



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session 1 On “Setting the scene”

presented by Beniamino Gorini

- Overview of ETSI TC-EE activities related to energy efficiency at level of:
 - products,
 - network
 - infrastructure elements
- Overview of EU Energy Efficiency regulations in ICT products
 - eco-design directive
 - energy labelling directive
 - next regulation on networked standby
 - Energy Star label for office equipment (new Energy Star regulation expected to be voted by EP in October 2012)
 - Criteria for the applicability of Eco-label
- Overview of EU mandates addressed by ETSI Green Agenda
- ETSI electronic working tools
- ETSI collaboration with other organizations

Collaboration

- on Green Data Centers with Green Grid, ECMA and JTC1

Coordination

- with CEN/CENELEC on horizontal mandate M/495 “Standardisation mandate to CEN, CENELEC and ETSI under Directive 2009/125/EC relating to harmonised standards in the field of Ecodesign”

- To improve collaboration on Green data center topics:
 - establish collaboration with Green Grid and ECMA
 - liaison with JTC1 already established through CEN/CLC/ETSI JWG “Green Data Centers”
- on horizontal mandate M/495
 - ETSI should join the CEN/CENELEC coordination group on this mandate



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session 2 On ‘Current Standardization Initiatives’

presented by Dong Hi SIM (Donghee Shim)

Highlights from the workshop

- Current Standardization Initiative
 - 3 international organization presented their activities related to the Energy Efficiency
- IEC TC111 / CENELEC TC111x, Mr Andrea Legnani
 - Environmental standardization for electrical and electronic products and systems
 - IEC 62474 database for material declaration
- ITU-T SG5, Dr Ahmed Zeddami
 - ITU-T SG5: Environmental Sustainability for the ICT sector
 - Environmental protection and recycling of ICT equipments
- ATIS, Mr David Bossmin
 - Energy Efficiency Metrics
 - Capacity, coverage, users, QoS ...

Key issues raised

- Energy Efficiency Metrics
 - Single metric or multiple metrics?
 - Capacity, consumed power, coverage, supported users, QoS, QoE, ...
 - Combined metrics
 - Methodologies (user equipments performance, traffic models, radio effects, etc)
- Collaboration among standardization organizations
 - EE Metrics
 - Recycling factors
 - Avoid fragmentation and duplication

- Collaboration among standards organizations
 - IEC TC111: Material declaration
 - CENELEC TC111x: Coordination on Mandates (eco-design etc)
 - ITU-T SG5: Circulation of information on new work items, co-located meetings, joint meetings, joint deliverables
 - ATIS: Evolution on EE metrics (on access network & core networks)
 - Proactive approach to exchange information
- Benefits of Workshop
 - 45 mins open discussion more valuable than liaison statement exchange



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session 3 On Energy efficiency – Measurements and KPIs
presented by Paolo Gemma

- Energy consumption of most actual equipment has no relation with equipment activity, traffic.
- It is necessary and it is possible measure the QOE (quality of experience) during the definition of energy efficiency measurement and metrics.
- STF 469 are developing Global KPI's for some network considering not only the energy efficiency of equipment but also renewable energy and reuse of energy.
- In data center it is necessary not to consider only the Indicator for infrastructure but also the SUE a indication of server efficiency

Key issues raised

- Use only SUE can force to change server introducing a global level a bad effect due to the construction of server, it is necessary take in account this effect making a LCA analysis of all the aspects.
- Which is the need to have a KPI that consider not only the efficiency of equipment but also the type of energy used.

- Consider the QoE in the development of future metrics and measurement methods for network efficiency.
- Considering the need to develop indicator for data center in collaboration with IEC and green grid
- Consider the variation of the load on metrics definitions



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

**Session 4 on Energy efficient cooling and power supply in
Telecommunications**

presented by Didier Marquet France Telecom Orange Labs, Chairman ETSI EE/EE2

- **Freescale and Ericsson: improvements of Energy Efficiency at the level from System level to sub-components.** How to coordinate HW and SW?
- **Intel: Reasons for Using LVDC in Data Centres and outside telecom.** Gains in Energy (8-30%), reliability, simplicity, space saving, less LCA impact, simple for renewable E. Ready for wide and wider use !!!
- **HCL: Achieving Energy efficiency for PoE (Power over Ethernet) Networks** POE management an enabler for saving much energy by integrating green management that save energy and increase lifetime. Multi-Control/monitoring protocols and global management DDU like in ES 202336.
- **Alpha: ES 202336 serie practical tools for energy, cooling and environmental monitoring and control.** A clear and robust protocol and data model over TCP/IP, http post and XML. Now used by industry, good field results.

Key issues raised

- Internet on mobile makes faster & higher power change on systems, so consumption has to be reduced at chip level. Compatibility of software with chip HW and high level management? will we observe reduction on system?
- How to accelerate use of LVDC in ICT sector, (already published EN 300 132-3-1 (DC power interface 260-400V) and ITU-T L.1200 in collaboration with ETSI. Already big site in DC appears 1MW site in switzerland
- Which intelligent green management e.g. of POE for devices to keep good ergonomoy for user (not increase too much latencies, no morning update peak, ...). Need also works on good practice and remote management servers ?
- How to enlarge ES 202 336 standard to more use including detailent equipment power and energy of Telecom/Datacom equipment ? How to better correlate data from different equipment and sites. Need work on

- How to take into account this chip level EE improvement evolution in standardization ? which granularity is required? how to coordinate HW and SW to get the max EE benefit? do we need to introduce dynamic performance of power/cooling ? → NWI in EE ?
- Close collaboration with IEC necessary for safety aspects and harmonized use of DC in other domain than ICT. very Important in editing the ETSI earthing and bonding standard for ICT in 400VDC.
- Need good practice of green power management to keep good user experience. Need of more standardization on remote management side for better green control / ergonomoy ? → NWI in EE ?
- After power plant and cooling, how to introduce Telecom/datacom equipment power/energy monitoring → NWI in EE/EE2? Already liaison with ITU-T and IETF. Which work on high level multisite management e.g. correlation of a wide quantity of data from field, extract energy/performance KPI ? → NWI in EE/EE2 ?



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session 5 On Life Cycle Assessment

presented by Pernilla Bergmark

- **The growth of the ICT industry will lead to increases in GHG-emissions**
 - Impact will still be *low compared to overall GHG emissions* (no dramatic change in percentage)...in spite of growth in number of users and use of data
- **The LCA and GHG inventory standards from ETSI and ITU-T are now being implemented and seem to work well on a high-level**
 - Proposals for further refinement identified
- **LCA needs more structured methods to reduce data uncertainties and can benefit from methods developed for other data evaluation**
 - Important to consider both uncertainty and impact of each source
- **LCA gives good opportunities in understanding where to focus efforts**
 - What is MORE important – what is LESS important
 - Absolute results (HOW MUCH) – especially for future impacts will always have considerable uncertainties
 - Very detailed analysis may in many situations be too resource demanding

Key issues raised - LCA

- Challenges in making prognoses for the future – behavioural patterns critical
- Uncertainties related to data and sector boundaries make different sector prognoses unaligned and hard to interpret for those who are not into the details
 - The figures that are seen as the “true” ones may not be the most accurate
- Important to remove barriers to fully utilize the potential reductions from ICT services
- ICT said to equal air industry – in reality ICT may be as low as 50% in comparison

- Two parallel LCA trends
 - detailed LCAs with increasing accuracy requirements
 - High-level studies to understand impacts on sector and country levels
- Organizational reporting of value-chain reporting (scope 3) increasing
- LCA standardisation to continue along the evolutionary track of standards to help industry to refine their studies
- Important to use insights gathered with LCA to make sure to focus limited world resources in the best way when combatting climate change and resource scarcity



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session6 On Research Projects
presented by Prof. Raffaele Bolla

- A significant number of relevant research projects are currently on going in the “green networking” area.
- Increasing the energy efficiency is a goal that implies a lot of different problems and most of them are almost still open
 - **KPIs**
 - Modeling, control, optimization in different devices, at different layers,
...
- Standardization is an very important instrument for making effective/useful the research results

Key issues raised

- How to evaluate the EE (KPI)
- Avoid as much as possible superposition and duplications
- Find a way to create a stronger level of cooperation
- Encourage and support the cooperation between standardization bodies and research project

- I suggest an holistic approach for EE (or better for sustainability) that should collect the relevant entities **including the standardization bodies**
 - A large project in the sector or, better, a coordinated and organized group of project (PPP style)
- ICT is currently the main enabler of EE in most of the relevant sectors (energy, transport, buildings, ...)
But, to be definitely effective
 - it should be really efficient (and sustainable)
 - ICT and not-ICT experts/researchers should strictly collaborate...



CLOSING SESSION - ETSI WORKSHOP ON ENERGY EFFICIENCY

20- 21 June 2012 – Genoa (Italy)

Session 7 On “Future perspectives and event conclusions”
presented by Beniamino Gorini

- Move forward in the reduction of energy consumption and carbon foot print in ICT products and networks
 - Mutual influence of energy efficient ICT and Smart Grids
 - Standard requirements and energy efficiency for external power supplies
- Standardization fragmentation and lack of coverage
- Link with research projects and standardization
- Environmental aspects policy goals to be addressed in standards
 - Material
 - Energy
- What to address in standards:
 - establish measurement points and methods
 - limits/targets values?
- ETSI as standardization leading role in ICTs

Key issues raised

- Need of worldwide standard for “connecting” requirements and energy efficiency for external power supplies (used to feed ICTs)
- Standardization fragmentation and lack of coverage
- Link research projects and standardization
- Limits/targets have to be part of standardization or regulations or left “natural” improvement as part of market competition?

- Improve collaboration through SDOs for a common standard for external power supplies (used to feed ICTs)
- Identify lack of coverage of standardization in ICT Energy Efficiency
- Improve collaboration between research projects and standardization organizations

Thank you for your active participation !

Presentations and conclusions can be found at:

<http://www.etsi.org/EEWORKSHOP>