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Editorial: Safety, Risk and Uncertainties in Transportation and Transit Systems

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Editorial on the Research Topic

Safety, Risk and Uncertainties in Transportation and Transit Systems

Disruptions in the operation of transportation and transit infrastructure may put at risk the functioning of our societies and their economies. Such disruptions may result from many kinds of hazards and physical and/or cyber-attacks on installations and systems. Safety is the first priority in operating transportation and transit systems. The public and customers rely on operators to assure them the reliable and safe day-to-day uses of public transports. To improve safety and reliability of transportation and transit systems, many key engineering implementations on board and on site have been innovated. In addition, based on recent facts and evidences, extreme physical and cyber threats become more common and even more dangerous to the public. Such examples are the terrorist attacks in St Petersburg in 2017, in London in 2017, in Stockholm in 2017, in Brussel in 2016, in Nice in 2016, and so many more. These examples have one thing in common. They all targeted at transportation and transit system, either on rail, bus, car, or truck, etc. This research topic will further promote and encourage research, development, policy, and innovation in improving safety, managing risks, and mitigating uncertainties in transportation and transit systems where perspectives from the humanities and the operations are also included.

It will be aligned with United Nation's Sustainable Development Goals, especially:

- Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable;
- Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; and
- Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The topic attracts very recent research work and very best discussions over a wide range of timely issues on technologies and innovations focusing on broad aspects of safety, risk, and uncertainties in order to address global grand challenges and UN's sustainable development goals with great social and economic importance. One of the papers published has won the inaugural Professor Joseph M Sussman Best Paper Prize in early 2019.

Along this line, Goto et al. shared extensive Japanese experience on the real service lives of railway concrete sleepers where the presence of fatigue failure is rarely observed in reality. The insight will underpin the sustainable development of new ISO standard for railway track concrete sleepers, taking into account safety, risk, and uncertainties in operational and maintenance.

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Bin Osman and Kaewunruen presented a novel data-driven risk cascade using twitter data that help inform the stakeholders and rail operators to improve safety and risk of tram operations. A real case study using data fusion technique reveals an impetus to railway industry to effectively partake in data exploration.

Ngamkhanong et al. highlighted the effects of far-field earthquakes on the cantilever mast structure and the response of OHLE. The insight in this earthquake response of OHLE and its support has raised the awareness of engineers for better design of cantilever mast structure and its support condition, to mitigate multi-hazard risks and to enhance resilience in built environments.

Mirza and Kaewunruen investigated resilience and robustness of railway track slabs exposed to train derailments. The structural safety has been analyzed critically to provide the insight into the robustness of the infrastructure. The profound insight is essential for risk and safety management of transportation infrastructure, from the bottom up.

These papers provide an insight on advanced methods and concepts for the prevention, mitigation, assurance and

development toward safer built environments via transportation systems. The topic editors are in significant debt with the review editors and associated editors. We also wish to congratulate the authors of the 2019 best paper (Ngamkhanong et al.) and hope to see more submissions on this research topic in the future.

AUTHOR CONTRIBUTIONS

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

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