

This document contains supplemental information referenced by the European Rolling Plan for ICT Standardisation

IEEE Standards Activities in the eHealth Space

Overview

IEEE has many standards in the eHealth technology area, from body area networks to 3D modeling of medical data. Another area is the IEEE 11073™ family of standards under Health Informatics/ Device Communication for data interoperability and architecture. IEEE 11073 standards are designed to help healthcare product vendors and integrators create devices and systems for disease management, health and fitness, and independent living that can help save lives and improve quality of life for people worldwide.

IEEE is part of a larger ecosystem and has active collaborative relationships with other global organizations such as:

- Health Level Seven International (HL7), with a focus on data exchange / delivery
- Integrating the Healthcare Enterprise (IHE), with a focus on development domain integration and content profiles
- Logical Observation Identifiers Names and Codes (LOINC), with a focus on medical laboratory observations
- ISO and CEN, both of which adopt many of the IEEE 11073 standards

This allows IEEE standards to be developed and used within a framework for interoperable medical device communications worldwide.

The growing IEEE 11073 family of standards is intended to support interoperable communications for personal health devices and convey far-ranging potential benefits, such as reducing clinical decision-making from days to minutes, reducing gaps and errors across the spectrum of healthcare delivery, and helping to expand the potential market for the medical devices themselves.

The other prong of the IEEE EMB standards development portfolio is the EMB Standards Committee. The EMB Standards Committee encourages, facilitates, promotes, and coordinates standards development activities that are useful and appropriate in the fields of medicine and biology. Current areas of interest include: Location Services for Healthcare, Audiometric Systems/Devices, Three-Dimensional Medical Modeling, Consumer Wearables, Brain- Machine Interface Systems/Devices, Blockchain and Distributed Ledger Technology (DLT) in Health, Artificial Intelligence Medical Devices, Open Mobile Health, and Clinical IoT Data and Device Interoperability with TIPPSS (Trust, Identity, Privacy, Protection, Safety, Security)..

Relevant Standards Activities

Approved Standards*

- IEEE Std 139, IEEE Recommended Practice for the Measurement of Radio Frequency Emission from Industrial, Scientific, and Medical (ISM) Equipment Installed on User's Premises
- IEEE Std 602, IEEE Recommended Practice for Electric Systems in Health Care Facilities
- IEEE 802 series on wired and wireless networking
- IEEE Std 802.15.6-2012, IEEE Standard for Wireless Body Area Networks
- IEEE Std 1708-2014, IEEE Standard for Wearable Cuffless Blood Pressure Measuring Devices
- IEEE Std 1789, IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers
- IEEE Std 1859, IEEE Standard for Relaxor-Based Single Crystals for Transducer and Actuator Applications
- IEEE Std 2010-2012, IEEE Recommended Practice for Neurofeedback Systems
- IEEE Std 3333.1.1-2015, IEEE Standard for Quality of Experience (QoE) and Visual-Comfort Assessments of Three-Dimensional (3D) Contents Based on Psychophysical Studies
- IEEE Std 3333.1.2-2017, IEEE Approved Draft Standard for the Perceptual Quality Assessment of Three Dimensional (3D) and Ultra High Definition (UHD) Contents
- IEEE Std 3333.2.1-2015, IEEE Recommended Practice for Three-Dimensional (3D) Medical Modelling
- IEEE Std 11073-00103-2012, Health informatics--Personal health device communication--Part 00103: Overview
- IEEE Std 11073-10101a-2015, IEEE Standard Health informatics--Point-of-care medical device communication --Part 10101: Nomenclature Amendment 1: Additional Definitions
- IEEE Std 11073-10101-2004, Health informatics--Point-of-care medical device communication--Part 10101: Nomenclature
- IEEE Std 11073-10102-2012, Health informatics--Point-of-care medical device communication--Part 10102: Nomenclature--Annotated ECG
- IEEE Std 11073-10103-2012, Health informatics--Point-of-care medical device communication--Part 10103: Nomenclature--Implantable device, cardiac
- IEEE Std 11073-10201-2004, Health informatics--Point-of-care medical device communication--Part 10201: Domain information model
- IEEE Std 11073-10207-2017, IEEE Health informatics--Point-of-care medical device communication Part 10207: Domain Information and Service Model for Service-Oriented Point-of-Care Medical Device Communication
- IEEE Std 11073-10404-2010, Health informatics--Personal health device communication--Part 10404: Device specialization--Pulse oximeter
- IEEE Std 11073-10406-2011, Health informatics--Personal health device communication--Part 10406: Device specialization--Basic electrocardiograph (ECG) (1-to 3-lead ECG)
- IEEE Std 11073-10407-2010, Health informatics--Personal health device communication --Part 10407: Device specialization--Blood pressure monitor

- IEEE Std 11073-10408-2010 Health informatics--Personal health device communication--Part 10408: Device specialization--Thermometer
- IEEE Std 11073-10415-2010, Health informatics--Personal health device communication--Part 10415: Device specialization--Weighing scale
- IEEE Std 11073-10417-2015, Health informatics--Personal health device communication--Part 10417: Device specialization--Glucose meter
- IEEE Std 11073-10418-2011, Health informatics--Personal health device communication--Part 10418: Device specialization--International Normalized Ratio (INR) monitor
- IEEE Std 11073-10418-2011/Cor 1-2015, Health informatics--Personal health device communication--Part 10418: Device specialization--International Normalized Ratio (INR) monitor--Corrigendum 1
- IEEE Std 11073-10419-2017, Health informatics--Personal health device communication--Part 10419: Device Specialization--Insulin Pump
- IEEE Std 11073-10419-2015, Health informatics--Personal health device communication--Device specialization--Insulin pump
- IEEE Std 11073-10420-2010, Health informatics--Personal health device communication--Part 10420: Device specialization--Body composition analyzer
- IEEE Std 11073-10421-2010, Health informatics--Personal health device communication--Part 10421: Device specialization--Peak expiratory flow monitor (peak flow)
- IEEE Std 11073-10422-2016, Health informatics--Personal health device communication--Part 10422--Device specialization--Urine analyzer
- IEEE Std 11073-10424-2014/Cor 1-2017, IEEE Standard - Health informatics--Personal health device communication--Part 10424: Device Specialization--Sleep Apnoea Breathing Therapy Equipment (SABTE) - Corrigendum 1
- IEEE Std 11073-10424-2014, Health informatics--Personal health device communication--Part 10424: Device specialization--Sleep apnea breathing therapy equipment (SABTE)
- IEEE Std 11073-10425-2017, Health informatics--Personal health device communication--Part 10425: Device Specialization--Continuous Glucose Monitor (CGM)
- IEEE Std 11073-10427-2016, Health informatics--Personal health device communication--Part 10427: Device specialization--Power Status Monitor of Personal Health Devices
- IEEE Std 11073-10441-2013, Health Informatics--Personal health device communication--Part 10441: Device specialization--Cardiovascular fitness and activity monitor
- IEEE Std 11073-10442-2008, Health informatics--Personal health device communication--Part 10442: Device specialization--Strength fitness equipment
- IEEE Std 11073-10471-2008, Health informatics--Personal health device communication--Part 10471: Device specialization--Independent living activity hub
- IEEE Std 11073-10472-2010, Health informatics--Personal health device communication--Part 10472: Device specialization--Medication monitor
- IEEE Std 11073-20101-2004, Health informatics--Point-of-care medical device communication--Application profile--Base standard
- IEEE Std 11073-20601-2010, Health informatics--Personal health device communication--Part 20601: Application profile--Optimized exchange protocol

- IEEE Std 11073-20702, IEEE Health informatics--Point-of-care medical device communication--Part 20702: Medical Devices Communication Profile for Web Services
- IEEE Std 11073-30200-2000, Health informatics--Point-of-care medical device communication--Part 30200: Transport profile--Cable connected
- IEEE Std 11073-30200a-2011, Health informatics--Point-of-care medical device communication--Part 30200: Transport profile--Cable connected Amendment 1
- IEEE Std 11073-30400-2010, Health informatics--Point-of-care medical device communication--Part 30400: Interface profile--Cabled Ethernet
- IEEE Std 2010, IEEE Recommended Practice for Neurofeedback Systems
- IEEE Std C95.1, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
- IEEE Std C95.1-2345, IEEE Standard for Military Workplaces--Force Health Protection Regarding Personnel Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

Current New or Revision Projects*

- IEEE 360, Draft Standard for Wearable Consumer Electronic Devices - Overview and Architecture
- IEEE P1708, Draft Standard for Wearable Cuffless Blood Pressure Measuring Devices
- IEEE P1752, Draft Standard for Mobile Health Data
- IEEE P1847, Draft Recommended Practice for Common Framework of Location Services (LS) for Healthcare
- IEEE P2418.6, Draft Standard for the Framework of Distributed Ledger Technology (DLT) Use in Healthcare and the Life and Social Sciences
- IEEE P2650, Draft Standard for Enabling Mobile Device Platforms To Be Used As Pre-Screening Audiometric Systems
- IEEE P2673, Draft Standard for Patient Digital Biomedical Data Files with 3D Topological Mapping of Macroanatomy and Microanatomy for Use in Big Data and Augmented Intelligence Systems
- IEEE P2721, Draft Standard for Wireless Health Device Security Assurance
- IEEE P2725.1, Draft Standard for Microwave Structural, Vascular or Functional Medical Imaging Device Safety
- IEEE P2727, Draft Standard for Wireless Health Device Security Assurance
- IEEE P2727.1, Draft Standard for Conformity Assessment Testing of Cardiac Defibrillators for Legal Metrology Purposes
- IEEE P2730, Draft Standard for Classification, Terminologies, and Definitions of Medical Robots
- IEEE P2733, Draft Standard for Clinical Internet of Things (IoT) Data and Device Interoperability with TIPPSS - Trust, Identity, Privacy, Protection, Safety, Security
- IEEE P2788, Draft Standard for Circulating Air Pressure Physiotherapy Equipment Used in the Home Healthcare Environment
- IEEE P2791, IEEE Draft Standard for Bioinformatics Computations and Analyses Generated by High-Throughput Sequencing (HTS) to Facilitate Communication

- IEEE P2792, Draft Standard for Therapeutic Electrical Stimulation Waveforms
- IEEE P2794, Draft Standard for Reporting of In Vivo Neural Interface Research
- IEEE P2801, Draft Recommended Practice for the Quality Management of Datasets for Medical Artificial Intelligence
- IEEE P2802, Draft Standard for the Performance and Safety Evaluation of Artificial Intelligence Based Medical Device: Terminology
- IEEE P3141, Draft Standard for 3D Body Processing
- IEEE P3333.2.2, Draft Standard for Three-Dimensional (3D) Medical Visualization
- IEEE P3333.2.3, Draft Standard for Three-Dimensional (3D) Medical Data Management
- IEEE P3333.2.4, Draft Standard for Three-Dimensional (3D) Medical Simulation
- IEEE P3333.2.5, Draft Bio-CAD File Format for Medical Three-Dimensional (3D) Printing
- IEEE P3333.2.5.1, Draft Standard for Soft Tissue Modeling for Medical 3D Printing
- IEEE P3333.2.5.2, Draft Standard for Hard Tissue Modeling for 3D Printing
- IEEE P3333.2.5.3, Draft Standard for Surgical Guide Design Modeling for Medical 3D Printing
- IEEE P3333.2.5.4, Draft Standard for Artificial Joint Implant Design Modeling for Medical 3D Printing
- IEEE P333.2.5.5, Draft Standard for In Vivo Evaluation of 3D Printed Polymeric scaffolds in bone defects
- IEEE P11073-10101, Draft Standard for Health informatics--Point-of-care medical device communication--Part 10101: Nomenclature
- IEEE P11073-10101b, Draft Health informatics--Point-of-care medical device communication--Part 10101: Nomenclature Amendment 2: Additional definitions
- IEEE P11073-10103a, Draft Health informatics--Point-of-care medical device communication--Part 10103: Nomenclature--Implantable device, cardiac Amendment 1: Additional definitions
- IEEE P11073-10201, Draft Health Informatics--Point-of-Care Medical Device Communication - Domain Information Model
- IEEE P11073-10316, Draft Trial-Use Health Informatics--Point-of-Care Medical Device Communication--Device Specialization--Dialysis device
- IEEE P11073-10404, Draft Standard for Health Informatics--Personal health device communication--Part 10404: Device Specializations--Pulse oximeter
- IEEE P11073-10406, Draft Standard for Health informatics--Personal health device communication--Part 10406: Device specialization--Basic electrocardiograph (ECG) (1- to 3-lead ECG)
- IEEE P11073-10407, Draft Standard for Health Informatics--Personal health device communication--Part 10407: Device specialization--Blood pressure monitor
- IEEE P11073-10408, Draft Standard for Health informatics--Personal health device communication--Part 10408: Device specialization--Thermometer
- IEEE P11073-10415, Draft Standard for Health informatics--Personal health device communication--Part 10415: Device specialization--Weighing scale
- IEEE P11073-10417, Draft Health Informatics--Personal Health Device Communication Part 10417: Device Specialization - Glucose Meter
- IEEE P11073-10419, Draft Standard for Health Informatics--Personal Health Device Communication--Part 10419: Device Specialization--Insulin Pump
- IEEE P11073-10420, Draft Standard for Health informatics--Personal health device

- communication--Part 10420: Device specialization--Body composition analyzer
- IEEE P11073-10424, Draft Standard for Health informatics--Personal health device communication--Part 10424: Device specialization--Sleep Apnoea Breathing Therapy Equipment (SABTE)
 - IEEE P11073-10425, Draft Standard for Health informatics--Personal health device communication--Part 10425: Device specialization--Continuous glucose monitoring (CGM)
 - IEEE P11073-10426, Draft Health Informatics--Personal Health Device Communication - Device Specialization - Home Healthcare Environment Ventilator
 - IEEE P11073-10428, Draft Health Informatics--Personal Health Device Communication - Device Specialization - Electronic Stethoscope
 - IEEE P11073-10442, Draft Health Informatics--Personal Health Device Communication Part 10442: Device Specialization - Strength Fitness Equipment
 - IEEE P11073-10471, Draft Standard for Health informatics--Personal health device communication--Part 10471--Device specialization--Independent living activity hub
 - IEEE P11073-20101, Draft Standard for Health informatics--Point-of-care medical device communication--Application profile--Base standard
 - IEEE P11073-20601, Draft Standard for Health informatics--Personal health device communication--Part 20601: Application profile--Optimized exchange protocol
 - IEEE P11073-20701, Draft Standard for Service-Oriented Medical Device Exchange Architecture & Protocol Binding
 - IEEE P982.1, Draft Standard for Measures of the Software Aspects of Dependability
 - IEEE P3141, Draft Standard for 3D Body Processing
 - IEEE PC95.1, Draft Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic and Electromagnetic Fields, 0 Hz to 300 GHz

**Draft standards projects, once approved, are often revised and/or used as the base for new projects, and therefore may appear in both the “active standards” and “projects under development” lists.*

***For the full and most-up-to-date list, please go to <https://standards.ieee.org/standard/index.html>*