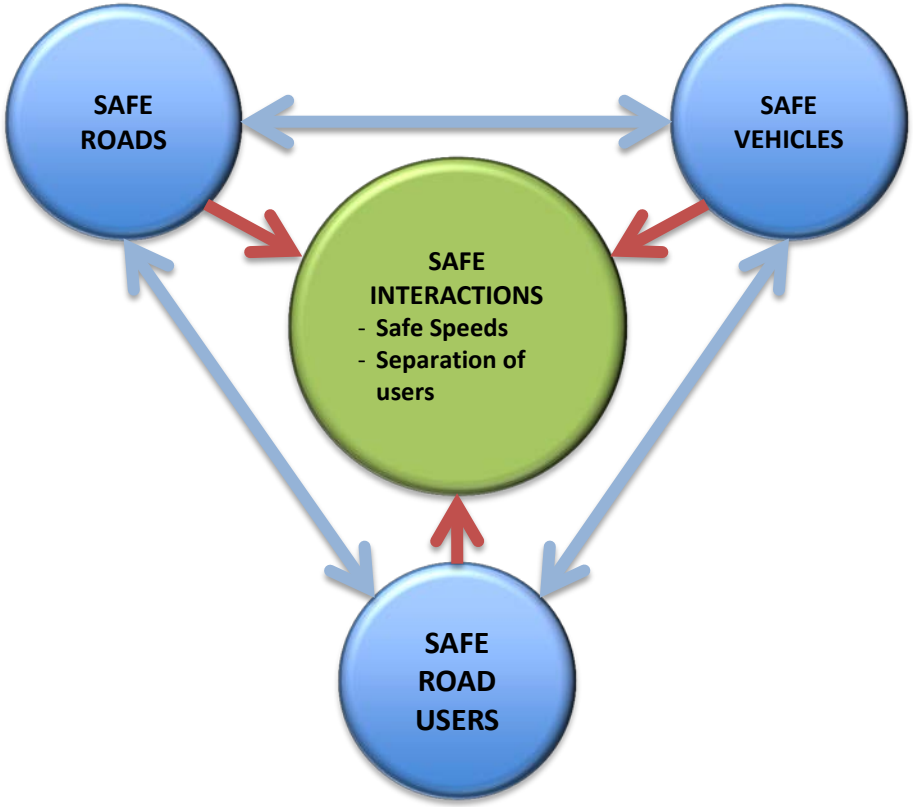

The Roads Between Us

Call: 31.03.2016

The need for a systems-based approach to road safety

Together we can save millions of lives.

The Global Road Safety Partnership is hosted by:

International Federation of Red Cross and Red Crescent Societies

GLOBAL ROAD SAFETY PARTNERSHIP

Roads Between Us: Agenda

TIME: **Thursday 31 March 2016, 1530-1630 CEST (Paris Time)**
THEME: **The need for a systems-based approach to road safety**

Call Agenda

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GLOBAL ROAD SAFETY PARTNERSHIP

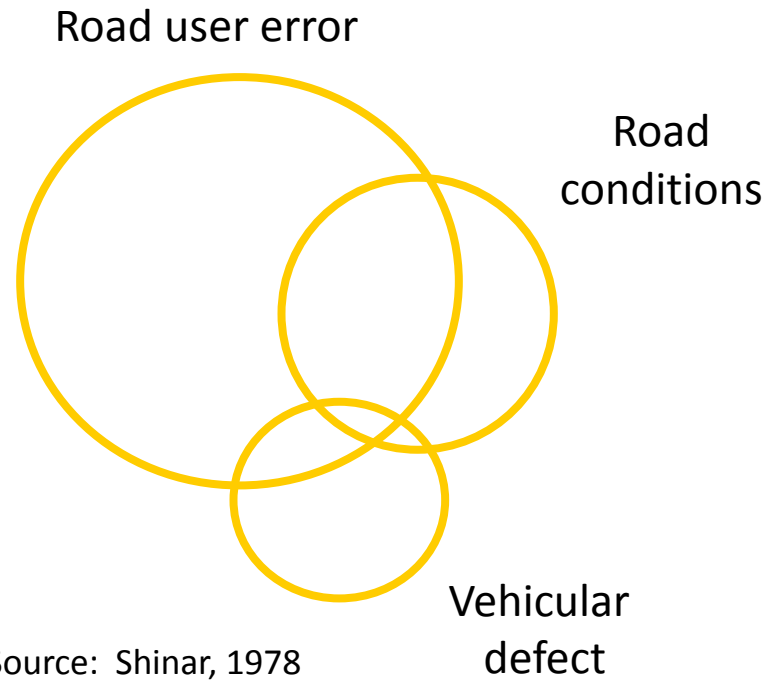
Overview

- The need for a systems-based approach to road safety
- The role of strategic frameworks to promote coordination and integration of actions
- Globally recognised strategic frameworks:
  - Sweden's *Vision Zero*
  - The Netherland's *Sustainable Road Safety*
  - Safe Systems Approach
- How to further embed the "Safe Systems Approach" into road safety policy and practice

GLOBAL ROAD SAFETY PARTNERSHIP

Crash causes

- Rarely a single cause of a crash, but a ‘causal chain’ of events
  - 90% road user error
  - 30% road conditions
  - 10% vehicular defect or failure



Source: Shinar, 1978

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The need for systems-based perspective

"For the first 50 years of motorization in the United States, Australia, and Europe, the almost exclusive emphasis was on trying to prevent crashes by changing the behaviour of individual drivers. This delayed for decades the recognition and application of possible prevention measures in other components of the causal chain leading to injury." (Williams, 2000, p.1)

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Crash prevention vs crash causes

"While the predominance of 'human errors" as causes of accidents should serve as a humbling experience, it does not imply that the practical way to eliminate most accidents is to 'fix' the driver. On the contrary, it appears that of the three major highway traffic components - the driver, the vehicle, and the roadway environment - the driver is the most difficult to change or improve"
(Shinar, 1978, p.126)

GLOBAL ROAD SAFETY PARTNERSHIP

The Haddon Matrix

	Pre-Crash stage	Crash Stage	Post-Crash stage
Road User			
Vehicle			
Road Environment			

GLOBAL ROAD SAFETY PARTNERSHIP

Road safety countermeasures: at a glance

	Pre-crash stage	*Crash stage*	*Post-crash stage*
Road user	▪ Graduated driver licensing ▪ Traffic law enforcement eg. RBT, speed cameras ▪ Public education		▪ Improved emergency services ▪ Improved trauma management and rehabilitation systems
Vehicle	▪ Improved primary safety eg. breaking systems ▪ Australian Design Rules ▪ New Car Assessment Program (ANCAP)	▪ Improved secondary safety eg. occupant protection – seat belts, restraints, airbags ▪ Helmets	▪ Design improvements to allow access by emergency services ▪ ITS crash reporting systems
Road Environment	▪ Improved road design & maintenance standards ▪ Crash 'blackspot' programs ▪ Road safety auditing	▪ Separation of traffic eg. divided roads ▪ Roadside barriers ▪ Removal of hazardous roadside objects	▪ Emergency/break-down lanes

Extended Haddon Matrix

	Management Culture	Journey	Road/ Site Environment	People - Drivers and Managers	Vehicle (10%)	External/ Societal/ Community/ Brand
Pre-Crash or Pre-Drive	Leadership Business case Legal compliance Safety review Benchmarking Pilot studies Goals & policies Safety culture Committee Pledge Communications Contractors	Travel policy Mode choice Journey planning Routing Risk assessment Emergency preparation Shifts/ working time	Risk assess Observation Guidelines Site layouts Work permits C&D rules Road design Hot-spot mapping Engage local road agencies	Recruit Contract Induct Check qualified Handbook Risk assess Train Equip Communicate Engage Monitor Correct	Risk assess Select Specification Safety features Service Maintain Check Use policy Mobile comms ITS/telematics Wear & tear Grey fleet	Regulator/policy engagement CSR Benchmarking Communications Family members Community Road safety weeks/ days Awards
At Scene	Emergency support to driver	Engage local investigators	Manage scene	Process to manage scene	Crashworthy 'ITS' data capture	Escalation process
Post-Crash	Report, record & investigate Change process Data linkages, evaluation & KPIs*	Debrief & review journeys	Investigate and improve Review site/road elements of collision data	Reporting and investigation Driver debrief Counselling, trauma support Reassess/train	Strong openable doors Investigate 'ITS' data Inspection & repair	Manage reputation and community learning process

Source: Murray, Watson, King, Pratt & Darby (2014)

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Criteria for selecting individual countermeasures/interventions

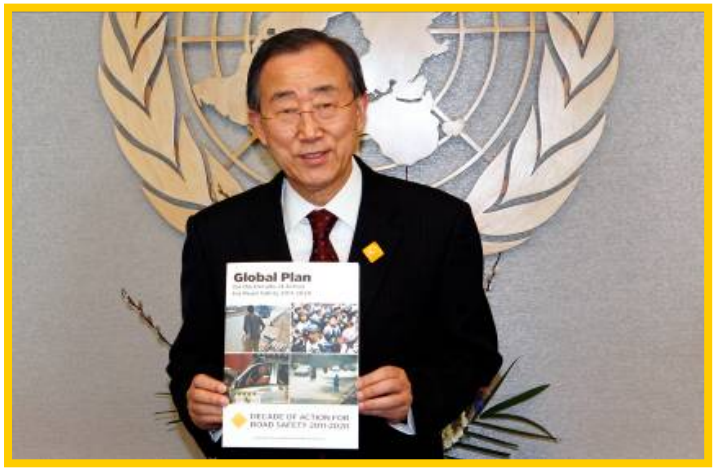
- Will it break or mitigate the crash causal chain?
- Does the evidence suggest it will be effective?
- Does the evidence suggest it will be cost-effective?
- How feasible is the approach?
- How permanent or sustainable will be the approach?
- Will it enable, complement or enhance the effectiveness of other countermeasures?

GLOBAL ROAD SAFETY PARTNERSHIP

The strategic challenge

- How do jurisdictions or organisations ensure the coordination and integration of actions across the elements of the system to optimise road safety goals?

The Global Plan for the Decade of Action



Together we can save millions of lives.

DECADE OF ACTION FOR ROAD SAFETY 2011-2020

www.decadeofaction.org

- Road safety management
- Safer roads and mobility
- Safer vehicles
- Safer road users
- Post-crash response

The need for a strategic framework (1)

- While action plans are important, they needs to be more than shopping lists
- A strategic framework is required to:
  - address different (and often competing) goals of the transport system e.g., safety, mobility, social justice, environmental sustainability
  - articulate a guiding vision to promote coherent and consistent decision making

Source: Johnston, 2001

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The need for a strategic framework (2)

A strategic perspective is required to:

- identify what the 'core' goal(s) are for the future
- acknowledge potential trade-offs that may need to be made e.g., safety vs. mobility vs. social justice
- provide a foundation for guiding principles and objectives
- identify areas of accountability

Source: Johnston, 2001

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Potential visions for an 'ideal' road safety outcome

- Prevent as many crashes as possible
- Prevent as many *serious* crashes as possible
- Accept that it is impossible to prevent all crashes and focus on reducing the severity of injuries
- Reduce road trauma while maintaining mobility
- Create a road system which is perceived as safe and accessible by all users (including vulnerable road users)

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Globally recognised strategic frameworks

- Strategic frameworks that have attracted considerable attention around the world are:
  - Vision Zero (Sweden)
  - Sustainable Safety (Netherlands)
  - Safe Systems (Australia and OECD)
- Different strategic principles and objectives flow from each of the visions

Sweden's Vision Zero (1)

- Key concept underlying the Road Traffic Safety Bill passed by Swedish government in 1997
- The long-term goal is that no one will be killed or seriously injured on Sweden's road system
- Vision Zero accepts that preventing all road crashes is unrealistic
- The aim is to better minimise the harmful outcomes of crashes

Sources: Tingvall, 1998; Vagverket, 2001

Sweden's Vision Zero (2)

- Long-term objective is to create a road system which allows for human error, without leading to serious injury
- At a political level, the road system should be as safe as other transport systems
- Unless safety is improved, mobility will need to be curbed (e.g., reduce speed limits)
- However, mobility can be maintained if there is an investment in safety and a change in safety thinking

Sources: Tingvall, 1998; Vagverket, 2001

Sweden's Vision Zero (3)

Strategic principles:

- The traffic system needs to better adapt to the needs, mistakes and vulnerabilities of road users
- The basic design parameter for the road system should be the tolerances of the human body
- Vehicle speed is the most important regulating factor for a safe system
- Users are responsible for complying with road rules, but system designers are responsible for overall safety performance of system

Sources: Tingvall, 1998; Vagverket, 2001

Sustainable Road Safety (1)

- The Netherlands developed the concept of ‘sustainable safety’ in early 1990s and formally adopted it in 1996
- The long-term goal is to create a sustainably-safe traffic system that:
  - limits the chances of crashes occurring
  - reduces the chances of serious injury in the event of a crash
- Aims to optimise the interaction between road users, vehicles and the road system

Source: van Schagen & Janssen, 2000

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Sustainable Road Safety (2)

Three key principles:

1. ***Functionality*** – the road system should consist of a small number of road types with a clearly identified function i.e., roads should be mono-functional not multi-functional
2. ***Homogeneity*** – need to prevent large differences in speed, mass and direction on each road type - by limiting access if necessary
3. ***Predictability*** – need to reduce uncertainty among road users by making the layout and design of roads clear, unambiguous

Source: van Schagen & Janssen, 2000

Sustainable Road Safety (3)

Key objectives:

- Create a limited number of predictable, mono-functional road categories e.g., through, distributor and access roads
- Reduce differences in speed and mass by:
  - separating vulnerable road users from motorised traffic on through roads
  - reducing speed limits on access roads and junctions with distributor roads
- Reduce road obstacles on through and distributor roads

Source: van Schagen & Janssen, 2000

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The Safe System Approach

- Emerged in Australia during the mid-2000s and reflects different aspects of Vision Zero and Sustainable Safety concepts
- Subsequently refined and adopted by:
  - OECD in the highly influential report: Towards Zero: Ambitious Road Safety Targets and the Safe System Approach
  - Global road safety community in the Decade of Action Global Plan

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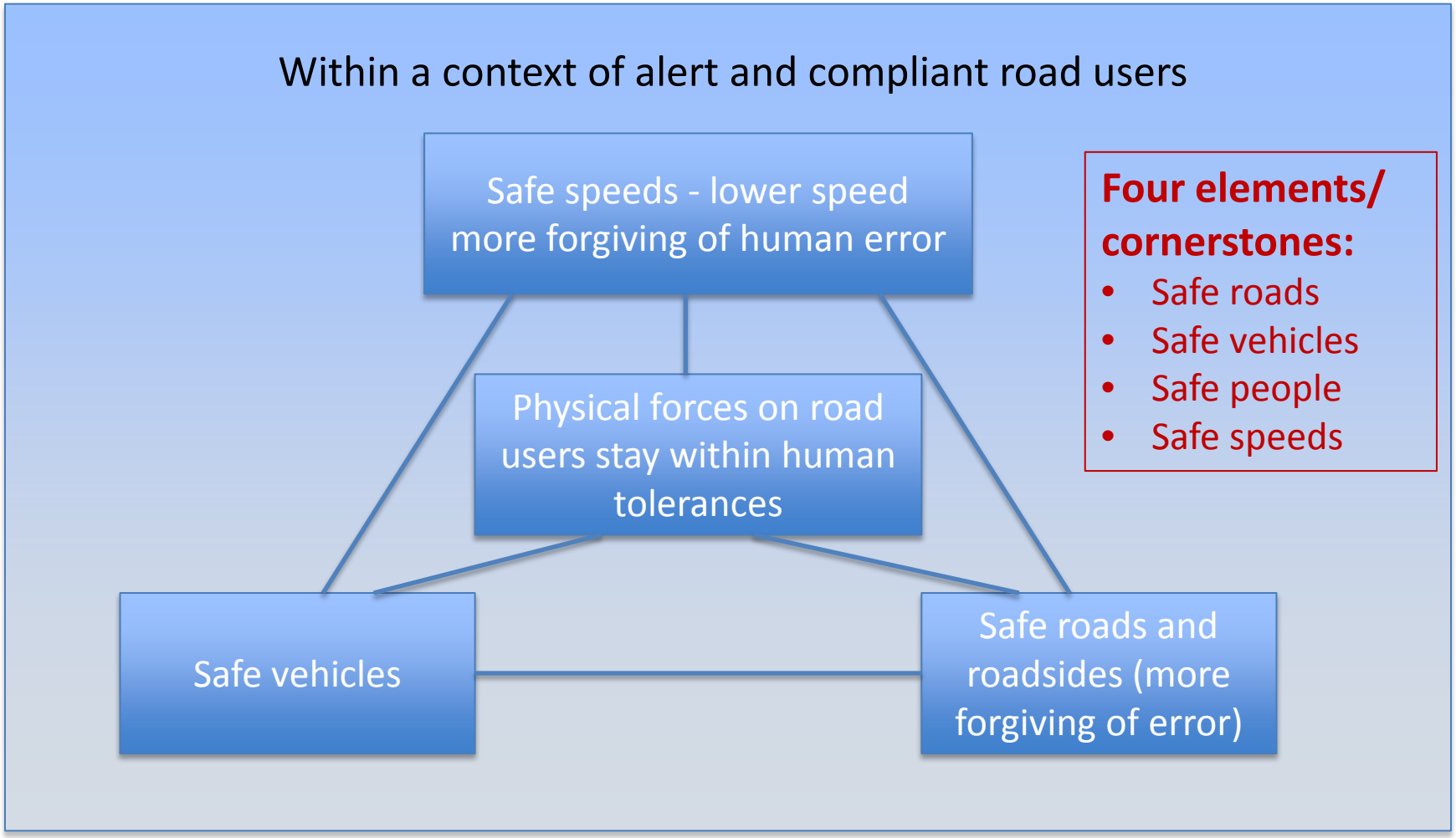
What is the Safe System Approach?

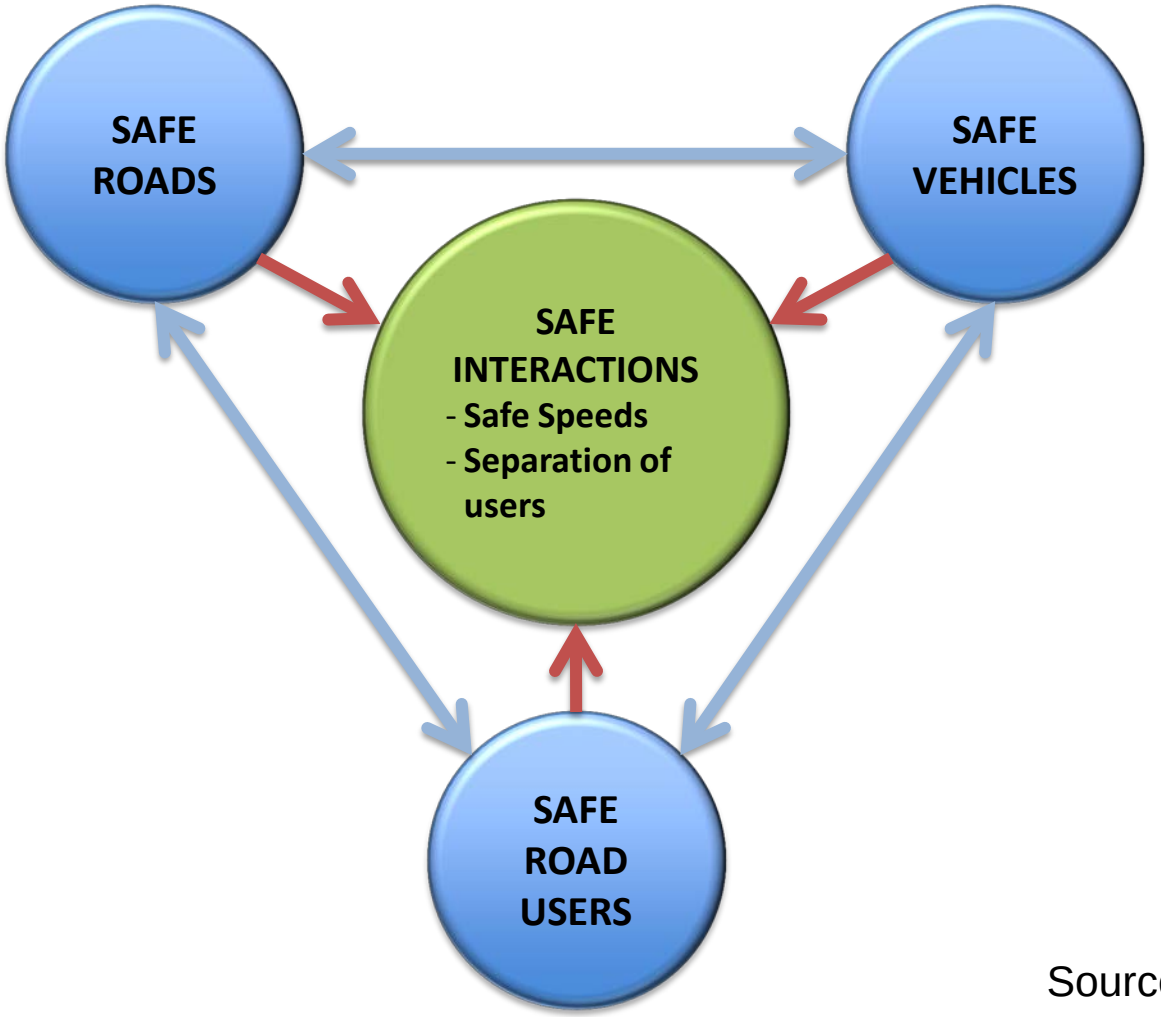
- Holistic approach to managing road safety
- Underlying principles:
  - humans inevitably make mistakes in a transportation context
  - the human body has physical limits
- Aims to ensure that these mistakes do not result in deaths or injuries
- The goal is to create a transport system which is more human-proof

The Safe System



Source: adapted from Howard, 2009

Another view of a Safe System



Source: Watson, 2015

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Challenges in operationalizing the Safe System Approach

- Although the Safe System Approach is now reflected in the road safety strategies of many jurisdictions, challenges remain in operationalizing the approach:
  - It requires a change in traditional road safety thinking and the underlying concepts are sometimes misunderstood
  - Most examples come from high income countries
  - There is an assumption that additional funding is required to implement a safe systems approach
  - It requires cooperative efforts across government and other agencies

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Strategies to better embed the Safe System Approach

- Identify and promote case studies of good practice, particularly low cost initiatives
- Develop training programs for road safety professionals explaining the approach
- Promote coordinated approaches to road safety problems to avoid criticisms of “safe silos” e.g. comprehensive speed management strategies
- Reconsider the way that the ‘safe speed’ component is communicated to place more emphasis on ‘safe interactions’

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The role of technology

- Within a Safe System framework, considerable potential exists to enhance safety through new technologies to:
  - enhance vehicle safety for occupants and pedestrians
  - enhance road environment safety through assessing and treating poor roads
  - encourage compliance with road rules
  - optimise the interactions between vehicles and road users through ITS and cooperative systems
- However, priority needs to be given to context-effective technology ie. it fits the system

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Implementing a safe system requires cooperative efforts

Safer roads

Safer road users

Safer vehicles

Safer interactions
eg. safer speeds

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GLOBAL ROAD SAFETY PARTNERSHIP

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Roads Between Us: Agenda

Here are some suggestions for our other calls for you to consider:

- **The SDGs – the roles we play in meeting the Road Safety target**
- **Telematics and In Vehicle Cameras**
- **Driver Health**

Any other suggestions?

Thank you for your participation in the Roads Between Us calls.

Next call: Thursday June 16, 1530 CEST

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