

UNIVERSITY OF BIRMINGHAM

University of Birmingham
Research at Birmingham

Editorial

Goto, Keiichi; Matsumoto, Akira; Ishida, Makoto; Chen, Hua; Kaewunruen, Sakdirat

DOI:

[10.3389/fbuil.2020.00054](https://doi.org/10.3389/fbuil.2020.00054)

License:

Creative Commons: Attribution (CC BY)

Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

Goto, K, Matsumoto, A, Ishida, M, Chen, H & Kaewunruen, S 2020, 'Editorial: UK-Japan Symposium on Highspeed Rails', *Frontiers in Built Environment*, vol. 6, 54. <https://doi.org/10.3389/fbuil.2020.00054>

[Link to publication on Research at Birmingham portal](#)

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.



Editorial: UK-Japan Symposium on Highspeed Rails

Keiichi Goto¹, Akira Matsumoto², Makoto Ishida³, Hua Chen¹ and Sakdirat Kaewunruen^{4*}

¹ Railway Technical Research Institute, Tokyo, Japan, ² Nihon University, Tokyo, Japan, ³ Nippon Koei Co., Ltd., Tokyo, Japan, ⁴ School of Civil Engineering, University of Birmingham, Birmingham, United Kingdom

Keywords: UK, Japan, highspeed, rail, system

Editorial on the Research Topic

UK-Japan Symposium on Highspeed Rails

The UK-Japan Symposium on Highspeed rails' had been hosted at the University of Birmingham to address one of the most important issues in the UK regarding high speed rail systems and how these systems create significant impacts to the public and enable positive contribution toward the environmental, social, and economic sustainability of the communities they serve. They are built to enhance social and economic connections, and people quickly take up the opportunities offered by the increased mobility. Around the world, high speed rails have been demonstrated to be the essential catalyst for regional growth and have improved the quality of everyday life (Kaewunruen et al., 2016). However, in the UK, highspeed rail systems have not fully been developed. The British Government has recently set up an ambitious plan to build a new highspeed rail line from London to Birmingham, toward the Northern Power House. This special topic presents a set of work presented in the symposium, which enhance a great opportunity for the UK industry to learn from the extensive expertise of the pioneers in highspeed rails.

Integration of transportation and transit systems to harmonize with real-life urban infrastructure systems needs extensive genuine discussion and collaboration among stakeholders, including scientists, engineers, policy makers, politicians, and society. The goal of this symposium is to develop an interface among the engineering, scientific, and general communities to underpin applied research contributions from the vital steps of highspeed railway sciences to the beginning steps of engineering and the adoption of engineered systems to serve the needs of individuals, societies, regions, industries, and countries. The topic of this symposium is very timely and original, especially when the UK currently and heavily invests in the highspeed rails (> £50 billions). The knowledge of life cycle and sustainability is extremely crucial for design, construction, maintenance, and operations of the highspeed rails acting as the system of system.

The key objectives of this symposium were to:

- Provide formal and informal platforms to establish long-lasting relationship between Japanese experts and the UK academics and industries.
- Enable knowledge transfer and share experience on highspeed rail systems, especially on the theme of life cycle management and sustainability.
- Highlight Birmingham as a world-class hub for high speed rail technology (Birmingham is home of National College for High Speed Rail, High Speed Two Ltd., British Alliance Rail Suppliers, and European-largest Birmingham Centre for Railway Research and Education).

This Research Topic thus highlights collaborative research for improving cost, maintenance, safety, sustainability and carbon footprint in transportation and transit systems in urban environments. The collaborative researches are aligned with United Nation's Sustainable

OPEN ACCESS

Edited and reviewed by:

Izuru Takewaki,
Kyoto University, Japan

*Correspondence:

Sakdirat Kaewunruen
s.kaewunruen@bham.ac.uk

Specialty section:

This article was submitted to
Transportation and Transit Systems,
a section of the journal
Frontiers in Built Environment

Received: 27 February 2020

Accepted: 31 March 2020

Published: 29 April 2020

Citation:

Goto K, Matsumoto A, Ishida M,
Chen H and Kaewunruen S (2020)

Editorial: UK-Japan Symposium on
Highspeed Rails.

Front. Built Environ. 6:54.

doi: 10.3389/fbuil.2020.00054

Development Goals. With proven research insights and open data sciences, the presentation reveals that 6D BIM can be used to enhance sustainability in railway industry.

Along this line, Rungskunroch et al. presented a novel methodology to improve the end-of-life of highspeed rolling stock, considering CFRP composite material replacements. The investigation and insight has formed a part of ISO working group (#4) for a new ISO standard for recycling of rolling stock. This new standard has now been officially endorsed by ISO for applications in the industry.

Almujibah and Preston shared an investigation into total social costs of constructing and operating a highspeed rail line based on a case of Riyadh-Dammam Corridor, Saudi Arabia. A highlight is the total external environmental cost resulting from the sum of average costs of noise and air pollution, climate change, and accident using the corridor data in Saudi Arabia.

Kaewunruen et al. shared extensive total track inspection of railway track systems. The extensive review specifies the systems thinking approach in track inspection activity planning. The insight underpins a risk-based inspection and maintenance of railway track systems, taking into account safety, reliability, risk, and uncertainties in railway asset operations and maintenance.

Kaewunruen and Xu highlighted the application and development of the three-dimensional model of the King's

Cross station building toward a 6D building information model. This is the world's first to enable a 6D model that is embedded with actual time and cost schedules, as well as carbon footprint calculation, and engineering assumptions for renovation. The result of this research can provide construction engineers and stakeholders with engineering guidance of BIM utilization for railway station projects that can enhance every stage of life cycle such as planning, designing, and operating an economic and environmental efficient construction project.

These papers provide an insight on design, construction, operation, maintenance, risk mitigation, assurance, and development toward sustainable highspeed rail systems. The topic editors are grateful to the review editors and associated editors.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

ACKNOWLEDGMENTS

The symposium has been sponsored by the Japan Society for the Promotion of Science London (Symposium Award).

REFERENCES

Kaewunruen, S., Sussman, J. M., and Matsumoto, A. (2016) Grand challenges in transportation and transit systems. *Front. Built Environ.* 2:4. doi: 10.3389/fbuil.2016.00004

Conflict of Interest: MI is employed by Nippon Koei Co., Ltd.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2020 Goto, Matsumoto, Ishida, Chen and Kaewunruen. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.