

# International Standards for HCI

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## INTRODUCTION

The last 20 years have seen the development of a wide range of standards related to HCI (human-computer interaction). The initial work was by the ISO TC 159 ergonomics committee (see Stewart, 2000b), and most of these standards contain general principles from which appropriate interfaces and procedures can be derived. This makes the standards authoritative statements of good professional practice, but makes it difficult to know whether an interface conforms to the standard. Reed et al. (1999) discuss approaches to conformance in these standards.

ISO/IEC JTC1 has established SC35 for user interfaces, evolving out of work on keyboard layouts. This group has produced standards for icons, gestures, and cursor control, though these do not appear to have been widely adopted.

More recently, usability experts have worked with the ISO/IEC JTC1 SC7 software-engineering subcommittee to integrate usability into software engineering and software-quality standards. This has required some compromises: for example, reconciling different definitions of usability by adopting the new term *quality in use* to represent the ergonomic concept of usability (Bevan, 1999).

It is unfortunate that at a time of increasing expectations of easy access to information via the Internet, international standards are expensive and difficult to obtain. This is an inevitable consequence of the way standards bodies are financed. Information on how to obtain standards can be found in Table 4.

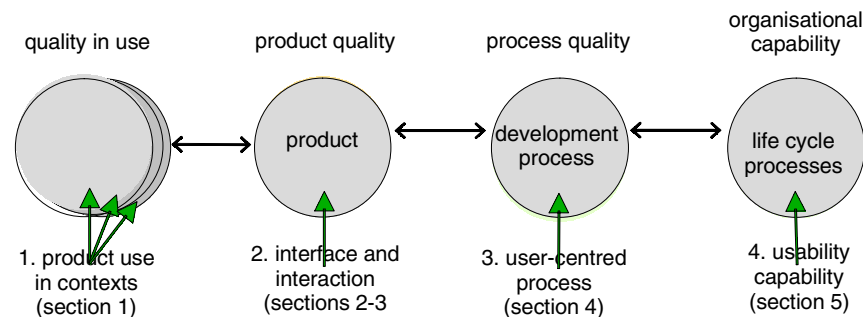
## TYPES OF STANDARDS FOR HCI

Standards related to usability can be categorised as primarily concerned with the following.

1. The use of the product (effectiveness, efficiency, and satisfaction in a particular context of use)
2. The user interface and interaction
3. The process used to develop the product
4. The capability of an organisation to apply user-centred design

Figure 1 illustrates the logical relationships: The objective is for the product to be effective, efficient, and satisfying when used in the intended contexts. A prerequisite for this is an appropriate interface and interaction. This requires a user-centred design process, which to be achieved consistently, requires an

*Figure 1. Categories of standards*



organisational capability to support user-centred design.

## DEVELOPMENT OF ISO STANDARDS

International standards for HCI are developed under the auspices of the International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC). ISO and IEC comprise national standards bodies from member states. The technical work takes place in working groups of experts, nominated by national standards committees.

The standards are developed over a period of several years, and in the early stages, the published documents may change significantly from version to version until consensus is reached. As the standard becomes more mature, from the committee-draft stage onward, formal voting takes place by participating national member bodies.

The status of ISO and IEC documents is summarised in the title of the standard, as described in Table 1, and Table 2 shows the main stages of developing an international standard.

## STANDARDS DESCRIBED IN THIS ARTICLE

Table 3 lists the international standards and technical reports related to HCI that were published or under development in 2004. The documents are

divided into two categories: those containing general principles and recommendations, and those with detailed specifications. They are also grouped according to subject matter. All the standards are briefly described in Table 3.

## APPROACHES TO HCI STANDARDS

HCI standards have been developed over the last 20 years. One function of standards is to impose consistency, and some attempt has been made to do this by ISO/IEC standards for interface components such as icons, PDA (personal digital assistant) scripts, and cursor control. However, in these areas, de facto industry standards have been more influential than ISO, and the ISO standards have not been widely adopted.

The ISO 9241 standards have had more impact (Stewart, 2000b; Stewart & Travis, 2002). Work on ergonomic requirements for VDT workstation hardware and the environment (ISO 9241, parts 3-9) began in 1983, and was soon followed by work on guidelines for the software interface and interaction (parts 10-17). The approach to software in ISO 9241 is based on detailed guidance and principles for design rather than precise interface specifications, thus permitting design flexibility.

More recently, standards and metrics for software quality have been defined by the software-engineering community.

The essential user-centred design activities needed to produce usable products are described in the ergonomic standard ISO 13407. These principles

*Table 1. ISO and IEC document titles*

<b>Example</b>	<b>Explanation</b>
ISO 1234 (2004)	ISO Standard 1234, published in 2004
ISO 1234-1 (2004)	Part 1 of ISO Standard 1234, published in 2004
ISO/IEC 1234 (2004)	Joint ISO/IEC Standard 1234, published in 2004
ISO TS 1234 (2004)	An ISO technical specification: A normative document that may later be revised and published as a standard
ISO PAS 1234 (2004)	An ISO publicly available specification: A normative document with less agreement than a TS that may later be revised and published as a standard
ISO TR 1234 (2004)	An ISO technical report: An informative document containing information of a different kind from that normally published in a normative standard
ISO xx 1234 (2004)	A draft standard of document type xx (see Table 2)

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