World Class Standards

ETSI STANDARDIZATION ACTIVITIES ON ENERGY EFFICIENCY

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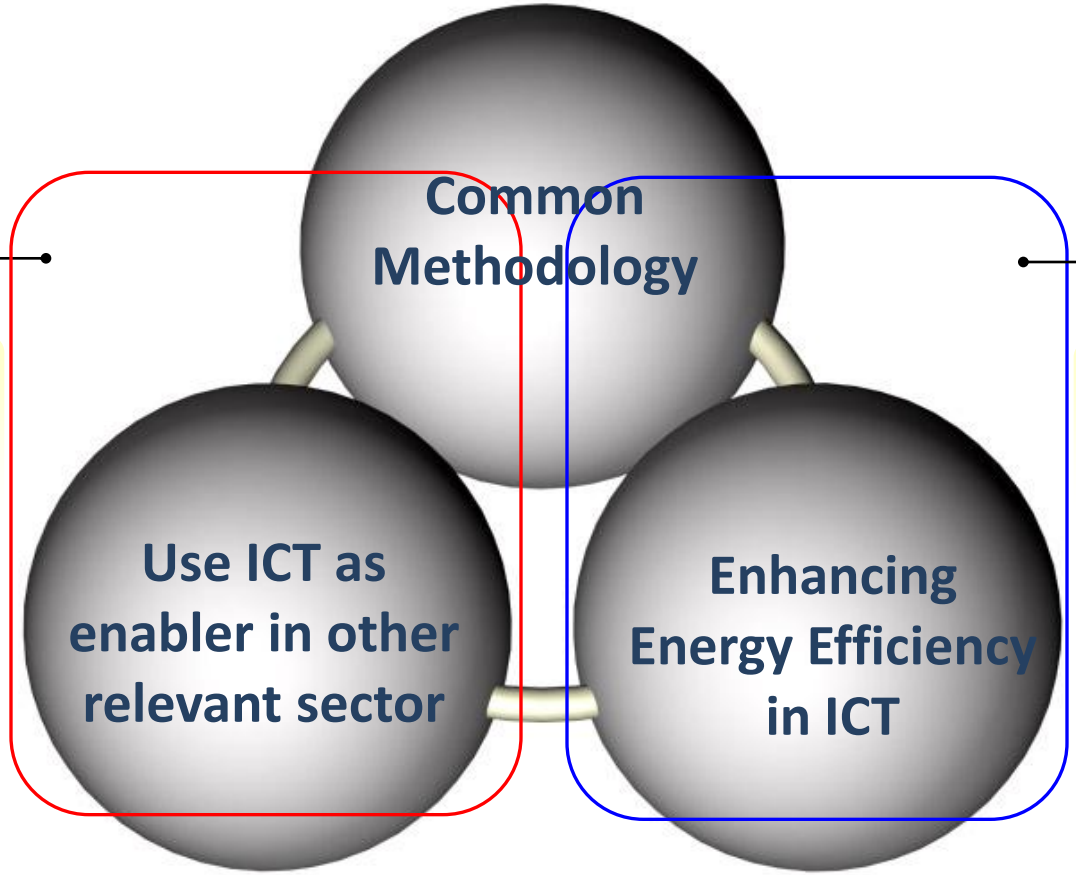
Contents

- Energy Efficiency – General view
- ETSI Activities on Energy Efficiency

ENERGY EFFICIENCY

Energy Efficiency - General



Mitigation that follows through the adoption of ICTs in other relevant sectors (Indirect impact)

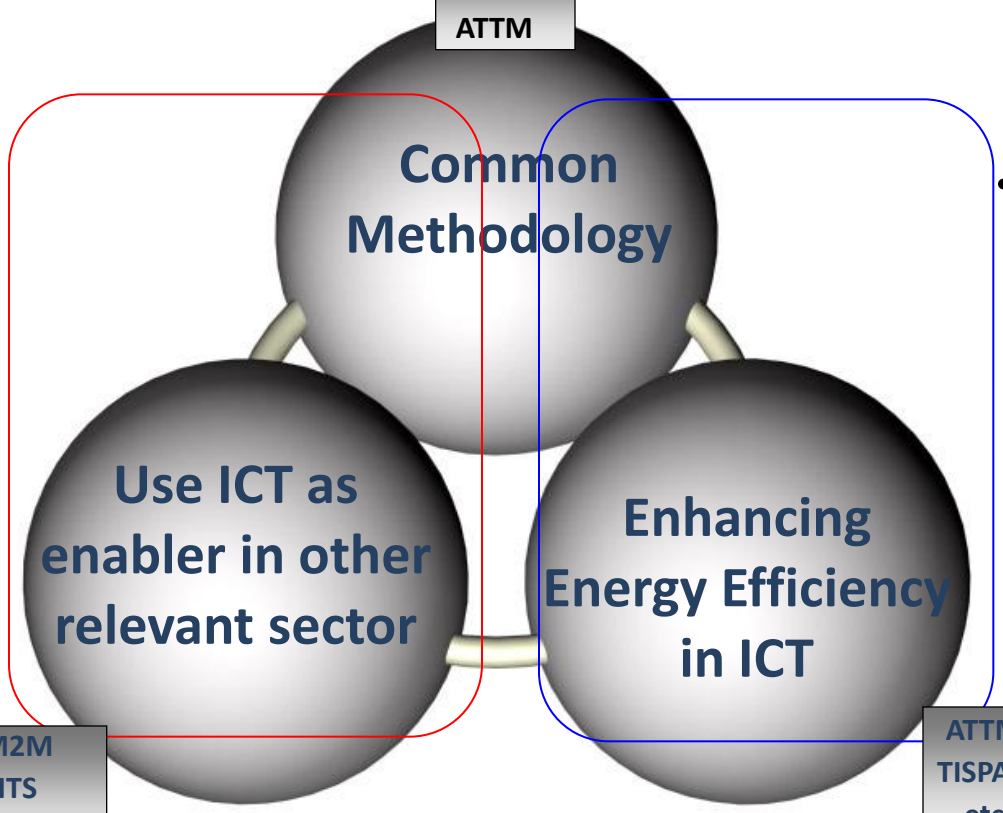
Reduction of ICT's own emissions over their entire lifecycle (Direct Impact) – this presentation covers

4

Energy Efficiency - General

- Definition of Energy Efficiency in Access (wireless / fixed), Core, Data Center, etc
- Measurement methodology on EE / Test Environment and procedures
- Life Cycle Assessment / etc

EE
ATTM



Mitigation that follows through the adoption of ICTs in other relevant sectors (Indirect impact)

Reduction of ICT's own emissions over their entire lifecycle (Direct Impact)

- Smart Grids
- Intelligent Transport
- Virtual Presence (electronic meetings, etc)
- Smart Buildings
- etc

M2M
ITS
etc

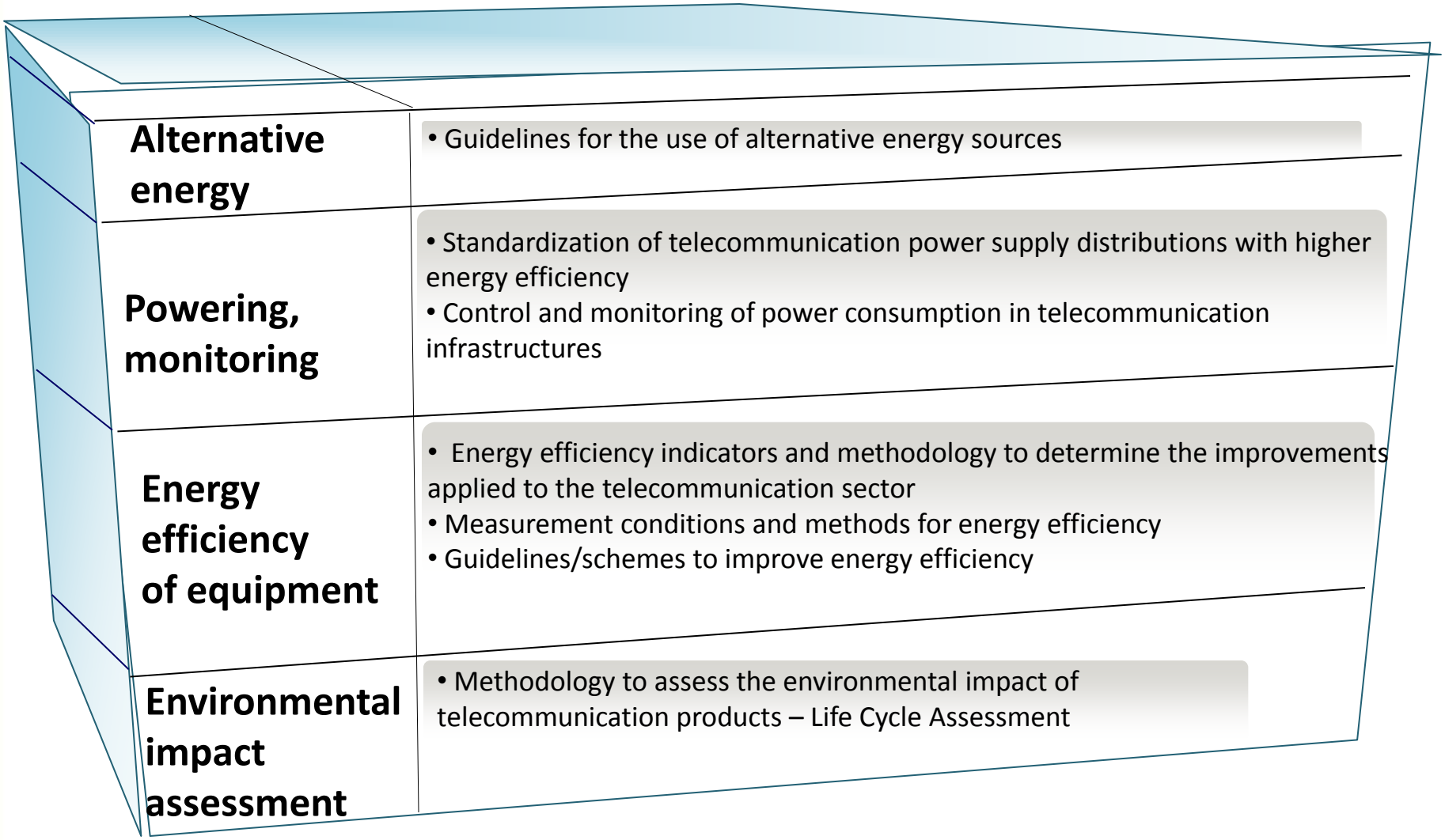
ATTM
TISPAN
etc

- Technical solutions to Enhance Energy Efficiency
- New power modes
- Efficient Cooling
- Alternative Energy Source
- Common Power Supply
- etc

•M2M: Machine to Machine
• ITS: Intelligent Transport System
•ATTM: Access, Terminals, Transmission and Multiplexing
• EE: Environmental Engineering
•TISPAN: Telecommunications and Internet converged Services and Protocols for Advanced Networking

ETSI ACTIVITIES ON ENERGY EFFICIENCY

ETSI TC EE:
Environmental Engineering



Alternative energy	• Guidelines for the use of alternative energy sources
Powering, monitoring	• Standardization of telecommunication power supply distributions with higher energy efficiency • Control and monitoring of power consumption in telecommunication infrastructures
Energy efficiency of equipment	• Energy efficiency indicators and methodology to determine the improvements applied to the telecommunication sector • Measurement conditions and methods for energy efficiency • Guidelines/schemes to improve energy efficiency
Environmental impact assessment	• Methodology to assess the environmental impact of telecommunication products – Life Cycle Assessment

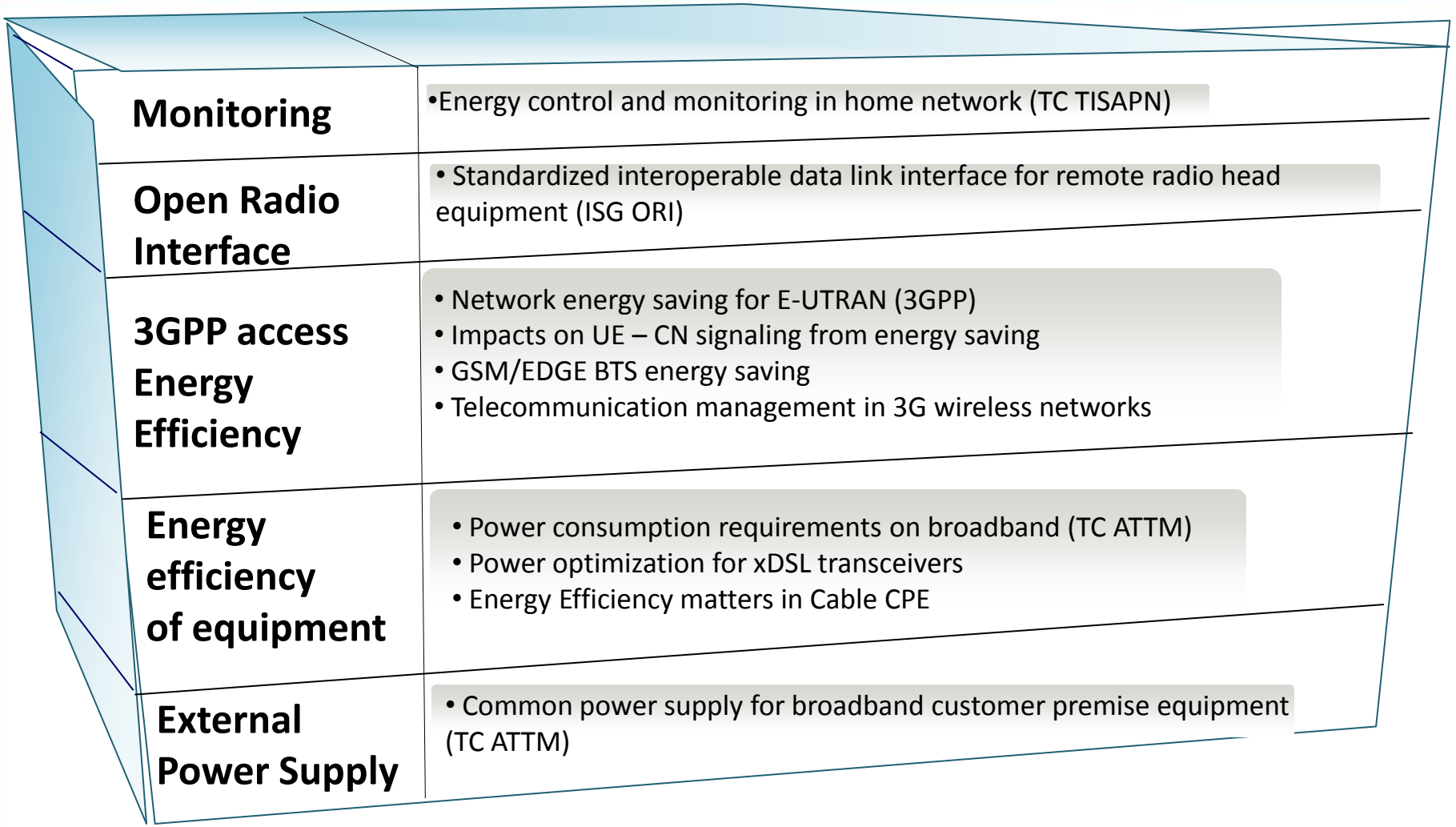
On-going works on Energy Efficiency

- Wireline Broadband Access equipment
  - ES 203 215 will replace TS 102 533
  - New ES includes further new Access technologies (e.g. GPON)
  - Power consumption limits are defined in an informative annex
- Wireless Broadband Access equipment
  - New version of TS 102 706 defines efficiency parameters taking into account traffic conditions
  - Metric and measurements are applicable to GSM/EDGE, WCDMA/HSPA, LTE and WiMAX
- Transport Equipment
  - DES/EE-00023 “Measurement Methods for Power Consumption of Transport Networks Equipment”
- Switching and Router equipment
  - DES/EE-00024 “Measurement Methods for Power Consumption of Router and switching Networks Equipment”

On-going works on Energy Efficiency (cont')

- CPE
  - DEN/EE-00021 "Measurement methods for Energy consumption of End-user Broadband equipment (CPE)": define methods and the tests conditions to measure the power consumption of end-user broadband equipment within the scope of the EU regulation 1275/2008 (off mode / standby) & Network standby / Lower power states on mode (not part of EU regulation 1275/2008)
  - DTS/EE-00018 "Measurement methods and limits for Energy consumption of End-user Broadband equipment (CPE)": power consumption limits (based on the European Code of Conduct of Power Consumption of Broad-Band Access equipment)
- Core Network equipment
  - DES/EE-EEPS00001 "Measurement method for Energy efficiency of Core network equipment" : IP Multimedia Subsystem (IMS) core functions (HSS, CSCF, etc), Fixed core functions (soft-switch), Mobile core functions (HLR, MSC, GGSN, SGSN, EPC, etc), Radio access control nodes (RNC, BSC)

ETSI TC ATTM, TISPAN, 3GPP, ISG ORI



ATTM: Access, Terminals, Transmission and Multiplexing , TISPAN: Telecommunications and Internet converged Services and Protocols for Advanced Networking
3GPP: 3rd Generation Partnership Project, E-UTRAN: Enhance UMTS Terrestrial Radio Access Network, GSM: Global System Mobile communication,
UE: User Euipment, CN: Core Network, EDGE: Enhanced Data rate for GSM Evolution, CPE: Customer Premise Network
ORI (Open Radio equipment Interface),, ISG: Industry Specification Group

THANKS FOR YOUR ATTENTION

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