



Road infrastructure safety management in Croatia

Zagreb, 3rd april 2017



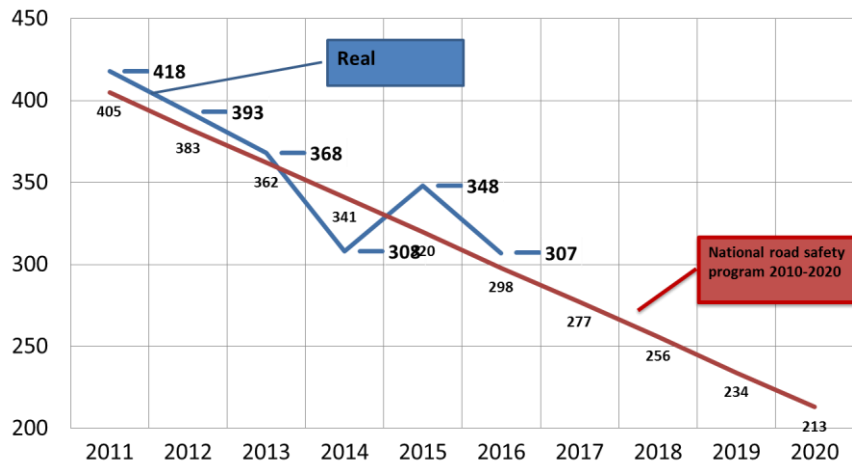
ROAD INFRASTRUCTURE SAFETY MANAGEMENT

- BASIC INFO
- KEY STAKEHOLDERS
- LEGISLATIVE FRAMEWORK
- IMPLEMENTATION OF DIRECTIVE
- EXPERIENCE ON BSM
- EXPERIENCE RSA/RSI
- ROAD SAFETY, PLAN 2017-2020
- CONCLUSION



Basic info:

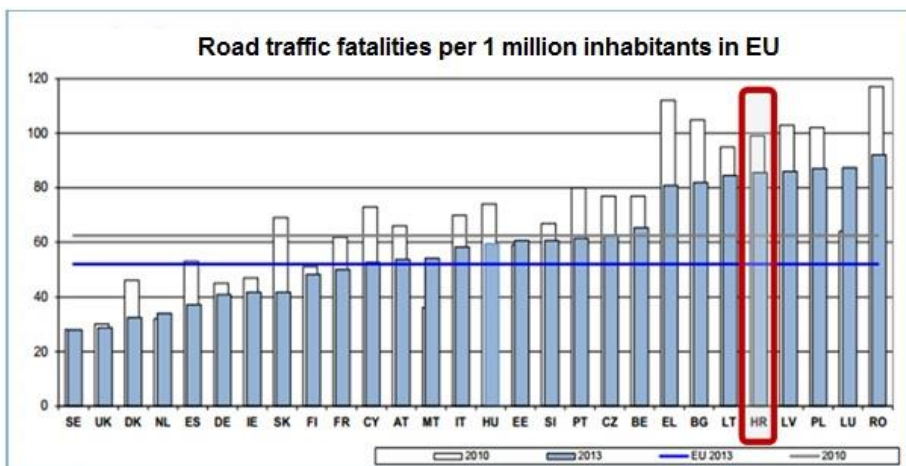
Road traffic fatalities in Croatia



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BASIC INFO:



Number of fatalities in road traffic per million inhabitants for all member states.

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BASIC INFO: National road safety program 2010-2020



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KEY STAKEHOLDERS:

- Ministry of the see, transport and infrastructure
- Ministry of interior affairs
- Road inspection
- Croatian association of drivers and vehicle owners (HAK)
- Faculty of transport and traffic sciences (FPZ)
- Road management authorities (HC, HAC, ARZ, etc...)

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ROAD INFRASTRUCTURE SAFETY LEGISLATIVE:

- „The Directive 2008/96/EC on road infrastructure safety management”,
- „Roads Act” from 2013. requires implementation of the Directive on TEN-T roads,
- The Directive is applied through „Regulation on activities to improve TEN-T roads safety” and „Regulation on road safety audit and education of auditors”
- „National road safety programe of the republic of Croatia 2011-2020”,
- and „Road Traffic Safety Act”.

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SCOPE OF IMPLEMENTATION:

- On TEN-T roads obligatory,
- On other roads is optional upon government decision,
- Tunnels are covered with tunnel safety directive,
- BSM and NSM on TEN-T network and state roads,
- Other activities and processes.

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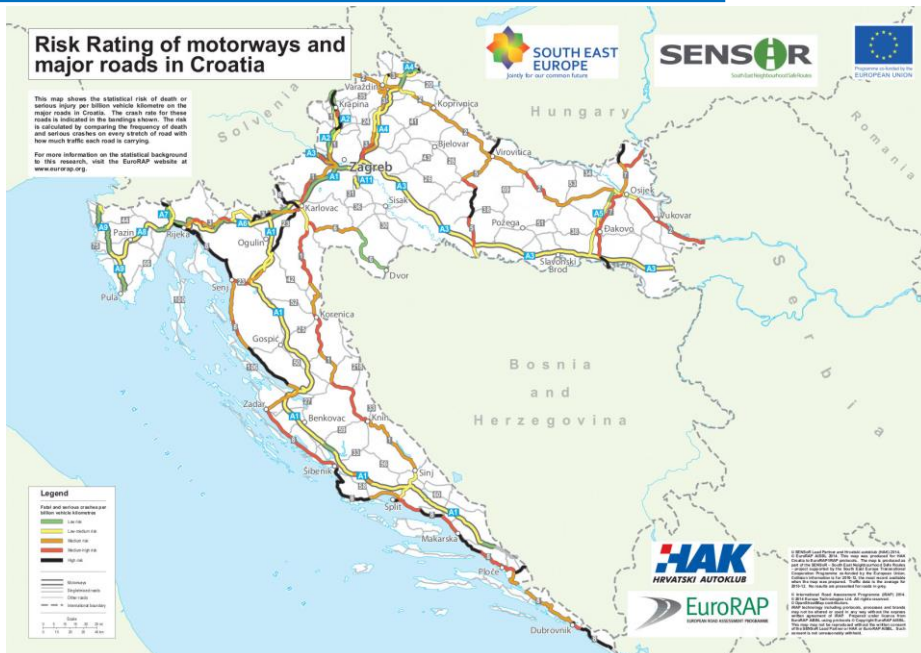
SCOPE OF IMPLEMENTATION:



TEN-T network: **1.596 km**
 TEN-T highways: **1.315 km**
 TEN-T state roads: **281 km**
 TEN-T 32 tunnels: **79 km**

Trans-European road network of the Republic of Croatia

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AUDITORS EDUCATION AND CERTIFICATION:

- Education of auditors:
 - Institution certified by Ministry,
 - Lectors (10 years experience, scientific papers),
 - Basic education (36 h, exam)
 - Periodical education (every 5 years, 18 h)
- Basic conditions for certification:
 - Degree with 300 ECTS or equivalent,
 - 10 years of experience,
 - Experience in design, revision of traffic or road projects,
 - Successfully passed auditor program and insurance.

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AUDITORS EDUCATION AND CERTIFICATION:

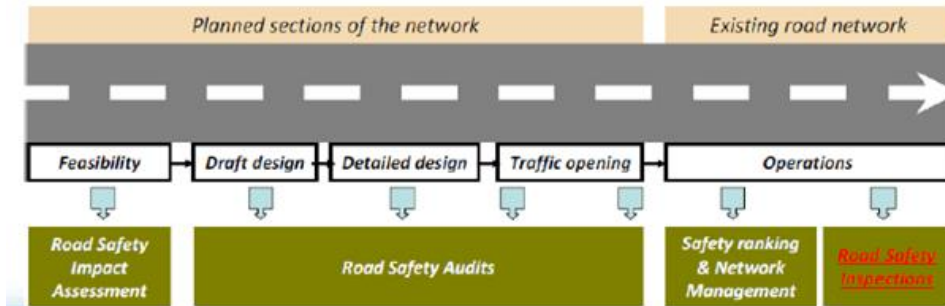
Obligations by Ministry:

- Audit committee,
- Certification of education program and institution,
- Certification of auditors,
- Second instance audit body,
- Register of auditors and education programs,
- Control of system.

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RSIA, RSA, RSI and NSM:



- Audit is performed according to the guidelines,
- Education program is inline with guidelines,

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EXPERIENCE ON BLACK SPOT MANAGEMENT

- Key institution: Croatian road Ltd.
- State roads network covered: 6.913 Km
- Implementation since 1998.

METHODOLOGY OF BSM:

- **Black spots** - an intersection or section of road length up to 300 m,
- or **dangerous section** – a section of road length of 300 m to 1000 m,

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RESULT OF BSM ON STATE ROADS

- During 15 years 278 spots were rehabilitated,
- Around 35 mil. EUR were invested,

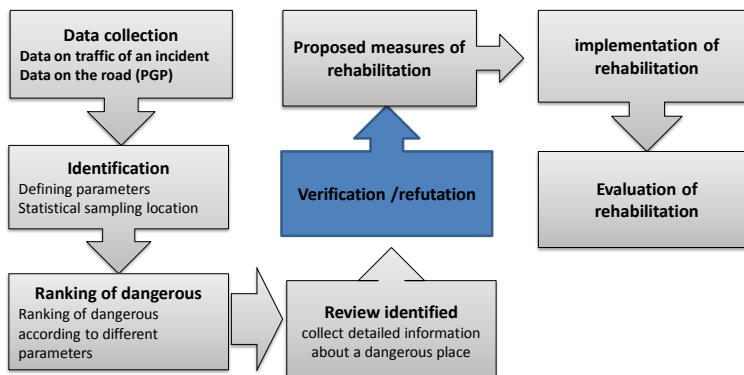
FINAL RESULTS (3 year prior vs. 3 years after)

	Prior	After	Difference
Total number of accidents	6.560	1.595	75,6 %
Died people	138	15	89,1 %
Hard injured	585	152	74,0 %
Light injured	2.055	557	72,8 %

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NEW METHODOLOGY FOR BS since this year



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ROAD SAFETY AUDIT

- **Safety Audit of Preliminary Design State Road 414, section Sparagovići – Doli Road**

Zahvat 18.1 km. Čvorišta, Tunel (L= cca 1.265 m) Most Ston = 485 m. Tunel L= 1.320 m, Križanje s DC8

FINAL REPORT, Date: 18.11.2016

dr. Tomaž Tollazzi dr. Marko Renčelj, mag. Goran Jovanović, mag. Robert Rijavec, CO-wokers; dr. Marko Šoštarić, Boštjan Celan, mag.inž.prom

- **Road Safety Audit of the final design for the Mainland - Pelješac Bridge and Connecting Roads**

Zahvat 14 km, čvorišta, **Most Pelješac L = 2.404 m.** , Tunel L= 499.00 m. most Most 'L=488 m, Tunel 2467 m,

FINAL REPORT Date: Marec / Ožujak / March 2016.

dr. Tomaž Tollazzi dr. Marko Renčelj, mag. Goran Jovanović, mag. Robert Rijavec, CO-wokers; dr. Marko Šoštarić, Boštjan Celan, mag.inž.prom.

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ROAD SAFETY, AKCION PLAN 2017-2020

MEASURE / PROJECT

- **Black spots on state roads**
- **Road safety audit/inspection on TEN-T – Directive 2008/96/EC**
- **Crocodile II Croatia - implementation of DATEX II standard in all regional centers for traffic management, Implementation of the ITS Directive 2010/40/EC**
- **Harmonization of tunnels longer than 500 m on TEN-T according to the Regulation on minimum safety requirements for tunnels (Directive 2004/54/EC)**
- **Implementation / Installation of safety barriers on motorways**
- **Weigh in motion on state roads**
- **Feasibility study for expanding the capacity of the Zagreb-Karlovac section (Masterplan project)**

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CONCLUSION:

- Adoption of regulation on auditors and guidelines,
- Better cooperation between main stakeholders,
- Roads, traffic and accident databases improvement,
- Increase of road safety based on modern technologies (ITS),
- The Directive implementation on whole road network,
- Involvement of auditors in all road safety processes,
- Exchange of experience between neighboring countries.

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THANK YOU FOR YOUR ATENTION!

Milan Vuković

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