

 CRC Press
Taylor & Francis Group

HUMAN FACTORS IN **TRANSPORTATION**

SOCIAL AND TECHNOLOGICAL EVOLUTION
ACROSS MARITIME, ROAD, RAIL,
AND AVIATION DOMAINS



EDITED BY
GIUSEPPE DI BUCCHIANICO • ANDREA VALLICELLI
NEVILLE A. STANTON • STEVEN J. LANDRY

HUMAN FACTORS IN **TRANSPORTATION**

SOCIAL AND TECHNOLOGICAL EVOLUTION
ACROSS MARITIME, ROAD, RAIL,
AND AVIATION DOMAINS

EDITED BY

GIUSEPPE DI BUCCHIANICO • ANDREA VALLICELLI

NEVILLE A. STANTON • STEVEN J. LANDRY



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **Informa** business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2017 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works

Printed at CPI on sustainably sourced paper
Version Date: 20160520

International Standard Book Number-13: 978-1-4987-2617-7 (Hardback)

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (<http://www.copyright.com/>) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Library of Congress Cataloging-in-Publication Data

Names: Di Bucchianico, Giuseppe., editor.
Title: Social and technological evolution across maritime, road, rail, and aviation domains / editors, Giuseppe Di Bucchianico, Andrea Vallicelli, Neville A. Stanton, and Steven J. Landry.
Description: Boca Raton : Taylor & Francis, CRC Press, 2017. | Series: Human factors in transportation | Series: Industrial and systems engineering series ; 11 | Includes bibliographical references and index.
Identifiers: LCCN 2016021879 | ISBN 9781498726177 (hard back)
Subjects: LCSH: Transportation engineering. | Human engineering. | Transportation--Social aspects.
Classification: LCC TA1145 .S64 2017 | DDC 629.04--dc23
LC record available at <https://lccn.loc.gov/2016021879>

Visit the Taylor & Francis Web site at
<http://www.taylorandfrancis.com>

and the CRC Press Web site at
<http://www.crcpress.com>

HUMAN FACTORS IN **TRANSPORTATION**

SOCIAL AND TECHNOLOGICAL EVOLUTION
ACROSS MARITIME, ROAD, RAIL,
AND AVIATION DOMAINS

INDUSTRIAL AND SYSTEMS ENGINEERING SERIES

Series Editor
Waldemar Karwowski

RECENTLY PUBLISHED TITLES:

Human Factors in Transportation: Social and Technological Evolution Across Maritime, Road, Rail, and Aviation Domains

Giuseppe Di Bucchianico, Andrea Vallicelli, Neville A. Stanton, and Steven J. Landry

Ergonomics and Human Factors in Safety Management

Pedro Miguel Ferreira Martins Arezes and Paulo Victor Rodrigues de Carvalho

Manufacturing Productivity in China

Li Zheng, Simin Huang, and Zhihai Zhang

Supply Chain Management and Logistics: Innovative Strategies and Practical Solutions

Zhe Liang, Wanpracha Art Chaovalitwongse, and Leyuan Shi

Mobile Electronic Commerce: Foundations, Development, and Applications

June Wei

Managing Professional Service Delivery: 9 Rules for Success

Barry Mundt, Francis J. Smith, and Stephen D. Egan Jr.

Laser and Photonic Systems: Design and Integration

Shimon Y. Nof, Andrew M. Weiner, and Gary J. Cheng

Design and Construction of an RFID-enabled Infrastructure:

The Next Avatar of the Internet

Nagabhushana Prabhu

Cultural Factors in Systems Design: Decision Making and Action

Robert W. Proctor, Shimon Y. Nof, and Yuehwern Yih

Handbook of Healthcare Delivery Systems

Yuehwern Yih

Preface

The development of the transport industry, as a whole and in all its main domains (rail, road, maritime, and aviation), is essential for the well-being of our planet: it not only can facilitate the mobility of citizens and goods, but also has a significant impact on economic growth, on social development, and on the environment.

In recent decades, moreover, the movement of people and goods in the world has seen unprecedented expansion. The overall increase in traffic at the global level has been both a cause and consequence of many contemporary phenomena, often interconnected: increasing globalization, with the abolition of many import duties and borders; the liberalization of markets, which has in many cases led to substantial price reductions; the change of social structures and demographic evolution, which have fueled the increase in travels and trips; increasing urbanization, which favored the commuting phenomena; the process innovations in production systems and delivery of goods, which saw the elimination of warehouse stocks, the development of “just-in-time” supplies, and the rapid growth of mail order sales; the technological advances in energy and ICT (information and communication technology), which have revolutionized the same systems and the means of transportation.

So the transport sector has a growing role in the economic and social development of contemporary societies. This also related to the frantic evolution of technology, especially electronic and information, which led to inevitable and profound changes, not only in economic activities, but also in our daily lives. If, however, the sector as a whole on the one hand continues to have an unprecedented dynamism and economic prosperity, it determines ever-increasing social and ecological costs. Many problematic aspects are due in large part to a substantial gap between recent technological and social evolution and some endogenous and substantially inefficient characteristics of transport systems, already largely anachronistic, that tend to slow down its evolution to the idea of an overall system of integrated and sustainable mobility.

As a particular “critical” feature of the entire transport sector, it is important to first consider that it is largely characterized by small and microenterprises: the majority of companies have fewer than 50 employees, while large companies are considered typical mostly for air and rail transportation. This is certainly a hindering factor to the idea of systems integration and of the creation of combined and intermodal transport chains.

This assumption impacts directly or indirectly also on other factors, in many ways unfavorable, that crosswise characterize the whole sector.

This starts from the workforce, which continues to be predominantly male: in Europe, for example, men represent more than 80% of workers in the transport sector, although the gender difference is not so great in all subsectors. Actually the number of women working in the transport sector is growing, but on terms that do not conform to this changing reality. In fact, even for the jobs and the sectors with a growing number of female workers, ergonomic investments in these workplaces still continue to extensively refer to a work environment considered for men only, in terms of infrastructure, culture, and conditions of work. In this situation, women working in the transport sector must still continue to adapt to an organization focused mainly on male labor.

Again with reference to the personnel, it is necessary to reflect also on the age of employees, because the transport workforce is aging at a faster rate than the general active

population in all other sectors. Again it can be useful to refer to Europe: although it is a continent notoriously “old,” it is significant that a recent study highlighted how only about 6% of workers in the transportation sector are less than 25 years old (versus more than 11% that instead represents the youth labor force in the total EU workforce). The aging phenomenon, which also affects the transport sector, raises the issue of how to ensure better working conditions for older workers and how to contribute to the updating of their skills in relation to ongoing organizational and technological changes that characterize the sector while responding to the ever-increasing needs of innovation expressed by customers. In fact, the pervasive diffusion of technical applications, such as electronic remote control systems and mobile means of communication, has changed the content of the workload: the transport workers have to operate using this complex equipment, and it is not always a simple task, especially for the elderly, who therefore need ongoing and adequate training in step with these changes.

The need for training is also expressed by the workers with part-time contracts, widely used in this industry, especially for more monotonous activities and those requiring less professional skills.

The transport sector is also one of the productive sectors employing more migrant workers, mainly employed in jobs that typically are the most dirty, dangerous, and tiring ones: primarily as drivers on long distances in road transport; for baggage handling and cleaning in air transport; in maintenance and services on ships. Their work is often characterized by uncertainty, poor working conditions, part-time jobs, and low salaries. The growing size on a planetary scale of workers’ migration puts in the foreground, next to the theme of safety and health in the workplace, the theme of cultural diversity and, therefore, of different habits, practices, and approaches to the development of tasks and activities. This raises, therefore, the need to adopt cross-cultural and universal procedures and practices easily transmitted through user-friendly devices, organizational systems taking into account human diversity (especially cultural and linguistic), and lifelong learning programs.

Further, secondary phenomena are flanked to the above features characterizing the whole transport sector related to the transformation of this sector in recent years and which tend to amplify their critical aspects: the rapid growth of air transport, especially low cost, with infrastructure subject to new intense activities, in relation to many more users, in environments which must be tailored to continuous change; the impact of the change in consumer habits, for example, relating to food, which affects the infrastructure related to the food industry; the increase in requests of dedicated transport for specific users or for private journeys of a short distance; the change of travel mode as far as distances, locations, destinations, and duration of the trips; the effect of an aging population on the demands of transport and on its related infrastructure; the rapid growth of public short distance commuting transport, even for specific user groups (school children, employees, etc.).

All of the above-mentioned characteristics and phenomena, finally, in the last few years have necessarily had to, and will more and more in the future, confront the environmental issues posed by the rapid growth in emissions due to transport systems. It is notoriously one of the largest global challenges to be faced in the fight against climate change. Over the past decade, in fact, emissions from transportation increased at a faster rate than any other industry that uses energy, and about a quarter of the gas emissions are mainly due to road vehicles. Achieving sustainable development will require a radical change of culture and of the overall infrastructure of transportation with the involvement of many other sectors in addition to the energy and environmental ones, such as the technological areas

of information and communication, agriculture, and trade. This will require a multidisciplinary approach to issues that are increasingly interconnected.

In this complex and evolutionary scenario related to the transport sector, we wonder what role ergonomics may have for the sustainable development of the sector, this starting from a clarification on what the new paradigms of “well-being,” which ergonomics refers to, will be.

In this regard, Ezio Manzini in 2004 summarized very clearly the transition from a “possession-based” well-being typical of preindustrial and industrial societies, to an “access-based” well-being in the transition to postindustrial societies, to, finally, a “context-based” well-being. And it is precisely this last conception of well-being, which will accompany the sustainable development of contemporary societies, that allows the recognition of the value of diversity of physical and social contexts, such as of diversity among individuals, in the idea that their valorization could carry to an overall improvement in the quality of life.

It is a transformation that will invest all the spheres of life and actions of man more and more, including those relating to transportation.

As a matter of fact, the new applied ergonomic issues related to transportation are required to deal with some emerging topics, such as growing automatism and manning reduction, advances in and pervasiveness of ICT, or new demographic and social phenomena, such as aging or multiculturalism.

New scenarios and vision for the years to come require new interpretation and development, including those issues and thematic areas that have already been well established in ergonomics literature and expertise. We refer, for example, to safety and wellness of workplaces, in the changing work scenario; to information and human-machine interaction onboard and in the infrastructures and systems connected with all means of transportation, in the ICT pervasiveness scenario; to human diversity and environmental design, in the new socio-demographic phenomena scenario.

Probably only renewing the interpretation of traditional topics or facing emerging ones related to ongoing social and technological phenomena in an innovative way, ergonomics can contribute to the development of an overall system of truly integrated and sustainable mobility.

This book aims to provide a first possible contribution in this direction, through a collection of reflections, experiences, and researches related to the relationship between human factors, recent social and technological developments, and the main areas of transportation: maritime, rail, road, and aviation.

Giuseppe Di Bucchianico

Editors

Giuseppe Di Bucchianico (Pescara, 1967), architect, earned a master's degree in ergonomics from Politecnico di Milano in 2000 and a PhD in technological culture and design innovation from University of Chieti-Pescara in 2001.

He currently is an associate professor in industrial design at the University of Chieti-Pescara. He conducts his research mainly in the field of relationships between individuals, artifacts, and environments, for the development of a holistic and user-centered approach to design, themes with which he has participated in several national and international conferences. The application areas are those of yacht design, design for all, and ergonomics for sustainable development.

Dr. Di Bucchianico is co-chairing several scientific and technical boards such as the technical committee "Ergonomics and Design for Sustainability" at IEA (International Ergonomic Association); the scientific advisory board at the International Conference on Human Factors in Transportation, and at the International Conference on Design for Inclusion, both in the ambit of the AHFE international conferences. Currently he is also president at Design for All Italia and vice president administration at EIDD-Design for All Europe.

Dr. Di Bucchianico has won numerous international architecture and design competitions and awards.

Professionally, he worked mainly as an industrial designer, with an approach geared primarily to social inclusion, working with numerous companies (including Gattocucine, Valcucine, Foster, Abis, and Tecnolam), exhibiting at major exhibitions and events in Milan, Verona, Brussels, Moscow, Paris, Frankfurt, and New York, and receiving reviews in prestigious magazines.

Andrea Vallicelli (Rome, 1951), architect, is professor of industrial design at the University of Chieti-Pescara and teacher in the master of yacht design at the Politecnico di Milano.

He has undertaken wide design activity in different areas. For the boating industry he has designed numerous pleasure boats built in Europe and America including Brava (1979 New York–1986 Limington); Azzurra (America's Cup 1983, 1987); Orsa Maggiore (the training ship for the Italian Navy, 1994); Virtuelle (in collaboration with Philippe Starck, 2000) and the family lines "Comet" (1985–2010) and "ISA" (2004–2010). In the furniture sector, he has collaborated with the Busnelli Industrial Group.

Dr. Vallicelli received several awards and recognitions and an overview of his works has been exhibited in the Pavilion of Contemporary Art in Milan (PAC) as part of the exhibition "It's Design," in 1983; in the Car & Yacht Designers' exhibition "The Birdhouse Project" in Osaka (Japan), in 2000; in the exhibition for SMEs in Canton (China), in 2006; and in the exhibition "Sport Design in Creative Interaction" in Jinan (Shandong, China), in 2008.

Dr. Vallicelli was the scientific coordinator for the unit of Chieti of the PRIN national researches (co-financed by the Italian Ministry of University and Scientific Research): "Sistema Design Italia" (which was awarded with the Compasso d'Oro ADI XIX 2001), in 1997/1999; "The design for the industrial districts," in 2001–2002; and "Me-Design," in 2002/2003.

He is co-chair of the scientific advisory board at the International Conference on Human Factors in Transportation, in the ambit of the AHFE International Conferences; and he was a member of the National Design Council of the Ministry of Cultural Heritage and he is a member of the Executive Committee of the Scientific Italian Society of Design (SID).

Neville A. Stanton earned his BSc in psychology from the University of Hull, Hull, UK, in 1986; an MPhil in applied psychology in 1990; a PhD in human factors engineering from Aston University, Birmingham, UK, in 1993; and a DSc in human factors engineering for the University of Southampton, Southampton, UK, in 2014.

Dr. Neville is both a chartered psychologist registered with the British Psychological Society and a chartered engineer registered with the Institution of Engineering and Technology in the United Kingdom. He has held a chair in human factors engineering since 1999, joining the University of Southampton in the Engineering Centre of Excellence in 2009. His research interest includes development and validation of ergonomics and human factors methods, analysis, and investigation of accidents, design of human-machine interaction, and modeling and investigation of human performance in highly automated systems. The Institute of Ergonomics and Human Factors awarded Dr. Neville the Otto Edholm Medal in 2001 for his contribution to ergonomics research, the President's Medal in 2008, and the Sir Frederic Bartlett Medal in 2012 for a lifetime contribution to ergonomics research. In 2007, The Royal Aeronautical Society awarded him the Hodgson Medal and Bronze Award with colleagues for their work on flight-deck safety.

Steven J. Landry is an associate professor and the associate head in the School of Industrial Engineering at Purdue University, and associate professor of aeronautics and astronautics (by courtesy). He has a BS in electrical engineering from Worcester Polytechnic Institute, an SM in aeronautics and astronautics from Massachusetts Institute of Technology, and a PhD in industrial and systems engineering from Georgia Tech. At Purdue, he conducts research in air transportation systems engineering and human factors. He teaches undergraduate and graduate courses in air transportation, human factors, statistics, and industrial engineering. Prior to joining the faculty at Purdue, Dr. Landry was an aeronautics engineer for NASA at the Ames Research Center, working on air traffic control automation. Dr. Landry was also previously a C-141B aircraft commander, instructor, and flight examiner with the US Air Force. He has over 2500 heavy jet flying hours, including extensive international and aerial refueling experience.

Dr. Landry's research has been funded by, among others, NASA, the Department of Transportation, and the FAA. Dr. Landry has published over 80 peer-reviewed journal articles, conference papers, and book chapters, including book chapters on human-computer interaction, automation, and human factors. He coauthored the second edition of the book *Introduction to Human Factors and Ergonomics for Engineers* (Lawrence Erlbaum Associates) with Dr. Mark Lehto, and published book chapters on Aviation human factors, in Salvendy, G. (Ed.), *Handbook of Human Factors and Ergonomics*, 4th edition; Human-computer interaction in aerospace, in J. Jacko (Ed.), *The Human Computer Interaction Handbook*, 3rd Edition; and Flight deck automation, in Nof, S. (Ed.), *Handbook of Automation*, Springer.

Dr. Landry is a senior member of the American Institute of Aeronautics and Astronautics and is a member of Sigma Xi; the IEEE Systems, Man, and Cybernetics Society; the Human Factors and Ergonomics Society; and the Institute of Industrial Engineers.

Contributors

Naseem Ahmadpour

Centre for Design Innovation
Swinburne University of Technology
Melbourne, Victoria, Australia

Bettina Bajaj

Centre for Transport Studies
Imperial College London
London, United Kingdom

Victoria A. Banks

Transportation Research Group
University of Southampton
Southampton, United Kingdom

Vanessa Beanland

Centre for Human Factors and
Sociotechnical Systems
Faculty of Arts, Business and Law
University of the Sunshine Coast
Maroochydore, Queensland, Australia

Todd J. Callantine

Human-Systems Integration Division
San José State University/NASA Ames
Research Center
Moffett Field, California

Stefania Camplone

Department of Architecture
University of Chieti-Pescara
Pescara, Italy

Miranda Cornelissen

Monash Injury Research Institute
Monash University
Melbourne, Australia

and

Griffith Aviation, School of Biomolecular
and Physical Sciences
Griffith University
Brisbane, Australia

Jacquelyn Crebolder

Defence Research and Development
Canada
Dartmouth, Nova Scotia, Canada

Christian Denker

OFFIS—Institute for Information
Technology
R&D-Division Transportation
Oldenburg, Germany

Massimo Di Nicolantonio

Department of Architecture
University of Chieti-Pescara
Pescara, Italy

Tamsyn Edwards

Human Factors Research Group
Faculty of Engineering
University of Nottingham
Nottingham, United Kingdom

Sebastiano Ercoli

Dipartimento di Design
Politecnico di Milano
Milan, Italy

Emre Ergül

Dipartimento di Design
Politecnico di Milano
Milan, Italy

Florian Fortmann

OFFIS—Institute for Information
Technology
R&D-Division Transportation
Oldenburg, Germany

Hartmut Fricke

Air Transport Technology and Logistics
Dresden University of Technology
Dresden, Germany

Marco Furtner

Department of Psychology
University of Innsbruck
Innsbruck, Tyrol, Austria

Katja Gaunitz

Air Transport Technology and Logistics
Dresden University of Technology
Dresden, Germany

Ashley Gomez

Human-Systems Integration Division
San José State University/NASA Ames
Research Center
Moffett Field, California

Elizabeth M. Grey

Centre for Human Factors and
Sociotechnical Systems
Faculty of Arts, Business and Law
University of the Sunshine Coast
Maroochydore, Queensland, Australia
and

Human Factors Team
Transport Safety Victoria
Melbourne, Victoria, Australia

Vimmy Gujral

Human-Systems Integration Division
San José State University/NASA Ames
Research Center
Moffett Field, California

Axel Hahn

OFFIS—Institute for Information
Technology
R&D-Division Transportation
Oldenburg, Germany

Eric Holder

Man-Machine-Systems
Fraunhofer Institute for Communication,
Information Processing and
Ergonomics
Wachtberg, North Rhine-Westphalia,
Germany

I. C. MariAnne Karlsson

Division Design & Human Factors
Chalmers University of Technology
Göteborg, Sweden

Barry Kirwan

EUROCONTROL Experimental Centre
Bretigny/Orge, France

Dirk Schulze Kissing

Aviation and Space Psychology
German Aerospace Center/Deutsches
Zentrum für Luft- und Raumfahrt
Hamburg, Hamburg, Germany

Michael Kupfer

Critical Networks
Harris Orthogon GmbH
Bremen, Germany

Michael G. Lenné

Monash University Accident Research
Centre
Monash University
Melbourne, Victoria, Australia

Gitte Lindgaard

Centre for Design Innovation
Swinburne University of Technology
Melbourne, Victoria, Australia

Monica Lundh

Division of Maritime Human Factors
and Navigation
Chalmers University of Technology
Department of Shipping and Marine
Technology
Gothenburg, Sweden

Arnab Majumdar

Centre for Transport Studies
Imperial College London
London, United Kingdom

Yemao Man

Department of Shipping and Marine
Technology
Chalmers University of Technology
Gothenburg, Sweden

Peer Manske

Center of Competence Safety
IABG mbH
Ottobrunn, Bavaria, Germany

Alastair Manson

Institute for Infrastructure and Environment
Heriot-Watt University
Edinburgh, Scotland, United Kingdom

Markus Martini

Department of Psychology
University of Innsbruck
Innsbruck, Tyrol, Austria

Pierangelo Masarati

Dipartimento di Scienze e Tecnologie
Aerospaziali
Politecnico di Milano
Milan, Italy

Roderick McClure

Monash Injury Research Institute
Monash University
Melbourne, Australia

Rich C. McIlroy

Transportation Research Group
University of Southampton
Southampton, United Kingdom

Joey Mercer

Human-Systems Integration Division
NASA Ames Research Center
Moffett Field, California

Lothar Meyer

Air Transport Technology and Logistics
Dresden University of Technology
Dresden, Germany

Ann Mills

Professional Head of Human Factors
RSSB
London, United Kingdom

Alice Monk

Human Factors Specialist
RSSB
London, United Kingdom

Maria Carola Morozzo della Rocca

Department of Science for Architecture
Polytechnic School, University of Genoa
Genova, Italy

Florian Motz

Man-Machine-Systems
Fraunhofer Institute for Communication,
Information Processing and
Ergonomics
Wachtberg, North Rhine-Westphalia,
Germany

Vincenzo Muscarello

Dipartimento di Scienze e Tecnologie
Aerospaziali
Politecnico di Milano
Milan, Italy

Massimo Musio-Sale

Department of Sciences for Architecture
Polytechnic School, University of Genoa
Genova, Italy

Ursa Katharina Johanna Nagler

Analyses and Further Development
Federal Office of Bundeswehr Personnel
Management
Cologne, North Rhine-Westphalia,
Germany

Gina Netto

School of Energy, Geoscience
Infrastructure and Society
Heriot-Watt University
Edinburgh, Scotland, United Kingdom

Lena Nilsson

The Swedish National Road and Transport
Research Institute (VTI)
Linköping, Sweden

Marco Michael Nitzschner

Aeromedical and Psychological
Assessment of Aircraft Accidents
Air Force Centre of Aerospace Medicine
Cologne, North Rhine-Westphalia,
Germany

Helen Omole

School of Energy, Geoscience
Infrastructure and Society
Heriot-Watt University
Edinburgh, Scotland, United Kingdom

Marie-Christin Ostendorp

OFFIS—Institute for Information Technology
R&D-Division Transportation
Oldenburg, Germany

Katherine L. Plant

Transportation Research Group
University of Southampton
Southampton, United Kingdom

Thomas Porathe

Department of Product Design
Norwegian University of Science and
Technology (NTNU)
Trondheim, Norway

Giuseppe Quaranta

Dipartimento di Scienze e Tecnologie
Aerospaziali
Politecnico di Milano
Milan, Italy

Andrea Ratti

Politecnico di Milano
Milan, Italy

Gemma J. M. Read

Centre for Human Factors and
Sociotechnical Systems
Faculty of Arts, Business and Law
University of the Sunshine Coast
Maroochydore, Queensland, Australia
and

Monash University Accident Research
Centre
Monash University
Clayton, Victoria, Australia

Jean-Marc Robert

Department of Mathematics and Industrial
Engineering
Polytechnique Montréal
Montréal, Québec, Canada

Pierre Sachse

Department of Psychology
University of Innsbruck
Innsbruck, Tyrol, Austria

Joshua Salmon

Department of Psychiatry & Psychology/
Neuroscience
Dalhousie University
Halifax, Nova Scotia, Canada

Paul M. Salmon

Centre for Human Factors and
Sociotechnical Systems
Faculty of Arts, Business and Law
University of the Sunshine Coast
Maroochydore, Queensland, Australia

Kirsten Schreibers

INTERGO Human Factors &
Ergonomics
Utrecht, The Netherlands

Sarah Sharples

Human Factors Research Group
University of Nottingham
Nottingham, United Kingdom

Ian Stevens

Suicide Prevention Programme Manager
Network Rail
Milton Keynes, United Kingdom

Niklas Strand

The Swedish National Road and Transport
Research Institute
Göteborg, Sweden

Ailsa Strathie

School of Energy, Geoscience,
Infrastructure and Society
Heriot-Watt University
Edinburgh, Scotland, United Kingdom

Richard van der Weide

INTERGO Human Factors & Ergonomics
Utrecht, The Netherlands

Guy Walker

Centre for Sustainable Road Freight
and
School of Energy, Geoscience,
Infrastructure and Society
Heriot-Watt University
Edinburgh, Scotland, United Kingdom

Colette Weeda

INTERGO Human Factors & Ergonomics
Utrecht, The Netherlands

John Wilson

Human Factors Research
Group
University of Nottingham
Nottingham, United Kingdom

Kristie L. Young

Monash University Accident Research
Centre
Monash University
Melbourne, Victoria, Australia

