TECHNICAL SPECIFICATION

ISO/TS 23541-1

First edition
2021-05

Health informatics — Categorial structure for representation of 3D human body position system —

Part 1: Bones

Informatique de santé — Structure catégorielle pour la représentation du système de positionnement du corps humain en 3D —

Partie 1: Os

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021

Reference number
ISO/TS 23541-1:2021(E)

© ISO 2021

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021

COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

 © ISO 2021 – All rights reserved

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
3.1 General 1
3.2 Characterizing categories 3
4 Categorial structure of 3D human body position system **5**
4.1 Overview 5
4.2 Representational relations 6
4.2.1 shareElement 6
4.2.2 isBodyPart 6
4.2.3 hasFinding 7
4.2.4 hasIntervention 7
4.2.5 hasObservation 7
4.2.6 hasObject 8
4.2.7 hasModel 8
Bibliography **10**

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021

© ISO 2021 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

This document was prepared by Technical Committee ISO/TC 215, *Health informatics*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021

 © ISO 2021 – All rights reserved

Introduction

Anatomical descriptions can be very abstract, requiring long narrative descriptions. These descriptions can lead to ambiguity and coding inconsistency. Text-based expressions lack expressiveness and accuracy, medical information is not captured and re-used sufficiently and there are also issues in interoperability. There is currently no unified way of expressing anatomical concepts.

However, recent advancements in imaging technology are dramatically revolutionizing the field. For instance, the spatial resolution in a CT scan is less than 1 mm. Regarding accuracy and expressiveness, it is believed that the gap between medical imaging and clinical terminology is increasing over time. Patients are also having problems understanding their disease because visualization is not given by standard terminology.

Healthcare workers are seeking to achieve additional expressiveness by adopting 3D data in the medical field. Radiation therapies are designed by 3D systems to generate optimal intensities while protecting adjacent tissue. In operating theatres, operations are often guided by 3D navigation systems. For example, arthroplasties are designed and simulated before surgery using 3D technology. Researchers are also studying ways to simulate operation tactics using 3D data by 3D printing, such as AR (augmented reality) and VR (virtual reality). Since 3D systems can deliver accurate spatial information in the human body, it is evident that a standard terminology infrastructure will provide additional expressiveness, accuracy and comparability when 3D data is adopted in medical informatics. Since anatomy is a key piece of information in many clinical descriptions, 3D data can increase the accuracy and expressiveness of clinical terminology. 3D data are numbers that can be processed by mathematical functions providing more computability in research, software production and artificial intelligence.

3D systems provide a consistent way of expressing anatomical concepts in a precise manner. Accurate data can improve data exchange between electronic health records, epidemiological analysis and quality. Increased accuracy also means better clinical decision support systems for patient safety, reducing medical errors and improving efficiency. It also provides visual information for patients and caregivers when conventional standard terminology system does not. HBPS (Human body position system) is intended to be used in electronic health records, personal health record and various medical research purposes.

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021

HBPS is a way of expressing clinical concepts by combining 3D data and text-based terminology. Although the main purpose of 3D is graphical expression, it can play a terminological role in many ways as it has accurate anatomical concept. It can have attributes that are similar to codes in semantic terminological system. It can be pre- or post-coordinated, just as conventional terminological concepts. Since the data inside a 3D system is purely numeric, it can be captured and retrieved better than semantic medical information.

© ISO 2021 – All rights reserved

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/TS 23541-1:2021
https://standards.iteh.ai/catalog/standards/iso/518edeb4-daa2-46e3-9dca-d284655a66c2/iso-ts-23541-1-2021