

ISO 13407: Human Centred Design Process for Interactive Systems

ISO 13407 is a description of best practice in user centred design. It provides guidance on design activities that take place throughout the life cycle of interactive systems. It describes an iterative development cycle where product requirements specifications correctly account for user and organisational requirements as well as specifying the context in which the product is to be used. Design solutions are then produced which can be evaluated by representative users, against these requirements.

The goal of the standard is to ensure that the development and use of interactive systems take account of the needs of the user as well as the needs of the developer and owner... to name but a few stakeholders.

The standard applies to software products, hardware/software systems, websites, and services.

The Standard describes:

... Four Principles of Human-Centred Design:

- active involvement of users
- appropriate allocation of function to system and to user
- iteration of design solutions
- multi-disciplinary design

... and Four Human-Centred Design Activities:

- understand and specify the context of use
- specify user and organisational requirements
- produce more than one candidate design solution
- evaluate designs against requirements

The term *user-centred* is one used in the Human Factors community, whereas in the wider Requirements or Software and Systems communities the term *stakeholders* has gained wide currency. The latter indicates a recognition that requirements originate from a wide group of people beyond the immediate users. Users such as secondary and indirect users (for example managers who read reports produced by an analytical software package but do not use the software themselves), people involved in writing technical documentation (for example on-line help, manuals tutorials), in training, in support (help desk staff), and developers and testers, to name a few. The term *stakeholders* is closer to the term *human-centred*.

All those involved in development, particularly software/system engineers and usability professionals have a professional responsibility to consider the definition of good practice in ISO 13407 with a view to adopting it as their baseline. It can make a very useful contribution to improving final product quality, by directly improving the methods underlying that product's development. In short, it improves the way we work. It enables us to work smarter.

ISO 12207: (1994) "Software lifecycle processes", presents a standard for the processes required to develop software. ISO 13407 was developed as a set of processes which can be added to ISO 12207 to make a complete set of processes required to develop human-centred interactive systems which have the benefits described above.

The Software Capability Maturity Model (CMM) is a staged process development framework toward the holy grail of defect-free software. Many software development organisations have

adopted the CMM and have prescribed the processes which their teams must follow in their organisation's software Quality Manuals. ISO 13407 can also be a useful resource to tap into to further develop the same Quality Manuals.

Human-centred processes require more investment in the early stages of the lifecycle, but have been found not only to reduce in-service costs but also to reduce development costs. In particular human-centred processes reduce the risk of unexpected changes in requirements and reduce re-work and installation costs. This is not to say that following ISO 13407 your users' requirements will not change, but that you will be in a better place to incorporate their changed requirements in a timely and cost-effective manner as adherence to the process ensures close and continual involvement with a representative sample of stakeholders. You are better able to balance the time-budget-quality constraints if you know the stakeholder requirements up-front. Your development effort can be correctly planned and budgeted and you are likely to meet your plans and your quality/release criteria. Otherwise, one is forever patching the software, and thereby increasing costs. In short, the extra effort expended early in a project pays dividends later in an overall development-cycle which is more efficient, predictable, and controlled. A more professional environment to work in and to commission for development.

Human-centred processes take account of context of use, the complete environment in which the interactive system will be used. The cooperative nature of so much computer related activity, whether in the office or the home, must inform the design of the systems. Whereas the scope of usability style guides for example, might be restricted in the main to screen design, human-centred processes deal with the total system within which software and hardware are components. A human-centred approach to process modelling and re-engineering, addresses cultural issues and staff acceptance and thus encourages buy-in to new processes, a prerequisite for institutionalising process improvement in any organisation.

Human-centred development is an approach to interactive system development that focuses specifically on making systems usable. It is a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques. The range of disciplines involved in modern system development can be enormous taking in business analysts, information architects, graphic designers, user experience designers, media designers, animators, interaction designers, programmers, and quality assurance personnel, to name a few. The application of these enhances effectiveness, efficiency and satisfaction, by designing out adverse effects of product usage on human health, safety and productivity.

Contact <http://www.ash-consulting.com> for assistance in embedding a human-centred approach in your organisation.