Safe System Approach

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Professional Services (Road Safety Section)

TII Road Safety Audit Webinar Series - 7th July 2021

Presentation Outline

- What is Safe System Approach ?
- Ireland & EU
- Traditional V Safe System Approach
- Principles & Pillars
- Challenges

Quality Audits – TII Standards Update

Questions and Answers

WHAT IS SAFE SYSTEM?

This is the *generic term* of a collection of similar concepts/visions:

- Vision Zero
- Towards Zero
- Sustainable Safety
- Safe System

All agree that :

- human beings make mistakes,
- human body has a limited physical ability,
- shared responsibility.

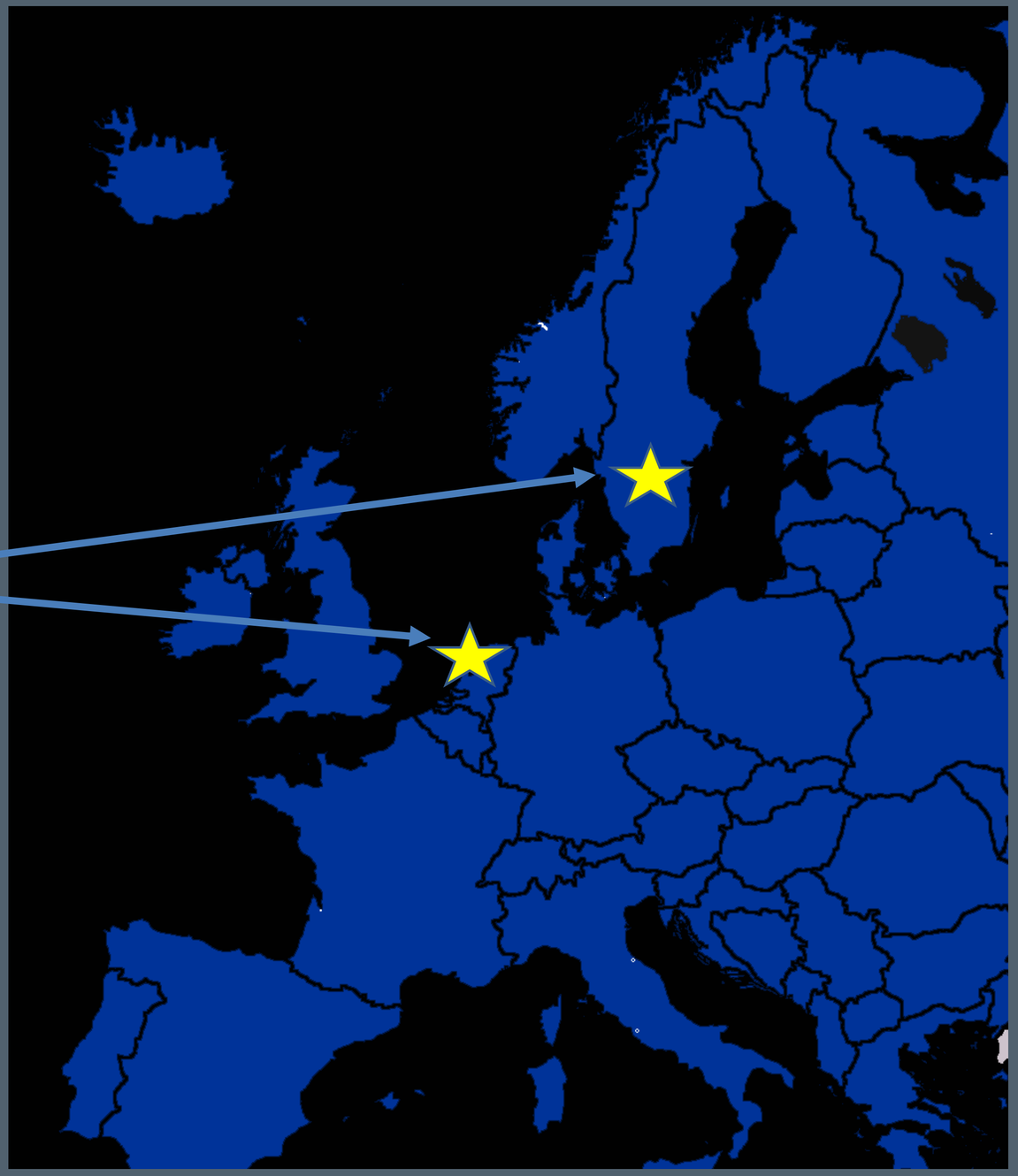
DEVELOPMENT OF THE SAFE SYSTEM APPROACH

Safe System approach builds upon the ground-breaking road safety efforts of the Netherlands and Sweden.

NETHERLANDS *SUSTAINABLE SAFETY*

SWEDEN'S *VISION ZERO*

Paradigm Shift – 1990's!



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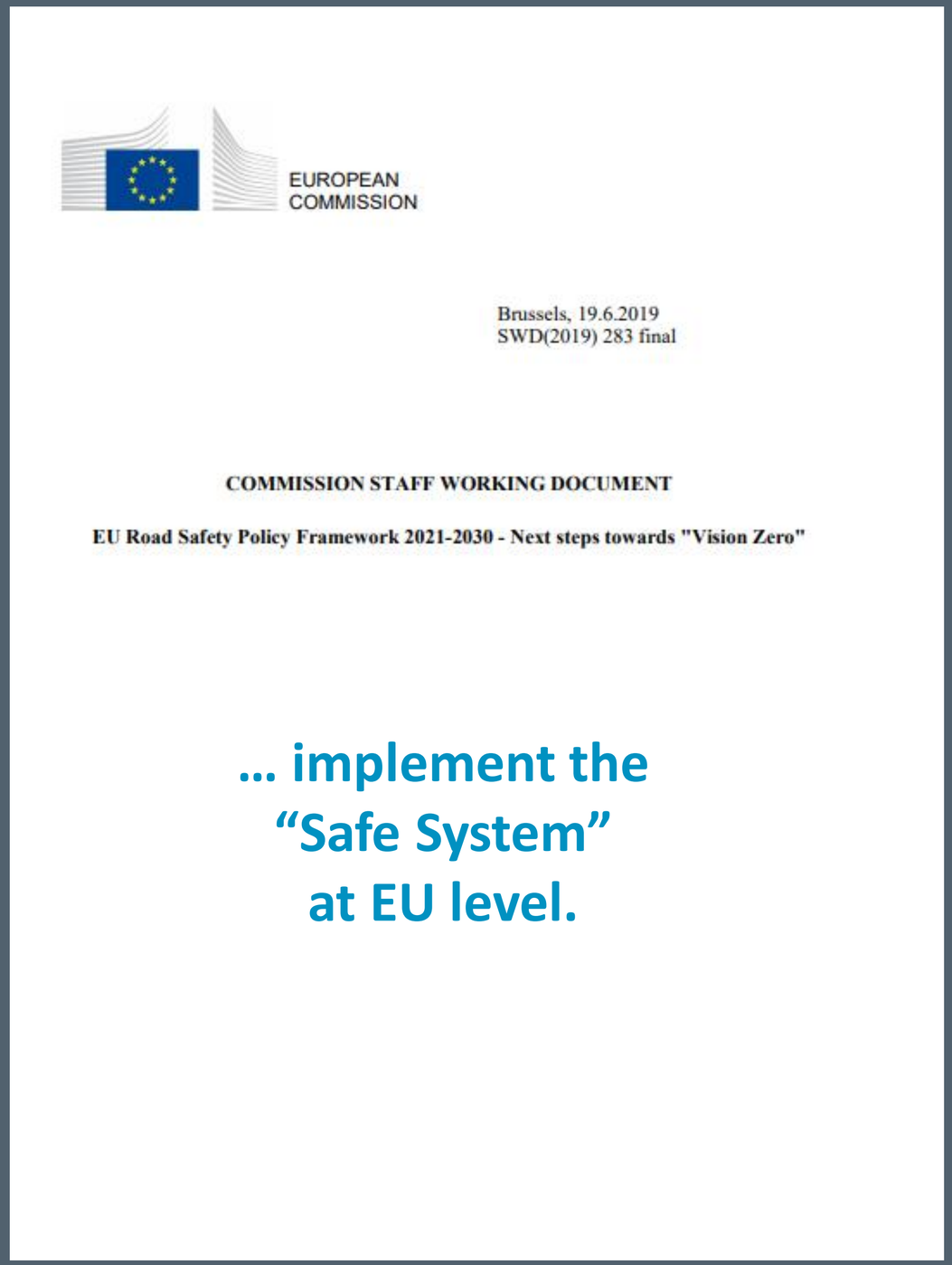
RSA.ie Road Safety Strategy

The Safe Systems Approach (Chapter 5)

……..this Strategy presents a more holistic approach to road safety, which builds on existing road safety interventions, but reframes the way in which road safety is viewed and managed in the community. This is called the Safe Systems approach and its key principles are outlined in this chapter.

Strategy, called ‘Closing the Gap’ 2013 to 2020

New RSS 2021 to 2030 will have a much stronger Safe Systems Approach focus.


EUROPEAN
COMMISSION

Brussels, 19.6.2019
SWD(2019) 283 final

COMMISSION STAFF WORKING DOCUMENT

EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero"

… implement the "Safe System" at EU level.

This approach, derived from European best practice and now recommended globally by the World Health Organisation, reframes road safety policy by focussing it on preventing deaths and serious injuries (EC, 2019)

AIM:

VISION ZERO via SAFE SYSTEMS

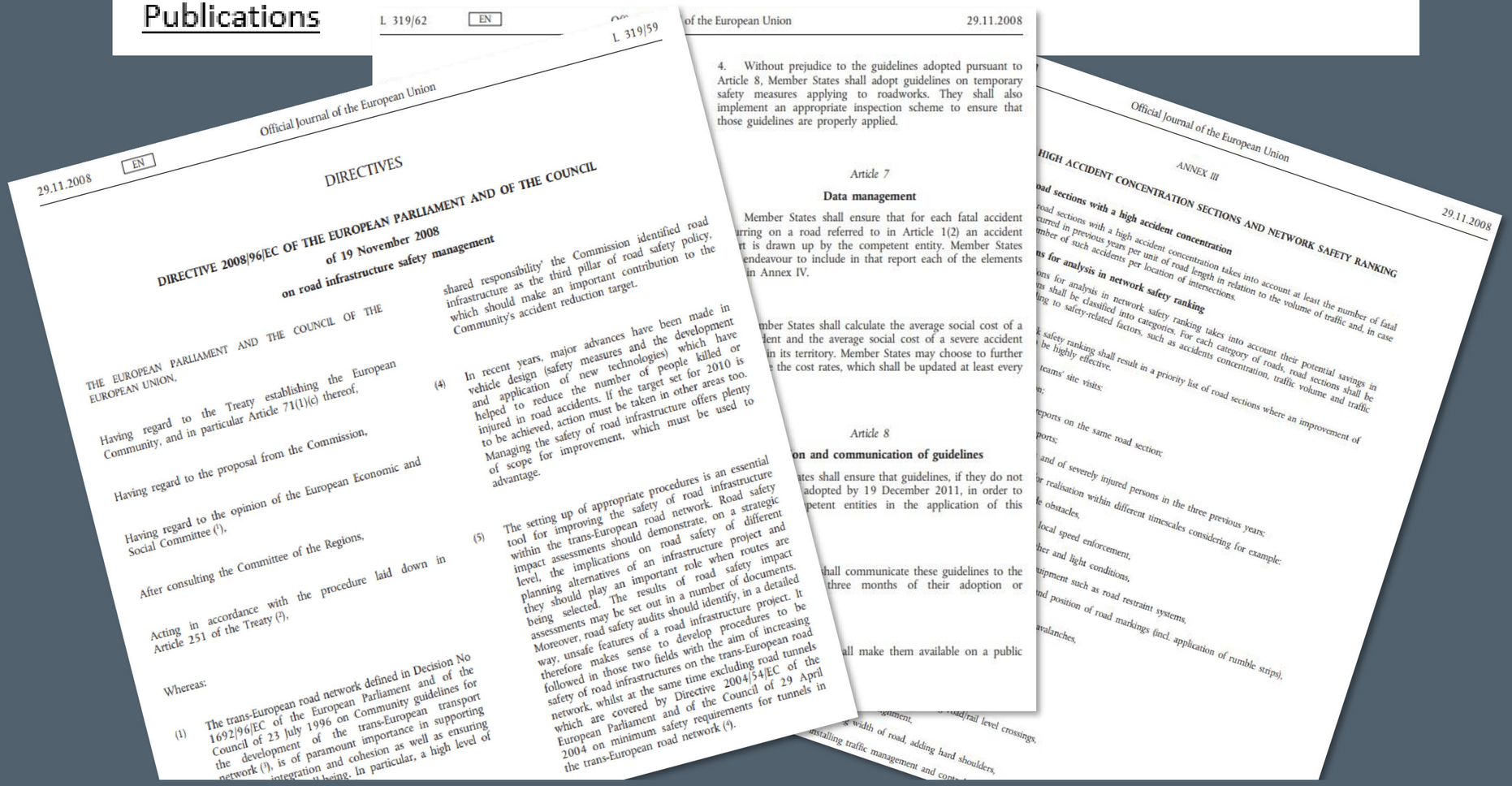
https://ec.europa.eu/transport/road_safety/sites/default/files/move-2019-01178-01-00-en-tra-00_3.pdf

TII Remit to provide Safe Infrastructure

EU RISM Directive 2008/96/EC

Transposed into SI 472 of 2011 – TII (NRA) Implementing Body

EU Directive on Road Infrastructure Safety Management (RISM) are met through TII Publications



29.11.2008 EN Official Journal of the European Union L 319/59

DIRECTIVES

DIRECTIVE 2008/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 19 November 2008

on road infrastructure safety management

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 71(1)(c) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee (1),

After consulting the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty (2),

Whereas:

(1) The trans-European road network defined in Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network (3), is of paramount importance in supporting integration and cohesion as well as ensuring well-being. In particular, a high level of shared responsibility' the Commission identified road infrastructure as the third pillar of road safety policy, which should make an important contribution to the Community's accident reduction target.

(4) In recent years, major advances have been made in vehicle design (safety measures and the development and application of new technologies) which have helped to reduce the number of people killed or injured in road accidents. If the target set for 2010 is to be achieved, action must be taken in other areas too. Managing the safety of road infrastructure offers plenty of scope for improvement, which must be used to advantage.

(5) The setting up of appropriate procedures is an essential tool for improving the safety of road infrastructure within the trans-European road network. Road safety impact assessments should demonstrate, on a strategic level, the implications on road safety of different planning alternatives of an infrastructure project and they should play an important role when routes are being selected. The results of road safety impact assessments may be set out in a number of documents. Moreover, road safety audits should identify, in a detailed way, unsafe features of a road infrastructure project. It therefore makes sense to develop procedures to be followed in those two fields with the aim of increasing safety of road infrastructures on the trans-European road network, whilst at the same time excluding road tunnels which are covered by Directive 2004/54/EC of the European Parliament and of the Council of 29 April 2004 on minimum safety requirements for tunnels in the trans-European road network (4).

L 319/62 EN Official Journal of the European Union 29.11.2008

4. Without prejudice to the guidelines adopted pursuant to Article 8, Member States shall adopt guidelines on temporary safety measures applying to roadworks. They shall also implement an appropriate inspection scheme to ensure that those guidelines are properly applied.

Article 7

Data management

Member States shall ensure that for each fatal accident urring on a road referred to in Article 1(2) an accident rt is drawn up by the competent entity. Member States endeavour to include in that report each of the elements in Annex IV.

mber States shall calculate the average social cost of a dent and the average social cost of a severe accident in its territory. Member States may choose to further the cost rates, which shall be updated at least every

Article 8

on and communication of guidelines

ates shall ensure that guidelines, if they do not adopted by 19 December 2011, in order to petent entities in the application of this

hall communicate these guidelines to the three months of their adoption or

all make them available on a public

Official Journal of the European Union 29.11.2008

ANNEX III

HIGH ACCIDENT CONCENTRATION SECTIONS AND NETWORK SAFETY RANKING

oad sections with a high accident concentration

road sections with a high accident concentration takes into account at least the number of fatal curred in previous years per unit of road length in relation to the volume of traffic and, in case mber of such accidents per location of intersections.

ns for analysis in network safety ranking

ons for analysis in network safety ranking takes into account their potential savings in rs shall be classified into categories. For each category of roads, road sections shall be ing to safety-related factors, such as accidents concentration, traffic volume and traffic

k safety ranking shall result in a priority list of road sections where an improvement of be highly effective.

teams' site visits:

reports on the same road section;

ports;

and of severely injured persons in the three previous years;

r realisation within different timescales considering for example:

e obstacles,

local speed enforcement,

her and light conditions,

uipment such as road restraint systems,

nd position of road markings (incl. application of rumble strips),

valanches,

gnment,

road/rail level crossings,

s width of road, adding hard shoulders,

installing traffic management and cont

New EU RISM 2019/1936 October 2019– to become law by 2024.

- Zero Fatal Collisions **2050**
- 50% Reduction of **Serious Injuries 2030**

The Vision

- Extended to all State National Roads (TII already adopted)

- Major Focus on improving the safety of Vulnerable Road Users
  Road Safety (growth area)
  Across EU motorised road safety steady improvment (but slowing).

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- Quality Audits – TII Standards Update
- Questions and Answers

Traditional V Safe System

Traditional - “Why did that a collision occur?”

Safe System Approach - Why was that person **so seriously injured** in the collision?”

This change in thinking, from collision reduction to injury prevention,

represents a significant shift from an engineering perspective to a public health perspective!

WHAT?

What does that mean for Road Safety Engineers and Auditors?

Instead of looking at data to prevent collisions, i.e. it has already happened, ensure that no one is exposed to so much crash force (the force being what actually causes injury or death) that they are seriously injured or killed.

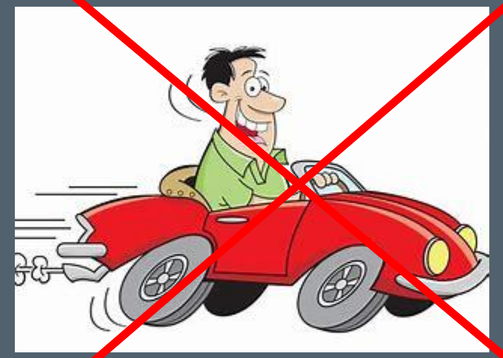
In this thinking the *vulnerability of the human body*

—not the collision itself—

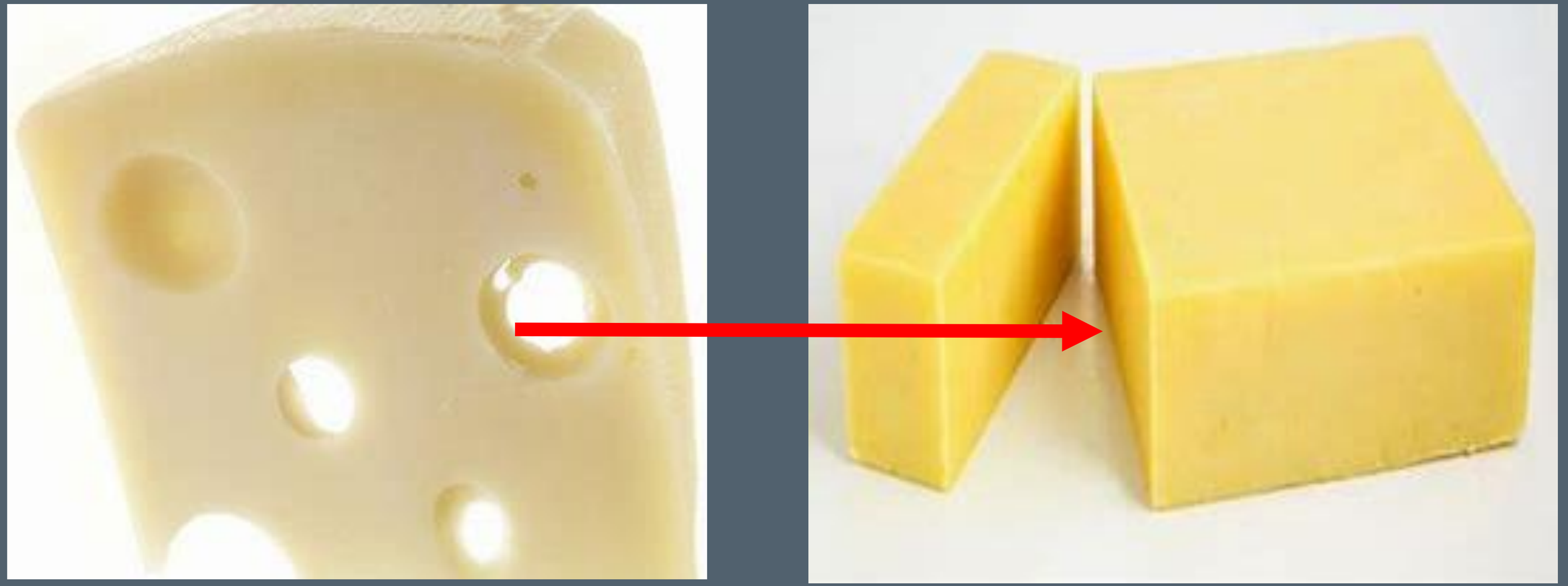
forms the basic parameter in the design of the transportation system.

We already do this Pro-Active v Re-Active (HCL v RSI)!

In collisions involving a bicycle and another vehicle, the most common key contributory factor recorded by the police is ‘failed to look properly’ by either the driver or rider, especially at junctions.



Making road safety less dependent on choices of individual road users – *because humans make mistakes*



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Guiding PRINCIPLES

1.People make mistakes

2.Human physical frailty

3.Shared responsibility

Guiding Principles

1.People make mistakes - Humans will continue to make mistakes, and the transport system must accommodate these. The transport system should not result in death or serious injury as a consequence of errors on the roads.

2.Human physical frailty - There are known physical limits to the amount of force our bodies can take before we are injured. **A 'forgiving' road transport system** - A Safe System ensures that the forces in collisions do not exceed the limits of human tolerance. Speeds must be managed – humans not exposed to impact forces beyond their physical tolerance. System designers and operators – accept known limits of the human body in designing and maintaining roads, vehicles and speeds.

3. Shared responsibility - between all stakeholders (road users, road managers, vehicle manufacturers, etc.) to take appropriate actions to ensure that road collisions do not lead to serious or fatal injuries.

4 Pillars of ACTION

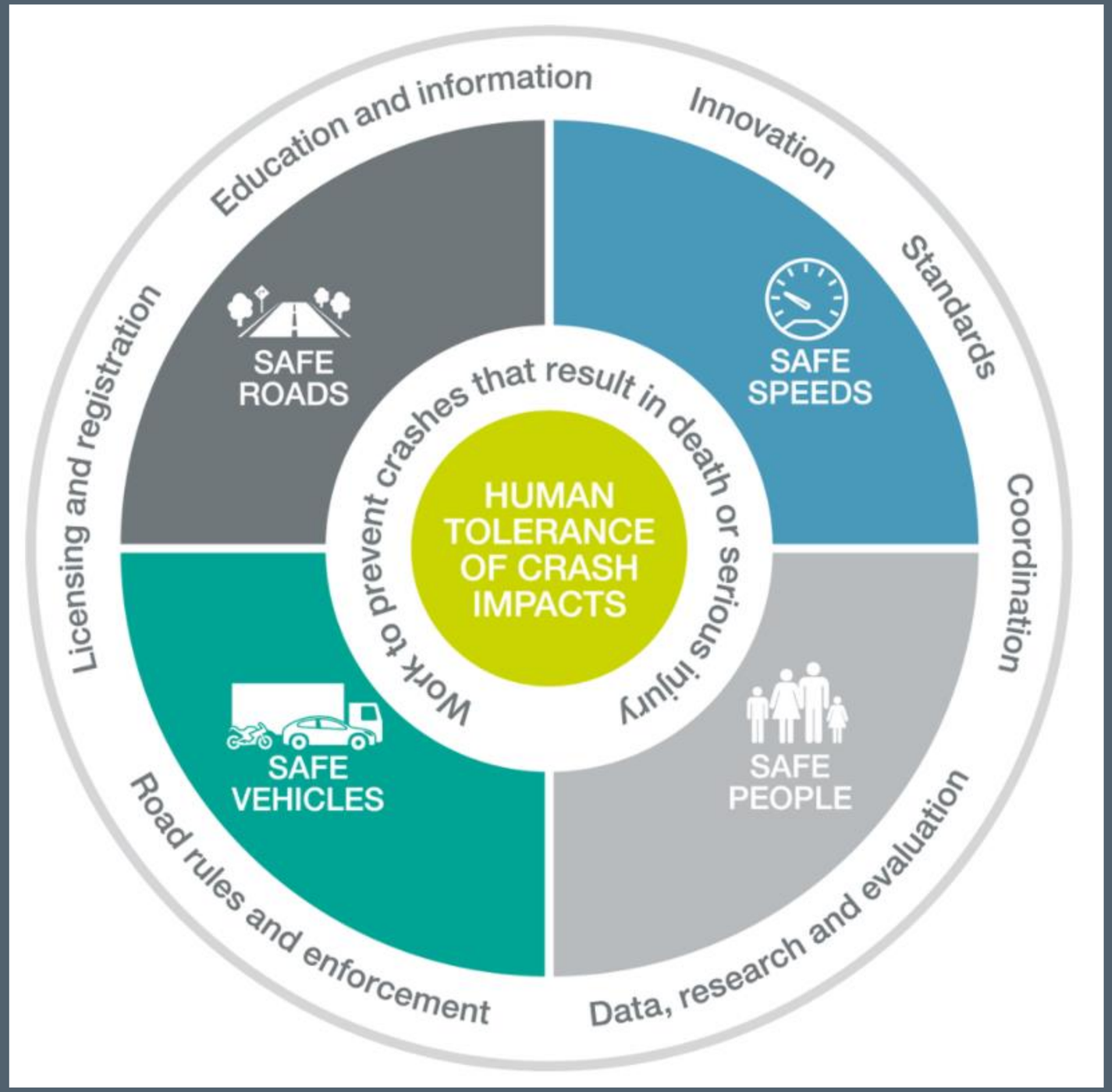
1. Safe Roads

2. Safe Speeds

3. Safe People

4. Safe Vehicles

(5. Post Collision Care e.g. e-Call)

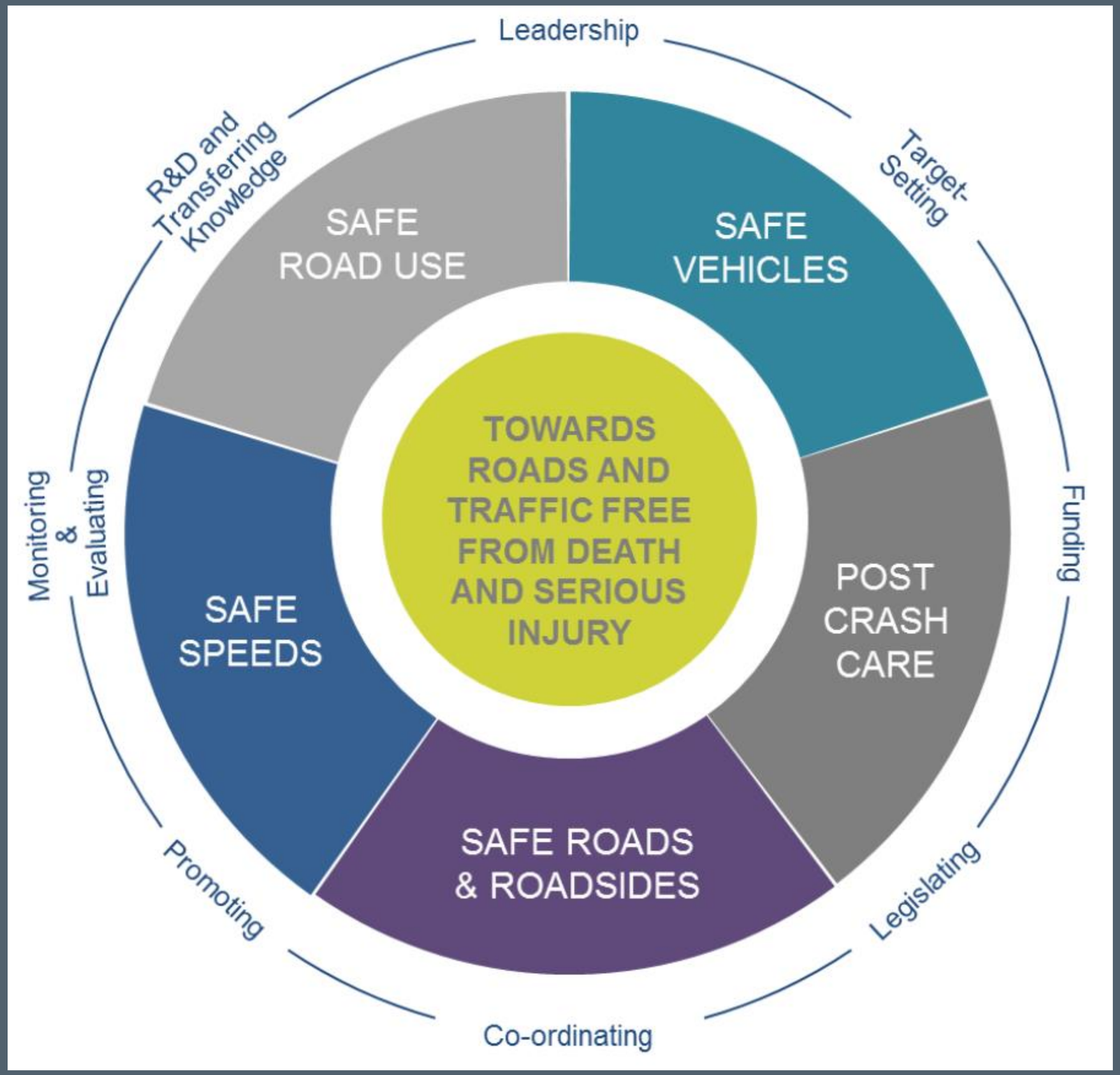


Safe Roads

Safe Speeds

Safe People

Safe Vehicles



Safe Roads

Safe Speeds

Safe People

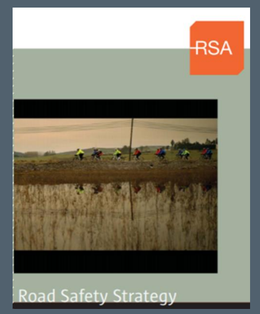
Safe Vehicles

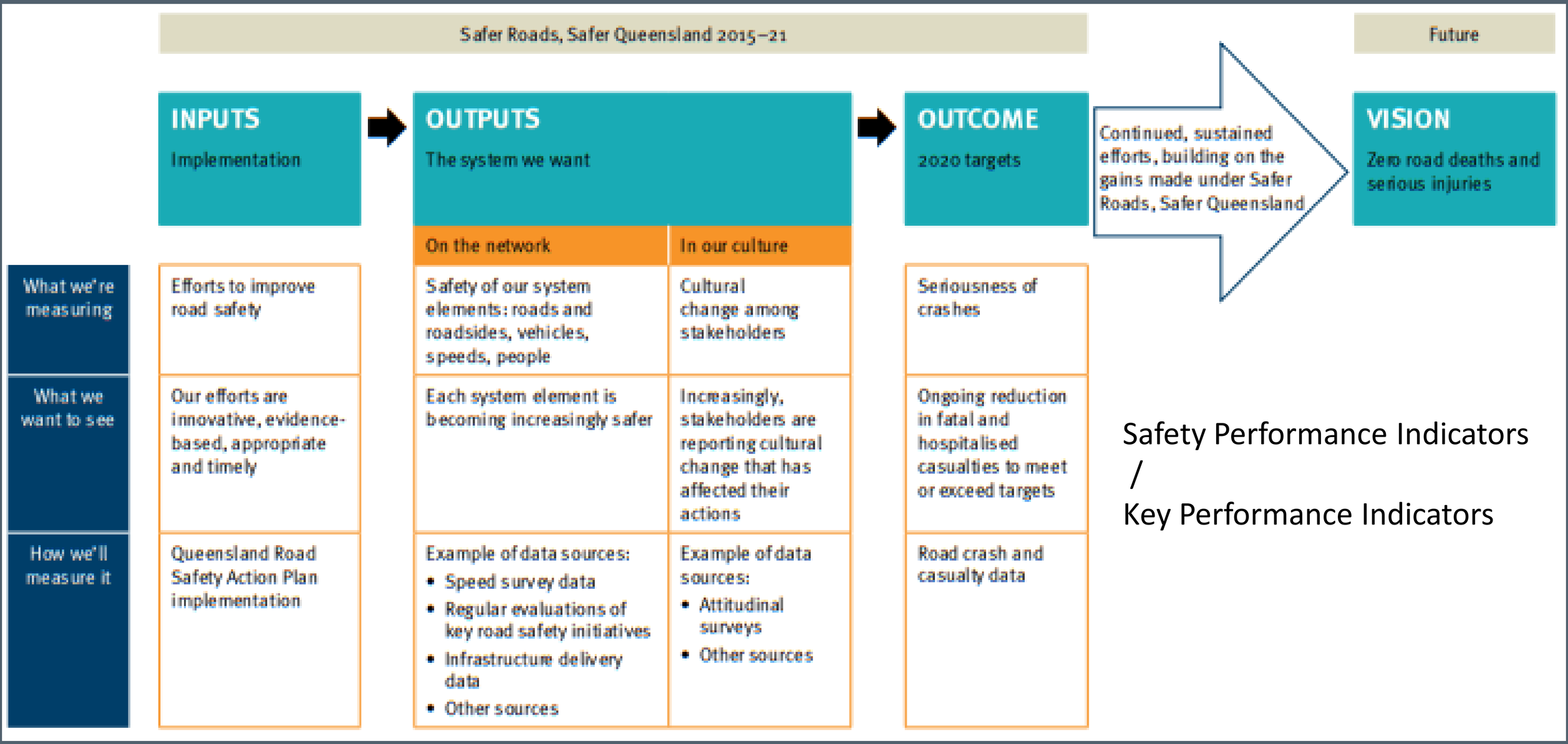
Post Crash Care

https://www.pacts.org.uk/safe-system/#:~:text=%20Safe%20System%20has%20five%20pillars%20of%20action%3A,roads%20and%20roadsides%3B%205%20post-crash%20response.%20More%20

WHAT MAKES a SAFE SYSTEM?

- A vision
- A set of principles
- A set of pillars for Action
- A set of tools and framework





Safety Performance Indicators
/
Key Performance Indicators

Shared Responsibility – Framework – SMART – Monitoring

https://www.tmr.qld.gov.au/Safety/Road-safety/Road-safety-strategy-and-action-plans/Strategy-and-action-plans

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Challenge

- Societal – Aging populations (higher vulnerability to injury), transport equity, gender equity, accessibility for all…

- Mobility Trends - requires **renewed focus** and awareness about Active Travel needs – addressing the road safety dichotomy that between protected and un-protected user.

- Understanding transport disrupters (e.g. e-mobility) – *transformative potential if safe!*

- Increased use of technology (e.g. Safe Smart Highways)

- Introducing new connected and autonomous vehicles (and flying ones?!)

Challenge

- Costs – safe limits / safe not safer!
- Level of ambition at the Project level
- Scope, quality and level of systemic adoption and acceptance of SS – All stakeholders/Silos
- Level of knowledge about all users safe limits / Design needs
- Quality of implementation and institutional/professional delivery of SS
- Wider accountability for outcomes LINK -Climate Action and Sustainable Transport and Mobility.

4 Pillars of ACTION

1. Safe Roads
2. Safe Speeds
3. Safe People
4. Safe Vehicles

(5. Post Collision Care e.g. e-Call)

Change – Auditors & Designers

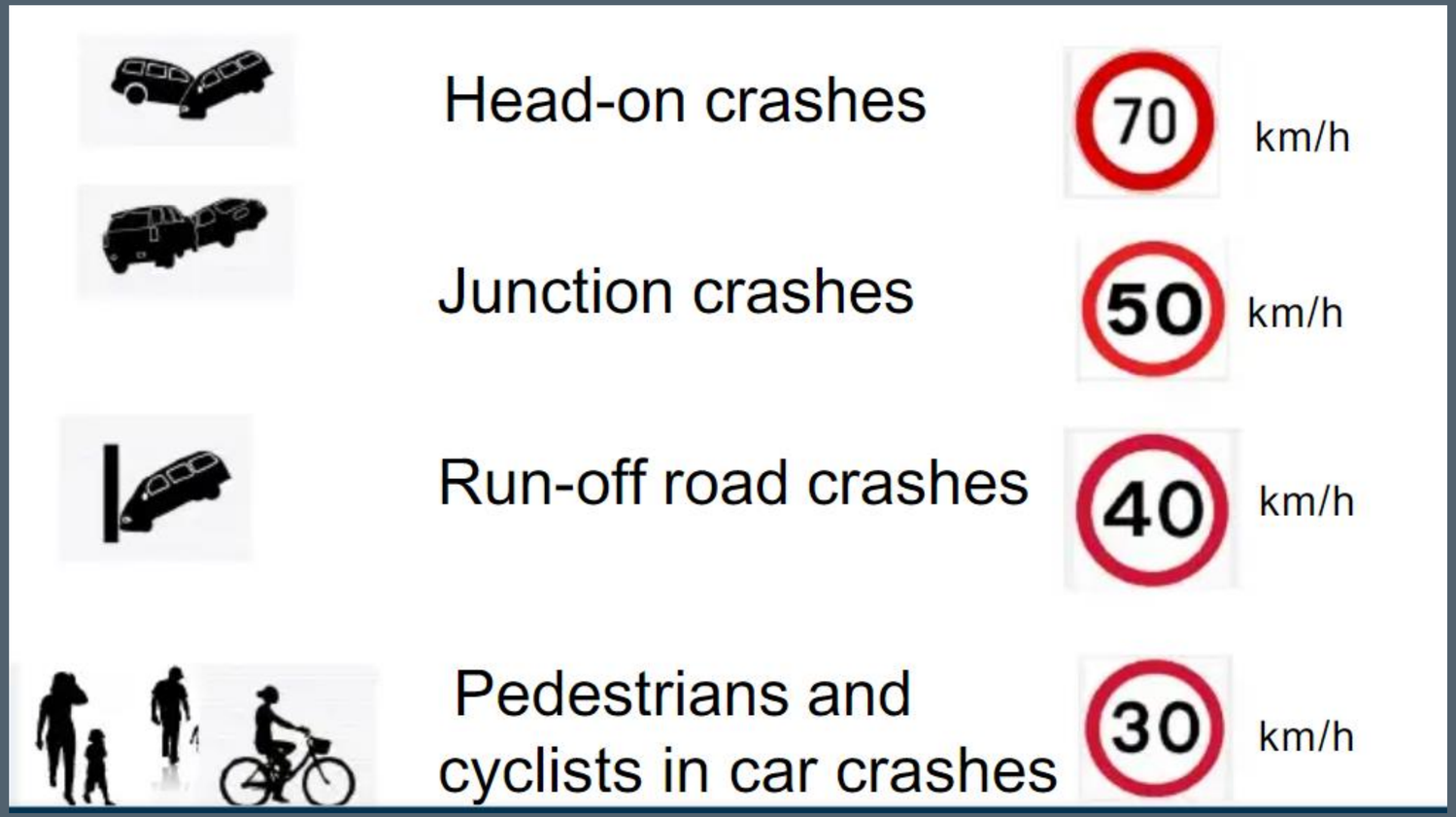
- Stronger focus on results and performance
- Pro-Active not Re-Active
- Focus on deaths AND serious injury performance (all injury?)
- Attention and knowledge about underlying operational safety - latent risk (the Swiss Cheese)
- Work in progress – scope for innovation

Challenge – Auditors & Designers

- Do our current ways of working facilitate collaborative working with all necessary stakeholders? (Shared responsibility)

- Do we currently LINK sustainability, acceptably and affordably?

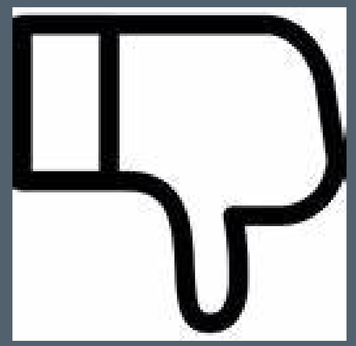
- Recommendations for SS will need some hard choices -*reduced speeds and cost of segregation as standard?*



Source: Jeanne-Breen-Towards-Zero-via-a-Safe-System-approach

https://www.thebulletin.be/nearly-50000-sign-petition-against-brussels-new-30kph-zone

Safe Speeds



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DN-GEO-03030 Improvement Schemes on National Roads

- NRA TA 85/11 first published in November 2011

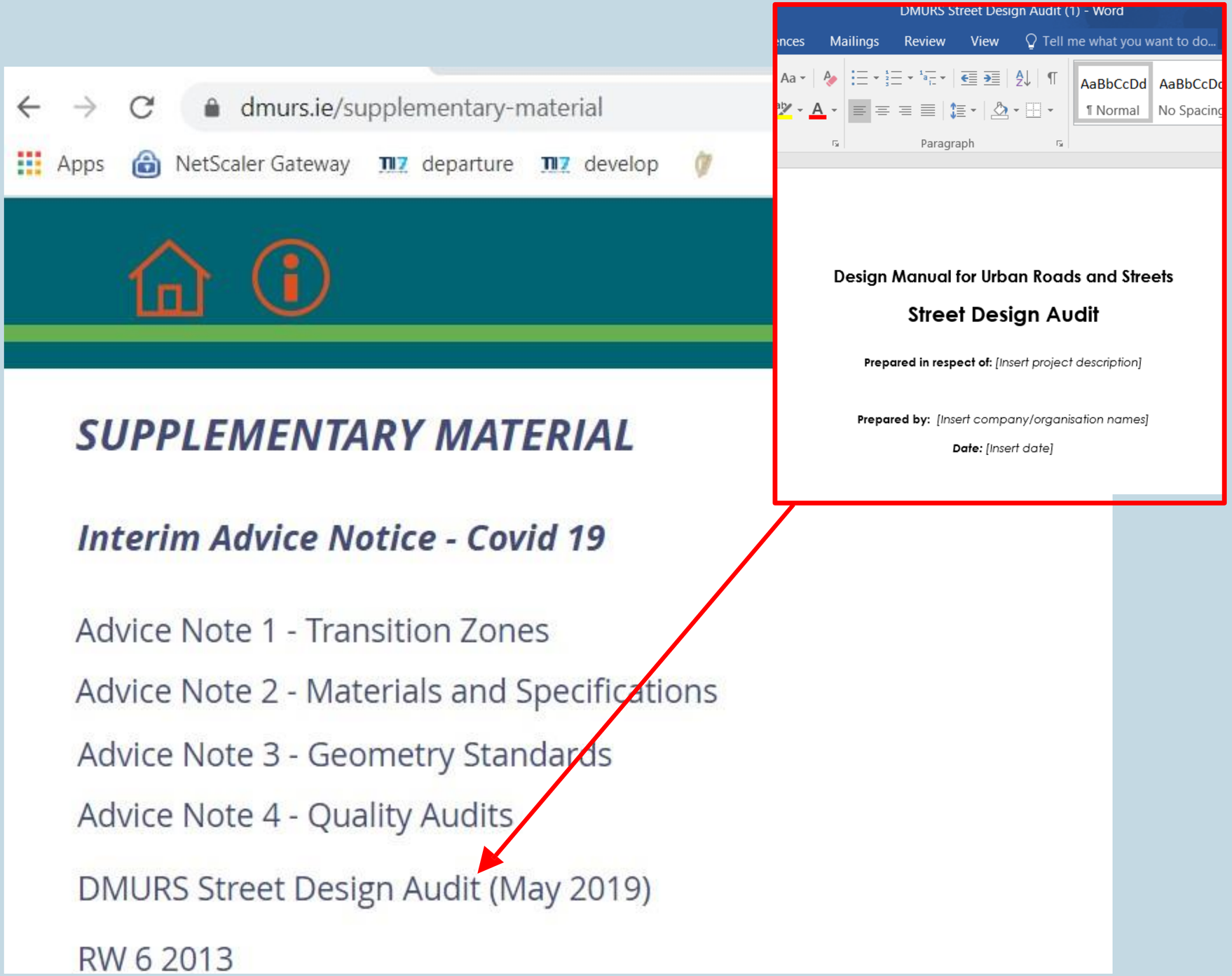
- DN-GEO-03030 - Guidance on Minor Improvements to National Roads updated in April 2013 June 2013

- New update – **Quality Audits required for Urban Schemes**

Traffic Advisory Leaflet 5/11

Quality Audits. 2011.

Department for Transport.



DMURS – Quality Audits

Objectives of the Project

DMURS Street Design Audit

Other Design Audits (as required, eg Road Safety Audit)

Quality Audit Report
(summary, cross-evaluation and recommendations)

DMURS **Street Design Audits** consists of a series of short tables used to cross check a design against DMURS principles.

Who should carry out a Quality Audit?

The Quality Audit Report should be carried out by the Design Team. The Design Team may include and benefit from having an independent appraisal or be carried out by person(s) ***with a broad skill set***.

It is a documented record of the process of how decisions were made.

The final Quality Audit signed by the Project Manager.

Road Safety Audits (including Risk Assessment).

Pedestrian and cycling audits
(e.g. Non-Motorised User Audit, Walkability Audit, Cycle Audit).

Mobility and visually impaired users audits
(e.g. Access Audit, Universal Design Audit, Wheelchair Audit).

Visual quality audits (e.g. Place check, Materials Audit)

Community audits (e.g. Community Street Audit).

Heritage Assessments

Permeability (NTA Guidelines)

Quality Audit - checks to promote ‘best practice’ design solutions.

Safety Auditing processes in Ireland are well understood.

Urban projects may/should have several other audits/assessments to fully engage with the complexity of issues when designing streets and street networks.

The Quality Audit process integrates:

1. INDEPENDENT road safety auditing processes (TII Standards)
2. A multidisciplinary decision record and suit of assessments to produce good street design. (Co-benefits!!!!! for safety)

Street Design Audit completed and signed off by Principle Designer/Project Manager - NOT the ROAD SAFETY AUDITORS!

Should not be limited to the SITE – RSA are limited to scope set by Client

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Questions and Answers

Thankyou