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**ISO/IEEE
11073-10701**

Health informatics — Device interoperability —

Part 10701: Point-of-care medical device communication — Metric provisioning by participants in a Service-oriented Device Connectivity (SDC) system

Informatique de santé — Interopérabilité des dispositifs —

Partie 10701: Communication entre dispositifs médicaux sur le site de soins – Fourniture de métriques par les participants à un système de connectivité des dispositifs orientée services (SDC)

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Abstract: Medical devices that offer a communication interface as specified by the IEEE 11073 Service Oriented Device Connectivity (SDC) standards can be integrated into a health IT system to jointly execute system functions. However, implementing the IEEE 11073 SDC communication protocol is not sufficient to demonstrate safety, effectiveness, and security of system functions resulting from the combination of system function contributions from two or more medical devices. SDC participant key purposes (PKPs) are sets of requirements that allow for manufacturers to have certain expectations about BICEPS participants from other manufacturers. This common understanding enables the manufacturers to perform risk management, verification, validation, and usability engineering for the safe use of system functions. This standard defines requirements for SDC metric participants in an SDC system that comprises an IT network of medical devices to enable safe and secure contribution to system functions based on the exchange of metric information.

Keywords: base PKP; BICEPS; communication protocol specification; device component; documentation and process responsibilities; dynamic medical device interoperability; IEEE 11073-10701™; integrated clinical environment; medical device communication; metric; metric PKP; participant key purpose; point-of-care service-oriented device connectivity; risk management; safety, effectiveness, and security; SDC; system function; system function contribution; usability engineering

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Introduction

This introduction is not part of IEEE Std 11073-10701-2022, Health Informatics—Device Interoperability—Part 10701: Point-of-Care Medical Device Communication—Metric Provisioning by Participants in a Service-Oriented Device Connectivity (SDC) System.

The IEEE 11073 Point-of-Care Medical Device Communication Standards enable communication between health IT elements in a HEALTH IT SYSTEM including MEDICAL DEVICES. They provide automatic and detailed electronic data capture of patient vital signs information and device operational data. The primary goals are to:

- Provide real-time plug-and-play interoperability for MEDICAL DEVICES. “Real-time” means that data from multiple MEDICAL DEVICES can be retrieved, temporally correlated, displayed, and processed in fractions of a second. “Plug-and-play” means that there are no recurring configuration steps necessary to enable data exchange between MEDICAL DEVICES.
- Facilitate the efficient and effective exchange of vital signs and MEDICAL DEVICE data acquired at the PoC in all health care environments. “Efficient and effective exchange of MEDICAL DEVICE data” means that data captured at the PoC, e.g., patient vital signs, can be received, parsed, and interpreted by different types of applications without the loss of safety-critical information.

The IEEE 11073 Point-of-Care Medical Device Communication Standards are targeted at surgical as well as acute and continuous care devices, such as patient monitors, ventilators, infusion pumps, ECG devices, endoscopic camera systems, insufflators, dissectors, etc. They build a family of standards that can be bound to one another to provide optimized connectivity for devices at the PoC.

Within the context of the ISO/IEEE 11073 family of standards for Point-of-Care Medical Device Communication, this standard defines the requirements for SDC METRIC PARTICIPANTs in an SDC SYSTEM that comprises an IT NETWORK of MEDICAL DEVICES to enable safe and secure contribution to SYSTEM FUNCTIONs based on the exchange of METRIC information.

Examples of such SYSTEM FUNCTIONs are remote display, calculation of derived parameters based on METRIC information, and partial automation of diagnosis and therapy, such as changing settings based on received METRIC information.

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Health Informatics—Device Interoperability

Part 10701: Point-of-Care Medical Device Communication—Metric Provisioning by Participants in a Service-Oriented Device Connectivity (SDC) System

1. Overview

1.1 Scope

This standard specifies a set of Participant Key Purposes (PKPs) pertaining to metric data exchange for the Service-oriented Device Connectivity (SDC) series of standards. PKPs are role-based sets of requirements for products in order to support safe, effective, and secure interoperability in medical IT networks at point-of-care environments such as the intensive care unit (ICU), operating room (OR) or other acute care settings. This standard specifies both product development process and technical requirements.

1.2 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).^{1,2}

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (*can* equals *is able to*).

1.3 Service-oriented Device Connectivity standards

The SDC STANDARDS are a subset of the IEEE 11073 standards and define requirements for MEDICAL DEVICES and other participants that exchange physiological or technical information or enable external control while being operated in an IT NETWORK.

The SDC STANDARDS comprise the specification of a domain and message model (IEEE Std 11073-10207) and transport technology (IEEE Std 11073-20702) that form a service-oriented MEDICAL DEVICE architecture (IEEE Std 11073-20701).³ These SDC core standards constitute the technical building blocks for foundational, structural, and semantic MEDICAL DEVICE interoperability over secure data transmission. The SDC PKP STANDARDS (see 1.4) and particular SDC Device Specializations address additional levels.

1.4 Participant key purposes

MEDICAL DEVICES that offer a communication interface as specified by the SDC STANDARDS can be integrated into a HEALTH IT SYSTEM on behalf of the SYSTEM OWNER, establishing an SDC SYSTEM to be used by the HEALTHCARE DELIVERY ORGANIZATION.

¹ The use of the word *must* is deprecated and cannot be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.

² The use of *will* is deprecated and cannot be used when stating mandatory requirements; *will* is only used in statements of fact.

³ Information on references can be found in Clause **Error! Reference source not found.**