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Health informatics — Standardizing graphical content

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Contents

Foreword	vi
Introduction.....	vii
1 Scope	1
2 Normative references.....	1
3 Terms and definitions	1
3.1 General terms	1
3.2 Terms related to information management	3
3.3 Terms related to healthcare	4
3.4 Terms related to graphical information	5
4 Overview.....	6
5 Current efforts of graphics standardization	8
6 Example sets of healthcare graphics usage.....	9
6.1 General	9
6.2 Working with terminologies	10
6.3 EHR and applications toolbar	11
6.4 Use within PC based and mobile applications	12
6.5 Creating a standard palette or toolbox	18
6.6 Natural language processing (NLP).....	19
6.7 Helpfiles and suggestions	19
6.8 Medical devices.....	20
6.9 Artificial intelligence (AI)	20
7 Challenges regarding graphics standardization.....	21
Bibliography	22

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~~document 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).

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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.

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

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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.

Introduction

Images and graphics predate any formal written human communication. Cave paintings and engravings have given pointers to lifestyles and methods from ancient times. Pictograms describing health problems have been found as engravings and drawings in the Egyptian pyramids (approximately 2 500 BC), the frescoes and road signs in Pompei (approximately 1st century AD) and the murals in the ancient temples of India such as Konark Sun Temple (1 250 AD). They have helped retrace the history of medicine and given an idea of health problems existing in those times. More importantly, their usage transcended language barriers.

Healthcare needs are universal. The health information technology sector depends on accurate and consistent transfer of information relevant to the health care providers and their patients. The focus is on finding convenient and universally understood methods for information transfer. In this context, graphics usage in the form of emojis, emoticons and stickers has become an indispensable tool in enhancing online communications and making it richer and more emotive. Healthcare applications are also adopting graphics, but ~~the~~their usage is still less prevalent than in other fields. One of the major reasons behind this is the lack of standardization in this field. This document attempts to stimulate interest, emphasize the need, and suggest ways for better usage of graphics in healthcare information technology.

With rising life expectancy, along with higher incidence of non-communicable diseases (NCDs), there is a constant need for care support. Advances in telecommunication have allowed this to be offered remotely through telehealth systems. Even before the COVID period, 76 % of US citizens preferred remote care over a physical visit^{[19-118]-1}.

Telehealth ~~had~~has spurred the need for interoperability standards. Telehealth usage increased exponentially globally following the COVID pandemic. With global warming and related environmental ~~constraints~~issues, the ~~chances~~frequency of other natural disasters ~~have~~has increased. During disasters, the need for remote support ~~will increase~~increases the interchange of health-related communication, even among communities and people who have never met before. ~~Better~~Improved travel facilities have given rise to tourism, and especially medical tourism. Migration is ~~another~~also a rising phenomenon. Both medical tourism and migration increase the possibility of language and cultural differences between the care provider and the patient. Thus, methods ~~for easy cross platform and cross language to easily transfer health information transfer will~~across platforms and language barriers can help achieve consistent and uniform delivery of care.

Graphics and visually relatable content, for example markinglocating injuries or pain localization ~~sometimes~~with additional on-the-spot markings, have been longused for medical record keeping ~~since long~~. However, these are not yet standardized.

This document extrapolates the need and current status of health-related graphics standardization.

Likely beneficiaries of this document include:

- application developers;
- telehealth solution providers;
- those working in the social media workspace;
- those working with terminologies;
- clinicians and other users of applications;
- informaticians, analysts and researchers working in the field of health information.

Health informatics — Standardizing graphical content

1 Scope

This document describes the need for standardization of graphics and images in the health informatics domain. It focuses on the current status of adoption and presents an overview of the opportunities as well as challenges in creating sets of standardized images and graphics. A plan of action is proposed to serve as the future roadmap for implementation.

2 Normative ~~References~~references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ~~ISO Online browsing platform: available at <https://www.iso.org/obp>~~<https://www.iso.org/obp>
- ~~IEC Electropedia: available at <https://www.electropedia.org/>~~

3.1 General terms

3.1.1

assessment in ankylosing spondylitis

ASAS

method to calculate *disease activity score* (~~3.1.3~~[\(3.1.3\)](#)) for ankylosing spondylitis and related disorders

3.1.2

botox

botulinum toxin

product used in cosmetic surgery to erase fine wrinkles in the skin

Note 1 to entry: Botox is also used to release spasm for certain neurological conditions.

3.1.3

disease activity score

DAS

method to assess the disease activity

Note 1 to entry: DAS is commonly used for rheumatological disorders assessing specific problems in a few named joints. In rheumatoid arthritis, ~~twenty-eight~~[28](#) joints are assessed (DAS28), for SSA, the number of joints can be 44 (DAS44) or even higher (DAS 66/68).

3.1.4

laser

light amplification by simulated emission of radiation

treatment used in cosmetic surgery for scars, pigmented lesions, and hair removal

3.1.5

lexicon

complete set of meaningful units in a language

3.1.6

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;ⁱ
- diagnosis, monitoring, treatment, alleviation of, or compensation for, an injury;ⁱ
- investigation, replacement, modification, or support of the anatomy, or of a physiological process;ⁱ
- supporting or sustaining life;ⁱ
- control of conception;ⁱ
- cleaning, disinfection, or sterilization of medical devices;ⁱ
- providing information by means of *in vitro* examination of specimens derived from the human body;

and that does not achieve its primary intended action by pharmacological, immunological, or metabolic means, in or on the human body, but which may be assisted in its intended function by such means

[SOURCE: Essential Principles of Safety and Performance of Medical Devices and IVD Medical Devices^[23, 31] October 2018 by the Medical Device Regulators Forum (IMDRF)]¹

3.1.7

post-coordination

technique used in *SNOMED CT* ^{(3.1.9(3.1.9))} to combine clinical *concepts* ^(3.2.1) to ontologically define more complex concepts

3.1.8

pre-coordinated expressions

expressions that represent the meaning of individual *concepts* ^(3.2.1) which are predefined in *SNOMED CT* ^{(3.1.9(3.1.9))}

3.1.9

SNOMED CT

Systemic Nomenclature in MEDicine Clinical Terms

systematically organized computer processable collection of medical terms providing codes, terms, synonyms, and more, managed by SNOMED International

3.1.10

terminology

set of designations and *concepts* ^(3.2.1) belonging to one domain or subject

[SOURCE: ISO 1087:2019, 3.1.11]

3.1.11

training data set

data set of examples used during the learning process and ~~is~~ used to fit the parameters

3.1.12

typeahead

method wherein a keyboard entry of the first few letters suggests the most likely word or phrase which will complete the text

3.2 Terms related to information management

3.2.1

concept

unit of knowledge created by a unique combination of characteristics

Note 1 to entry: *SNOMED CT* (~~3.1.9(3.1.9) Concept Codes~~) concept codes are numerical codes that identify clinical terms, primitive or defined, organized in hierarchies.

[SOURCE: ISO 1087:2019, 3.2.7, modified — Notes to entry were removed; a new Note 1 to entry was added.]

3.2.2

coding scheme

collection of rules that maps the elements of one set on to the elements of a second set

[SOURCE: ISO/TS 21089:2018, 3.33]

3.2.3

data

information elements which are input, stored, processed, or output by the automated information system which supports the clinical and business functions of a *healthcare* (3.3.1) organization

Note 1 to entry: These data can relate to person identifiable records or be part of an administrative system where persons are not identified.

[SOURCE: ISO/TS 21089:2018, 3.43]

3.2.4

electronic health record

EHR

health record (~~3.2.7(3.2.7)~~) where all information is stored on electronic media

[SOURCE: ISO 13606-1:2019, 3.3.13] Also see 3.2.5

3.2.5

electronic medical record

EMR

electronic record derived from a computerized system used primarily for delivering patient care in a clinical setting

[SOURCE: ISO/TR 24291:2021, 3.3]

3.2.6

health information

information about a person relevant to his or her health

[SOURCE: ISO 18308:2011, 3.28]