low Energy COnsumption NETworks

DELIVERABLE D7.3

FIRST ECONET INFORMATION DISSEMINATION PLAN

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Table of Contents

DISCLAIMER **2**
COPYRIGHT **2**
TABLE OF CONTENTS **3**
1 EXECUTIVE SUMMARY **4**
2 DISSEMINATION ACTIVITIES **5**
2.1 LIAISON WITH RELATED RESEARCH ACTIVITIES AND EXPERT WORKING GROUPS 5
2.2 CONTACTS AND ACTIONS WITH RESPECT TO STANDARDIZATION BODIES 7
2.3 THE WEBSITE 9
2.4 DISSEMINATION MATERIALS 9
2.4.1 Leaflet *9*
2.4.2 Brochure *11*
2.4.3 Poster *11*
2.4.4 Banner *11*
2.4.5 Video *11*
2.5 SCIENTIFIC PUBLICATIONS 13
2.6 PROJECT PRESENTATIONS AT CONFERENCES, SYMPOSIA, WORKSHOPS AND INDUSTRIAL EVENTS 15
2.6.1 List of already done presentations *15*
2.6.2 Currently planned presentations *18*
2.7 SEMINARS, RESTRICTED WORKSHOPS AND MEETINGS 20
2.7.1 Seminars, restricted workshops and meetings *20*
2.7.2 Other planned workshops, seminars and meetings *23*
2.8 ACADEMIC AND TRAINING COURSES AND TUTORIALS 24
CONTACTS WITH POTENTIAL USERS 25
3 CONCLUSIONS **25**

1 Executive Summary

This document describes the first definition of the dissemination plan for the ECONET project. The plan aims at promoting scientific and technical progress in low energy consumption networks related research, communicating project results to the widest possible audience, supporting the implementation of project results and fostering their impact on the European society.

Dissemination activities follow the ECONET communication strategy and implement actions raising the awareness and maximizing the adequate exploitation of project results, communicating the vision and the goals of the ECONET project and promoting novel standards for green networking. Specifically, the dissemination strategy of ECONET includes:

- liaison with related research initiatives and expert working groups,
- contacts with standardization bodies,
- cooperation with other RTD initiatives,
- creation of a public website,
- media relations (press conferences, press releases at appropriate time-points),
- scientific publications in leading scientific journals,
- talks and lectures at national and international conferences,
- seminars targeting interested companies, academic groups and/or stakeholders,
- dialogue with policy makers, stakeholders, citizen's associations, to demonstrate benefits for the industry and community.

The purpose of this document is to give a first overview of the dissemination roadmap and the description of the actual activities to be carried out. Some of the included information may be modified in the course of the project development due to a natural progress of the research. When the concepts have been proven to be stable and realizable the dissemination and training events will be extended to focus on more practical information related to the active exploitation.

2 Dissemination activities

2.1 Liaison with related research activities and expert working groups

The ECONET project and its partners have currently activated cooperations with the following entities, projects and communities:

- "Towards Real Energy-efficient Network Design – TREND" Network of Excellence (NoE), funded by the EC, linked by the ECONET partner CNIT. The cooperation has been exploited by the common effort in events such as cross participation and presentations at internal meetings of both projects, and in common events organized by one of the partners (see meetings and events participations sections).
- "Energy-Aware Radio and neTwork technologies – EARTH" project, funded by the European Commission (EC), linked by the ECONET partners ALU and TELIT, and also directly by the coordinator. The cooperation has been exploited by the common participation in events (see meetings and events participations sections).
- "Cognitive radio and Cooperative strategies for POWER saving in multi-standard wireless devices – C2POWER" project, funded by the EC, linked by the ECONET partner LQDE and by the ECONET project itself. The cooperation has been exploited by the common participation in events (see meetings and events participations sections).
- "Generalised architEcture for dYnamic infraStructure sERvices" – GEYSER" project, funded by the EC, linked by the ECONET partner ALU. Here the cooperation has been exploited by organizing a specific inter-projects meeting in Genoa for exchange of information and for identifying possible synergies.
- Portland State University (PSU) as collaborating institution has concretized the relationship with contributions inserted in common publications with the consortium (see the list of publications).
- The University of South Florida (USF) as collaborating institution has concretized the relationship with contributions inserted in common publications with the consortium (see the list of publications).
- "Future InterNet Energy Efficiency - FINE2" project, funded by the Italian Ministry of International Cooperation, linked by CNIT. The cooperation has been exploited by the more direct involvement of the collaborating partners USF and PSU.
- "Green Touch" (GT) initiative by Bell Labs of Alcatel-Lucent, linked by the ECONET partner ALU. The cooperation has been exploited by informing and updating the GT group about ECONET and its topics and results.
- IC0804 - Energy efficiency in large scale distributed systems **(**COST 804), linked by partner CNIT. The Cooperation has been exploited by a CNIT visit at Würzburg University for a fist exchange of information and the ECONET project has been presented during the COST project meeting in Budapest, Hungary, May 2011.
- Preliminary contacts with the project "Scalable Tunable and Resilient Optical Networks Guaranteeing Extremely-high Speed Transport – STRONGEST" between the coordinators (CNIT and Telecom Italia) for future interactions (see the last part of this section).

- "ICT for Energy Efficiency – ICT4EE" forum, linked by the ECONET partner TELIT.
- "The green GÉANT team – GN3 project", co-funded by European National Research & Education Networks (NRENs) and the EC, by the ECONET partner GRNET. GRNET is disseminating ECONET work within the team and can also take the responsibility of the liaison between the two projects.
- Liaison with NetFPGA Community to promote ECONET activity on NetFPGA in the researcher community managed by Lightcom, which is specifically working in ECONET on NetFPGA objects together with DCU.
- Future Internet Cluster; the ECONET project has participated in the initiative of these EU clustering activities by contributing to organized events with presentations and proposals (see meetings and events participations sections).

For each of these projects/initiatives a partner or the coordinator takes the responsibility of the liaison throughout the project duration.

The cooperation with such initiatives, fora and RTD project has been oriented to:

- Organizing and/or participating in common events, workshops and open panels/discussions in order to maximize the impact and the soundness of EC efforts in the field of energy-efficient Information and Communication Technology (ICT).
- Exchanging and comparing perspectives on next-generation energy-efficient networks, technical knowledge and results and main achievements.
- Identifying potential synergies for enhancing the impact on standardization bodies in an as much as possible effective way.
- Participating in forum activities (e.g., ICT4EE) in order to create consensus and common visions and make the impact on standardization easier.
- Envisaging possible research synergies in the respect of the proposed energy-efficient solutions, protocols and technologies for future networks.
- Creating common publications on subjects of common interest, e.g. measures, models, etc.
- Identifying possible new project proposals to be defined together in the green networking field.

In terms of future plans, the project currently envisages (or has taken) the following actions:

- Green- Touch: a presentation and a discussion (Q&A) of ECONET (realized by CNIT with the support of ALU), with the objective of identifying synergies, collaborations and potential common actions, in a session of a Green Touch meeting to be held in November 2011 in Seattle (USA).
- "Scalable, Tunable and Resilient Optical Networks Guaranteeing Extremely-high Speed Transport" -STRONGEST: a presentation and a discussion (Q&A) of ECONET (realized by CNIT), with the objective of identifying synergies, collaborations and potential common actions during the periodic meeting of STRONGEST to be held in Pisa, Italy in October 2011.
- Common training actions with respect to University post-graduate students (Master, PhD) by means of one day of courses and a visit to the Telecom Italia test plant in Torino, Italy, to be realized with STRONGEST, EARTH and TREND projects.

- In collaboration with the project FINE2, a visit in Genova (Italy) of Prof. Suresh Sing from Portland State University has been planned in early November 2011, with the organization of seminars and discussions with partners of the project, both in presence and by means of Webex sessions.
- Strengthening of relations with EARTH, TREND and C2Power, through the sharing of common visions on models, data and consumption measurements finalized also to the realization of one or more common publications on the subject of Green Networking.

2.2 Contacts and actions with respect to standardization bodies

The ECONET partners envisage contributions to the following standardization bodies and industrial fora:

1. ETSI, linked by the ECONET partners ALU, CNIT, GRNET, LQDE, TEI, TELIT.
2. ITU-T, linked by the ECONET partners TELIT, ALU, LQDE, TEI, CNIT.
3. ETNO/HGI, linked by the ECONET partners LQDE, TELIT.
4. ATIS, linked by the ECONET partners ALU, TEI, TELIT.
5. Broadband Forum, linked by the ECONET partners LQDE, TEI, TELIT.
6. GeSI, linked by the ECONET partner TELIT.
7. IEEE 802.3 linked by the ECONET partner MLX.
8. PCISIG linked by the ECONET partner MLX.

Additionally, it should be noticed that Prof. R. Bolla has been inserted on behalf of the ECONET project inside the CEN-CLC-ETSI JCG M462 “Joint coordination group on energy efficiency use in fixed and mobile information and communication networks”. Telecom Italia has been leading the collection of standardization bodies related to power.

Note that a large part of partners of the ECONET consortium already act in the above and other standardization groups, bodies and industrial fora as first-rank players, and many of them are working on their own in the field of energy-efficient protocols and network architectures. Moreover, USA collaborating institutions are involved in American standardization activities, and they will connect the project with the related bodies. The initial effort in the respect of standards has been to create a visibility of the project in the relevant standardization bodies and fora, to start an exchange of information and finally try and select a limited subset of groups to which the effort of the project should be addressed to obtain some specific and concrete contributions.

At the end of the year, behind the dissemination of the project activities in all the above-listed contexts, the following specific planned actions have been identified.

As a long-term action, the results of the ECONET project in terms of innovative mechanisms aimed at reducing the energy consumption of BB equipment could be disseminated within:

- ITU-T SG5 (which deals on ICT and Climate Change),
- ITU-T SG15 (dealing with Transport and Access),
- ETSI EE (Environmental Engineering, dealing with metrics and measurement for equipment energy efficiency),

- EU CoC BB (both network and user side). When the new developments on the NT boards will be closed, ECONET will be able to produce input for the future versions of the EU CoC on BB Equipment, with relation to the power consumption targets,
- IEEE 802.3 within the Energy Efficient Ethernet definition actions,
- PCISIG in the bus specific energy state definition.

Some more specific actions have been already planned at this stage in five main areas: ETSI, HGI, UPnP Forum, DLNA and EU CoC group.

With respect to the ETSI Task Force WM (ETSI TCs ATTM/EE) on Global KPIs for energy efficiency of deployed broadband, informal contacts have been activated by means of ALU representatives to create a liaison between the project and ETSI in the respect of the theme of Energy. The concretization of this action is planned for the last days of this year.

With respect to the ITU group, CNIT has planned a direct registration of the institution to the ITU. The coordinator, Prof. R. Bolla, with the support of TELIT, has already informally introduced the project in the above-listed two groups and he has been invited to participate in the "Guidelines for Environmental Sustainability Standard for the ICT Sector" project in the context of the ITU-T Study Group 5.

Moreover, Telecom Italia will present the ECONET working progress during the next ITU-T Joint Coordination Activity on ICT and climate change (JCA-ICT&CC), which should be held in Geneva in April 2012. The objectives of the Joint Coordination Activity on ICT and climate change (JCA-ICT&CC) are to co-ordinate activity on ICT & CC across ITU-T Study Groups, in particular SGs (5, 9, 13, 15 and 16), and to coordinate with ITU-R and ITU-D as well as to provide a visible contact point for ICT and Climate Change activities in ITU-T, to seek cooperation from external bodies working in the field of ICT & CC, and enable effective two-way communication with these bodies.

In the remaining contexts, three possible exploitation actions have been identified specifically for the ECONET results related to NT/home gateways:

- *Short term* - Home Gateway Initiative (HGI): as HGI members, Telecom Italia and Lantiq, on behalf of the Consortium, will present the status of the energy proxy activities in mid November (Q4 HGI meeting in Dubrovnik, Croatia, 14 - 18 November 2011).
  - Possible direct adoption of requirements or more detailed specifications in the current HGI document dealing with energy optimization of the home networking devices.
- *Medium term* - UPnP Forum: as Infocom and CNIT developments are in fact testing the real applicability of the UPnP low power solution, a number of remarks and suggestions for improvement can be proposed in the future to the UPnP Forum for improving the current solution.
  - The relationship could be extended to DLNA where a new work item on Home Networking Low Power is under discussion and could be launched by the end of 2011.
- *Long term* – EU CoC group: when the new developments on the NT boards will be closed, ECONET will be able to produce input for the future versions of the EU CoC on BB Equipment, with relation to the power consumption targets.

2.3 The website

Internet websites represent one of the primary media for the dissemination of projects' activities. The Internet domain "**www.econet-project.eu**" is currently registered and active.

The ECONET website is intended to be used for both internal consortium communication and public dissemination; it is an effective communication channel where information and knowledge produced by the project can be shared among partners and/or published to be available for the general public.

For external dissemination, publicly accessible website sections have been set up. Through these sections, the general public can access the common information about the project (contact data of the coordinator, list of partners with links to their own websites, a short description of the project underlining the objectives and key ideas, etc.), as well as the introductory dissemination material, such as the ECONET leaflet and the brochure, written in an appropriate language and style. Moreover, results and outcomes of the project, as well as all the publications of the project, are and will be made available (subject to copyright and IPR conditions).

The website is also heavily used for internal communication: project resources like minutes of meetings, deliverable templates, presentations, scientific papers or general guidelines are published on the repository area, only viewable by consortium members. Moreover, officially released deliverables are at the disposal of the Project Officer and the Project Reviewers through the private section of the website.

2.4 Dissemination materials

2.4.1 Leaflet

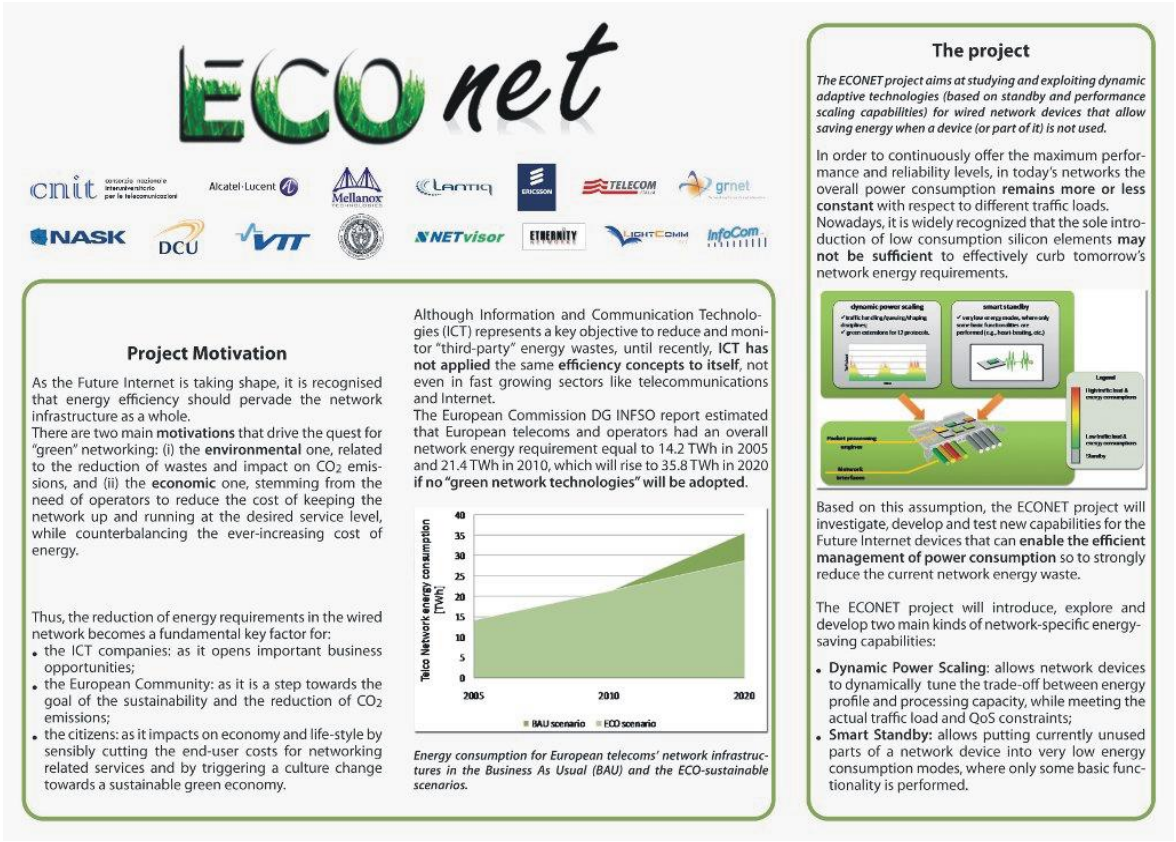
A project leaflet (English and Italian versions) was prepared and distributed. It contains:

- basic information about the ECONET project,
- the contact data of the coordinator,
- the list of all the partners of the consortium.

This leaflet informs on the purpose of the project. The main goal is to make the reader - regardless of he/she being a scientist, an expert in the field, a student or just a citizen - aware of the project, of the emerging green networking technologies and of the advantages that could be offered by the energy efficiency solutions applied to the network in a comprehensive way.

We plan to distribute this leaflet during the project lifetime at conferences, workshops, seminars and events, etc. An electronic version of the leaflet has been uploaded on the project website. Hence, it is at disposal to be downloaded by any interested user.

The leaflet is shown in Figure 1.



ECO net

The project

The ECONET project aims at studying and exploiting dynamic adaptive technologies (based on standby and performance scaling capabilities) for wired network devices that allow saving energy when a device (or part of it) is not used.

In order to continuously offer the maximum performance and reliability levels, in today's networks the overall power consumption **remains more or less constant** with respect to different traffic loads.
Nowadays, it is widely recognized that the sole introduction of low consumption silicon elements **may not be sufficient** to effectively curb tomorrow's network energy requirements.

Based on this assumption, the ECONET project will investigate, develop and test new capabilities for the Future Internet devices that can **enable the efficient management of power consumption** so to strongly reduce the current network energy waste.

The ECONET project will introduce, explore and develop two main kinds of network-specific energy-saving capabilities:

- **Dynamic Power Scaling**: allows network devices to dynamically tune the trade-off between energy profile and processing capacity, while meeting the actual traffic load and QoS constraints;
- **Smart Standby:** allows putting currently unused parts of a network device into very low energy consumption modes, where only some basic functionality is performed.

Project Motivation

As the Future Internet is taking shape, it is recognised that energy efficiency should pervade the network infrastructure as a whole.
There are two main **motivations** that drive the quest for "green" networking: (i) the **environmental** one, related to the reduction of wastes and impact on CO_2 emissions, and (ii) the **economic** one, stemming from the need of operators to reduce the cost of keeping the network up and running at the desired service level, while counterbalancing the ever-increasing cost of energy.

Thus, the reduction of energy requirements in the wired network becomes a fundamental key factor for:

- the ICT companies: as it opens important business opportunities;
- the European Community: as it is a step towards the goal of the sustainability and the reduction of CO_2 emissions;
- the citizens: as it impacts on economy and life-style by sensibly cutting the end-user costs for networking related services and by triggering a culture change towards a sustainable green economy.

Although Information and Communication Technologies (ICT) represents a key objective to reduce and monitor "third-party" energy wastes, until recently, **ICT has not applied** the same **efficiency concepts to itself**, not even in fast growing sectors like telecommunications and Internet.
The European Commission DG INFSO report estimated that European telecoms and operators had an overall network energy requirement equal to 14.2 TWh in 2005 and 21.4 TWh in 2010, which will rise to 35.8 TWh in 2020 **if no "green network technologies" will be adopted**.

Energy consumption for European telecoms' network infrastructures in the Business As Usual (BAU) and the ECO-sustainable scenarios.

Objective

The objective of the ECONET project is to introduce novel green network-specific paradigms and concepts enabling **the reduction of energy requirements of wired network equipment by 50%** in the short to mid-term (and by 80% in the long run) with respect to the business-as-usual scenario.
The impact analysis has been based on the expected development of the Telecom Italia network by 2015-2020, when the ECONET project targets that the first "green-enabled" devices will be ready on the market.

Network segment type	Power consumption per device (W)	Number of devices (k)	Overall consumption BAU (MWh/year)	Overall consumption ECONET (MWh/year)	Gain (%)
Home	10	17,500,000	1,533	473	70
Access	1,280	27,348	307	94	70
Metro/Transport	6,000	1,750	92	43	54
Core	10,000	175	15	6	58
		Total	1,947	616	68

The Consortium

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Econet at a glance

ECONET (low Energy COnsumption NETworks) project is a 3-year IP (Integrated Project), running from October 2010 to September 2013, co-funded by the European Commission under the Seventh Framework Programme (FP7), addressing the Strategic Objective ICT-2009.1.1 "The Network of the Future".

Duration: October 2010 – September 2013
Funding scheme: Collaborative Project
Total Cost: € 10.1 m
EC Contribution: € 6.1 m
Contract Number: INFSO-ICT-258454

Contact

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SEVENTH FRAMEWORK PROGRAMME
COOPERATION

ECO net
low Energy COnsumption NETworks

The ECONET project is devoted at re-thinking and re-designing wired network equipment and infrastructures towards more energy-sustainable and eco-friendly technologies and perspectives.

Figure 1: ECONET leaflet.

2.4.2 Brochure

The ECONET brochure is planned to be created during the second year of the project, when project results will be ready to be disseminated more in depth. The brochure will aim to illustrate the most promising and/or interesting expected outcomes of ECONET research activities.

This brochure will be about 4 pages in length and it should be understandable even for people who are not familiar with the green networking topic. It will contain information on the advantages of the solutions proposed and/or provided by the ECONET project together with a simple explanation of the respective technologies.

The brochure will be distributed during the project lifetime at selected conferences, workshops or seminars, where it will appear to be more appropriate than the simple leaflet. An electronic version of the brochure will be uploaded on the project website so as to be at disposal to be downloaded by any interested user.

2.4.3 Poster

An A0 format poster was prepared to be used at various events where the ECONET consortium will be present.

The poster contains the ECONET general information and depicts the overall idea of the project, with the main purpose to arouse curiosity and induce persons to ask more information. The poster in itself is generic, so that all dissemination targets could be addressed: it mainly serves as an instrument to stimulate live discussions and to help in disseminating the ECONET vision and/or outcomes, by letting the speaker tune the level of detail as appropriate.

The poster is shown in Figure 2.

2.4.4 Banner

The consortium plans to print a banner (i.e., large stripe), which will contain the project website address and the ECONET logo together with the logos of all the partners, in order to increase the visibility of the project during the participation at workshops, conferences or other dissemination events that provide assigned spaces to participants, such as desks or booths.

2.4.5 Video

The ECONET consortium will envisage the opportunity to produce promotional videos in case they can improve the descriptive impact of the vision and the key ideas of the project or help wider communication and deeper explanation of proposed/developed solutions within the ECONET activities.

To this aim, the videos could be either of introductory nature (target audience: graduate and undergraduate students, unskilled public, etc.) or focused on detailed technological descriptions about specific solutions (target audience: industry experts, scientists, etc.).

In case any video will be produced, it will be uploaded on the project website so that it could be available to be downloaded by any interested user.

Currently the consortium envisages that the video productions should be realized during the first part of the last year of the project, when it will be possible to show in an effective way the concrete results that the project will obtain.

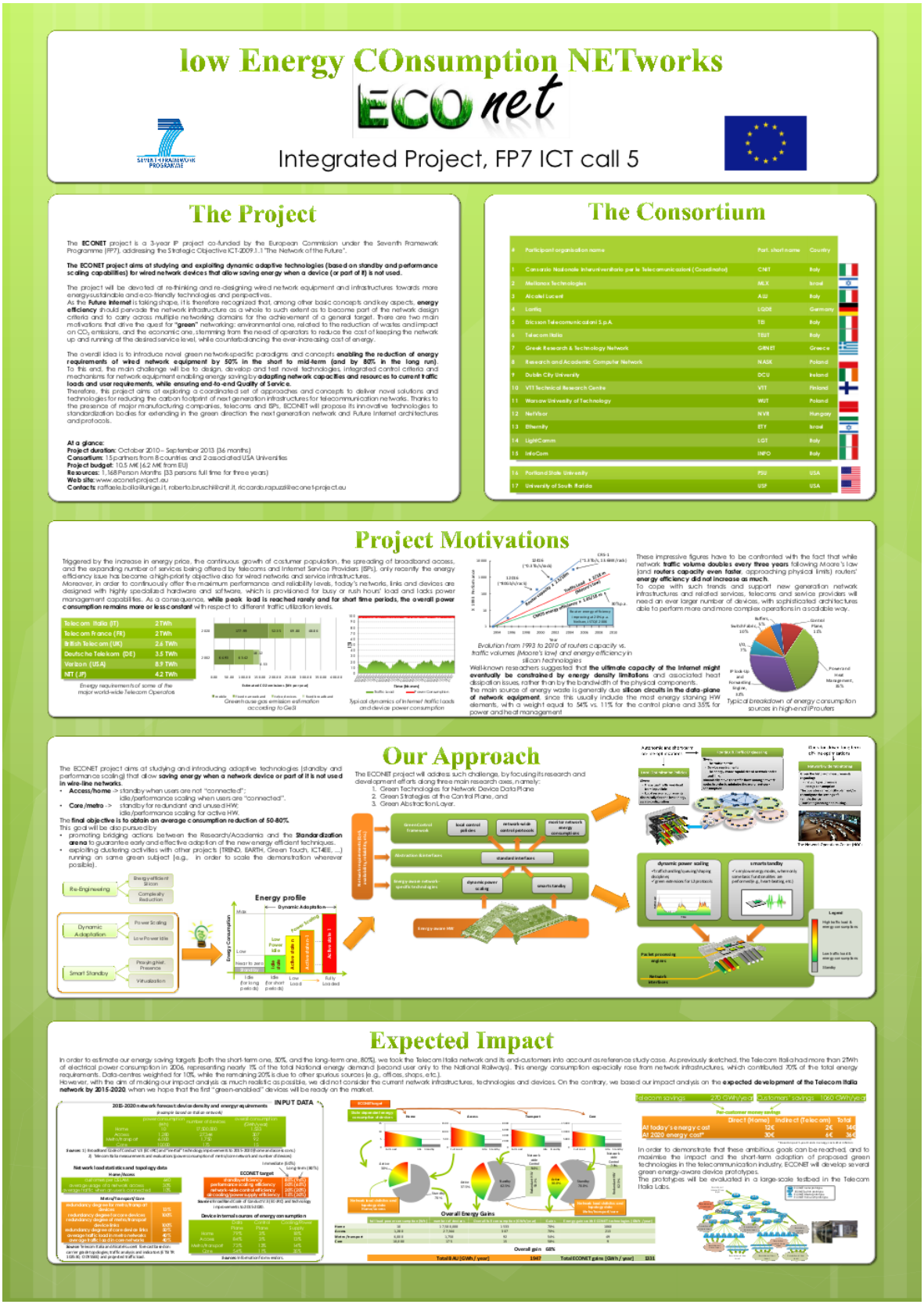

Figure 2: ECONET poster.

2.5 Scientific publications

The members of the consortium have commitment in publishing their work in relation to the ECONET themes and research topics in both national and international high quality journals and books and national and international Conferences/Workshops. Technical documents, such as white papers, research reports, specifications or contributions to standards, will be also a valuable dissemination channel of the project outcomes (either towards the external world or, at least, within the consortium partners, if the IPR rules will not allow to disclose some of such technical documents outside the project). With this respect, it is also worth noting that all the public deliverables of the project are and will be publicly available through the repository of the ECONET website.

A list of targeted journals (among others) is presented below:

- ACM SIGCOMM Computer Communication Review
- Communications & Strategies Journal
- Computer Networks Journal
- Computer Communications Journal
- International Journal of Network Management
- IEEE Transactions on Network and Service Management
- IEEE/ACM Transactions on Networking
- IEEE Communications Magazine
- IEEE Network Magazine
- IEEE Communications Surveys and Tutorials
- Infocommunications Journal
- Journal of Network and Systems Management
- Telecommunications Policy Journal
- Journal of Telecommunications and Information Technology
- International Journal of Applied Mathematics and Computer Science
- International Journal of Space-Based and Situated Computing
- International Journal of Communication Systems
- Simulation: Transactions of The Society for Modeling and Simulation International
- Electrical Review
  Przegląd Elektrotechniczny
- Telecommunication Review – telecommunication news
  Przegląd Telekomunikacyjny – wiadomości telekomunikacyjne

The list of all papers and documents that will be produced by ECONET partners will be inserted and regularly updated in the scheduled “ECONET information dissemination plan”.

The current list of publication of the first year is reported in the following:

Journals and magazines

1. R.Bolla, R. Bruschi, F. Cucchietti, F. Davoli, "Energy Efficiency in the Future Internet: A Survey of Existing Approaches and Trends in Energy-Aware Fixed Network Infrastructures", *IEEE Commun. Surveys & Tutorials*, vol. 13 no. 2, pp. 223-244, May 2011.
2. R. Bolla, R. Bruschi, A. Cianfrani, M. Listanti, "Enabling Backbone Networks to Sleep," *IEEE Network Magazine*, Special Issue on "Energy-Efficient Networks," vol. 25, no. 2, pp. 26-31, March-April 2011.
3. R. Bolla, R. Bruschi, K. Christensen, F. Cucchietti, F. Davoli, and S. Singh, "The Potential Impact of Green Technologies in Next-Generation Wireline Networks – Is There Room for Energy Saving Optimization?", *IEEE Communications Magazine*, Feature Topic on Energy Efficiency in Communications, vol. 49, no. 8, pp. 80-86, Aug. 2011.

Conferences and Workshops

1. R. Bolla, R. Bruschi, A. Carrega, F. Davoli, "An Analytical Model for Designing and Controlling New-Generation Green Devices", Proc. of the 3rd Int. Workshop on Green Communications (GreenCom10), co-located with IEEE Globecom 2010, Miami, FL, USA, Dec. 2010. WINNER OF THE BEST PAPER AWARD.
2. R. Bolla, R. Bruschi, A. Carrega, F. Davoli, "Theoretical and technological limitations of power scaling in network devices", Proc. of the Australasian Telecommunication Networks and Applications Conf. 2010 (ATNAC 2010), Auckland, New Zealand, Nov. 2010, pp. 37-42.
3. R. Bolla, R. Bruschi, A. Carrega, F. Davoli, "Green Network Technologies and the Art of Trading-off," Proc. of IEEE INFOCOM 2011 Green Communications and Networking Workshop (IEEE INFOCOM GCN), Shanghai, China, April 2011, pp. 331-306
4. R. Bolla, R. Bruschi, A. Cianfrani, M. Listanti, O. Jaramillo, "Energy-Efficient Sleeping Modes for Next-Generation Core Networks", Proc. of the Future Network & Mobile Summit 2011, Warsaw, Poland, June 2011, pp. 111-118.
5. R. Bolla, R. Bruschi, C. Lombardo, "State of the Art of Existing Standards for the Evaluation of Network Performance and Energy Consumption", Proc. of the 2011 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS 2011), The Hague, The Netherlands, June 2011, pp. 62-68.
6. R. Bolla, R. Bruschi, C. Lombardo, D. Suino "Evaluating the Energy-Awareness of Future Internet Devices", Proc. of the 2011 IEEE Conference on High Performance Switching and Routing (IEEE HPSR 2011), Cartagena, Spain, July 2011, pp. 36-43.
7. R. Bolla, "Enabling Fixed Network Energy Efficiency Optimization Through Dynamic Adaptation – Research Challenges and European Project Efforts", Invited keynote of the 1-st IEEE Online Green Communication Conference (GreenCom 2011), Sept. 2011.
8. R. Bolla, R. Bruschi "Energy-Aware Load Balancing for Parallel Packet Processing Engines," Proc. of the 1-st IEEE Online Green Communication Conference (GreenCom 2011), Sept. 2011, pp. 115-112.

2.6 Project presentations at conferences, symposia, workshops and industrial events

The potential influence of power saving technologies and the idea of the ECONET project have already been presented and discussed in national and international conferences, symposia and events. Many presentations have been both invited and submitted in the form of keynotes, participation in panels, or invited speeches, in which the project itself and/or some (or most) of its interesting and relevant aspects (for the specific contexts) have been shown.

The next subsection lists the already held presentations, while the second one gives indications about presentations that have been already planned.

In general, the basic idea for the future plan is to submit aspects and results of the ECONET project for presentation in future environments in the networking field where the impact of the specific dissemination actions seems to be valuable in terms of typology and number of listeners. The main attention will be focused on IEEE and ACM conferences or conferences/workshops organized by Standardization bodies (ITU, ETSI) or by the European Community, but also on relevant national and industrial events. Obviously, also other events, including those not foreseen at the moment, may be addressed as well.

2.6.1 List of already done presentations

The already done project-related presentations are shown in Table 1.

Table 1: Already done project-related presentations.

Acronym	Conference and presentation	Date	Location
ATNAC 2010	**Australasian Telecommunication Networks and Applications Conference** Invited keynote: *Energy Efficiency in the Future Internet: Current Status and Trends* Speaker: F. Davoli (CNIT)	November 3, 2010	Auckland, New Zealand
Globecom 2010	**3rd Int. Workshop on Green Communications (GreenCom10)** *An Analytical Model for Designing and Controlling New-Generation Green Devices* Winner of the best paper award Speaker: R. Bolla (CNIT)	December 6-10, 2010	Miami, USA

VTC2011	**IEEE 73rd Vehicular Technology Conference** **Workshop on Cognitive radio and Cooperative strategies for POWER saving (C2POWER)** R. Bolla (CNIT) invited ECONET panelist in the Panel: *Energy Efficiency in Future Telecommunications: Technical Issues, Standardization Activities and Business Requirements*	May 15-18, 2011	Budapest, Hungary
FOTONICA2011	**13th Italian National Conference of Photonic Technologies** ECONET acted as an official partner and was represented by CNIT & ALU ECONET's overview and goals were presented by an invited speech by R. Bolla (CNIT) Info booth was set with ECONET leaflets Two official press releases issued, presenting ECONET to the public	May 9-15, 2011	Genoa, Italy
HOTI 2011	**IEEE 19th Annual Symposium on Hot Interconnects** Invited speech: *Paving the road to Exascale* E. Zahavi (MLX)	August 25, 2011	Santa Clara, USA
WoWMoM	**12th International Symposium on a World of Wireless, Mobile and Multimedia Networks** **First International Workshop on Sustainable Internet and Internet for Sustainability (SustaInet 2011)** Invited Speech: *Green Networking Technologies for a Sustainable Future Internet* F. Davoli (CNIT)	June 20, 2011	Lucca, Italy

NZWW 2011	**IEEE NZ Wireless Workshop** Invited presentation: *Green Networking in Wired and Wireless Networks – Bridging the Gap* F. Davoli (CNIT)	August 26, 2011	Christchurch, New Zealand
ITU Green Standard Week	**ITU Green Standard Week** **Workshop on "Moving to a Green Economy through ICT Standards"** Invited speech: *ECONET: low Energy COnsumption NETworks* R. Bolla (CNIT)	Sept. 5-9. 2011	Rome, Italy
IEEE INFOCOM 2011	**Green Communications and Networking Workshop** *Modeling and identification of nonlinear dynamics for freeway traffic by using information from a mobile cellular network* Speaker: A. Carrega (CNIT)	April, 2011	Shanghai, China
SPECTS 2011	**2011 International Symposium on Performance Evaluation of Computer and Telecommunication Systems** *State of the Art of Existing Standards for the Evaluation of Network Performance and Energy Consumption* Speaker: C. Lombardo (CNIT)	June 27-30, 2011	The Hague, The Netherlands
Future Network & Mobile Summit	**Future Network & Mobile Summit** *Energy-Efficient Sleeping Modes for Next-Generation Core Networks* Speaker: R. Bruschi (CNIT)	June, 2011	Warsaw, Poland

HPSR	**2011 IEEE Conference on High Performance Switching and Routing** *Evaluating the Energy-Awareness of Future Internet Devices* Speaker: R. Bruschi (CNIT)	July 4-6, 2011	Cartagena, Spain
GREEN-COMM 2011	**IEEE Online Conference on Green Communications** Invited keynote: *Enabling Fixed Network Energy Efficiency Optimization Through Dynamic Adaptation - Research Challenges and European Project Efforts* R. Bolla (CNIT)	September 26-28, 2011	Online
GREEN-COMM 2011	**IEEE Online Conference on Green Communications** *Energy-Aware Load Balancing for Parallel Packet Processing Engines* Speaker: R. Bruschi (CNIT)	September 26-28, 2011	Online

2.6.2 Currently planned presentations

The planned conferences being targeted are shown in Table 2.

Notice that, as conferences are only announced a few months before the actual event, this list will likely have to be extended in the subsequent versions of this document.

Table 2: Planned conferences.

Acronym	Conference	Date	Location
CCW 2011	**25th IEEE Annual Computer Communications Workshop** Invited presentation in the Panel: *Energy-efficient Networking: The Views of Leaders of International Research Projects* *Energy Efficient Networking: The ECONET Project (low Energy COnsumption NETworks)* F. Davoli (CNIT)	Oct. 11, 2011	Hyannis, Cape Cod, MA, USA
IEEE INFOCOM 2012	**IEEE International Conference on Computer Communications** Submitted: *Making Sleep Mode Practical in IP Networks* Authors: A.P. Bianzino, L. Chiaraviglio, M. Mellia	March 25-30, 2012	Orlando, USA
ACM SIGCOMM	**ACM Special Interest Group on Data Communication (SIGCOMM) Conference**	August 13-17, 2012	Helsinki, Finland
MCC2012	**Military Communication and Information Systems Conference** Special Session on Green Networking	October, 2012	Gdynia, Poland
IEEE GLOBECOM	**IEEE Global Communication Conference**	December 3-7, 2012	Anaheim, USA
ECONET	**General ECONET meeting**	July 11-15, 2012	Dublin, Ireland
CIICT 2012	**Energy Efficient ICT for Sustainable Development** Special Session with ECONET dissemination, within one-day workshop on NetFPGA boards	July 9-10, 2012	Dublin, Ireland

ACM CONEXT	**International Conference on emerging Networking Experiments and Technologies**	2012	TBD
INTELEC	**International Telecommunications Energy Conference**	2012	Scottsdale, AZ, USA
KSTiT	**Polish National Telecommunication Symposium** Special Session on Green Networking	2012	Warsaw, Poland
DSTIS	**International Conference on Decision Support for Telecommunication and Information Society**	2012	Japan
ICCE 2012	**4th International Conference on Communications and Electronics** Special Session on Energy Efficient Networking, organized by R. Bolla and F. Davoli (CNIT)	2012	Hue, Vietnam
ICCE 2012	*Tutorial on Green Networking* F. Davoli (CNIT)	2012	Hue, Vietnam
IEEE INFOCOM	**IEEE International Conference on Computer Communications**	2013	TBD
IEEE ICC	**IEEE International Conference on Communications**	2013	TBD

2.7 Seminars, restricted workshops and meetings

In order to enable a regular information exchange about the ECONET project results the partners of the consortium will organize academic and/or technical seminars for researchers, students and industry experts in the field. Particular attention will be paid to create awareness on the low energy consumption and energy efficient methods and technologies developed in the project for a wider audience. Several such meetings and seminars have already been arranged.

2.7.1 Seminars, restricted workshops and meetings

The ECONET project was/will be presented at the meetings and dissemination events collected in Table 3.

Table 3: Presentations at dissemination seminars, meetings and events.

Meeting, seminars and dissemination event	Date	Location
Green Networking and correlated activities ECONET cross presentations and possible cooperation within COST804 CNIT	January 26, 2011	University of Würzburg, Germany
Energy Efficiency in the Future Internet: Current Status and Trends Invited speech: R. Bolla, R. Bruschi (CNIT)	March 25, 2011	Scuola Superiore Sant'Anna, Pisa, Italy
4th Future Internet Cluster Workshop on "ICT and Sustainability" *ECOnet: Low Energy Consumption Networks* R. Bolla (CNIT)	May 16, 2011	Budapest, Hungary
Economic Forum: Telecommunications, Internet, Media, Electronics Organized by the Polish Chamber of Commerce for Electronics and Telecommunications	May 16, 2011	Poland
Meeting with Oman Ministry of Education	September 19, 2011	Warsaw University, Poland
Green Networks Cross Cluster meeting Held within the "*Future Networks 8th FP7 Concentration meeting*" ECONET part included two presentations and panel participation. Presentation topics: *Energy consumption in fixed telco's networks: status, trends, needs and opportunities* Speaker: A. Zafeiropoulos (GRNET) *A pragmatic approach in developing new generation sustainable networks* Speaker: M. Enrico (Ericsson) R. Bolla (CNIT) was panelist in the final panel Session	October 6-7, 2011	Brussels, Belgium

Xilinx Research Day Poster and flyers of ECONET activities DCU	January 28, 2011	Dublin
The Rince Institute Research Day Presentation to DCU researchers of the ECONET project DCU	January 20, 2011	Dublin
STRONGEST Project Meeting Presentation of the ECONET Project R. Bruschi (CNIT)	October 2011	Pisa, Italy
GreenTouch Meeting Online presentation of the ECONET project to the Core Optical Network and Transmission (CONT) Working Group of the Green Touch Consortium F. Davoli (CNIT)	November 2011	Seattle, WA, USA
Green ICT in Italy: Networks, Cloud and Power Grid Presentation of the ECONET project F. Davoli (CNIT)	December 1, 2011	Milan, Italy

The ECONET project was presented to different CNIT and DCU visitors and contacts including:

- CNIT: Mr. Olivier Lauvray: President & Managing Director of NetLogic Microsystems Europe,
- CNIT: Mr Shugong Xu, Pricipal Scientist and Vice –Director of Comm. Lab, Senior researcher Mr. Zhu Bin, from HUAWEI TECHNOLOGIES Co-.
- DCU: Mr. Zhaotian Zhang: Deputy Director General of the National Natural Science Foundation of China, in charge of the ICT division (very important figure for research funding in China)
- DCU: Prof. Yinghai Zhang: Vice President of BUPT (Beijing University of Post and Telecommunications), and a number of research active professors from BUPT including Prof. Wenbo Wang (Director for postgraduate studies in BUPT)
- DCU: Mr. Jichun Feng (former director general of the the High-Technology Research & Development Center in The Ministry of Science & Technology, China)
- DCU: Other DCU visitors including from Wuhan University, Beijing Institute of Technology, Xian Jiaotong University, ETM: European Telecommunications Management Ltd, and Indian Institute of Science, Bangalore.

The partners of the ECONET consortium have already organized seminars on the green networking and ECONET project goal and idea. The titles of talks given by the partners of the consortium are presented in Table 4.

Table 4: Held seminars.

Presentation	Date	Location
ECONET: low Energy Consumption NETworks – project presentation E. Niewiadomska-Szynkiewicz (WUT)	17 November, 2010	Warsaw University of Technology, Poland
ECONET the 7-th FP project – project objectives M. Kamola (NASK)	24 November, 2010	NASK, Poland
Green Networking Technologies for a Sustainable Future Internet F. Davoli (CNIT)	August 8, 2011	University of Canterbury, Christchurch, New Zealand
IEEE NZ ComSoc Chapter invited talk: *Green Future Internet and green energy: a profitable liaison* F. Davoli (CNIT)	August 24, 2011	Auckland University of Technology, Auckland, New Zealand
IEEE NZ ComSoc Chapter invited talk: *Green Future Internet and green energy: a profitable liaison* F. Davoli (CNIT)	August 25, 2011	University of Canterbury, Christchurch, New Zealand
Meeting with Oman Ministry of Education WUT	September 19, 2011	Warsaw University, Poland

2.7.2 Other planned workshops, seminars and meetings

We plan to participate in and support the organization of events, which allow disseminating and promoting the results of the ECONET project.

More in detail, the ECONET consortium envisages to organize at least two workshops/sessions when project results will be ready (sufficiently consolidated) to be disseminated. The target audience will consist of stakeholders from government and businesses, technical experts, researchers, network operator organizations (e.g., GeSI, etc.) and special standard and industrial forums (e.g., ITU, ETSI, HGI, etc.).

Due to the fact that separate single events might be not so attractive and effective for the target audience, owing mainly to a very large number of analogous initiatives both in general and in the field, the current plan is to realize or better co-realize and participate in events both together with other projects and inside larger initiatives (as already done in the first year).

2.8 Academic and training courses and tutorials

Although in the last years sustainability and the green approach to technologies became critical issues in many research fields, the majority of engineers, researchers and students have only scattered information and superficial knowledge about the energy efficiency technologies related to the networking field. We plan to survey among partners to assess and identify training needs. Based on this survey a training program will be elaborated with the planning of the required workshops and training courses, making use of both partners' or external resources.

Academic partners have the responsibility to prepare and deliver the lectures on green networking and include ECONET outcomes in their institutional courses and other educational activities. Furthermore M.Sc. and Ph.D. thesis and other research work on the subject are being proposed.

The following courses provided in Warsaw University of Technology will include material related to ECONET:

- Modelling and Computer Simulation
- Computer Networks
- Distributed Systems

CNIT has presented the following tutorial at the HPSR 2011 conference:

- IEEE HPSR2011 – tutorial on Green Technologies For Smarter Next Generation Wire-line Networks (R. Bolla and R. Bruschi)

and will present a tutorial on Green Networking at ICCE 2012, Hue, Vietnam, Aug. 2012 (F. Davoli).

As *Visiting Erskine Fellow* at the University of Canterbury, Christchurch, New Zealand, from July 9 to Sept. 10, F. Davoli (CNIT) delivered an 18-hour course on Green Networking[1].

Moreover, the ECONET partners plan to prepare a common action with other projects for students of both Mater and PhD courses. CNIT has already taken preliminary contacts with projects STRONGEST and TREND to realize a common day of seminars in the Telecom Italia Test plant with an included visit of the plant.

Some of the ECONET partners plan to fund, or even are already funding, doctoral grants for Ph.D. students to let them work within research areas of interest for the project.

[1] Information about the course is available online at the following link:
http://www.cosc.canterbury.ac.nz/open/teaching/classes/cosc473/

Contacts with potential users

In the course of their business contacts the ECONET participants are familiarizing their partners with their concepts and emerging technologies. The telecommunication companies and institutions will be contacted and exposed to the ideas and results of the project.

A few ECONET partners are end-user operator that can be also potential users of the project outcomes.

3 Conclusions

The dissemination and promotional activities should follow the ECONET communication strategy and implement actions maximizing the exploitation of project results. The goal of the ECONET project should be presented to the wider community and novel standards for green networking should be promoted. Therefore, future work in dissemination will aim to achieve the following tasks:

- to verify the interest toward green networking through workshops, seminars and meetings with potential users,
- to convey knowledge about ECONET,
- to cooperate with other research groups and RTD initiatives,
- to initiate the cooperation with key customers,
- to continue the cooperation with standardization bodies,
- to prepare plans for the optimal use of the project results.