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Health informatics—Point of care medical device communication

Part 10207: Domain Information and Service Model for Service-Oriented Point-of-Care Medical Device Communication

Corrigendum 1

IEEE Engineering in Medicine and Biology Society

Developed by the
IEEE 11073™ Standards Committee

IEEE Std 11073-10207™-2017/Cor 1-2025
(Corrigendum to IEEE Std 11073-10207-2017)

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IEEE 11073™ Standards Committee
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Approved 10 September 2025

IEEE SA Standards Board

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Abstract: The IEEE 11073-10207-2017 standard falls within the context of the ISO/IEEE 11073™ family of standards for point-of-care medical device communication. In this standard, a Participant Model is derived from the ISO/IEEE 11073-10201 Domain Information Model. The Participant Model specifies the structure of medical information objects. Additionally, the standard defines an abstract Communication Model to facilitate the exchange of medical information objects. Both the Participant Model and Communication Model elements are specified using XML Schema. The core subjects covered by the Participant Model include the modeling of medical device-related data (such as measurements and settings), alert systems, contextual information (such as patient demographics and location), remote control, and archival information. XML Schema is utilized to provide extensibility to the model. The corrigenda for this standard comprise fixes related to definition terms, requirements, and a significant retrofit of the versioning concept. It modifies the standard so that it remains accurate and up-to-date, addressing any issues that may have arisen since its initial publication.

Keywords: BICEPS, communication protocol specification, dynamic medical device interoperability, IEEE 11073-10207™, integrated clinical environment, medical device communication, point-of-care, remote control, safety, service-oriented architecture, service-oriented device connectivity, SDC, system function, xml schema

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Introduction

This introduction is not part of IEEE Std 11073-10207™ Health informatics—Point-of-care medical device communication—Part 10207: Domain Information and Service Model for Service-Oriented Point-of-Care Medical Device Communication—Corrigendum 1.

The IEEE 11073-10207-2017 standard is a crucial component of the ISO/IEEE 11073™ family of standards, which focuses on point-of-care medical device communication. In this context, the standard defines a Participant Model derived from the ISO/IEEE 11073-10201 Domain Information Model. This Participant Model outlines the structure of medical information objects, including data related to measurements, settings, alert systems, contextual information (such as patient demographics and location), remote control, and archival data. The use of XML Schema enables model extensibility.

Additionally, the standard introduces an abstract Communication Model that facilitates the exchange of medical information objects. Both the Participant Model and Communication Model are specified using XML Schema, providing a robust framework for interoperability in healthcare environments.

The corrigendum for this standard addresses various issues that have arisen since its initial publication. It includes fixes related to definition terms, requirements, and a significant retrofit of the versioning concept. By incorporating these corrections, the standard remains accurate and relevant, ensuring seamless communication between medical devices and systems.

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Contents

Correction to Introduction 15

1. Overview 16
1.3 Word usage 16

2. Normative references 16

3. Definitions and notational conventions 16
3.1 Definitions 16
3.2.2 XML Schema namespaces 19
3.2.4 XML Schema type description 19

5. Participant Model 19
5.2.1 General 19
5.2.2 Handle 19
5.2.3 Coded value 20
5.2.4.1 General 20
5.2.4.3 Comparison 21
5.2.5.2 Descriptor version 21
5.2.5.3 State version 22
5.2.5.4 MdDescription version 23
5.2.5.5 MdState version 23
5.2.5.6 MDIB version 23
5.3.1 General 25
5.3.6 Battery 25
5.3.7 SystemContext 25
5.3.8 SCO 27
5.3.9 Operation 28
5.3.12.1 General 28
5.3.12.2 Time-related attributes 28
5.3.12.3 Detect obsolete metric values 29
5.3.13 AlertSystem 29
5.3.14 Safety Classification 30
5.4.1 General 30
5.4.2 Mapping between descriptor and state 31
5.4.3 Single state vs. multi-state 31
5.4.4 Context state 31
5.4.6 Device component and metric activation 32
5.4.7 Metric activation state 34
5.4.8 SCO operation activation state 35
5.4.9.1 General 36
5.4.9.2 Alert condition presence 36
5.4.9.3 Present alarm conditions 36
5.4.9.4 Valid alert attribute combinations 37

7. Communication Model 39
7.3.2 GET SERVICE 39
7.3.3 SET SERVICE 39
7.3.5 STATE EVENT SERVICE 39
7.3.6 CONTEXT SERVICE 40
7.3.7 WAVEFORM SERVICE 41
7.3.8 CONTAINMENT TREE SERVICE 41
7.3.9 ARCHIVE SERVICE 41

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Full document details: IEEE 11073-10207-2017/Cor 1-2025

7.3.10 LOCALIZATION SERVICE 41
7.4.2 Additional requirements 43
7.4.3 Operation-invoked report....45

8. Extension Model....46

9. Discovery Model 47
9.1 General 47
9.3 Explicit discovery 47

10. Nonfunctional requirements 47
10.1 General 47
10.3 Cybersecurity considerations....48

11. Conformance 48
11.3 ICS tables....48

Annex A (normative) Extension Model 49
A.1 Extension 49
A.2 ExtensionType 49
A.3 MustUnderstand....49

Annex B (normative) Participant Model 50
B.6 AbstractComplexDeviceComponentDescriptor/Sco....50
B.8 AbstractContextDescriptor....50
B.9 AbstractContextState 50
B.10 AbstractContextState/@ContextAssociation 50
B.15 AbstractContextState/Validator 51
B.16 AbstractContextState/Identification....51
B.19 AbstractDescriptor/@DescriptorVersion 51
B.20 AbstractDescriptor/@SafetyClassification 51
B.28 AbstractDeviceComponentState/@ActivationState....52
B.30 AbstractDeviceComponentState/@OperatingCycles....52
B.35 AbstractMetricDescriptor/@MetricCategory....52
B.36 AbstractMetricDescriptor/@DerivationMethod....52
B.38 AbstractMetricDescriptor/@MaxMeasurementTime....53
B.39 AbstractMetricDescriptor/@MaxDelayTime....53
B.41 AbstractMetricDescriptor/@LifeTimePeriod 53
B.43 AbstractMetricDescriptor/Unit 53
B.45 AbstractMetricDescriptor/Relation 53
B.46 AbstractMetricDescriptor/Relation/@Kind 54
B.49 AbstractMetricDescriptor/Relation/Identification....54
B.51 AbstractMetricState/@ActivationState 54
B.52 AbstractMetricState/@ActiveDeterminationPeriod....54
B.53 AbstractMetricState/@LifeTimePeriod 55
B.54 AbstractMetricState/BodySite....55
B.57 AbstractMetricValue/@StartTime 55
B.58 AbstractMetricValue/@StopTime 56
B.59 AbstractMetricValue/@DeterminationTime....56
B.61 AbstractMetricValue/MetricQuality/@Validity....56
B.63 AbstractMetricValue/MetricQuality/@Qi....57
B.70 AbstractOperationDescriptor/@OperationTarget 57
B.71 AbstractOperationDescriptor/@MaxTimeToFinish....57
B.72 AbstractOperationDescriptor/@InvocationEffectiveTimeout....58
B.73 AbstractOperationDescriptor/@Retriggerable....58
B.80 AbstractState/@StateVersion....58

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B.82 AbstractState/@DescriptorVersion 58
B.83 ActivateOperationDescriptor 59
B.90 AlertConditionDescriptor/@Priority 59
B.92 AlertConditionDescriptor/@CanEscalate 59
B.93 AlertConditionDescriptor/@CanDeescalate 59
B.97 AlertConditionState/@ActualConditionGenerationDelay 59
B.98 AlertConditionState/@ActualPriority 59
B.99 AlertConditionState/@Rank 60
B.103 AlertSignalDescriptor/@ConditionSignaled 60
B.111 AlertSignalDescriptor/@AcknowledgeTimeout 60
B.113 AlertSignalState/@ActualSignalGenerationDelay 60
B.114 AlertSignalState/@Presence 61
B.118 AlertSystemDescriptor/@MaxPhysiologicalParallelAlarms 61
B.119 AlertSystemDescriptor/@MaxTechnicalParallelAlarms 61
B.120 AlertSystemDescriptor/@SelfCheckPeriod 61
B.122 AlertSystemDescriptor/AlertSignal 61
B.124 AlertSystemState/@LastSelfCheck 62
B.125 AlertSystemState/@SelfCheckCount 62
B.128 AlertSystemState/SystemSignalActivation 62
B.129 ApprovedJurisdictions 63
B.141 BatteryState 63
B.142 BatteryState/@ChargeStatus 63
B.165 ClinicalInfo/Type 63
B.166 ClinicalInfo/Code 64
B.170 ClinicalInfo/RelatedMeasurement/@Validity 64
B.176 ClockDescriptor/@Resolution 65
B.177 ClockDescriptor/TimeProtocol 65
B.179 ClockState/@DateAndTime 65
B.181 ClockState/@Accuracy 65
B.182 ClockState/@LastSet 66
B.185 ClockState/ActiveSyncProtocol 66
B.187 CodedValue 66
B.188 CodedValue/@Code 67
B.189 CodedValue/@CodingSystem 67
B.190 CodedValue/@CodingSystemVersion 67
B.194 CodedValue/Translation 67
B.196 CodedValue/Translation/@CodingSystem 68
B.202 DistributionSampleArrayMetricDescriptor 68
B.213 EnumStringMetricDescriptor/AllowedValue 68
B.217 EnumStringMetricDescriptor/AllowedValue/Characteristic 68
B.219 ImagingProcedure 68
B.226 InstanceIdentifier 69
B.228 InstanceIdentifier/@Extension 69
B.229 InstanceIdentifier/Type 69
B.231 LimitAlertConditionDescriptor 69
B.233 LimitAlertConditionDescriptor/MaxLimits 70
B.237 LimitAlertConditionState/Limits 70
B.238 LocalizedText 70
B.239 LocalizedText/@Ref 70
B.241 LocalizedText/@Version 70
B.242 LocalizedText/@TextWidth 71
B.271 MdsDescriptor/MetaData/ManufactureDate 71
B.272 MdsDescriptor/MetaData/ExpirationDate 71
B.279 MdsDescriptor/ApprovedJurisdictions 71
B.283 MdsState/@OperatingMode 72
B.284 MdsState/OperatingJurisdiction 72

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B.302 NumericMetricDescriptor/TechnicalRange 72
B.304 NumericMetricState/@ActiveAveragingPeriod....72
B.309 OperatingJurisdiction....72
B.314 OrderDetail/Start....73
B.315 OrderDetail/End....73
B.322 PatientDemographicsCoreData....73
B.325 PatientDemographicsCoreData/DateOfBirth....73
B.340 Range/@StepWidth....73
B.342 Range/@AbsoluteAccuracy....73
B.343 RealTimeSampleArrayMetricDescriptor....74
B.348 RealTimeSampleArrayMetricState/MetricValue....74
B.352 SampleArrayValue....74
B.363 ScoState/OperationGroup/@OperatingMode....75
B.365 ScoState/OperationGroup/Type....75
B.377 SetStringOperationState/AllowedValues....75
B.378 SetStringOperationState/AllowedValues/Value....75
B.399 VmdDescriptor/ApprovedJurisdictions....75
B.402 VmdState/OperatingJurisdiction....75
B.418 AlertActivation....75
B.421 AlertConditionPriority....76
B.424 AlertSignalPresence....76
B.429 ComponentActivation....76
B.438 LocalizedTextWidth....76
B.439 MdsOperatingMode....77
B.440 MeasurementValidity....77
B.442 MetricCategory....78
B.446 QualityIndicator....78
B.447 RealTimeValueType....78
B.449 SafetyClassification....79
B.452 Timestamp....79
B.454 VersionCounter....79
B.460 MdibVersionGroup....80
B.461 MdibVersionGroup/@MdibVersion....80
B.462 MdibVersionGroup/@SequenceId....80
B.463 MdibVersionGroup/@InstanceId....80

Annex C (normative) Message Model....82
C.7 DescriptionModificationReport/ReportPart/@ParentDescriptor....82
C.9 DescriptionModificationReport/ReportPart/Descriptor....82
C.10 DescriptionModificationReport/ReportPart/State....82
C.12 EpisodicComponentReport....83
C.19 GetContainmentTreeResponse/ContainmentTree....83
C.26 GetContextStatesByFilterResponse/ContextState....84
C.31 GetContextStatesByIdentificationResponse/ContextState....84
C.44 GetLocalizedText....84
C.45 GetLocalizedText/Ref....84
C.46 GetLocalizedText/Version....85
C.47 GetLocalizedText/Lang....85
C.48 GetLocalizedText/TextWidth....85
C.49 GetLocalizedText/NumberOfLines....86
C.51 GetLocalizedTextResponse/Text....86
C.55 GetMdDescriptionResponse/MdDescription....87
C.57 GetMdibResponse....87
C.60 GetMdState/HandleRef....87
C.70 GetSupportedLanguagesResponse....87
C.72 ObservedValueStream....87

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C.79 OperationInvokedReport/ReportPart/@OperationHandleRef....87
C.111 SystemErrorReport/ReportPart/ErrorInfo....88
C.117 AbstractComponentReport....88
C.119 AbstractComponentReport/ReportPart/ComponentState....88
C.123 AbstractGet....88
C.124 AbstractGetResponse....88
C.133 AbstractReportPart/SourceMds....88
C.134 AbstractSet....89
C.135 AbstractSet/OperationHandleRef....89
C.136 AbstractSetResponse....89
C.139 InvocationInfo/TransactionId....89
C.141 InvocationInfo/InvocationError....89
C.142 InvocationInfo/InvocationErrorMessage....89
C.144 RetrievabilityInfo/@Method....90
C.156 TransactionId....90

Annex D (informative) Examples....91
D.2 MDIB versioning....91
D.4.1 Explicit discovery....91
D.5 Remote control....92
D.6 Alert signal generation....92

Annex E (informative) Bibliography....93

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Health informatics—Point-of-care medical device communication

Part 10207: Domain Information and Service Model for Service-Oriented Point-of-Care Medical Device Communication

Corrigendum 1

NOTE—The editing instructions contained in this corrigendum define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.

Correction to Introduction

Change the following text in the Introduction:

~~R0007: All HANDLEs SHALL be unique within one MDIB sequence of a SERVICE PROVIDER.~~

R1234: The quick brown fox SHALL jump over the lazy dog.

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1. Overview

Add the following subclause after the Purpose.

1.3 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*).[6,7]

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*).

2. Normative references

Insert the following text after ISO/IEEE 11073-10201:2004:

Extensible Markup Language (XML) 1.0 (Fifth Edition), W3C Recommendation, T. Bray et al., 26 November 2008.

Insert the following text after Extensible Markup Language (XML) 1.0 (Fifth Edition):

XML Schema Definition Language (XSD) 1.1, W3C Recommendation, Shudi (Sandy) Gao et al., 5 April 2012, Part 1 and Part 2.

3. Definitions and notational conventions

3.1 Definitions

Change the following text in ATTRIBUTE:

XML attribute as defined in eXtensible Markup Language. (Extensible Markup Language –(XML))

[6] The use of the word *must* is deprecated and cannot be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.
[7] The use of *will* is deprecated and cannot be used when stating mandatory requirements; *will* is only used in statements of fact.

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Insert the following text after CODING SYSTEM:

CONTAINMENT SUBTREE: A CONTAINMENT TREE ENTRY and all child elements of that CONTAINMENT TREE ENTRY, transitively including children of children etc. A CONTAINMENT SUBTREE also includes all ELEMENTs of any XML Schema type that extends pm:AbstractState that use @DescriptorHandle to refer to a node within the CONTAINMENT SUBTREE as well as the ELEMENT content, attributes, and child ELEMENTs of these ELEMENTs.

NOTE—This includes child ELEMENTs of any XML Schema type that extends pm:AbstractDescriptor.

Change the following text in CONTAINMENT TREE:

~~**CONTAINMENT TREE:** Device configuration and capability description of an MEDICAL DEVICE SYSTEM (MDS) that represents a POC MEDICAL DEVICE and is conceivable as a four-layered tree.~~

CONTAINMENT TREE: Capability description and configuration state of a MEDICAL DEVICE SYSTEM. It constitutes a rooted tree of CONTAINMENT TREE ENTRIEs, the hierarchy of which is specified in Subclause 5.3. Its root node is a CONTAINMENT TREE ENTRY of the XML Schema type pm:MdsDescriptor.

NOTE—There can be zero, one, or multiple CONTAINMENT TREEs within a SERVICE PROVIDER's MDIB.

Change the following text in ELEMENT:

XML element as defined in eXtensible Markup Language. (Extensible Markup Language (XML))

Insert the following text after ELEMENT:

GRAPHEME CLUSTER: A grapheme cluster as specified by Unicode. A GRAPHEME CLUSTER describes a user-perceived character, which is what humans think of as a single character. User-perceived character counts correspond to the number of segments delimited by grapheme cluster boundaries.(Unicode© Standard Annex #29 [B15])

Insert the following text after HAZARDOUS SITUATION:

MANUFACTURER: Natural or legal person with responsibility for the design, manufacture, packaging, or labeling of medical electrical equipment, assembling a medical electrical system, or adapting medical electrical equipment or a medical electrical system, regardless of whether these operations are performed by that person or on that person's behalf. (IEC 60601-1:2005+AMD 1:2012+AMD 2:2020 [B9])

Change the following text in MEDICAL DATA INFORMATION BASE:

MEDICAL DATA INFORMATION BASE (MDIB): Structured collection of any data objects that are provided by ~~a particular~~ one or more POC MEDICAL ~~DEVICE.~~ DEVICEs. An MDIB includes descriptive and state information.

Insert the following text after MEDICAL DATA INFORMATION BASE:

MEDICAL DEVICE: Instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the MANUFACTURER to be used, alone or in combination, for human beings, for one or more of the specific medical purpose(s) of

- Diagnosis, prevention, monitoring, treatment or alleviation of disease
- Diagnosis, monitoring, treatment, alleviation of or compensation for an injury

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- Investigation, replacement, modification, or support of the anatomy or of a physiological process
- Supporting or sustaining life
- Control of conception
- Disinfection of MEDICAL DEVICEs
- Providing information by means of in vitro examination of specimens derived from the human body

and which does not achieve its primary intended action by pharmacological, immunological or metabolic means, in or on the human body, but which can be assisted in its intended function by such means. (ISO/IEC Guide 63:2019 [B12])

NOTE—Products which can be considered to be MEDICAL DEVICEs in some jurisdictions but not in others include:

- Disinfection substances
- Aids for persons with disabilities
- Devices incorporating animal and/or human tissues
- Devices for in-vitro fertilization or assisted reproductive technologies

Change the following text in MEDICAL DEVICE SYSTEM:

~~**MEDICAL DEVICE SYSTEM (MDS):** Abstraction of a system comprising one or more medical functions. In the context of IEEE Std 11073-10207, the term is specifically used as an object-oriented abstraction of a POC MEDICAL DEVICE that provides medical information in the form of information objects that are defined in IEEE Std 11073-10207.~~

MEDICAL DEVICE SYSTEM (MDS): Object-oriented abstraction of a device system comprising zero or more subsystems, all of which always operate within the same context, that provides information objects as defined in IEEE Std 11073-10207. (IEEE Std 11073-10700-2022 [B11])

NOTE—Device systems or subsystems thereof are typically MEDICAL DEVICEs.

Change the following text in PARTICIPANT:

~~**PARTICIPANT:** A PARTICIPANT can be either a SERVICE PROVIDER or a SERVICE CONSUMER.~~

PARTICIPANT: A PARTICIPANT can be a SERVICE PROVIDER, a SERVICE CONSUMER, or both.

Insert the following text after POC MEDICAL DEVICE:

PRIORITY: The effective priority of an SDC ALERT CONDITION that is either high priority, medium priority, low priority as defined for an ALARM CONDITION in (Unicode© Standard Annex #29 [B15]), or none for an SDC ALERT CONDITION resulting in an ADVISORY SIGNAL.

NOTE—The PRIORITY is represented by pm:AlertConditionDescriptor/@Priority and pm:AlertConditionState/@ActualPriority. If the @ActualPriority attribute is present, it overrides @Priority.

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3.2.2 XML Schema namespaces

Change the following text in Subclause 3.2.2:

Annex A, Annex B, and Annex C include an XML Schema (XML Schema Definition Language (XSD) 1.1) [B8] to describe an Extension Model, the object hierarchy, and ATTRIBUTEs of an MDIB instance as well as a set of MESSAGE structures that is used to request MDIB objects.

3.2.4 XML Schema type description

Table 2—Description of XML Schema type properties

Replace row Type with the following:

Type	Type name, including inheritance information if applicable. NOTE—'List of' indicates that the type is using the mechanisms of xsd:list.

Replace row Use with the following:

Use	Usage: optional or required.

5. Participant Model

5.2.1 General

Insert the following text after Figure 3:

R0247: If not explicitly stated otherwise, a PARTICIPANT SHALL compare xsd:anyURI by performing simple string comparison as per RFC3986 [B13], section 6.2.1.

5.2.2 Handle

Change the following text in R0007:

~~**R0007: All HANDLEs SHALL be unique within one MDIB sequence of a SERVICE PROVIDER.**~~

R0007: Within every MDIB version of a SERVICE PROVIDER, all HANDLEs SHALL be unique.

Change the following text in R0105:

~~**R0105: A HANDLE SHALL consist of characters that match only valid Unicode codes greater than U+0020, except for U+FFFD (replacement character).**~~

R0105: A HANDLE SHALL only consist of characters that match Unicode code points in the range of [U+0021, U+007E].

Change the following text in R0098:

~~**R0098: If a SERVICE PROVIDER removes and reinserts a CONTAINMENT TREE ENTRY from / into the CONTAINMENT TREE within one MDIB sequence, and the CONTAINMENT TREE ENTRY has the same HANDLE, it SHALL be of the same XML Schema datatype.**~~

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R0098: If a SERVICE PROVIDER inserts an ELEMENT with a HANDLE that has been used in a previous MDIB version of the same MDIB sequence, this ELEMENT SHALL be of the same XML Schema datatype as every ELEMENT that previously carried the HANDLE.

Delete the following text from Subclause 5.2.2:

R0137: A SERVICE PROVIDER SHALL NOT change the HANDLE of a CONTAINMENT TREE ENTRY within one MDIB sequence.

Delete the following text from Subclause 5.2.2:

R0138: If a SERVICE PROVIDER removes a CONTAINMENT TREE ENTRY from the CONTAINMENT TREE and reinserts the same CONTAINMENT TREE ENTRY into the CONTAINMENT TREE within one MDIB sequence, the CONTAINMENT TREE ENTRY SHALL have the same handle.

NOTE—From R0098 it follows that a CONTAINMENT TREE ENTRY that disappears and appears again can change any of its ATTRIBUTEs and ELEMENTs except for the XML Schema datatype.

Delete the following text from Subclause 5.2.2:

R0099: If a SERVICE PROVIDER removes and reinserts the same CONTAINMENT TREE ENTRY of an element in the CONTAINMENT TREE beyond one MDIB sequence, it SHOULD use the same HANDLE for that CONTAINMENT TREE ENTRY.

NOTE—R0099 implies that with a new MDIB sequence a handle might be assigned to another element in the CONTAINMENT TREE. Therefore, after an MDIB sequence has changed, a SERVICE CONSUMER cannot make any assumptions regarding the previous relation between a HANDLE and an element in the CONTAINMENT TREE.

Change the following text in Subclause 5.2.2:

~~NOTE—As stated in R0099, a~~ NOTE—A SERVICE PROVIDER might have reassigned a HANDLE during an MDIB sequence change.

5.2.3 Coded value

Insert the following text after the NOTE of R0128:

R0236: For each pm:CodedValue and pm:Translation, if multiple versions of the CODING SYSTEM exist and @CodingSystem does not identify one version, a PARTICIPANT SHALL set @CodingSystemVersion to identify the version.

5.2.4.1 General

Insert the following text after the last sentence in Subclause 5.2.4.1:

R0266: For each instance of pm:InstanceIdentifier/pm:Type, a PARTICIPANT SHOULD use @CodingSystem = "urn:oid:2.16.840.1.113883.18.108", which identifies the HL7 coding system identifierType.

NOTE—The coding system identifierType is available from Health Level Seven (http://terminology.hl7.org/).

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5.2.4.3 Comparison

Insert the following text after Subclause 5.2.4.2:

Determining whether two instance identifiers refer to the same instance requires understanding of the system of reference (e.g., the assigning authority) to which the root attribute refers. As the root is a URI, simple string comparison applies [RFC3986].

— For two instance identifiers where for both the root is provided, the equivalence rules of the reference system(s) apply. If any root or extension refers to a null value, it cannot be assumed that the identifiers refer to the same instance.

— For two instance identifiers where for one or both only the extension is provided, it cannot be assumed that the identifiers refer to the same instance.

When comparing instance identifiers, the type attribute is not of relevance. There can be use cases in which the same identifier, referring to the same instance, is provided for different purposes using different types.

5.2.5.2 Descriptor version

Change the following text in Subclause 5.2.5.2:

Any TYPE that is derived from pm:AbstractDescriptor, ~~possesses~~ contains the ~~pm:AbstractDescriptor/@Descriptor Version~~ pm:AbstractDescriptor/@DescriptorVersion ATTRIBUTE. The following ~~requirements describe in~~ requirement describes the condition under which ~~eases~~ a change of the descriptor version ~~change~~ is applied.

Delete the following text from Subclause 5.2.5.2:

R0033: A SERVICE PROVIDER SHALL increment pm:AbstractDescriptor/@DescriptorVersion by 1 if a direct child descriptor is added or deleted.

NOTE—From R0033 follows that adding or deleting of a descriptor only increments the descriptor version of its direct parent. The version increment does not propagate upwards to other ancestors in the CONTAINMENT TREE.

Delete the following text from Subclause 5.2.5.2:

R0034: A SERVICE PROVIDER SHALL increment pm:AbstractDescriptor/@DescriptorVersion by 1 if the content of a child ELEMENT or an ATTRIBUTE of the descriptor have changed and if the child ELEMENT itself is not derived from pm:AbstractDescriptor.

NOTE 1—A child ELEMENT refers to the child in an XML document tree.

NOTE 2—pm:AbstractDescriptor is exempted from R0034 because every parent descriptor owns a dedicated descriptor version that is not meant to be affected by updates in any child descriptor. If pm:AbstractDescriptor would not be exempted from R0034, then any update of a child descriptor would propagate changes up to the root descriptor of the MDIB.

Insert the following text after NOTE 2 of R0034:

R0201: When a pm:AbstractDescriptor ELEMENT is affected by changes in one or more of the following ways:

— **an ATTRIBUTE of the pm:AbstractDescriptor ELEMENT is added, changed, or removed;**

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— **the content of the pm:AbstractDescriptor ELEMENT changes, excluding changes to children of any TYPE that extends pm:AbstractDescriptor;**

— **a child of any TYPE that extends pm:AbstractDescriptor is added or removed;**

the SERVICE PROVIDER SHALL set the @DescriptorVersion of the pm:AbstractDescriptor instance that reflects these changes to n+1 where n is the @DescriptorVersion of the pm:AbstractDescriptor instance before these changes.

NOTE—This prevents recursive increments of @DescriptorVersion values triggered by increments of @DescriptorVersion values.

Insert the following text after the NOTE of R0201:

R0262: Within one MDIB sequence of a SERVICE PROVIDER, for each HANDLE that identifies an ELEMENT of a TYPE that extends pm:AbstractDescriptor, the SERVICE PROVIDER SHALL set @DescriptorVersion to a number that is greater than or equal to the highest previous value of @DescriptorVersion of the ELEMENT identified by the HANDLE.

5.2.5.3 State version

Change the following text in R0038:

~~**R0038: A SERVICE PROVIDER SHALL increment pm:AbstractState/@StateVersion by 1 if the content of a child ELEMENT or an ATTRIBUTE of the state has changed.**~~

~~NOTE—A child ELEMENT refers to the child in an XML document tree.~~

R0038: When a pm:AbstractState ELEMENT is affected by changes in one or more of the following ways:

— **an ATTRIBUTE of the pm:AbstractState ELEMENT is added, changed, or removed;**

— **the content of the pm:AbstractState ELEMENT changes;**

the SERVICE PROVIDER SHALL set the @StateVersion of the pm:AbstractState instance that reflects these changes to n+1 where n is the @StateVersion of the pm:AbstractState instance before these changes.

NOTE—This prevents recursive increments of @StateVersion values triggered by increments of @StateVersion values.

Insert the following text after the NOTE of R0038:

R0263: Within one MDIB sequence of a SERVICE PROVIDER, for each HANDLE that identifies an ELEMENT of a TYPE that extends pm:AbstractDescriptor and does not extend pm:AbstractContextDescriptor, the SERVICE PROVIDER SHALL set @StateVersion of the corresponding state ELEMENT to a number that is greater than or equal to the highest previous value of @StateVersion of the state ELEMENT that corresponds to the ELEMENT identified by the HANDLE.

Insert the following text after R0263:

R0264: Within one MDIB sequence of a SERVICE PROVIDER, for each HANDLE that identifies an ELEMENT of a TYPE that extends pm:AbstractMultiState, the SERVICE PROVIDER SHALL set @StateVersion to a number that is greater than or equal to the highest previous value of @StateVersion of the ELEMENT identified by the HANDLE.

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NOTE 1—Together with R0262, this means that once a HANDLE is used, version counters for this HANDLE cannot be decremented by creating a different ELEMENT with the same HANDLE using a lower version number.

NOTE 2—As per R0098, the TYPE of ELEMENT identified by a HANDLE cannot change.

5.2.5.4 MdDescription version

Change the following text in R0043:

~~**R0043: A SERVICE PROVIDER SHALL increment pm:MdDescription/@DescriptionVersion every time any descendent descriptor of pm:MdDescription is added or removed, and every time pm:AbstractDescriptor/@DescriptorVersion of a descendent descriptor changes.**~~

R0043: When the pm:MdDescription ELEMENT is affected by changes in one or more of the following ways:

- **an ELEMENT of any TYPE that extends pm:AbstractDescriptor is added or removed;**
- **the @DescriptorVersion of an ELEMENT of any TYPE that extends pm:AbstractDescriptor is incremented;**

the SERVICE PROVIDER SHALL increment pm:MdDescription/@DescriptionVersion by 1.

5.2.5.5 MdState version

Change the following text in R0045:

~~**R0045: A SERVICE PROVIDER SHALL increment the pm:MdState/@StateVersion every time pm:AbstractState/@StateVersion of a descendent state in pm:MdState changes.**~~

R0045: When the pm:MdState ELEMENT is affected by changes in one or more of the following ways:

- **an ELEMENT of any TYPE that extends pm:AbstractState is added or removed;**
- **the @StateVersion of an ELEMENT of any TYPE that extends pm:AbstractState is incremented;**

the SERVICE PROVIDER SHALL increment pm:MdState/@StateVersion by 1.

5.2.5.6 MDIB version

Change the following text in the first paragraph of Subclause 5.2.5.6:

~~The MDIB version follows the concept of WS-Discovery's AppSequence ELEMENT (see 5.3 in WS-Discovery [B3]) and is described in pm:MdibVersionGroup. The sequence identifier defined in pm:MdibVersionGroup is used to discriminate different sequences of versions. In addition to that, the instance identifier can be used to establish an order between different sequences.~~

The MDIB version is inspired by the concept of WS-Discovery's AppSequence ELEMENT (see 5.3 in WS-Discovery [B3]). It is specified in pm:MdibVersionGroup.

Insert the following text after the first paragraph of Subclause 5.2.5.6:

The MDIB version represents the chronological order of event occurrences within one sequence of the MDIB.

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NOTE—The chronological order means that, e.g., if a METRIC violates an ALERT CONDITION threshold, first the METRIC is updated, then the ALERT CONDITION changes to present before the respective METRIC changes again.

Change the following text in R0046:

~~**R0046: A SERVICE PROVIDER SHALL increment pm:MdibVersionGroup/@MdibVersion by 1 every time pm:MdDescription/@DescriptionVersion or pm:MdState/@StateVersion have changed.**~~

R0046: When either or both of pm:MdDescription/@DescriptionVersion and pm:MdState/@StateVersion are incremented, a SERVICE PROVIDER SHALL increment pm:Mdib/pm:MdibVersionGroup/@MdibVersion by 1.

Delete entire R0047

Delete the following text from R0117:

R0117: A SERVICE PROVIDER SHALL assign a new MDIB sequence identifier after it has reset pm:MdibVersionGroup/@MdibVersion.

NOTE 1—A new MDIB sequence identifier is defined as a unique identifier that has never been used before by a SERVICE PROVIDER.

NOTE 2—The MDIB sequence identifier and instance identifier are explained in pm:MdibVersionGroup.

Insert the following subclause after Subclause 5.2.5.6:

5.2.5.7 Sequences of localized texts

Each sequence of pm:LocalizedText ELEMENTs represents multiple human-readable descriptions of exactly one concept. The text can be made available in different languages and text widths, either by including the actual text in the pm:LocalizedText ELEMENT content or by requesting the LOCALIZATION SERVICE.

R0245: Within each sequence of pm:LocalizedText ELEMENTs, a SERVICE PROVIDER SHALL NOT provide two or more pm:LocalizedText ELEMENTs that have the same values for each of the ATTRIBUTEs @Ref, @Lang, @Version, and @TextWidth.

R0256: For each pm:LocalizedText of a SERVICE PROVIDER, if @Ref is present, the SERVICE PROVIDER SHALL provide the text content that is represented by that @Ref in its LOCALIZATION SERVICE.

R0257: For each pm:LocalizedText of a SERVICE PROVIDER except for msg:GetLocalizedTextResponse/msg:Text, if @Ref is present, the SERVICE PROVIDER SHALL NOT include @Lang in that pm:LocalizedText.

R0258: For each pm:LocalizedText of a SERVICE PROVIDER except for msg:GetLocalizedTextResponse/msg:Text, if @Ref is present, the SERVICE PROVIDER SHALL NOT include text content in that pm:LocalizedText ELEMENT.

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5.3.1 General

Change the following text in R0010:

~~**R0010: A SERVICE PROVIDER SHALL describe the information provisioning and remote control capabilities of its represented POC MEDICAL DEVICEs using the pm:MdDescription structure.**~~

~~NOTE—The set of MDS CONTAINMENT TREEs in pm:MdDescription might be empty at a certain point in time. This is the case if, e.g., the SERVICE PROVIDER acts as an aggregator of POC MEDICAL DEVICES and none of the devices it manages are available at that point in time.~~

R0010: For each POC MEDICAL DEVICE represented by a SERVICE PROVIDER, the SERVICE PROVIDER SHALL describe the information provisioning and external control capabilities of the POC MEDICAL DEVICE using the pm:MdDescription structure.

NOTE—pm:MdDescription can be empty, e.g., when the SERVICE PROVIDER acts as an aggregator and while none of the POC MEDICAL DEVICEs represented by the SERVICE PROVIDER are currently available.

5.3.6 Battery

Insert the following text after the first paragraph of Subclause 5.3.6:

R0241: When a battery has a malfunction, a SERVICE PROVIDER SHOULD communicate detailed error information using an ALERT SYSTEM.

5.3.7 SystemContext

Change the following text in the caption of Figure 5:

Figure 5—Contextual information that ~~may~~ can be handled by a POC MEDICAL DEVICE

Delete the following text from Subclause 5.3.7:

R0013: A SERVICE PROVIDER SHALL NOT express a capability to handle a specific kind of contextual information if it is not able to validate the contextual information either directly or indirectly.

NOTE 1—A context is called being handled, if a POC MEDICAL DEVICE or SERVICE PROVIDER is capable of validating, that it is operated in the context provided by the information accessible in the MDIB. Validation of contextual information may afford operator interaction or may rely solely on information provided by the act of proposing the contextual information. Example: a surgeon (i.e., an operator) has to confirm patient data (provided in the MDIB by a patient context) on the graphical user interface of a POC MEDICAL DEVICE. Confirming the patient data can be considered as a kind of validation.

NOTE 2—As not all POC MEDICAL DEVICEs are able to handle all kinds of contextual information, an MDS is able to express which kinds of contextual information can be handled by the POC MEDICAL DEVICE. If a SERVICE PROVIDER is capable of validating the contextual information without the POC MEDICAL DEVICE that the contextual information is related to, this is called direct validation. If the SERVICE PROVIDER utilizes the POC MEDICAL DEVICE for validating contextual information for that medical device, this is called indirect validation.

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Change the following text in R0014:

~~**R0014: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining to which patient the POC MEDICAL DEVICE is currently connected to, this capability SHOULD be expressed in the MDS context with a pm:PatientContextDescriptor.**~~

R0014: If a SERVICE PROVIDER has the means to determine which patient the POC MEDICAL DEVICE represented by an MDS is connected to, the SERVICE PROVIDER SHOULD provide a pm:PatientContextDescriptor for this MDS.

Change the following text in R0015:

~~**R0015: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining in which location the POC MEDICAL DEVICE is currently operated, this capability SHOULD be expressed in the MDS context with a pm:LocationContextDescriptor.**~~

R0015: If a SERVICE PROVIDER has the means to determine which location the POC MEDICAL DEVICE represented by an MDS is operated in, the SERVICE PROVIDER SHOULD provide a pm:LocationContextDescriptor for this MDS.

Change the following text in R0016:

~~**R0016: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining in which clinical workflow the POC MEDICAL DEVICE is currently participating, this capability SHOULD be expressed in the MDS context with a pm:WorkflowContextDescriptor.**~~

R0016: If a SERVICE PROVIDER has the means to determine which clinical workflow the POC MEDICAL DEVICE represented by an MDS is participating in, the SERVICE PROVIDER SHOULD provide a pm:WorkflowContextDescriptor for this MDS.

Change the following text in R0017:

~~**R0017: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining who is currently operating the POC MEDICAL DEVICE, this capability SHOULD be expressed in the MDS context with a pm:OperatorContextDescriptor.**~~

R0017: If a SERVICE PROVIDER has the means to determine which user is operating the POC MEDICAL DEVICE represented by an MDS, the SERVICE PROVIDER SHOULD provide an pm:OperatorContextDescriptor for this MDS.

Change the following text in R0018:

~~**R0018: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining which virtual or physical means the POC MEDICAL DEVICE is using, this capability SHOULD be expressed in the MDS context with a pm:MeansContextDescriptor.**~~

~~NOTE—An example for a virtual means is a license from a pool of licenses. An example for a physical means could be a docking station that the POC MEDICAL DEVICE is connected to.~~

R0018: If a SERVICE PROVIDER has the means to determine which virtual or physical means the POC MEDICAL DEVICE represented by an MDS is using, the SERVICE PROVIDER SHOULD provide a pm:MeansContextDescriptor for this MDS.

NOTE—A license from a pool of licenses is an example for a virtual means. A docking station that the POC MEDICAL DEVICE is connected to is an example for a physical means.

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Change the following text in R0019:

~~**R0019: If a SERVICE PROVIDER or POC MEDICAL DEVICE is, e.g., capable of determining in which logical group the POC MEDICAL DEVICE is currently operated, this capability SHOULD be expressed in the MDS context with a pm:EnsembleContextDescriptor.**~~

~~NOTE—A logical group is, e.g., a temporal group based on a treatment session or spatial group that is not affixed to one location.~~

R0019: If a SERVICE PROVIDER has the means to determine which logical group the POC MEDICAL DEVICE represented by an MDS is operated in, the SERVICE PROVIDER SHOULD provide a pm:EnsembleContextDescriptor for this MDS.

NOTE—Examples for a logical group include temporary groups based on a treatment session.

Change the following text in R0106:

~~**R0106: Any context descriptor SHALL NOT be removed from or added to the MDIB during runtime, except if the hosting MDS is removed or added to the MDIB.**~~

~~NOTE 1—The existence of context descriptors defines whether a SERVICE PROVIDER supports processing a particular kind of contexts. Either a SERVICE PROVIDER is able to process a kind of context or it is not. Therefore, it makes no sense to remove or add context descriptors during runtime, except in the case when a whole MDS is removed or added to the MDIB.~~

~~NOTE 2—By not allowing context descriptors to appear or disappear during runtime, an implementation can make assumptions on the availability of contexts. This can ease implementation.~~

R0106: While a SERVICE PROVIDER does neither remove an MDS from an MDIB nor add an MDS to an MDIB, the SERVICE PROVIDER SHALL NOT remove a context descriptor from an MDIB or add a context descriptor to an MDIB.

NOTE 1—The existence of context descriptors represents whether a SERVICE PROVIDER supports processing a particular kind of contextual information. A SERVICE PROVIDER is either able or unable to process a kind of context. Therefore, it makes no sense to remove or add context descriptors during runtime, except for the case in which a whole MDS is removed from or added to the MDIB.

NOTE 2—By not allowing context descriptors to appear or disappear during runtime, an implementation can make assumptions on the availability of contexts. This can ease implementation.

5.3.8 SCO

Change the following text in Subclause 5.3.8:

A POC MEDICAL DEVICE allows SERVICE CONSUMERs to request remote control commands by means of the service control object (SCO). The ~~SCO MAY possess a set of operations that the SERVICE PROVIDER offers to SERVICE CONSUMERs to allow modification of MDIB objects. The~~ class diagram of remote control commands is given in Subclause 5.3.9.

Insert the following text after Subclause 5.3.8:

R0232: The SCO MAY possess a set of operations that the SERVICE PROVIDER offers to SERVICE CONSUMERs to allow modification of MDIB objects.

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5.3.9 Operation

Change the following text in R0011:

~~**R0011: A SERVICE PROVIDER SHOULD describe all offered remote invocation capabilities using the pm:ScoDescriptor structure in pm:MdsDescriptor/pm:Sco.**~~

R0011: A SERVICE PROVIDER SHOULD describe all remote invocation capabilities using the pm:ScoDescriptor structure in pm:AbstractComplexDeviceComponentDescriptor/pm:Sco.

Insert the following text after R0011:

R0221: A SERVICE PROVIDER SHALL provide the pm:Operation ELEMENTs that the entries of pm:ScoState/@InvocationRequested, pm:ScoState/@InvocationRequired, and pm:ScoState/pm:OperationGroup/@Operations refer to either contained in the pm:ScoDescriptor that the pm:ScoState/@DescriptorHandle refers to or contained in another pm:ScoDescriptor within the CONTAINMENT SUBTREE that has as its root the parent element of the pm:ScoDescriptor that the pm:ScoState/@DescriptorHandle refers to.

NOTE—According to R0221, the referenced operations have to be in the same SCO or in an SCO that is in the CONTAINMENT SUBTREE of the parent of this SCO.

Insert the following text after the NOTE of R0221:

R0233: A SERVICE PROVIDER SHALL provide the ELEMENTs that the entries of pm:ScoDescriptor/pm:Operation/@OperationTarget refer to contained in the CONTAINMENT SUBTREE that has as its root the parent element of the pm:ScoDescriptor.

Insert the following text after R0233:

R0237: A SERVICE PROVIDER SHOULD NOT set pm:Operation/@OperationTarget to a HANDLE reference that refers to a state instance.

5.3.12.1 General

Insert the following text after Subclause 5.3.12.1:

R0234: For each pm:AbstractMetricDescriptor, a SERVICE PROVIDER SHALL provide the ELEMENTs that the entries of pm:Relation refer to contained in the CONTAINMENT SUBTREE that has as its root the same pm:MdsDescriptor as the CONTAINMENT SUBTREE that contains the pm:AbstractMetricDescriptor.

5.3.12.2 Time-related attributes

Change the following text in Subclause 5.3.12.2:

LifeTimePeriod is defined in pm:AbstractMetricDescriptor/@LifeTimePeriod. It designates the time period until a ~~measured metric~~ METRIC value is not usable ~~anymore and~~ anymore. It can be overwritten by pm:AbstractMetricState/@LifeTimePeriod.

Insert the following text after Figure 8:

R0213: pm:AbstractMetricValue/@StartTime SHALL be less than or equal to pm:AbstractMetricValue/@DeterminationTime.

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