Moving closer to Human Factors integration in the design of rail systems: a UK regulatory perspective

Deborah Lucas
HM Railway Inspectorate, HSE
Manchester, UK

Abstract

Major rail accidents in the UK, including the Southall and Ladbroke Grove train crashes, have shown the key role of human factors in the prevention and mitigation of catastrophic risk on the railways. The human factors community appreciates how user centred design approaches can eliminate opportunities for human error and improve the mitigation of potential human failures. Whilst the concept of Human Factors Integration (HFI) is well established in the aviation sector, it has only recently been introduced in the UK rail sector and is still gaining acceptance amongst engineers. This paper outlined how regulatory intervention on a major rail construction project in the late 1990s was a driving force for new human factors standards on HFI. Case studies from the rail sector showing both initial successes and perceived barriers to the use of such approaches are given.

Introduction

Her Majesty's Railway Inspectorate (HMRI) is the health and safety regulator for UK railways. It currently employs over 200 staff predominantly operational and specialist inspectors at offices throughout the UK. HMRI inspectors investigate incidents and complaints on the railways. As the rail safety regulator HMRI inspectors enforce relevant UK health and safety legislation. This includes the powers to inspect and monitor safety compliance of members of the rail industry, to issue improvement and prohibition notices and to initiate prosecutions for breaches of health and safety legislation. The rail safety regulator is also responsible for the approval of all rail safety cases. Under existing legislation HMRI also grants approval for new works, plant and equipment. This latter function is changing with alterations to European and UK legislation.

During 2003 HMRI recruited two human factors rail specialists. This reflected an increased awareness of the need to promote better management of human factors issues in the rail industry as well as the recognition of the need for more accessible specialist advice within HMRI. The need for improved management of human factors issues in the rail industry was clear from a number of serious rail accidents and their investigations. For two of the more serious train crashes in the UK in recent years the public inquiries took evidence from psychologists as to the possible causes