

NEWCOM NEWSLETTER

Welcome!

[Michał Wódczak, PUT](#)

Dear Readers,

Welcome to the 6th issue of the NEWCOM Newsletter!

With this issue we bring you the latest news coming from the Network of Excellence.

In the opening Section A you will find a number of important details regarding the future of the NEWCOM Project. Particularly, you can read there about a special EB meeting to be organised soon. For this reason your feedback is extremely important and therefore all NEWCOM Partners are kindly requested to follow the link given in this section and fill in the relevant questionnaires.

The following Section B contains the technical reports delivered to us by the leaders or representatives of some of the Projects and Departments. You can read there about the specific technical achievements and about the further plans as well as have a look at the lists of publications.

Section C includes information about the upcoming events. More specifically, there are NEWCOM schools and courses advertised as well as the details pertaining to the NEWCOM meetings and the activities ongoing in the distinct Projects and Departments are given.

After that there is Section D, which is usually very interesting to those of you, who are looking for exchanges and position openings. Again

we kindly request all NEWCOM Partners to continue advertising in this section.

Finally, there is Section E, which serves as a kind of project proposal incubator. Please read the description provided inside and contact us in case you need any support in advertising your proposal.

Please visit the specific sections to find out more.

We hope all of you will find this issue interesting and we are also looking forward to receiving your feedback, special inputs and comments. Any pictures are of course more than welcome!

Michał Wódczak
NEWCOM Newsletter EIC



A. NEWCOM life

Sergio Benedetto, ISMB and Stephen Sadler, ISMB

The Joint Programme of Activity for the third (and last) year of NEWCOM operations has been prepared and submitted to EC, together with the activity and management reports of the second year, and the Forms C provided by all partners to claim the eligible expenses incurred into during the second year.

Based on the third JPA, the NEWCOM Office has prepared the third year budget that will be sent to all partners for electronic approval. Although there are several overspending and under-spending partners, our total expenditure so far has been in line with the schedule, so we'll have some limited funds available to accomplish the last year activities.

Given that NEWCOM was scheduled to end with the NEWCOM–AcORN Workshop (Vienna, September 20–22 2006), the budget remaining is only one third of that which was available for previous JPAs. Whilst in the first two years of NEWCOM all partners' expenses have been paid because funds were available, this will not be the case at the end of NEWCOM so partners should keep tight rein of their expenditure as there is absolutely no guarantee they will receive more than the amount in their budget.

Meanwhile, the EB has started moving forward, working at finding ways for not losing the patrimony of knowledge, acquaintance, and scientific cooperation accumulated during NEWCOM life. To this purpose, the EB has decided to organise a 2-day event in Pisa (June 27–28, 2006).

The first day there will be a regular Executive Board meeting, discussing important issues such as:

- Problems raised after the EC Review meeting and actions therein.
- The implementation of the new (and last) 12 months JPA.
- The Budget for the last year.

The second day will be open also to Department/Project Heads and will be devoted to:

- NEWCOM continuation in FP7 (Yes or Not, in what form, for how long, etc.).
- NEWCOM (and the many tools developed during the project) sustainability after its end.

You are strongly urged to help the process by completing the Questionnaire on the DBKN Web Site ([link](#)). Log in and then click 'Questionnaires' in the navigation pane on the left. Please fill in one questionnaire for each work package which you are involved in.

In June, we will go one step further and open a Forum for discussion on the future of NEWCOM in our web site, in order to gather as many suggestions as possible to make the best possible and agreed upon choices.

B. Technical sections

[Michał Wódczak, PUT](#)

WPR.2 MIMO Radio Channel Modelling for Design Optimisation and Performance Assessment of Next Generation Communication Systems

1. TECHNICAL REPORT

The Second Department 2 Workshop took place at Eurecom (Sophia-Antipolis, Nice, France) on the 3rd of April, 2006. In total 28 participants joined this event. Sixteen talks presented the most recent results in the numerous on-going integrated activities of the department.

In the management meeting organized during this event it was stressed that the model of financing cooperative research within NoEs has led to a flourish of newly initiated joint activities in Department 2 with a high level of integration of the involved partners. This high integration has been documented by the impressive number of joint publications of Department 2 partners since NEWCOM was launched. In view of that, the general opinion was that initiatives should be taken in order to identify possible scenarios for a follow-up project beyond the funding period of NEWCOM that would allow for a continuation and extension of this successful action.

The program of the workshop and further related information such as the list of talks can be downloaded from [link](#). The minutes of the workshop can be downloaded by following the path „Research/R.2 Radio Channel Modelling/Minutes of Meetings” in DBKN.

2. PUBLICATIONS

X. Yin, T. Pedersen, N. Czink, and B. H. Fleury, "Parametric characterization and estimation of bi-azimuth dispersion of path components", in Proc. of the Seventh IEEE International Workshop on Signal Processing Advances for Wireless Communications (SPAWC), Nice, France, 2006, invited paper.

G. Del Galdo, N. Czink, and M. Haardt, "Cluster Spatial Localization from High-Resolution Parameter Estimation," in /Proc. IEEE/ITG Workshop on Smart Antennas/, (Ulm, Germany), Mar. 2006.

Enrico Vitucci, Vittorio Degli Esposti, Franco Fuschini, "MIMO channel characterization through ray tracing simulation," EUCAP 2006, Nice, France, 6-10 Nov. 2006, submitted for publication.

M. Guillaud, M. Debbah, C. Oestges and B. H. Fleury, "Design Issues for MIMO Systems in Various Fading Situations," International Wireless Communications & Mobile Computing Conference, Vancouver, Canada July 3 - 6, 2006.

X. Yin, T. Pedersen, N. Czink and B. H. Fleury, "Parametric characterization and estimation of bi-azimuth and delay dispersion of individual path components", European Conference on Antennas & Propagation 2006 (EuCAP 2006), invited paper.

WPR.7 QoS Provision in Wireless Networks: Mobility, Security and Radio Resource Management

1. TECHNICAL REPORT

During this period, the work progress in department 7 has continued with the activities given below.

The 6th plenary meeting of Department 7 was held in LNT-TUM premises in Munich, from the 20th until the 21st of April, 2006. In this meeting partners discussed the progress of the different activities ongoing in the department.

The presentation of the department 7 activities that will be given in the NEWCOM workshop at the IEEE International Conference on Communications (ICC) in Istanbul, June 2006, is being prepared jointly by the different partners of the department.

A special session devoted to the department 7 activities is being organised in the 3rd International Symposium of Wireless Communications Systems (ISWCS 2006) ([link](#)), to be held in Valencia, 6–8 September.

With respect to the work in scenario definitions, the different partners have been organised in three different task groups in order to define three common scenarios, in accordance with the current activities of the department, to be used in the different studies and included in EMORANS. These scenarios are denoted as “Single cell heterogeneous RANs”, “Single cell WLAN” and “Multicell”.

On the 29th of March, 2006 a videoconference meeting using the Easymeeting tool was held between CNIT and LNT-TUM in order to coordinate their work regarding the common simulator they are developing. They decided there on some modifications to be included in the new software release. The developed simulator is

currently being used for the evaluation of scheduling strategies in MC-CDMA with mixed traffic.

In the framework of the joint work between UPV, UPC and UPF to the application of Hopfield Neural Networks to RRM and CRRM, the proposed strategies have been evaluated in scenarios with 3 access technologies. Some methodology to reduce the ping pong effect in the RAT selection has also been introduced. Finally, a new hardware model for the implementation of the neurons in HNN is being developed.

In the framework of the joint work between POLITO and UPF entitled “QoS for VoIP in WLAN” a new analytical model for CAC in IEEE 802.11e has been developed.

A joint work between UGent and BUTE entitled “A network planning tool for location area forming in next generation mobile access” is being carried out. This work introduces a methodology for the proper definition of location areas to cope with the trade-off between paging and location updates, using a very realistic mobility model simulator.

In the framework of the activity “Security as a QoS parameter in Wireless Networks”, a KaU researcher visited BUTE working on the elaboration of a joint paper.

2. PUBLICATIONS

David Gómez-Barquero, Daniel Calabuig, José Monserrat, Nuria García, Jordi Pérez-Romero, “Hopfield Neural Network – based Approach for Joint Dynamic Resource Allocation in Heterogeneous Wireless Networks”, accepted for publication at the 64th IEEE Vehicular Technology Conference (VTC-2006 Fall), Montreal, September, 2006. ([link](#))

Abstract: This paper presents a comprehensive approach to solve the problem of Joint Dynamic

Resource Allocation (JDRA) in heterogeneous wireless networks using a Hopfield Neural Network (HNN). A generic formulation for packet services with delay constraints is proposed to decide the optimal bit rate and Radio Access Technology (RAT) allocation. Some illustrative simulations results in a basic scenario are presented to evaluate performance of the proposed algorithm.

WPR.A Ad Hoc and Sensor Networks

1. TECHNICAL REPORT

The main goal of Project A inside NEWCOM is to reinforce and integrate the European research in the area of Ad Hoc and Sensor Networks.

It is worth reporting on the six-month extension officially requested for the NEWCOM project during the second EC revision. The new end date of the project will be February 28, 2007. A new plan for the last-12-months JPAs related to WPR.A, was prepared and released in April 2006. Please refer to Section 2 therein for the details on the main modifications on WPR.A milestones and list of the expected Deliverables.

The most significant technical achievements provided during this reporting period by Project A are related to the Second Project A Technical Workshop, held in Florence on May 22, 2006. It has been organised in cooperation with HYCON, the NoE on Embedded Systems and representatives from other relevant NoEs/Projects (CRUISE, e-SENSE, Wisents) were invited to present their main technical achievements. The aim of Second Project A Technical Workshop was to present the most significant results of the four JPAs obtained since November 2005, as well as to discuss and promote new integrated research activities among partners of Project A, to be carried out during the last period of the project. In order to emphasize the nature of the integrated research work accomplished so far by Project A, it has been pur-

posely decided to present at the workshop only the papers jointly produced by more than one partner. During the presentations, the partners discussed and promoted new integrated research activities within Project A, to be carried out according to the Action Plan and the JPAs identified in DRA.1 and DRA.2 respectively. The Project A seventh deliverable (DRA.7) has been prepared with the proceedings of the workshop and it has been released at the end of May.

Other important technical achievements of Project A are related to the ongoing activity focused on the extension of common tools and traces to be included in the Project A software library. The WPR.A eight Deliverable (DRA.8: "Second report on software libraries"), expected by the end of June 2006, will report the results of this activity. The ToC of DRA.8 was discussed and agreed among the involved partners during the reporting period.

Finally, it is worth reporting on another activity, promoted by Project A and carried out during the reporting period, which was focused on the organisation of the Doctoral School Course on "Wireless Sensor Networks" within the framework of NEWDOCS initiative. The 21-hour course started on February the 20th, 2006 and was given through video-conference sessions by Roberto Verdone, Sergio Palazzo and Michele Zorzi. It was targeted at PhD students who intend to start a research activity on the subject, or are conducting research in similar fields.

WPR.B Ultra-wide Band Communication Systems

1. TECHNICAL REPORT

Eurecom and Aalborg University have investigated UWB channel modelling and capacity issues using information theoretic arguments [1]. Eurecom has also proposed an original multiple access technique based on UWB channel high diversity [2]. The specific propagation mecha-

nism of UWB channels has been also analysed and a relationship between the maximum number of channel degrees of freedom, the cluster solid angle and a critical wavelength has been derived [3]. Further work in WPRB concerns the study of novel acquisition techniques based on hybrid parallel/serial solutions and their analysis and simulations in case of realistic multipath channel models. Moreover, CNIT (Italy) and Supelec (Paris, France) are investigating different receivers for increasing acquisition performance in case of non-gaussian multi user interference. Finally, CNIT (Italy) and Chalmers University (Goteborg, Sweden) have defined a research project for verifying the behaviour of UWB sensor networks when the estimated channel parameters are used for localizing one or more terminals. This study should clarify the impact of acquisition and synchronization tracking on sensors/transceivers localization by testing algorithms with novel characteristics in terms of complexity, utilization of the parameters and level of coordination among sensors.

2. PUBLICATIONS

[1] R. L. de Lacerda Neto, A. Menouni Hayar, M. Debbah and B. H. Fleury, "A maximum entropy approach to ultra-wideband channel modeling", 31st International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2006), Toulouse, France, May 14-19, 2006.

[2] R. L. de Lacerda Neto, A. Menouni Hayar and M. Debbah "Channel Division Multiple Access Based on High UWB Channel Temporal Resolution", IEEE 2006 Vehicular Technology Conference Fall (VTC 2006), Montreal, Canada, September 25-28, 2006.

[3] A. Menouni Hayar, "On the spatial and temporal degrees of freedom of UWB communications", 12th European Wireless Conference, Athens, Greece, April 2 - 5, 2006.

WPR. E : Cross Layer Optimisation

1. TECHNICAL REPORT

During the current period, research activity within project E has been focused on establishing the roadmap for the future. Deliverable DRE.4 has been finalised.

For the summer period of 2006, two summer schools are being organised:

- Fundamentals of wireless communications and its application to 4G systems, Santorini, Greece, Sept. 18-23.
- Random matrix theory in Wireless communications, Barcelona, June 19-23, 2006.

2. PUBLICATIONS

C. Verikoukis, L. Alonso, I. Koutsopoulos, "Performance evaluation of directional-antenna assisted MAC protocols the presence of mobility:", to appear in IST Summit 2006, Mukonos, Greece.

M. Realp, R. Knopp and A. I. Pérez-Neira, Delay bounds for Resource Allocation in Wideband Wireless Systems, IEEE International Conference on Communications (ICC 2006).

R. Bosisio, J. L. Vicario, C. Antón-Haro, U. Spagnolini, The Effect of Imperfect Feedback on Opportunistic Beamforming Schemes, European Wireless 2006.

Alex Cateura, Elli Kartsakli, Jesus Alonso, Christos Verikoukis, Luis Alonso, "Cross-Layer Enhancement for WLAN Systems based on a Distributed Queuing MAC protocol", IEEE VTC'06 Spring, Melbourne.

C. Newcom events

[Philippe Ciblat, Telecom Paris](#)

1. SEMINARS, DOCTORAL SCHOOLS AND COURSES

1.a ANNOUNCEMENTS

- TITLE : "Wireless Sensor Networks"

Lectures are given by Roberto Verdone, Michele Zorzi, and Sergio Palazzo.

All information on this course can be found on the NEWDOCS webpage ([link](#)) reachable from the NEWCOM homepage.

- TITLE : "Random Matrix Theory for Wireless Communications"

This course will be held in Barcelona between June 19–23.

- TITLE : "Space–Time Coding"

This course will be held in Politecnico di Torino, Turin, Italy between October 9–12, 2006.

The purpose of this school is to provide the standard and new space–time coding tools used in wireless communications. The focus will be on the well–known block coding (Alamouti and BLAST schemes) as well as on the most recent and powerful coding such as Golden codes. Decoding and information–theoretic aspects will be also treated. As for applications, the course will concentrate on the WiMAX.

This school is organized by academic staffs of Politecnico di Torino (Polito, Turin, Italy) and of Ecole Nationale Supérieure des Télé–

communications (ENST, Paris, France): Emanuele Viterbo, Jean–Cladue Belfiore, and Philippe Ciblat.

The registration deadline is September 22, 2006. In order to register, please just send an email to Philippe Ciblat (philippe dot ciblat at enst dot fr). For further information, see the web site at [link](#).

1.b MINUTES

- TITLE: "Current trends in Communication Theory"

Given by Prof. Sergio Verdú (Princeton University, USA)

This lecture took place at the Department of Information Engineering at the University of Pisa, on May 22nd, 2006 for the NEWCOM Doctoral School in Wireless Communications (NEWDOCS).

This distinguished lecture saw the participation of PhD students and researchers of all Europe through the virtual Newdocs rooms.

The talk was held by Sergio Verdú, one of the most skilled researchers in the field of Information and Communication Theory. Prof. Verdú gave a broad overview of the state of the art in communication theory and the research areas likely to influence future communication systems design. Information Theory, Channel Coding Theory, Signal Processing, and Data Compression have been shown as the prime movers in physical–layer communications research, focusing on the emerging union between them. Some of the

incoming technical tools, recent advances and challenges ahead have been also reviewed.

Participants' feedback showed a high interest, especially in new paradigms and perspectives. Electronic copies of the slides (in PDF format) and the registration of the talk are available on the school website.

NEWDOCS (NEWcom DOctoral School in wireless communications, [link](#)) is one of the integration actions within the NEWCOM Network of Excellence.

It was born as a coordination of different national post-graduate education programs within the NoE. PhD students and Research-

ers were able to attend such schools so that a spirit for cooperative research has grown up.

The purpose of NEWDOCS was the integration of research studies in different european countries to strengthen european culture.

The NoE is the natural means of integration for transnational research: NEWDOCS was an indispensable experience in formative years of European students.

The courses included in NEWDOCS are reported in the table below.

Course Name & Code	Teacher	Lessons Calendar	Linked docs
Advanced Wireless Communications: 4G Technologies (W4G)	S. Glisic (UoO)	every Thursday 14:00 to 17:00 CET	Program & CV For information and to include your name in the list of participant to the course, please contact juma@ee.oulu.fi
Wireless Sensor Networks (WSN)	R. Verdone (CNIT) S. Palazzo (UoC) M. Zorzi(CNIT)	Calendar	Program & CV More info and how to attend
Broadband Wireless Communications (BWC)	S. Pupolin (CNIT)	Calendar	Program & CV
Adaptive Equalization in Wireless Systems (EWS)	K. Wesołowski (PUT)	27 March to 05 June every Monday 14:00–16:30 CET	Program
RF Microelectronics characterization and design (RFM)	G. Ghione G. Pirola S. Donati (PoliTO)	20 April to 10 May Intensive EasyMeeting room "new-docs"	Program
Signal Synchronization for Digital Modems (SYN)	M. Luise (UoP)	18 April to 26 May 4 hours/week (to be confirmed)	

The lessons given by NEWDOCS teachers are recorded and stored into the NEWCOM DBKN ([link](#)).

If you are registered to the service (i.e. you have a NEWCOM username/password), you can access the NEWDOCS area and select the course/lesson you intend to replay.

2. NEWCOM MEETINGS / DEPARTMENT LIFE

2.a MINUTES

– DEPARTMENT 1:

The last department 1 meeting took place at Toulouse, France, (just before the International Conference on Acoustics, Speech and Signal Processing). The minutes are available at the following [link](#).

3. WORKSHOP ANNOUNCEMENTS

- 6th International Workshop on Multi-Carrier Spread Spectrum It (MC-SS 2007) will be held on May 07-09, 2007 in Oberpfaffenhofen nearby Munich CFP deadline: November 26, 2006, [link](#).
- NEWCOM-ACoRN Workshop in Vienna NEWCOM and the Australian Communications Research Network ACoRN will hold a joint workshop in Vienna, Austria on 20- 22 September, 2006. All NEWCOM reseachers are encouraged to attend the workshop, which is also open to external participants ([link](#)).
- ISCWS – International Symposium on Wireless Communication Systems The 3rd International Symposium on Wireless Communication Systems (ISWCS) will take place in Valencia (Spain) from the 6th to the 8th of September 2006.

ISWCS is technically co-sponsored by IEEE VTS. It intends to bring together leading

wireless communication researchers and technologists willing to identify and discuss the most recent advances, the future technical challenges and business opportunities arising in the path towards the realisation of ambient wireless communication networks.

Together with the technical sessions, the symposium will feature panel discussions and keynote presentations from leading wireless communication experts from industry, academia regulatory and standardisation bodies.

Several researchers involved in NEWCOM are Chairpersons of the various ISWCS'06 Committees ([link](#)).

2.b MEETINGS

The 15th Joint Conference on Communications and Coding was organized by the Institute for Communications Engineering (LNT-TUM) within the framework of NEWCOM (Network of Excellence in Wireless Communications).

From March 12-18, 2006, eight members of the LNT-TUM research staff met with nine other colleagues from University of Edinburgh (UoE), Université Catholique de Louvain (UCL), and Centre Nationale de Recherche Scientifique (CNRS).

During the one week workshop held in Sölden, Austria, each participant gave a 30min presentation of his or her latest contributions to NEWCOM Departments 1,5, or 7. Each talk was followed by a high-level discussion with the audience. The afternoons were left for further information exchange in small groups.

In addition, invited talks by one guest from LNT and two guests from the Institute for Communications and Navigation (NAV) at TUM offered interesting insights into new information theo-

retic approaches in genetics and current research on satellite-based navigation.

Besides the technical aspect, this workshop offered a great opportunity to meet colleagues from other research institutes in an informal atmosphere.



The following presentations were given:

- List-Sequential Detection of MIMO Signals, Christian Kuhn (LNT-TUM)
- List-Sphere Decoder with Channel Matrix Ordering for MIMO Systems, Luis Barbero (UeE)
- Revisiting the Hidden Terminal Problem in Wireless Mesh Networks, Athanasia Tsertou (UoE)
- On Turbo Base-Station Cooperation for Improving the Performance of Cellular Systems, Timo Mayer (LNT-TUM)
- Adaptive Dependency-Aware Unequal Erasure Protection Code, Amine Bouabdallah (CNRS)
- Channel- and Application-Aware Transmission Strategies for Wireless Multimedia, Günther Liebl (LNT-TUM)
- Asynchronous and Reliable On-Demand Media Streaming over Wireless Broadcast Channels, Hrvoje Jenkac (LNT-TUM)
- Signal Shaping with Mapping by Superposition, Frank Schreckenbach (LNT-TUM)
- Source-Controlled Channel Decoding using the Krichevsky-Trofimov (KT) Estimator, Joachim Hagenauer (LNT-TUM)
- Variable Length Codes in Turbo Schemes, Xavier Jaspard (UCL)
- Turbo Source Coding of HMM Sources, Nicolas Dütsch (LNT-TUM)
- Recent Advances in Trellis Based Quantization, Tomas Eriksson (UoE)
- Iterative Synchronization Based on Gradient Methods, Cédric Herzet (UCL)
- A Synchronization Algorithm for Processes in Molecular Biology, Johanna Weindl (Invited Speaker, LNT-TUM)
- EGNOS Integrity Performance, Sebastian Graf (Invited Speaker, NAV)
- Integrity of Diff. Carrier Phase Measurements, Patrick Henkel (Invited Speaker, NAV)
- Improved Rate-Compatible Joint Network-Channel Code for the Two-Way Relay Channel, Christoph Hausl (LNT-TUM)
- Bit loading for goodput improvement in coded OFDM systems, Bertrand Devillers (UCL)
- Channel Estimation for MIMO Systems by a Factor Graph Approach, Xavier Wautelet (UCL)
- Utility-based coding for multi-antenna multi-user systems, Jonathan Dupligny (UCL)
- Optimization of LDPC Codes for Receiver Frontends, Gottfried Lechner (FTW) - cancelled due to the illness of the speaker

D. Exchanges and position openings

[Charlotte Lanlais, ENST Bretagne](#)

In this section, any NEWCOM member and partner has the possibility to advertise for exchanges and position openings. The contributions should be send in ASCII (text) to [email](#) according to the format proposed below. The author should provide a detailed version of the proposal on his own laboratory website. The NEWCOM forum web site is also an efficient tool to post such a message.

1. POSTDOC, PHD AND MASTER POSITIONS

Field: Signal processing and channel modelling
 Title: PhD position in the Mobile Communications Department
 Author: Prof. M. Debbah
 Location: Eurecom, Sophia-Antipolis, France

Description: The Mobile Communications Department at Institut Eurecom invites applications for a **PhD position in the area of signal processing and channel modeling for mobile localization, with a special focus on software platform development**. This work will be carried out in the context of a national collaborative research (RNRT) project called SEMAFOR, involving both industrial and academic partners, namely Eurecom, Thales, TdF, France Telecom R&D, and Siradel. The context of the project is the development of radio metrology equipment to allow spectrum regulation authorities to surveil the usage of radio spectrum and to allow operators to optimize the positioning of base stations. The technical challenges involve signal recognition (which wireless standard is used, which modulation scheme, which base station etc.) and transmitter localization. Significant innovation is expected concerning this last aspect,

involving localization in non-line-of-sight conditions and general multipath conditions. Over the last years, Eurecom has devoted significant resources to the development of experimental real-time radio sounders for MIMO channel measurements and modeling. The aim of the Phd is to pursue the on-going work by developing appropriate localization algorithms tailored to real-time experiments.

The candidate is expected to have a very strong background in applied mathematics, signal processing as well as excellent programming skills. Previous experience in the area of digital communication systems applied to wireless radio communications will also constitute a significant advantage.

The Mobile Communications Department has strong interests in signal processing, communication theory, networking protocols for wireless systems and experimental platform development. Over the past decade, the Department has seen significant growth both in its professorial staff and in its infrastructure for research and teaching. It is very active in publicly-funded French national and European research projects as well as direct contracts with industry. The Department has created a state-of-the-art radio communications laboratory used both for experimental research and teaching.

Institut Eurécom is located in Sophia Antipolis, a vibrant technopolis on the French Riviera. It is in close proximity with a large number of research units of leading multinational corporations in the telecommunications, semiconductor and biotechnology sectors, as well as other outstanding research and teaching institutions. A freethinking,

multinational population and the unique geographic location provide a quality of life without equal. Qualified candidates are invited to submit a resume together with three letters of reference and a one page statement outlining research goals to the PhD supervisors, Dirk Slock ([email](#)) and Merouane Debbah ([email](#)).

2. FACULTY AND ENGINEERING OPENINGS

NEWCOM partners and members are highly encouraged to submit their proposals for faculty and engineering openings.

3. VISITING RESEARCHERS OPPORTUNITIES AND EXCHANGES

NEWCOM partners and members are highly encouraged to submit their proposals for visiting researchers opportunities and exchanges.

E. Project proposal incubators

[Hakan Cirpan, Istanbul University](#)

In this section, NEWCOM partners and other organizations have the possibility to advertise project proposal incubators for exploring new research dimensions and also forming consortia for the next EC Calls provided that at least one NEWCOM partner is a part of the consortium.

This is the right place to include such proposal incubators. It is recommended that a proposal should highlight the following issues:

- Organization information: contact information, role and type of contribution.
- Goal and objectives: provide a clear and concise summary of the proposal, capturing the main goal and specific objectives.

The project proposals should be send in ASCII (text) to hcirpan@istanbul.edu.tr .

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SUBSCRIPTION

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