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Health ~~Informatics—~~informatics — Internet healthcare service pattern

~~DTS stage~~

Informatique de santé — Modèle de services de soins de santé sur internet

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Foreword

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

Introduction

The rapid development of information technologies such as the internet, cloud computing, and big data, as well as ~~the~~their in-depth application in the healthcare field, has given birth to internet healthcare services. With the help of information technologies, internet healthcare services have redistributed medical resources, thereby reconstructing relevant processes, improving service efficiency~~,~~ and promoting fairness across the industry. Healthcare organizations, such as hospitals, outpatient clinics~~,~~ and even some internet companies, provide the public with various online healthcare services. These healthcare service providers, as well as a growing variety of healthcare service types, are intertwined in cyber and physical space, and~~.~~ together, they have formed a complex internet healthcare service system. The global pandemic has significantly impacted the capacity of the traditional healthcare ~~system's capacity~~system to deliver essential healthcare services. Therefore, accelerating the development of internet healthcare services and improving the maturity of non-contact service delivery is inevitably becoming the primary trend of future growth in this field.

The service pattern is the organization ~~&~~and coordination mode of the internet healthcare service system. It includes but it is not limited to the boundary of relevant participants, the collaboration of diverse processes from both business and medical perspectives, the exchange of related information and the realization of healthcare service goals. The ISO 12967 series has developed a concept model to describe healthcare information systems, focusing on enabling openness, integration and interoperability of healthcare information systems. An internet healthcare service pattern aims to organize the entire system and coordinate related participating elements. An understandable description of the pattern throughout the early, mid and late stages of service implementation is critical to effectively designing, rapidly constructing and continuously operating a sustainable healthcare service system. However, communication among relevant participants is long yet costly due to the need for more unified terminology describing and classifying internet healthcare services. Besides, a consolidated descriptive method is necessary. ~~Without~~The lack of a descriptive model~~, it~~ would impede the identification of the service pattern types, thus bringing difficulty in reusing and systematically analysing internet healthcare services.

This document aims to identify the standardized description and classification of internet healthcare service patterns through terminology and modelling suitable to facilitate pattern reuse, optimize the current healthcare expenditure level, accelerate industrial development, and lay the foundation for systematic analysis of the entire industry.

Health informatics— — Internet healthcare service pattern

1 Scope

This document specifies the core elements, the description model and typical categories of internet healthcare service patterns.

This document applies to the development and application of internet healthcare service patterns.

2 Normative references

The following documents, are referred to in whole the text in such a way that some or in part, are normatively referenced in all of their content constitutes requirements of this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 21089:2018, *Health informatics — Trusted end-to-end information flows*

3 Terms and definitions

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

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

— — ISO Online browsing platform: available at https://www.iso.org/obp

— — IEC Electropedia: available at https://www.electropedia.org/

3.1
internet healthcare
internet-based telehealth

Note 1 to entry: Internet-based technologies to deliver healthcare and transmit health information over both long and short distances.

Note 2 to entry: Telehealth utilizes all kinds of information and communications technologies, rather than internet technology only.

3.2
internet healthcare service
healthcare *service* (3.5) activities undertaken via internet

3.3
internet healthcare service system
combination of interacting elements organized to achieve one or more *internet healthcare services* (3.2.)

[SOURCE: ISO/IEC/IEEE 15288:2015[1], 4.1.46, modified — The preferred term "system" was changed to "internet healthcare service system"; in the definition, "stated purposes" was changed to "internet healthcare services"; Notes to entry were deleted.]

[1] Withdrawn.

3.4
internet healthcare service pattern
organization &and coordination mode of *internet healthcare service system* (3.3,), including role allocation of all elements, demarcation of relevant *participants* (3.8,), collaboration of diverse processes, exchange of related information and realization of healthcare service *goals* (3.6.)

3.5
service
set of interrelated or interacting processes that use inputs to deliver an intended *internet healthcare* (3.1) result

Note 1 to entry: Whether the "intended result" of a process is called output, product or service depends on the context of the reference.

Note 2 to entry: Inputs to a process are generally the outputs of other processes and outputs of a process are generally the inputs to other processes.

Note 3 to entry: Two or more interrelated and interacting processes in series can also be referred to as a process.

Note 4 to entry: Processes in an organization are generally planned and carried out under controlled conditions to add value.

Note 5 to entry: A process where the conformity of the resulting output cannot be readily or economically validated is frequently referred to as a "special process".

~~Note 6 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1. The original definition has been modified to prevent circularity between process and output, and Notes 1 to 5 to entry have been added.~~

[SOURCE: ISO 9000:2015, 3.4.1~~.~~, modified — The preferred term "process" was replaced by "service"; in the definition, "activities" was replaced by "processes", ~~added~~ and "result" was changed to "internet healthcare~~"~~ result"; Note 6 to entry was removed.]

3.6
goal
intended outcome of user interaction with one or more *services* (3.5~~(3.5)~~)

[SOURCE: ISO/IEC 19763-8:2015, 3.1.1, modified — "a process or~~"~~ service" was replaced by "one or more~~"~~ services".]

3.7
platform
~~refers to the~~ infrastructure that supports the operation of the *service* (3.5) pattern

Note 1 to entry: Infrastructure includes software and corresponding supporting hardware.

3.8
participant
person or organization that implements, delivers, or receives *services* (3.5) related to internet healthcare

3.9
service provider
organization, or part of an organization, or individual that manages and delivers a *service* or *services* (3.5) to customers

[SOURCE: ISO/IEC 20000-1:2018, 3.2.24, ~~added~~modified — "or part of an organization or individual~~"]~~" was added to the definition.]

3.10
service recipient
patient
subject of healthcare
healthcare actor with a personal role, who seeks to receive, is receiving, or has received healthcare

~~Note 1 to entry: Among synonyms are patient and objects of healthcare.~~

~~-~~[SOURCE: ISO 13940:2015, 5.2.1]

3.11
healthcare organization
healthcare *service provider* (3.9) having an organization role

[SOURCE: ISO 12967-1:2020, 3.3.5, ~~added~~modified — "service~~"]~~" was added to the definition.]

4 Symbols and abbreviations

~~IHSS Internet healthcare service system~~

~~IHSP Internet healthcare service pattern~~

~~G2S Healthcare group to service recipient~~

~~P2S Platform to service recipient~~

~~H2S Hospital to service recipient~~

IHSS Internet healthcare service system

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5 Overview of internet healthcare service system

Internet healthcare service is one of the mainstream development directions ~~as~~ the healthcare industry is moving in now. By utilizing information technologies such as the internet, cloud computing~~,~~ and big data, internet healthcare service improves service capabilities and service experience from both service providers' and recipients' points of view. A typical internet healthcare service system (IHSS) shall include various participants, including healthcare service providers, platform providers, payment service providers, logistics service providers~~,~~ and service recipients. These participants shall coordinate with each other in cyber and physical space to achieve the efficient provision and convenient interaction of healthcare services. Different types of healthcare services~~,~~ (such as online appointments and consultations, electronic prescriptions, post-care coordination~~, etc.,~~) should be published through internet healthcare platforms by those participants. Although the purpose and content of IHSS may be similar worldwide, differentiated system structures shall be formed from country to country in industrial development due to different administrative systems and industry status quo.

6 Specification of internet healthcare service pattern

6.1 Core elements of IHSPs

6.1.1 ~~6.1.1~~ Participant

The design, implementation~~,~~ and interaction of internet healthcare service patterns (IHSPs) depend on participants who can decide the resource allocation and are responsible for the operation, delivery and management of services. An integrated IHSP shall consist of at least the following five sub-categories~~((~~see Figure 1~~Figure 1) :~~):

a) ~~Internet~~internet healthcare platform provider: legally registered organizations that provide online carriers for internet healthcare services;

b) ~~Internet~~internet healthcare service provider: legally registered organizations or certified individuals who provide online healthcare services via internet healthcare service ~~platform~~platforms;

c) ~~Internet~~internet healthcare service recipient: organizations or individuals who receive healthcare services via internet healthcare service ~~platform~~platforms;

d) ~~Internet~~internet payment service provider: legally registered organizations that provide payment and account settlement services;

e) ~~Internet~~internet logistics service provider: legally registered organizations that provide delivery services, such as drug and medical apparatus delivery.