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# TECHNICAL REPORT

**Information technology – Brain-computer interfaces – Use cases**

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# INFORMATION TECHNOLOGY – BRAIN-COMPUTER INTERFACES – USE CASES

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ISO/IEC 27599 has been prepared by subcommittee SC 43: Brain-computer interfaces, of IEC technical committee JTC 1: Information technology. It is a Technical Report.

The text of this Technical Report is based on the following documents:

| Draft | Report on voting |
|---|---|
| JTC1-SC43/134/DTR | JTC1-SC43/152/RVDTR |

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, and the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

# INTRODUCTION

Brain-computer interface (BCI) has unique technical aspects, and there are few similar international standards or technical reports.

This document provides a collection of representative use cases of brain-computer interface applications in a variety of domains. The current document reflects contributions and discussions by ISO/IEC JTC 1/SC 43 experts and liaison members.

In particular, SC 43 performed research on the standardization requirements of BCI, and this document presents the conclusions. BCI technology is gradually being applied to many real-world application fields, including smart environments, medical and health, education, industrial control, and gaming. In the future, this technology will bring new changes and developments in more fields. Therefore, to ensure that BCI technology can better benefit humans, it is important to carry out standardization research work on the technology, which mainly focuses on the standardization of BCI technology, ethics, and safety.

# INFORMATION TECHNOLOGY – BRAIN-COMPUTER INTERFACES – USE CASES

## 1 Scope

This document provides a collection of representative use cases of brain-computer interface (BCI) applications in a variety of domains: proposed medical and health, industrial controls, smart environment, etc.

This document can be used for the development of potential standards, and it is valuable for a better comprehension of BCI.

This document is also helpful for BCI industries and products that provide support for communications among interested parties and stakeholders.

This document is applicable to all types of organizations (e.g. commercial enterprises, government agencies, not-for-profit organizations).

## 2 Normative references

ISO/IEC 8663, *Information technology – Brain-computer interfaces – Vocabulary*[1]

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 8663 and the following apply.

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

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

**3.1**
**minimally invasive BCI**
**minutely invasive BCI**
invasive brain-computer interface paradigm or system which requires a surgical procedure but with a low risk of infection and a minimal contact or disruption of neural tissue and vasculature

Note 1 to entry: The electrodes can be placed outside the dura mater (epidural).

**3.2**
**implanted sensor**
**implantable sensor**
sensor which is placed inside the body after surgical incisions, providing accurate in vivo physiological measurement in humans and other animals

[1] Under preparation. Stage at the time of publication: ISO/IEC CDV 8663:2024.