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**EDITORIAL: INTRODUCTION TO GROUP RESEARCH PROJECTS  
DEVELOPED WITHIN AN INTENSIVE PROGRAMME IN RAILWAY AND  
LOGISTICS**

**Summary.** This paper introduces a special issue of the Journal Transport Problems on group research projects developed within the RailNewcastle summer school organised and held in Newcastle upon Tyne, North East England. The participants (both educators and students) worked together in multinational and multidisciplinary groups to produce research projects. The topics of the group research projects were based around railway and logistics-related problems. As a result a collection of the best articles is produced for the purposes of this special issue.

**OD REDAKCJI: PRZEDMOWA DO PROJEKTÓW BADAWCZYCH  
OPRACOWANYCH PRZEZ MIĘDZYNARODOWE ZESPOŁY W RAMACH  
INTENSYWNEGO PROGRAMU POŚWIĘCONEGO KOLEJNICTWU I LOGISTYCE**

**Streszczenie.** Ten wstęp wprowadza do specjalnego wydania czasopisma Problemy Transportu poświęconego projektom badawczym przygotowanym w ramach letniej szkoły RailNewcastle, która była zorganizowana i odbyła się w Newcastle upon Tyne, w północno-wschodniej Anglii. Uczestnicy (zarówno nauczyciele, jak i studenci) pracowali razem w grupach międzynarodowych i interdyscyplinarnych w celu opracowania projektów badawczych. Tematy projektów badawczych grup są poświęcone problemom kolejnictwa i logistyki. To specjalne wydanie jest przygotowane na podstawie zebrania najlepszych artykułów.

This special issue is a result of multinational/multicultural research team work organised during the RailNewcastle Intensive Programme in railway and logistics. Specifically the issue reflects on the outcome of research group projects based around railway and logistics-related problems, ranging from rail policy and practice, through rail infrastructure, to rail service design. The material can be used as an inspiration for further student research projects and/or for courses on railway systems, logistics and transport as a whole.

The special issue explores the sustainability credentials of railway transport in comparison to other transport modes. The concept of a sustainable corridor is studied through desk top research on energy

consumption, noise and pollution. A reference of UIC, Railway noise in Europe: a 2010 report on the state-of-the-art is made and noise maps for key nodes in EU are discussed. The railway transport appears to be the preferred choice for a sustainable transport.

City logistics and urban freight by rail are both included in this special issue. The possibility of using council warehouses and metro systems for final delivery in cities is discussed. How to use existing infrastructure effectively, how to distribute freight quietly without disturbing the daily life of the commuter, how to deliver on time at low costs; are some of the questions asked in which led to a conceptual design for innovative system envisaged to distribute freight seamlessly in cities.

Light Rail systems and factors for customer satisfaction are also discussed. The services offered by “The Docklands Light Railway (London, UK)” and “Metro Sul do Tejo, MST (Almada, Portugal)” have been studied and compared. Improvements in terms of price, time of journey and connectivity are identified. Specifically it is shown that real systems can learn from each other and good practice can be exchanged and transferred.

The importance of rail passenger stations has been revealed. User satisfaction as well as customer services in railway passenger stations have also been looked at. Specifically a holistic method to study the level of satisfaction from current station layouts and service designs has been developed and implemented using survey techniques and simple data analysis. Over 150 frequent users of Newcastle Central have taken part in this study. Results suggest high levels of user satisfaction from both the customer services offered and the available facilities.

The Trans-European Transport Networks (TEN-T), priority projects for Europe, multimodal, intermodal services in a corridor are analysed. Sourcing from Eurostat and DataMarket, a modal split of freight transport in the EU member states (EU-27) is shown. It has been concluded that freight corridors alone would not contribute significantly to the economy of the union, instead networks of corridors should be designed and implemented; hence ways for connecting freight corridors to form networks should be found and recommended.

A discussion on smart rail infrastructure, what it is and what it does is offered. The technical and operational principles of ERTMS and GSM-R are presented. The benefits of implementing ITS in rail are demonstrated. For sustainable use of energy, synchronisation of timetables is suggested. Regenerative braking as a new concept for reusing regenerated electricity within the transport network itself and to replace friction braking is also introduced. The discussion is supported by a number of examples and cases studies: deployment of GSM-R, ARRIVAL method, Implementation ERTMS in Poland.

Technical characteristics and operational aspects of metro systems are studied using *World Metro Figures*, interesting facts are revealed. Four cases from Europe have been selected for comparison; Sofia Metro, Warsaw Metro, Transportes de Lisboa and Tyne and Wear Metro. When looking at deployment, length, capacity, stations, utilization, ticketing and rolling stock, similarities and differences between the metro systems selected are described and analysed.

High Speed Rail (HSR) as a viable and attractive option is also discussed. The characteristics and specificities of TGV, France and Shinkansen model are amplified and compared. The potential for High Speed Rail services in the US is discussed. It appears that the California HSR project, in particular could benefit greatly by compiling the operational model of TGV, France and the measures for earthquake protection incorporated into the Shinkansen model.

The subject of maximising capacity and revenue through alternative rail vehicle’s design is also included in this special issue. The possibility to increase the number of commuters in a vehicle is studied. A new design for standing up seats is elaborated. The newly designed coach can easily accommodate over 100 commuters.

For further information about the RailNewcastle intensive programme the interested reader is referred to [1] and [2].

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**References**

1. Marinov, M. An Intensive Programme in Railway and Logistics. Special Issue. *Research in Transportation Economics*. Vol. 41. ISSN: 0739-8859.
2. Marinov, M. & Ricci, S. Organization and Management of an Innovative Intensive Programme in Rail Logistics. *Procedia - Social and Behavioral Journal*. 2012. Vol. 46. P. 4813-4816.

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