



ECO net

low Energy CONsumption NETworks

DELIVERABLE D7.6

ECONET STANDARDIZATION

Grant Agreement Number:	258454
Project Acronym:	ECONET
Project Title:	low Energy CONsumption NETworks
Funding Scheme:	Collaborative Project
Starting Date of the Project:	01/10/2010 <i>dd/mm/yyyy</i>
Duration:	36 months
Project Coordinator:	Name: Raffaele Bolla Phone: +39 010 353 2075 Fax: +39 010 353 2154 e-mail: raffaele.bolla@unige.it

Due Date of Delivery:	M24 <i>Mx</i> (30/09/2012 <i>dd/mm/yyyy</i>)
Actual Date of Delivery:	30/09/2012 <i>dd/mm/yyyy</i>
Workpackage:	WP7 – Dissemination, training and standardization
Nature of the Deliverable:	R
Dissemination level:	PU
Editors:	TELIT
Version:	1.0

Disclaimer

The information, documentation and figures available in this deliverable are written by the ECONET Consortium partners under EC co-financing (project FP7-ICT-258454) and do not necessarily reflect the view of the European Commission.

The information in this document is provided “as is”, and no guarantee or warranty is given that the information is fit for any particular purpose. The reader uses the information at his/her sole risk and liability.

Copyright

Copyright © 2012 the ECONET Consortium. All rights reserved.

The ECONET Consortium consists of:

CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI,

ALCATEL-LUCENT ITALIA S.p.A.,

MELLANOX TECHNOLOGIES LTD - MLNX,

LANTIQ Deutschland GmbH,

ERICSSON TELECOMUNICAZIONI,

TELECOM ITALIA S.p.A.,

GREEK RESEARCH AND TECHNOLOGY NETWORK S.A.,

NAUKOWA I AKADEMICKA SIEC KOMPUTEROWA,

DUBLIN CITY UNIVERSITY,

TEKNOLOGIAN TUTKIMUSKESKUS VTT,

POLITECHNIKA WARSZAWSKA,

*NETVISOR INFORMATIKAI ES KOMMUNIKACIOS ZARTKORUEN MUKODO
RESZVENYTARSASAG,*

ETHERNITY NETWORKS LTD,

LIGHTCOMM S.R.L.,

INFOCOM S.R.L.

This document may not be copied, reproduced or modified in whole or in part for any purpose without written permission from the ECONET Consortium. In addition to such written permission to copy, reproduce or modify this document in whole or part, an acknowledgement of the authors of the document and all applicable portions of the copyright notice must be clearly referenced.

Table of Contents

DISCLAIMER.....	2
COPYRIGHT	2
TABLE OF CONTENTS.....	3
1. EXECUTIVE SUMMARY.....	4
2. GOALS AND SCHEDULED ACTIONS TOWARDS STANDARDIZATION.....	5
3. OVERVIEW OF THE ACTIVITIES TOWARDS STANDARDIZATION PERFORMED IN THE FIRST TWO YEARS OF THE ECONET PROJECT	8
3.1. ETSI EE.....	8
3.2. ITU-T.....	10
3.3. HGI.....	13
3.4. EUROPEAN COMMISSION JRC	16
4. FUTURE ACTIVITIES TOWARDS STANDARDIZATION	17
REFERENCES.....	19

1. Executive summary

The present document describes the main actions of the ECONET project performed during the first two years towards standardization bodies and forums, as well as the updated plan of the next steps in this respect for the third year.

Section 2 contains a general recap of the main goals and scheduled activities (for the entire three-years of life of the project) towards standardization*. In particular, after examining the existing contacts between ECONET partners and standardization bodies, four organizations were selected as main targets for focusing and finalizing the outcome of project activities in this area: ETSI, ITU-T, HGI, and EC-JRC. Section 3 reports in detail all the main specific actions/initiatives carried out during the first two years toward these institutions. Such actions/initiatives include:

- contributions and liaisons towards standardization working groups (with the establishment of a specific Work Item in ETSI for the Green Abstraction Layer),
- participation in conferences and workshops specifically oriented to standardization activities and contributions, typically organized by the relevant standardization bodies.

With respect to the first point above, the main topics that have been brought to the attention of the organizations selected have been, besides the already mentioned GAL (which is currently the subject of the most relevant and advanced action), the Network Connection Proxy (NCP) and the suggestion of requirements for the Broadband Code of Conduct (CoC).

The last Section specifies in more detail (with respect to Section 2) the main lines and the updated goals of the standardization activity plan for the last part of the project. Specifically, these include moving forward the GAL standardization effort, with the aim of completing the process, consolidating the main aspects of the NCP, and bringing a significant contribution to the next version of the CoC.

* Most of the data relevant to standardization related to the first year was inserted at the end of that period in the general report D7.4 "First ECONET information dissemination plan".

2. Goals and scheduled actions towards standardization

The ECONET project has been created with the clear objective to bring its main outcomes (among those that could lend themselves to this end) into the most relevant Standardization Bodies, considering that standardization typically represents one of the most effective ways to speed up the finalisation of products/services; this fact is especially true with respect to what is aimed at reducing the energy consumption of the networks.

In the last recent years the topic of energy efficiency (and, more generally speaking, of sustainability) has gained an ever-growing attention on the part of quite a few stakeholders, especially considering the huge rise in the energy costs. More specifically, this behaviour has led to a plethora of initiatives in many different areas (fixed and mobile access networks, core networks, data centres, office buildings, etc.) by standardization bodies and industrial forums, as shown in the GeSI standardization map. Considering the limited resources involved in the ECONET project, there has been the need to perform a careful preliminary analysis covering:

- the main focus area,
- the degree of commitment,
- the strategic weight,
- the existing connections with the ECONET partners,

for each organisation, in order to come up with a manageable short but relevant list of standardization bodies to deal with. As far as the last bullet is concerned, it must be highlighted that actually a large part of partners of the ECONET consortium already acts in standardization groups, bodies and industrial forums as first-rank players, and many of them are working on their own in the field of energy-efficient protocols and network architectures. More precisely, the ECONET partners envisage contributions to the following standardization bodies and industrial forums:

1. ETSI, linked by ECONET partners CNIT, ALU, GRNET, LQDE, TEI, TELIT,
2. ITU-T, linked by ECONET partners CNIT, ALU, LQDE, TEI, TELIT,
3. ETNO/HGI, linked by ECONET partners LQDE, TELIT,
4. ATIS, linked by ECONET partners ALU, TEI, TELIT,
5. Broadband Forum, linked by ECONET partners LQDE, TEI, TELIT,
6. GeSI, linked by ECONET partner TELIT,
7. EU Code of Conduct for Broadband Equipment group (for revision 5 of the Code), liaised by ECONET partners LQDE, TELIT.

Moreover, it should be noticed that on behalf of the ECONET project professor Bolla has joined the CEN-CLC-ETSI JCG M462 “Joint coordination group on energy efficiency use in fixed and mobile information and communication networks”.

Finally, as a result of the analysis mentioned above, the following four organizations have been selected with the aim to standardize the main outcomes of the ECONET project:

- ETSI
- ITU-T
- HGI
- European Commission JRC

While the first three are indeed standardization bodies, the latter has anyway been taken into account considering that the JRC (Joint Coordination Centre) is the owner of the Code of Conduct on Broadband Equipment [1], which is a document containing the power consumption targets for different technologies for fixed and wireless broadband access networks. Such document is nowadays considered as a standard reference as far as the power consumption targets are concerned. The EC JRC has therefore been selected within the above shortlist considering that the many analyses performed, the different prototypes of energy-aware equipment and, last but not least, the technologies of dynamic consumption adaptation and smart standby defined and tested within the ECONET project enable the elaboration of proposals concerning future devices in terms of power consumption targets and characteristics.

Starting since the end of 2011, many actions have been performed towards such four organizations, with relevant results. The details will be provided in the following Sections, while the chart reported in Figure 1 aims at showing a brief recap through a schedule involving all the three years of the ECONET project.

Finally, it is worth noting that activities towards standardization bodies and forums complement and, from another point of view, affect the ECONET communication strategy, which is oriented to increase the awareness and maximize the exploitation of project results, by communicating the vision and the goals of the project also for promoting novel standards in the green networking field. Specifically, the ECONET dissemination strategy action types more relevant in this respect include

- liaison with related research initiatives and expert working groups,
- contacts and collaboration 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 detailed description of the specific results and actions in this framework are reported in deliverable D7.5.

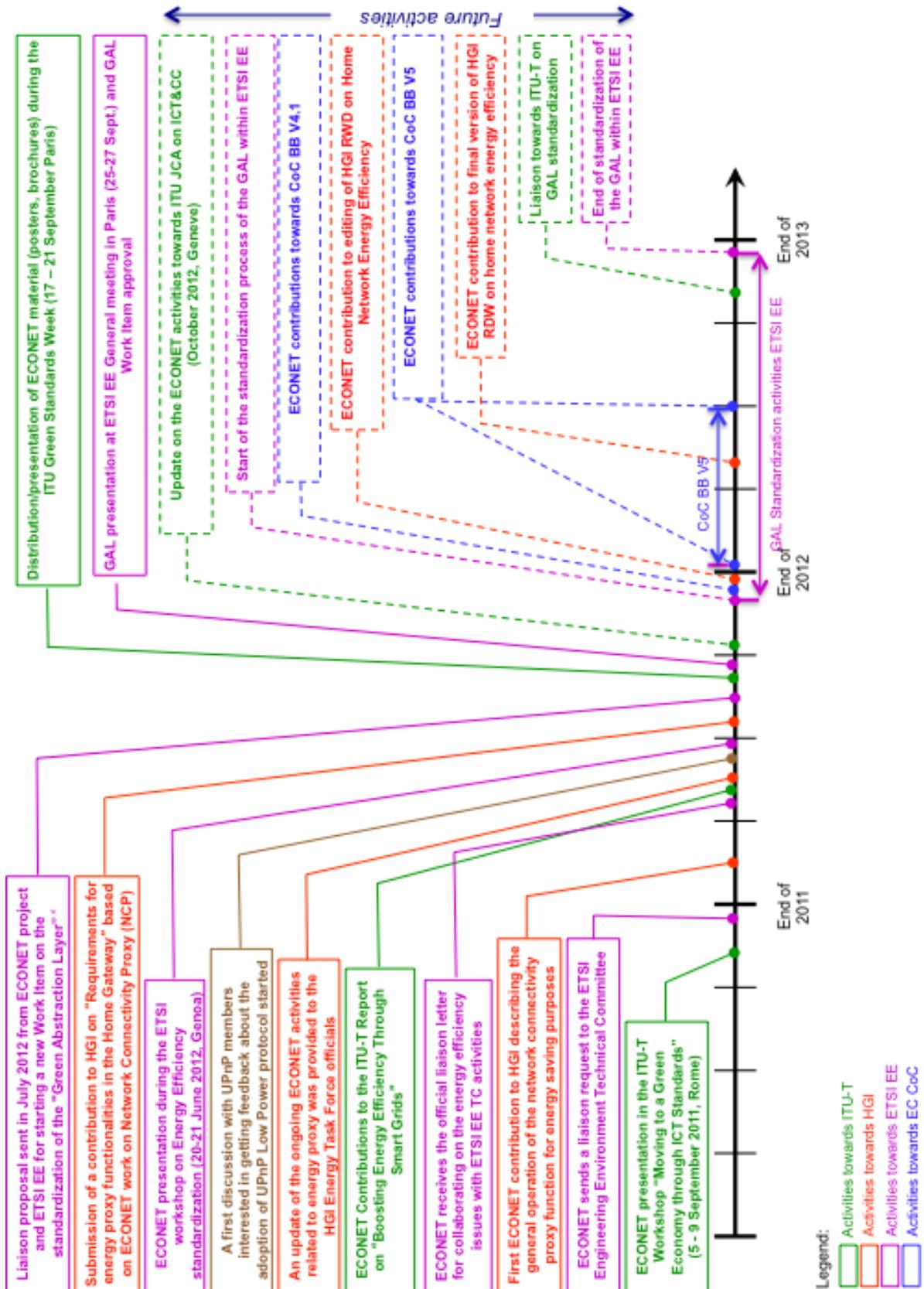


Figure 1 – Schedule of the main actions already done or to be performed by the ECONET project towards the relevant standardization bodies.

3. Overview of the activities towards standardization performed in the first two years of the ECONET project

3.1. ETSI EE

ETSI [2] produces globally applicable standards for ICT (Information and Communications Technologies), including fixed, mobile, radio, converged, broadcast and Internet technologies. ETSI is an independent, not-for-profit organization based in the technical park of Sophia Antipolis in the south of France. ETSI is committed to serving its members (more than 700 member organizations drawn from 62 countries worldwide) and to assisting in the development of their market potential; it is officially recognized by the European Union (EU) as a European Standards Organization. This body is also active in vital areas related to standardization such as interoperability, including protocol testing and methodology, and it also offers forum-hosting services. ETSI members include Manufacturers, Network operators, National Administrations, Service providers, Research bodies, User groups, Consultancies. ETSI standards in mobile, fixed, and radio communications cover Security, Satellite, Broadcast, Human Factors, Testing & Protocols, Intelligent transport, Power-line telecoms, eHealth, Smart Cards, Emergency communications, GRID & Clouds, Aerospace, and many more.

The ETSI Technical Committee “Environmental Engineering” (ETSI EE) covers four main areas of responsibility in standardization for ICT:

- 1) specifications for environmental and infrastructural aspects for telecommunication equipment and its environment (WG-EE1): environmental conditions/requirements/tests (including climatic, mechanical, chemical, biological aspects), thermal management and acoustic noise measurement and limits;
- 2) specifications of Power Supply interface requirements and grounding for telecommunication/data-com equipment (WG-EE2): power supply interface requirements (voltage range, voltage variations, inrush current, etc.), power distribution architectures, monitoring and control interfaces of power and cooling systems, grounding & bonding requirements;
- 3) specifications for Mechanical Structure and Physical design of telecommunication equipment: Equipment practice for telecommunication devices, characteristics of sub-racks, racks and cabinets for telecom equipment;
- 4) Eco-Environmental affairs (WG-EEPS): analysis of European environmental legislations, in terms of ecological aspects, and assessing its impact on Telecommunication infrastructure and equipment; establishment and maintenance of liaisons with SDOs and the European Commission on the development of ecological environmentally related product deliverables in the telecommunication area; reduction of energy consumption for telecommunications/data-com equipment and related infrastructure; renewable energy sources (for powering telecommunication and data-com equipment).

ETSI EE produces deliverables on energy efficiency of ICT, specifically for equipment in Wire-line and Wireless Broadband Access, Customer Premises, Core Network, Transport, Switching and Routing (in the scope of mandate M/462 “ICT to enable efficient energy use in fixed and mobile information and communication networks” from the EC). Moreover, ETSI EE produces deliverables on environmental impact assessment of ICT (in the scope of mandate M/478 “Greenhouse gas emissions” from the EC). Finally, ETSI EE works in liaison with the other main standardization bodies (ITU-T SG5 and ICT&CC, ATIS-NIPP, CENELEC, IEC TC111, BBF, HGI, 3GPP/GSMA/BRAN, IETF EMAN, GeSI, EU Research projects, EC JRC).

The first contacts of ECONET with ETSI date back to the very beginning of the project with the EE TC; they were finalized with an official request in November 2011 to create a liaison between the ETSI TC and the project, accepted with an official liaison letter from the EE Chairman Ing. Beniamino Gorini in March 2011 (see Fig. 3). In the beginning of 2011 the Project coordinator, Prof. Raffaele Bolla, was selected to participate in the ETSI Specialist Task Force (STF) 439 charged with developing a standard for "Global Key Performance Indexes (KPIs) for energy efficiency of broadband Deployed". Four experts compose this STF, and Prof. Bolla, together with his personal knowledge and experience, is explicitly bringing the collective experience and the proposals of the project in this context. The first phase of the work (which will end at the beginning of 2013) is mostly focused on the general definition of G-KPI concepts and on the specific definitions for data centres and cellular radio access. The second phase will be oriented specifically to the fixed networks, but the presence in the first phase is fundamental for making the general definitions and concepts compatible with energy reduction techniques developed in ECONET.

During the first phase of the relationship with the EE TC, some of the partners of the project involved in this group (from Telecom Italia, Alcatel and Ericsson) and Prof. Bolla himself have been involved in the organization of the first ETSI Workshop on Energy Efficiency [3], which took place on the 20th-21st of June 2012, in Genoa, Italy. Such Workshop was hosted by the University of Genoa and officially supported by the ECONET project. The workshop emphasized the design and the use of ICT to reduce the environmental impact; in addition, it enabled the 80 delegates to share views on ongoing work on energy efficiency standards in ETSI and among other SDOs and research projects, to identify any potential gaps and overlaps in energy efficiency standardization and analyze future requirements for energy efficiency standardization of ICT equipment and networks. As far as the ECONET presentation is concerned, there was the opportunity to highlight, among all the activities performed at that date, the concept of the GAL (as reported in Figure 2), introducing for the very first time the proposal for its standardization.

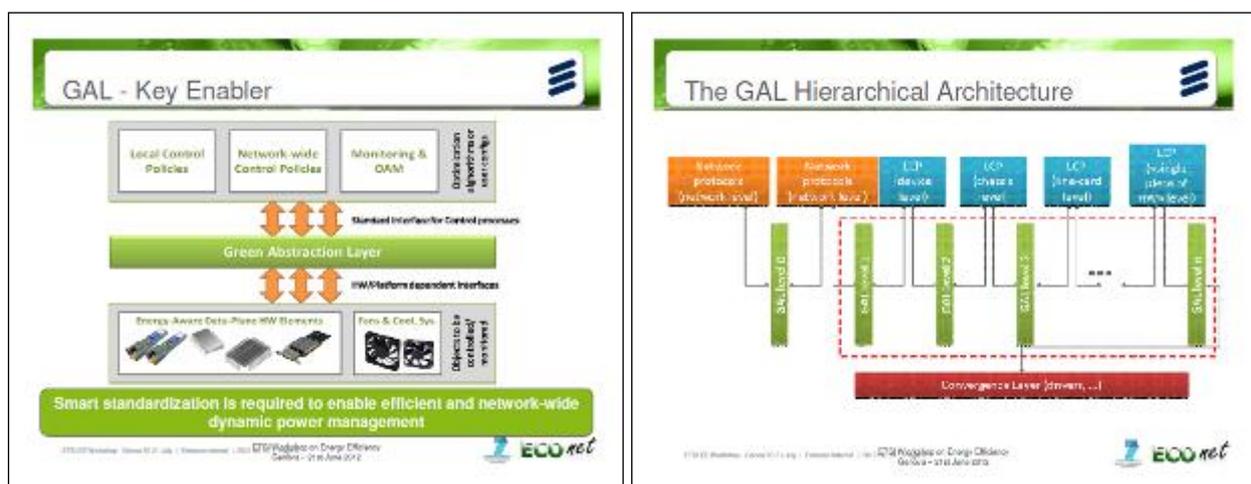


Figure 2 – Slides on the Green Abstraction Layer presented during the ETSI Workshop on Energy Efficiency

The proposal for the GAL standardization has been positively welcome, both by the Workshop attendees and by the ETSI EE Technical Committee and therefore a specific liaison request was sent on the 18th of July (reported in Figure 3).

Prof. Bolla was invited to participate in the ETSI EE TC meeting in Paris on the 25th-27th of September to present the GAL standardization proposal in more detail. During the meeting this proposal was deeply discussed by the board members and, finally, **the creation of a specific ETSI**

Work Item (WI) for the GAL standardization was approved. Prof. Bolla has been selected as rapporteur for the WI and the project is waiting to receive the official letter that will state the starting and ending dates of this standardization activity.

3.2. ITU-T

Study Group 5 is the ITU-T Study Group in charge of studies on methodologies for evaluating the ICT effects on climate change and publishing guidelines for using ICT in an eco-friendly way. Under its environmental mandate SG 5 is also responsible for studying design methodologies to reduce environmental effects, for example recycling of ICT facilities and equipment.

In addition to its climate focused activities the Recommendations, Handbooks and other publications produced by SG 5 have four main objectives. The first one is to protect telecommunication equipment and installations against damage and malfunction due to electromagnetic disturbances, such as those from lightning. In this field, ITU-T SG 5 is the most experienced and competent standardization body. The second one is to ensure the safety of personnel and users of networks against currents and voltages used in telecommunication networks. The third one is to avoid health risks from electromagnetic fields (EMF) produced by telecommunication devices and installations. The fourth one is to guarantee a good quality of service (QoS) for high-speed data services, by providing requirements on characteristics of copper cables and on the coexistence of services delivered by different providers.

In recent years the most well-known output of SG 5 has been an energy-efficient one-charger-fits-all new mobile phone solution. Every mobile phone user will benefit from the new Universal Charging Solution (UCS), which enables the same charger to be used for all future handsets, regardless of make and model. SG 5 work also encompasses commonly agreed methodologies for measuring the carbon footprint of ICT, to facilitate measurements of the impact of ICT on emissions and support meaningful reporting and comparisons. ITU's common methodology will help establish the business case to go green and support informed consumer choices and climate-friendly business procurement.

Several outcomes of the ECONET project have been brought into the ITU-T, particularly towards ITU-T SG5, ITU-T JCA-ICT&CC, as well as different ITU-T Workshops and Symposia.

In particular, the first contacts with ITU-T SG5 happened with the occasion of the ITU-T Workshop "Moving to a Green Economy through ICT Standards" held in Rome in September 5–9, 2011 [4]. Such Workshop (hosted by TELIT) brought together leading specialists in the field, from top policy-makers to engineers, designers, planners, government officials, regulators, standards experts and others. Its main purpose was to raise awareness of the importance and opportunities of using ICT standards to build a green economy.

The body of the talks comprised three workshops:

- Methodologies for Environmental Impact Assessment of ICT, jointly organized with the European Commission;
- Moving to a Green Economy through ICT Standards, jointly organized with Telecom Italia
- Submarine Cables for Ocean/Climate Monitoring and Disaster Warning: Science, Engineering, Business and Law, organized with WMO and UNESCO

**EE(11)000006**

Dear Prof. Bolla,

I thank you for your interest on the activities performed by ETSI Technical Committee (TC) "Environmental Engineering" (EE) on energy efficiency matters. We are happy to establish a liaison with the ECONET Project.

First of all I wish to give a short summary of the Technical Committee EE responsibilities. This TC is in charge for defining the environmental and infrastructural aspects for all telecommunication equipment and its environment, including equipment installed in subscriber premises. Where ever possible this will be achieved by references to existing international standards. Its responsibility includes: definition of environmental conditions, power supply, bonding and related topics, mechanical structure and physical design, powering/cooling/building infrastructure control/monitoring interface (including energy consumption reporting), eco-environmental affairs.

The eco-environmental affairs include:

Analysis of European environmental legislation, in terms of ecological aspects, and assessing its impact on Telecommunication infrastructure and equipment.

Establishment and maintenance of liaisons with ITU/CEN/CENELEC and the European Commission on development of ecological environmental related product deliverables applicable to telecommunication infrastructure and equipment.

It also covers the aspects of:

- *Reduction of energy consumption in telecommunications and datacom equipment and related infrastructure*
- *Renewable energy sources for powering telecommunication and datacom equipment*

For the complete Terms of Reference of TC "Environmental Engineering" (EE), please refer to the following link:

http://portal.etsi.org/ee/ee_tor.asp

The deliverables produced by TC-EE on the energy efficiency matters cover the tests methodology (equipment configuration, traffic load, etc), the metrics (e.g. throughput/Power) and the Key Performance Indicators to assess the energy efficiency of products or networks (e.g. formula to determine energy efficiency of GSM/WCDMA/LTE/WiMax). TC-EE does not define product design specifications for energy efficiency.

In the annex of this liaison there is the list of TC-EE activities on energy efficiency.

For the ECONET project, we think that the Work Items for energy efficiency of equipment and network level are the most relevant ones.

You can download the published deliverables from the ETSI web site and the latest drafts of our ongoing Work Items from the ETSI portal at the following link:

<http://portal.etsi.org/portal/server.pt/community/EE/303#>

If you need clarifications on specific WIs, we are happy to provide them.

On behalf of TC-EE I would like to invite you at the next TC-EE meeting that will be held on 21-25 May 2012 in Naples (Italy). It would be our interest to have a presentation of the ECONET project.

Best regards.

Beniamino Gorini

(ETSI TC-EE chairman)

3/4

Figure 3 – The main page of the liaison letter between ECONET and ETSI EE

In particular, the second workshop had a speaker from the ECONET Project (Prof. Raffaele Bolla), who had the opportunity to describe the Project and its main outcomes, as reported in Figure 4.



Figure 4 – Presentation of the ECONET project during the ITU-T Green Standard Week

After this first successful workshop, the cooperation of the ECONET project with ITU-T was enforced through the ITU-T Report on “Boosting energy efficiency through smart grids” [5]. Such report (which has been officially released in September 2012, discusses the role of ICT in the smart grid with a view of energy efficiency, with the ultimate goal of hindering climate changes. To this end, as shown in Figure 5, several power consumption estimations have been provided and the previous ECONET evaluations have been taken among the bases to evaluate the energy footprint of ICT for Smart Grids. Moreover, it was highlighted that among the goals of the ECONET project there is also the definition of a suitable abstraction (Green Abstraction Layer (GAL)) to represent power adaptation capabilities of parts of the device or of an entire device toward the network control plane. The report also highlights the risks that, without careful action, ICT for Smart Grids could add up very high energy consumption, in particular at the customer premises. ECONET activities could prove to be applicable to the Smart Grid environment, too.

Table 2 – Estimated energy saving in 2015-2020 perspective telecommunication networks – Telecom Italia use case (Source: ECONET project [65], [66]).

	<i>Full load power consumption [W]</i>	<i>Number of devices [#]</i>	<i>Overall full consumption [GWh/year]</i>	<i>Percentage Gains [%]</i>	<i>Energy Gains [GWh/year]</i>
<i>Home</i>	10	17,500,000	1,533	70	1,060
<i>Access</i>	1,280	27,344	307	70	213
<i>Metro/transport</i>	6,000	1,750	92	54	49
<i>Core</i>	10,000	175	15	58	9
Total [GWh / year]			1947	68	1,331

Table 15 – Internal sources of energy consumption. Source: the ECONET Consortium.

	<i>Data Plane</i>	<i>Control Plane</i>	<i>Cooling/Power Supply</i>
<i>Home</i>	79%	3%	18%
<i>Access</i>	84%	3%	13%
<i>Metro/transport</i>	73%	13%	14%
<i>Core</i>	54%	11%	35%

Figure 5 – ECONET references within the ITU-T Report on “Boosting energy efficiency through smart grids”

The third opportunity for the ECONET project to be promoted within ITU-T happened thanks to the 2nd ITU Green Standards Week, held in Paris on September 17–21, 2012 [6]. In this occasion, a distribution/presentation of ECONET materials (posters, brochures) was organized, as shown in Figure 6.

3.3. HGI

The HGI, founded in 2004 by major broadband service providers (BSPs), and joined by leading vendors of digital home equipment, is a forum working on how to deliver IP services to the home. The HGI publishes requirements for digital home building blocks. Those building blocks are the hardware and software in the digital home that connect consumers and services. They include home gateways, home networks, and home network devices. HGI projects are triggered by the services vision of BSP members, and build on the technical collaboration of all the HGI participants. The HGI welcomes BSPs and vendors from across the globe. Its members represent the entire spectrum of players in the broadband home area.

HGI’s initial role was to specify requirements and test plans for Home Gateways (HGs) that support Quality of Service and the rollout of triple-play, broadband services. That work established the key functional requirements needed to support managed services in the home, and it continues to provide an invaluable reference for the industry. The scope has now been expanded to cover the entire spectrum of requirements for devices and service support in the digital home. Projects fall within two main themes – Connecting Homes and Enabling Services.

Connecting Homes covers the infrastructure requirements for delivering telecoms and Internet services in the home. This work builds on the original HG ‘Residential Profile’ [7] by defining extensions covering higher speeds and performance attributes, and updating the functionality to include such things as IPv6 support. HGI also publishes test plans for much of its defined functionality, and holds an annual Test Event where these tests can be independently carried out. Going beyond the Gateway itself, HGI now specifies requirements for home network ‘infrastructure devices’ (bridges, wireless Access Points etc.) and is also addressing real-world home network performance, end-to-end diagnostics, and energy efficiency [8]. Enabling Services has now moved beyond triple-play to encompass a delivery framework for Smart Home services. This architecture includes support for a standard, general-purpose software execution environment in the HG (for third party applications), API definitions, device abstraction, and interfacing with Cloud based platforms. HGI’s published Use Cases for Home Energy Management are the first in a range of Smart Home services that the HGI architecture will support.



Figure 6 – ECONET promotion during the 2nd ITU-T Green Standards Week

The published output of HGI includes functional requirements, test specifications, and white papers on the digital home infrastructure. They can be used by service providers in formal procurement activities, and by digital home equipment vendors to understand service providers’ needs so they can plan their roadmaps.

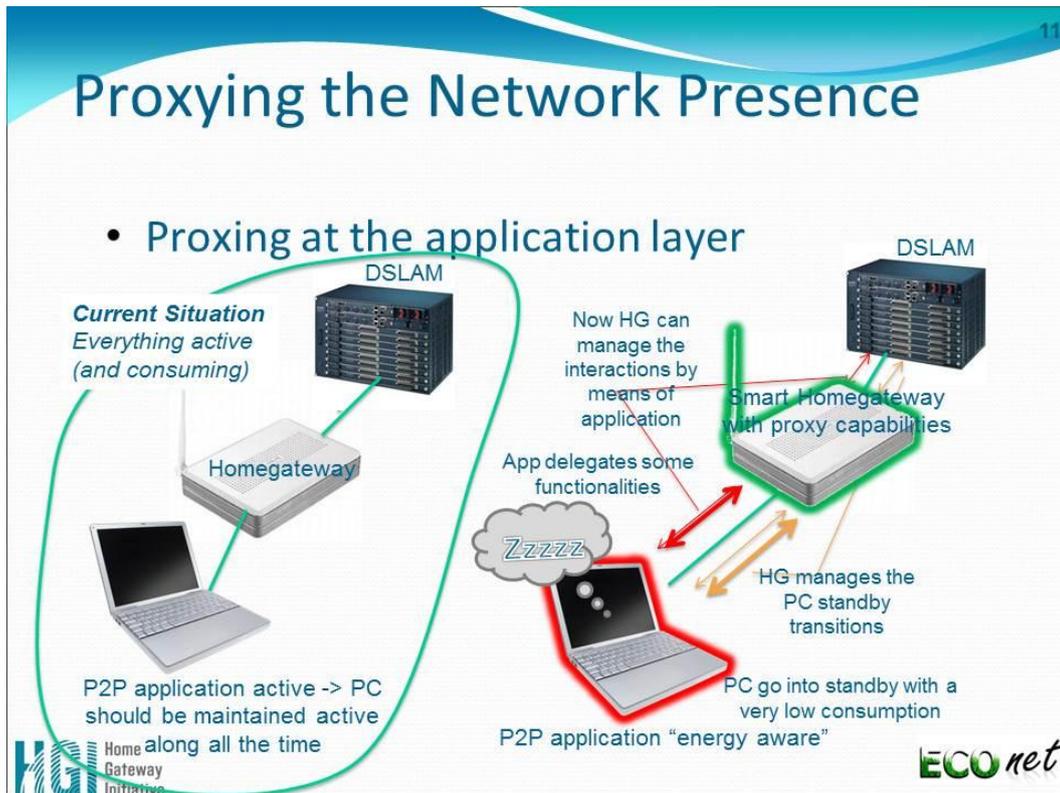


Figure 7 – Description of the proxy concept presented to HGI

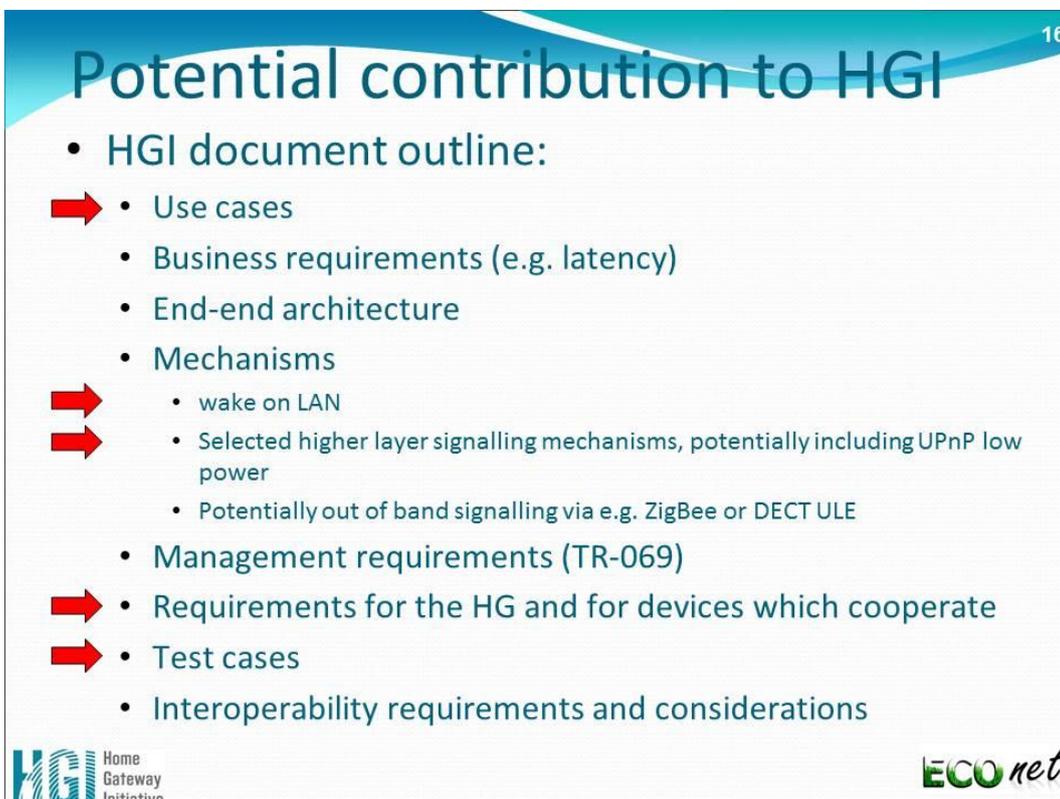


Figure 8 – Potential contribution from ECONET to HGI RWD031

The first ECONET contribution to HGI was presented in March 2012 to describe the general operation of the home network connectivity proxy function for energy saving purposes. In the presentation the mechanism for sharing information and controlling the status of the energy consumption on various home networking devices via the home gateway has been proposed, as shown in Figure 7 and Figure 8.

A more detailed contribution to HGI on “Requirements for energy proxy functionalities in the Home Gateway” based on ECONET work on the Network Connectivity Proxy (NCP) has been submitted in June 2012 (2nd HGI plenary meeting of 2012). This contribution was inserted into the draft official document HGI-RWD031 “Requirements for Power Management of Home Network Devices”. The contribution included:

- An introduction about the concept of proxy as functionality to be supported by the home gateway, as central node of the home network and main coordinator of the connectivity and service enablement.
- A detailed description of the sub-functions.
- A number of punctual requirements for inclusion in the HGI draft.

A new contribution, revising and integrating previous Telecom Italia/ECONET as well as France Telecom’s contributions was then submitted at the 3rd HGI plenary meeting (Sept. 2012). As consequence of this presentation, Telecom Italia assumed the editing responsibility of the document, with specific reference to the refinement of the proxy related parts. In developing this task, Telecom Italia will leverage on the guidelines, suggestions and implementation results stemming from the ECONET activity.

3.4. European Commission JRC

The European Commission JRC (Joint Research Centre) is the scientific and technical arm of the European Commission. It is providing the scientific advice and technical know-how to support a wide range of EU policies. It has the status of a Commission service, which guarantees independence from private or national interests. In particular, as the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners. Key policy areas include, among others, environment, climate change and energy.

In particular, since 2004 the JRC has developed the “Code of Conduct on Broadband Equipment” [1], which aims at reducing energy consumption of broadband communication equipment, without hampering the fast technological developments and the service provided. More precisely, such document defines a set of power consumption limits for a wide range of equipment for broadband services both on the customer side as well as on the network access side. In such wide range, some technologies can be found that are certainly within the scope of the ECONET project:

- Home gateways - DSL CPEs (ADSL, ADSL2, ADSL2plus, VDSL2)
- Simple broadband access devices - DSL CPEs powered by USB
- DSL Network equipment (for example, ADSL, ADSL2, ADSL2plus, VDSL2)

As already stated before, the CoC has become in the last years a real “standard de facto” for many stakeholders, especially after the Global CoC Signature Event, organised in Brussels in September 2010 by GeSI and the EC, with the support of Telecom Italia and the participation of Commissioner Neelie Kroes. In particular, such event was dedicated to the signatures of the two CoCs, respectively on Broadband and Data Centres. The addition of the new signatories greatly increased the scope of the Codes, which, for broadband, increased the coverage of the EU broadband market from the previous 32% to roughly 75% (analysis by Arthur D. Little). The inclusion of non-EU companies in the list of signatories also gave the Codes of Conduct a push towards becoming global standards for energy efficiency.

Some contacts have been set up with Mr. Paolo Bertoldi, who is the JRC responsible for the CoCs, in order to manage an ECONET contribution towards the new version (V5) of the CoC BB, considering that studies performed on power consumption of broadband equipment, as well as prototypes of energy-aware equipment, already realised or under preparation, allow the elaboration of useful proposals concerning future power consumption targets for tier 2015-2016.

4. Future activities towards standardization

The present section aims at providing a brief list of the future actions foreseen towards the selected reference standardization bodies.

Starting with ETSI TC EE, after receiving the official letter stating the beginning of the GAL Work Item activities, the project will proceed with moving the work already done on this respect to the standardization process; possibly all work finalization should be performed before the end of the project itself. The Work Item should contain four different specific definitions:

- General Architecture
- Green Standard Interface (GSI)
- Power States
- Convergence Layer Interface (CLI)

Moreover, Prof. Bolla will act as the Rapporteur, with at least the following supporters: Alcatel-Lucent, Telecom Italia, Ericsson, CNIT, GRNET.

Following with ITU-T SG5, there are currently some contacts in order to reserve a time slot for an ECONET presentation during the forthcoming ITU JCA on ICT&CC (Joint Coordination Activity on ICT&Climate Change), foreseen in Geneva on October 11th. The JCA-ICT&CC has the objective 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;
- provide a visible contact point for ICT and Climate Change activities in ITU-T, to seek co-operation from external bodies working in the field of ICT & CC and enable effective two-way communication with these bodies.

The ECONET presentation, in addition to a general update on the working progress, will highlight the liaison towards ETSI EE, which was established in June 2012 and will launch the proposal to standardize the GAL also within ITU-T as a future next step.

Moving to the EC JRC CoC BB, the ECONET project will provide a contribution on the occasion of the stakeholder meeting foreseen in Ispra on the 26th of October. The goal of such meeting will be to discuss a possible revision of the current version (V4) as far as tier 2013-2014 is concerned, and to start a discussion on the next version (V5), which should contain new targets for tier 2015-2016 together with new technologies (e.g., USB 3.0) currently not included. In particular, the ECONET contribution will highlight new technologies related to Smart Grids and sensor networks, together with NT and other functionalities for the access network equipment. To this end, a coordinated action and contribution of ECONET, through the partners that work in that scenario (in particular LQTE and TELIT) will provide useful information. Among the ECONET contributions, the power scaling mechanisms will be introduced in order to differentiate equipment with and without such functionalities. Specifically, the contribution will ask for the introduction of the GAL (Green Abstraction Layer) concept as a strong enabler of global energy saving.

Concerning HGI, as mentioned before TELIT has now the editorship of the HGI_RWD031 document. Further text elaborated after discussions and feedback among HGI members and ECONET external support, as well as changes suggested by the idea of harmonizing the HGI outcome with other SDOs, are going to be included and re-published for the 4th HGI plenary meeting (Dec 2012). In 2013, it is expected to finalise the document between Q1 and Q2 2013 and possibly activate a joint dissemination activity from HGI+ECONET towards UPnP and DLNA.

Moreover, concerning the UPnP Forum, the UPnP Low Power approach was initially considered as a basis for the Digital Living Network Alliance (DLNA) Low Power Task Force standardization effort. It was then abandoned in favour of another one based on UPnP Configuration Management Service, a more frequent choice for recent developments like DLNA Diagnostics. UPnP will likely be addressed by DLNA to standardize the new CMS DLNA Low Power data model as well as new UPnP actions that might be defined.

Finally, regarding DLNA, rapid progress is being made after a recent face-to-face meeting of the main stakeholders in the TF. Architecture, data model and (UPnP) actions have been proposed. The fast evolution of activities related to the UPnP Low Power approach – which never reached high momentum prior to the HGI and DLNA interest – is a good sign for the propagation of ECONET ideas and results in this specific field.

References

- [1] Code of Conduct on Broadband Equipment: <http://iet.jrc.ec.europa.eu/energyefficiency/ict-codes-conduct/energy-consumption-broadband-communication-equipment>
- [2] ETSI: <http://www.etsi.org>
- [3] ETSI Workshop on Energy Efficiency:
http://www.etsi.org/WebSite/NewsandEvents/Past_Events/2012_EEWORKSHOP.aspx
- [4] ITU-T Green Standard Week, Rome, September 5th – 9th 2011: <http://www.itu.int/ITU-T/climatechange/gsw/201102/index.html>
- [5] ITU-T Report on “Boosting energy efficiency through smart grids”: <http://www.itu.int/ITU-T/climatechange/report-smartgrids.html>
- [6] 2nd ITU-T Green Standard Week, Paris, September 17th – 21st 2012: <http://www.itu.int/ITU-T/climatechange/gsw/201209/index.html>
- [7] HGI Residential Profile: http://www.homegateway.org/publis/RD-001-R2-01_HG-Tech-Req-Residential_V1-01.pdf
- [8] HGI Home Gateway Requirements for Energy Efficiency:
http://www.homegateway.org/publis/RD-009-R3_Req-for-an-energy-efficiency-HG.pdf