: Bologna is lively, and its citizens love to enjoy life, day and night. There are no better words to describe this characteristics, than those that Francesco Guccini, an artist who knows Bologna from the very heart, dedicated to the city years ago: "Bologna è una vecchia signora dai fianchi un po' molli, col seno sul piano padano ed il culo sui colli" – "Bologna is an old lady, with tender hips, the breast on the flat region and the back on the hills".

Bologna "la dotta" – "the erudite". Bologna is home to Alma Mater Studiorum Università di Bologna, one of the largest Universities in Italy, among the best in all international rankings, the oldest University in the western world (founded in 1088). About 100,000 students populate the city, half of them from outside the Region. They are attracted here because of the lifestyle, and because they know Emilia-Romagna is one of the richest and more productive Regions in Italy, where many important mechanical, automotive (have you ever heard of Ferrari, Ducati, Lamborghini?) electronic and nutritional industries have their headquarters. For this reason the School of Engineering of our University is one of the most prestigious in Italy.

Bologna "la rossa" – "the red". This third traditional appellation is due to the colour of the bricks and the roofs of all historical buildings, and if you look to Bologna from the top of Torre degli Asinelli, you will see how much it is true.

Bologna is, after Milano, Firenze and Rome, one of the best cities in Italy for shopping, with many fashion shops in all parts of the city centre – maybe the most prestigious are under *Galleria Cavour*. In terms of handicraft, the Region is famous worldwide in particular for ceramic; Faenza, a small town close to Bologna, is synonym to high quality ceramics. You can find a nice shop for artistic ceramics at the basement of Torre degli Asinelli.

In summary, there are many ways to spend few days in Bologna, enjoying the city, its cuisine and the friendly atmosphere.

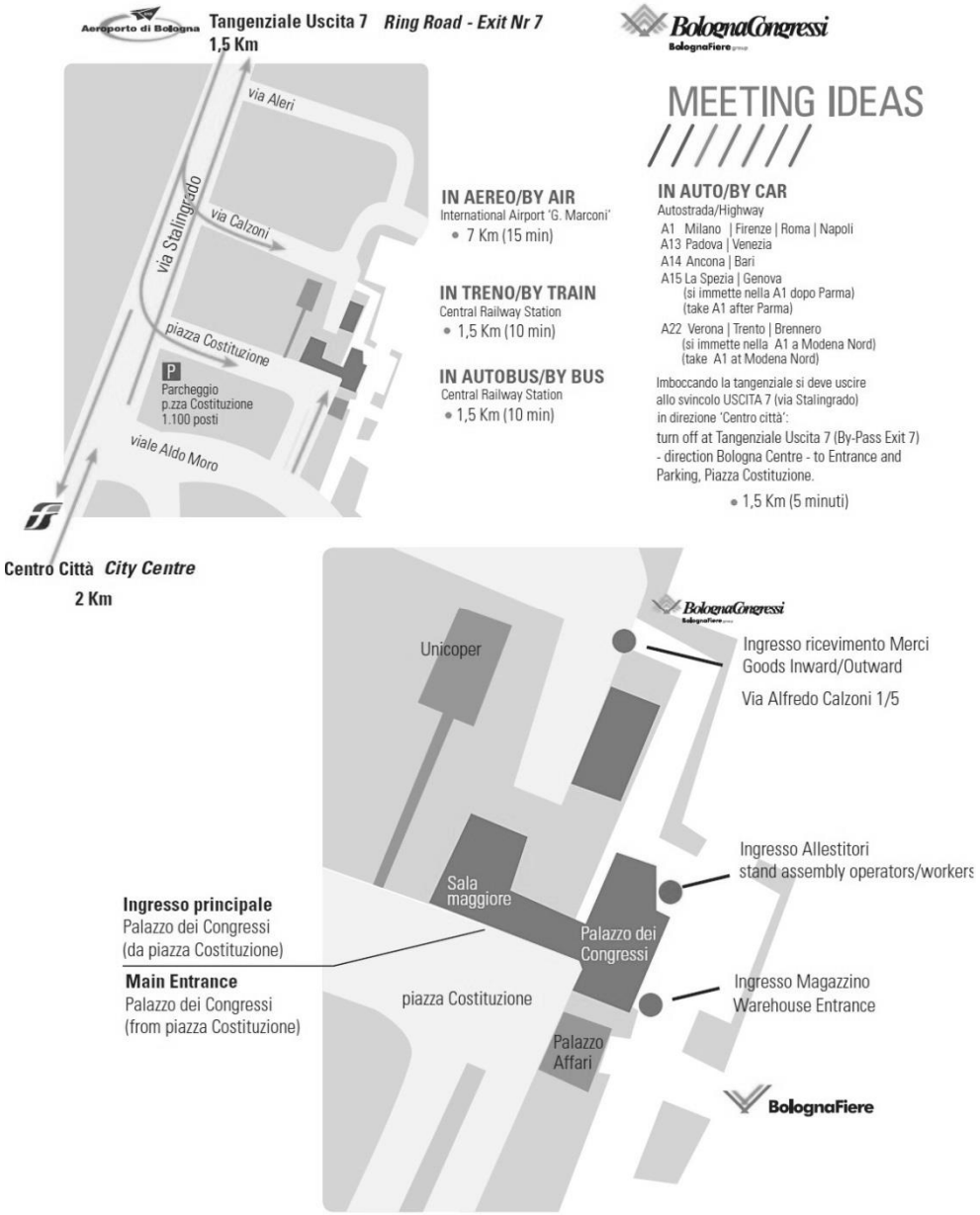
I am sure you will enjoy the city.

Roberto Verdone

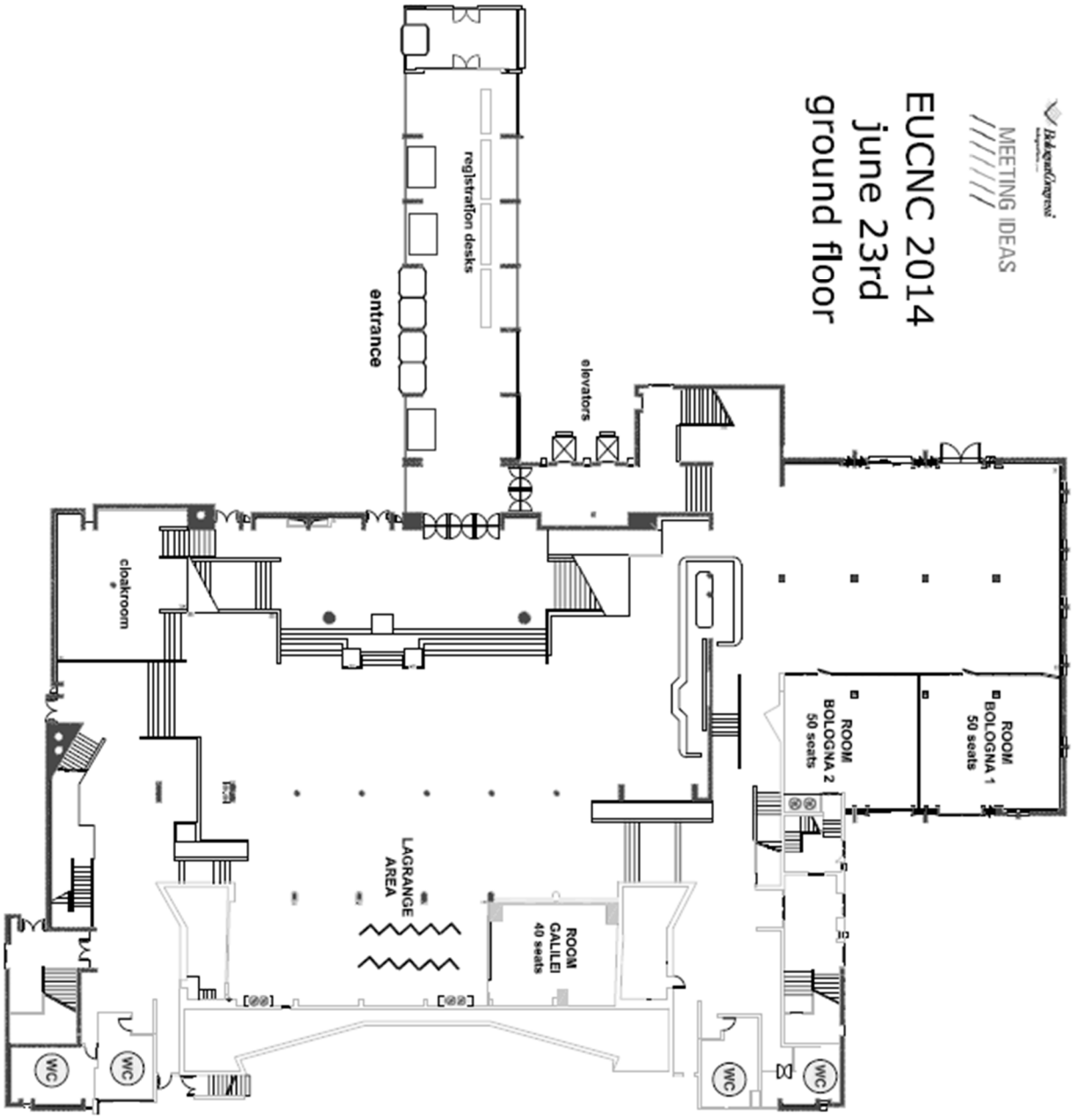
Congress Venue

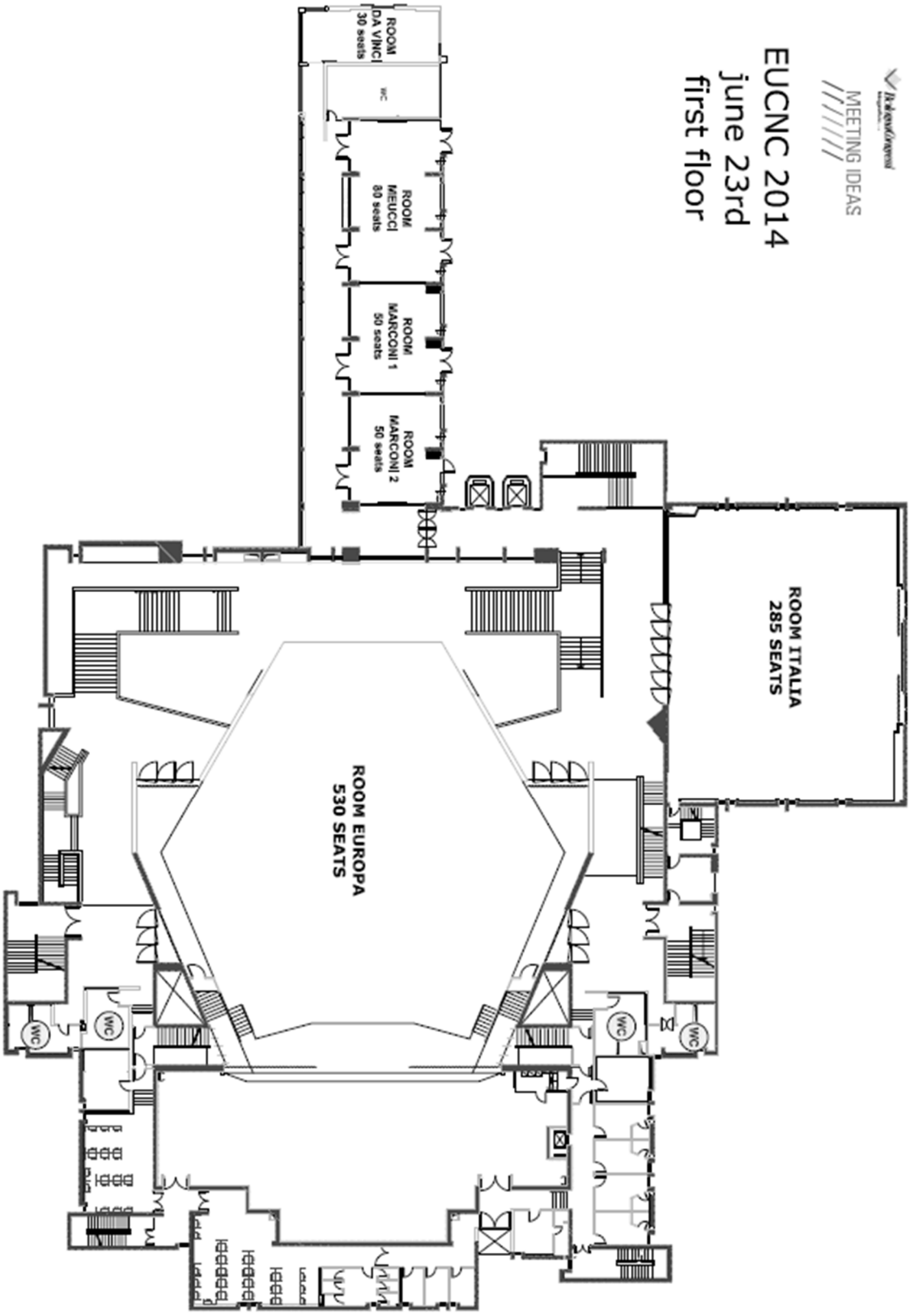
GENERAL INFORMATION

Built in 1975 by architect Melchiorre Bega, it offers a range of meeting rooms, each with the latest amenities and technology, hosting from 20 to 1,350 people.
The Europauditorium is a splendid example of a multi-functional container with a capacity of 530, 850 or 1,350 as required. Characterized by a well-equipped stage and a perfect acoustics, it's a suitable location for quality musical entertainments too.
Extensive foyers provide ample exhibit or other event space.

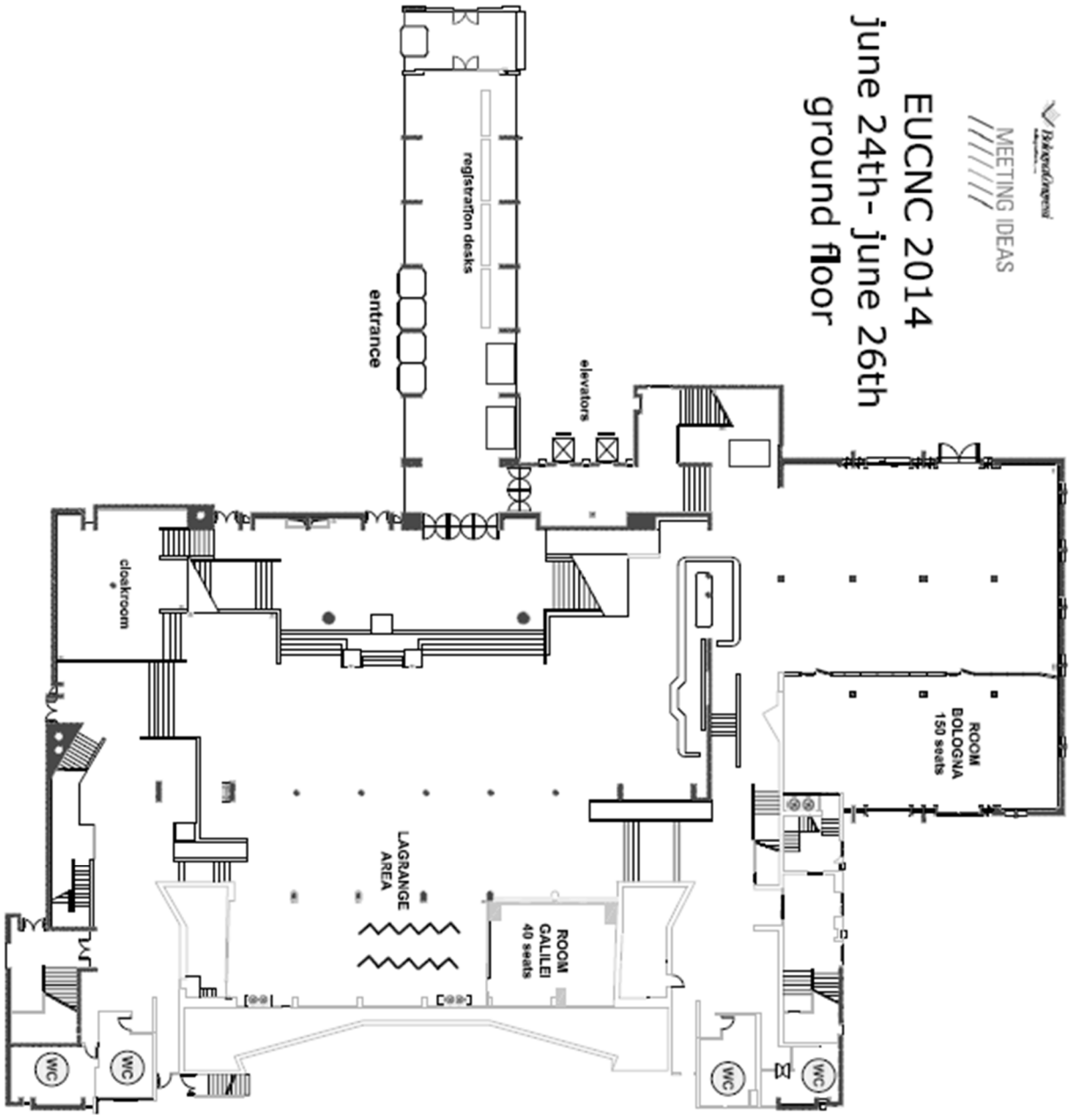


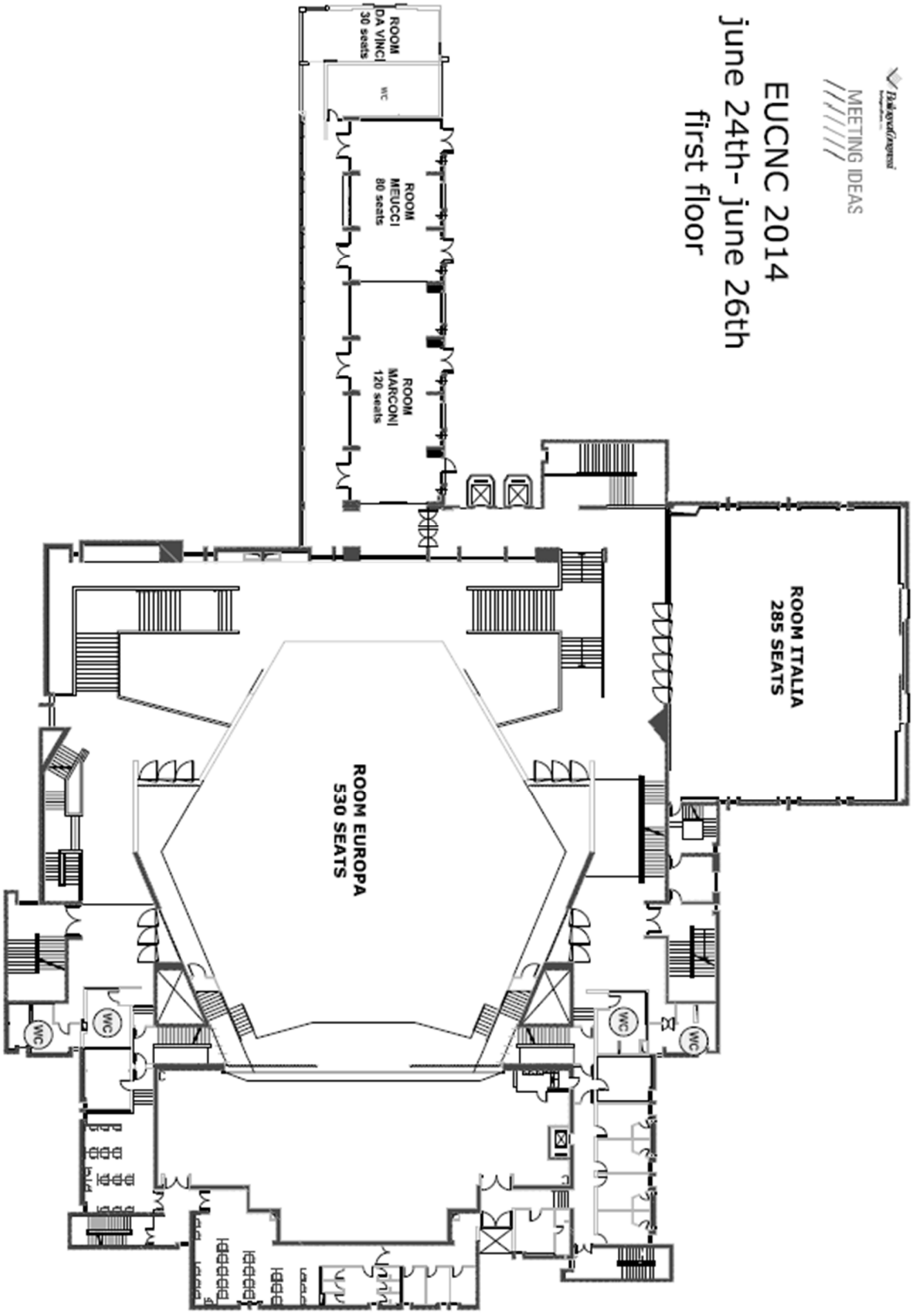
FLOOR PLANS 23 JUNE 2014




EUCNC 2014
june 23rd
first floor
MEETING IDEAS
ROOM DA VINCI 30 seats
ROOM MEUCCI 80 seats
ROOM MARCONI 1 50 seats
ROOM MARCONI 2 50 seats
ROOM ITALIA 285 SEATS
ROOM EUROPA 530 SEATS
WC

FLOOR PLANS 24-25-26 JUNE 2014

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Program

SCHEDULE AT A GLANCE

	Monday 23 June								
	Foyer	Italia	Bologna1	Bologna2	Marconi1	Marconi2	Meucci	Da Vinci	Galilei
08:00/09:00	Registration								
09:00/10:40		W5 - Mobile Cloud Infrastructures and Services	W3 - A Global Perspective [...] for Shaping the 5G Era	W2 - Enablers on the road to 5G	W6 - Test beds for the Networks & Communications	W7 - Fixed-Mobile Convergent Networks	W4 - Management of Large Scale Virtualized Infrastructures	W8 - Advances in Wireless Body Area Networks	T1 - Indoor localization and tracking
10:40/11:10		Coffee (Foyer Europa and Foyer Italia)							
11:10/12:50		W5 - Mobile Cloud Infrastructures and Services	W3 - A Global Perspective [...] for Shaping the 5G Era	W2 - Enablers on the road to 5G	W6 - Test beds for the Networks & Communications	W7 - Fixed-Mobile Convergent Networks	W4 - Management of Large Scale Virtualized Infrastructures	W8 - Advances in Wireless Body Area Networks	T1 - Indoor localization and tracking
12:50/14:00		Lunch (Foyer Europa and Foyer Italia)							
14:00/15:40		W9 - Next Generation Data Center	W3 - A Global Perspective [...] for Shaping the 5G Era	W2 - Enablers on the road to 5G	W10 - Workshop on Radio Access and Spectrum	W12 - Spatially or/and Spectrally Flexible Core Optical Networks	W4 - Management of Large Scale Virtualized Infrastructures	W11 - Fundamental research through experimentation	T2 - The path towards 5G
15:40/16:10		Coffee (Foyer Europa and Foyer Italia)							
16:10/17:50		W9 - Next Generation Data Center	W3 - A Global Perspective [...] for Shaping the 5G Era	W2 - Enablers on the road to 5G	W10 - Workshop on Radio Access and Spectrum	W12 - Spatially or/and Spectrally Flexible Core Optical Networks	W4 - Management of Large Scale Virtualized Infrastructures	W11 - Fundamental research through experimentation	T2 - The path towards 5G

		Tuesday 24 June				
	Foyer	**Europa**	**Italia**	**Bologna**	**Marconi**	**Meucci**
08:00/09:00	Registration and Exhibition stands					
09:00/09:40		Opening (Europa)				
09:40/10:20		Keynote 1 - On the Advanced 5G Infrastructure for the Future Internet in Horizon 2020 and Beyond (Europa)				
10:20/11:00		Keynote 2 - 5G Mobile Communications for 2020 and Beyond – Vision and Key Enabling Technologies (Europa)				
11:00/11:30		Coffee (Foyer Europa and Foyer Italia)				
11:30/13:00		TuM1 - 5G Architectures and Enablers	TuM2 - Multi-carrier modulations	TuM3 - Wireless Scheduling and Dimensioning	TuM4 - Fundamental limits of wireless networks	TuM5 - Virtualising the Network
13:00/14:00		Lunch (Foyer Europa and Foyer Italia)				
14:00/14:45		TuP - Physical Layer and Wireless Networks (Lagrange)				
14:45/16:15		Panel 1 - On the 5G research, innovation and collaboration frameworks looking at a global agreement				
16:15/16:45		Coffee (Foyer Europa and Foyer Italia)				
16:45/18:15		TuA1 - Advanced Wireless Access	TuA2 - Signal processing and Estimation	TuA3 - Advanced optical systems and access networks	TuA4 - Intelligence in 5G: Trends & Challenges	TuA5 - Advanced techniques for […] efficient communications
18:15/19:30		Welcome reception (Foyer Europa and Foyer Italia)				
		Wednesday 25 June				
	Foyer	**Europa**	**Italia**	**Bologna**	**Marconi**	**Meucci**
08:00/09:00	Registration and Exhibition stands					
09:00/09:40		Keynote 3 - The "SuperNetwork" of Networks, Data Centers and End User Devices: an olistic view (Europa)				
09:40/10:20		Keynote 4 - Looking ahead to 5G – A symbiotic convergence of new and existing technologies (Europa)				
10:20/11:00		Keynote 5 - 5G: The Software Network and Virtualization Opportunities (Europa)				
11:00/11:30		Coffee (Foyer Europa and Foyer Italia)				
11:30/13:00		WeM1 - Energy Aware Design	WeM2 - Testbeds and Experimental Research	WeM3 - Applications, Services and Networks	WeM4 - Opportunistic and cooperative communications	WeM5 - Software defined photonics in data center networks
13:00/14:00		Lunch (Foyer Europa and Foyer Italia)				
14:00/14:45		WeP - Networks and Applications (Lagrange)				
14:45/16:15		Panel 2 - On the Advanced Cloud Infrastructures and Services				
16:15/16:45		Coffee (Foyer Europa and Foyer Italia)				
16:45/18:15		WeA1 - Interference Aware Design	WeA2 - Cooperative wireless networks	WeA3 - Advanced architectures […] for optical networks	WeA4 - Virtualised Networks	WeA5 - Spectrum Management Strategies
20:00/23:00		Conference Banquet (Palazzo Re Enzo)				
		Thursday 26 June				
	Foyer	**Europa**	**Italia**	**Bologna**	**Marconi**	**Meucci**
08:00/09:00	Registration and Exhibition stands					
09:00/10:30		ThM1 - Wireless Algorithms and Platforms	ThM2 - Content Networking	ThM3 - IoT and Cloud-Based Services	ThM4 - Experimental research activities in Newcom#'s EuWIn labs	ThM5 - Recent advances in […] radio channel characterization
10:30/11:00		Coffee (Foyer Europa and Foyer Italia)				
11:00/12:30		Panel 3 - E^{4}Connect - Everything Everywhere Every-time Every-path Connect - Internet of Things and Platforms for Connected Smart Objects				
12:30/13:00		Closing (Europa)				
13:00/14:15		Lunch (Foyer Europa and Foyer Italia)				
14:15/17:00		W1 - The 5G PPP: Vision and Opportunities (Europa)				

OPENING PLENARY

TUESDAY, 24 JUNE 2014, 09:00-09:40, ROOM EUROPA
MARIO CAMPOLARGO, EC
ANTONIO MANZALINI, TELECOM ITALIA

Welcome Address, Antonio Manzalini (Telecom Italia)

Opening Address, Mario Campolargo (EC)

CLOSING PLENARY

THURSDAY, 26 JUNE 2014, 12:30-13:00, ROOM EUROPA
THIBAUT KLEINER, EC

Horizon 2020: Latest News and Next Steps, Thibaut Kleiner (EC)

KEYNOTE SPEAKERS

KEYNOTE 1: ON THE ADVANCED 5G INFRASTRUCTURE FOR THE FUTURE INTERNET IN HORIZON 2020 AND BEYOND

TUESDAY, 24 JUNE 2014, 09:40-10:20, ROOM EUROPA

WEN TONG, WIRELESS CTO, HUAWEI

Dr. Wen Tong is the CTO of Huawei Wireless, and Vice President of Huawei Canada R&D Center. Prior to joining Huawei in March 2009, Dr. Wen Tong was the Nortel Fellow and global Head of the Network Technology Labs at Nortel. He received the M.Sc and Ph.D degrees in Electrical Engineering in 1986 and 1993 and joined the Wireless Technology Labs at Bell Northern Research in 1995. He has pioneered fundamental technologies in wireless with 160 granted US patents and more than 200 patents filings. Dr. Tong has conducted the advanced research work spanning from 1G to 4G wireless at Nortel. From 1997 to 1999, he was the industry leader to create the 3G/4G foundational technologies and the framework for 3G/4G standards. From 1998 to 2006, he had been a driving force in developing foundational technologies for all the 4G wireless networks–OFDM-MIMO. At Nortel, Dr. Tong had been the director of Wireless Technology Labs from 2005 to 2007. He was twice-winner of Nortel Technology Excellent Award (highest R&D award). Since 2007, Dr. Tong was the head of Network Technology Labs, responsible for Nortel's global strategic technologies research and development in wireless RAN, advanced RF and antenna technologies, high performance IP routing, and enterprise networking. He was member of Nortel Executive Edge team. In 2007, Dr. Tong was inducted as Nortel Fellow, a lifetime honor bestowed to selected 5 individuals in Nortel's R&D community in Nortel's 114 years history. Dr. Tong was Nortel's Most Prolific Inventor and the creator of Nortel LTE patent portfolio which is valued at 4.5 Billion USD in an unprecedented IPR auction history. Since 2009, Dr. Tong is the vice president of Huawei wireless research; he is responsible to build the global research capability centers (5 China sites, 3 US sites, 1 Canada site, 1 Sweden site, 1 Russia site) with 1,200 research experts. He is accountable for advanced algorithms development, network planning and performance optimizations, DSP/ASIC chip development and 3GPP/IEEE/IETF standards, leading the largest wireless research organization in the industry. Since 2011, Dr. Tong is appointed the Head of Communications Technologies Labs of Huawei, a corporative centralized next generation research initiatives, which covers cloud computing based mobile broadband, all-photonic switching networking, E-band microwave, SDN/NFV networking, next generation base-station technologies, data-center networking, DSP/CPU core development, wireless and packet processor development. He also has the accountability to lead Huawei's 5G wireless development for the next decade. In 2011, Dr. Tong was elected as Huawei Fellow (Huawei has 6 Technical Fellows in its 24 years history) and the chair of the Huawei wireless technology investment/review committee. Dr. Tong serves as Board of Director of WiFi Alliance and Board of Director of Green Touch Consortium. During 2008-2011, Dr. Tong served at Canadian NSERC Discovery Grant Committee. In February 2009, Dr. Tong created Huawei Canada R&D Center at Ottawa (with 150 world leading experts). Currently, Dr. Tong is based in Ottawa.

Abstract

The speech will present the Huawei view on the main challenges and opportunities in supplying and deploying the future 5G network infrastructures, in alignment with real needs of a renewed industrial landscape. As a part of this framework, the talk will touch upon the new technical challenges of the advanced 5G infrastructure in meeting the fundamental requirements, such as: 1) 1000x capacity increase; 2) Capabilities of interconnecting trillions of devices, giving a global market opportunity on telecom infrastructures of 1 billion of hyper-connected nodes; 3) Utilization and exploitation of all spectra below visible light, flexibly. Special focus will be placed on the new technology enablers for delay-critical, ultra reliable, secure, privacy preserving, and dependable connectivity services to cognitive objects, such as cars, robots, drones and cyber physical systems, with and without network assistance.

KEYNOTE 2: 5G MOBILE COMMUNICATIONS FOR 2020 AND BEYOND – VISION AND KEY ENABLING TECHNOLOGIES

TUESDAY, 24 JUNE 2014, 10:20-11:00, ROOM EUROPA

WONIL ROH, PH.D., VICE PRESIDENT, DMC R&D CENTER, SAMSUNG ELECTRONICS, KOREA

Dr. Roh is currently a Vice President and Head of Advanced Communications Lab at Samsung Electronics Corp in Korea, responsible for research of next generation mobile communications technologies. He started working at Samsung Electronics in 2003 in research and development of CDMA and Mobile WiMAX base-stations with the main focus on multi-antenna algorithms and system analysis. Then he led overall WiMAX standard activities and strategy in Samsung including IEEE, the WiMAX Forum and ITU-R, and served as Chair of Technical Working Group (TWG) of the WiMAX Forum from 2006 to 2011. Since 2011, he has been leading research efforts for the next generation cellular (Beyond 4G or 5G) technologies at DMC R&D Center with a focus on development of disruptive technologies and feasibility studies. Dr. Roh holds a Doctorate in Electrical Engineering at Stanford University in USA.

Abstract

The race to search for innovative solutions to enable the Next Generation Mobile Communications (5G era) has recently begun worldwide. In early 2013, the European Commission announced that it would invest €50 million in 2013 for 5G research in multiple projects such as METIS, quickly followed by the formation of the Chinese Government-led IMT-2020 Promotion Group in February 2013, the initiation of the Korean Government-led 5G Forum in May 2013, and the formation of 2020 and Beyond Ad-hoc within ARIB (Association of Radio Industries and Businesses), Japan, in October, 2013. Recently the European Commission also announced that it would invest €700 million to 5G research through Horizon 2020 program. While the standardization of 5G specifications in standards bodies such as the Third Generation Partnership Project (3GPP) and the formal ratification of 5G standards by the International Telecommunication Union (ITU) are still several years away, many share the vision of targeting 2020 for the initial commercialization of 5G cellular with drastically enhanced user experience.

This talk presents the vision, requirements, and the key technologies envisaged for the 5G mobile communications in 2020 and beyond era. The requirements emerged for the 5G era include massive capacity with order of magnitude data rate improvement as well as uniform Gbps experience, reduced latency for delay sensitive services, massive connectivity supporting innumerable simultaneous connections, and all these demands with energy efficient as well as cost effective solutions. The talk will put forth a few key technologies ranging from air technologies and network design to services along with the recent R&D achievements proving the feasibility of the proposed technologies and showing a bright prospect of 5G.

KEYNOTE 3: THE "SUPERNETWORK" OF NETWORKS, DATA CENTERS AND END USER DEVICES: AN OLISTIC VIEW

WEDNESDAY, 25 JUNE 2014, 09:00-09:40, ROOM EUROPA

GABRIELE ELIA, HEAD OF FUTURE INTERNET TRAILS, TELECOM ITALIA

Gabriele Elia manages the Future Internet Technologies research group on service evolution at the *Innovation* Department of Telecom Italia. Gabriele's interests are about fast prototyping and research on Mobile Internet and Internet of Things from the point of view of roles and opportunity of the telecom operator. Topics are *context awareness*, *wireless sensor networks* e *service robotics* , *smart grid*, *smart cities e assisted living*, *internet of things and people*, *semantic web*, *social and local media*. A specific attention is given to a "interaction design driven" approach to service definition. Gabriele worked on internet services research and innovation since joining CSELT, the formed R&D department of Telecom Italia, in the early '90s and has been involved in a number of innovative IPs project among which the launch Telecom Online and TIN.IT in middle '90, the launch of ADSL services, IPTV and Mobile TV. He received a Master Degree in Electronical Engineering and a PhD in Computer Science and Systems Engineering at Politecnico di Torino.

Abstract

Networks, both for connecting people and things, are part of a ecosystem that gives and takes from computing (cloud, datacentes) and end user devices. Actually, we can call "SuperNetwork" the combination of networks and computing and devices.

If we take a 10.000 feet view, worldwide investments in these three segments are surprisingly comparable. The commercial life of these segments are anyway quite different, and this should be taken in consideration to try to understand future network evolution. Technologies Factores, Users and Human Factores, Finances and Business Models, Regulations at local and global level and the capability of attracting and managing Talents and Professionals are all equally important in networks and supernetwork evolution but are playing with different forces. We will try to find some possibilities of thing to future evolution from this scenario.

KEYNOTE 4: LOOKING AHEAD TO 5G – A SYMBIOTIC CONVERGENCE OF NEW AND EXISTING TECHNOLOGIES

WEDNESDAY, 25 JUNE 2014, 09:40-10:20, ROOM EUROPA

HOSSEIN MOIIN, EXECUTIVE VICE PRESIDENT, TECHNOLOGY AND INNOVATION, NOKIA

Hossein has over 25 years of international experience in the Information Technology and telecommunications industries with proven expertise in driving technology strategy and architecture to ensure growth and profitability. He is known to have an in-depth understanding of the business context of the ICT sector, bringing a high level of customer focus and innovation to Nokia Solutions and Networks. Hossein joined Nokia Siemens Networks from British Telecom in 2010. During his extensive career, he has worked in several leading companies in leadership roles in Europe, Asia and the United States. As an active consultant, Hossein has been a Board Member of several technology startup companies. Furthermore, he has served as an investment or strategy advisor in leading firms across the globe. Hossein holds a Ph.D, Master of Science, and Bachelor of Science degrees in Electrical and Computer Engineering from the University of California, Santa Barbara. He was born in1964 in Tehran, Iran, and holds both Italian and Iranian citizenship. He has two sons. In his spare time, he enjoys skiing, reading, watching films and spending time with his family.

Abstract

5G will be a platform for innovation, which allows others to innovate and apply 5G to improve life, business and our society. It will support all industry sectors, every vertical, every human, every machine and every thing. This results in challenging requirements in terms of higher system capacity, very low latency, e.g. for the tactile Internet, very high throughput values, a high diversity of services including IoT, M2M and a more consistent experience. The 5G architecture will integrate novel and legacy technologies by means of Hetnet RAN, Cloud enhanced RAN and SW defined data centers as a symbiotic convergence of new and existing technologies. Therefore, 5G will combine next generation a wide area scalable service experience anytime and everywhere with ultra dense deployments and nearly zero latency and GB experience – when and where it matters. Collaboration with the IT/Internet world, industry verticals, policy makers and academia on research, standardization and spectrum allocation will be a key success factor.

KEYNOTE 5: 5G: THE SOFTWARE NETWORK AND VIRTUALIZATION OPPORTUNITIES

WEDNESDAY, 25 JUNE 2014, 10:20-11:00, ROOM EUROPA

JEAN-LUC BEYLAT, PRESIDENT BELL LABS FRANCE & VP EUROPEAN PROGRAMS BELL LABS, ALCATEL LUCENT

Jean-Luc Beylat is the current President of Alcatel-Lucent Bell Labs France, Chairman of the Business Cluster for Systematic Paris–Region and President of the French Association for Competitivity Clusters. Jean-Luc first joined Alcatel in 1984 and worked on semiconductor lasers. In 1992 he launched various activities concerning WDM transmission. In 1996 he was named as Director of Systems Departments and Optical Networks at Alcatel's research centre. In 2000, he joined Alcatel Optic as Programme Director then as Vice President for network solutions. Jean-Luc holds a PhD on semi-conductor lasers and their application, awarded by The University of Pierre Marie Curie (UPMC, France).

Abstract

5G is not only about speed, new air interface, enabling M2M… It is about improving the performance for the consumer, enabling new types of applications and terminals and making the network more agile and optimum for each application. SDN and NFV promise many benefits and will revolutionize the way telecommunications networks are built and operated. Service providers will use virtualized networking and cloud technologies to automate many aspects of operations and management. They will meet the needs of the telecommunications market through faster service introduction, automated scaling of resources and the ability to continuously optimize resource allocation based on the results of sophisticated analytics-based algorithms. NFV and SDN are expected to create an environment that enables new business models and services, increased innovation, and prompts new vendors to enter the telecommunications market place. This will result in NFV creating new ways to monetize telecommunications infrastructure. This key note speech will address the expected benefits and also the technical and business challenges to be overcome for the future 5G Infrastructure.

PANELS

PANEL 1: ON THE 5G RESEARCH, INNOVATION AND COLLABORATION FRAMEWORKS LOOKING AT A GLOBAL AGREEMENT

TUESDAY, 24 JUNE 2014, 14:45-16:15, ROOM EUROPA

ORGANIZER: DAVID SOLDANI, VP HUAWEI EUROPEAN RESEARCH CENTRE (ERC) AND HEAD OF CENTRAL RESEARCH INSTITUTE AT ERC, GERMANY

Title

On the 5G research, innovation and collaboration frameworks looking at a global agreement:: A global perspective of the business priorities, opportunities, fundamental challenges, key enabling technologies and instruments for making the Advanced 5G Infrastructure a reality with the maximal level of stakeholders' consensus

Panelists

Rahim Tafazolli (5G IC Director, University of Surrey, United Kingdom)
Werner Mohr (NSN, Chair of the 5G IA, Germany)
Takaharu Nakamura (Fujitsu, Sub-Leader of RIB 2020 and Beyond AdHoc., Japan)
Hyeon Woo Lee, (Chair of a subcommittee, 5G Forum, Korea)

Moderator

David Soldani, VP Huawei European Research Centre (ERC) and Head of Central Research Institute at ERC, Germany

Several initiatives on 5G are currently ongoing globally, namely: 5GPPP in Europe, 863 in China, 5G IC in the UK, Korea, Japan, etc. This panel aims at addressing the fundamental business aspects and benefits for a global adoption and market uptake of 5G technologies, thus enabling a sustainable business ecosystem in the future. The speakers from different regions will present their views on the business viability of 5G Networks and Services, opportunities offered by international collaboration between ongoing research and innovation frameworks, what needs to be necessarily regulated, standardized, and provide answers to some of the following fundamental questions. Beyond this, the distinguished speakers will address the main obstacles and barriers to meet current and future wide range of requirements, such as: "Verticals" needs; true ubiquitous "ABC" access; restless pressure on bandwidth; spectrum crunch; complex traffic – usage patterns; cloud computing reshaping the networks; complex/common management; security; energy consumption, etc. Last, but not least, the panellists will share their views on the new technology enablers of the advance 5G infrastructure, beyond the scope of current standardization working items, to support the following requirements, but not limited to: 1) D2X and M2X communications; 2) 1000 times wireless area capacity with wider varied service capabilities; 3) Saving up to 90% of energy per service provided; 4) Reducing service creation time from 90 h to 90 min on average; 5) Very dense deployments; 6) Secure, reliable and dependable Internet with a "zero perceived" downtime for services provision.

PANEL 2: ON THE ADVANCED CLOUD INFRASTRUCTURES AND SERVICES

WEDNESDAY, 25 JUNE 2014, 14:45-16:15, ROOM EUROPA

ORGANIZER: JOHANNES PRADE, PRINCIPLE TECHNOLOGIST, NOKIA NETWORKS, GERMANY

Title

On the Advanced Cloud Infrastructures and Services: A global view on the business priorities, opportunities, fundamental challenges, key enabling technologies and tools for cloud adoption and market uptake, especially in Europe

Panelists

Linda Strick (eGovernement Cloud Computing Lab, Fraunhofer-Institut Fokus, Germany)
Holger Macho (Director GTS Cloud Development, IBM, Germany)
William Rabie (Head of International Cloud Strategy and Business Development, CenturyLink, England)

Moderator

Johannes Prade (Principle Technologist, Nokia Networks, Germany)

The Cloud" business, cloud computing and cloud technologies are of very high interest in the public recognition of consumers being impacted as well as by corporations and institutions developing and providing cloud technologies and offerings. Also EU has identified this as one of the focus areas for research funding.

A lot of research and innovation efforts are currently placed in developing new computational, storage, data management and, especially, networking solutions to cope with the heterogeneity of interfaces and devices, energy efficiency, big data, federated clouds, and secure private and public multi-actor environments. On the other hand recent high profile security incidents and security breaches have shattered the public's trust in service providers ensuring privacy and security of personal information and data.

This panel aims at discussing infrastructures, means and methods for high performance, adaptive cloud applications and services, beyond current capabilities, building upon telecoms and mobile infrastructures, as well as software applications and services.

PANEL 3: E^{4}CONNECT - EVERYTHING EVERYWHERE EVERY-TIME EVERY-PATH CONNECT - INTERNET OF THINGS AND PLATFORMS FOR CONNECTED SMART OBJECTS

THURSDAY, 26 JUNE 2014, 11:00-12:30, ROOM EUROPA

ORGANIZER: OVIDIU VERMESAN, SINTEF, NORWAY

Title

E^{4}Connect - Everything Everywhere Every-time Every-path Connect - Internet of Things and Platforms for Connected Smart Objects: Looking at an integrated multi□stakeholder ecosystem rather than deployment of individual, not compatible technical solutions

Panelists

Roberto Minerva (Telecom Italia, Italy)
Mario Gerla (University of California, Los Angeles, USA)
Markus Dillinger (Head of Wireless Internet Technologies, Huawei European Research Centre, Germany)
Nicolas Demassieux (Director of Research and Strategy, Orange, France)

Moderator

Ovidiu Vermesan (SINTEF, Norway)

As of today, we witness a strong basis of research, smart systems, manufacturing and integration providers, and a lack of ecosystem(s) for creating a strong Internet of Things (IoT) up take. Hence, there is a strong need of a multi□stakeholder ecosystem, rather than the deployment of individual, fragmented and not compatible solutions. This requires the integration of results from a number of disciplines, e.g. cloud and networking technologies (5G), big data, cyber physical systems, components, as well as technologies for ensuring privacy/security, and new strategies for international collaboration focusing on IoT architectures, semantics, security and privacy, and standardization.

WORKSHOPS

WORKSHOP 1: THE 5G PPP: VISION AND OPPORTUNITIES

THURSDAY, 26 JUNE 2014, 14:15-17:00, ROOM EUROPA

ORGANIZER: GIOVANNI EMANUELE CORAZZA, UNIVERSITY OF BOLOGNA, ITALY

•**Chair:** Giovanni Emanuele Corazza (University of Bologna, Italy)

This aim of this event is to present the 5G-PPP initiative to a large audience of potentially interested participants and investors. The vision on the 5G netowrk architecture and main features and requirements will be discussed. Special attention will be given to the Horizon 2020 Calls preparation and the related opportunities, as seen from the Association perspective.

Structure

- Opening and welcome
- 5G PPP presentation, latest news (European Commission)
- Presentation of the 5G Infrastructure Association and Preparation for 5G PPP call 1 (Association representative)
- 5G: a view from the Experts (ETP Expert Group representatives)
- Open debate on call 1 preparation, expression of interests (all attendees)
- Conclusion and close (European Commission)

WORKSHOP 2: ENABLERS ON THE ROAD TO 5G

MONDAY, 23 JUNE 2014, 09:00-17:50, ROOM BOLOGNA 2

ORGANIZERS: OLAV QUESETH, ERICSSON AB, SWEDEN
NEIVA LINDQVIST, ERICSSON AB, SWEDEN
LAURENT DUSSOPT, CEA-LETI, FRANCE
ALBERT BANCHS, IMDEA NETWORKS, SPAIN
GERHARD WUNDER, FRAUNHOFER HEINRICH-HERTZ-INSTITUT, GERMANY

•**Chair:** Olav Queseth (Ericsson AB, Sweden)

Currently the work on developing 5G is ongoing. A number of initiatives have started or are on the way to be started. The envisioned future 5G network is targeting not only further improvement of mobile broadband, but also new areas of interest and new applications. This requires research in new topics and on new concepts.

The METIS project is one of the main drivers of 5G. The COMBO project will propose new integrated approaches for fixed / mobile broadband access. The MiWaveS project is working on technologies for mm Waves. The iJoin project aims for a joint design and optimisation of access and backhaul. The 5GNOW project is studying 5th Generation Non-Orthogonal Waveforms for Asynchronous Signalling for LTE. In the workshop we will present the latest research in areas of interest for the development of 5G. Understanding of 5G is emerging and due to this we will present also the first 5G system concept. The workshop provides participants with leading edge knowledge of topics relevant for future wireless systems as well as a chance to meet the researchers working on 5G.

09:00-10:40 - **5G system concept**

Welcome and introduction, Olav Queseth (Ericsson, Sweden)
5G System concept, Hugo Tullberg (Ericsson, Sweden)
5G Channel models, Katsutoshi Kusume (DOCOMO Euro-Labs, Germany)
Spectrum tools for 5G, Mikko Uusitalo (Nokia, Finland)

11:10-12:50 - **Emerging technologies in modulation and coding**

5G waveform approaches in highly asynchronous settingt, Gerhard Wunder (Heinrich-Hertz-Institut, 5GNOW, Germany)
Multicarrier with filtering – A new waveform candidate for 5G, Nandana Rajatheva (CWC; University of Oulu, Finland)
Air interface on the Move: Tackling the challenges of future V2x communication, Raja Sattiraj (Technischen Universität

Kaiserslautern, Germany)
Unified air interface design for dense deployments, Eeva Lahetkangas (Nokia Solutions and Networks, Finland)
Compressive Sensing based Multi-User Detection joins Coded Random Access, Armin Dekorsy (Universität Bremen, Germany)

14:00-15:40 - **Network concepts**

5G System architecture, Heinz Droste (DT, Germany)
Benefits and challenges of cloud technologies for "5G", Albert Banchs (imdea iJoin, Spain)
Future Fixed and Mobile Converged Network Architectures, Neiva Lindqvist (Ericsson, COMBO, Sweden)
Utilization of context awareness, Andreas Klein (Technischen Universität Kaiserslautern, Germany)

16:10-17:50 - **Antenna systems**

Decentralized Coordinated Transceiver Design with Large Antenna Arrays, Nandana Rajatheva (CWC; University of Oulu, Finland)
Millimeter-wave radio and antenna technologies for wireless access and backhaul, Laurent Dussopt (CEA, MiWaveS, France)
5G architectures for small cells with wireless backhaul and two-way access, Elisabeth de Carvalho (Aalborg University, Denmark)
Dynamic clustering with multiple receive antennas in downlink CoMP systems, Paolo Baracca (Alcatel-Lucent, Germany)

WORKSHOP 3: A GLOBAL PERSPECTIVE ON THE CHALLENGES AND EMERGING TECHNOLOGIES FOR SHAPING THE 5G ERA

MONDAY, 23 JUNE 2014, 09:00-17:50, ROOM BOLOGNA 1

ORGANIZERS: CHRISTOS POLITIS, KINGSTON UNIVERSITY LONDON
ANGELIKI ALEXIOU, UNIVERSITY OF PIRAEUS
NIGEL JEFFERIES, HUAWEI
PANAGIOTIS DEMESTICHAS, UNIVERSITY OF PIRAEUS
YAO JING, HUAWEI

•**Chair:** Christos Politis (Kingston University London, UK)

The motivation is to encourage global research that will achieve unbounded communications to address key societal challenges for the future and provide an initial understanding of the future of mobile wireless networks beyond 2020. This workshop will attempt to identify the key enabling technologies of 5G networks that will help to mould the Wireless World in the era beyond 2020. The workshop should focus on discussions of innovation and regulation, social inclusion and infrastructural challenges. This will be achieved by creating a range of new technological capabilities from wide-area networks to short-range communications, machine-to-machine communications, vehicle-to-vehicle communications, sensor networks, wireless broadband access technologies and technologies in the license-exempt band. This will support a dependable future Internet of humans, knowledge and things and the development of a service universe. The following areas should be touched during the workshop:

Air Interfaces and enabling technologies
Mobility management in the 5G networks
Licensed-exempt carrier offloading technologies
Ubiquitous networks (WiFi Ad-hoc, D2D, V2V)
Intelligent Regulations in world beyond 2020
Social, business and innovation challenges for the 5G
Multi-RAT (2G/3G/4G/WiFi) coexistence
5G requirements (e.g., in terms of performance, regulation, spectrum)
Efficient resource management in ultra-dense, heterogeneous networks
Ultra flexible infrastructures by means of M2M/D2D
Optimal spectrum management in 5G networks
Carrier aggregation
The role of virtualization (SDN, NFV concepts)
New business opportunities
Enabling applications by means of 5G technologies

09.00-09:15 - **Welcome and Intro**, Christos Politis (Kingston University London, UK)
09:15-09:45 - **WWRF Overview**, Nigel Jefferies (Huawei, UK)

09:45-10:15 - **5G R&D activities and global collaborations in Korea**, HyeonWoo LEE (Korean 5G Forum, Korea)
10:15-10:40 - **5G Standardisation in Asia**, Zhixi Wang (Senior Manager, Huawei, China)

11:10-11:40 - **SDN+NFV, the necessary virtualization equation in the 5G Era**, Diego Lopez (Telefonica, Spain)
11:40-12:10 - **5G activities in the EU**, Klaus Moessner (5GIC/ CCSR, University of Surrey, UK)
12:10-12:50 – **Remarks for the morning session**, Christos Politis (Kingston University London, UK)

14:00-14:30 - **5G Use Case: European Agriculture**, George Kormentzas (Aegean University and GAIA Epicheirein, Greece)
14:30-15:00 - **MmWave Small Cells is a Key Technology for Future 5G Wireless Communication Systems**, Alexander Maltsev (Intel Corporation, USA)
15:00-15:40 – **5G Use Case: Healthcare**, Kostantinos Danas (Kingston University London, UK)

16:10-17:40 - Panel "**The WWRF Vision for the 5G**"
Chair: Werner Mohr (NSN, Germany)
Panelists: Knud Eric Skouby (WWRF WGA chair and Aalborg University, Denmark)
Panagiotis Demestichas (WWRF WGC chair and University of Piraeus, Greece)
Angeliki Alexiou (WWRF WGD chair and University of Piraeus, Greece)
James Irvine (Strathclyde University, UK), Yao Jing (Huawei Technologies, China)

17:40-17:50 – **Closing Remarks**, Christos Politis (Kingston University London, UK)

WORKSHOP 4: MANAGEMENT OF LARGE SCALE VIRTUALIZED INFRASTRUCTURES: SMART DATA ACQUISITION, ANALYSIS AND NETWORK AND SERVICE MANAGEMENT IN THE FUTURE INTERNET

MONDAY, 23 JUNE 2014, 09:00-17:50, ROOM MEUCCI

ORGANIZERS: FILIP DE TURCK, IMINDS-GHENT UNIVERSITY, BELGIUM
DAVID GRIFFIN, UCL, UK
AIKO PRAS, UTWENTE, THE NETHERLANDS
PHILIP EARDLEY, BT, UNITED KINGDOM

•**Chair:** Filip de Turk (iMinds-Ghent University, Belgium)

Many Future Internet research projects deal with efficient data acquisition and analysis of large scale data in order to make intelligent decisions for management of the network and the services offered over the network. The virtualized nature of future networks and computational infrastructures introduces specific problems, but also creates very interesting opportunities. It is very interesting to discuss in detail the synergies between the studied data acquisition and analysis approaches, the required interfaces, the coordination of actions taken in the different layers, and the challenges and opportunities of the recent emergence of virtualized infrastructures.

The organizers of this workshop play an active role in three ongoing Future Internet cluster projects. The FP7 Leone project focuses on large scale measurement platforms and can be considered as the underlying layer for future network and service management platforms. The NoE Flamingo project focuses on the network management layer and important topics are Network and service monitoring, based on flow-based techniques, automated configuration and repair, based on self-* features and frameworks, for management of large scale networks and economic, legal, and regulative constraints in the Future Internet. The FP7 Fusion project studies a service layer for the Future Internet, and focuses on efficient provisioning, discovery and execution of service components distributed over the Internet, and promotes the idea of 'service-centric networking'.

The interaction, interfaces, and synergies between the Monitoring Layer, Network Management Layer and Service Management and Control Layer is very interesting for an interactive workshop session. For instance, following important questions will be addressed: how can the service layer benefit from the large scale monitoring and measurement systems?, how can the interaction between content placement techniques and the services that make use of the content in the service management layer be organized in the best possible way?, which service security requirements are necessary to take into account in the network management layer?, etc.

The idea is to have an interactive workshop format where the discussion and interaction among the participants is stimulated.

Structure

9:00 -10:40 **Opening Keynote session, overview of the main achievements of the Leone, Flamingo, Fusion projects and stimulation of the participants with interesting challenges on the theme of "Management of Large Scale Virtualized Infrastructures"**

Keynote speakers:
Filip De Turck (iMinds-Ghent University, Belgium)
David Griffin (UCL, UK)
Philip Eardley (BT, UK)

11:10-12:50 **Paper session on "Smart Data Acquisition and Analysis in the Future Internet"**
Large-scale measurements to improve quality of Experience: the Leone project, Dario Ercole (Telecom Italia, Italy)
Network and service monitoring for the future internet: status and results, Luuk Hendriks, Anna Sperotto, Jose Jair C. de Santanna, Rick Hofstede, Aiko Pras (Twente University, the Netherlands)
Identifying TCP Congestion Control Algorithms Used on the Internet, Anuj Sehgal, Juergen Schoenwaelder (Jacobs University Bremen, Germany)
Network visualisation, the Leone approach, and the TPlay tool, Maurizio Pizzonia (University Roma Tre, Italy).

14:00-15:40 **Paper session on "Smart Management of Services in the Future Internet"**
Orchestration of real-time services over distributed heterogeneous execution environments, Frederik Vandeputte (Alcatel-Lucent Bell Labs), David Griffin (UCL, UK)
Learning algorithms for dynamic resource allocation in virtualized networks, Rashid Mijumbi, Juan-Luis Gorricho, Joan Serrat (UPC, Barcelona)
Multi-Tenant Cache Management for Virtualized ISP Networks, Maxim Claeys, Jeroen Famaey, Filip De Turck (Ghent University-iMinds, Belgium), Daphne Tuncer, Marinos Charalambides, George Pavlou (UCL, UK), Steven Latré (Department of Mathematics and Computer Science, University of Antwerp-iMinds, Belgium)
Service and network aware anycast routing, Dariusz Bursztynowski (Orange Poland), Miguel Rio (UCL, UK);

16:10-17:50 **Panel session on "The interaction, interfaces, and synergies between the Monitoring Layer, Network Management Layer and Service Management Layer in the Future Internet"**

Panel participants:
Dario Ercole (Telecom Italia, Italia)
Maurizio Pizzonia (University Roma Tre, Italia)
Dariusz Bursztynowski (Orange Poland, Poland)
Frederik Vandeputte (Alcatel-Lucent Bell Labs, Belgium)
Marinos Charalambides (University College London, UK)
Panel Moderator: Filip De Turck (iMinds-Ghent University, Belgium)

WORKSHOP 5: MOBILE CLOUD INFRASTRUCTURES AND SERVICES (MCIS)

MONDAY, 23 JUNE 2014, 09:00-12:50, ROOM ITALIA

ORGANIZERS: THOMAS MICHAEL BOHNERT, ZURICH UNIVERSITY OF APPLIED SCIENCES
ANNA TZANAKAKI, UNIVERSITY OF BRISTOL
PETER ROST, NEC LABORATORIES EUROPE
FILIP DE TURCK, UNIVERSITY OF GENT
EDMUNDO MONTEIRO, UNIVERSIDADE DE COIMBRA
TORSTEN BRAUN, UNIVERSITÄT BERN
TARIK TALEB, NEC LABORATORIES EUROPE
GEORGIOS KARAGIANNIS, UNIVERSITY OF TWENTE

•**Chair:** Thomas Michael Bohnert (Zurich University of Applied Sciences, Switzerland)

This workshop addresses the three main topics that are significant for the realization of the Future Internet Architecture, which are the Mobile Networking, Network Function Virtualization and Service Virtualization.

While mobile communication networks have been established decades ago and are still continuously evolving, cloud computing and cloud services became a hot topic in recent years and is expected to have significant impact on novel applications as well as on ICT infrastructures. Cloud computing and mobile communication networks have been considered separate from each other in the past. However, there are various possible synergies between them. This trend supports the use of cloud computing infrastructures as processing platforms for signal and protocol processing of mobile communication networks, in particular for current (4G) and future (5G) generation networks. This enables several opportunities to optimize performance of cloud applications and services observed by mobile users, whose devices are connected to the cloud via wireless access networks. This trend is also in line with the emerging ETSI activities in Network Functions Virtualization (NFV). The "Mobile Cloud Infrastructures and Services" workshop focuses on the thematic area that the EU project MCN is concentrating on and is addressing emerging technologies in cloud services and mobile communication infrastructures. Emphasis will be put on possible integration scenarios and synergies between them.

09:00 – 10:40

Welcome speech: EU FP7 Mobile Cloud Networking (MCN), Thomas Michael Bohnert, (Zurich University of Applied Sciences, Switzerland)
EU FP7 CONTENT: Virtualizing converged network infrastructures in support of mobile cloud services, Anna Tzanakaki (University of Bristol, United Kingdom)
EU FP7 iJOIN: Benefits and challenges of cloud technologies for '5G', Peter Rost (NEC Laboratories Europe, Germany)
EU FP7 iJOIN "Decoder Implementation for Cloud Based Architectures", Dirk Wübben (University of Bremen, Germany)
EU FP7 FLAMINGO: Network monitoring in virtualized environments, Filip De Turck (University of Gent, Belgium)
Cloud computing and SDN networking for end to end virtualization in cloud-based LTE systems, Joao Soares (Portugal Telecom Inovacao, Portugal), Andy Edmonds (Zurich University of Applied Sciences, Switzerland)), Giada Landi, Giacomo Bernini (Nextworks, Italy), Luigi Grossi (Telecom Italia, Italy), Julius Mueller (Fraunhofer FOKUS, Germany), Frank Zdarsky (NEC Laboratories Europe, Germany)

11:10 - 12:50

Challenges ahead of RAN virtualization in LTE, Desislava Dimitrova (University of Bern, Switzerland), Lucio S. Ferreira (INOV-INESC | IST, Portugal), André Gomes (University of Bern, Switzerland | One Source, Consultoria Informática Lda., Portugal), Navid Nikaein (EURECOM, France), Alexander Georgiev (CloudSigma, Bulgary), Anna Pizzinat (Orange, France)
Virtualizing the LTE Evolved Packet Core (EPC), Tarik Taleb (NEC Laboratories Europe, Germany), Marius Iulian Corici (Fraunhofer FOKUS, Germany), Carlos Parada (Portugal Telecom Inovacao, Portugal), Almerima Jamakovic (University of Bern, Switzerland), Simone Ruffino (Telecom Italia, Italy), Georgios Karagiannis (University of Twente, the Netherlands), Morteza Karimzadeh (University of Twente, the Netherlands), Thomas Magedanz (Fraunhofer FOKUS, Germany)
Cloud-based Orchestration of Multimedia Services and Applications, André Gomes (University of Bern, Switzerland | One Source, Consultoria Informática Lda., Portugal), Santiago Ruiz (Soft Telecom, Spain), Giuseppe Carella (TU Berlin / Fraunhofer FOKUS, Germany), Paolo Comi (Italtel, Italy), Paolo Secondo Crosta (Italtel, Italy)
Panel discussions

WORKSHOP 6: TEST BEDS FOR THE NETWORKS & COMMUNICATIONS COMMUNITY: AN UNTAPPED POTENTIAL

MONDAY, 23 JUNE 2014, 09:00-12:50, ROOM MARCONI 1

ORGANIZER: FEDERICO ALVAREZ, UNIVERSIDAD POLITÉCNICA DE MADRID, SPAIN

•**Chair:** Federico Alvarez (Universidad Politécnica de Madrid, Spain)

Organisations involved in Networking & Communications Research and Innovation field are often in need of testing the results of their collaborative or internal R&D efforts. Such tests involve very often the set-up of a dedicated test bed. In the case of a collaborative project involving several partners, a test environment is built up in a lab from scratch and often dedicated only to the project itself; it typically has a life time limited to the duration of the project and then it is disbanded. In the case of in-house development, SMEs, mid-sized companies and research institutions often do not have the means to build such test beds beyond the border of their labs, preventing them from testing their product, service and/or applications on a larger scale. As a matter of fact, nowadays, even large companies are fighting to find or set up the proper environment for field trials at a reasonable cost.

The Future Internet PPP has developed in the past three years enabling the development of a broadly available set of technologies targeting SMEs and web entrepreneurs and more generally the European innovation ecosystem including mid-sized and large companies, as well as

research institutions (http://www.fi-ware.org/). The core idea is that these technologies shall be offered to all including Networks & Communication stakeholders, within collaborative projects or not (http://catalogue.fi-ware.org/). In particular, the FI-PPP offering is also being made available on a growing number of physical infrastructures by the XIFI project (www.fi-xifi.eu).

In addition, there are many existing test beds and infrastructures available all over Europe and beyond. The INFINITY project estimated the number of Future Internet infrastructures available in Europe only between 500 and 600, at European, national, regional and local level. Details of about 230 of those are available in the XiPi web repository at www.xipi.eu.

The objective of the proposed workshop is to investigate how this "untapped potential" could be used by all the stakeholders involved in the Networking & Communications research and innovation domain could make use of existing test beds. By involving key players in the FI-PPP domain and beyond the idea is to create an interactive session in which all comers to the EUCNC will be able to discover new opportunities and discuss the potential of easy-to-access and easy-to-use Future Internet test beds and resources.

09:00-10:40

Welcome and Introduction to the workshop agenda and scope, Monique Calisti (Martel, Switzerland)
Overview of the FI-PPP federation of infrastructures and the FI-Ops services from the XIFI Project, Anastasius Gavras (Eurescom, Germany)
Overview of the FIRE offer, Hans Schaeffers (Aalto University, Finland)

Panel 1 - **Existing test beds and experimental infrastructures: European landscape, federation of infrastructures, services for the Networks & Communications community**
Technical and functional solutions to build a community cloud for future Internet services from an Infrastructure Owner Perspective, Federico Alvarez (UPM, Spain)
Federation of Internet experimentation facilities: architecture and implementation, Thijs Walcarius (iMinds, Belgium)
The FIRE Vision for 2020: a technical and business perspective, Scott Kirkpatrick (Hebrew University, Israel)

11:10-12:50

Keynote speech – **A test bed looking for users: matching the developers' requirements**, Claude Hary (Comm4Innov, France)

Panel 2 - **Are existing test beds relevant to industry, SMEs, research institutions? In which context are they useful, collaborative projects such as H2020/5G PPP, and/or for internal needs?**
Future Internet-Lab (FI-LAB) – Hands-on experimentation for the Networks & Communication stakeholders, Stefano de Panfilis (Engineering, Spain)
Technical and functional solutions to build a community cloud for future Internet services from End-User Perspective, Federico Facca (Create-Net, Italy)
Inter-domain Monitoring and Software-Defined Network Connectivity for Federated Infrastructures Management, Jose Gonzalez, Federico Alvarez (UPM, Spain), Luis M. Contreras, Oscar Gonzalez (TID, Spain)
Productivity gains and boost of future Internet services in the Networks & Communication sector through large-scale experimentation, Brian Pickering (IT Innovation, United Kingdom)

Conclusions and invitation to the exhibition booths of the various projects, Dr. Monique Calisti (Martel, Switzerland)

WORKSHOP 7: FIXED-MOBILE CONVERGENT NETWORKS: SOLUTIONS AND ARCHITECTURES PROPOSED IN FP7

MONDAY, 23 JUNE 2014, 09:00-12:50, ROOM MARCONI 2

ORGANIZERS: JEAN-CHARLES POINT, JCP CONNECT, FRANCE
STEFANO BREGNI, POLITECNICO DI MILANO, ITALY
ACHILLE PATTAVINA, POLITECNICO DI MILANO, ITALY

•**Chair:** Jean-Charles Point (JPC Connect, France)

Currently, Fixed-Mobile Convergence (FMC) is mainly implemented at service level, introducing all-IP services and the IMS, which allows a converged service control layer. Also standardization bodies address fixed and mobile networks separately in different committees.

Today, significant attention is devoted the convergence of fixed and mobile networks, combining both an optimal and seamless quality of experience for the end user together with an optimized network infrastructure ensuring increased performance, reduced cost and reduced energy consumption.

This panel presents and compares approaches proposed in 6 European FP7 Projects (COMBO, SODALES, DISCUS, CONTENT, MOBILE CLOUD, METIS) thus providing an exceptional up-to-date oversight on this theme as studied by European industries, telecom operators, research and academic institutions.

09:00-10:40

COMBO – Network scenarios for Fixed Mobile Convergence, Stéphane Gosselin (Orange Labs, France)
SODALES - Techno Economics of an Open Access Model for Converged Access Networks, Carlos Bock (Fundació i2CAT, Spain)
DISCUS - End-to-End Optical Network Architecture Offering Broadband Access to All Users and Reduction of O/E/O Conversion in the Core, Andrea Di Giglio (Telecom Italia, Italy)

11:10-12:50

CONTENT - An SDN platform for joint control of wireless and optical virtual infrastructures in mobile cloud services, Giada Landi (Nextworks, Italy)
MOBILE CLOUD - An architecture for dynamic composition and delivery of integrated virtual wireless infrastructures and end-to-end services, Giada Landi (Nextworks, Italy)
METIS – The 5G Mobile and Wireless Communications: Views on System Architecture, Heinz Droste, (Deutsche Telekom, Germany)

WORKSHOP 8: ADVANCES IN WIRELESS BODY AREA NETWORKS

MONDAY, 23 JUNE 2014, 09:00-12:50, ROOM DA VINCI

ORGANIZERS: VINCENT PEIRIS, CSEM, SWITZERLAND
CHIARA BURATTI, UNIVERSITY OF BOLOGNA, ITALY

•**Chair:** Vincent Peiris (CSEM, Switzerland), Chiara Buratti (University of Bologna, Italy)

The Workshop will give an inter-disciplinary view of the technology trends in the field of Wireless Body Area Networks (WBANs) and their potential in supporting healthcare applications.

WBAN will gain wide market acceptance only if the personal sensing and interacting capabilities can be significantly improved thanks to miniature, unobtrusive, long-lifetime sensor nodes. Therefore, the key challenges for WBAN are the miniaturization of the integrated components, the achievement of ultra-low-energy consumption, such as the design of flexible communication protocols, accounting for the proper on-body and off-body radio channel and the possible presence of interference.

The Workshop is organized in the framework of the EC funded FP7 WiserBAN Project, which is about improving personal sensing capabilities by using miniature, unobtrusive, long-lifetime sensor nodes. WiserBAN will create an ultra-miniature and ultra low-power RF microsystem for WBANs.

The first five speakers will be researchers of institutions involved in WiserBAN, providing talks, not only focused on the WiserBAN itself, but dealing with different aspects of WBANs. While the last two talks will be given by invited speakers not involved in the WiserBAN project and bringing the perspective of biomedics and robotics.

09:00-10:40

Ultra-low-power and low-voltage integrated radios for WBAN applications, Vincent Peiris (CSEM, Switzerland)
Antenna and propagation for on-body communication, Raffaele D'Errico (CEA-LETI, France)
Channel modelling for off-body and inter-bodies communications, Ramona Rosini (University of Bologna, Italy)
RF communication for leadless pacemakers implanted inside the heart and peripheral medical devices, Renzo Dal Molin (SORIN, France)

11:10-12:50

Communication Protocols in WBANs, Riccardo Cavallari (University of Bologna, Italy)
A WBAN implementation of an intelligent tutoring systems for gait enhancement and rehabilitation of persons with Parkinson's disease, Lorenzo Chiari (University of Bologna, italy)
Artificial Touch for Hand Neuroprostheses, Calogero Oddo (Scuola Superiore Sant'Anna, Italy)
Discussion and Conclusions, Vincent Peiris (CSEM, Switzerland)

WORKSHOP 9: NEXT GENERATION DATA CENTER

MONDAY, 23 JUNE 2014, 14:00-17:50, ROOM ITALIA

ORGANIZER: GIANCARLO PRATI, ISTITUTO TECIP, SCUOLA SUPERIORE SANT'ANNA/CNIT, ITALY

•**Chairs:** Piero Castoldi (Istituto TeCIP, Scuola Superiore Sant'Anna, Italy), Giuseppe Bianchi (CNIT, Italy), Marco Romagnoli (CNIT, Italy)

Future data centers need to meet requirements that are continually changing, both as a result of the services required and the operational flexibility, both for management and energy efficiency. This raises the problem of development and implementation of a Next Generation of Data Centers (NGDC) using innovative techniques of communication, switching and processing that will see massive integration of photonics and electronics at circuit level, and new switching architectures and control subsystems integrated with the realization of low power consumption , footprint and cost, in order to handle large amounts of data (big data) in challenging application contexts such as the evolution of the cloud towards the "zettabyte era". The use of integrated photonics circuit will impact the future data center at all levels, requiring innovation of architecture of all the components (intra blades, racks, data centers), innovation of systems at data plane level, such as communication intra DC, matrices for photonic switching and their composition, innovation at software level tailored to new photonic technology to generate a real and virtual software-defined network optimized for applications, searching, and high-performance computing.

14:00-15:40 - Session 1. **Architectures and systems**

Chairman: Piero Castoldi (Istituto TeCIP, Scuola Superiore Sant'Anna, Italy)
The new ENI green Data Center – resilience and efficiency: first results, Michele Mazzarelli (ENI SpA – Information & Communication Technology, Italy)
Application Centric Infrastructure - Redefine the power of IT, Davide Q. Cattoni (CISCO, Italy)
Network architectures in Data Centers, Piero Castoldi (Istituto TeCIP, Scuola Superiore Sant'Anna, Italy)
A New Era of Networking, Igor Marty (IBM EMEA, France)
NGDC: system design and total cost of ownership, Giampietro Tecchiolli (Eurotech Italia, Italy)

16:10-17:50 - Session 2. **Challenges in algorithms and technology**

2.1 Algorithms
Chairman: Giuseppe Bianchi (CNIT, Italy)
Algorithmic challenges in data storage and indexing, Paolo Ferragina (Università di Pisa, Italy)
Virtualizing network security functions in the Data Center, Giuseppe Bianchi (CNIT, Italy)

2.2 Photonics
Chairman: Marco Romagnoli (CNIT, Italy)
Integrated photonics to revolutionize the Data Center hardware, Marco Romagnoli (CNIT, Italy)
Scalable and low latency optical packet switching architectures for High Performance Data Center networks, Nicola Calabretta (Technical University Eindhoven, The Netherlands)
Challenges towards an on-chip optical interconnection network, Nicola Andriolli (Istituto TeCIP, Scuola Superiore Sant'Anna, Italy)

WORKSHOP 10: WORKSHOP ON RADIO ACCESS AND SPECTRUM

MONDAY, 23 JUNE 2014, 14:00-17:50, ROOM MARCONI 1

ORGANIZERS: PAULO MARQUES, INSTITUTO DE TELECOMUNICAÇÕES, PORTUGAL
ALESSANDRO VANELLI-CORALLI, UNIVERSITY OF BOLOGNA, ITALY
DOMINIQUE NOGUET, CEA-LETI, FRANCE
KLAUS MOESSNER, UNIVERSITY OF SURREY, UK
DIONYSIA TRIANTAFYLLOPOULOU, UNIVERSITY OF SURREY, UK
MICHAEL GUNDLACH, NSN, GERMANY
SIMON DELAERE, IMINDS, BELGIUM

•**Chair:** Paulo Marques (Instituto de Telecomunicações, Portugal)

This workshop will look at novel approaches towards a more efficient use of the radio spectrum being developed by the European Commission research projects and that will contribute to the capacity improvement required by the next generation of radio access networks. Although standardization is a key enabler for market success in radio access networks, standardization is only a side aspect in EU research projects. All projects face the fact that it is difficult to achieve impact during the rather short lifetime of a three years project. In particular, standardization in Dynamic Spectrum Access is a process with low speed reaction because of many conflicting spectrum requirements and regulatory implications. In this light, the main objective of this workshop is exchange and dissemination of EU project's intermediate results in the Radio Access and Spectrum area, and fostering debate on the results of existing standardization work and on opportunities for future collaboration between research projects and standardization organizations. Projects updates will be accompanied by presentations from experts on the standardization streams: Cognitive radio and Licensed Shared Access (ETSI); New waveforms beyond OFDM (IEEE); Device-to-Device communications (3GPP). The workshop will end with a Panel where conclusions on project synergies and standardization strategies will be discussed.

14:00-15:40

Opening address [FP7 CRS-i project]
Potential synergies across projects with spectrum related standardization activities, Paulo Marques (Instituto de Telecomunicações, Portugal)

Session 1: Cognitive Radio and White Spaces
Overview of the standardization work in IEEE DySPAN-SC 1900, Dominique Noguet (CEA-LETI, France)
5GNOW: Intermediate Transceiver and Frame Structure Concepts and Results, Gerhard Wunder (Fraunhofer HHI, Germany)
FP7 SOLDER intermediate results and standardization strategy, Oliver Holland (King's College London, United Kingdom)
FP7 CORASAT intermediate results and standardization strategy: Cognitive Radio Techniques in Ka Band SatCom Context, Nicolas Chuberre (Thales Alenia Space, France)

16:10-17:50

Session 2: Device-to-Device communications and Public Safety
Overview of D2D Proximity Services standardization in 3GPP LTE, Michael Gundlach (NSN, Germany)
FP7 MOTO intermediate results and standardization strategy, Vania Conan (Thales Communications & Security, France)
FP7 ABSOLUTE intermediate results and standardization strategy, Isabelle Bucaille (Thales Communications & Security, France)
FP7 EMPhATiC intermediate results and standardization strategy, Xavier Mestre (CTTC, Spain)

Session 3: Licensed Shared Access (LSA)
Overview of LSA activities in ETSI, Michael Gundlach (NSN, Germany)
FP7 ADEL project intermediate results and standardization strategy, Tharm Ratnarajah (University of Edinburgh, United Kingdom)

Panel: Conclusions on project synergies and standardization strategies

WORKSHOP 11: FUNDAMENTAL RESEARCH THROUGH EXPERIMENTATION

MONDAY, 23 JUNE 2014, 14:00-17:50, ROOM DA VINCI

ORGANIZER: DAVIDE DARDARI, CNIT

•**Chair:** Davide Dardari (CNIT/UniBo, Italy)

The workshop is organized and supported by the European Laboratory of Wireless Communications for the Future Internet (EuWin) funded by the EC through the Network of Excellence in wireless communications Newcom#. The EuWin facilities are distributed over three sites: at CTTC in Barcelona (Spain), at the University of Bologna (Italy) and at the Eurecom institute in Sophia-Antipolis (France). They are open for access by any scientist worldwide. EuWin is an integrated laboratory able to address, under a common environment, the various topics of wireless communication technologies for the future Internet. The laboratory activities aim at creating a new generation of researchers in wireless communications believing in the motto "Fundamental Research Through Experimentation". EuWin addresses topics and techniques related to the systems and networks that will drive the evolution of wireless communications in the years to come: LTE/4G, the Internet of Things, GNSS. Digital signal processing, radio access and network protocol aspects, are studied through the available lab facilities.

Within this context, the workshop will give a unique opportunity to the attendees to learn in detail the facilities offered by the 3 EuWin sites and how experimental activities can be carried out from them. Emphasis will be given to the role of experimentation as means to characterize the radio environment and test system performance in real contexts, to the interplay between theory and experimentation, and the relevance of a multi-disciplinary approach to research, requiring knowledge of channel, link and network aspects.

14:00 - The EuWin@CTTC site facilities: Testing an interference management algorithm in GEDOMIS®, Miquel Payaro (CTTC, Spain)

14:50 - The EuWin@Unibo site facilities: Testing Smart City applications Thought Flextop, Davide Dardari, Chiara Buratti (CNIT/UniBO, Italy)

16:10 - The EuWin@EURECOM site facilities, Raymond Knopp, Florian Kaltenberger (EURECOM, France)

17:00 Technical session
Network Protocols for Linear Wireless Sensor Networks for Smart City Applications, Andrea Stajkic (CNIT/UniBO, Italy), Chiara Buratti (CNIT/UniBO, Italy), Roberto Verdone (CNIT/UniBO, Italy)
OpenInLocation: a platform to test indoor positioning algorithms, Ana Moragrega, Javier Arribas, Pau Closas, Carles Fernández-Prades (CTTC, Spain), Giacomo Calanchi, Davide Dardari (CNIT/UniBO, Italy)
eMBMS Experimentation in TV White Spaces, Raymond Knopp, Florian Kaltenberger, Dominique Nussbaum (EURECOM, France) Oliver D. Holland (KCL, United Kingdom)

17:45 End of workshop

WORKSHOP 12: SPATIALLY OR/AND SPECTRALLY FLEXIBLE CORE OPTICAL NETWORKS

MONDAY, 23 JUNE 2014, 14:00-17:50, ROOM MARCONI 2

ORGANIZERS: MARIANNA ANGELOU, OPTRONICS TECHNOLOGIES SA, GREECE
IOANNIS TOMKOS, ATHENS INFORMATION TECHNOLOGY, GREECE

•**Chair:** Dimitrios Klonidis (Athens Information Technology, Greece)

Conventional fixed-grid WDM networking leads to the stranded bandwidth issue, due to the coarse and rigid granularity of the system where frequently only a small portion of the allocated wavelength channel capacity is used. Indeed core networks are fast approaching the fundamental spectral efficiency limits of single-mode fibres and the capacity growth potential of conventional WDM networks is not sufficient to cope with this issue. Recent technology innovations promise a capacity increase in two dimensions. First, efforts targeted purely the frequency and the signal encoding domains, in an effort to increase the spectral density in fiber links. These efforts led eventually to the definition of the spectral flexible/elastic optical networks utilizing the so-called super-channel approach together with spectrally flexible/elastic multiplexing schemes and advanced modulation formats. More recently, the use of the spatial domain was proposed as the evident solution to extend the capacity of optical communication systems. To this aim, significant research efforts have focused on the

development of few-mode fibers (FMF) and multi-core fibers (MCF) so as to enable the so-called space division multiplexed (SDM) systems. The aforementioned technology enablers allow the scientific community to pursue the development of innovative, optical network solutions introducing on one hand a) the flexibility in the spectrum allocation of channels via flex-grid and super-channel technologies, and on the other b) the spatial multiplexing dimension when designing future transport networks.

14:00-14:25 - **Introduction and Network Implications in Spatially or/and Spectrally Flexible Networks**, Dimitrios Klonidis (Athens Information Technology, Greece)

14:25-14:50 - **Control plane for spatially/spectrally flexible optical networks: a preliminary investigation**, Domenico Siracusa (CREATE-NET, Italy)

14:50-15:15 - **IDEALIST: Technology enablers for spectral elastic optical networks**, Antonio Napoli (Coriant R&D GmbH, Germany)

15:15-15:40 - **Spatially or/and Spectrally switching solutions**, Dan Marom (The Hebrew University of Jerusalem - Dept. of Applied Physics, Israel)

16:10-16:35 - **Dimensioning issues utilizing advanced multicore fibres**, Lars Dittmann (Technical University of Denmark - DTU Fotonik, Denmark)

16:35-17:00 - **Adaptive Terabit Transceivers for Flexible Core Networks**, Roberto Magri (Ericsson Telecomunicazioni, Italy)

17:00-17:25 - **Progress towards a 4th Telecommunications Window in the region of 2000nm: The activities of the EU project MODEGAP**, Brian Corbett (Tyndall National Institute, Ireland)

17:25-17:50 - **Panel Discussion**

TUTORIALS

TUTORIAL 1: INDOOR LOCALIZATION AND TRACKING: FROM THEORETICAL FOUNDATIONS TO PRACTICAL APPLICATIONS

MONDAY, 23 JUNE 2014, 09:00-12:50, ROOM GALILEI

DAVIDE DARDARI, DEPARTMENT OF ELECTRICAL, ELECTRONIC AND INFORMATION ENGINEERING - "GUGLIELMO MARCONI" - UNIVERSITY OF BOLOGNA, ITALY
BENOÎT DENIS, CEA-LETI MINATEC, FRANCE

Indoor localization and tracking has been gaining relevance due to widespread of devices and technologies, as well as the necessity of seamless solutions for location-based applications, for example, in the field of automated guided vehicles in manufacturing lines, radiofrequency identification (RFID), GPS-denied first-responder or personal navigation, asset navigation and tracking, indoor unmanned vehicles, people-movers, unprecedented services in the Internet of Things (IoT) or even optimized wireless connectivity. One current trend is to concentrate the positioning capabilities on smartphones for the detection and localization of energy autonomous tags making use of energy harvesting techniques. Therefore there is the need to design new technologies capable of providing both high-definition positioning accuracy and extremely low consumption and cost at tag side. Another trend is to optimally and opportunistically benefit from cooperation in daily-life heterogeneous wireless environments.

All this entails that the latest challenge in indoor localization and tracking is not only addressed to design specialized sensors for these tasks but also to figure out and implement data fusion methods using the already available technologies under practical connectivity conditions. Data fusion in indoor localization and tracking is indeed a key element for further advances of the field and presents exciting challenges for signal processing practitioners and researchers. Due to the large variety of technologies and standards involved, the in-depth understanding of the theoretical limits and the application of advanced statistical tools are thus of primary importance in the design of modern localization systems.

This tutorial addresses fundamentals, supporting technologies, and technical issues on indoor localization and tracking. An overview of the recent research trend is also given.

TUTORIAL 2: THE PATH TOWARDS 5G

MONDAY, 23 JUNE 2014, 14:00-17:50, ROOM GALILEI

MÉROUANE DEBBAH, SUPELEC, FRANCE

Wireless networks are inherently limited by their own interference. Therefore, a lot of research focuses on interference reduction techniques, such as mutiuser MIMO, interference alignment, interference coordination or multi-cell processing. Although these techniques might lead to considerable performance gains, it is unlikely that they will be able to meet the demand for wireless data traffic in the future. Therefore, a significant network densification, i.e., increasing the number of antennas per unit area, is inevitable. One way of densifying the network consists in cell-size shrinking, such as the deployment of femto or small cells, which comes at the cost of additional equipments and increased interference. Another much simpler, but also less efficient, option is the use of massively more antennas at each base station (BS). In this talk, we will discuss the challenges of small cell versus massive MIMO networks and show how modular cognitive networks can bring the flexibility to deploy next generation wireless systems. Tools such as Random Matrices, Game Theory, Mean Field Theory and stochastic geometry will also be described to optimize beyond LTE (Long Term Evolution) networks.

EXHIBITION AND DEMOS

EXHIBITION STAND 1: EMPHATIC

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

VIDAR RINGSET, SINTEF ICT

The demonstration will consist of the FBMC hardware and TETRA terminals. The FBMC system is implemented using two laptop PCs and two USRP hardware platforms. These constitute one transmitter and one receiver. The plan is to transmit the signal over the air. A narrowband signal is generated by means of standard TETRA handsets. The frequency allotment of the TETRA terminal is 25 kHz whereas the broadband system covers a bandwith of 1.05 MHz. The frequencies not used by the TETRA system is used by the broadband system and the demonstration will show that it is possible for these systems to coexist within the same RF frequency band. A spectrum analyser is used to display the frequency content of the signal. In addition a PC will be used to show simulation results. Posters will illustrate the demonstration setup as well as general information about the project.

EXHIBITION STAND 2: WISERBAN - SMART MINIATURE LOW-POWER WIRELESS MICROSYSTEM FOR BODY AREA

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

CHRISTOPH PREGIZER, SIEMENS AUDIOLOGY SOLUTIONS

The demonstration will showcase technologies developed in the framework of WiserBAN. This will include samples of the WiserBAN System-in-Package as well as the integration of the system into a hearing aid and other systems of the end users, such as cardiac implants, insulin pumps, and cochlear implants. The functional aspects of the system will be demonstrated by using a test setup incorporating the WiserBAN technologies, including an implementation on a Tablet Device to showcase transmit and receive functionality as well as the protocol that is intended to be used for communication between e.g. a hearing aid and a Tablet.

EXHIBITION STAND 3: AMPLIFIRE / FED4FIRE

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

TIMO LAHNALAMPI, MARTEL CONSULTING
THIJS WALCARIUS, IMINDS

Using the various tools developed for Fed4FIRE, such as the Fed4FIRE portal and jFed these demonstrations will cover the entire lifecycle of the experiment including finding appropriate resources, designing the experiment, running the experiment and gathering measurements. The demo will also show the use and control of the resources of your experiment during the experiment and how measured data can be retrieved from the experiment. Additionally, the various federation support tools that are available to the end-user and the First Level Support will be demonstrated. At the time of the EUCNC- conference, the second open call for additional project partners will be open. At the booth, we will provide more information about this call, and we will be present for face-to-face discussions with all interested parties including academia, research institutions, industry and SMEs.

The AmpliFIRE project will show an overview of the Future Internet Research and Experimentation (FIRE) projects, available test facilities and overall FIRE service offering.

EXHIBITION STAND 4: SODALES | SOFTWARE-DEFINED ACCESS USING LOW-ENERGY SUBSYSTEMS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

CARLOS BOCK, I2CAT FOUNDATION

The demo will consist of a end-to-end transmission system, which will transmit a high definition video from one end to the other. This will validate that the complete system works correctly and demonstrate the developments done so far by the project. Separately, the control and management plane that is being developed now will be described.

EXHIBITION STAND 5: FABULOUS FDMA PON: HIGHLY FLEXIBLE PASSIVE OPTICAL NETWORK FOR GENERALIZED BROADBAND ACCESS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

BENOIT CHARBONNIER, ORANGE LABS
SILVIO ABRATE, ISTITUTO SUPERIORE MARIO BOELLA

The demonstration includes:

- A prototype Optical Line Termination (OLT — central office side) including a simple service platform. OLT picture top right.
- Three prototype Optical Network Units (ONU – customer side) with Video screens giving a feel for the transmission and service capabilities of our demonstrator. ONU picture bottom right.
- The OLT and ONUs are linked with optical fibre spools (FTTH network).

A video service runs both ways through the fibre. There will also be on display some early Silicon Photonics devices fabricated in the project.

EXHIBITION STAND 6: 5GNOW: CHALLENGING THE LTE DESIGN PARADIGMS OF ORTHOGONALITY AND SYNCHRONICITY

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

DIMITRI KTENAS, CEA-LETI

The GFDM transceiver demo implemented in FPGA can generate and receive a stream of GFDM blocks with parameterized number of subcarriers (K) and sub-symbols per subcarrier (M). Aspects of the real transmission with antennas in the frequency of 2.4 GHz can be easily accessed through a graphical user interface that allows interaction with the experiment and highlights its main properties in terms of spectrum emission and demodulation steps.

The second demonstrator is a reconfigurable FPGA/ARM digital baseband hardware platform implementing fragmented spectrum processing both at transmit and receive parts using FBMC modulation. The objective is to demonstrate the FBMC built-in filtering feature adapted to spectrum availability in the fragmented case. The proposed receiver architecture based on frequency domain processing combined with the fair frequency localization of the FBMC prototype filter provides an architecture that allows for more efficient multiuser asynchronous reception compared to OFDM. The setup will be composed of two user equipments (transmitters) and one receiver. Real time transmission will be done through RF front ends at 2.7GHz via the National Instrument NI PXIe-1062 equipment. The application running on top of the physical layer is uplink video conference service and we demonstrate the robustness of FBMC compared to OFDM in the case of timing misalignment between the two user equipments (multi-user asynchronous access). The objective of the demonstration is thus to prove the feasibility of FBMC multiuser access (FBMC-MA) in a multiuser asynchronous environment.

EXHIBITION STAND 7: NEXT GENERATION SATELLITE BROADBAND SYSTEMS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

GRAHAM PETERS, AVANTI COMMUNICATIONS GROUP PLC
ALESSANDRO VANELLI-CORALLI, UNIVERSITY OF BOLOGNA
GLYN JONES, AVANTI COMMUNICATIONS GROUP PLC

This will be a "static" demo including a set of posters capturing the research outcomes of the involved studies related to satellite broadband. It is also the idea to include a monitor showing a presentation with additional information on the specifics of the different projects. We also plan to bring an example of satellite broadband router to provide an example of satellite broadband technology targeting the residential users. This router will be inactive during the exhibition.

EXHIBITION STAND 8: AERIAL BASE STATIONS WITH OPPORTUNISTIC LINKS FOR UNEXPECTED &TEMPORARY EVENTS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

ISABELLE BUCAILLE, THALES COMMUNICATIONS & SECURITY

In EuCNC, ABSOLUTE will provide some of these elements even if they are still under development:

A first demonstration provides first LTE results with Remote Radio Head (being on the aerial platform) and the Baseband components being on the ground.

A second demonstration illustrates the Portable Land Mobile Unit sub-system. It is composed of a suitcase having a Base station, a WiFi access point, Wireless Sensor Network, etc... Mobile phones connected to ABSOLUTE network are also presented on the booth.

As the aerial platform cannot be deployed on the booth, some pictures and videos displayed on the booth present the platform used in the project.

To illustrate the research work being performed in the project, another video displays the simulations performed in order to evaluate the system performances in a larger scale.

EXHIBITION STAND 9: HIGH ACCURACY REAL TIME LOCALIZATION: THE SELECT EXPERIENCE

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

ENRICO SAVIOLI, DATALOGIC IP TECH S.R.L.

The exhibition will allow the participants to see the SELECT prototype in action by means of a live demo and a video of the prototype tracking moving luggage on a conveyor belt. The live demo shows how the system identifies tags and how it measures the distance between tags and readers using backscattered UWB pulses. The SELECT demo system is composed of a reader, one or more tags, and a workstation that visualizes the results of the detection, identification, and location processes. During the demonstration, the tags and readers will be moved at various relative distances and the new tag position will be updated and visualized in real-time. Moreover, the participants will have the opportunity to discuss the advanced techniques researched during the project and to see the UWB transmitting/receiving front-ends, the dual UHF/UWB tags, and the other basic components used to implement the SELECT prototype.

EXHIBITION STAND 10: EUWIN EXPERIMENTATION

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

RAYMOND KNOPP, EURECOM

The Bolognoa IoT demo will access a site in Bologna remotely and demonstrate how sensor network experiments can be controlled from a remote location. EURECOM demo is centered around recent advances in the OpenAirInterface.org (OAI) platform. We will show an example of the use of OpenAir4G as a fully compliant 4G basestation using commercial terminals. We will also demonstrate how the OAI platform can be used to create so-called *Cloud-RAN centralized processing* for virtualizing basestations in a server platform.

EXHIBITION STAND 11: ICORE: EMPOWERING IOT WITH COGNITIVE TECHNOLOGIES

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

VERA STAVROULAKI, UNIVERSITY OF PIRAEUS

The demo shows how, through the concept of Virtual Objects (VOs), Real World Objects can be semantically enriched to foster their reuse and made to behave more autonomously i.e. generating events, notifications and streaming sensed data which can be tailored to the needs of the applications that use them. Moreover the demo shows how such enriched objects can also be combined dynamically and automatically to achieve more complex functionality which is then maintained to achieve better robustness of the IoT. Besides these object "self-management" aspects, the demo will also show how IoT based applications can be improved with the support of models that are able to reproduce Real World Knowledge and that can adapt to the changing situation they are representing. This is achieved through a set of use-cases, namely smart home, smart meeting, smart transportation, supply chain management and urban surveillance. Finally, the demonstration will feature iCore trial activities focusing on Smart City and Smart Health aspects. The components that will be used for the demonstration include actual devices, sensors and actuators, smartphones, Gateways and software for the various cognitive management entities. Indicatively, Arduino, Waspmote and FlyPort platforms are combined with a variety of sensors (such as luminosity, temperature, humidity, location, heart-rate), actuators (such as Wireless-enabled, over ZigBee, Lights), M2M-enabled FlyPort modules, a (ZigBee-enabled) Gateway as well as various software technologies such as RESTful Web Services and JAVA Servlets, XML, JSON, RDF, SPARQL, Apache Jena Ontology API, open RDF Sesame API, etc.

EXHIBITION STAND 12: MCN – MOBILE CLOUD NETWORKING

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

PAULO SIMÕES, UNIVERSITY OF COIMBRA
THOMAS BOHNERT, ZURICH UNIVERSITY OF APPLIED SCIENCES
GEORGIOS KARAGIANNIS, UNIVERSITY OF TWENTE
MARIUS-IULIAN CORICI, FRAUNHOFERFOKUS
GIUSEPPE ANTONIO CARELLA, TECHNICAL UNIVERSITY OF BERLIN

The demonstration includes the first steps achieved on this path. It specifically includes:

- An OpenStack based cloud infrastructure enabling the deployment of cloudified network services
- A basic Service Orchestrator (partially overlapping with Fraunhofer FOKUS OpenSDNCore toolkit, managing dynamically the deployment of a set of virtual networks and of a virtual telecom core network platform.
- A basic monitoring system for providing momentary capacity and triggers for virtual network infrastructure adaptations
- A set of virtualised network functions:
  - A realistic implementation of a virtual 3GPP EPC based on the Fraunhofer FOKUS OpenEPC toolkit

- An LTE emulation bases on the Fraunhofer FOKUS OpenEPC eNB implementation
- A benchmarking tool, providing the means to make basic conformity testing of the virtual infrastructure and the evaluation of different network function placement mechanisms

EXHIBITION STAND 13: AUTOFLOW: EXPERIMENTATION FRAMEWORK FOR AUTONOMIC SOFTWARE DEFINED NETWORKS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

KOSTAS TSAGKARIS, UNIVERSITY OF PIRAEUS

This demo shows how, an operator can deploy new services or accommodate new traffic on top of its multi-vendor and multi-technology but SDN-enabled infrastructures. For this purpose, three critical aspects are demonstrated: i) the operator describes his goals and objectives, through high-level means and governs his network, ii) policy-based operation of SDN-enabled segments is achieved and optimized with respect to QoE/QoS efficiency, taking into account metrics and knowledge derived in network nodes and end-user devices and are inline with the operator objectives and iii) coherence between these segments is achieved through cooperation, negotiation and federation. This demonstration exploits the physical topology of the GÉANT OpenFlow facility and in particular the 5 Points of Presence (PoPs) in Vienna, Amsterdam, Frankfurt, Zagreb and London. Consequently, this demonstration is based on a realistic environment for WAN-relevant SDN/OpenFlow experimentation.

EXHIBITION STAND 14: E-HEALTH APPLICATIONS FOR SMART CITIES INFRASTRUCTURES BASED ON LIVE VIDEO-TO-VIDEO SOLUTIONS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

ELENI PATOUNI, NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS
LUIS CORDEIRO, ONESOURCE
IOANNIS CHOCHLIOUROS, HELLENIC TELECOMMUNICATIONS ORGANIZATION S.A

Telemedicine use case Demo

This use-case focuses on providing everyday monitoring for eye patients (e.g. with glaucoma). The core of this use case demo is the LiveCity telemedicine plugin used to connect the doctor and patient over public internet through HD vídeo with the use of Video-to-Video (V2V) services. The demonstration will showcase the local/remote connection of doctor and patient in EUCNC venue and eye examination (depending on connectivity and access to the Livecity closed network through EUCNC venue).

Emergency use case demo

The emergency use case has its primary focus on providing remote assistance to emergency personnel deployed on the field giving assistance to trauma victims. This local demonstration in EUCNC will showcase one user wearing a backpack computer system performing live secure video transmission through wireless medium to a computer with a user playing the role of the doctor at the hospital, while there is a patient simulating some kind of trauma. The core of this platform is the microcomputer, which is embedded inside the backpack itself .

EXHIBITION STAND 15: METIS DBB KEY COMPONENT: FBMC/OQAM-RELATED NEW WAVEFORM

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

JÉRÉMY NADAL, INSTITUT MINES-TELECOM/TELECOM BRETAGNE
CHARBEL ABDEL NOUR, INSTITUT MINES-TELECOM/TELECOM BRETAGNE
AMER BAGHDADI, INSTITUT MINES-TELECOM/TELECOM BRETAGNE
HAO LIN, ORANGE LABS.

This exhibition proposes to demonstrate a new waveform based on filter bank multicarrier (FBMC) modulation as one of the promising technology components enabling efficient air-interface for several new usage scenarios. This is done through a complete hardware implementation on an FPGA-based digital baseband (DBB) platform of both techniques with similar architectural choices. Novel hardware optimisations are proposed to reduce implementation complexity. Target key-performance indicators (KPIs) include spectrum usage, hardware complexity, latency, and energy efficiency. Being a physical-layer component, it constitutes an enabler to many usage scenarios as it enhances system robustness in several impairment cases: (1) against narrowband interference encountered in an ultra-dense network (UDN) where cellular and device-to-device (D2D) users coexist and perfect synchronization may not be easily ensured and (2) against high Doppler shifts encountered in mobile environments.

EXHIBITION STAND 16: ADAPTIVE VIDEO ENCODING AND TRANSMISSION FOR TELEMEDICINE APPLICATIONS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

LORENZO IACOBELLI, THALES COMMUNICATIONS AND SECURITY
CYRIL BERGERON, THALES COMMUNICATIONS AND SECURITY
PETER AMON, SIEMENS
ESA PIRI, VTT
JANNE VEHKAPERÄ, VTT
MATTEO MAZZOTTI, CNIT
SIMONE MORETTI, CNIT
LASZLO BOKOR, BME

Two main areas of the full CONCERTO demonstration will be represented: the emergency area and the hospital. At the emergency area side, CONCERTO will show the capability to transmit over wireless networks videos acquired in real time by multiple cameras (expected to be deployed inside the ambulance) and combined in a single video stream as well as medical videos generated by an ultrasound machine. The videos are coded adaptively according to cross layer signalling about available bandwidth or user preferences. At the hospital side, the demonstrator will show how the videos are received, stocked and transmitted on a tablet of a mobile user (i.e., a doctor walking inside the hospital) in real time and adaptively following the interactive preferences of the user. A customized smartphone deployed at the emergency side and capable to exploit different access networks (Wi-Fi, 3G) to optimize the video stream transmission to the hospital will be also operated.

EXHIBITION STAND 17: COMM&NET@UNIBO ON STAGE

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

SILVIA VECCHI, ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA

Self-organisation for smart-devices

By means of several entertainment apps for smartphones and tablets, this demonstrator focusses on the potentials of self-organization techniques when applied at large scale on pervasive computing devices: solely by local communications, digital ecosystems will be created that adapt to the movement of devices on top of a wireless-enabled "carpet".

ParticipAct – A ParticipAction experiment at UNIBO

ParticipAct is a UNIBO project aimed at studying the still under-explored potential of collaboration among people exploiting smartphones as interaction tool and interconnection medium. We developed a smartphone application that allows users to easily do coordinated tasks (for example, to automatically collect data about network coverage or about audio pollution) and sends collected data to our platform that process, aggregates and analyzes the data. We still do not understand how deeply communication and continuous sensing will change society, we are ahead of an exciting journey.

The MIROR Platform

The MIROR platform is an advanced system for young children music and dance education, based on the paradigm of "reflexive interaction". The MIROR platform is composed by 3 applications: MIROR-Improvisation, MIROR-Composition and MIROR-Body Gesture. A new application is coming: the MIROR-MultiModal.

Robust and easy to deploy wireless sensor networks for landslides integrated monitoring

We show a wireless sensor network (WSN), designed for landslides monitoring. Data collected by sensors are then delivered to a remote unit for on-line analysis and alerting. The network has been designed and installed on a landslide located in Torgiovannetto (Italy) for an experimental campaign of several months. With negligible human intervention during the pilot experiment, the network revealed a very high level of robustness which makes it suitable to monitor landslides in critical environments.

EXHIBITION STAND 18: METIS RRM KEY COMPONENT: DIRECT NETWORK CONTROLLED D2D

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

KALLE RUTTIK, AALTO UNIVERSITY

The demonstration will contain four software radio units. One pair operates as base station and user equipment using TD-LTE radio interface technology. The second pair demonstrates device to device communication. The D2D link synchronizes to TD-LTE frame structure transmitted by BS. The data communication quality of both links can be observed by visitors.

The demonstration is illustrated with a graphical user interface that provides interactive aspect of the demo. The visitors can configure whether the links are allowed to use the same spectral resources or not. The demonstration gives users visual feedback on the impact of selected changes.

EXHIBITION STAND 19: SUCCESS STORIES OF THE CREW PROJECT

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

INGRID MOERMAN, IMINDS - GHENT UNIVERSITY

The 4 experiments that will be showcased are:

- Experimental coexistence study in TV bands: this experiment will showcase the combination of TVWS geo-location database access with real-time the sensing information from the LOG-a-TEC outdoor sensor network.
- Experiment-based validation of control channels for cognitive radio systems: this experiment will show that, if a mobile node (MN) goes out of the coverage of an access point (AP), it is possible to maintain the connectivity by exploiting the opportunities offered by neighboring (fixed) nodes.
- WiFi/ZigBee inter-technology cooperation: this experiment will demonstrate a cross-technology TDMA MAC scheme, providing a global synchronisation signal and alternating WiFi and ZigBee channel allocation

- Online gathering of spectrum sensing delay and energy consumption measurements in the CREW Benchmarking Framework: this experiment has extended the CREW facilities with hardware and software tools for evaluating cognitive solutions spectrum sensing delay and energy consumption.

EXHIBITION STAND 20: WIRELESS RESEARCH INFRASTRUCTURE FOR COGNITIVE AND SENSOR NETWORKING RADIO SYSTEMS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

MARKO MÄKELÄINEN, CENTRE FOR WIRELESS COMMUNICATIONS

In this demonstration, a micro cell network is consisted of multiple WARP development boards where some of the boards act as base station and some are user terminals. This setup enables testing network optimization techniques such as load balancing algorithms and dynamic resource sharing.

In addition, one WARP board acts as a router platform which provides an interface to the sensor network. Sensor data can be transferred to the graphical user interface (GUI) via WARP network.

The sensor system consists of environmental sensors performing periodic measurements and simple controls along with a human interface device control loop.

The GUI provides a convenient manner to monitor network events and performance metrics, and it has up-to-date information of the entire network

EXHIBITION STAND 21: SDN-ENABLED ALL-OPTICAL AND PROGRAMMABLE DATA CENTRE NETWORK FOR LOW LATENCY SERVER-TO-SERVER CONNECTIVITY

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

GIACOMO BERNINI, NEXTWORKS S.R.L.

Demonstrations of data plane technologies, network architecture and the interworking between the data plane and the SDN-based control plane will be performed. More specifically, the data plane technologies to be demonstrated include: a) advanced optical fast (nsec) switches to route traffic flows between DC servers/racks; b) high performance and all-programmable FPGA-based Network Interface cards (NIC) able to directly generate optical circuit/packet traffic, and c) an end-to-end all-optical network testbed able to demonstrate flexible, low-latency, and high-capacity DCN services. Regarding the integration with the control plane, the communication between the ODL SDN controller and the fast optical switch is implemented through the OpenFlow (OF) protocol; more specifically, the SDN controller is deployed on top of the OF-enabled fast optical switches (with dedicated OF control agents) for switch configuration and monitoring performed through the OF protocol messages. This way, the provisioning and reconfiguration of virtual slices mapped onto the fast optical switches can be performed. It is realized through the proper remote creation and modification of the look-up-table of the switch. Therefore, an SDN-based control framework for the fast optical switches will be demonstrated.

EXHIBITION STAND 22: REAL-TIME MONITORING OF DYNAMIC INTERNET OF THINGS ENVIRONMENTS USING SMART OBJECTS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

GIANLUIGI FERRARI, UNIVERSITÀ DEGLI STUDI DI PARMA

The demo shows an application scenario for real-time monitoring of dynamic environment where Smart Objects may join or leave abruptly and transparently and automatically interact with the environment and with the active users. The demo involves:

- Heterogenous Smart objects involving Arduino, Contiki-based devices and Linux- based Single board computers
- Multi Application-Layer protocols management (e.g., CoAP and HTTP)
- Service discovery procedures in local networks and distributed overlays
- IoT Hub implementation with
  - Protocol Translation (HTTP & CoAP); §□ Resource Directory;
  - Proxy functionalities

EXHIBITION STAND 23: DEMONSTRATING THE OPPORTUNITIES OFFERED BY THE INTERNET OF UNDERWATER THINGS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

CHIARA PETRIOLI, UNIVERSITY OF ROME "LA SAPIENZA"
JOHN R. POTTER, NATO CENTRE FOR MARITIME RESEARCH AND EXPERIMENTATION
ROBERTO PETROCCIA, UNIVERSITY OF ROME "LA SAPIENZA"
DANIELE SPACCINI, UNIVERSITY OF ROME "LA SAPIENZA"

We will demonstrate a wireless distributed underwater sensor network integrating sensing, communication, and networking capabilities. It provides a complete self-organising system that is able to collect different measurements from the underwater environment making use of static nodes, intelligent sensors and actuators. We will set-up a scale-model test-bed where two or more underwater nodes, consisting of on-board dissolved CO2 and temperature sensors coupled to an Evologics Acoustic communications modem, cooperate to provide and communicate their measurements. Wireless data transfer will be achieved using Evologics acoustic modems deployed in a water tank or making ultrasonic acoustic transmissions through the air. A laptop or embedded device will be used to control the operation of the test-bed. Possibly the connection via Internet to an underwater test-bed deployed in La Spezia (at the NATO CMRE premises) will be experimented.

EXHIBITION STAND 24: LABVIEW BASED PLATFORM FOR PROTOTYPING DENSE LTE NETWORKS IN CROWD PROJECT

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

ARIANNA MORELLI, INTECS S.P.A

This demonstrator shows initial integration results of integrating open source NS-3 LTE LENA stack within National Instruments' (NI) PXI-based FlexRIO SDR platform for rapid prototyping. The demo shows a rich heterogeneous environment including multi-core Windows/Linux PC and real-time operating system (RTOS) running on high performance general purpose processors (GPP) such as Intel processors and FlexRIO FPGA modules containing Xilinx Virtex-5 and Kintex-7 FPGAs. We also show first integration results of

baseband with RF, Digital to Analog Converter (DAC) and Analog to Digital Converter (ADC) modules that can meet the bandwidth and signal quality requirements of 5G systems.

EXHIBITION STAND 25: SDN-BASED MOBILITY MANAGEMENT IN A DENSE SMALL CELLS SCENARIO.

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

LUCA COMINARDI, IMDEA NETWORKS INSTITUTE
ALBERT BANCHS, IMDEA NETWORKS INSTITUTE

The proposed SDN-based Mobility Management solution uses OpenFlow 1.3 as Southbound API and RYU as Network Controller. The Network Controller it is responsible to store the users' mobility sessions and to configure properly the anchors. By the access network's point of view, any OpenFlow-enabled node can play the role of anchor. Unlike classical protocol such as GPT and PMIPv6, our solution does not involve any tunnelling mechanism. This can be done by having an IP-based access network where the internal routing is independently driven by MPLS or 802.1Q VLANs. Our implementation deals only the case where the whole access network is Ethernet-based. The internal routing is thus performed using 802.1Q VLANs. As a use case to show the benefits of our SDN-based solution, the MN run multiple flows and a different anchor is selected for each flow. The anchor selection is based on the characteristics of the flows. Furthermore, we cover the use case of network reconfiguration, namely the case when a branch of the network is switched-off for energy saving purpose. In case of anchors placed in the switched-off branch, that have been already assigned and are still active, we show the anchor reassignment mechanism where new anchors are selected inthe active branch of the network.

EXHIBITION STAND 26: LARGE CONTENTS OFFLOADING

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

FARID BENBADIS, THALES COMMUNICATIONS & SECURITY

Two entities are involved in the demonstration: a MOTO web server and a MOTO mobile application. The former emulates a service running on the Telecom operator side. It chooses a subset of users requiring a content and it sends them the content through the network infrastructure (3g normally, but through the Wi-Fi during the demo to avoid lack of coverage). Users who receive the contents, share it with all the other users through the mobile application. It implements a specific network protocol to disseminate large contents exploiting short duration opportunistic contacts through the Wi-Fi ad hoc technology. Every time a user completely receives a content, the server is notified. It can thus keep track of the content dissemination and eventually injects other copies after a time line.

EXHIBITION STAND 27: OPENIOT: OPEN SOURCE INTERNET OF THINGS SERVICES AND APPLICATIONS

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

MARTÍN SERRANO, NATIONAL UNIVERSITY OF IRELAND GALWAY

The exhibition will be structured based on a main demonstrator of worldwide distributed IoT sensors-enabling the creation of services and a set of satellite demonstrations of various tools facilitating IoT services deployment. The main demonstration (eye-catching) will be based on a visually attracting canvas where the deployed worldwide sensors will be shown, and from there, a selection of those sensors can be used for deploying services. Smart environments will be simulated to showcase the different services can be offered from the registered sensors. As a demonstrator of open space environment, like air monitoring with thousand of sensor distributed to monitoring the conditions of the air in a smart city. Devices and sensor prototypes will be demonstrated. Led lights and the combination of the lights and the flashing effect explain the variations in the conditions of the sensors. These set up corresponds with a real implementation in Zagreb, Croatia, where the monitoring of the air quality by using IoT sensor technology is deployed and currently customising the OpenIoT platform for scientific purposes. People will be attracted by sensor prototypes and the images o the real deployment of the sensors in Zagreb city via an individual screen projection.

The satellite demonstrations will include a wide range of tools, which will on the one hand visualize different parameters of the demonstrators (e.g., the showcases processes), and on the other will illustrate a visual process of designing, developing, configuring and deploying IoT services. The tools are offered as royalty free components of the OpenIoT (http://www.openiot.eu) open source. OpenIoT platform aim itself to be a fingerprint key system for easy adoption and creation of IoT services. Primordially for SME companies, OpenIoT and the sidereal tools will be crucial as per typically proprietary commercial IoT infrastructure for offering solutions is not necessary.

EXHIBITION STAND 28: HUAWEI TECHNOLOGIES

24/26 JUNE 2014, 09:00-18:00, FOYER EUROPA AND ITALIA

DAVID SOLDANI, HUAWEI TECHNOLOGIES

Huawei Technologies is a leading global ICT solutions provider serving 45/50 of the world top carriers and connecting more than 1/3 of the world population. The Huawei European Research Centre (ERC) consists of more than 800 ICT experts located in Germany, Sweden, Italy, Finland, France, Belgium and UK based on competencies. In 2012, the R&D investment in Europe was approximately €137m (€14m for collaborations with selected EU partners). Since 2006, we have been working on more than 10 EU funded projects with leading EU partners in the ICT sector. Looking at H2020, Huawei will collaborate with government and private sector companies and contribute to crucial technologies, especially, in the field of 5G Wireless, Networks, IoT and Optics, within the 5G Public Private Partnership (PPP) scope and beyond. We will leverage our strong presence of R&D in EU and contribute to test-beds and facilities for a maximal exploitation of results in Europe. Significant effort will be placed in implementing an effective communication plan and in disseminating the attained results. The exhibition stand provides some insights into this framework and beyond: welcome! More information about us is available at: www.huawei.eu .

TECHNICAL SESSIONS

TUM1: 5G ARCHITECTURES AND ENABLERS

TUESDAY, 24 JUNE 2014, 11:30-13:00, ROOM EUROPA

•**Session Chair:** Didier Bourse (Alcatel-Lucent, France)

Towards the METIS 5G Concept - First view on Horizontal Topics Concepts
Hugo M Tullberg (Ericsson Research, Sweden), Zexian Li (Nokia, Finland), Andreas Höglund (Ericsson, Sweden), Peter Fertl, David Gozalvez-Serrano (BMW Group Research and Technology, Germany), Krystian Pawlak (Nokia Siemens Networks, Poland), Petar Popovski (Aalborg University, Denmark), Genevieve Mange (Alcatel Lucent Bell Labs, Germany), Ömer Bulakci (Huawei European Research Center (ERC), Germany)

Towards a Flexible Functional Split for Cloud-RAN Networks
Andreas Maeder, Peter Rost (NEC Laboratories Europe, Germany), Massinissa Lalam (Sagemcom Broadband, France), Antonio De Domenico (CEA-LETI Minatec, France), Emmanouil Pateromichelakis (University of Surrey, United Kingdom), Dirk Wübben (University of Bremen, Germany), Jens Bartelt (Dresden University of Technology, Germany), Richard Fritzsche (Technische Universität Dresden, Germany)

Availability Indication as Key Enabler for Ultra-Reliable Communication in 5G
Hans D. Schotten, Raja Sattiraju (University of Kaiserslautern, Germany), David Gozalvez-Serrano, Zhe Ren, Peter Fertl (BMW Group Research and Technology, Germany)

Enabling 5G Backhaul and Access with millimeter-waves
Richard J. Weiler, Michael Peter, Wilhelm Keusgen (Fraunhofer HHI, Germany), Emilio Calvanese Strinati (CEA-LETI, France), Antonio De Domenico (CEA-LETI Minatec, France), Ilario Filippini, Antonio Capone (Politecnico di Milano, Italy), Isabelle Siaud (Orange Labs, Reseach and Development, Access Networks, France), Anne-Marie Ulmer-Moll (France Telecom R&D, France), Alexander Maltsev (Intel A/O, Russia), Thomas Haustein (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, Germany), Kei Sakaguchi (Osaka University, Japan)

Rethinking the Mobile and Wireless Network Architecture: The METIS Research into 5G
Jose F. Monserrat (Polytechnic University of Valencia, Spain), Heinz Droste (Deutsche telekom, Laboratories, Germany), Ömer Bulakci (Huawei European Research Center (ERC), Germany), Joseph Eichinger (Huawei Technologies Duesseldorf GmbH, European Research Center (ERC), Germany), Olav Queseth (Ericsson Research, Sweden), Gerasimos Stamatelatos (University of Athens, Greece), Hugo M Tullberg (Ericsson Research, Sweden), Venkatasubramanian Venkatkumar (Nokia-Solutions and Networks, Poland), Gerd Zimmermann (Deutsche Telekom, Germany), Uwe Doetsch (Alcatel-Lucent, Germany), Afif Osseiran (Ericsson Research, Sweden)

TUM2: MULTI-CARRIER MODULATIONS

TUESDAY, 24 JUNE 2014, 11:30-13:00, ROOM ITALIA

•**Session Chair:** Werner Mohr (NSN, Germany)

OFDM-based Nonlinear Fixed-Gain Amplify-and-Forward Relay Systems: SER Optimization and Experimental Testing
David Simmons (University of Oxford, United Kingdom), David Halls (Toshiba Research Europe Ltd, United Kingdom), Justin P Coon (University of Oxford, United Kingdom)

Feedback scaling for Downlink CoMP with orthogonal and non-orthogonal waveforms
Nicolas Cassiau (CEA-Leti Minatec, France), Dimitri Kténas (CEA, France), Gerhard Wunder (Heinrich-Hertz-Institut, Germany), Martin Kasparick (Fraunhofer HHI, Germany)

Low complexity frequency domain carrier frequency offset compensation for uplink multiuser FBMC receiver
Jean-Baptiste Doré (CEA, France), Nicolas Cassiau (CEA-Leti Minatec, France), Dimitri Kténas (CEA, France)

Optimal Resource Allocation Based on Interference Alignment for OFDM and FBMC MIMO Cognitive Radio Systems
Mohammed El-Absi, Thomas Kaiser (University of Duisburg-Essen, Germany)

AF Relaying for FBMC Signals
David Gregoratti, Xavier Mestre (CTTC, Spain)

TUM3: WIRELESS SCHEDULING AND DIMENSIONING

TUESDAY, 24 JUNE 2014, 11:30-13:00, ROOM BOLOGNA

•**Session Chair:** Gianni Pasolini (CNIT, Italy)

De Bruijn Spreading Sequences for Dense CDMA-Based WSNs
Mahdiyar Sarayloo, Ennio Gambi, Susanna Spinsante (Università Politecnica delle Marche, Italy)

On the Performance of IEEE 802.15.6 CSMA/CA With Priority for Query-Based Traffic
Riccardo Cavallari, Chiara Buratti (University of Bologna, Italy)

3G Access Network Dimensioning in Isolated Rural Areas based on Femtocells
Jaume del Olmo Alòs, Antonio Pascual-Iserte, Josep Vidal, Olga Muñoz-Medina, Adrian Agustin (Universitat Politècnica de Catalunya, Spain)

Effective dynamic coordinated scheduling in LTE-Advanced networks
Giovanni Nardini, Giovanni Stea, Antonio Virdis (University of Pisa, Italy), Dario Sabella, Marco Caretti (Telecom Italia, Italy)

On the Performance of Decentralized Cell Edge Coordinated Scheduling in Small Cell Clusters with Different Densities
Omer Anjum, Carl Wijting, Mikko A Uusitalo, Kimmo Valkealahti (Nokia Research Center, Finland)

TUA1: ADVANCED WIRELESS ACCESS

TUESDAY, 24 JUNE 2014, 16:45-18:15, ROOM EUROPA

•**Session Chair:** Paulo Marques (Instituto de Telecomunicações, Portugal)

Full Duplex Device-to-Device Communication in Cellular Networks
Samad Ali, Premanandana Rajatheva, Matti Latva-aho (University of Oulu, Finland)

Spectrum Overlay through Aggregation of Heterogeneous Dispersed Bands
Florian Kaltenberger (Eurecom, France), Fotis Foukalas (Athena Research Innovation Centre, Greece), Oliver D Holland (King's College London, United Kingdom), Slawomir Pietrzyk (Innovative Solutions, Poland), Somsai Thao (Thales, France), Guillaume Vivier (Sequans, France)

The Study on Spectrum/Channel Fragmentation from Dynamic Spectrum Aggregation in CRNs
Haeyoung Lee, Seiamak Vahid, Klaus Moessner (University of Surrey, United Kingdom)

Energy-Efficient Interference-aware Precoding for the Downlink of Multi-cell Multi-user MIMO Systems
Fabien Héliot, Yusuf Sambo, Muhammad Ali Imran (University of Surrey, United Kingdom)

Achieving High Reliability in Aerial-Terrestrial Networks: Opportunistic Space-Time Coding
Wei Jiang, Hanwen Cao, Michael Wiemeler, Thomas Kaiser (Univerisity of Duisburg-Essen, Germany)

TUA2: SIGNAL PROCESSING AND ESTIMATION

TUESDAY, 24 JUNE 2014, 16:45-18:15, ROOM ITALIA

•**Session Chair:** Michel Kieffer (L2S - CNRS - SUPELEC – University Paris-Sud, France)

Directional Spectrum Sensing for Cognitive Radio Using ESPAR Arrays with a Single RF Chain
Rongrong Qian, Mathini Sellathurai (Heriot-Watt University, United Kingdom), Tharmalingam Ratnarajah (The University of Edinburgh, United Kingdom)

Channel Estimation and Performance Analysis of Beamspace MIMO Systems
Lin Zhou, Tharmalingam Ratnarajah, Jiang Xue (The University of Edinburgh, United Kingdom)

Multi-Mode Filter Bank Solution for Broadband PMR Coexistence with TETRA
Juha Yli-Kaakinen, Markku K. Renfors (Tampere University of Technology, Finland)

The Entropy of Wireless Statistics
Christine Hennebert, Hicham Hossayni (CEA, LETI, Minatec, France), Cedric Lauradoux (INRIA, France)

Antenna Characteristics Impact on LTE Inter-Cell Interference Performance in Urban Scenarios
Diogo Almeida (Instituto Superior Técnico - INOV/INESC, University of Lisbon, Portugal), Luis M. Correia (IST - University of Lisbon, Portugal), Marco Serrazina (FCT-UNL, Portugal)

TUA3: ADVANCED OPTICAL SYSTEMS AND ACCESS NETWORKS

TUESDAY, 24 JUNE 2014, 16:45-18:15, ROOM BOLOGNA

•**Session Chair:** Franco Gallegati (University of Bologna, Italy)

Challenges and Progress toward a Silicon-based Multi-Microring Optical Network-on-Chip
Nicola Andriolli, Isabella Cerutti, Paolo Pintus (Scuola Superiore Sant'Anna, Italy), Mirco Scaffardi (CNIT, Italy), Diego Marini (IMM CNR, Italy), Giovanni Battista Montanari (Laboratorio MIST E-R, Italy), Fulvio Mancarella, Matteo Ferri, Roberto Balboni (IMM CNR, Italy), Gabriele Bolognini (Consiglio Nazionale delle Ricerche, Italy)

Optics in Data Center: Improving Scalability and Energy Efficiency
Isabella Cerutti, Nicola Andriolli, Pier Giorgio Raponi, Piero Castoldi (Scuola Superiore Sant'Anna, Italy), Odile Liboiron-Ladouceur (McGill University, Canada)

Towards the Distributed Core for Ubiquitous Superfast Broadband Optical Access
Andrea Di Giglio, Marco Schiano (Telecom Italia, Italy), Marco Ruffini (CTVR, Trinity College Dublin, Ireland), David B Payne (Trinity College Dublin, United Kingdom), Nick Doran (Aston University, United Kingdom), Mohand Achouche (Alcatel-Thales III-V Lab, France), Rich Jensen (Polatis, USA), Barry O'Sullivan (University College Cork, Ireland), Thomas Pfeiffer, Rene Bonk (Alcatel-Lucent, Germany), Harald Rohde (Coriant GmbH, Germany), Xin Yin (Ghent University - IMEC, Belgium), Roland Wessäly (Konrad-Zuse-Zentrum, Berlin, Germany), Lena Wosinska (KTH Royal Institute of Technology, Sweden), Julio Montalvo (Telefónica I+D, Spain), Giuseppe Talli (Tyndall National Institute, Ireland)

On the next generation bandwidth variable transponders for future flexible optical systems
Antonio Napoli (Coriant R&D GmbH, Germany), Markus Noelle (Fraunhofer Institute, Heinrich Hertz Institute, Einsteinufer 37, Berlin, Germany), Danish Rafique (Coriant R&D GmbH, Germany), Johannes K. Fischer (Fraunhofer Heinrich-Hertz-Institute, Germany), Bernhard Spinnler (Coriant R&D GmbH, Germany), Talha Rahman (Eindhoven University of Technology, Eindhoven, Germany), Mahdi Mohammed Mezghanni (TU München, Germany), Marc Bohn (Coriant R&D GmbH, Germany)

Upstream Transmission in a Reflective FDMA-PON: results from the EU project FABULOUS
Joana Chang, Roberto Gaudino, Valter Ferrero (Politecnico di Torino, Italy), Stefano Straullu, Paolo Savio, Antonino Nespola, Silvio Abrate (Istituto Superiore Mario Boella, Italy), Benoit Charbonnier (Orange Labs, France)

WEM1: ENERGY AWARE DESIGN

WEDNESDAY, 25 JUNE 2014, 11:30-13:00, ROOM EUROPA

•**Session Chair:** Matti Latva-aho (University of Oulu, Finland)

Computation Offloading Strategies based on Energy Minimization under Computational Rate Constraints
Sergio Barbarossa (University of Rome, Italy), Paolo Di Lorenzo, Stefania Sardellitti (University of Rome La Sapienza, Italy)

1 Hop or 2 Hops: Topology Analysis in Body Area Network
Fabio Di Franco (Università degli Studi di Palermo, Italy), Ilenia Tinnirello (University of Palermo, Italy), Yu Ge (Institute for Infocomm Research, Singapore)

Energy Saving Potentials in the Radio Access through Relaying in Future Networks
Jordi Pérez-Romero, Oriol Sallent, Ramon Agustí (Universitat Politècnica de Catalunya, Spain)

An Adaptive Pilot Power Control for Green Heterogenous Networks
Anna Dudnikova, Antonio Mastrosimone, Daniela Panno (University of Catania, Italy)

Energy-Efficient User Association In Extremely Dense Small Cell Networks
Claudio Bottai (Intecs, Italy), Claudio Cicconetti (MBI, Italy), Arianna Morelli, Michele Rosellini (Intecs S.p.A., Italy), Christian Vitale (IMDEA Networks Institute, Spain)

WEM2: TESTBEDS AND EXPERIMENTAL RESEARCH

WEDNESDAY, 25 JUNE 2014, 11:30-13:00, ROOM ITALIA

•**Session Chair:** Chiara Buratti (CNIT, Italy)

A Distributed Algorithm for Virtual Traffic Lights with IEEE 802.11p
Alessandro Bazzi (WiLab, IEIIT-BO/CNR, University of Bologna, Italy), Alberto Zanella (Istituto di Elettronica e di Ingegneria dell'Inform. e delle Telecomunicazioni, Italy), Barbara M Masini (IEIIT-CNR, Italy), Gianni Pasolini (University of Bologna, Italy)

Design and integration of a low-complexity dosimeter into the Smart City for EMF assessment
Luis Diez (University of Cantabria, Spain), Shoaib Anwar (Microwave Vision Group, Satimo Industries, France), Laura Rodriguez de Lope (University of Cantabria, Spain)**,** Matthieu Le Hennaff (SATIMO Industries, France), Yann Toutain (Microwave Vision, France), Ramón Agüero (University of Cantabria, Spain)

Smart Water Grids for Smart Cities: a Sustainable Prototype Demonstrator
Leonardo Gabrielli, Mirco Pizzichini, Susanna Spinsante, Stefano Squartini (Università Politecnica delle Marche, Italy), Roberto Gavazzi (Telecom Italia Lab, Italy)

Monitoring and Measurement Architecture for Federated Future Internet Experimentation Facilities
Yahya Al-Hazmi (Technische Universität Berlin, Germany)**,** Thomas Magedanz (TU Berlin / Fraunhofer FOKUS, Germany)

Health Monitoring of Federated Future Internet Experimentation Facilities
Thijs Walcarius, Wim Vandenberghe (Ghent University – iMinds, Belgium)**,** Brecht Vermeulen (UGent - IBBT, Belgium)**,** Piet Demeester (Ghent University - iMinds, Belgium)**,** Dai Davies (DANTE, United Kingdom)

WEM3: APPLICATIONS, SERVICES AND NETWORKS

WEDNESDAY, 25 JUNE 2014, 11:30-13:00, ROOM BOLOGNA

•**Session Chair:** Klaus Moessner (University of Surrey, United Kingdom)

YouTube All Around: Characterizing YouTube from Mobile and Fixed-line Network Vantage Points
Pedro Casas, Pierdomenico Fiadino, Arian Bär, Alessandro D'Alconzo (Telecommunications Research Center Vienna (FTW), Austria), Alessandro Finamore, Marco Mellia (Politecnico di Torino, Italy)

Design of ICN-enabled IEEE 802.11 Wireless Access Points
Suyong Eum (NICT, Japan), Yozo Shoji (National Institute of Information and Communications Technology, Japan), Masayuki Murata (Osaka University, Japan), Nozomu Nishinaga (National Institute of Information and Communications Technology, Japan)

Telemedicine System for Game-Based Rehabilitation of Stroke Patients in the FP7-"StrokeBack" Project
Emmanouela Vogiatzaki (RFSAT Ltd, Greece), Yannis Gravezas, Nikos Dalezios (RFSAT Ltd, United Kingdom), Dwaipayan Biswas (University of Southampton, United Kingdom), Andy Cranny (Faculty of Physical Sciences and Engineering, University of Southampton, United Kingdom), Steffen Ortmann (IHP, Germany), Peter Langendoerfer (IHP Microelectronics, Germany), Ilias Lamprinos, Gioula Giannakopoulou (INTRACOM TELECOM, Greece), Josy Achner, Jasmin Klemke (Berlin-Brandenburg-Klinik, Germany), Holger Jost (University of Potsdam, Germany)

Service Discovery in Resource Constrained Networks using Multicast DNS
Aleksandar Siljanovski, Anuj Sehgal, Jürgen Schönwälder (Jacobs University Bremen, Germany)

Context-Aware Handover in HetNets
Andrea Zanella, Irene Pappalardo (University of Padova, Italy)**,** Francesco Guidolin, Michele Zorzi (Università degli Studi di Padova, Italy)

WEA1: INTERFERENCE AWARE DESIGN

WEDNESDAY, 25 JUNE 2014, 16:45-18:15, ROOM EUROPA

•**Session Chair:** Jordi Perez-Romero (Universitat Politècnica de Catalunya, Spain)

Comparison of inter-cell interference Models for Cellular Networks
Olav Norvald Østerbø (Telenor Corporate Development, Norway)**,** Ole Grøndalen (Telenor, Norway)

A Cooperative Localization Algorithm Exploiting a Mobile Device in Cognitive Radio Networks
Sanaz Kianoush, Anna Vizziello, Paolo Gamba (Università degli Studi di Pavia, Italy)

Full-Duplex Communications in Interference Networks Under Composite Fading Channel
Carlos H. M. de Lima, Pedro Henrique Juliano Nardelli (University of Oulu, Finland)**,** Hirley Alves (University of Oulu, Brazil)**,** Matti Latva-aho (University of Oulu, Finland)

Interference Aware Massive SDMA with a Large Uniform Rectangular Antenna Array
Martin Kurras, Lars Thiele (Fraunhofer Heinrich Hertz Institute, Germany)**,** Thomas Haustein (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, Germany)

Distributed Interference Mitigation in Two-Tier Wireless Networks Using Correlated Equilibrium and Regret-Matching Learning
Pawel Sroka, Adrian Kliks (Poznan University of Technology, Poland)

WEA2: COOPERATIVE WIRELESS NETWORKS

WEDNESDAY, 25 JUNE 2014, 16:45-18:15, ROOM ITALIA

•**Session Chair:** Luis Correia (INOV, Portugal)

On the Security of Cognitive Radio Networks: Cooperative Jamming with Relay Selection
Weigang Liu, Md. Zahurul Islam Sarkar, Tharmalingam Ratnarajah (The University of Edinburgh, United Kingdom)

Physical-layer Network Coding via Low Density Lattice Codes
Yi Wang, Alister G. Burr (University of York, United Kingdom)

Eisenstein Integer based Multi-dimensional Coded Modulation for Physical-layer Network Coding over F_4 in the Two-way Relay Channels
Dong Fang, Alister G. Burr, Yi Wang (University of York, United Kingdom)

Optimization of coherent amplify-and-forward cooperative transmissions in spatially-multiplexed MIMO-OFDM systems
Donatella Darsena (University of Napoli Parthenope, Italy), Giacinto Gelli, Fulvio Melito, Francesco Verde (University of Napoli Federico II, Italy)

Distributed SPS Algorithms for Non-Asymptotic Confidence Region Evaluation
Vincenzo Zambianchi (University of Bologna, Italy), Michel Kieffer (L2S - CNRS - SUPELEC - UniversityParis-Sud, France), Francesca Bassi (LSS-CNRS-Supelec, France), Gianni Pasolini, Davide Dardari (University of Bologna, Italy)

WEA3: ADVANCED ARCHITECTURES AND CONTROL FOR OPTICAL NETWORKS

WEDNESDAY, 25 JUNE 2014, 16:45-18:15, ROOM BOLOGNA

•**Session Chair:** Dimitra Simeonidou (University of Bristol, United Kingdom)

A Novel SDN enabled Hybrid Optical Packet/Circuit Switched Data Centre Network: the LIGHTNESS approach
Shuping Peng, Dimitra Simeonidou, Georgios Zervas, Reza Nejabati, Yan Yan, Yi Shu (University of Bristol, United Kingdom), Salvatore Spadaro, Jordi Perelló, Fernando Agraz, Davide Careglio (Universitat Politècnica de Catalunya, Spain), Harm Dorren, Wang Miao (Eindhoven University of Technology, The Netherlands), Nicola Calabretta (COBRA Research Institute, The Netherlands), Giacomo Bernini, Nicola Ciulli (Nextworks s.r.l., Italy), Jose Sanchov, Steluta Iordache (Barcelona Supercomputing Center, Spain), Yolanda Becerra, Montse Farrera (Universitat Politecnica de Catalunya, Spain), Matteo Biancani (Interoute S.p.A., Italy), Alessandro Predieri (Interoute, Greece), Roberto Proietti, Zheng Cao, Lei Liu, S. J. Ben Yoo (University of California, Davis, USA)

Network Virtualization, Control Plane and Service Orchestration of the ICT STRAUSS Project
Raul Muñoz, Ricard Vilalta, Ramon Casellas, Ricardo Martinez (CTTC, Spain), Luis Miguel Contreras, Victor López, Juan P. Fernández-Palacios, Oscar González de Dios (Telefónica I+D, Spain), Shuping Peng, Mayur Channegowda, Reza Nejabati, Dimitra Simeonidou (University of Bristol, United Kingdom), Xiaoyuan Cao, Noboru Yoshikane, Takehiro Tsuritani(KDDI R&D Laboratories, Inc., Japan), Achim Autenrieth (ADVA Optical Networking, Germany), Michael Schlosser (Fraunhofer-Institute for Telecommunications Heinrich-Hertz-Institut, Germany)

IDEALIST Control Plane Architecture for Multi-domain Flexi-Grid Optical Networks
Ramon Casellas, Raul Muñoz, Ricardo Martinez, Ricard Vilalta (CTTC, Spain), Filippo Cugini (CNIT, Italy), Francesco Paolucci (Scuola Superiore Sant'Anna, Italy), Oscar González de Dios, Victor López, Juan P. Fernández-Palacios (Telefónica I+D, Spain), Roberto Morro, Andrea Di Giglio (Telecom Italia, Italy), Daniel King, Adrian Farrel (Old Dog Consulting, United Kingdom)

Flexible Optical Infrastructure for Ethernet Transport: Solutions and Enabling Technologies in the ICT STRAUSS Project
Michela Svaluto Moreolo, Josep M. Fabrega (CTTC, Spain), Shuangyi Yan, Bijan Rahimzadeh Rofoee, Yan Yan, Emilio Hugues-Salas, Yi Shu, Georgios Zervas, Dimitra Simeonidou (University of Bristol, United Kingdom), Ken'ichi Kitayama (Osaka University, Japan), Masato Nishihara, Toshiki Tanaka, Tomoo Takahara, Jens C. Rasmussen (Fujitsu Laboratories Limited, Japan), Luz Fernández (Fraunhofer HHI, Germany), Michael Schlosser (Fraunhofer-Institute for Telecommunications Heinrich-Hertz-Institut, Germany), Andres Macho Ortiz (TID, Spain), Victor López, Juan P. Fernández-Palacios (Telefónica I+D, Spain)

Next Generation Optical Network Architecture Featuring Distributed Aggregation, Network Processing and Information Routing
Theofanis G. Orphanoudakis, Chris Matrakidis, Alexandros Stavdas (University of Peloponnese, Greece)

WEA4: VIRTUALISED NETWORKS

WEDNESDAY, 25 JUNE 2014, 16:45-18:15, ROOM MARCONI

•**Session Chair:** David Soldani (Huawei Technologies, Germany)

Neural Network-based Autonomous Allocation of Resources in Virtual Networks
Rashid Mijumbi, Juan-Luis Gorricho, Joan Serrat (Universitat Politècnica de Catalunya, Spain), Maxim Claeys (Ghent University- iMinds, Belgium), Jeroen Famaey (Ghent University, Belgium), Filip De Turck (Ghent University - iMinds, Belgium)

Planning of Dynamic Mobile Optical Virtual Network Infrastructures Supporting Cloud Services
Markos Anastasopoulos, Anna Tzanakaki, Bijan Rahimzadeh Rofoee, Shuping Peng, Georgios Zervas, Dimitra Simeonidou (University of Bristol, United Kingdom), Giada Landi, Giacomo Bernini (Nextworks, Italy), Nicola Ciulli (Nextworks s.r.l., Italy), Jordi Ferrer Riera, Eduard Escalona, Joan A. García-Espín (Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain), Kostas Katsalis (University of Thessaly, Greece), Thanasis Korakis (Polytechnic Institute of New York University, USA)

Mobility and Bandwidth prediction in virtualized LTE systems: architecture and challenges
Georgios Karagiannis (University of Twente/DACS Group, The Netherlands), Almerima Jamakovic (UniBE, Switzerland), Keith Briggs (BT Group, United Kingdom), Morteza Karimzadeh (University of Twente, The Netherlands), Carlos Parada (Portugal Telecom Inovação, Portugal), Marius Corici (Fraunhofer FOKUS, Germany), Tarik Taleb (NEC Europe Ltd., Germany), Andy Edmonds (Zürcher Hochschule für Angewandte Wissenschaften, Switzerland), Thomas Michael Bohnert (Zurich University of Applied Sciences, Switzerland)

T-NOVA: A Marketplace for Virtualized Network Functions
George K Xilouris, Eleni Trouva (NCSR Demokritos, Greece), Felicia Lobillo (Atos, Spain), Joaosoares Soares, Jorges Carapinha (Portugal Telecom Inovação, Portugal), Michael J McGrath (Intel Labs, Ireland), Georgios Gardikis (Space Hellas S.A., Greece), Pietro Paglierani (ITALTEL, Greece), Evangelos Pallis (Technological Educational Institute of Crete, Greece), Letterio Zuccaro (Sapienza University of Rome, Italy), Yacine Rebahi (Fraunhofer Institut Fokus, Berlin, Germany), Anastasios Kourtis (NCSR Demokritos, Greece)

Wireless Access Virtualisation: Addressing Virtual Resources with different Types of Requirements
Luisa Caeiro (Escola Superior de Tecnologia de Setubal - Polytechnic Institute of Setubal, Portugal), Filipe D. Cardoso (ESTSetubal/Polytechnic Institute of Setubal, Portugal), Luis M. Correia (IST - University of Lisbon, Portugal)

THM1: WIRELESS ALGORITHMS AND PLATFORMS

THURSDAY, 26 JUNE 2014, 9:00-10:30, ROOM EUROPA

•**Session Chair:** Alessandro Bazzi (IEIIT-CNR, Italy)

LabVIEW based Platform for prototyping dense LTE Networks in CROWD Project
Rohit Gupta, Thomas Vogel (National Instruments, Germany), Nikhil Kundargi, Amal Ekbal (National Instruments, USA), Arianna Morelli (Intecs, Italy), Vincenzo Mancuso (IMDEA Networks Institute, Spain), Vincenzo Sciancalepore (Institute IMDEA Networks, Italy), Russell Ford, Sundeep Rangan (New York University, USA)

Implementation of Spectrum Micro-trading for Mobile Operators in the Spatial Dimension
Pål R. Grønsund, Ole Grøndalen (Telenor, Norway), Kashif Mahmood (Telenor ASA, Norway), Per H. Lehne (Telenor Group Industrial Development, Norway)

A C/I based approach to setting the maximum EIRP levels for database-assisted WSDs
Valeria Petrini, Maria Missiroli (Fondazione Ugo Bordoni, Italy), Marina Barbiroli (University of Bologna, Italy)

Inter- and Intra-Cloud Resource Allocation for Delay Sensitive Industrial Networks
Ali Parichehreh, Umberto Spagnolini (Politecnico di Milano, Italy)

LTE traffic analysis and application behavior characterization
Gianluca Foddis (Telecom Italia, Italy), Rosario G. Garroppo, Stefano Giordano, Gregorio Procissi, Simone Roma (University of Pisa, Italy), Simone Topazzi (Telecom Italia Lab, Italy)

THM2: CONTENT NETWORKING

THURSDAY, 26 JUNE 2014, 9:00-10:30, ROOM ITALIA

•**Session Chair:** Carla Raffaelli (University of Bologna, Italy)

Towards Multi-Tenant Cache Management for ISP Networks
Maxim Claeys (Ghent University- iMinds, Belgium), Daphne Tuncer (University College London, United Kingdom), Jeroen Famaey (Ghent University, Belgium), Marinos Charalambides (University College London, United Kingdom), Steven Latré (University of Antwerp - iMinds, Belgium), Filip De Turck (Ghent University - iMinds, Belgium), George Pavlou (University College London, United Kingdom)

Research Challenges Towards a Managed Information-Centric Network of Things
Daniel Corujo (Instituto de Telecomunicações Aveiro, Portugal), Rui L Aguiar (University of Aveiro, Portugal), Ivan Vidal, Jaime J. Garcia (Universidad Carlos III de Madrid, Spain), Kostas Pentikousis (EICT, Germany)

QoS and QoE Evaluation of Web-browsing Over an SI-SAP-Enabled DVB-S2/RCS System
Marco Cello (University of Genoa, Italy), Tomaso De Cola (German Aerospace Center (DLR), Germany), Mario Marchese (DIST-University of Genoa, Italy), Maurizio Mongelli (National Research Council of Italy, Italy)

Named Data Networking for IoT: an Architectural Perspective
Marica Amadeo, Claudia Campolo, Antonio Iera, Antonella Molinaro (University Mediterranea of Reggio Calabria, Italy)

Service Oriented Networking
David Griffin, Miguel Rio (University College London, United Kingdom), Pieter Simoens, Piet Smet (Ghent University - iMinds, Belgium), Frederik Vandeputte, Luc Vermoesen (Alcatel-Lucent Bell NV, Belgium), Dariusz Bursztynowski (Orange, Poland), Folker M Schamel (Spinor, Germany)

THM3: IOT AND CLOUD-BASED SERVICES

THURSDAY, 26 JUNE 2014, 9:00-10:30, ROOM BOLOGNA

•**Session Chair:** Giacomo Morabito (Univeristy of Catania, Italy)

M2M Technologies: Enablers for a Pervasive Internet of Things
Stefano Severi (Jacobs University Bremen, Germany), Francesco Sottile (ISMB, Italy), Giuseppe Abreu (Jacobs University Bremen, Germany), Claudio Pastrone (Istituto Superiore Mario Boella, Italy), Maurizio A. Spirito (ISMB, Italy), Friedbert Berens (FBConsulting S.à r.l., Luxemburg)

A Partial Offloading Technique for Wireless Mobile Cloud Computing in Smart Cities
Daniela Mazza, Daniele Tarchi, Giovanni Emanuele Corazza (University of Bologna, Italy)

IoT Data Management Methods and Optimisation Algorithms for Mobile Publish/Subscribe Services in Cloud Environments
Ivana Podnar Zarko, Kresimir Pripuzic (University of Zagreb, Croatia), Martin Serrano (National University of Ireland Galway - NUIG, Ireland), Manfred Hauswirth (DERI Galway, Ireland)

An Architecture to offer Cloud-Based Radio Access Network as a Service
Lúcio Studer Ferreira (INOV-INESC | IST University of Lisbon, Portugal), Dominique Pichon (Ecole Nationale Supérieure des Télécommunications de Bretagne, France), Atoosa Hatefi (Orange, France), Andre Gomes (OneSource, Lda. | University of Coimbra, Switzerland), Desislava Dimitrova, Torsten Braun (University of Bern, Switzerland), Georgios Karagiannis (University of Twente/DACS Group, The Netherlands), Morteza Karimzadeh (University of Twente, The Netherlands), Monica Branco (INOV-INESC | IST University of Lisbon, Portugal), Luis M. Correia (IST - University of Lisbon, Portugal)

An SDN Orchestrator for Resources Chaining in Cloud Data Centers
Barbara Martini (CNIT, Italy), Davide Adami (CNIT Pisa Research Unit, University of Pisa, Italy), Andrea Sgambelluri, Molka Gharbaoui

(Scuola Superiore Sant'Anna, Italy), Lisa Donatini, Stefano Giordano (University of Pisa, Italy), Piero Castoldi (Scuola Superiore Sant'Anna, Italy)

TECHNICAL SPECIAL SESSIONS

TUM4: FUNDAMENTAL LIMITS OF WIRELESS NETWORKS

TUESDAY, 24 JUNE 2014, 11:30-13:00, ROOM MARCONI

•**Session Chair:** Mari Kobayashi (Supelec, CNRS, France)

On Interference channels with generalized and intermittent feedback
Abdellatif Zaidi (CNRS, France)

Stochastic Geometry Modeling and Analysis of the Error Probability of Two-tier Cellular Networks
Wei Lu, Marco Di Renzo, Anthony Busson (CNRS, France)

Effects of randomness on power optimization in wireless networks
Anthony Mays (Supelec, CNRS, France), Aris Moustakas (University of Athen, Greece), Merouane Debbah (Supelec, CNRS, France)

Decoding Options for the Symmetric and Asymmetric Turbo-Coded Two-Way Relay Channel
Stephan Pfletschinger (CTTC, Spain), Carmine Vitiello (University of Pisa, Italy) Monica Navarro (CTTC, Spain)

Erasure channel decoding and density evolution for a class of non-linear codes with local constraints
Jossy Sayir and Caroline Atkins (University of Cambridge, UK)

TUM5: VIRTUALISING THE NETWORK AND PROGRAMMING THE SDN: OF COURSE, BUT HOW?

TUESDAY, 24 JUNE 2014, 11:30-13:00, ROOM MEUCCI

• **Session Chair:** Pedro A. Aranda Gutiérrez (Telefónica I+D, Spain)

NetIDE: Empowering the "S" in SDN
Pedro A. Aranda Gutiérrez, Diego López (Telefónica, I+D; Spain), Elio Salvadori (Create-NET; Italy)

SDK4SDN
Thomas Michael Bohnert, Philipp Aeschlimann, Diana Moise (Zurich University of Applied Sciences; Switzerland)

TUA4: INTELLIGENCE IN 5G: TRENDS & CHALLENGES

TUESDAY, 24 JUNE 2014, 16:45-18:15, ROOM MARCONI

•**Session Chair**: Panagiotis Demestichas (University of Piraeus, Department of Digital Systems, Greece)

Cognitive Management for Future Radio Access Networks
Colin Willcock (NSN, Germany)

Intelligence in 5G – at the speed of services
Markus Gruber (Alcatel-Lucent Bell Labs, Germany)

Patterns in Networks - exploiting the big data in Comms Networks
Klaus Moessner (University of Surrey, UK)

Artificial Intelligence as a cornerstone for 5G networks management
Oriol Sallent (Universitat Politecnica de Catalunya, Spain)

TUA5: ADVANCED TECHNIQUES FOR ENERGY- AND BANDWIDTH-EFFICIENT COMMUNICATIONS

TUESDAY, 24 JUNE 2014, 16:45-18:15, ROOM MEUCCI

•**Session Chair**: Andreas Polydoros (IASA/NKUA, Greece)

Low complexity distributed outlier identification for wireless sensor networks
Wenjie Li, Francesca Bassi (CNRS – SUPELEC, Univ. Paris-Sud, France), Davide Dardari (CNIT, DEI, University of Bologna, Italy), Michel Kieffer (CNRS - SUPELEC, Univ. Paris-Sud, France), Gianni Pasolini (CNIT, DEI, University of Bologna, Italy)

Interference management in HetNets based on the use of Radio Environmental Maps
Jordi Pérez-Romero (UPC, Spain), Andreas Zalonis (IASA, Greece), Adrian Kliks (PUT, Poland), Lila Boukhatem (CNRS – UniPS, France)

Optimal Design of Energy-Efficient Multi-User MIMO Systems
Emil Bjornson,(CNRS – Supelec, France), Luca Sanguinetti (CNIT-Pisa, Italy), Jakob Hoydis (Alcatel-Lucent, France), Mérouane Debbah (CNRS – Supelec, France)

Mixed-Integer Linear Programming approaches for the LTE Uplink Radio Resource Assignment model
M. Danilo Abrignani (DEI, University of Bologna, Italy), Lorenza Giupponi (CTTC - Centre Tecnològic Telecomunicacions Catalunya, Spain), Andrea Lodi, Roberto Verdone (DEI, University of Bologna, Italy)

Radio resource allocation algorithms in cognitive radio networks with outdated CSI
Paolo Del Fiorentino, Riccardo Andreotti, Filippo Giannetti, Vincenzo Lottici (CNIT/Pisa, Italy), Jeroen Van Hecke, Marc Moeneclaey (UGent, Belgium)

WEM4: OPPORTUNISTIC AND COOPERATIVE COMMUNICATIONS

WEDNESDAY, 25 JUNE 2014, 11:30-13:00, ROOM MARCONI

•**Session Chair**: Sergio Palazzo (CNIT, Research Unit at University of Catania, Italy)

Invited talk: Opportunistically Cooperating Radios in Action
Andreas Polydoros (University of Athens, Greece)

VAA Formation Game for Cooperative Wireless Sensor Networks
Riccardo Andreotti (CNIT at University of Pisa, Italy), Stefan Mijovic (CNIT at University of Bologna, Italy), Ivan Stupia (UCL, Spain), Chiara Buratti (CNIT at University of Bologna, Italy), Andrea Zanella (CNIT at University of Bologna, Italy) Filippo Giannetti (CNIT at University of Pisa, Italy),

Multiple relay selection in underlay cognitivenetworks with per-relay constraints
Luis Blanco (CTTC, Spain), Montse Nájar (UPC, Spain)

On the impact of sociality in multicast delay tolerant networks with adaptive infection recovery
Beatriz Lorenzo, Savo Glisic (University of Oulu, Finland), Laura Galluccio (CNIT at University of Catania, Italy)

A Game-Theoretic Analysis of Anti-Jamming Timing Channels
Lin Chen (CNRS, UPS, France)**,** Salvatore D'Oro, Laura Galluccio (CNIT at University of Catania, Italy)**,** Fabio Martignon (CNRS, UPS, France)**,** Giacomo Morabito, Sergio Palazzo (CNIT at University of Catania, Italy)

WEM5: SOFTWARE DEFINED PHOTONICS IN DATA CENTER NETWORKS

WEDNESDAY, 25 JUNE 2014, 11:30-13:00, ROOM MEUCCI

•**Session Chair**: Carla Raffaelli (University of Bologna, Italy)

SDN-enabled optical switching
Dimitra Simeonidou (University of Bristol, UK)

Toward feedback-controlled integrated photonics
Andrea Melloni, Francesco Morichetti (Politecnico di Milano, Italy)

Resilience of optical networks based on Architecture on Demand nodes
Marija Furdek, Matija Džanko (University of Zagreb, Faculty of Electrical Engineering and Computing, Dept. of Telecommunications, Croatia), Lena Wosinska (KTH Royal Institute of Technology, ICT School, Kista, Sweden KTH)

Architectures and technologies for data center interconnection
Alexandros Stavdas, Chris Matrakidis, Theofanis Orphanoudakis (Department of Informatics and Telecommunications, University of Peloponnese, Greece), Antonio Manzalini (Telecom Italia, Italy), Ricardo Martínez (Centre Tecnològic de Telecomunicacions de Catalunya, Spain)

Load balancing in SDN enabled integrated packet/circuit networks, first experimental demonstrations
Raimena Veisllari (Department of Telematics, Norwegian University of Science and Technology, Trondheim, Norway), Steinar Biornstad (TransPacket, Oslo, Norway), Kurosh Bozorgebrahimi (UNINETT, Trondheim, Norway)

WEA5: SPECTRUM MANAGEMENT STRATEGIES FOR FUTURE RADIO COMMUNICATIONS NETWORKS

WEDNESDAY, 25 JUNE 2014, 16:45-18:15, ROOM MEUCCI

•**Session Chair**: Narcis Cardona (UPV, COST IC1004, Spain)

Spectrum sharing initiatives in the UHF band in the light of preparations for WRC-15
TBD

Potential and challenges of the Licensed Shared Access approach
C. Carciofi, R. Castrucci (Fondazione Ugo Bordoni, Italy), M. Barbiroli (University of Bologna, Italy), D. Guiducci, P. Grazioso, V. Petrini (Fondazione Ugo Bordoni, Italy)

Coexistence of Broadcast and Mobile Technologies in UHF bands
C.G. Pardo, M. Fuentes, D.G. Barquero, E. Garro, N. Cardona (iTEAM Research Institute, Universidad Politecnica de Valencia, Spain)

Incentives for incumbent spectrum users in Licensed Shared Access (LSA): A dynamic capabilities view
Leo Fulvio Minervini (University of Macerata, Italy), Marja Matinmikko (VTT Technical Research Centre of Finland, Finland), Vânia Gonçalves (University of Porto, Portugal), Miia Mustonen (VTT Technical Research Centre of Finland, Finland), Petri Ahokangas (University of Oulu, Finland)

THM4: FROM THEORY TO PRACTICE: EXPERIMENTAL RESEARCH ACTIVITIES IN NEWCOM#'S EUWIN LABS

THURSDAY, 26 JUNE 2014, 09:00-10:30, ROOM MARCONI

•**Session Chair**: Miquel Payaró (CTTC, Spain)

Testing Protocols for the Internet of Things on the EuWIn Platform
Sebastiano Milardo (Università degli Studi di Catania, Italy), Gordana Gardasevic (Università di Bologna, Italy), Melchiorre Danilo Abrignani, Andrea Stajkic, Stefan Mijovic (Università di Bologna, Italy), Giacomo Morabito (Università degli Studi di Catania, Italy), Chiara Buratti, Roberto Verdone (Università di Bologna, Italy)

A VLSI Implementation of the Belief PropagationAlgorithm Applied to the Decoding of Polar Codes
Andrea Biroli, Guido Masera (Department of Electronics and Telecommunications, Politecnico di Torino, Italy)

Measurement Based Modeling of Time-Variant Fading Statistics in Indoor Peer-to-peer Scenarios
Evgenii Vinogradov (ICTEAM/Electrical Engineering, Université catholique de Louvain, Belgium), Joseph Wout (Dept. of Information Technology (INTEC-WICA), Ghent University/IMinds, Belgium), Claude Oestges (ICTEAM/Electrical Engineering, Université catholique de Louvain, Belgium)

RSS based localization: Theory and experimentation
Ioannis Dagres (Institute of Accelarating Systems and Applications, National Kapodistrian University of Athens, Greece), George Arvanitakis (Eurecom, France), Adrian Kliks (Poznan University of Technology, Poland), Andreas Polydoros (Institute of Accelarating Systems and Applications, National Kapodistrian University of Athens, Greece)

Exploitation of TVWS measurements in indoor/outdoor scenarios for HetNets deployment
Jordi Perez-Romero (Universitat Politècnica de Catalunya, Spain), Adrian Kliks (Poznan University of Technology, Poland), Anna Umbert

(Universitat Politècnica de Catalunya, Spain), Pawel Kryszkiewick (Poznan University of Technology, Poland), Ferran Casadevall (Universitat Politècnica de Catalunya, Spain)

THM5: RECENT ADVANCES IN MILLIMETRE-WAVE RADIO CHANNEL CHARACTERIZATION AND ANTENNA ISSUES IN COST ACTION IC1004

THURSDAY, 26 JUNE 2014, 09:00-10:30, ROOM MEUCCI

•**Session Chair**: Christian Schneider (Ilmenau University of Technology, Germany)

Multiple Band Channel Sounder for 5G Cellular Networks
Sana Salous (Communications Engineering, Durham University, England, UK)

Modular UWB Multichannel Sounder for 5G cellular Networks
Robert Müller, Christian Schneider, Martin Käske, Ralf Hermann, Diego Andres Dupleich, Reiner S. Thomä (Ilmenau University of Technology, Germany)

Channel Modeling at mmW using Ray Tracing
Maria-Teresa Martinez-Ingles (Universidad Politécnica de Cartagena, Dpto. Tecnologías de la Información y las Comunicaciones, Cartagena, Spain), Davy P. Gaillot (University of Lille 1, IEMN/TELICE, France), Juan Pascual-Garcia, Jose-Maria Molina Garcia-Pardo (Universidad Politécnica de Cartagena, Dpto. Tecnologías de la Información y las Comunicaciones, Cartagena, Spain), Martine Lienard (University of Lille 1, IEMN/TELICE, France), José-Víctor Rodríguez, Leandro Juan-Llacer (Universidad Politécnica de Cartagena, Dpto. Tecnologías de la Información y las Comunicaciones, Cartagena, Spain), Pierre Degauque (University of Lille 1, IEMN/TELICE, France)

Point Cloud-Based Deterministic Propagation Prediction at 60 GHz
Jan Järveläinen, Katsuyuki Haneda, Mikko Kyrö (Aalto University School of Electrical Engineering, Finland)

Semi-Deterministic Modelling of the Millimeter-wave Indoor Propagation Channel in an Office Environment
Li Tian (Tongji University / University of Bologna, Italy), Enrico M. Vitucci, Franco Fuschini(University of Bologna, Italy), Xuefeng Yin (Tongji University, China), Vittorio Degli-Esposti (University of Bologna, Italy)

POSTER SESSIONS

TUP: PHYSICAL LAYER AND WIRELESS NETWORKS

TUESDAY, 24 JUNE 2014, 14:00-14:45, LAGRANGE

Session Chair: Ramona Rosini (CNIT, Italy)

1. FFT-based Waveforms for Satellite Communications: Opportunities and Challenges
Svilen Dimitrov (German Aerospace Center (DLR), Germany), Gabriele Boccolini (GRADIANT, Spain), Stephan Jaeckel (Fraunhofer Heinrich Hertz Institute, Germany), Davide Benfatto, Niccoló Privitera, Rosalba Suffritti (Mavigex, Italy), Adegbenga Awoseyila, Barry Evans (University of Surrey, United Kingdom)

2. Performance Analysis of Inter-cell Interference Coordination in Small-Cell Networks with long feedback delays
Marc Torrellas, Adrian Agustin, Josep Vidal (Universitat Politècnica de Catalunya, Spain)

3. Comparative Study of Distributed Consensus-based Estimation Schemes for Small-Cell Networks
Dirk Wübben, Henning Paul, Ban-Sok Shin, Guang Xu, Armin Dekorsy (University of Bremen, Germany)

4. RESCUE: Links-on-the-fly Technology for Robust, Efficient and Smart Communication in Unpredictable Environments
Khoirul Anwar (Japan Advanced Institute of Science and Technology, Japan), Rohit Datta (Technische Universität Dresden, Germany), Yi Ma (University of Surrey, United Kingdom), Gerhard Fettweis, Andreas Festag (Technische Universität Dresden, Germany), Giovanni Del Galdo (Fraunhofer Institute for Integrated Circuits IIS, Germany), Sebastian Gurgul (FQS Poland, Poland), Markku Juntti (University of Oulu, Finland), Hicham Khalife (Thales Communications & Security, France), Petri Komulainen (University of Oulu, Finland), Filippo Mariani (Ubitech, United Kingdom), Maximilian Matthé (Technische Universität Dresden, Germany), Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan), Grant Millar (Kingston University, United Kingdom), Marek Natkaniec (AGH University of Science and Technology, Poland), Christian Schneider (Ilmenau University of Technology, Germany), Szymon Szott (AGH University of Science and Technology, Poland), Rahim Tafazolli (University of Surrey, United Kingdom), Reiner S. Thomä (Ilmenau University of Technology, Germany), Jacek Wszolek (AGH University of Science and Technology, Poland), Pei Xiao, Na Yi (University of Surrey, United Kingdom)

5. Experimental framework for Analyzing Probabilistic Cognitive Relays using USRP2
Amith Khandakar, Amr Mohamed, Amr El Sherif (Qatar University, Qatar)

6. The EuWin Platform: From a Down-Scaled Testbed to the Real Deployment
Andrea Stajkic, Melchiorre Danilo Abrignani, Chiara Buratti, Roberto Verdone (University of Bologna, Italy)

7. Assessing IEEE 802.11 and IEEE 802.16 as backhaul technologies for rural 3G femtocells in rural areas of developing countries
Francisco Javier Simó Reigadas, Eduardo Morgado, Esteban Municio, Ignacio Prieto-Egido, Andrés Martínez (Universidad Rey Juan Carlos, Spain)

8. Coexistence between WSD and PMR/PAMR systems operating in adjacent bands
Marina Barbiroli (University of Bologna, Italy), Claudia Carciofi (FUB, Italy), Doriana Guiducci, Valeria Petrini (Fondazione Ugo Bordoni, Italy)

9. Traffic Adaptive Base Station Management Scheme for Energy-Aware Mobile Networks
Sotirios Michail (DTU Fotonik, Denmark), Aleksandra Checko, Lars Dittmann (Technical University of Denmark, Denmark)

10. Virtual residential gateways: Architecture and performance
Younes Khadraoui, Xavier Lagrange (Institut Mines Telecom / Telecom Bretagne, France)

11. Distributed Power Allocation Based on PER Minimization for Noncooperative Multicarrier Systems under Interference Constraints
Paolo Del Fiorentino, Riccardo Andreotti, Vincenzo Lottici, Giannetti (University of Pisa, Italy), Ivan Stupia (Université Catholique de Louvain, Belgium), Luc Vandendorpe (University of Louvain, Belgium)

12. Cooperative Beamforming and Scheduling Strategies for Body Area Networks
Stefan Mijovic, Chiara Buratti (University of Bologna, Italy), Alberto Zanella (Istituto di Elettronica e di Ingegneria dell'Inform. e delle Telecomunicazioni, Italy), Roberto Verdone (University of Bologna, Italy)

13. Near-Optimal Practical Power Control Schemes for D2D Communications in Cellular Networks
Gabor Fodor (Ericsson Research, Sweden), Aidilla Pradini, Guowang Miao (KTH, Royal Institute of Technology, Sweden), Marco Belleschi (Ericsson AB, Sweden)

14. Performance Analysis of Network Coding Schemes in Network Assisted D2D Communications
Gabor Fodor (Ericsson Research, Sweden), Aidilla Pradini (Ericsson AB, Sweden)

15. Network Aware Traffic Steering and Selection In Heterogeneous Wi-Fi/LTE-A Networks
Luis Carlos BS Goncalves, Pedro Sebastião, Nuno Souto, Américo Correia (ISCTE-IUL/Instituto de Telecomunicações, Portugal)

16. Gigabit point to multipoint backhaul using Q-band
Ruth Vilar, Javier Marti (Universitat Politecnica de Valencia, Spain), François Magne (Bluwan S.A., France)

17. Energy-efficiency of phase-noise impaired wireless networks
Giuseppa Alfano (Politecnico di Torino, Italy), Alessio Zappone, Eduard Jorswieck (Dresden University of Technology, Germany), Guido Montorsi (Politecnico di Torino, Italy)

18. Resource Allocation in Relay-Assisted Uplink SC-FDMA Systems
Samuele Gallerani, Sergio Cicalò, Velio Tralli (University of Ferrara, Italy)

19. Channel Gain Estimation in UWB Multistatic Radars in the Presence of Multiple Targets
Bita Sobhani, Matteo Mazzotti, Andrea Giorgetti, Enrico Paolini, Marco Chiani (University of Bologna, Italy)

20. Coordination protocol for inter-operator spectrum sharing based on spectrum usage favors
Bikramjit Singh, Konstantinos Koufos, Olav Tirkkonen (Aalto University, Finland)

21. Cognitive Multimedia Radio Networks
Lorenzo Favalli, Takai Eddine Kennouche, Luigi Marangio, Anna Vizziello (University of Pavia, Italy)

22. Widely Linear Filtering based kindred Co-Channel Interference Suppression in I/Q Staggered Multicarrier Waveforms
Sladjana Josilo, Slobodan Nedic (Faculty of Technical Sciences, University of Novi Sad, Serbia), Milan Narandžić (University of Novi Sad), Stefan Tomić (Faculty of Technical Sciences, University of Novi Sad, Serbia)

23. Real-field Successive Interference Cancellation in I/Q staggered Multicarrier Waveforms - SISO to MIMO extension, noise suppression and constructive exploitation of intrinsic interference
Vladimir Stanivuk, Stefan Tomić (Faculty of Technical Sciences, University of Novi Sad, Serbia), Milan Narandžić (University of Novi Sad, Serbia), Slobodan Nedic (Faculty of Technical Sciences, University of Novi Sad, Serbia)

24. Trajectory-aware Ad hoc Routing Protocol for Micro Aerial Vehicle Networks
Raheeb Muzaffar, Evsen Yanmaz (University of Klagenfurt, Austria)

25. From Energy reduction to CO2 emission reduction: the ECO2Clouds approach
Pierluigi Plebani (Politecnico di Milano, Italy), Usman Wajid (University of Manchester, United Kingdom)

26. Interference Management Strategies for Forward and Return Link in High Throughput Satellite Systems
Niccoló Privitera, Rosalba Suffritti (Mavigex, Italy), Svilen Dimitrov, Zoltan Katona (German Aerospace Center, Germany), Gabriele Boccolini (GRADIANT, Spain), Leszek Raschkowski (Fraunhofer Heinrich Hertz Institute, Germany), Argyrios Kyrgiazos, Barry Evans (University of Surrey, United Kingdom), Juan Manuel Rodriguez Bejarano, Ana Yun Garcia (Thales Alenia Space España, Spain), Thierry Fesquet (Airbus Defence & Space, France), Patricia Inigo (EADS Astrium, France)

27. Characterization of a Simple Threshold to Fight Out of Cluster Interference
Juan José García Fernández, Ana Garcia Armada (Universidad Carlos III de Madrid, Spain)

28. On the performance of FBMC-based AF and DF Multiple Access Relay Networks
Yahia Medjahdi (Université Catholique de Louvain, Belgium), Ali Dziri (CNAM Paris, France), Jerome Louveaux (Universite Catholique de Louvain, Belgium)

29. Detecting WiFi Flows in the Middle by Local Channel Observations
Giuseppe Bianchi, Simone Corrieri (University of Rome "Tor Vergata", Italy), Domenico Garlisi (University of Palermo, Italy), Pierpaolo Loreti (University of Rome "Tor Vergata", Italy), Ilenia Tinnirello (University of Palermo, Italy)

30. Regenerative Relay: Constraining Interference vs. Increasing Energy- and Spectral-Efficiency
Goran Dimić (University of Belgrade, Serbia), Dragana D. Bajić (University of Novi Sad, Serbia), Marko Beko (ULHT/UNINOVA, Portugal)

31. On spatial multiplexing receivers for FBMC
Rostom Zakaria, Didier Le Ruyet (CNAM, France)

32. Recent advances on the udWDM-PON for lambda-to-the-user access
Josep Prat (Universitat Politècnica de Catalunya, Barcelona), Ernesto Ciaramella (Scuola Superiore Sant'Anna, Istituto TeCIP, Pisa, Italy)

WEP: NETWORKS AND APPLICATIONS

WEDNESDAY, 25 JUNE 2014, 14:00-14:45, LAGRANGE

Session Chair: Valeria Petrini (Fondazione Ugo Bordoni, Italy)

1. Interoperability in the Internet of Things with Edge Intelligence Systems in the Cloud
Martin Serrano, Danh LePhuoc (National University of Ireland Galway - NUIG, Ireland), Manfred Hauswirth (DERI Galway, Ireland), Sofiane Sarni, Karl Aberer (École Polytecnique Fédérale de Lausanne, Switzerland)

2. Test Framework for IoT-Based Services - A Knowledge Driven Approach
Daniel Kuemper (University of Applied Sciences Osnabrück, Germany), Eike Steffen Reetz (University of Surrey, United Kingdom), Marco Schaarschmidt (University of Applied Science of Osnabrück, Germany), Marten Fischer (University Osnabrueck, Germany), Elke Pulvermueller (University Osnabrück, Germany), Ralf Tönjes (University of Applied Sciences Osnabrück, Germany)

3. E-health Applications for Smart Cities Infrastructures based on Live Video-to-Video Solutions
Panagiotis Diamantopoulos, Nikolaos Bompetsis, Eleni Patouni, Nancy Alonistioti (University of Athens, Greece), Luis Cordeiro, João Gonçalves (OneSource, Portugal), Ioannis Chochliouros (Hellenic Telecommunications Organization S.A., Greece), George Lyberopoulos (COSMOTE Mobile Telecommunications S.A., Greece)

4. Real Time IoT Stream Processing and Large-scale Data Analytics for Smart City Applications
Ralf Tönjes (University of Applied Sciences Osnabrück, Germany), Muhammad Intizar Ali (National University of Ireland, Galway, Ireland), Payam Barnaghi (University of Surrey, United Kingdom), Alessandra Mileo (National University of Ireland, Galway, Ireland), Manfred Hauswirth (DERI Galway, Ireland), Frieder Ganz (Centre for Communication Systems Research, University of Surrey, United Kingdom), Sorin Ganea (Brasov Metropolitan Agency, Romania), Birgitte Kjærgaard (City of Aarhus, Denmark), Daniel Kuemper (University of Applied Sciences Osnabrück, Germany), Septimiu Nechifor (Siemens SRL, Romania), Dan Puiu (Siemens, Romania), Amit Sheth (Wright State University, USA), Vlasios Tsiatsis (Ericsson, Sweden), Lasse Vestergaard (Alexandra Institute, Aarhus, Denmark)

5. Rehabilitation System for Stroke Patients using Mixed-Reality and Immersive User Interfaces
Emmanouela Vogiatzaki (RFSAT Ltd, Greece), Yannis Gravezas (RFSAT Ltd, United Kingdom), Artur Krukowski (Intracom S. A. Telecom Solutions, Greece)

6. Half a Mile, Half a World: Locality Patterns of International Calls in Milan
Francesco Malandrino (Trinity College, Dublin, Ireland), Claudio E. Casetti, Carla-Fabiana Chiasserini (Politecnico di Torino, Italy)

7. Proposal of indoor localization technique using smartphone, bluetooth low energy and visual tags
Gaetano Carmelo La Delfa, Vincenzo Catania (University of Catania, Italy)

8. An End-to-End Infrastructure for Network Function Virtualization
João Soares (Portugal Telecom Inovação e Sistemas, Portugal), Giada Landi (Nextworks, Italy), Luigi Grossi (Telecom Italia, Italy), Bruno Parreira (Instituto de Telecomunicações, Universidade de Aveiro, Portugal), David Palma, Bruno Sousa (OneSource, Portugal), Nicola Ciulli (Nextworks s.r.l., Italy)

9. Unicast and multicast streaming services over LTE networks
Carlos M. Lentisco (Universidad Politécnica de Madrid, Spain), Luis Bellido (Telematic Systems Engineering Department, Technical University of Madrid (DIT-UPM), Spain), Encarna Pastor (Universidad Politecnica de Madrid, Spain), Alejandro de la Fuente (Universidad Carlos III de Madrid, Spain)

10. NEON: SDN Southbound Protocol for Fine-grained Device Information and Configuration
Sylvain Decremps, Sofiane Imadali, Mathias Boc (CEA, LIST, Communicating Systems Laboratory, France)

11. Deployment Scenarios for the COCONUT UDWDM-PON solutions
Ernesto Ciaramella (Scuola Superiore Sant'Anna University, Italy), Gemma Vall-llosera (Ericsson Research, Sweden)

12. Techno Economics and Cost Analysis of Convergent Access Networks
Jordi Ferrer Riera, Carlos Bock (Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain), Tiago Mendes (Portugal Telecom Inovacao, Portugal), Michael Parker (University of Essex, United Kingdom), Volker Jungnickel (Fraunhofer Heinrich Hertz Institute, Germany), David Levi (Ethernity Networks, Israel), Victor Marques, Cláudio Rodrigues (Portugal Telecom Inovacao, Portugal), Eduard Escalona, Joan A. García-Espín (Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain), Stuart D Walker (University of Essex, United Kingdom)

13. The FELIX Architecture for Testbed Federation
Kostas Pentikousis, Matthew Broadbent (EICT, Germany), Radek Krzywania (PSNC, Poland), Gino Carrozzo (Nextworks s.r.l., Italy), Albert Vico (I2CAT, Spain), Tomohiro Kudoh (AIST, Japan), Carolina Fernandez (I2CAT, Spain), Atsuko Takefusa (AIST, Japan), Bart Puype (Ghent University, Belgium), Jin Tanaka (KDDI, Japan), Tom Rothe (EICT, Germany)

14. Experimentation Framework for Autonomic Software Defined Networks: Design, Development and Application in the Validation of Policy-based Traffic Engineering
Kostas Tsagkaris (University of Piraeus, Greece), Marios Logothetis (University of Piraeus Research Center, Greece), Vassilis Foteinos, Giorgos Poulios, Michalis Michaloliakos, Panagiotis Demestichas (University of Piraeus, Greece)

15. Multilevel QoS vs QoE Measurements and Verification of Service Level Agreements
Arianna Rufini, Edion Tego, Francesco Matera (Fondazione Ugo Bordoni, Italy)

16. Full-Stack Monitoring for OpenStack
Oleksii Serhiienko, Andy Edmonds, Thomas Bohnert (ZHAW, Switzerland)

17. Virtualizing the Network Edge: Virtual CPE for the datacenter and the PoP
Giacomo Bernini, Gino Carrozzo (Nextworks s.r.l., Italy), Pedro A. Aranda Gutierrez, Diego Lopez (Telefonica I+D, Spain)

18. FUSION: connecting SMEs to the Future Internet
Monique Calisti, Martin Potts (Martel GmbH, Switzerland)

19. Visual Correlation Of Large-Scale Network Measurements With TPlay
Valentino Di Donato, Marco Di Bartolomeo, Maurizio Pizzonia (Roma Tre University, Italy)

20. 20 Gbps upstream FDMA-PON real-time and low-speed DSP demonstrator
Stefano Straullu, Paolo Savio, Antonino Nespola, Silvio Abrate (Istituto Superiore Mario Boella, Italy), Joana Chang (Politecnico di Torino, Italy), Valter Ferrero, Roberto Gaudino (Politecnico di Torino, Italy), Benoit Charbonnier (Orange Labs, France)

21. DOLFIN - Data Centres Optimization for Energy-Efficient and EnvironmentalLy Friendly INternet
Matteo Biancani (Interoute SPA, Italy), Theodore Zahariadis (TEI of Chalkida, Greece)

22. An Open Architecture for Software Defined Services at the Edge
Alfio Lombardo (University of Catania, Italy), Antonio Manzalini (Telecom Italia, Italy), Vincenzo Riccobene, Giovanni Schembra (University of Catania, Italy)

23. eCOUSIN: enhanced COntent distribUtion with Social INformation
Yannick Lelouedec (Orange Labs FT, France), Claudio Venezia, Fabio Mondin (Telecom Italia SPA, Italy)

24. SDN-Controlled Flexible-Grid Optical Switch
Carla Raffaelli, Piero Orlandi, Eleonora Franchi, Giovanni Tartarini, Paolo Bassi (University of Bologna, Italy), Andrea Melloni (Politecnico

di Milano, Italy), Francesco Morichetti (Policom - DEI Politecnico di Milano, Italy), Marc Sorel, Michael Strain (University of Glasgow, United Kingdom)

Social Program

SOCIAL EVENT

The Social program of the conference includes two events.

The welcome reception will take place at the conference venue on Tuesday 24th, starting at 18h15 in the main foyer of the Congress Center. Take advantage of the informal environment to do networking and build the next projects with a glass of wine in your hand. For those who are fond of the Football Championship, since the match Italy-Uruguay will be played at the same time of the welcome reception, it will be displayed on the screen of room Bologna, close to the foyer; all Italian attendees are welcome to share the match, and our foreign Colleagues to taste one of the National flavours: the Italian cheer.

The conference banquet will be held on Wednesday 25th at Palazzo Re Enzo, a magnificent Medieval building whose entrance is in *Piazza Nettuno*, near *Piazza Maggiore*. The banquet will start at about 20h00 with some entertainment, followed by the dinner. The former is a homage to Argentina, where the University of Bologna has an official site; two musicians (Mo Michela Tintoni, violin, and Mo Francesca Perrotta, piano) will perform some pieces of new Tango, playing well known songs of Astor Piazzolla: Triunfal, Solitude, Jeanne y Paul, Milonga en re, Libertango, Oblivion, Esqualo. I recommend you not to miss this short concert (about twenty-five minutes) that will be held inside the same room where the aperitif and dinner will be served; it will be really magnetic and charming!

Enjoy!

Roberto Verdone

Instructions

SESSION CHAIRS

We are very grateful to you for agreeing to be a Session Chair at EUCNC'2014.

We would like to remind you of the following points which will contribute to a successful session:

- Via your personal account in EDAS, you've access to the full information of your session.
- Read the papers of your session in advance, and prepare questions to open a discussion on them, if needed. Each Speaker should have a brief technical discussion.
- Be at the room of your session 15 minutes before it begins so that you can meet the speakers in advance and review with them the time limits for their presentations (15 minutes). You are also receiving a short CV of each speaker: if you notice any changes, please ask the new speaker(s) for a short CV.
- Stick to the timetable of the session by starting on time.
- Start the session by announcing its title and by briefly introducing yourself.
- Introduce each speaker by mentioning the title of the paper, his/her name, affiliation and the short CV you have received.
- It is most important to enforce strict time constraints to allow the presentations to fit within the allotted time periods. Each paper has a time slot of 18 minutes: 15 of which are for the presentation, and the remaining 3 are for questions and discussion. Notify the speaker when there are only 2 minutes left for his/her presentation.
- If a speaker is missing, do not advance the presentation, rather break the session, or preferably continue/stimulate the discussion on the previously presented papers to fill in the gap.
- There will be student volunteers in the room to ensure that facilities are working properly, and to give you any assistance you may require during the session.
- A Feedback Form is being distributed jointly with these instructions. Please take a minute to fill it in after the session, and hand it over to the student volunteer or at the Conference desk.

PRESENTERS

Oral Sessions

As a Speaker, you have the responsibility of being clear, concise, and capturing the interest of the attendees. The quality of your presentation directly affects the interest your audience will have in your material and the overall satisfaction the attendees will have of the conference.

If you are not an experienced presenter, we suggest you practice your presentation with a small group of experienced colleagues who will provide feedback to assist you.

We would like to call your attention to the following:

- Be at the room of your session 15 minutes before it begins, so that you can meet your Session Chairs and the other Speakers in advance.

- Make sure that your CV has been uploaded to your personal area in EDAS before Friday, June 6th, so that the Session Chair will have it by the beginning of the session.

- It is most important to be within the strict time constraints in order to allow the presentations to fit within the allotted time periods. Each paper has a time slot of 18 minutes: 15 of which are for the presentation, and the remaining 3 are for questions and discussion. The Session Chair will rigorously enforce these time limits.

- Video projectors and laptop computers will be available in all conference rooms. Other equipment, if available, will be provided at your expense if you request it. Check availability with the conference secretariat.

- Speakers must upload their presentation to the laptop computer in the session room 15 minutes before the session starts. We recommend that you bring both a PowerPoint and PDF file of your presentation to ensure that there are no problems. Speakers are requested to test the functionality of the presentation before the beginning of the session.

- Speakers are not allowed to bring their own laptop computer, avoiding useless time breaks in between papers.

- There will be student volunteers in the room to ensure that facilities are functioning properly and to give you any assistance you may require during the session.

Poster Sessions

As a Poster Presenter, you have the responsibility of capturing the interest of the attendees to the work you are showing. The quality of your presentation directly affects the interest your audience will have on your material, and the overall satisfaction the community will have on the conference.

We would like to call your attention to the following:

- Poster Sessions will take place in the room (Lagrange area) where coffee breaks will be served, so that we can take advantage of the breaks to increase interaction between authors and attendees.

- Each poster board is marked with the assigned poster reference number. Authors are required to use only the boards corresponding to their posters.

- Posters should be stuck to the poster board using only dual-face sticking tape or similar tool supplied by the local organisation. Staples, pins, screws or any abrasive or perforating hardware are not permitted. Do not write or paint on the poster boards.

- Posters should be put on the board 10 minutes before the beginning of lunch break on the day of the session.

- Authors are required to stand by their posters during the whole session dedicated to posters.

- Posters should be removed from the boards by the end of the day.

- There will be student volunteers in the room to ensure that facilities are functioning properly, and to give you any assistance you may require during the session.

- Poster boards have a size of 70 cm x 100 cm (width × height).

- Use an appropriate font size allowing posters to be readable by attendees 1.5 m away. The poster message should be clear and understandable without oral explanation.

Notes

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