

# Rail Human Factors

## Supporting the Integrated Railway



Edited by John R. Wilson, Beverley Norris, Theresa Clarke  
and Ann Mills

# Rail Human Factors Supporting The Integrated Railway Hardcover

**Ann Mills**



## **Rail Human Factors Supporting The Integrated Railway Hardcover:**

*Rail Human Factors* Ann Mills, 2017-07-05 In recent years for reasons connected to the organization of the industry technical developments and major safety concerns rail human factors has grown in importance at an international level Despite its importance however supporting literature has been largely restricted to specialist journal publications and technical reports *Rail Human Factors* addresses this imbalance by providing the first fully comprehensive overview of the area The volume includes contributions from leading ergonomists psychologists sociologists management scientists and engineers whose common theme is to investigate understand and design for people on the railways including staff passengers and the general public Every area of ergonomics human factors is covered physical design of work and equipment in maintenance cognitive ergonomics in driving signalling and control organizational and social ergonomics in the way teams are formed plans are made and organizations are structured and run Topics covered include Systems views of rail human factors Driver models and performance Train and cab design Network and train control systems including ERTMS Signals and signal SPADS Signalling and control center design Signaller performance Control center interfaces Workload situation awareness team working Human error and reliability Timetabling and planning Maintenance planning and work Safety climate and safety culture Passenger comfort and behaviour Station design Public information systems Level crossings Trespass and vandalism Ergonomics standards and guidelines Human Factors integration The book is the definitive guide for all those concerned with making railways safer more

**People and Rail Systems** John R. Wilson, 2007 Following on from 2005's *Rail Human Factors Supporting the Integrated Railway* this book brings together an even broader range of academics and practitioners from around the world to share their expertise and experience on rail human factors People and

American Book Publishing Record, 2003 People and Rail Systems John R. Wilson, Beverley Norris, Ann Mills, 2016-12-05 Following on from 2005's *Rail Human Factors Supporting the Integrated Railway* this book brings together an even broader range of academics and practitioners from around the world to share their expertise and experience on rail human factors The content is both comprehensive and cutting edge featuring more than 55 chapters addressing the following topics Passengers and public Driver performance and workload Driving and cognition Train cab and interfaces simulation and design Routes signage signals and drivability Signalling and control of the railway Planning for the railway Engineering work and maintenance Level crossings Accidents and safety Human error and human reliability SPADs signals passed at danger Human factors integration and standards Impairments to performance Staff competencies and training People and Rail Systems Human Factors at the Heart of the Railway will be invaluable for all those concerned with making railways safer more reliable of higher quality and more efficient It will be essential reading for policy makers researchers and industry around the world

**Rail Human Factors** Nastaran Dadashi, Anita Scott, John R Wilson, Ann Mills, 2013-02-19 The rail human factors ergonomics community has grown quickly and extensively and there is much increased recognition of the vital

importance of ergonomics human factors by rail infrastructure owners rail operating companies system developers regulators and national and trans national government This book the fourth on rail human factors is drawn from papers presented at the London 4th International Conference on Rail Human Factors The contributions cover the range of human and organisational issues on the railway from driving to signalling and control to maintenance and engineering work to passengers and security issues such as trespass and address improvements in safety reliability use of capacity efficiency and quality The book represents the best of recent work in rail human factors and starts to define the framework for the next few years As well as the human factors areas listed above the conference and thus the book are notable for sessions on simulation in rail human factors and on human factors in metro design and operation The book also reflects the increased attention being paid to and developments in understanding all aspects of rail stakeholders behaviour and also the contribution of ergonomics human factors to innovative network control systems which will enhance reliability safety and use of capacity The book will be of interest to a number of groups those working in the rail sector from a human factors point of view the larger rail industry and related bodies generally and in terms of transferrable knowledge to ergonomists and human factors specialists working in other industries [Highway Research Abstracts](#) ,1994 [Bulletin of the Atomic Scientists](#) ,1969-02 The Bulletin of the Atomic Scientists is the premier public resource on scientific and technological developments that impact global security Founded by Manhattan Project Scientists the Bulletin s iconic Doomsday Clock stimulates solutions for a safer world **Bulletin of the Atomic Scientists** ,1986-04 The Bulletin of the Atomic Scientists is the premier public resource on scientific and technological developments that impact global security Founded by Manhattan Project Scientists the Bulletin s iconic Doomsday Clock stimulates solutions for a safer world [Rail Human Factors around the World](#) John R Wilson,Ann Mills,Theresa Clarke,Jane Rajan,Nastaran Dadashi,2012-09-13 The rail human factors ergonomics community has grown quickly and extensively and there is much increased recognition of the vital importance of ergonomics human factors by rail infrastructure owners rail operating companies system developers regulators and national and trans national government This book the third on rail human factors is drawn from papers presented at the Lille 3rd International Conference on Rail Human Factors The contributions cover the range of human and organisational issues on the railway from driving to signalling and control to maintenance and engineering work to passengers and security issues such as trespass and address improvements in safety reliability use of capacity efficiency and quality The book represents the best of recent work in rail human factors and starts to define the framework for the next few years As well as the human factors areas listed above the conference and thus the book are notable for sessions on simulation in rail human factors and on human factors in metro design and operation The book also reflects the increased attention being paid to and developments in understanding all aspects of rail stakeholders behaviour and also the contribution of ergonomics human factors to innovative network control systems which will enhance reliability safety and use of capacity The book will be of interest to a number of groups

those working in the rail sector from a human factors point of view the larger rail industry and related bodies generally and in terms of transferrable knowledge to ergonomists and human factors specialists working in other industries

**Evaluation of Rail Technology** Anjum Naweed, Jillian Dorrian, Janette Rose, 2013 Cover Contents List of Figures List of Tables About the Editors List of Contributors Foreword Acknowledgements 1 Introduction The Promise and Perils of New Technology 2 Key Technology Related Human Factors Issues 3 Resistance to Technology 4 Effective User Feedback The Practical Value of Mock ups 5 Qualitative Research Rules Using Qualitative and Ethnographic Methods to Access the Human Dimensions of Technology 6 Future Inquiry A Participatory Ergonomics Approach to Evaluating New Technology 7 Using Task Analysis to Inform the Development and Evaluation of New Technologies 8 Evaluating Your Train Simulator Part I The Physical Environment 9 Evaluating Your Train Simulator Part II The Task Environment 10 Applying the Theories and Measures of Situation Awareness to the Rail Industry Index

*Evaluation of Rail Technology* Dr Anjum Naweed, Dr Chris Bearman, Dr Jillian Dorrian, Ms Janette Rose, Professor Drew Dawson, 2013-11-28 Rapid advancements in train control and in cab technologies provide significant opportunities for rail operators to improve efficiency and enhance their operations New technologies often provide elegant solutions to existing problems or new capabilities for the operator However new technologies may also represent a significant form of risk Thus it is important to balance the potential for significant improvement with justifiable concern about how the technology may unpredictably change the nature of the work If a technology is designed and implemented without considering the substantive human factors concerns that technology may lead to unintended consequences that can introduce safety issues and disrupt network performance It is important to note that even a well designed and beneficial technology may be rejected by the users who see it as a threat to their jobs status or working conditions This book discusses the issues surrounding rail technology and introduces a toolkit of human factors evaluation methods The toolkit provides a practical and operationally focused set of methods that can be used by managers considering investing in technology staff charged with implementing a technology and consultants engaged to assist with the design and evaluation process This toolkit can help to ensure that new rail technologies are thoughtfully designed effectively implemented and well received by users so that the significant investment associated with developing rail technologies is not wasted

Human Factors in the U.S. Railroad Industry Thomas G. Raslear, 2025-03-13 At the heart of the U S Railroad Industry are human operators who continue to make it work and operate However humans are susceptible to error fatigue and risky behaviors Understanding how these impact the safety of the industry remains a crucial topic to be studied Human Factors in the U S Railroad Industry investigates the human factor behind one of the world s biggest railway networks and synthesizes the body of research that has been produced by the Federal Railroad Administration FRA on Human Factors in the Railroad industry since 1993 During that time over 120 FRA reports were published on topics such as accident analysis grade crossing safety and trespassing working conditions and ergonomics employee fatigue safety culture and track

inspection This book organizes this body of work into topic areas that correspond to Moray's Sociotechnical System 2006 to provide a comprehensive way to understand the relationship between policy organizational culture and system safety It discusses tools such as risk exposure signal detection theory and program evaluation that have been applied to railroad projects and can be used to improve future railroad and transportation research It provides a synthesis of the reports across topic areas such as fatigue ergonomics and safety culture that are currently important within the wider human factors transportation research community The reader will develop an understanding of a human centered systems approach to the railroad industry which focuses on human capabilities and limitations with respect to human system interfaces operations system integration and organizational influences on safety Human Factors in the U S Railroad Industry will appeal to researchers academics students and professionals interested in human factors railway engineering civil engineering and industrial engineering **Special issue on rail human factors** Dr. Beverley Norris, 2005 Rail Human Factors, 2005

**Human Factors in Railroad Operations** Donald B. Devoe, United States. Federal Railroad Administration. Office of Policy and Plans, 1972 **Handbook of Rail Human Factors** John R. Wilson, Ann M. Mills, 2014-06-30 From almost a zero base 125 years ago rail human factors has grown into a large research and application community producing a large body of fundamental and applied research and effecting change in products processes and systems in rail industries around the world This book includes chapters which work from an applied need of the industry to highlight the relevant human factors and thus the investigations or interventions carried out and work from university research programs providing results which are then applied within design and innovation in the rail industry **Human Factors in the Railway Industry**,

**Understanding human factors**, 2006 **The Influence of Human Factors on the Performance of Railway Systems** Institution of Railway Signal Engineers (GB). Technical Committee, 1996 Human Factors of Future Rail Intelligent Infrastructure Nastaran Dadashi, 2012 The introduction of highly reliable sensors and remote condition monitoring equipment will change the form and functionality of maintenance and engineering systems within many infrastructure sectors Process transport and infrastructure companies are increasingly looking to intelligent infrastructure to increase reliability and decrease costs in the future but such systems will present many new and some old human factor challenges As the first substantial piece of human factors work examining future railway intelligent infrastructure this thesis has an overall goal to establish a human factors knowledge base regarding intelligent infrastructure systems as used in tomorrow's railway but also in many other sectors and industries An in depth interview study with senior railway specialists involved with intelligent infrastructure allowed the development and verification of a framework which explains the functions activities and data processing stages involved The framework includes a consideration of future roles and activities involved with intelligent infrastructure their sequence and the most relevant human factor issues associated with them especially the provision of the right information in the right quantity and form to the right people In a substantial fieldwork study a

combination of qualitative and quantitative methods was employed to facilitate an understanding of alarm handling and fault finding in railway electrical control and maintenance control domains. These functions had been previously determined to be of immediate relevance to work systems in the future intelligent infrastructure. Participants in these studies were real railway operators as it was important to capture users' cognition in their work settings. Methods used included direct observation, debriefs and retrospective protocols and knowledge elicitation. Analyses of alarm handling and fault finding within real life work settings facilitated a comprehensive understanding of the use of artefacts, alarm and fault initiated activities along with sources of difficulty and coping strategies in these complex work settings. The main source of difficulty was found to be information deficiency, excessive or insufficient information. Each role requires different levels and amounts of information, a key to good design of future intelligent infrastructure. The findings from the field studies led to hypotheses about the impact of presenting various levels of information on the performance of operators for different stages of alarm handling. A laboratory study subsequently confirmed these hypotheses. The research findings have led to the development of guidance for developers and the rail industry to create a more effective railway intelligent infrastructure system and have also enhanced human factors understanding of alarm handling activities in electrical control.

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