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Information technology — User interface component accessibility —

Part 15: Guidance on scanning visual information for presentation as text in various modalities

Technologies de l'information — Accessibilité du composant interface utilisateur —

Partie 15: Recommandations relatives à la numérisation des informations visuelles en vue d'une présentation sous forme de texte selon différentes modalités

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by ISO/IEC JTC 1, *Information technology*, SC 35, *User interfaces*.

A list of all parts in the ISO/IEC 20071 series can be found on the ISO website.

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Introduction

There are a wide variety of visual objects in a user's environment that provide information that could be scanned and processed to output text-based information about or related to the object. Providing text-based information can provide accessibility to diverse users in various contexts of use, including:

— persons who cannot see the information (due to vision or environmental limitations);

— persons who cannot approach the information closely enough to see it (due to physical or environmental limitations);

— people who cannot understand the information (due to cognitive or linguistic limitations);

— where the information is provided in a format that human cannot directly understand (e.g. barcodes, QR codes);

— where information content, beyond what is in the scanned image, can be obtained through additional processing.

This document provides guidance on various aspects of the user interface of applications that scan visual information. This includes selecting the types of information that are of interest to the user, helping the user locate visual objects of interest, helping the user position the object or device used for scanning, scanning the information, processing the scanned image, and outputting textual information in various modalities.

The guidance contained in this document can be applied to a wide range of devices, applications, and contexts of use.

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Information technology — User interface component accessibility —

Part 15: Guidance on scanning visual information for presentation as text in various modalities

1 Scope

This document provides guidance on various aspects of the user interface of applications that scan visual information that are used directly by humans, including:

— initiating the scanning application;

— setting user's preferences and configuring the scanning application;

— identifying the types of information currently of interest to the user;

— locating visual objects of interest to the user;

— creating a static image via scanning the visual object;

— identifying the information content provided by the visual object;

— processing scanned information and outputting the results to the user.

This document provides increased accessibility by addressing the user accessibility needs of diverse users in diverse contexts.

This document contains guidance that can be applied to a variety of devices, including:

— specialized devices that are dedicated to scanning and processing visual information;

— mobile devices (such as smartphones and tablets);

— general purpose computers with camera capabilities;

— office machines with scanning functions.

This document contains guidance that can be applied to various types of software, including:

— stand-alone scanning applications;

— applications including scanning functionalities;

— (scanning) applications that interoperate with other applications.

This document contains guidance that can be used for outputting scanned information in various modalities, including:

— audio outputs;

— visual outputs;

— tactile outputs;

— storing information for future use within the application performing the scanning;

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— electronic outputs (to other applications, systems, or devices including those directly connected and those connected via the Internet).

This document does not:

— apply to fully automated scanning that is not under direct human control;

— apply to applications that scan visual information for editing an image or just displaying it;

— provide guidance on the design of specific hardware devices involved in scanning;

— provide guidance on the specific objects that can be recognized or the specific software used to recognize these objects;

— provide guidance on the internal functioning of software that recognizes specific types of objects.

This document is intended for use by developers of applications that include user controlled scanning functionalities. It does not expect that an application includes all of these functionalities. It can be used for those functionalities that an application does provide.

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 terminological databases for use in standardization at the following addresses:

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

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

3.1
scanning
use of a camera or similar function to obtain image data

3.2
recognition
<scanning> processing of *scanned image* (3.6) to locate and identify visual *objects of interest* (3.4)

3.3
visual information
recognizable information presented by a visual object

3.4
object of interest
type of object that has been chosen by a user

3.5
information of interest
type of information that has been chosen to be processed by a *scanning* (3.1) system

3.6
scanned image
data resulting from *scanning* (3.1)

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3.7
scanning application
software that scans visual objects, recognizes and processes the *objects of interest* (3.4), and outputs the information about the objects

3.8
cropping
<scanning> cutting off part(s) of a *scanned image* (3.6) so that its dimensions, and possibly its information content, are changed

[SOURCE: ISO/IEC 5127:2017, 3.5.9.1.08, modified — "a document or graphic" has been replaced by "a scanned image".]

4 Conformance

It is recognized that all of the functionalities recommended in this document might not be implemented.

If an organization claims conformity of a system with this document, then it shall document:

a) the decisions of which recommendations from this document are and are not applicable to the system;

b) how it addresses each of the applicable recommendations in this document or the justifications for any course of action that deviates from any of the applicable recommendations.

In making such a claim, an organization should be specific about the basis on which it is made and should have evidence to support the claim. The claim can be based on self-assessment or by an assessment carried out by another party.

Annex B provides assistance in documenting conformance to this document.

5 Overview of scanning visual information for presentation as text in various modalities

5.1 General

Humans recognize a multitude of objects in the real world and in scanned image, despite the fact that their vision of the objects can vary somewhat from different viewpoints, in different sizes and scales or even when they are translated or rotated.

As a type of computer vision technology, object recognition is the task of finding and identifying the visual objects of interest. Utilizing this technology allows for a wide range of applications that can provide information associated with the object. It can identify, locate, and retrieve information of the physical features of the object, and search for detailed information relevant to the scanned image.

Utilizing this technology can help users with diverse capabilities in diverse contexts to identify and understand objects as well as environments. Users, who will be aided by this technology include:

— users who cannot see the visual object being scanned;

— users who cannot directly understand the visual object being scanned;

— users who cannot sufficiently approach the visual object being scanned.

Contextual examples of use that can be provided by this technology include:

— where the information is not provided in a format that a human can directly understand (e.g. barcodes, QR codes);

— where the information content beyond what is in the scanned image can be obtained through additional processing.

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