

Safe System for Universities: linking graduate knowledge with industry best-practice

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Abstract

Safe System represents long-established best-practice in road safety internationally, in Australia and in New Zealand. However, there has been limited success in implementing Safe System policy into practice. While Safe System theory is taught at some Australian universities, there are currently no consistent means of formal education before professionals enter the workforce, leading to a discrepancy between graduate engineer knowledge and industry best-practice. The Safe System for Universities (SS4U) project provides a means for consistent education of Safe System theory at a tertiary level. SS4U is designed for self-learning and a curriculum and material to teach Safe System within existing courses.

Background

The Safe System philosophy, adopted in many countries and underpinning Australian and New Zealand road safety strategy, represents long-established best-practice in road safety. Despite good intentions throughout the industry, there remains a gap between Safe System policy and its implementation at a practical level (Woolley and Crozier 2018). This “implementation failure” is being observed as a gap between the Safe System philosophy that we aspire to and the real-world outcomes that we achieve.

The Safe System is currently industry led with no consistent means of formal education before professionals enter the workforce: there exists a lack of Safe System understanding by those on the coal-face of road industry practice, especially in areas outside of the silo of road safety. While the Safe System is taught as part of road transportation engineering courses within some Australian Universities (pers comm Dr Ashim Debnath and authors), this appears to be the exception to a curriculum in which Safe System theory is largely absent. This lack of formal training is being felt within the road transportation industry as a discrepancy between graduate engineer knowledge and industry best-practice. Furthermore, there are gaps in Safe System knowledge, and we will rely on well-informed future graduates to solve these knowledge gaps.

Safe System for Universities

SS4U is an initiative of the TAC/VicRoads Safe System Road Infrastructure Program (SSRIP) being developed with the expertise of the Centre for Automotive Safety Research, University of Adelaide (CASR), and in collaboration with the New Zealand Transport Agency (NZTA). The SS4U curriculum guideline is being developed as a guideline for the learning and teaching of Safe System philosophy, theory and practice at both an introductory level for first year engineering students, and a more advanced level for students undertaking study in road transportation engineering. Through not currently integrated, SS4U is also being flagged as a learning tool for polytechnical and post-graduate students.

The learning outcomes on which the curriculum guideline content is based were developed in consultation with industry experts, through workshops held at VicRoads and feedback thereafter. The main aspects of the learning outcomes are for students to:

- Recognise/critically analyse the Safe System and its associated objectives
- Recognise/critically analyse the moral and ethical principles that underpin the Safe System
- Demonstrate/critically analyse why and how harm occurs and the need for a Safe System to eliminate harm
- Differentiate between Safe System aligned and non-aligned design and operation of a road transportation system
- Identify and evaluate the functionality of primary and supporting Safe System design and operation solutions
- Explain the purposes and demonstrate the limitations of current design guides and standards
- Apply Safe System tools for identifying problems and evaluating solutions
- Explain the role of a Safe System within a future road transport system
- Identify where and why resistance to the Safe System may arise
- Recognise risk aversion culture and explain the accompanying legal liability issues.

SS4U consists of four modules with educational material being developed for each module. This material consists of concise lecture slides (termed “snippets”) and example assessment pieces (Figure 1). It is designed as stand-alone, self-learning-oriented material for implementation into existing courses where additional topic capacity is limited. This format was developed following discussions with senior teaching academics (pers comm Ms Bernadette Foley and Dr Tom Goldfinch).

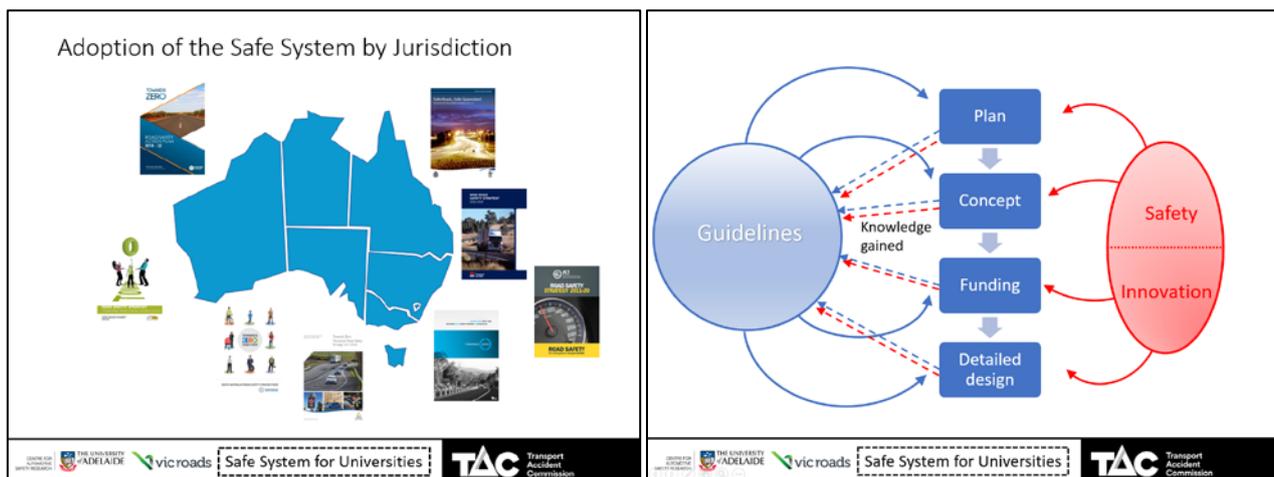


Figure 1. Example snippet material being developed for the Safe System for Universities project

Conclusions

SS4U has been conceived as a means for providing consistent learning and teaching information for undergraduate engineering studies. This, once established, will help to provide all road authorities and industry with the capability and capacity to bring our nations closer to achieving zero harm on our roads.

References

Woolley, J., Crozier, J. (2018). Inquiry into the National Road Safety Strategy 2011-2020. Australia.