International Transport Forum

OECD

Zero Deaths & Serious Injuries

Leading a Paradigm Shift to a Safe System

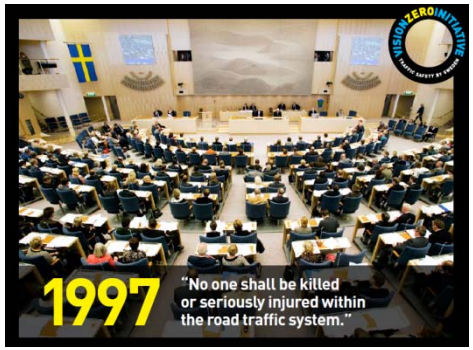
Where it started

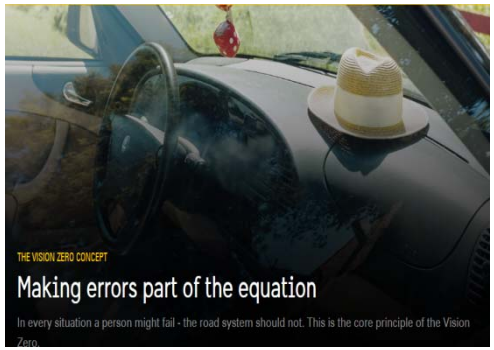
Scandinavian research indicates that even if all road users complied with road rules, fatalities would only fall by around 50% and injuries by 30%.

Netherlands: Sustainable Safety

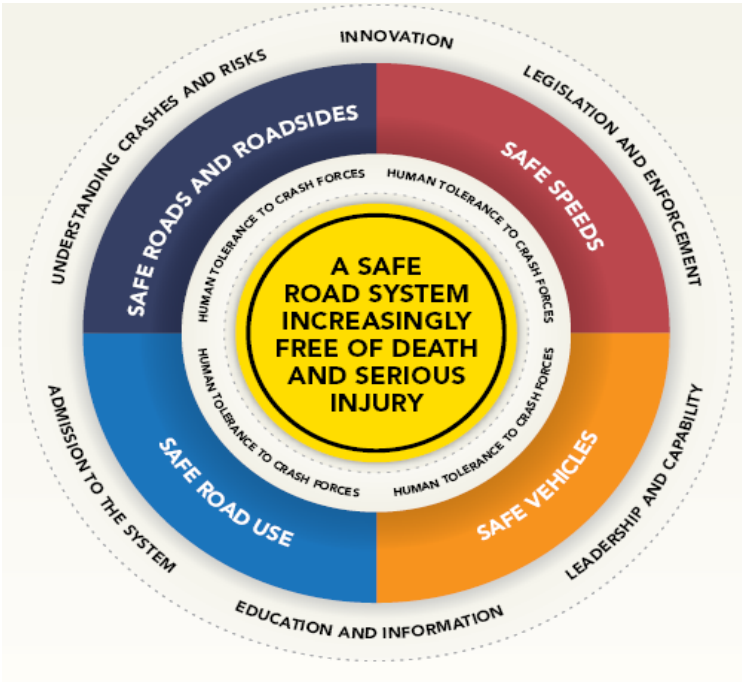
Man should be the reference standard and road safety problems should be tackled at its roots.

Sweden : Vision Zero





New Zealand's adoption of Safe System

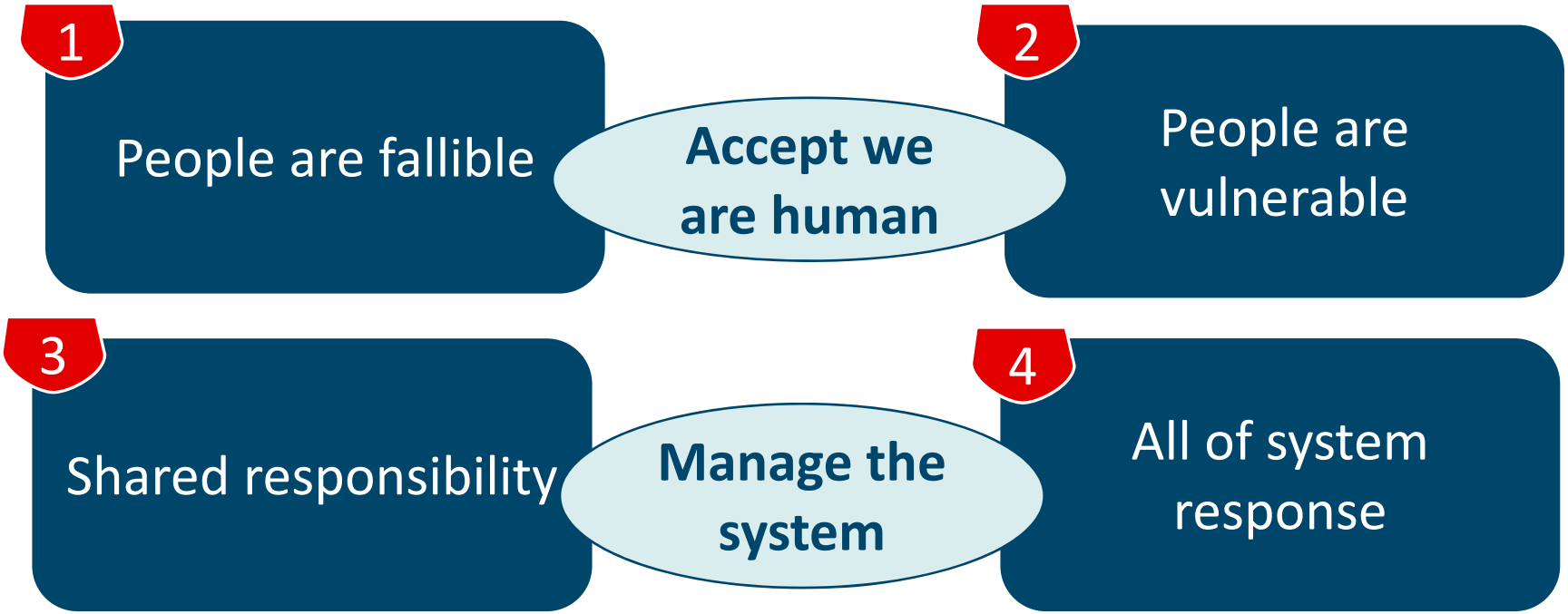


UN Sustainability Goals

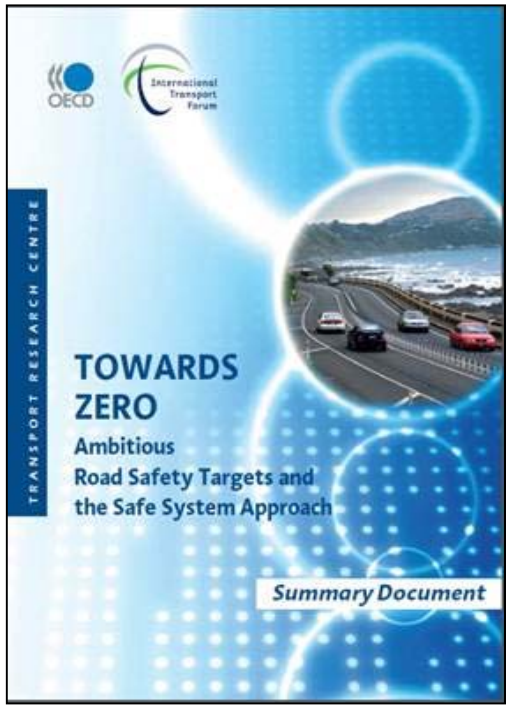
Goal 3.6 (Ensure Healthy Lives):
By 2020, halve the number of global deaths and injuries from road traffic accidents.

Goal 11.2 (Cities):
By 2030 provide access to safe affordable accessible and sustainable transport systems for all.

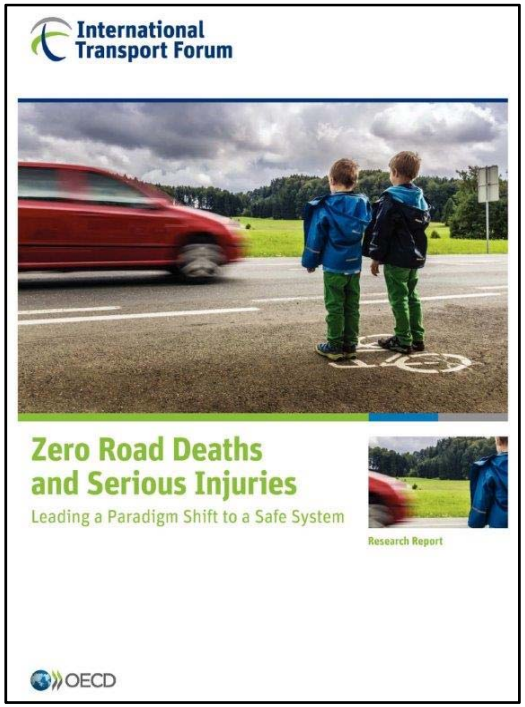
Safe System Approach - Principles



OECD/ITF Safe System Guide Series



2008
Introduced the Safe System approach



2016
How to go about it.

Process – Working Group

39 Participants from 24 countries

7 Chapter Lead Authors

Programme

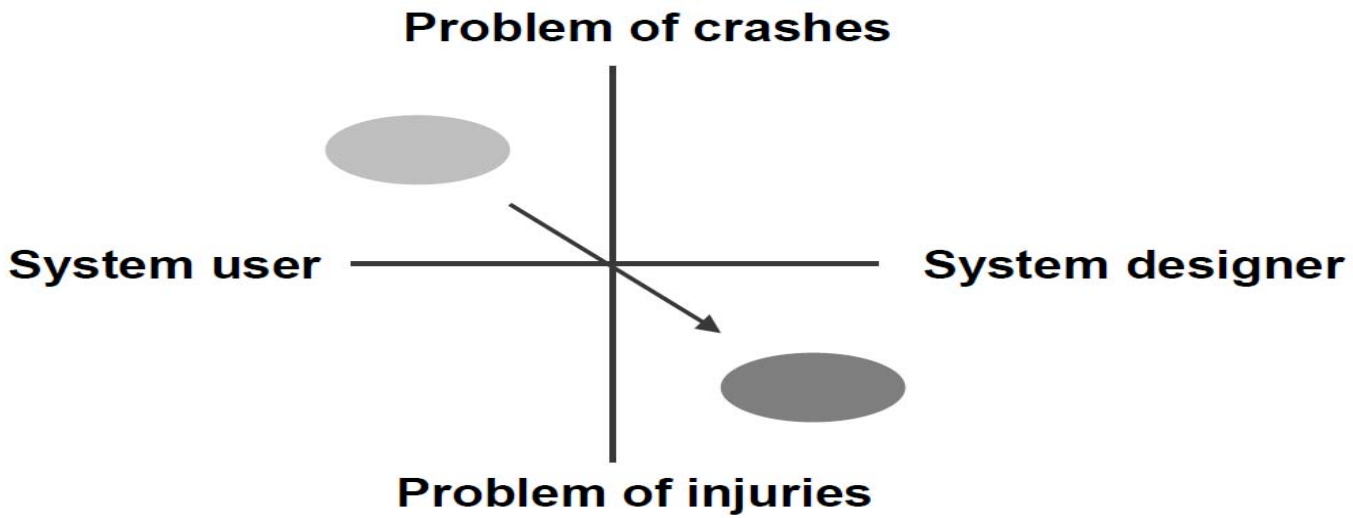
- 2 years (30th September 2014 – 3rd October 2016)
- 6 meetings (5 in Paris, 1 in London)
  - 2 x full group
  - 3 x Editorial group
  - 1 x launch event
- Plus presentation trips to Edmonton (Canada,2015) & St Petersburg (Russia,2016)

Chapters

1. A Safe System – Promoting a world free of road traffic fatalities (7 pages)
2. Principles & Description of a Safe System (9 pages)
3. Leadership for a Paradigm Shift (18 pages)
4. Safe System Management & Governance (31 pages)
5. Safe System Practices and Tools (47 pages)
6. Safe System in Cities (15 pages)
7. Start the journey towards a Safe System (7 pages)

The Paradigm Shift to a Safe System

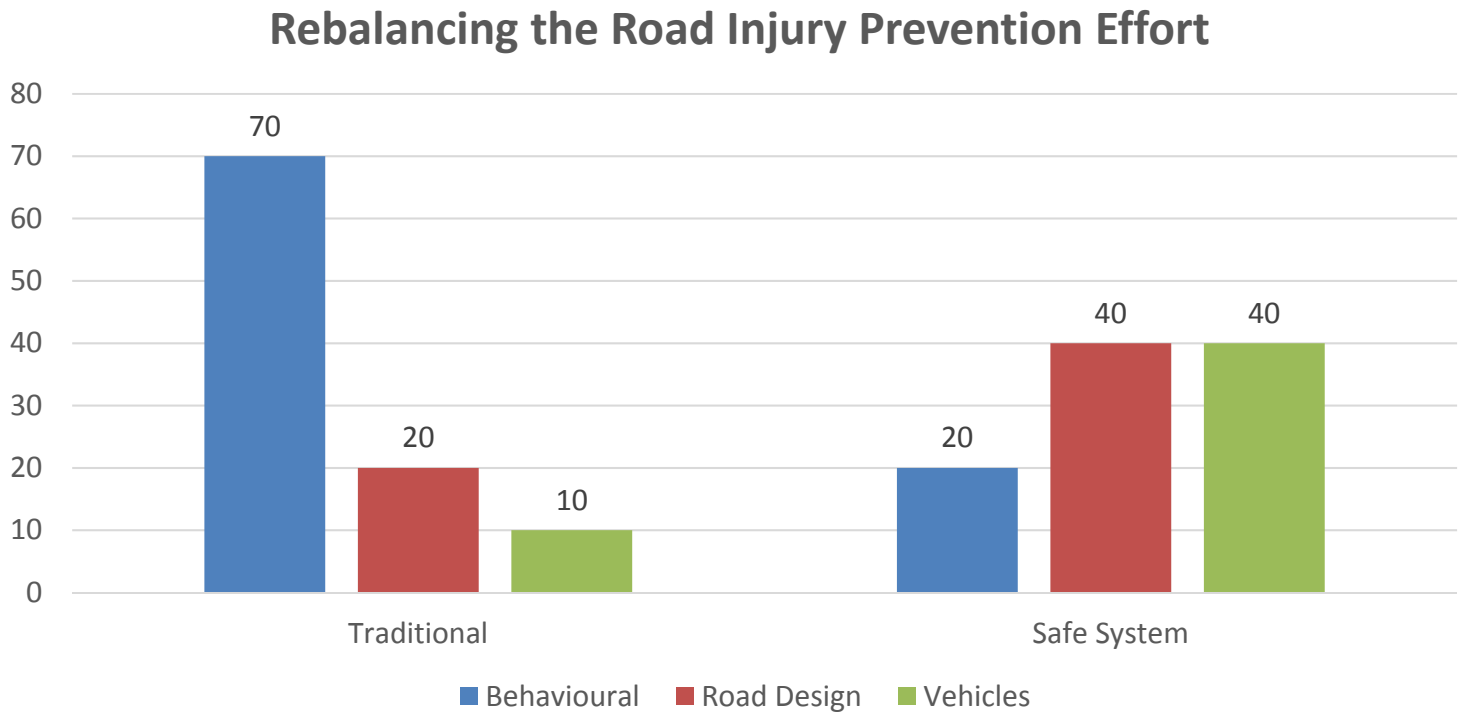
From crash reduction to injury prevention



Traditional versus Safe System approach

	Traditional	Safe System
What is the problem?	Accidents	Fatalities and Serious Injuries
What causes the problem?	Mainly poor road user performance Speeding, drink driving, inattention, deliberate risk taking	System failures
Who is ultimately responsible?	Individual road users	System designers and operators
What is the major planning approach?	Incremental approach to reduce the problem with an associated residual crash problem	A systemic approach to build a safe road system and minimise the harm
What is the appropriate goal?	Optimum number of fatalities and serious injuries based on competing objectives	Towards the virtual elimination of death and serious injuries
What is the trade-off?	A balance between mobility and safety	Maximising safe mobility
How is the effort coordinated?	Incremental gain within individual pillars (roads / speeds / vehicles / people)	Optimise solutions across pillars (roads / speeds / vehicles / people) – pillars compensate for each other where performance is poor
What are the cultural manifestations?	Legal liability avoidance and risk aversion	Risk assessment, innovation, trials and demonstrations
Context of tools in use	Bias towards pre-existing crash history, understanding crash causes and likelihood, optimising the network for motor vehicles	Risk analysis based on network design attributes supplemented by crash data, understanding crash consequence, optimising the network for all road users and human frailty

Policy Instrument Burden Sharing: 'Traditional' vs. Safe System

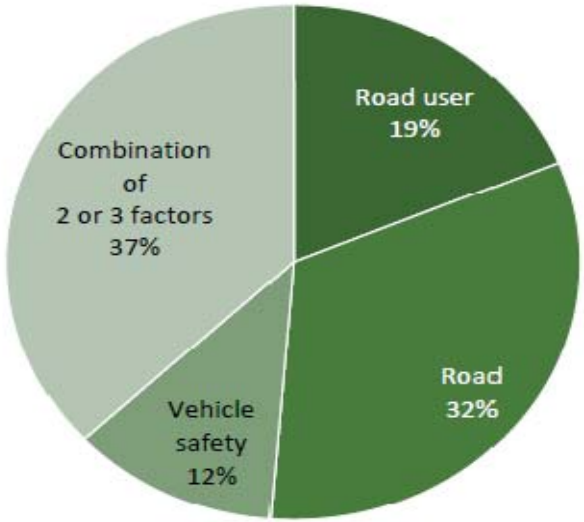


Key Takeaways: Swedish Ethical Principles

- No Loss of life is Acceptable
- A human being is unique and cannot be substituted or traded with money
- Traffic safety shall not be a function of mobility ; mobility must be a function of safety

Key Takeaway: Contribution of System failures in fatal crashes

Figure 2.3: Fatal crashes linked to compliance with safety criteria (Stigson et al. 2008).



Key Takeaways : Self Driving Cars vs Vehicle Technologies

Self Driving Cars Forecast Global Sales by 2035:
11.8 Million or just 2.68% of the global light duty fleet.
(IHS Automotive 2015)

So self driving cars will make no positive impact at all on road injury prevention by 2030. The policy priority should be driver assistance systems that are already in use and which are pathways towards more autonomous vehicles. These include:

- Electronic Stability Control
- Autonomous Emergency Braking
- Intelligent Speed Assistance

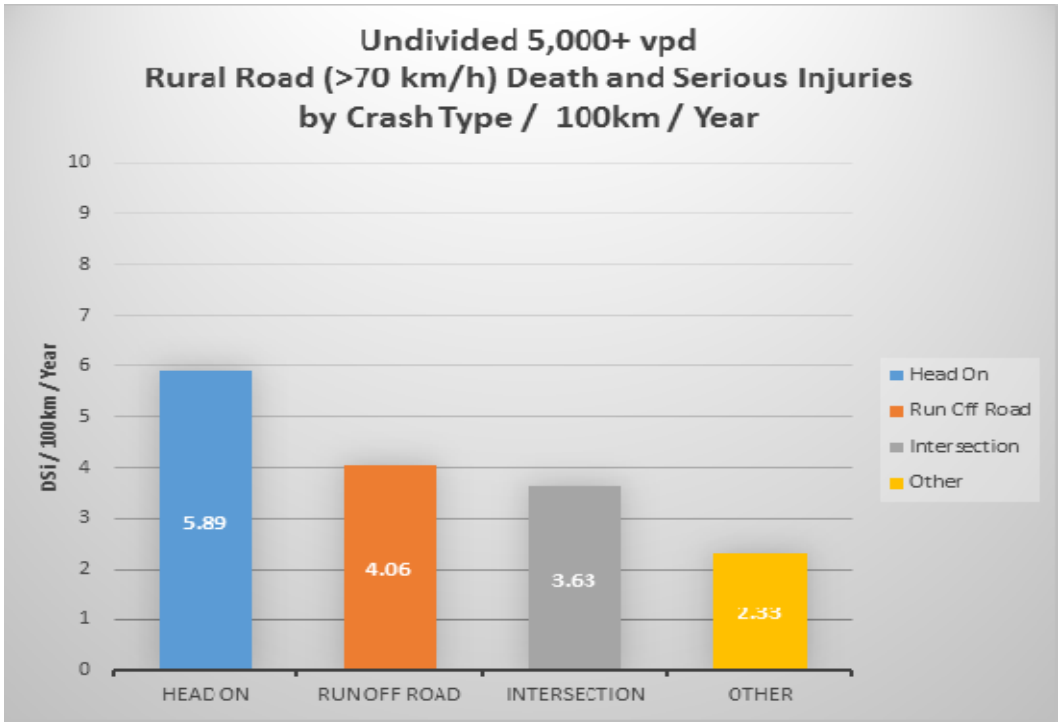
There is a real risk that 'hype' about self driving cars will divert policy makers from mandating the technologies that can greatly contribute to road injury reduction to 2030 and beyond.

Austroads Safe System Assessment Framework

	ROR	HO	INT	OTHER	PED	CYC	M/C	
Exposure	High volume × $^{4}/_{4}$	High volume × $^{4}/_{4}$	High vol. on Burwood Hwy × Moderate vol. on Terrara Rd – $^{4}/_{4}$	High volume × $^{4}/_{4}$	Low pedestrian volumes ✓ $^{1}/_{4}$	Low cyclist volumes ✓ $^{1}/_{4}$	Low motorcyclist volumes ✓ $^{1}/_{4}$	
Likelihood	Steep grade × Deceleration lane ✓ Presence of intersection × No shoulders × Moderate clear zone – No barriers × $^{3}/_{4}$	Divided, wide/raised median ✓ Intersection movements/conflict points minimal for HO crash ✓ $^{1}/_{4}$	% turning movements × No. of lanes and conflict points × High speed × Poor sight distance × Protected turn lanes ✓ $^{3}/_{4}$	High no. of lanes × Protected turn lanes ✓ Short decel. lanes × Buses stopping × $^{3}/_{4}$	Service lane with footpath ✓ No crossing facilities at intersection × Many lanes to cross × $^{4}/_{4}$	Service lane – some separation ✓ No crossing facilities at intersection × $^{4}/_{4}$	No delineation × Well surfaced ✓ Straight road ✓ $^{3}/_{4}$	
Severity	High speed × No barriers × Steep grade × Poles and trees to hit × $^{3}/_{4}$	High speed × Low speed in side road ✓ $^{3}/_{4}$	High speed × Bad conflict angles × $^{4}/_{4}$	High speed × $^{3}/_{4}$	High speed × No crossing facilities × $^{4}/_{4}$	High speed × $^{4}/_{4}$	High speed × Some roadside hazards × $^{4}/_{4}$	**Total**
Product	$4 * 3 * 3 = {}^{36}/_{64}$	$4 * 1 * 3 = {}^{12}/_{64}$	$4 * 3 * 4 = {}^{48}/_{64}$	$4 * 3 * 3 = {}^{36}/_{64}$	$1 * 4 * 4 = {}^{16}/_{64}$	$1 * 4 * 4 = {}^{16}/_{64}$	$1 * 3 * 4 = {}^{12}/_{64}$	$\mathbf{{}^{176}/_{448}}$

Back to New Zealand

For every 100km stretch of high volume (>5000vpd) rural road, 16 people are killed or seriously injured every year



Head-on Casualties

Safe impact speed


Primary treatment: Median barriers to eliminate head on crashes


Electronic Stability Control & Lane Departure Warning System

Speed management on undivided roads

Run off Road Casualties

Safe side impact speed with narrow object

Primary treatment: Forgiving roadside barriers to protect road users

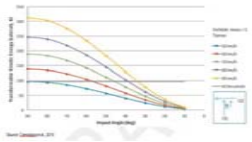
Self explaining roads to minimise driver/rider error


Vehicle technologies: Electronic Stability Control & Lane Departure systems


Speed management to reduce incidence and outcome of crashes

Intersection Casualties

Safe impact speeds



Primary treatment: Understanding and managing impact forces through speed and impact angle

Roundabouts

Speed management – raised platforms

V2I & V2V technologies

The Icing on the Cake

International Transport Forum's 'Vision Zero' report wins Prestigious Prince Michael of Kent 2016 International Road Safety award:

TOWARDS ZERO FOUNDATION