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~~— —~~ Pandemic response

~~— —~~ **Functional requirements for self-symptom checker app**

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## 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](http://www.iso.org/directives) 2 (see [www.iso.org/directives](http://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](http://www.iso.org/patents)[www.iso.org/patents](http://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](http://www.iso.org/iso/foreword.html)[www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 304, *Healthcare organization management*.

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](http://www.iso.org/members.html).

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## Introduction

In 2005, the International Health Regulations<sup>[7][2]</sup> (IHR) declared that a global network of national health systems should be established ~~that would to~~ facilitate coordinated defence against public health threats and ~~that could~~ ensure the security of international public health. Four areas of work to achieve the envisioned network have been established:

- a) ~~1)~~ strengthening national prevention capacity;
- b) ~~2)~~ introduction of global alert ~~&and~~ response mechanisms;
- c) ~~3)~~ containment of specific threats; ~~and~~
- d) ~~4)~~ travel and transports.

With the first case reported on ~~31~~ December ~~31~~, 2019, the WHO declared COVID-19 as a pandemic in March 2020<sup>[6], [6]</sup>. The lack of effective vaccines and treatment created a crisis that has seen a significant number of confirmed cases and deaths worldwide. The pandemic has imposed enormous pressure on, and, in some countries, paralyzed public health systems, resulting in shortages of personal protective equipment (PPE), extracorporeal membrane oxygenation (ECMO) machines, hospital beds and medical personnel.

Each country has implemented various measures to block infection spread at entry points to the country, which has required tremendous resources. Asymptomatic cases and long incubation periods challenge infection prevention and control capacities of health care institutions and public health agencies.

A self-symptom checker app for a pandemic enables individuals to record and report pandemic-related symptoms, to provide information on screening test sites and to offer consultation channels that link them to health experts for disease spread containment.

The self-symptom checker app is designed to act as a frontline defence that enables isolation and quarantine of potentially infected individuals.

This document provides interested parties with guidance to support the development of applications for self-monitoring of symptoms to support screening. Self-monitoring applications ~~may can~~ be used to support screening in businesses as well as border entry to contain the spread of infection and provide critical information to health care providers to provide appropriate care.

Annex-A uses ~~the informative Annex E of~~ ISO/TS 82304-2<sup>[4][1]</sup>, ~~Annex E~~ to provide additional guidance when considering a self-symptom checker app.

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# Healthcare organization management — Pandemic response

## Functional requirements for self-symptom checker app

### 1 Scope

This document specifies functional requirements for a self-initiated disease symptom checker app to be used for early screening and control of pandemics such as COVID-19.

There are four functional components specified in this document:

- 1) self-registration (Clause 7.1.1); see 7.2);
- 2) symptom checking (Clause 7.2); see 7.3);
- 3) guidance on screening stations (Clause 7.3); see 7.4);
- 4) health consultation (Clause 7.4); see 7.5).

### 2 Normative 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/> <https://www.electropedia.org/>

#### 3.1

##### confirmed case

person who has been confirmed to be infected with the infectious disease pathogen according to the diagnostic testing standard, regardless of clinical manifestations

[SOURCE: Korea Centers for Disease Control and Prevention <sup>[2]</sup> [\[2\]](#)]

#### 3.2

##### isolation

separation of sick people with a contagious disease from people who are not sick

[SOURCE: Centers for Disease Control and Prevention <sup>[3]</sup> [\[3\]](#)]

#### 3.3

##### pandemic

epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people

[SOURCE: A dictionary of epidemiology <sup>[4]</sup> [\[4\]](#)]

#### 3.4

##### quarantine

separation and restriction of the movement of people who were exposed to a contagious disease to see if they become sick

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Note\_1-to\_entry:-These people ~~may~~ have possibly been exposed to a disease and do not know it, or they ~~may~~possibly have the disease but do not show symptoms.

[SOURCE: Centers for Disease Control and Prevention-~~[5]~~[5]]

### 3.5

#### self-symptom checker app

tool that enables individuals to record and report pandemic-related symptoms, ~~and~~ that provides information on screening test sites, and offers consultation channels

Note\_1-to\_entry:-The consultation channels can provide a real time connection of the people with health experts for disease spread containment.

[SOURCE: Korea Centers for Disease Control and Prevention, Self-symptom checker-~~[5]~~[5]]

## 4 General

To build or enhance the capacity to monitor and manage the spread of the disease at the points of entry and onward, the following actions, at a minimum, should be taken:

- ~~—~~To maintain timely communication with visitors/entrants: ~~It~~ is an onerous task to contact entrants, due to unanswered calls and/or phones being offline. This incurs delayed quarantine and extra personnel to manage connection with entrants.
- ~~—~~To monitor the entrants' health status: ~~Provision~~provision of information to entrants of public health control measures including quarantine and monitoring.
- ~~—~~Information technology (IT) and infrastructure to support communication and screening applications: ~~Technology~~technology can enhance our response to pandemic management in a very significant way. For example, it is possible for disease-pertinent symptoms of an entrant to emerge after clearance from the point of entry due to a latent state of the virus. With the help of, for example, a smart phone-based application, it is made possible to track, monitor and manage the health of the entrant.

The purpose of this document is to provide guidelines towards the development of technology-based symptom screening applications to improve the efficiencies of infection containment practices.

## 5 The self-symptom checker app

### 5.1 General

Four core functional components of the self-symptom checker app are described in ~~Figure 1~~Figure 1. Each functional component comprises a set of functions, each of which executes specific tasks.

The specific tasks of each functional component of the self-symptom checker app are as follows:

- ~~—~~Self-registration: after the self-symptom checker app has been installed on the smartphone, tablet or personal computer of the individual, he/she shall register himself/herself to use the self-symptom checker app.
- ~~—~~Symptom checking: the individual shall record and report through the self-symptom checker app any symptoms he/she has experienced.
- ~~—~~Guidance on screening stations: the individual may~~can~~ at any time search and contact nearby screening test sites, locations of which are determined by the GPS service, or other positioning service available, ~~of~~ the device owned by the individual.
- ~~—~~Health consultation: the individual may~~can~~ contact health experts through available communication channels, such as chatbot, mobile messaging application or email.



Figure 1 — Functional components of the self-symptom checker app

## 6 External services and applications of the self-symptom checker app

The self-symptom checker app is the central application upon which either optional or external services and applications, or both, can operate (see [Figure 2](#)).

For example, national health authorities, subject to user consensus, can gain access to demographic and symptomatic data about the individuals who have exhibited potential symptoms, and reach out preemptively to them for test and quarantine. State or national health centres can receive information about the individuals who have been exhibiting symptoms for two or more days consecutively and instruct them to visit a screening test site.

NOTE Local, regional or national guidelines on patient (or personal) information can apply.