216715 NEWCOM++
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Report on second year researchers exchange and joint publications and evaluation report on the issue of the awards: 1st Best Paper and Young Researcher Awards

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Editor: Irene Inchingolo (ISMB)
Participating institutions: ***ISMB, PUT, CNIT***
Contributors: Hanna Bogucka (PUT), Rossella Cravetto (ISMB), Flavio Fabbri (CNIT), Adrian Kliks (PUT)
Internal Reviewer: Luis M. Correia (IST)
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Abstract:

The report is dedicated to the description of the integration activities that have taken place during the second year of NEWCOM++ within WPI.3 – Valorisation of human capital.
Integration among partners is a good possibility for researchers to meet and exchange their knowledge and for institutions to create a lasting structure that will continue to benefit the research community beyond the life span of the NoE.
Therefore, data on joint papers, researchers exchange, grants and awards are presented in order to evaluate the level of integration among partners.
A final section is dedicated to the gender issue, one of the topics involving NEWCOM++'s life.
During the second year of the project, 78 scientific exchanges, both of short and long-term duration, have taken place, 97 joint papers have been published or accepted for publication, 1 female mobility grant for project implementation has been given by the NEWCOM++ Mobility Panel, as well as two awards for the best papers (already published or accepted for publication) authored by NEWCOM++ researchers.

Keyword list:
Awards, gender issue, grants, joint papers, mobility, researchers exchanges.

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LIST OF ACRONYMS

AAU	Aalborg Universitet
CEA	Commissariat à l'Énergie Atomique
CHALMERS	Chalmers Tekniska Högskola Aktiebolag
CNIT	Consorzio Nazionale Interuniversitario per le Telecomunicazioni
CNRS	Centre National de la Recherche Scientifique
CTTC	Centre Tecnologic de Telecomunicacions de Catalunya
FTW	ftw. Forschungszentrum Telekommunikation Wien GmbH
ICT	Information Communication Technologies
IEEE	Institute of Electrical and Electronics Engineers
ISMB	Istituto Superiore Mario Boella
IST-TUL	Instituto Superior Tecnico
ISWCS'09	International Symposium on Wireless Communication Systems
MIMO	Multiple-Input Multiple-Output
N^2WOMEN	Networking Networking Women
NoE	Network of Excellence
NOFDM	Non-Orthogonal Frequency-Division Multiplexing
OFDM	Orthogonal Frequency-Division Multiplexing
PUT	Poznan University of Technology
RWTH	Rheinisch-Westfaelische Technische Hochschule Aachen
TUM	Technische Universität München
UCL	Université Catholique de Louvain
UPC	Universitat Politècnica de Catalunya
WCNC'09	Wireless Communications & Networking Conference
WP	Workpackage

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1 INTRODUCTION

WPI.3 is dedicated to the personal development of the members of the participating institutions and has as a purpose the sharing of the knowledge. The valorisation of human capital in NEWCOM++ has been implemented through initiatives as the promotion of the *mobility* within the project, the production of *joint publications* and the *awarding* of prizes related to the foretold issues. All these integration activities contribute to enable researchers to get critical mass in joint development and results, which is the actual advantage of an NoE as NEWCOM++.

This report is divided into three *chapters:* Introduction, Activities and Conclusions. The second one is divided in six *sections*; each of them describes the different actions, undertaken during the second year of the project, devoted to the valorisation of human capital:

- The first section is dedicated to the researchers' exchanges; some figures are given on quantity, duration of the visits and partners/WPs involved;
- The second section gives comments on the mobility experiences of the grant 2008;
- The third section reports on the "mobility grant" that has been given to a young female researcher in order to enhance the face to face research;
- The fourth section is devoted to joint publications and it gives some figures on conference and journal papers written by two or more partners of NEWCOM++;
- The fifth section describes the 1st Best Paper and Young Researcher Awards that have been given to the best papers already published/accepted for publication authored by NEWCOM++ researchers;
- The sixth and last section gives some figures and comments on the gender issue in the project.

Documents are reported in the *annexes*, in particular:

- tables with the figures that have been used to create graphs
- reports on the 2008 mobility grants
- the call for projects promoting the female "2009 mobility grant"
- the call for papers promoting the "1st Best Paper and Young Researcher awards"
- the "Gender Questionnaire" on the perceptions of this issue among NEWCOM++ researchers

2 ACTIVITIES

In this chapter the activities undertaken within the second year of NEWCOM++ project are presented. As mentioned previously, this chapter is divided into six sections corresponding to the six main activities related to the valorisation of the human capital issues.

2.1 Researchers exchanges

During the second year of the project quite a number of researchers spent a period of their working time at some other institutions within NEWCOM++ and the following charts show the figures on those researchers' exchanges. The most noteworthy result is that in the second year of the project the number of exchanges has been doubled compared to the first year. As shown in the figure below, during the second year of the project there have been 78 visits of researchers, with different time duration.

The numbers used in Fig. 2.1 have been taken from the table in Annex A.

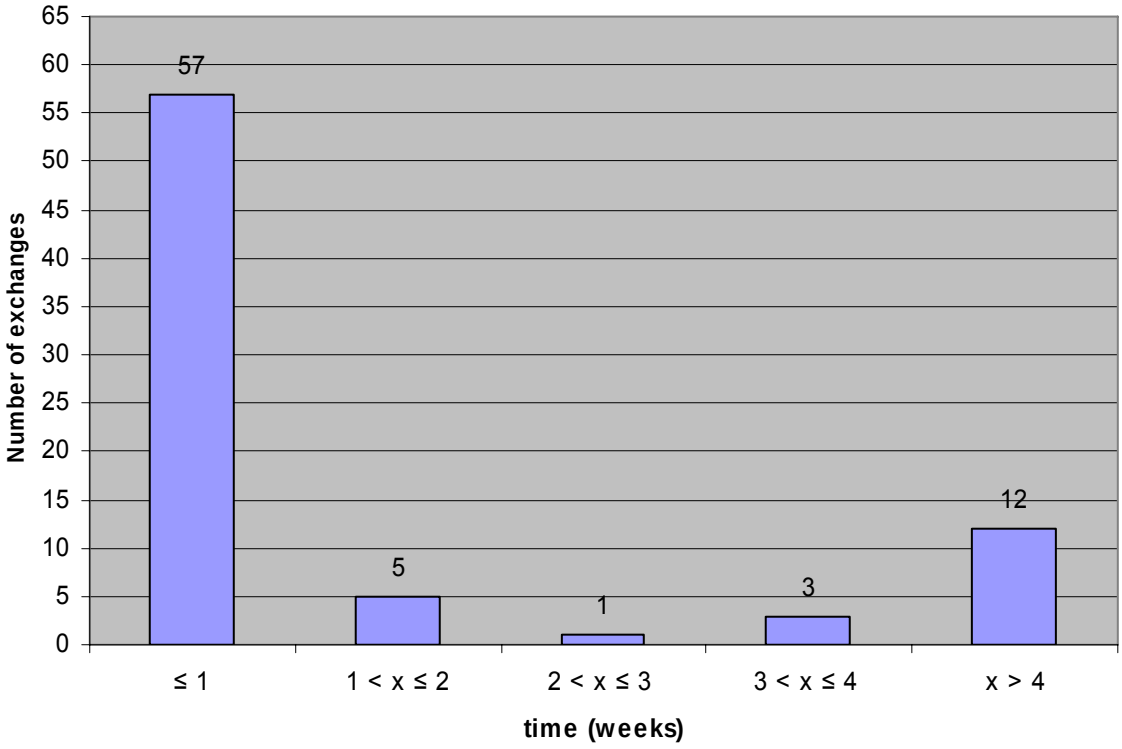

Fig. 2.1- The number of visits versus duration

These figures are in line with the past year's results in terms of typology, showing that NEWCOM++ researchers continue to find short visits (up to one week) the most effective ones. Indeed they have the aim of starting collaborations for future joint work; several times they are repeated and often have joint publications as a result.

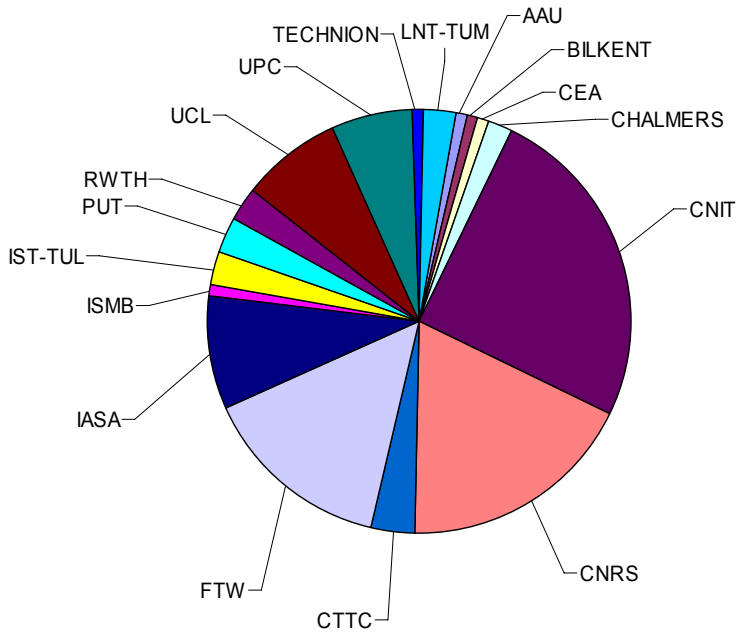

Fig. 2.2 - The involvement of partners in researchers' exchanges

As for the involvement of partners in the exchange actions (Fig. 2.2), it should be noted that in the second year of the project almost all NEWCOM++ institutions have been involved in researchers' mobility. This is a very successful result for the network, because it remarks the effective collaboration between research groups and their high level of integration. Clearly, as in the first year, the bigger partners implemented more researchers' exchanges than the smaller ones.

In Fig. 2.3 the graph highlights within which WP Rs the visits were performed.

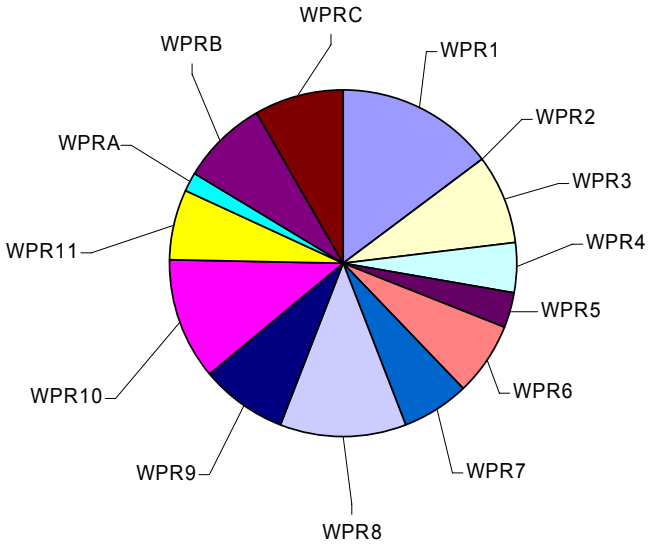

Fig. 2.3 - The involvement of NEWCOM++ WPs in researchers' exchange

The pie chart above reflects cooperation activities in terms of face-to-face meetings and visits taking place within different research workpackages. Compared to the first year, in which only some WPs seemed to have the leading positions, Fig.2.3 shows that there is a very homogeneous level of involvement among WPs. Therefore, it underlines that the collaborations within all WPs are more and more tight and well balanced.

2.2 Mobility grants 2008-2009

The first year of the "Mobility Grant" has been a huge success. As confirmed by the winners, it has created a great opportunity to work intensively with NEWCOM++ partners on the emerging investigation issues related to the specific workpackages, to get together and discuss face-to-face the most challenging problems. In general, mobility exchanges permit to establish new relations between research institutions and the visits may enable to realise important scientific results and many scientific discussions and talks. Beyond doubt, the exchange of knowledge, experiences and ideas that accompany these achievements are a valuable benefit for the network. Besides, the trip is a chance to learn about the history and tradition of a country and to observe its culture-specific features.

The enthusiastic comments about that experience can be read in the 5th issue of the Newsletter on NEWCOM++ web site.

See annex D for the reports of 2008 mobility grants.

2.3 Mobility grant 2009-2010

In order to enhance the face to face research cooperation and promoting exchanges of researchers among different N++ institutions, a grant for mobility has been given to the best project proposal. In particular, this year the mobility grant has been "feminine", to encourage and support the participation of women in research activities. The increase of the number of female PhD students to become successful researchers in the future may be one of the achievements of the NoE.

A mobility panel has been created in order to discuss the rules for the submission of proposals, to prepare the "Call for Projects" and to evaluate the proposals. The following persons have been nominated as members of the Mobility Panel: Luis Correia (IST), Carles Anton (CTTC), Lorenzo Vangelista (CNIT), Irene Inchingolo (ISMB).

On July 1st 2009 the call for project was opened on the web site at the following URL:
http://www.newcom-project.eu/mobility/grants-for-mobility

See Annex C for the complete text of the call.

A brief description of the winning project follows:

Researcher's name: Diana Fontanella
Affiliation: CNIT-MI
Title of the project: *Distributed Algorithms for Cooperative Localisation*

Diana Fontanella will spend three months at UCL (Université Catholique de Louvain) during the end of year 2009 / beginning of year 2010. The approximate dates are 01/12/2009-28/02/2010.

The objective of the research is the study of cooperative localisation for the estimates of nodes' positions in WSNs. The research that will be conducted is related to the topics of the workpackage WPR.B of NEWCOM++.

2.4 Joint Publications

By *joint publications* it is meant papers written by at least two partners of the consortium.

The results, in terms of papers accepted by international conferences and journals, have been doubled with reference to the already good last year ones. In particular, papers submitted and accepted on international journals are 15 while on proceedings of international conferences are 82. Therefore, joint publications accepted in the second year of NEWCOM++ are 97 (see Table 2.1).

Since the joint publications within an NoE are an important indicator of the integration established among different partners, we can affirm that the project is contributing to tighten the pre-existing relations and collaborations among the institutions of the consortium.

The following table reports figures on partners/countries involved:

	2 partners 1 country	2 partners 2 countries	3 partners 2 countries	3 partners 3 countries	4 partners 3 countries	total
conferences	17	51	6	6	2	82
journals	4	9	0	2	0	15
total	21	60	6	8	2	97

Tab. 2.1 - The number of joint papers published or accepted in the second year of NEWCOM++

Besides, like in the past year, some joint papers have been produced by two or more NEWCOM++ partners, as well as authors coming from institutions external to the Consortium, underlining the interest that the network keeps gaining from external actors and the concrete spreading of the achievements of the project.

In the chart below, we present the involvement of the different WPs in the production of joint papers. It should be noticed that some papers have been produced by two workpackages jointly, enhancing further the level of integration. The numbers were taken from the table in Annex D.

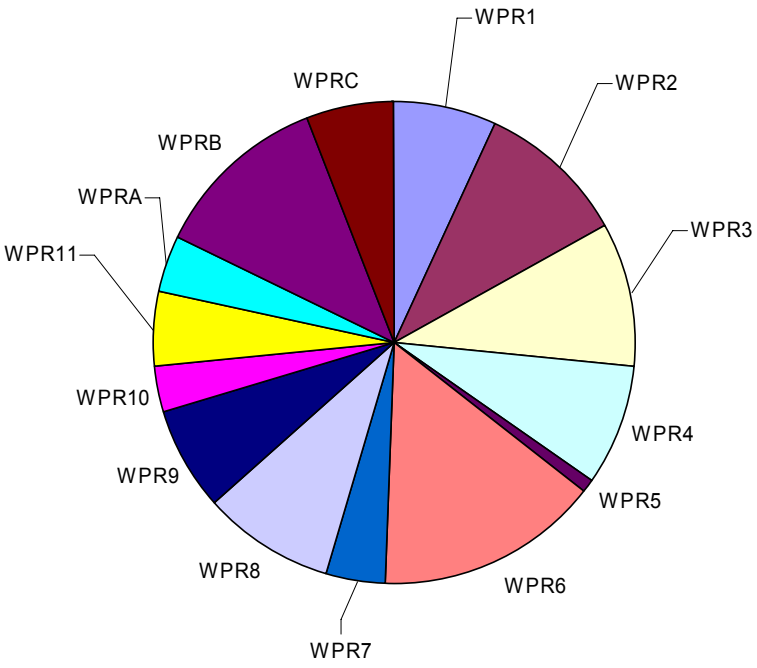

Fig. 2.4 - The involvement of NEWCOM++ WPs in joint papers

1st Best Paper and Young Researcher Awards

The main aim of these awards is to encourage (especially young) researchers to publish their research work and to promote a healthy competition among researchers and institutions; therefore two awards have been given to the best papers already published/accepted for publication authored by N++ researchers.

An Award Committee has been created in order to evaluate the papers. It is formed by the members of the Advisory Board (Joachim Hagenauer – LNT-TUM; Ernst Bonek - TUV; Riccardo De Gaudenzi - ESA; Roberto Padovani - Qualcomm; Antti Toskala – Nokia), and chaired, without voting privilege, by the NEWCOM++ Scientific Director (Sergio Benedetto - ISMB).

On July 6th 2009 the call for submission was opened on the web site at the following URL: http://www.newcom-project.eu/news/1st-best-paper-and-young-researcher-awards-call-for-submissions. See Annex E for the complete text of the call.

The call has had a good response: in fact 11 candidates have applied, 3 for the Best Paper Award and 8 for the Young Researcher Award. See all the candidates in the table below:

Authors	Title	NEWCOM++ Institutions
1st Best Paper Award		
M. Kobayashi, M. Debbah, S. Shamai	Secured Communication over Frequency-Selective Fading Channels: a practical Vandermonde precoding	CNRS and Technion
Felix Brah, Jerome Louveaux, Luc Vandendorpe	CDIT-Based Constrained Resource Allocation for MobileWiMAX Systems	UCL
Erdal Arıkan	Channel Polarization: A Method for Constructing Capacity-Achieving Codes for Symmetric Binary-Input Memoryless Channels	Bilkent
1st Young Researcher Award		
S. M. Perlaza, M. Debbah, S. Lasaulce, H. Bogucka	On the Benefits of Bandwidth Limiting in Decentralized Vector Multiple Access Channels	CNRS and PUT
Dieter Duyck, Daniele Capirone, Joseph J. Boutros, Marc Moeneclaey	A full-diversity joint network-channel code construction for cooperative communications	UCL/UGent and CNIT-Torino
Umer Salim, David Gesbert, Dirk Slock, Zafer Beyaztas	Hybrid Pilot/Quantization based Feedback in Multi-Antenna TDD Systems	CNRS/EURECOM
Pau Closas, Carles Fernández-Prades, Juan A. Fernández-Rubio	Cramér–Rao Bound Analysis of Positioning Approaches in GNSS Receivers	CTTC and UPC
Pau Closas, Carles Fernández-Prades, Juan A. Fernández-Rubio	A Bayesian Approach to Multipath Mitigation in GNSS Receivers	CTTC and UPC
Troels Pedersen, Claus Pedersen, Xuefeng Yin and Bernard H. Fleury	Optimization of Spatiotemporal Apertures in Channel Sounding	AAU and FTW
Jorge M. Soares and Rui M. Rocha	CHARON: Routing in Low-Density Opportunistic Wireless Sensor Networks	IST-TUL
Jesús Alonso-Zárate, L. Alonso and Ch. Verikoukis	Performance Analysis of a Persistent Relay Carrier Sensing Multiple Access Protocol	CTTC and UPC

Tab. 2.2 - List of participating papers to the Awards

The winning papers are the following:

"1st Best Paper Award"

M. Kobayashi (CNRS/Supelec), M. Debbah (CNRS/Supelec), S. Shamai (Technion), "Secured Communication over Frequency-Selective Fading Channels: a practical Vandermonde precoding", Eurasip Journal on Wireless Communications and Networking, special issue on physical layer security, 2009.

"Young Researcher Award"

D. Duyck (UCL/UGent), D. Capirone (CNIT/PoliTo), J. J. Boutros (TAMU), M. Moeneclaey (UCL/UGent), "A full-diversity joint network-channel code construction for cooperative communications", accepted for publication in proceedings of PIMRC 2009, Tokyo, Japan.

2.5 Gender issue

During the first year of the project, a survey was conducted within the consortium in order to observe the gender situation in NEWCOM++. That survey showed an under-representation of women in the area of information technologies within NEWCOM++ partners. In this second year of the project, an anonymous gender questionnaire has been prepared in order to collect different perceptions of this situation among NEWCOM++ researchers. The information provided will help the network to better understand the gender issue and to foster equal opportunities at all levels.

The following graph is a picture of the people who replied to the questionnaire; about 38% are women and this proves that, in spite of their small number, female researchers are active in replying to the project initiatives.

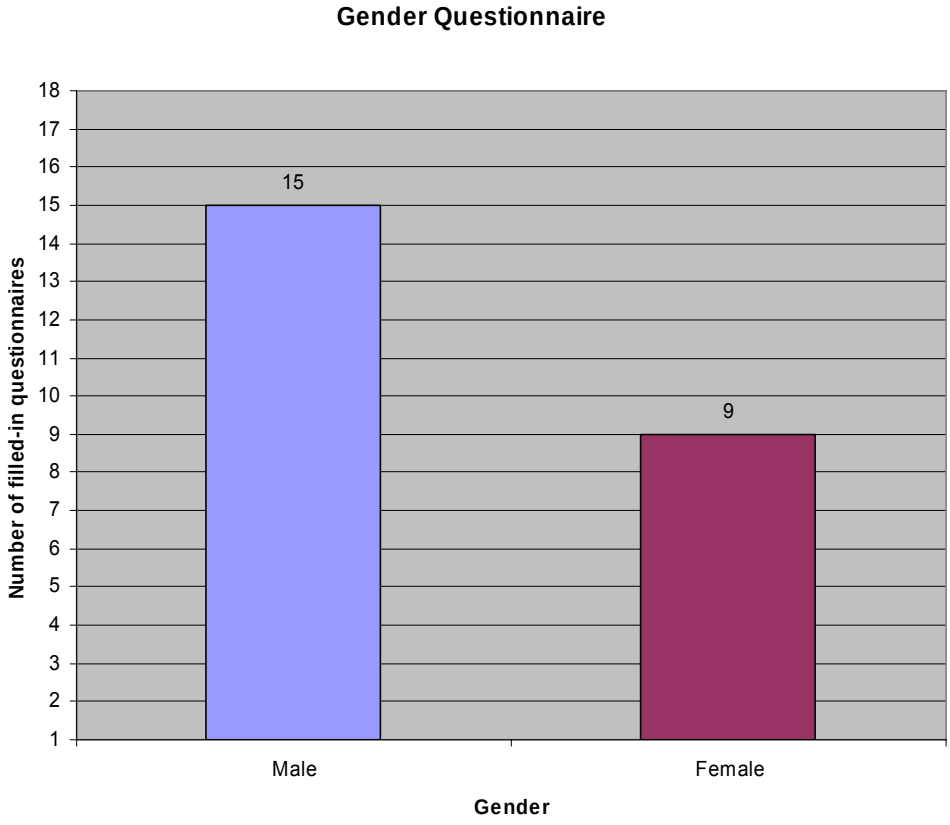

Fig. 2.5 - Figures on gender of the interviewed

From the filled in questionnaires, we can take some figures about the percentage of women working in NEWCOM++: they are about 20% of the total researchers in the laboratories.

The shared idea is that there are no huge differences between women and men in the work approach; surely there are differences related to the temperament, regardless of the fact they are men or women. Also the excellence in some topics is related to personal case and not to gender case.

Apparently, none female researcher in NEWCOM++ has been facing gender problems, no discrimination, nor prejudices.

Most of the interviewed are convinced that promoting exchange of women researchers, through the issuing of female mobility grants, is an effective way to enhance the gender balance. This fits also the institutional goal of creating and implementing networks. Maybe the investment of the NEWCOM++ project on this issue should be increased to 2-3 grants per year.

Some good suggestions and advice in order to promote the gender balance have been provided, especially by women:

- Collaboration with organisations such as IEEE community Networking Networking Women (N^2 Women) a worldwide community conceived to foster collaboration among women working in networking so as to support fellowships, grants, advising open positions, sharing accommodations for conferences, etc
- Creation of a feminine NEWCOM++ working group where women exchange their ideas and experiences about project activities carried out across all the WPs and while also getting some ideas of who is doing what in the female research community of the project
- Advertising by leaflets and web pages
- Nomination of a Gender Panel of women, chaired by a senior female researcher, with the aim of creating opportunities for female students and researchers, scholarships or PhD program at selected institutions, organising and advertising themed events.
- Writing of a Gender Actions Plan of the project to lead people to work effectively over this issue
- To evaluate the performance of each partner in terms of encouragement to the participation of women in research activities
- Giving lectures devoted to undergraduate female students on how careers in ICT can be an attractive option for them.

Some interviewed are not supportive or pretty sceptical about women gathering or whatever makes them different from male employees. They are afraid women would lose the acceptance from the male side and their capability may be underestimated.

About the investment that would be fair to devote to the improvement of gender balance, the interviewed agree on around 5% of NEWCOM++ budget. This amount should help:

1) to promote women to give courses at different locations (so that people know better the women involved in NEWCOM++)
2) to give women the ability to do remote work at home and use the efficient NEWCOM++ Easymeeting tool
3) to finance PhD grants for women

But someone thinks that it is not so much a matter of lack of money as a matter of attitudes to promote gender equality.

According to the answers, most of interviewed would like to continue doing research in an academic institution. The institutions of the consortium are significantly flexible in managing work/family matters, allowing people to work by objectives, giving flexible working time schedules (also in planning meetings and classes), allowing teleworking/working from home whenever needed,

organising the replacements in case of absence and paid parental leave programs. All these possibilities permit to conciliate everything in an agile way.

This is an important support to encourage female researchers to reach their professional goals without encountering problems with their private life. Some good advices provided in order to balance work/family life are the provision of baby parking structures in the Institution buildings where mums work, so that they can be close to their babies and spend some time with them also while working or the possibility to work from home; it could be an effective way to help women researchers in their activities and careers.

The first step is creating higher awareness of gender issue by trying to understand the factors leading to gender inequalities and the mechanisms and tools for reducing them. Anyway, gender equality is a long-term process which requires continuous monitoring and encouragement. As pointed out by an interviewed, and according to modern research in the gender equality area, it is important to avoid singling out women as a problematic group, in order not to have negative impact on the performance of the whole team.

Balance in terms of numbers is difficult to achieve in the short to medium term. It would require a much better recruitment of women to basic engineering programs to start with. In fact, the problem is the amount of women in research, not their lack of involvement in research projects. Obviously, this is not a NEWCOM++ problem, but a rather extended cultural issue of women involved in jobs in the field of ICT. Changing this trend is slow, so it is not really expected that it can be significantly changed within NEWCOM++ lifetime. Of course, having a longer term vision, the promotion of the gender balance could help in increasing the number of women doing research in universities that could in turn somehow contribute to change the trend (e.g. this could attract more female students to ICT studies in those universities).

Therefore, related to the activities and the choice for future careers, somebody suggests promoting the engineering (in particular telecommunications and related fields) among female students already at the secondary school. Indeed, no specific actions would be needed to support women if the problem at the source was solved; the point is that there are too few female students in engineering faculties, hence too few female PhDs, hence researchers and so on. The main issue is that women have been traditionally less attracted by telecommunications field. This is reflected in the statistics of women studying e.g. telecommunications engineering, which can be only 15-25% of the total number of students. As a result it is natural that there exists also some imbalance between men and women in the research stage. This is something that can't be easily changed at the later stage (e.g. once men/women have finished their studies) but it should be changed at an earlier stage (e.g. by trying to make telecommunications studies more attractive for women). Therefore, it is necessary to combat the cultural and social attitudes towards what is traditionally considered 'male' or 'female' roles and functions. These gender stereotypes may influence the choices of studies and jobs.

It is important to overcome the common idea which describes ICT careers as boring or too technical for women and try to get girls and young women interested in undertaking such careers. Tackling stereotypes enables women to use their full potential. It could be a good idea to organise a NEWCOM++ Girls' Day at the end of the project. For this purpose, the hosting institution could open its laboratories and offices to give concrete examples on how interesting this world can be. In this event some researchers may be available for talks and discussions. At that event, a copy of *Tech Girls are Chic*[1] could be given as a gift to all participants.

[1] Tech Girls are Chic is a book focusing on 16 women who work in technology jobs. They are a bunch of fun women who find working with technology challenging and interesting, and they are far from fitting the stereotypical 'geek' image portrayed by the media. They use both their technical and/or non-technical skills to have a successful career in IT. This book hopes to inspire girls to think a little deeper about technology and to encourage them not to shy away from it, by showing that tech jobs are welcoming to women.

In conclusion, the way to handle the question is to make possible that all women are treated in the same way men are treated and have exactly the same opportunities. In general, in order to avoid the under-representation of women, the point is to make the work in ICT field generally attractive to everybody.

3 CONCLUSIONS

Human capital is a crucial asset of transversal character, whose consistency, valorisation and development represent the determining elements for the success of the working groups, the institutions or the whole research system.

The leading thread in this second year of NEWCOM++ project has been the competitiveness of the network, so actions to support the development of competences of involved partners have been undertaken.

Therefore, NEWCOM++ valorisation of human capital has been encouraging researchers to publish their joint work on internationally recognised journals and conferences, fostering a healthy competition among researchers and institutions by creating awards in recognition of excellent cooperative research.

The main aim is to create conditions for the development of scientific knowledge and collaborations within research WPs and the cooperation between partners involved in these work-packages. Establishing collaborations among partners with the same objectives is the correct approach to reach the Excellence.

We can affirm that all the activities have reached good results. In particular, the researchers' exchanges and the joint publications have been doubled with reference to the past year; the papers presented for the Awards have shown a good level of quality in terms of actual study/analysis; a first step ahead has been taken to promote the gender balance thanks to the issue of a feminine Mobility Grant. This good trend makes us hopeful: we expect similar remarkable achievements for the next year.

In general, in the current economic situation it is important to stimulate human resources to optimise their potential using abilities and talents to best. For the third year of the project a further effort will be made in this direction by issuing the second Best Paper and Young Researchers Awards and the Distinguished Achievements Award.

ANNEX A - RESEARCHERS EXCHANGES

home institution	hosting institution	period of the visit		WP involved in the joint research
		from (dd/mm/yy)	to (dd/mm/yy)	
BILKENT	IASA	25/06/2009	27/06/2009	WPR.3
CEA	CNRS	20/04/2009	30/04/2009	WPRC
CHALMERS	CNIT	26/05/2009	30/05/2009	WPRB
CNIT	UCL	12/10/2009	16/10/2009	WPR1
CNIT	PUT	31/08/2009	05/09/2009	WPR3
CNIT	IASA	23/02/2009	27/02/2009	WPR8
CNIT	IASA	31/08/2009	04/09/2009	WPR8
CNIT	FTW	03/06/2009	03/06/2009	WPR6
CNIT	RWTH	12/01/2009	23/04/2009	WPR10, WPR11
CNIT	UPC	01/03/2009	31/07/2009	WPR9
CNIT	UPC	01/03/2009	31/07/2009	WPR9
CNIT	UCL	05/01/2009	29/05/2009	WPRB
CNIT	UPC	01/03/2009	31/07/2009	WPR9
CNIT	UCL	22/07/2009	24/07/2009	WPR3
CNIT	IASA	23/02/2009	27/02/2009	WPR8
CNIT	UPC	01/01/2009	31/10/2009	WPRC
CNRS	CNIT	01/01/2009	30/04/2009	WPR7
CNRS	FTW	16/03/2009	19/03/2009	WPR10
CNRS	FTW	30/11/2009	11/12/2009	WPR10
CNRS	PUT	15/06/2009	16/06/2009	WPR9
CNRS	FTW	23/01/2009	23/01/2009	WPR1
CNRS	FTW	05/11/2009	05/11/2009	WPR1
CNRS	IASA	02/06/2009	04/06/2009	WPR.3
CNRS	CNIT	18/05/2009	18/05/2009	WPR8
CNRS	CHALMERS	05/06/2009	12/06/2009	WPR11
CNRS	TECHNION	19/04/2009	24/04/2009	WPRA
CTTC	CNRS	01/07/2009	22/12/2009	WPR6
CTTC	CNIT	02/03/2009	06/03/2009	WPR8
CTTC	CNIT	26/05/2009	29/05/2009	WPRB
FTW	CNRS	10/07/2009	21/07/2009	WPR4
FTW	CNRS	25/09/2009	20/12/2009	WPR4
FTW	CNIT	20/07/2009	24/07/2009	WPR6, WPRB
FTW	UCL	26/10/2009	30/10/2009	WPR1
FTW	AAU	16/11/2009	22/11/2009	WPR4
FTW	UCL	26/10/2009	30/10/2009	WPR1
FTW	UCL	26/10/2009	30/10/2009	WPR1
FTW	CNRS	02/02/2009	27/02/2009	WPR7
FTW	CNRS	01/04/2009	30/04/2009	WPR7

FTW	CNRS	02/06/2009	30/06/2009	WPR7
FTW	CNRS	09/07/2009	15/07/2009	WPR1, WPR8
IASA	CNIT	23/02/2009	25/02/2009	WPR10
IASA	CNIT	23/02/2009	25/02/2009	WPR10
IASA	CTTC	21/07/2009	23/07/2009	WPR10
IASA	CNIT	23/02/2009	25/02/2009	WPR.10
IASA	CNIT	06/09/2009	12/09/2009	WPR.11
IST-TUL	UCL	25/05/2009	29/05/2009	WPR1
IST-TUL	CNIT	22/06/2009	27/06/2009	WPR9
IST-TUL	ISMB	15/11/2009	19/11/2009	WPR11
LNT-TUM	UCL	11/02/2009	12/02/2009	WPR6
LNT-TUM	CNIT	12/11/2009	13/11/2009	WPR5
LNT-TUM	FTW	02/06/2009	04/06/2009	WPR5
PUT	CNIT	01/02/2009	28/02/2009	WPR3
RWTH	CNRS	07/09/2009	11/09/2009	WPRC
RWTH	CNRS	07/09/2009	11/09/2009	WPRC
UCL	CNIT	06/07/2009	12/07/2009	WPR1
UPC	CNRS	19/06/2009	20/07/2009	WPRC
UPC	CNIT	06/07/2009	22/07/2009	WPR8
UPC	CNIT	06/07/2009	31/07/2009	WPRB

ANNEX B - MOBILITY GRANT – CALL FOR PROJECTS

Opening of the call: July 1st, 2009
Project acronym: NEWCOM++
Type of contract: NETWORK OF EXCELLENCE.
Contract N°: 216715
Project URL: http://www.newcom-project.eu/

GENERAL ASPECTS	
Purpose	The aim of the mobility grants is to enhance the face to face research cooperation and to promote exchanges of researchers among different institutions. In particular, this specific mobility grant is "feminine", in order to encourage the participation of women in research activities.
Participants	Female researchers (especially young, under 30 year of age) from any of the NEWCOM++ partners can participate to the call and submit a project.
Duration	The duration of a project is not fixed, as long as it is within NEWCOM++ duration.
Budget	The total budget allocated for this grant is € 1.500,00.
Claim and proof	The prize will be given directly to the winner from the coordinator ISMB. At the end of the stay the winner will send to the coordinator a short report of the results obtained as well as copies of the boarding passes (or train tickets) as proof of the travel.
EVALUATION OF PROPOSALS	
Criteria	▪ Relevance to the objectives of NEWCOM++ (links to WPs). ▪ Feasibility and clarity of the objectives. ▪ Integration. The extent to which: o the mobility gives an add value to already existent liaisons (importance of the choice of the hosting institution); o increase of links between institutions o new collaborations o "Cross-fertilization" (The person who moves should have complementary knowledge with respect to the one of the hosting institution in any case helpful for the research) ▪ Applicants CVs
Procedure	Each project will be evaluated by the Mobility Panel. In case of conflicts of interest, the corresponding member(s) of the Panel will be replaced by a person chosen by the Executive Board.

SCHEDULE
The applicants should send the Proposals to Irene Inchingolo at N++office@newcom-project.eu.
Deadline for submitting the proposals: October 30, 2009
Notification of the ranking: November 30, 2009.

PROPOSAL TEMPLATE
The template can be found at the url: http://www.newcom-project.eu/mobility/grants-for-mobility

ANNEX C – REPORTS ON "2008 MOBILITY GRANTS"

Adrian Kliks (akliks@et.put.poznan.pl)
PhD student - Poznan University of Technology (PUT)

Introduction

It is widely expected that one of the main results of the NEWCOM++ project will be the creation of dense and active network of excellence, which connects various research centers among the whole Europe. To reach this goal many activities are undertaken, like offering special founding in order to ease the face-to-face cooperation between partners. ISBM, leader of work-package WPI.3 ("Valorization of human capital") has offered three "Mobility Grants" for the amount of 1500€ within this activity, which were dedicated mainly to young researchers. In 2008 Adrian Kliks from PUT has applied with success for one of the two available "Mobility Grants". His project entitled "*Adaptive Modulation and Coding Algorithms for Non-Orthogonal Multicarrier Systems*" was selected from all received applications to be realized in practice. The proposed research topic of the project corresponds to the actual research activities which are undertaken in PUT and CNIT/Pisa within the Task 2 in work package WPR.3. The detailed project description (i.e. the received application form) is attached to this document.

Description of the scientific visit and the achieved results

As it was mentioned, constructive cooperation between PUT and CNIT/Pisa exists within task 2 in work package WPR.3, which covers the problems related to the development of new adaptive modulation and coding techniques for non-orthogonal multicarrier systems. This already fruitful cooperation was even more tightened and improved due to the scientific visit of one researcher from PUT (Adrian Kliks, PhD student, WPR.3 Task 2 leader) at the University of Pisa in Italy, which lasted four weeks (from the first of February 2009 to the twenty eighth of February 2009). The sending institution was the Poznan University of Technology, Chair of Wireless Telecommunication (PUT – contact person Prof. Hanna Bogucka) and as the host institution was acting the Consorzio Interuniversitario delle Telecomunicazioni – University of Pisa (CNIT/Pisa – contact person – Prof. Filippo Giannetti).

During the first two weeks of the stay, two official and minuted meetings were organized in order to define, adjust and monitor the progress in all the tasks that were planned for realization. Let us stress that these details about CNIT/Pisa and PUT joint investigation were discussed based on the activity plan presented by in WPR.3 meeting held in Sophia Antipolis and on the work-plan included in A. Kliks' application form for the N++ "Mobility Grant. Some important decisions have been taken and some milestones have been set up.

a) The participants agreed to finalize the development of a software simulator (programming language used: C++ with IT++ library modules) supporting both OFDM and NOFDM (Non-Orthogonal FDM), and possibly also other multicarrier formats of interest. It was acknowledged that intensive testing is needed prior to the final migration from the Matlab simulator. The simulations will be carried by using the CNIT/Pisa and PUT computer clusters.
b) The participants agreed to improve the modified J. Campello's algorithm, as presented in the IEEE WCNC2009 joint paper, and to check the possibility of adapting the Fisher algorithm to the NOFDM case.
c) Feasibility of applying SNR mapping algorithms to NOFDM systems will be evaluated.
d) A collection of software modules specifically developed during the investigation on AMC for NOFDM will be delivered to the Software Simulation Library (SSL) developed within the WPI.4.
e) Partners declared their interest in supporting the creation of ViceWicom web-site, which is under the responsibility of Adrian Kliks.

In accordance with the accepted working plan, various activities were undertaken and various problems were discussed, investigated and solved, mainly due to the face-to-face cooperation. The most significant achievements are gathered and highlighted below:

a) The software simulator was updated, improved and deeply tested. At the end of the stay the most parts of the simulator were finished. The simulator is prepared in C++ using the special IT++ routines, which are dedicated for telecommunication and signal-processing application. The final version of the simulator is due by the end of May.
b) Effective discussion concerning implementation of new Adaptive Modulation and Coding algorithms were carried out. As the results, some potential algorithms candidates were selected and adjusted for non-orthogonal scenario, e.g.: Effective Exponential SNR-mapping (EESM), Cumulant Generating Function-based ESM (κ-ESM), Received-Bit Mutual Information Rate ESM. These new proposed algorithms that include the effect of overlapping between neighbouring waveforms on the Time-Frequency Plane will be included into the simulator within the coming two-three months.
c) Similarly, efficient discussions were carried out about the further improvement of Campello's algorithm, already presented at the IEEE WCNC'09 conference in Budapest. The presented bit and power loading algorithm was rather impractical due to the high computation complexity, although it solved the main problem of incorporating the overlapping phenomenon into the algorithmic procedure. During the stay, a new efficient algorithm was developed, which outperforms the previous one in terms of number of required mathematical operations, while ensuring the same effectiveness in terms of saved transmit power. Its main idea bases on the observation that the power of the overlapping fraction of the neighbouring pulses is known at the transmitter, thus yielding an approximate estimate of the interfering power, which is needed at the initial phase of the modified Campello's algorithm. Numerical results proved the correctness of the proposed sub-optimal solution. The developed algorithm was described in the paper submitted to IEEE ISWCS'09 conference, which will be held in Siena. It is decided, that this algorithm will be implemented on hardware platform – some discussions about hardware implementation were carried out during the stay. However, as planned, this stage will be done by PUT after A. Kliks come back to Poznań.
d) Efficient investigation has been performed with regard to the possibilities of the derivation of channel capacity of NOMC systems by the means of Singular Value Decomposition. In such an approach, intersymbol and intercarrier interferences will be taken into account during the derivation process in similar way as the capacity is calculated in MIMO-OFDM systems and as in the wireless systems that utilize the spatial diversity. The partners will put their special attention on this topic in the near future.
e) There were a lot of special activities related to the "Exchange of knowledge", e.g.:
    - Presentation of the AMC techniques that can be applied in multicarrier systems (given by A. Kliks)
    - Presentation of the CNIT/Pisa achievements in the field of reception of TETRA2 TEDS signals and presentation of the overall TETRA concept (given by prof. Vincenzo Lottici)
    - Presentation of the details of Bussgang theorem (given by Prof. Filippo Giannetti)
    - Presentation of the new ideas for the assessment of the impact of non-linear distortions on multi-carrier signals (given by A. Kliks).
f) Efficient discussions have been made in order to find the concept of modification of the Fisher-Huber bit- and power-loading algorithm for the NOMC case. Both partners have agreed that a new and more accurate definition of bit error probability has to be find based on Log-Likelihood Ratio approach. First derivation of the error probability has been performed during the stay in Pisa. However, this subject has to be examined in a more detailed way.
g) Exchange of knowledge and ideas related to the joint activities of CNIT/Pisa and PUT in the area of modeling of non-linear distortions in non-orthogonal systems has been performed. Prof. F. Giannetti has provided excellent material related to this particular topic. Based on this

background, both partners have agreed to investigate the theoretical performance of non-orthogonal multicarrier systems over nonlinear channels.

h) The partners decided to provide the set of separate software modules and the whole working simulator of Non-orthogonal MultiCarrier systems to the Software Simulation Library. This contribution is of the high importance.
i) Based on the same assumptions, both partners have agreed to anticipate actively in creation and maintenance of the ViceWicom portal. In particular, the partners have agreed to provide some educational material (devoted to the Educational Area) and research contribution (devoted to Research Area).
j) It has to be mentioned, that at the end, the detailed publication plan was proposed.

Since one-month stay in Pisa occurs to be not long enough to solve all emerging scientific problems and discuss all relevant ideas, both partners have agreed to tighten the cooperation by repaying a scientific visit in Poznań by researchers from Pisa. This can be done twofold: on the one hand the scientific visit of Prof. F. Giannetti and/or Prof. V. Lottici is considered, on the other hand – at least one week visit of Dr. Ivan Stupia is planned on August/September 2009. Moreover, the partners have observed that the possibility of establishment of more official and long-term cooperation between both universities exists. In particular, official agreement for students exchange in the Socrates/Erasmus program between Department of Information Engineering and Faculty of Electronics and Telecommunications could be considered.

Conclusions

During the scientific visit of Adrian Kliks in Pisa a number of important research issues were considered, which were highlighted above. Since both universities have not cooperated in the past, i.e. before Newcom++ project started, such scientific visit has contributed to establish new, fresh research connections. It was an excellent possibility to valorise the human capital, to exchange the knowledge and experience in various research and educational areas and to create new scientific connections between Poland and Italy. As it was mentioned, most of the action points planned for this visit were done and lots of new ideas, that arise during the stay in Pisa, were taken into consideration. It is expected that next scientific visits will be organized in the nearest future, thus it can be stated that the expectations with regards to the Mobility Grant were satisfied even with interest.

Acknowledgment

Adrian Kliks would like to express thanks to Newcom++ community and its officials for creating the excellent opportunity of the scientific visit at University of Pisa.

Flavio Fabbri (flavio.fabbri@unibo.it)
PhD student - Consorzio Nazionale Interuniversitario per le Telecomunicazioni - University of Bologna (CNIT-Unibo)

Introduction
This short report illustrates the activity carried out by Flavio Fabbri, researcher at CNIT-Unibo, and performed during his 3 months exchange period spent at RWTH Aachen University from Jan-15th to Apr-22th 2009.

Activities
Research activity was strictly related to Newcom++ tasks, in particular those of WPR.10 (Network Theory) and WPR.11 (Opportunistic Networks). In Jan-2009 Flavio Fabbri collaborated with Janne Riihijarvi for the finalization of a paper published at WCNC 2009 on the throughput performance of clustered wireless sensor networks. This work of analytical flavor was made possible thanks to the integration of RWTH skills on statistical analysis of point patterns used to model sensor nodes deployment, with CNIT-Unibo skills on radio channel access modeling and MAC issues.
The rest of the period was devoted to WPR.11 activities on the analysis of opportunistic paradigms for sensor networks. In particular we evaluated the effects of nodes mobility through real-life data as well as through simulation and mathematical modeling. In this case CNIT-Unibo knowledge of mathematical modeling of connectivity aspects of wireless networks well matched with RWTH skills on handling real data. This resulted in the production of joint papers.

Conclusions
The period spent by Flavio Fabbri at RWTH Aachen University was very productive in terms of knowledge sharing and successfully lead to high quality publications. The main achievements of the collaboration were: 1 joint paper published at WCNC 2009; 1 joint paper presented at the N++ event 2009 in Barcelona; 1 joint paper accepted for publication at ICT-Mobile Summit 2009; 1 joint paper submitted to Globecom 2009.

ANNEX D - JOINT PUBLICATIONS

WPs involved	papers accepted /published
WPR1	7
WPR2	10
WPR3	10
WPR4	8
WPR5	1
WPR6	15
WPR7	4
WPR8	9
WPR9	7
WPR10	3
WPR11	5
WPRA	5
WPRB	12
WPRC	6
total	101

Please notice that 4 papers have been counted twice since they have been produced jointly within 2 WPs. This explains why the total number is 101 instead of 97 (which is the actual number of papers accepted or published).

ANNEX E – 1ST BEST PAPER AND YOUNG RESEARCHER AWARDS – CALL FOR SUBMISSIONS

Opening of the call: July 06, 2009
Project acronym: NEWCOM++
Type of contract: NETWORK OF EXCELLENCE.
Contract N°: 216715
Project URL: http://www.newcom-project.eu

GENERAL ASPECTS	
Purpose	The aim of the awards is to encourage (especially young) researchers to publish their research work and to promote a healthy competition among researchers and institutions.
Participants	The papers must have originated from NEWCOM++ researchers and contain the acknowledgement of NEWCOM++ support.
Budget	The total budget allocated for a single award is € 1.000,00. Two awards will be assigned during the second year of NEWCOM++: 1st Best Paper Award: to the best paper already published or accepted for publication authored by NEWCOM++ researchers; 1st Young Researcher Award: to the best paper already published or accepted for publication authored by NEWCOM++ researchers with the first author under 30 years of age.
Prize-giving	The prize will be given to the winner by the coordinator (ISMB).
EVALUATION OF PAPERS	
Criteria	▪ Contribution to the advancement to the field of Wireless Communications ▪ Relevance to the objectives of NEWCOM++ (links to WPs); ▪ General quality, originality of research, contributions, subject matter, clarity and style of presentation; ▪ Priority: papers co-authored by researchers belonging to more than one NEWCOM++ partner will be given special consideration in the evaluation process.
Procedure	Each paper will be evaluated by the Award Committee, formed by the members of the Advisory Board and chaired, without voting privilege, by the NEWCOM++ Scientific Director.

SCHEDULE

The applicants should send their paper(s) electronically to Newcom++ Office at N++office@newcom-project.eu.
Deadline for submitting the papers: October 30, 2009
Notification of the ranking: December 15, 2009.

ANNEX F – GENDER QUESTIONNAIRE

Country …… Gender …….

1. How many men/women work in your laboratory?

Number of men	Number of women

2. How many men do you know who won fellowships, awards or prizes in your Institution? How many women?

Number of men	Number of women

3. What long-term goals have you set in your professional activities? How flexible/encouraging is your Institution in managing the work/family matter?

4. What is the most effective way to support women researchers in their activities/careers? (e.g. by promoting exchanges of female students; by supporting organizations gathering female researchers in telecommunications, computer science and related fields)

5. What differences have you perceived between women and men in the work approach in NEWCOM++ project? Where do women excel in? Where do men excel in?

6. **[Only for women]** - Which are the main gender problems you are facing within NEWCOM++ that might affect your activities (if any)? (e.g. discrimination in important tasks and responsibilities, prejudices about your professional skills, bias regarding your role in the family)

7. This year a female mobility grant has been issued in NEWCOM++ to encourage the participation of women in research activities. What would you do in order to further improve the gender balance in the project? Please, provide your advice.

8. How much would a fair investment be to promote the gender balance in NEWCOM++ project? Why?