

# Driving ambitions

Aston Brand, JP Doherty and Claire Williams reveal how systems thinking principles can improve the Safe System approach to protecting people on the roads

Road crashes are the number one cause of death for children and young adults globally. The United Nations set an ambitious target of halving road fatalities and injuries by the end of the first UN Decade of Action for Road Safety (2011–2020). It was identified as unlikely to be met when it was set, and indeed

Sustainable Safety approaches in the 1990s. Since then, it has been advocated by the World Health Organization, World Bank, the Organisation for Economic Co-operation and Development and the United Nations, amongst others. The Department for Transport endorsed it in 2015 in the British Road Safety Statement, and it has gradually become part of road safety policy in the UK.

## What is it?

The common wisdom is that the 'traditional' approach to road safety does not work because transport on roads is a dynamic and complex socio-technical system. An endeavour to address this failing is written into the basic principles of the Safe System. One of these principles states that road safety is a shared responsibility amongst everyone, including those that design, build, operate and use the road system. Another says that all parts of the road system must be strengthened in combination to multiply the protective effects and if one part fails, the others will still protect people.

The Safe System approach effectively breaks the problem of road safety into five groups (sometimes called the five pillars) represented in the concentric circles (right). These are: Safe Speeds; Safe Roads; Safe

Vehicles; Safe People; Post crash care. Being human centred is written into the Safe System approach, which outlines that system designers need to create a transport system tailored to the mental and physical capabilities of humans to protect them. People are at the core – people who are fragile and will at times make mistakes that can lead to crashes.

## Is it working?

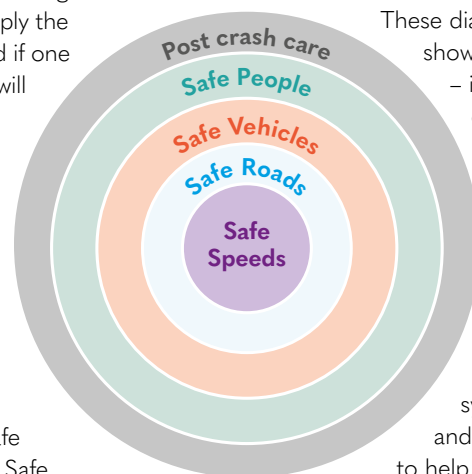
Adoption of the Safe System is seen as a long-term commitment to redesigning our transport system. As such, reductions in the number of people being killed and seriously injured would not be expected to happen overnight. So perhaps seven years is not long enough to say if it's working or not.

However, in our experience, the lack of obvious success from adoption of the Safe System approach may be down to a deficiency in its application – and that in turn comes down to a lack of understanding of how best to use it.

Typically, the approach is communicated using a diagram.

These diagrams simply show the framework – it is up to system designers and safety professionals to work out how to apply it.

So what tools and techniques can the human factors community give system designers and safety professionals to help make the



## Adopting the Safe System approach

The Safe System approach to road safety is said to have emerged from the Swedish Vision Zero and Dutch

implementation of the Safe System approach more of a success?

### How systems thinking tools might help

The provision of five pillars supports the idea that road safety results from many factors and it highlights the importance of stakeholders working collaboratively. However, it does not use important aspects of systems thinking that will be familiar to the human factors community.

In its current form, the Safe System does not explicitly explore how the pillars – and elements within these pillars – interact. Instead, these are often considered in isolation. While reducing something to its constituent parts is helpful in some circumstances, systems thinking tells us some important things only come into focus when we consider the whole system. Many of the outcomes that are of interest in relation to road safety are emergent properties, which arise due to the interactions between many parts of the system, when it's operating as a whole.

Systems thinking encourages us to move freely between a reductionist and holistic view (zooming in and zooming out), enabling us to find out what's really going on. A range of systems thinking tools, such as systems maps and iceberg models, can be used to help with this 'finding out' process, providing an integrated way of looking across the pillars – and might even prompt changes to the content within them.

### A worked example

'Safe speeds' is one of the pillars of the Safe System approach. Speed is pivotal in road safety – it has a significant impact on the number of deaths and injuries that result from a collision, as well as on the likelihood that an incident will happen in the first place. However, all the Safe System approach provides to designers and safety professionals is the 'Safe Speeds' heading in the framework, without a suggested way of beginning to look at it. The first thing a tool like systems mapping can provide is a 'way in' to considering and structuring the issues. The systems map to the right outlines some of the factors that contribute to speeding.

Within the Safe System approach, this would all typically sit in the Safe Speeds

pillar. However, the colour coding on this example map demonstrates that the factors that contribute to speeding are varied – sitting across most of the five Safe Systems pillars.

Furthermore, some of the factors (shown in pink) are not clearly covered by the existing pillars at all. So this tool not only provides a way in to the Safe Speeds pillar, it also provides a more holistic and integrated understanding of speeding across multiple pillars.

As well as aiding our understanding, systems thinking approaches can help with developing interventions to deal with the issues the system mapping is highlighting. Tools such as The Seven Samurai can support understanding of how any intervention could impact the original context – identifying potential unintended consequences that may arise due to any changes and forcing thought about how an initiative will be delivered and sustained.

### What does all of this mean?

The Safe System approach is now internationally recognised and seen as best practice. With its human-centred approach to the socio-technical system of road transport, it's recognisably "human factors" in many ways. However, with no widespread understanding amongst system designers and safety professionals about how to actually use it, there is a risk that its application may drift away from its core principles or not be used at all.

Systems thinking approaches can support the sector in using the Safe System approach – helping to maintain holistic rather than reductionist thinking so as to integrate across the five pillars. This can provide clarity on both inputs to the system and emergent or resultant properties. This clarity is an important step in 'finding out' what's really going on

and, with other systems thinking tools, will help in the development of more effective interventions.

Systems thinking tools and techniques have the potential to provide much needed support in using the Road Safe System – reducing frustration amongst road safety specialists and encouraging its uptake, all in service of the ambition for a step change reduction in fatal and serious casualties on our roads. ■

## About the authors

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