Contribution of international standards to promoting energy efficiency

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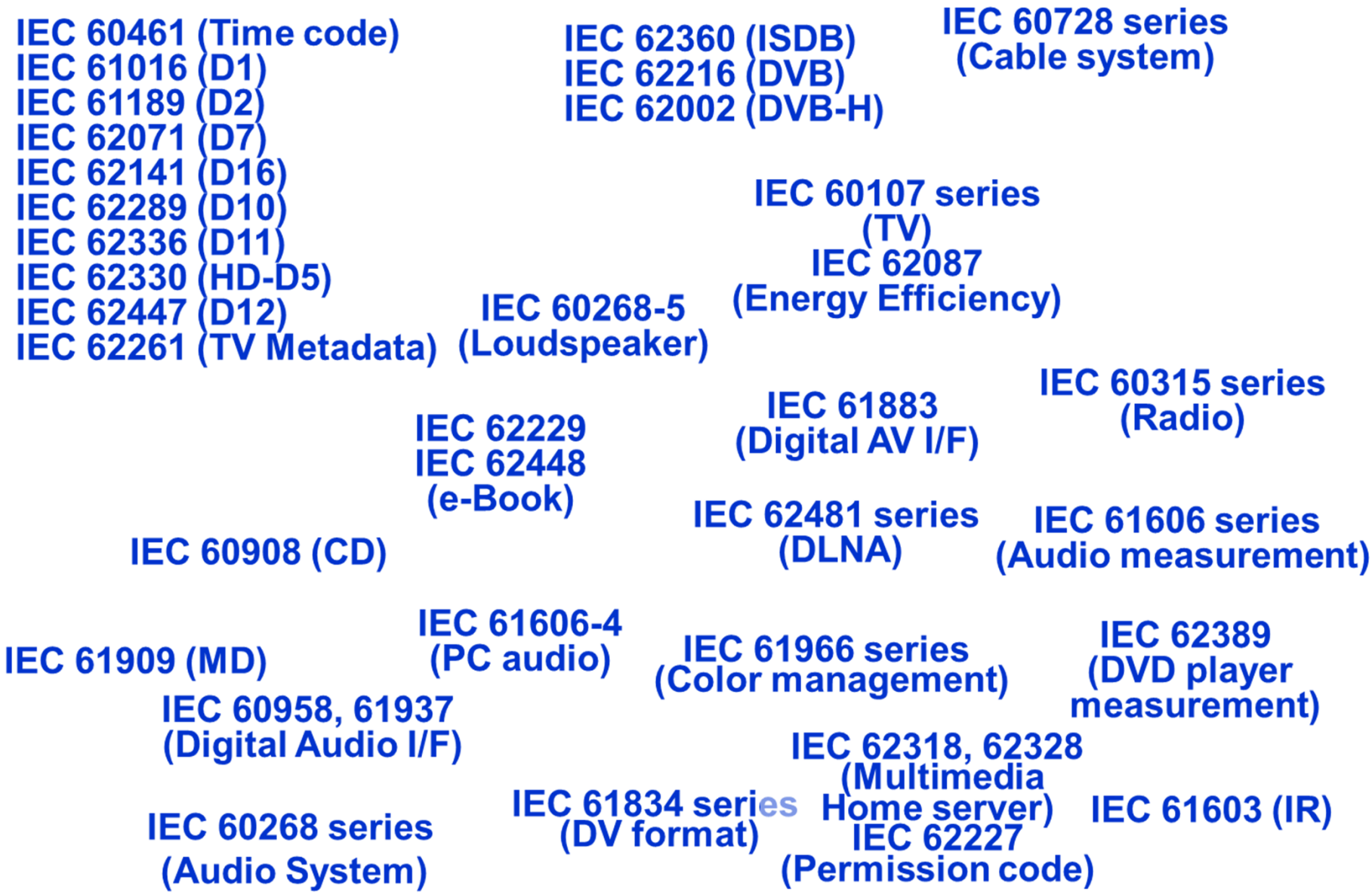
TC 100/TA 12
(AV energy efficiency and smart grid applications)

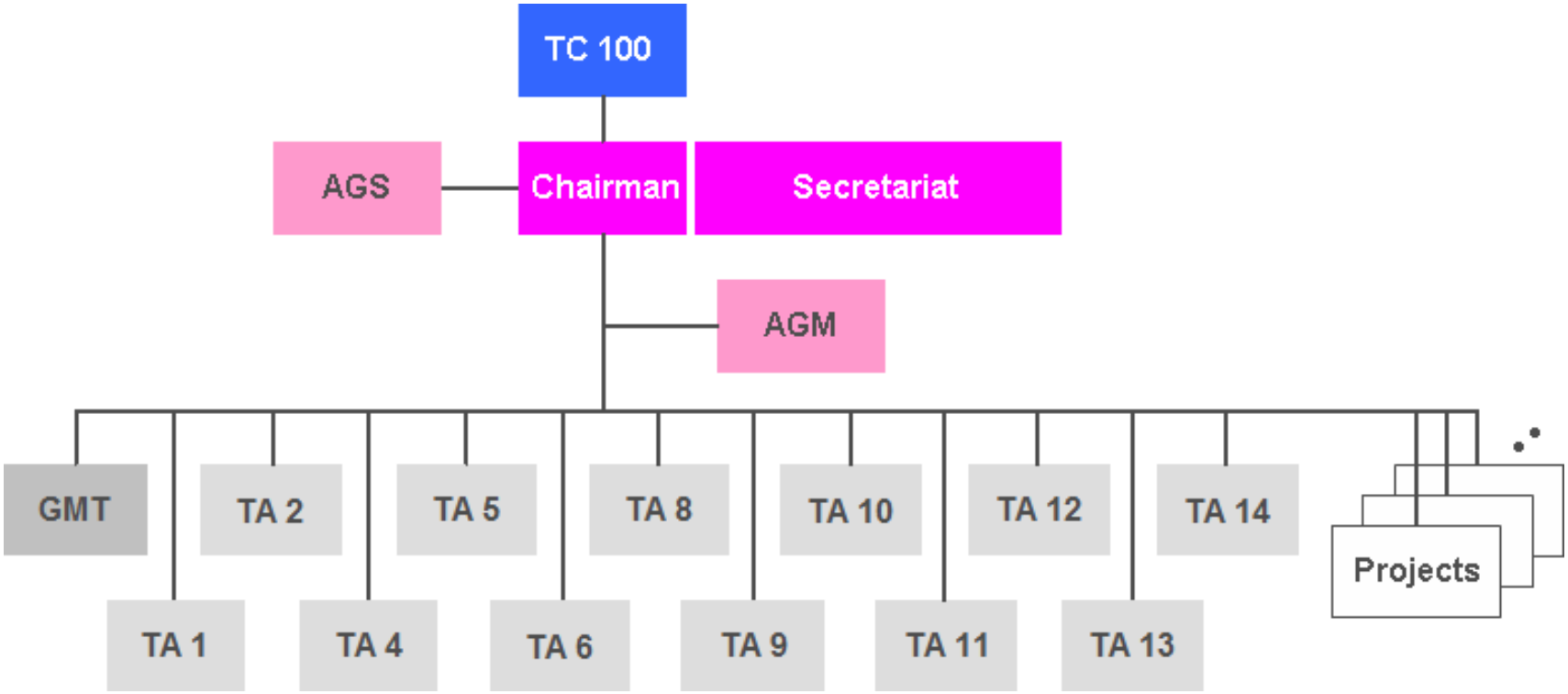
- To develop standard measurement methods for power consumption and energy efficiency of audio, video and multimedia systems and equipment connected to the power mains. The scope also includes development of standards related to smart grid and home energy management applications in networked multimedia equipment for the purpose of energy measurement and savings.

- IEC 62087 *Methods of measurement for the power consumption of audio, video and related equipment*
- IEC TS 62654 *Energy Saving System (ESS): Conceptual Model for the Network Based Energy Consumption Measurement of AV Equipment and Systems*

AV & Multimedia Systems and Equipment



TC 100 Structure



TA has
- Technical Area Manager (equivalent to SC chairman) and
- Technical Secretary (equivalent to SC secretary)

Technical Areas and Groups

TA 1: Terminals for audio, video and additional data services
TA 2: Colour measurement and management
TA 4: Digital system interfaces and protocols
TA 5: Cable networks for television signals, sound signals and interactive services
TA 6: Storage media, data structures, equipment and systems
TA 8: Multimedia home server systems
TA 9: Audio, video and multimedia applications for end-user network
TA 10: Multimedia e-publishing and e-book technology
TA 11: Quality for audio, video and multimedia systems
TA 12: AV energy efficiency and smart grid application 
TA 13: Environmental aspects in the field of audio, video and ICT equipment
TA 14: Interfaces and methods of measurement for personal computing equipment

GMT: General Maintenance Team

Projects directly under TC 100

AGS: Advisory Group on Strategy
AGM: Advisory Group on Management

TC 100 officers

TA	Technical Area Manager	Technical Secretary
TA 1	Mr. Pekka Talmola (FI)	Mr. Hiroyuki Iga (JP)
TA 2	Dr. Hiroaki Sugiura (JP)	Mr. Jack Holm (US)
TA 4	Dr. Jae-Young Lee (KR)	Mr. Kwan-Soon Choi (KR)
TA 5	Dr. Lauli Halme (FI)	Mr. Eero Sorri (FI)
TA 6	Mr. Hideki Ohtaka (JP)	Mr. Koji Tsukada (JP)
TA 8	Mr. Shuichi Matsumura (JP)	Mr. Hironori Sakakihara (JP)
TA 9	Ms. Grace Wei (US)	Mr. Norimasa Minami (JP)
TA 10	Dr. Yashio Uemura (JP)	Mr. Yoshihisa Narui (JP)
TA 11	Mr. Junichi Yoshio (JP)	Mr. Mark Yonge (UK)
TA 12	Mr. Jon Fairhurst (US)	Mr. Toshihiro Inokuchi (JP)
TA 13	Mr. Ferdinand Hermann (DE)	Mr. Tsuyoshi Naruoka (JP)
TA 14	Mr. Shuichi Matsumura (JP)	Mr. Hironori Sakakihara (JP)
GMT	Mr. John Woodgate (UK)	Mr. Tadashi Ezaki (JP)

Measuring method of power consumption for AV equipment (TA 12, 14)

- IEC 62087
  - Methods of measurement for the power consumption of audio, video and related equipment
  - Ed. 2.0: TV part was revised
    (Moving picture was adopted for the test signal)
    - ◆Referred to by Energy Star in the US, ErP in Europe, MEPs in Australia and many others
  - Ed. 3.0: STB part was revised
  - Multi-part structure (Audio part, Video part will be revised)
- IEC 62623
  - Measuring the Energy Consumption of Desktop and Notebook Computers
  - Developed in TC 108, will be transferred to TC 100/TA 14 after completion

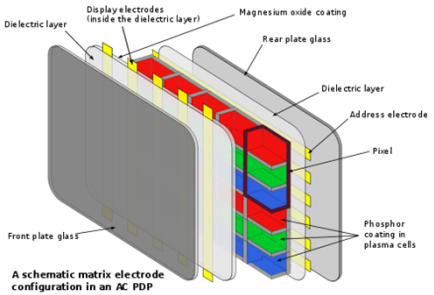
Development of IEC 62087 ed. 2.0

- Methods of measurement for the power consumption of audio, video and related equipment
- Equipment covered:
  - TV
  - Video Recorders
  - STB
  - Audio
  - Multi-function Equipment

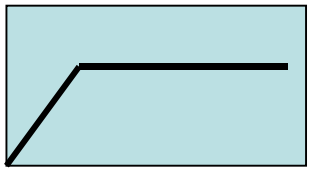
- Ed 1.0, TV power consumption measurement was based upon CRT-TV, not technology neutral, not representative of “real” viewing conditions
  - AHWG established to find a solution

Flat panel display technology

Plasma

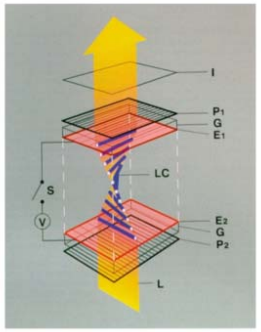


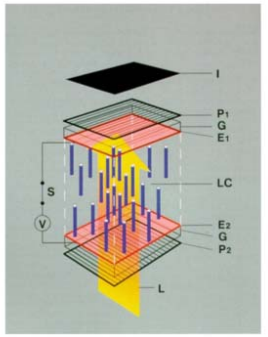
A schematic matrix electrode configuration in an AC PDP



- Power consumption varies greatly with input signal
- Lowest power consumption for black signal
- Very bright for small points of light; reduced brightness for large bright areas

LCD





For global backlight...

- Power consumption varies little with power; white signal can draw less power than black.
- Peak white level constant.

For locally dimmable backlight...

- Power varies somewhat with signal

Development of IEC 62087 Ed. 2.0

Experts

LCD Manufacturers Content with static signals Prefer bright content Low test complexity	Policymakers Want quick publication Technology neutral Accurate – no gaming Based on actual use
PDP Manufacturers Want dynamic signals Prefer dark content Low test complexity	IEC Follow procedures Respect copyright Content distributable

Reaching consensus was challenging

Development of IEC 62087 Ed. 2.0

- Topics: Testing, Measurement & Discussion
  - Power levels
  - Broadcast brightness levels
  - Modes & settings
    - Repair shops: 85% of TV owners don't adjust the picture
    - Use "out of the box settings"
  - Features & functions
    - What is plugged in & enabled?
  - Energy Saving Features
    - Automatic Brightness Control (ABC)
  - Audio power consumption
  - Temperature & humidity
  - Stabilization times

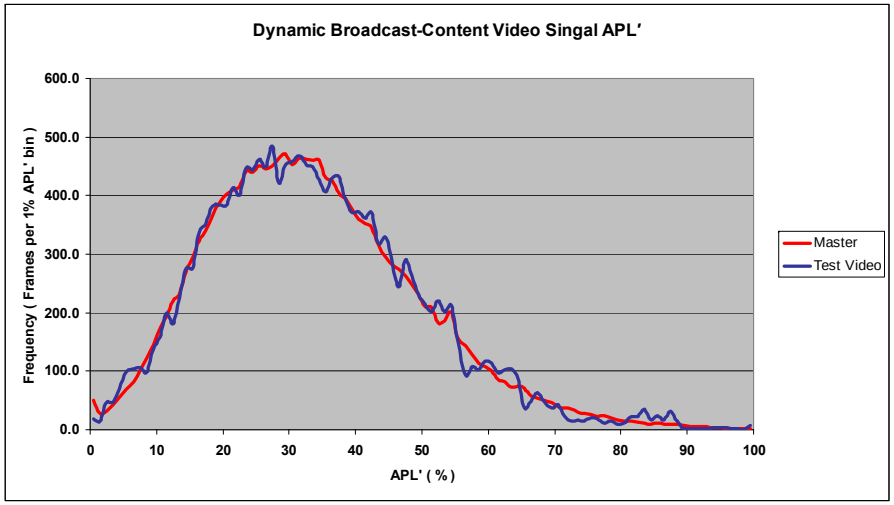
Video Content

- The source content topic was the most challenging item
- Requirements
  - Technology neutral
  - Accurate
  - Respect copyright
  - Low cost (time, equipment)
  - International
- Solution – Three signal content types
  - Static, dynamic broadcast, Internet

- 11.5 Static Video Signals
  - Black, white, color bars, 3-bar
  - Was being used in Japanese Environmental Law

Video Content

- 11.6 Dynamic Broadcast-Content Video Signal
  - Measured 200 hours of primetime broadcast levels in 5 countries
  - A ten minute loop of real video
  - Clips from available material selected by computer
  - 34% mean average picture level – pre gamma (APL')

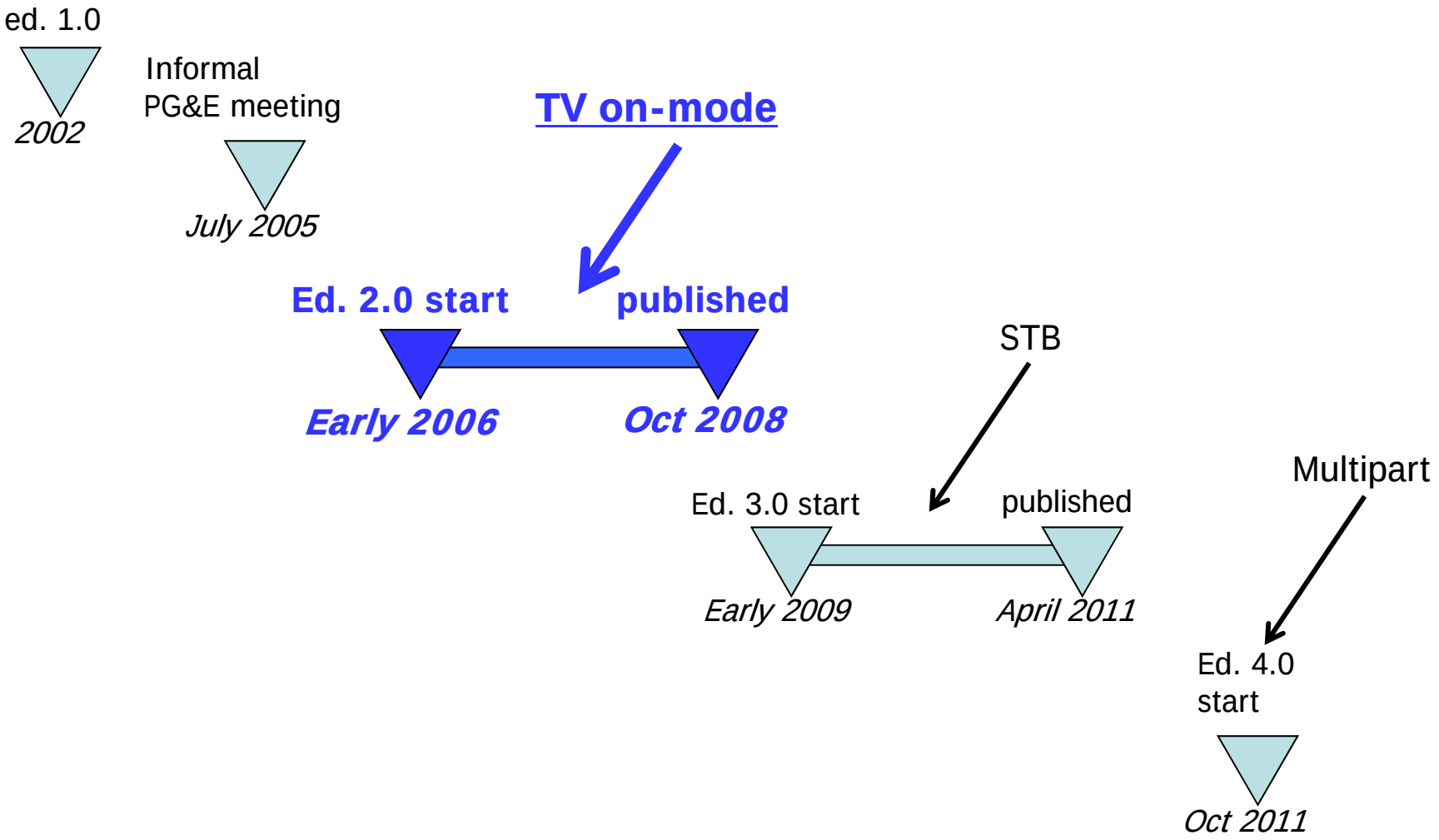


Development of IEC 62087 Ed. 2.0

- Initial meetings were face-to-face (negotiation phase)
- Later, phone meetings included online “real time minutes”
  - **Show the text** to ensure common understanding
  - Highlight, document, and review **Decisions**
  - Highlight, document, and review **Actions**
  - Send “real-time minutes” immediately after each meeting
- No voting – everything by consensus
- Video content
  - Acquired copyright agreements from all content providers
    - *BBC, CEA, Milwaukee Public TV, Sharp Labs of America*
  - A computer program selected the video clips, based on APL’
  - Delivered four versions:
    - *HD (Blu-ray) & SD (DVD), 60Hz & 50Hz*
  - Project experts reviewed the draft discs
  - PL worked directly with Central Office to enable Blu-ray publishing

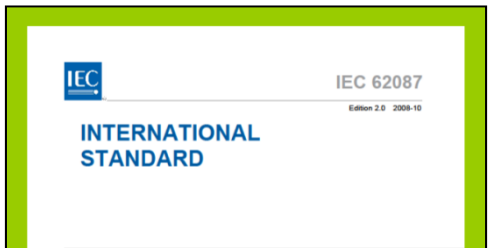
Development of IEC 62087 Ed. 2.0

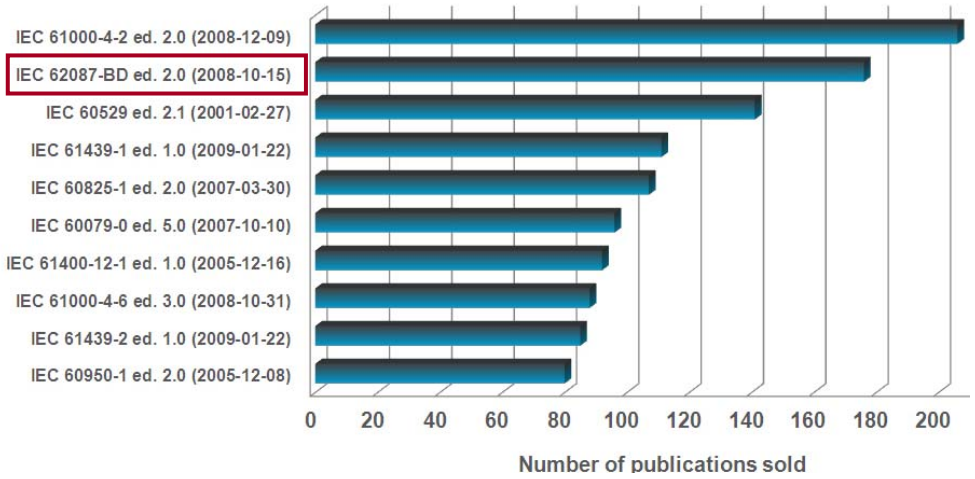
Timeline

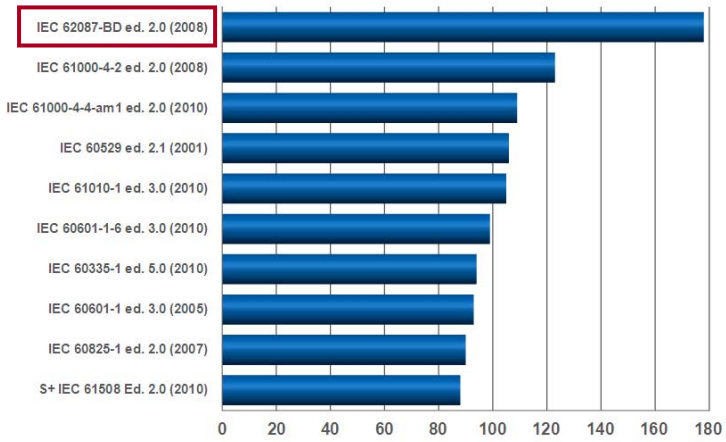


IEC 62087 Ed. 2 Publication

Published October, 2008





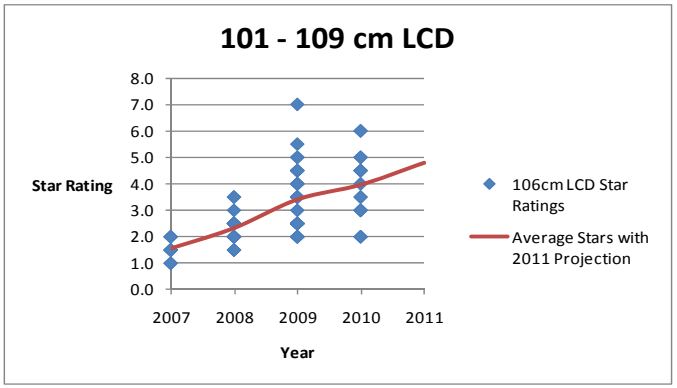


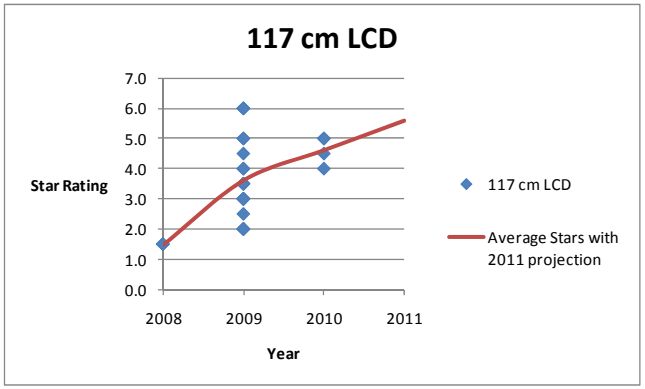
IEC's #2 selling standard in 2009

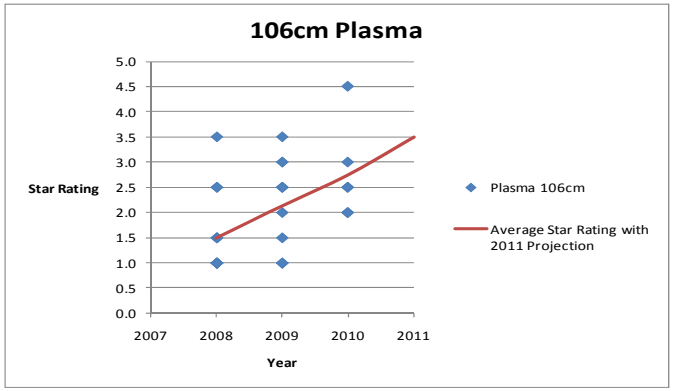
IEC's #1 selling standard in 2010

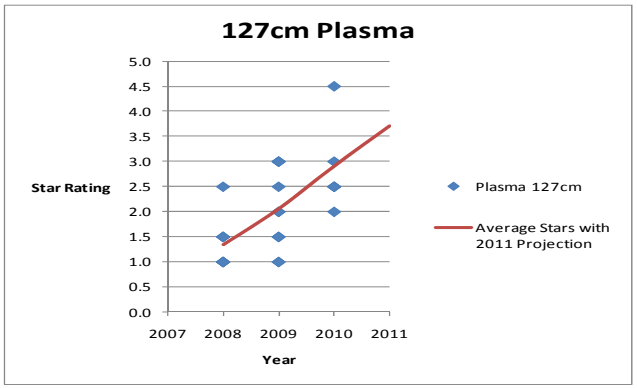
Adopted quickly by policymakers worldwide

TV Energy Efficiency in Australia









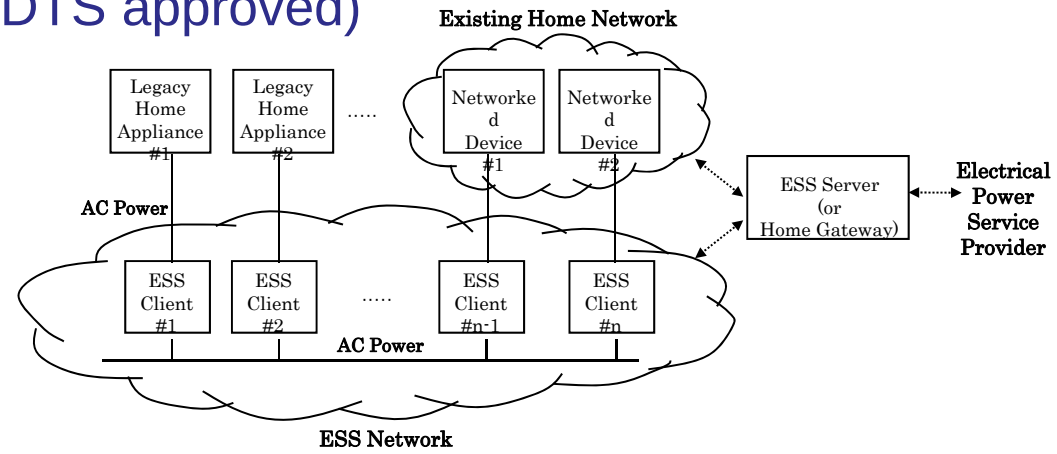
Both LCD & PDP TVs increased efficiency by ~60%

Data: Digital CEnergy Australia Pty Ltd

Smart Grid and Home Energy Management System, DC power distribution (TA 12)

Home is a demand side component of the Smart Grid
- TC 59 (White goods) and TC 100 cooperation
- Contribution to IEC SG 3 (Smart Grid) and SG 4 (Low voltage DC distribution)

- IEC 62654: *Energy Saving System (ESS): Conceptual Model for the Network Based Energy Consumption Measurement of AV Equipment and Systems* (DTS approved)
- SG 3 Task Group in AGS
- SG 4 Task Group in AGM



IEC TS 62654

- For 62654, DTS (Draft Technical Specification) has been circulated and already approved.
- The TS will be published soon, but the title may be changed by a suggestion from IEC CO editor. (Layered structure is recommended.)
- IEC TS 62654 is considered as a conceptual model to visualize power consumption in home. The project will need further investigation by analyzing various use cases
- TC 100 will continue investigation of measuring methods for power consumption of networked AV products by revision of IEC TS 62654 or developing another standard

Summary

- Network standby is within the scope of TA12 and we have a structure which can accept such work.
- We can show a history of results (62087 Ed. 2 & 3) as well as current activity (TV, STB, Video Recorders, Audio Equipment, Computer Monitors).
- We urge those who are interested in the topic to join their National Committee and to bring their proposals forward. TA12 has a manager and secretary who can assist new members with the IEC process.
- TC 100 welcomes suggestions and input for standardization activities

Thank you