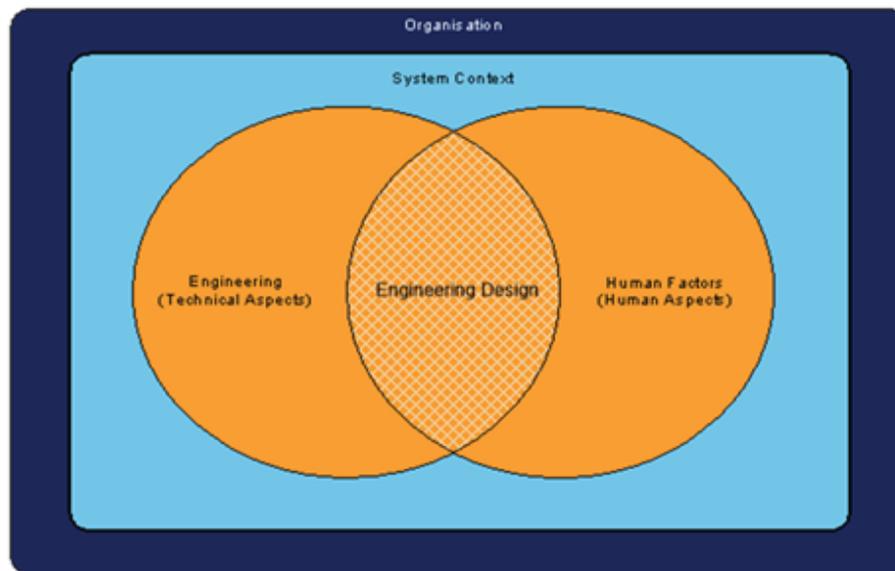


Human Factors considers the capacity and limitations of humans that should be taken into account in the design of a system, with the goal of optimising human and system performance. The figure below shows a simple diagrammatic representation of human aspects and technical aspects overlapping in a system context. This illustrates that optimal design arises from the dual consideration of human factors and technical considerations.



The International Ergonomics Association defines human factors as follows: Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system and the profession that applies theory, principles, data and methods to design in order to optimise human well-being and system performance.

There are three commonly regarded categories of Human Factors:

- **Physical** - this is concerned with human anatomical, anthropometric, physiological, and biomechanical characteristics as they relate to physical, sustained or sedentary activities;
- **Cognitive** - this is concerned with mental processes such as perception, memory, reasoning, mental workload, decision making, and so forth, as they affect interactions among humans and other elements of a system, job or specific task.
- **Organisational** - this is concerned with the organisation and optimisation of sociotechnical systems including organisation structures, policies and processes, teamwork, and so forth.

The process that considers human factors within an integrated approach to the engineering design and development process is human factors integration. Human factors integration is not a simple linear process. There will be many occasions, as is the case with the development of design solutions, where initial options will need revisiting and, in some cases, changing. In these circumstances the human factors considerations need to be re-evaluated and fed into the design development and decision making process. Therefore, view the human factors integration process as being highly proactive and dynamic and as an integral part of the design and development process.

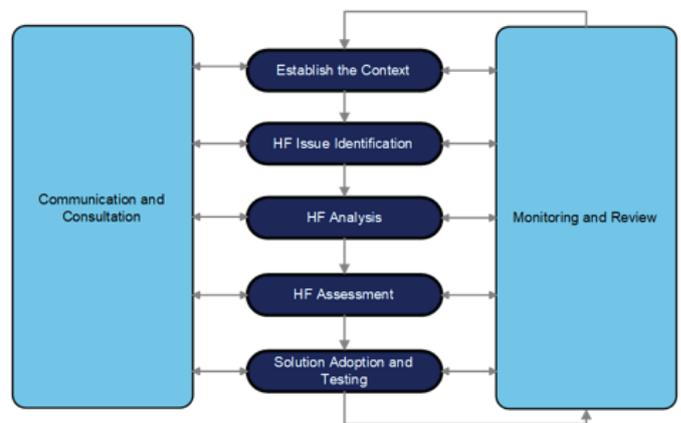
Compliance with the Disability Discrimination Act (DDA) and specifically the Disability Standards for Accessible Public Transport (DSAPT) and Disability (Access to Premises-Buildings) Standards (premises Standards) legislation is generally considered to lie within the remit of human factors integration.

Certain topics are common in human factors across many projects and should be the starting point when assessing the Human Factors aspects to be considered when evaluating the impact of an engineering design change. The list of topics below is not comprehensive and the order of presentation is not indicative of their importance or relevance to any specific situation.

Common Human Factors topics include the following:

- Error and violation;
- Level of automation;
- Design requirements;
- Using anthropometric data;
- Alarms and alerts;
- Human-computer interface (HCI) and Human-machine interface (HMI);
- Workspace and task design;
- Operating and maintenance manuals;
- Training; and
- Customer and the public.

Further information about human factors and human factors integration is in the RISSB Guideline Integration of Human Factors in Engineering Design.



About RISSB

We develop and maintain the Australasian Rail Industry Standards, Rules, Codes of Practice and Guidelines. Our vision is to be the trusted leader in the rail safety co-regulatory environment, providing products and services that enhance safety and efficiency.

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