Developing Human Factors Standards for a Transport Organisation

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1. Background

In NSW a major reform of how transport services and infrastructure are delivered has been underway for the last 18 months. Previously, the services were delivered vertically by transport mode. In the new structure there is a single body, Transport for NSW (TfNSW), coordinating the integrated delivery of services and infrastructure across the whole sector with separate organisations dedicated to operating and maintaining the assets. Included within this reform was a change in procurement philosophy to make doing business with TfNSW easier and to move towards the development of functional rather than prescriptive requirements and standards. TfNSW formally allocated the ownership and development of standards to the Asset Standards Authority (ASA) on 1 July 2013. The ASA is an independent body within TfNSW with a dual reporting responsibility to the Deputy Director General (DDG) of Transport Projects Division and the Secretary, Transport.

In order to enable industry to assume greater responsibility for delivery and assurance of engineering and design services the ASA adopted a model used in the Australia defence industry based on 'Authorised Engineering Organisations' (AEO). As an AEO, organisations are required to integrate human factors into all the work and services they provide to TfNSW.

The ASA focus is on assets – e.g. trains, stations, track, signals etc. Its mandate is to assure TfNSW assets are operable, maintainable, safe to operate and maintain and that deliver the required overall level of system performance.

2. Process

To assist industry to successfully deliver appropriate human factors, the ASA investigated what support AEOs may require through conducting research into what information was already available and through consultation with industry organisations and human factors professionals.

At the conclusion of this work it was found that there was no need to develop in depth reference material on human factors data, principles, methods or tools as there is a plethora of existing material to cover these areas. There was however, a need for a standard describing the process and accompanying guidance material focused at project personnel – engineers, designers, project managers and bid managers rather than human factors professionals. This document needed to be short, usable and readable but also include some high level topical guidance to help the intended users of the documents to recognise potential issues for their projects in the transport sector.

Compared to other documented processes the human factors integration (HFI) process included in the ASA standard is a simplified process based around the risk management process described in ISO 31000. The topical guidance includes information on; design requirements (human variability, error, violations, workload, distraction, all modes of operation, identifying, considering and consulting end users, impact of design decisions on training and operations), anthropometry, delivery and display of information including alerts and alarms, controls and displays, workspace and task design, seating, glare and reflections and specific requirements for customers and the public. The topics were chosen using the experience of the human factors professionals who had worked on a wide range of projects across transport identifying areas that were common, needing specifying or areas that regularly posed issues to transport projects. As the ASA is concerned with the asset the topics focused on the design aspects for operability and maintainability of an asset rather than the day to day operations or maintenance.

The standard and an associated guidance document were published on the ASA website on 22 August 2014 as publically available documents. As these are new standards with a different focus to traditional standards it is expected that they will be reviewed after a year to ensure they are providing relevant information and that industry is finding them useful.

Future work will be aimed at developing collaborative approaches to the adoption of the new standard within the industry.
3. Conclusion

From research and consultation it was found that an ASA human factors standard and guidance document was required to support the implementation of the AEO model for industry to incorporate human factors into their transport projects. There was a myriad of information available for human factors professionals but industry needed information that was concise and usable. The documents needed to allow engineers, designers and other project personnel to understand the HFI process and recognise some key topic areas that need to be considered to ensure delivered asset for transport projects are fit for purpose.