

ISO/IEC JTC 1 "Information technology"

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SC 25 Business Plan 2025

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Description

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ISO/IEC JTC 1: INFORMATION TECHNOLOGY

ISO/IEC JTC 1/SC 25: INTERCONNECTION OF INFORMATION TECHNOLOGY EQUIPMENT

Strategic business plan for ISO/IEC JTC 1/SC 25; edition 2026

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(Please refer to JTC1-SC25/3328/Q & JTC1-SC25/3334/RQ)

1.0 Executive Summary

ISO/IEC JTC 1/SC 25 Scope

Standardization of microprocessor systems, interfaces, protocols, architectures and associated interconnecting media for information technology equipment and networks to support embedded and distributed computing environments, storage systems and other input/output components.

Standards for home and building electronic systems in residential and commercial environments to support interworking devices (IoT-related) and applications such as energy management, environmental control, lighting, and security.

Cabling system standards for information and communication technology (ICT), in all types of residential, commercial and industrial environments for the design, planning and installation, test procedures, automated infrastructure management systems and remote powering. In addition, the focus of the work is sustainability, network security, cybersecurity and ICT skills.

NOTE: JTC 1/SC 25 standards reference IEC standards for cables, waveguides and connectors.

ISO/IEC JTC 1/SC 25 was created in 1989 just two years after JTC 1 started. SC 25 addresses IT infrastructure, computer interfaces and electronic systems.

SC 25 International Standards support the development of Information Technology (IT) and Operational Technology (OT). The main target customers are manufacturers/developers of IT/OT devices and infrastructure, system integrators, consultants, planners, engineers, designers and installers in the area of IT and OT.

SC 25 working groups (WG's) are structured to provide expert participation relating to specific aspects of the SC 25 Scope and Work Program.

WG 1 – Home Electronic System:

Develops standards for home and building systems in residential and commercial environments to support interworking devices (IoT-related) and applications such as energy management, environmental control, lighting, and security. WG 1 develops a family of related standards and reports comprising the “Home Electronic System” (HES).

WG 3 – Customer Premises Cabling:

Standardization of characteristics of cabling systems and other IT/OT infrastructure for building and campus environments including planning and installation guides and test procedures.

Standards developed by WG 3 primarily relate to IT and OT infrastructure for commercial, residential, industrial and data center facilities. These standards also influence the design and implementation of IT and OT infrastructure for specialized use cases and environments that include transportation, marine, aerospace and energy sectors.

WG 5 – Taxonomy and Terminology of Intelligent Homes:

The main target of WG 5 is to support the development of specifications for intelligent homes by identifying missing standards; improving terms and definitions; and by achieving consistency among the terms defined in the specifications.

For new topics related to microprocessor systems, interfaces, protocols, architectures and associated interconnecting media for information technology equipment and networks to support embedded and distributed computing environments, storage systems and other input/output components, we are open to establish a WG again if we have support from new experts.

2.0 Environment

The home systems industry is in an active phase of commercialization especially with the growing focus on application interoperability, IoT, artificial intelligence (AI) technologies, and local power generation from solar panels and related equipment. Some industry marketing programs have re-branded home and building automation as IoT. SC 25 has been writing standards for interconnecting devices since inception. Therefore, standards developed in SC 25/WG 1 are relevant to this emerging market. WG 1 work program includes standards that uses AI elements focused on adapting energy management to the home or building environment.

Wired and wireless standards such as IEEE 802.3, IEEE 802.11 and others drive our standards development. These standards require increasing bandwidth and data rate and ability to transmit concurrent power and data.

Topics related to the scope of our working groups include:

- All electric society
- Internet of Things (IoT)
- Industry 4.0
- Artificial intelligence
- Environmental conditions
- EMC compliant networks

- Energy efficiency
- Sustainability
- Security

3.0 Achievements and benefits

The HES comprises a family of about 60 standards and technical reports that enable home and building occupants:

- To live more comfortably at home,
- To be more protected and feel safe at home,
- To work productively in smart buildings, and
- To live and work more economically with minimal environmental impact by reducing energy consumption and/or producing and storing or selling excess energy.

WG 3 deliverables and stakeholders primarily include:

- Standards and Technical Reports relating to all aspects of Information Technology (IT) and Operational Technology (OT)-cabling systems, and associated infrastructure used in diverse operating environments including building, campus, data center, and industrial.
- IT & OT infrastructure Providers, owners, designers, installers, and
- standardization committees referencing our standards to ensure reliability and interoperability of networking equipment, e.g., IEEE 802.3.

Sustainable Development Goals (SDG) are supported by standard ISO/IEC 14763-5 "Information technology – Implementation and operation of customer premises cabling – Part 5: Sustainability". The addition of single-pair cabling to our work program provides data and power to a wide range of IT and OT applications with less material while covering greater distances between active devices - enlarging service areas without the need for mains power or batteries. Standard ISO/IEC 11801-1 AMD 1 "Information technology — Generic cabling for customer premises – Part 1: General requirements" provides comprehensive requirements and guidance to support applications such as Single Pair Ethernet (SPE). Future work is planned to support a growing range of single-pair applications and use cases.

4.0 Participation and cooperation/collaboration.

SC 25 has 29 Participating countries and 18 Observer countries.

WG 1 and WG 5 experts represented 9 countries at meetings (some virtual) held in 2024 and 2025.

The WG 1 convenor writes articles for the trade press, speaks at conferences about the WG 1 accomplishments, and invites experts to contact their national bodies about participating in WG 1.

WG 3 consists of 60 to 70 experts joining two meetings per year with delegates from 18 to 22 countries.

As in many committees, some experts will discontinue participation in the coming years. Through public relations promoting newly published standards, we are working to elevate stakeholder awareness of this important work to promote broad market adoption of our publications and attract new experts.

SC 25 plans to inform the public about new projects through press releases and LinkedIn posts, to describe the relevance of the standards projects for the public and to attract new experts along the way.

SC 25 has liaison relationship with:

- JTC 1 liaisons
 - JTC 1 Information Technology (IT)
 - JTC 1/SC 27 Information security, cybersecurity and privacy protection
 - JTC 1/SC 41 Internet of Things and Digital Twin
 - JTC 1/SC 42 Artificial Intelligence
- ITU-T: International Telecommunication Union
- IEC liaisons:
 - IEC TC 1: Terminology
 - IEC TC 23: Electrical Accessories
 - IEC TC 34: Lighting
 - IEC TC 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories
 - IEC TC 46/SC 46A: Coaxial cables
 - IEC TC 46/SC 46C: Wires and symmetric cables
 - IEC TC 46/SC 46F: RF and microwave passive components
 - IEC TC 48 Electrical connectors and mechanical structures for electrical and electronic equipment
 - IEC TC 48/SC 48B: Electrical connectors
 - IEC TC 57: Power systems management and associated information exchange
 - IEC TC 64: Electrical installations and protection against electric shock
 - IEC TC 65: Industrial-process measurement, control and automation
 - IEC TC 65/SC 65C: Industrial networks
 - IEC TC 65/SC 65C/JWG 10: Industrial Cabling
 - IEC TC 86: Fibre optics
 - IEC TC 86/SC 86A: Fibres and cables

- IEC TC 86/SC 86B: Fibre optic interconnecting devices and passive components
- IEC TC 86/SC 86C: Fibre optic systems, sensing and active devices
- IEC TC 104: Environmental conditions, classification and methods of test
- IEC SyC Smart Cities: Electrotechnical aspects of Smart Cities
- CENELEC TC 205 WG18, Smart Grids
- CENELEC TC 215
- CISPR/CIS/I Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers
- ISO/IEC JTC 1/SC 25 Subgroups Liaisons to WG 1:
 - Consumer Technology Association (CTA)
 - GridWise Architecture Council (GWAC)
 - Interstate Renewable Energy Council (IREC)
 - Smart Electric Power Alliance (SEPA)
- ISO/IEC JTC 1/SC 25 Subgroups Liaisons to WG 2:
 - IEEE 802.3: Ethernet Working Group

Several experts work in this joint working groups:

- IEC SyC Active Assisted Living WG5, AAL in the connected home environment
- JMTG with IEC SC 46C and IEC SC 48B for modelling of cabling characteristics,
- SC 65 JWG 10 for applications in the industrial area

5.0 Objectives and strategies to achieve them

WG 1 standards facilitate consumer electronic products, networks, and services to interoperate or to operate, where feasible, as a single coherent system. This system benefits all stakeholders including product developers, manufacturers, service providers, installers, utilities, and consumers. HES consists of a network of networks that enables interoperation among consumer products, sensors, control devices, and user interfaces in homes and buildings with the potential for access to external services.

WG 3 provides long term generic solutions for IT-infrastructure. It watches applications, application standardization groups and the impact of mega trends and considers their impact on the IT-infrastructure.

One example is our newly introduced single-pair cabling as an extension to the infrastructure human-machine interface towards interconnection of objects for IoT, for "Industry 4.0", for the "All-Electric Society" and for artificial intelligence.

WG 3 has close liaison to application groups. Worldwide contributions of the experts within the working group. Information from international IT-conferences, e.g., IWCS. Input from national research projects, e.g., WIPANO from Germany.

Important and sustaining achievements within each working group are built on consensus between a diverse group of experts, some of whom have opposing interests.

6.0 Factors affecting completion and adoption of the work program

WG 1 has had consistent participation and project management by experts who have participated for many years.

WG 3 has experts from many countries and continents, each with unique practices, needs, strategies and priorities.

Experts from additional countries are always welcome in all working groups.

In that Working Groups rely on consensus building to advance their program of work, there is risk when a single organization sponsors experts from multiple countries. Strategies to mitigate this risk include expert participation that is sufficiently broad and diverse, combined with controls by each participating country to ensure transparency and accountability in positions taken at the national level. Properly applied, these strategies can effectively prevent outcomes that unfairly benefit one organization over the industry-at-large.

7.0 Structure, current projects, and publications

WG 1 standards include system architecture, communication protocols, device interfaces, network interfaces (gateways), cybersecurity to protect data, privacy, and safety, user interfaces, and applications such as energy management, lighting, and security systems.

The WG 1 standards are organized into the following related documents:

- ISO/IEC 10192 series, Information Technology – Home Electronic System (HES) for communication and user interfaces
- ISO/IEC 14543 series, Information Technology – Home Electronic System (HES) architecture including communication protocols
- ISO/IEC 15045 series, Information Technology – Home Electronic System (HES) gateway providing communication-protocol translation among home area networks and wide area networks; cybersecurity protection for data, privacy, and safety; and a platform for hosting application services
- ISO/IEC 15067 series, Information Technology – Home Electronic System (HES) application models for security, lighting, energy management, and safety
- ISO/IEC 18012 series, Information Technology – Home Electronic System (HES) interoperability”
- And others

Current projects and new projects in WG 1 since last update:

- ISO/IEC 14543-4-303 “Information technology – Home Electronic System (HES) architecture – Part-4-303 Application protocol for electric vehicle supply equipment (EVSE) chargers and controllers”

- ISO/IEC 14543-4-304 “Information technology – Home Electronic System (HES) architecture – Part-4-304 Application protocol for electric vehicle supply equipment (EVSE) charger and dischargers and controllers”
- ISO/IEC 14543-5-105 “Information technology – Home Electronic System (HES) architecture – Part 5-105: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – RA server-based smart lock application – Test and verification”
- ISO/IEC 14543-5-106, “Information technology – Home Electronic System (HES) architecture – Part 5-106: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Networked fitness exercise equipment system”
- ISO/IEC 14543-5-107, “Information technology – Home Electronic System (HES) architecture – Part 5-107: Intelligent grouping and resource sharing for HES Class 2 and Class 3 – Networked fitness exercise equipment application profile”
- ISO/IEC 15045-5-1 ED1 “Information Technology — Home Electronic System (HES) gateway — Part 5-1: Application services – Overview, foundation, and requirements”
- ISO/IEC 15045-5-2 ED1 “Information Technology — Home Electronic System (HES) gateway — Part 5-2: Application services – Energy management and measurement application (EMMA)”
- ISO/IEC 15067-5 ED1 “Information technology — Home Electronic System (HES) application models — Part 5: A safety framework and guidelines for control and data communication messages”

Recent and pending publications

- ISO/IEC 10192-4-1, “Information technology — Home Electronic System (HES) interfaces — Part 4-1: Common user interface and cluster-to-cluster interface to support interworking among home cluster systems — Architecture
- ISO/IEC 10192-4-2 “Information technology — Home Electronic System (HES) interfaces — Part 4-2: Common user interface and cluster-to-cluster interface to support interworking among home cluster systems — Interfaces, services and objects
- ISO/IEC 10192-4-3 “Information technology — Home Electronic System (HES) interfaces — Part 4-3: Common user interface and cluster-to-cluster interface to support interworking among home cluster systems – Messaging”
- ISO/IEC 15045-3-1 ED1 “Information technology — Home Electronic System (HES) gateway — Part 3-1: Introduction to privacy, security, and safety”
- ISO/IEC 15045-3-2 ED1 “Information technology — Home Electronic System (HES) gateway — Part 3-2: Privacy Framework”
- ISO/IEC 15045-4-1 ED1 “Information Technology — Home Electronic System (HES) gateway — Part 4-1: Structural classes”
- ISO/IEC 15045-4-2 ED1 “Information Technology — Home Electronic System (HES) gateway — Part 4-2: Structural classes — Simple gateway”
- ISO/IEC 15067-3 ED2 “Information Technology — Home Electronic System (HES) application model — Part 3: Model of an energy management system for HES”

- ISO/IEC 15067-3-30, “Information technology — Home Electronic System (HES) application model — Part 3-30: Energy management agent functional requirements and interfaces
- ISO/IEC 15067-3-51, “Information technology — Home Electronic System (HES) application model — Part 3-51: Framework of a narrow AI engine for a premises energy management system using energy management agents
- ISO/IEC 18012-3 ED1 “Information Technology — Home Electronic System — Guidelines for product interoperability — Part 3: Lexicon”
- ISO/IEC 18012-4 ED1 “Information Technology — Home Electronic System — Guidelines for product interoperability — Part 4: Event encoding”

The top project includes:

- ISO/IEC 15067-3 ED2 “Information Technology — Home Electronic System (HES) application model — Part 3: Model of an energy management system for HES”: this document addresses consumer energy management more generally, rather than just demand response and focuses on energy management controlled by consumers.

In the WG 3-meetings we work with ad hoc groups responsible for different projects.

Current projects and new projects in WG 3 since last update:

- ISO/IEC 11801-1/AMD1 ED1: Amendment 1 - Information technology - Generic cabling for customer premises - Part 1: General requirements
- ISO/IEC 11801-6/AMD1 ED1: Amendment 1 - Information technology - Generic cabling for customer premises - Part 6: Distributed building services
- ISO/IEC TS 11801-9903 ED2: Information technology - Generic cabling for customer premises - Part 9903: Matrix modelling of channels and links
- ISO/IEC 14763-6 ED1: Information Technology – Implementation and operation of customer premises cabling – Part 6: Best practices for installation and quality control of cabling systems
- ISO/IEC 24383 ED1: Information technology - Generic cabling – Physical network security for the accommodation of customer premises cabling infrastructure and information technology equipment
- ISO/IEC 30129/AMD2 ED1: Amendment 2 – Information technology – Telecommunications bonding networks for buildings and other structures

Recently published WG 3 standards:

- ISO/IEC TR 11801-9906 ED2 “Information technology - Generic cabling for customer premises – Part 9906: Balanced single-pair cabling channels up to 600 MHz for single-pair Ethernet (SPE)”

- ISO/IEC TR 11801-9911 ED1 "ISO/IEC 11801-9911: Guidelines for the use of balanced single pair applications within a balanced 4 pair cabling system"
- ISO/IEC 14763-5 ED1 "Information technology – Implementation and operation of customer premises cabling – Part 5 Sustainability"
- ISO/IEC TS 29125/AMD2 ED1 "Amendment 2 - Information technology - Telecommunications cabling requirements for remote powering of terminal equipment"

Visibility should be given to the following projects:

- Single-pair Cabling. Stakeholders include IEEE 802.3 and the "All-Electric Society;"
- Sustainability in support of UN 17 SDG;
- Infrastructure security in support of cyber safety; and
- ICT skills.

The top projects include:

- Single Pair cabling infrastructure to support ongoing market adoption of IP-enabled networking protocols for existing OT applications, and enable the use of Ethernet technology for new applications with the following documents:
 - ISO/IEC 11801-1 AMD 1 "Information technology — Generic cabling for customer premises – Part 1: General requirements
 - ISO/IEC 11801-3 AMD 1 "Information technology — Generic cabling for customer premises – Part 3: Industrial premises
-since it contains already the single-pair cabling at least for industry applications
 - ISO/IEC 11801-6 AMD 1 "Information technology — Generic cabling for customer premises – Part 6: Distributed building services
- ISO/IEC 14763-3 Ed 3 "Information technology – Implementation and operation of customer premises cabling – Part 3: Testing of optical fibre cabling"
-because it includes testing of MPO-cabling, normative inspection for cleanliness and new test limits for connector attenuation against reference connector
- New project to define required skills for ICT system design, installation and administration, plus uniform certification program requirements to ensure a consistently high level of quality, performance and longevity of installed IT & OT cabling and supporting infrastructure. Project deliverable will be publication of ISO/IEC 14763-6 3 "Information technology – Implementation and operation of customer premises cabling – Part 6: ICT skills