

European Transport Policy

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Structure of the presentation

- 1. Overview of ERF
- 2. Europe's roads facts and figures
- 3. European Transport Policy
 - 3.1 Road Safety
 - **3.2 Infrastructure Financing**
- 4. Future challenges

1. Overview of the ERF

- > Non profit organisation, based in Brussels
- Founded in 1998
- Represents the sector of the road infrastructure
 - > In the EU, towards the EU institutions
 - Outside the EU
- Defends the importance of roads for Europe economy and society

1. Overview of the ERF

- ➢ 64 members from 25 countries
 - National Road Associations
 - Road suppliers (asphalt, concrete, safety barriers, markings, signs)
 - Construction companies
 - Professional Business Organisations
 - Test Houses and Notified Bodies



<u>1. Overview of the ERF</u>

- > 4 major Programmes
 - Road Safety
 - Sustainable Roads
 - > Infrastructure Financing
 - Smart Roads

1. Overview of the ERF

- Operates technical working groups on areas of interests to its members
- > Organises policy/technical events
- > Participate in relevant research projects at EU level



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2. Europe's roads: facts and figures

- Length:
 - European Road Network = +/- 5 million km
- Contribution to the economy:
 - Direct: 5 million jobs or +/- 5% of GDP*
 - Indirect: 14 million jobs or +/- 11% of GDP**
- The major community asset (Value > 8.000 billion €***)

* Source: CE ** Source: ERTRAC *** ERF estimation

Passenger transport modal split in EU 28, 2014 (pkm in %)



Inland transport modal split in EU 28, 2014 (% of tkm)





2. Europe's roads: facts and figures Evolution forecasts



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2. Europe's roads: facts and figures Financing the transport infrastructures

- > All modes of transport*:
 - Lowest level since the 70's
 - 1,5 % of the GDP in the 70's
 - Fell at record low in 2013 in Europe (below 1%)

Source: International Transport Forum



3. Europe's roads: facts and figures

Financing the transport infrastructures

Figure 2. Investment in inland transport infrastructure by region 1995-2013



(as a percentage of GDP, at current prices)



3. Europe's roads: facts and figures

Financing the transport infrastructures

Figure 5. Distribution of infrastructure investment between modes







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European Transport Policy

- According to the Lisbon Treaty, EU competences divided into 3 main categories
 - Exclusive competencies (e.g. common commercial policy)
 - Shared comptences (e.g. transport)
 - Supporting competencies (e.g. education)



European Transport Policy

- White Paper on Transport released in 2011
- Lays down a global vision for an integrated transport system by 2050 for all modes
- Several thematic priorities, i.e. road safety, financing, decarbonisation, EU industry competitivness



ROADMAP TO A SINGLE EUROPEAN TRANSPORT AREA — TOWARDS A COMPETITIVE AND RESOURCE-EFFICIENT TRANSPORT SYSTEM



3.1 Road Safety at EU level

In 2001, more 50,000 were losing their lives on Europe's roads

- > Equivalent to a small town dissapearing every year
- Road fatalities in Europe a huge wound from a socioeconomic perspective equal to 2% of GDP

HUDDEAN ERF

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3.1 Road Safety at EU level

- Unfortunately, the dispersed nature of the fatalities meant that reaction from authorities was not vigilant enough
- Given that the European Union is open space without borders and with significant cross-border traffic
- It was agreed that a European strategy was needed for road safety



- In 2003, Road Safety Action Programme adopted
- Calling for 50% decrease in fatalities by 2010 compared to 2001 levels
- Target = reduce fatalities by 25,000





3.1 Road Safety at EU Level

Road fatalities in the EU since 2001





3.1 Road Safety at EU Level





- Objective: 50% reduction compared to 2010 levels
- 7 Action areas: focussing on the road safety triangle (driver, vehicle and infrastructure)
- Range of instruments: legislation, policy and communication, research



3.1Road Safety at EU Level

Road fatalities in the EU since 2001





- > Since 2013, progress in reducing fatalities has been marginal
- EU reduction in fatalities 2010-2016 = 19%
- Huge efforts need to put to reach targets of 50% by 2020
- Reasons for slow down:
 - Growing number of elderly drivers
 - Growing number of VRU in cities
 - Less resources dedicated to road maintenance due to cutbacks
 - Increase in traffic volumes



3.1 Road Safety at EU Level







3.1 Road Safety at EU Level infrastructure legislation

- Legal Responsibility for TEN-T Motorways lies with EU
- Two EU Directives on TEN-T:
 - Tunnel Directive 2004/54/EC
 - Open Roads Directive 2008/96/EC



<u>3.1 Road Safety at EU Level</u> <u>Tunnel Directive 2004/54/EC – Background</u>

- Need for common appoach triggered by 1999 Mont Blanc tunnel disaster
- > Mont Blanc Tunnel: 11,6 km / Connects Italy and France
- > 39 people lost their lives as a result of fire outbreak
- ➤ Economic losses due to closure > € 300,000,000
- 30 November 2001: Common declaration by Austria, France, Germany, Italy, Switzerland (>95% of EU tunnels) on need for harmonising safety requirements
- > 14-15 December 2001: European Council underlines urgency to improve tunnel safety



3.1 Road Safety at EU Level Tunnel Directive 2004/54/EC

Prevention of incidents

• To prevent events that endanger human life, the environment and tunnel installations

Reduction of their consequences

- Enable people involved in the incident to rescue themselves
- Ensure efficient action by emergency services
- Protecting the environment
- Limiting material damage

http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32004L0054



<u>3.1 Road Safety at EU Level</u> Tunnel Directive 2004/54/EC – Basic Facts

- Adoption: 29 June 2004
- Defines minimum safety requirements for tunnels on TEN-T
- Applies to all tunnels >500 metres on TEN-T network
- > Transposition into national legislation: 30 April 2006
- Refurbishment of existing tunnels: 30 April 2014
- Refurbishment of existing tunnels: 30 April 2019 for countries where km of tunnels / km of TEN-T > EU average (Austria, Italy)
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<u>3.1 Road Safety at EU Level</u> <u>Tunnel Directive 2004/54/EC – Requirements</u>

- > Organisational Requirements
 - > To harmonise the organisation of safety at national level and to clarify roles and responsibilities
- > Technical Requirements
 - Defines minimum requirements deal with lighting, road signs, water supply, monitoring systems, fire resistance of equipment etc.



Tunnel Directive 2004/54/EC – Organisation Requirements

Directive establishes four levels of administrative responsibility

- > Administrative authority: appointed by Member States (usually on per MS)
 - o overall responsibility for tunnels
 - Commissions new tunnels / power to suspend operation of tunnels
 - Ensures that following tasks are performed:
 - Inspecting and testing of safety features
 - Appropriate schemes for training and equipping of emergency services
 - Procedures for closing a tunnel are defined
 - Risk reduction measures are implemented



Tunnel Directive 2004/54/EC – Organisation Requirements

Directive establishes four levels of administrative responsibility

- Tunnel Manager: appointed by Administrative authority
 - Responsible for design, construction or operation of a tunnel
 - For tunnels located in two Member States, Administrative authorities recognise the same tunnel manager
 - Responsible for drawing up and incident / accident report and sends it to the Safety officer / Administrative authority and emergency services

NB: Administrative authority may act as Tunnel Manager



Tunnel Directive 2004/54/EC – Organisation Requirements

Directive establishes four levels of administrative responsibility

- Safety officer: appointed by Tunnel Manager (with prior approval of Administrative authority)
 - Coordinates all preventive and safeguards measures to ensure safety of staff and users
 - Takes parts in planning, operation and evaluation of emergency operation
 - Takes part in definition of safety schemes and specification of road safety equipment
 - Verifies that operational staff and emergency services are trained
 - Verifies that tunnel structure and equipment are maintained



Tunnel Directive 2004/54/EC – Organisation Requirements

Directive establishes four levels of administrative responsibility

- Inspection entity: carries out inspections, tests and evaluations of tunnels
- Inspection entity must be functionally independent from Tunnel Manager

NB: Administrative authority may act as inspection Entity



<u>3.1 Road Safety at EU Level</u> <u>Tunnel Directive 2004/54/EC – Technical Requirements</u>

Distance between lay-bys for tunnels >1,5 km : shall not exceed 1000m



Control Rooms: obligatory for tunnels >3 km and traffic volumes > 2000 vehicles per lane



Road signs: Specific uniform signs shall be used to designate safety facilities.



Minimum Equipment: Indication of escape routes by lighting and by signing every 25 m; fire extinguishers every 150 m and at entrances; water supply every 150 m; radio broadcasting with special channels for emergency; video monitoring systems in tunnels longer than 1 000 m etc.



Infrastructure Safety Management Directive 2008/96/EC

Objectives

- To bring about a common high level of safety of roads in all EU Member States
- To ensure that safety is integrated in all phases of planning, design and operation of road infrastructure
- To use the limited funds for more efficient construction and maintenance of roads



Infrastructure Safety Management Directive 2008/96/EC

Objectives

- Provides a common approach to managing all TEN-T motorways in the EU
- **EU Member States must establish procedures for:**
 - Road Safety Impact Assessment (during initial planning stage)
 - Road Safety Audits (during design and early operation)
 - Safety ranking and management of network (in operation)
 - Road Safety Inspections (in operation)



3.1 Road Safety at EU Level

Infrastructure Safety Management Directive 2008/96/EC

4 procedures to attain the objectives

Road safety impact assessment

- Strategic comparative analysis of the impact of a new road or a substantial modification to the existing network on the safety performance of the road network
- To demonstrate the implications of different planning alternatives of a project, whether new construction or changes in the existing infrastructure

Road safety audits

- Systematic and technical safety check relating to the design characteristics of a road infrastructure project. Auditors can be of the same administration, but shall not be involved in the conception of the project.
- To identify and rectify dangerous road elements at the different stages of a project



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3.1 Road Safety at EU Level

Infrastructure Safety Management Directive 2008/96/EC

4 procedures to attain the objectives

Road Safety Ranking and Management

Road Safety Inspections

- Reduction of future accidents by targeting remedial treatment to parts of the network where, respectively, accidents and accident costs reduction potential are the highest
- Must be performed at least every three years

- Periodical safety review of a road in operation
- To recognise risks and to prevent accidents by measures for implementation within one year



Infrastructure Safety Management Directive 2008/96/EC

Basic facts

- Date of adoption: 19 November 2008
- > Date of transposition into national legislation: 19 December 2010

NB: Whereas Tunnel Directive is very prescriptive, RISM Directive only provides a framework and it is to each Member State to define national specifications



<u>3.1 Road Safety at EU Level</u> Infrastructure legislation – Next steps

- Both the Open Roads and Tunnel Directive have had a positive effect on road safety
- Encouraged a more generalised use of RISM procedures
- Created a common language within EU allowing for a greater exchange of good practices



<u>3.1 Road Safety at EU Level</u> Infrastructure legislation – Next steps

- European is expected to release a proposal for revising both Directives in March 2018
- Proposal should be an evolution rather than a revolution
- Larger focus on linking infrastructure with new vehicle technologies
- Emphasis on the protection of Vulnerable Road Users
- Possible extension of scope of Directive to non TEN-T roads



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Trans-European Transport Network is European Commission policy directed towards the implementation and development of a Europe-wide network of roads, railway lines, inland waterways, maritime shipping routes, ports, airports and rail-road terminals. It consists of two planning layers:

- The Comprehensive Network: Covering all European regions target date completion 2050
- The Core Network: Most important connections within the Comprehensive Network linking the most important nodes – target date completion - 2030





3.2 Infrastructure financing Infrastructure Financing

> Funds for the financing of infrastructure are available via:

- Connecting Europe Facility (€ 24 billion between 2014-2020) geared principally towards development of the railway Core Network
- EU Structural Funds which are mainly geared towards road projects
- National Funds very limited across Europe
- Implementation of road pricing schemes being pushed by European Commission as only long-term viable alternative



Revision of 'Eurovignette' Directive

- 31 May 2017: Commission proposed a revision of Directive 1999/62/EC on the charging of Heavy Good Vehicles for the use of certain infrastructures
- Proposal proposes significant changes to original scope of the Directive which has covered traditional trucks above 3,5 tonnes and was principally concerned about ensuring a level playing field for transport operators

NB: Proposal does not force members to apply road charging schemes but simply aims to create a uniform framework for its potential application



Revision of 'Eurovignette' Directive

- Phasing out of time-based vignettes for HDV's by 2023 and by 2027 for light duty vehicles (private cars and vans) in favour of distance-based charging
- Extension of charging system to cover all cars, vans, buses and coaches
- Removal of possibility to exempt HDVs below 12 tonnes from road charging



Revision of 'Eurovignette' Directive

- Changes in the method in determining road user charges to incentivise use of clean vehicles
 - For HDV: shift from Euro standards to new method based on C02 emissions
 - Possibility to introduce variation in charges for car and vans based on emissions and air pollutants
 - $\circ~75\%$ discount toll discount for zero emission vehicles, including trucks
 - Possibility to introduce congestion charge / mark up where justified provided revenue is re-invested in solving the problems at hand



<u>3.2 Infrastructure financing</u> <u>Revision of 'Eurovignette' Directive</u> <u>Issues of concern</u>

- Proposal does not contain provision for 'earmarking' of revenues back into the infrastructure
 - This creates the danger that charges may end up simply being a tax
- Cost of implementation of distance-based charging schemes needs to be assessed against potential revenues generated
- Safety risk linked to the transfer of traffic to non-charged part of the network



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4. Future Challenges

- Adaptation of road infrastructure to connected vehicles
- > Optimisation maintenance techniques

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/ Deceleration	<i>Monitoring</i> of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability <i>(Driving Modes)</i>
Human driver monitors the driving environment						
0	No Automation	the full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	Driver Assistance	the <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human driver and system	Human driver	Human driver	Some driving modes
2	Partial Automation	the <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/ deceleration using information about the driving environment and with the expectation that the <i>human</i> <i>driver</i> perform all remaining aspects of the <i>dynamic driving</i> <i>task</i>	System	Human driver	Human driver	Some driving modes
Automated driving system ("system") monitors the driving environment						
3	Conditional Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the dynamic driving task with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human driver	Some driving modes
4	High Automation	the <i>driving mode</i> -specific performance by an automated driving system of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some driving modes
5	Full Automation	the full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes

Convright © 2014 SAE International. The summary table may be



- EC Report: Saving Lives: Boosting Car Safety in the EU (December 2016)
- Identified 19 life-saving technologies that should be considered for the revision of General Safety Regulation (proposal expected March 2018)
- > Three technologies deal directly with infrastructure:
 - Lane Support Systems (LSS)
 - Intelligent Speed Adaptation (ISA)
 - Automatic Emergency Breaking (AEB)
- Proposal is to make these technologies mandatory for all new vehicles as of
 - September 2022 for LSS, ISA
 - September 2024 for AEB



- EuroNCAP (European New Car Assessement Programme) is already incentivising the update of such technologies on a voluntary basis
- According to EuroNCAP, 25% of all new vehicles sold will be fitted with AEB as a standard feature
- The effectiveness of such technologies will also depend on the presence of a well maintained infrastructure



- There is nevertheless a need to understand the interaction between new vehicle technologies and the infrastructure
- Testing protocols for proposed life saving technologies (AEB, LSS, ISA) are done under perfect weather conditions and assuming perfect infrastructure
- In fact, there is no qualitative information concerning the condition of either pavements, lane markings or traffic signs



- At the same time, infrastructure manager rely on CEN standards to maintain their road infrastructure
- As such, it is important to understand the correlation between new technologies being proposed and existing infrastructure standards for pavements, marking, signs
- The idea should not be to fundamentally change the way infrastructure is designed (impossible from a financial point of view)
- But to understand how existing infrastructure can be optimised to work better with new proposed technologies

4. Future Challenges

- C-ITS Platform set up to understand the implications of road automation on road transport
- Final report was released in September 2017
- Specific Working Group on Physical and Digital Infrastructure



4. Future Challenges

Adapation of road infrastucture to connected vehicles

Recommendation 2a: Road operators to identify, in close collaboration with OEMs and digital map providers, key attributes of roads relevant for automated driving, with the aim of adding predictability on what to expect on the road ahead and enlarging the decision base for using automatic mode. Where needed, possible or desirable define values for these attributes.





4. Future Challenges

Optimisation of maintenance techniques

- Europe has a mature and dense road network
- The key for the future will be to maintain and upgrade the existing infrastructure
- Against a backdrop of limited resources, the key will be to develop more innovative techniques



<u>4. Future Challenges</u> Optimsation of maintenance techniques

- A procurement framework that allows for the uptake of innovation is indispensable in this respect
- Public Procurement Directive 2014/24/EC aims to create a framework which moves away from cheapest price model
- > Promotes MEAT principle (Most Economically Advanatageous Tender)
- Tender awarded on a combination of criteria, i.e. price, ability of contractor to intervent in a short time frame, durability of elements, etc)



<u>4. Future Challenges</u> Optimsation of maintenance techniques

- Promotion of MEAT principle could prove a win-win principle for both authorities, industry and ultimately tax-payers/users
- ERF Working on Sustainablity will begin as of next year to map good practices across Member States in the different areas of road construction and maintenance
- Should allow for up-take of more innovative techniques that extend the life time of roads and reduce maintenance techniques



4. Future Challenges

Optimsation of maintenance techniques – The HEALROAD project

- HEALROAD (<u>www.healroad.eu</u>)
- Financed unde the ERANET+ Infravation Call 2014
- > Duration: 2,5 years
- Partners: University of Cantabria, BAST, ERF, Heijmans, University of Nottingham and SGS



4. Future Challenges

Optimisation of maintenance techniques – The HEALROAD project

- Developing, optimising and validating asphalt mixture wearing courses as well as steel-fibbers to facilitate self-healing via induction heating
- When micro-cracks appear in the wearing course (normally between after 3-5 years from its construction), an induction heating generator will pass through the road surface heating up the magnetic particles. Bitumen will then melt and flow through the micro cracks in order to close them.
- Initial estimations confirm that the lifetime of the road can be extended more than 30% by using self-healing combined with other maintenance actions.





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