



TEM PROJECT WORKSHOP
MAINTENANCE SERVICE LEVELS

May 2018

MAINTENANCE UNDERSTANDING AND DEFINITION

- *Road maintenance works are defined thru Law on Public Roads of Federation of B&H, Rules Book on Public roads of B&H and internal regulations of Ministry of traffic and communications of B&H and Public Company Roads of Federation of B&H*
- *Maintenance works are: „All activities to keep pavement, shoulders, slopes, drainage, property within the road margins as near as possible to their as-constructed or renewed condition”.*



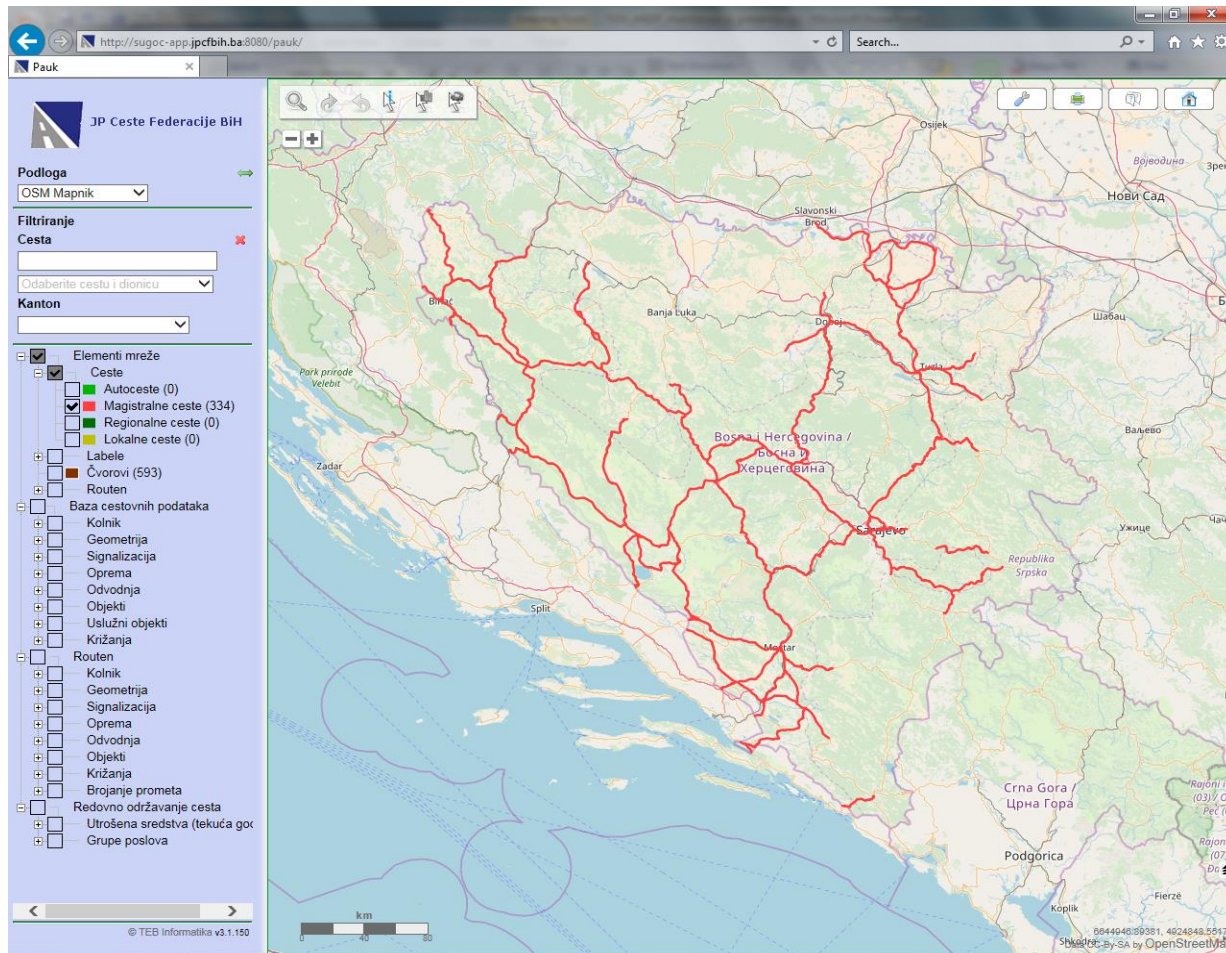
OWNERSHIP OF MAINTENANCE

- *Public Company Highways of F B&H is manager of motorways and highways in Federation of B&H.*
- *Public Company Roads of F B&H is manager of main roads in Federation of B&H.*
- *PC Roads of F B&H is manager of 2100km main roads in F B&H. Public Company is responsible for maintenance and repairing of existing roads and building new main roads.*
- *Other institutions, then Ministry, are not involved in the maintenance process*



OWNERSHIP OF MAINTENANCE

main roads map



TRANS-EUROPEAN NORTH-SOUTH
MOTORWAY (TEM)

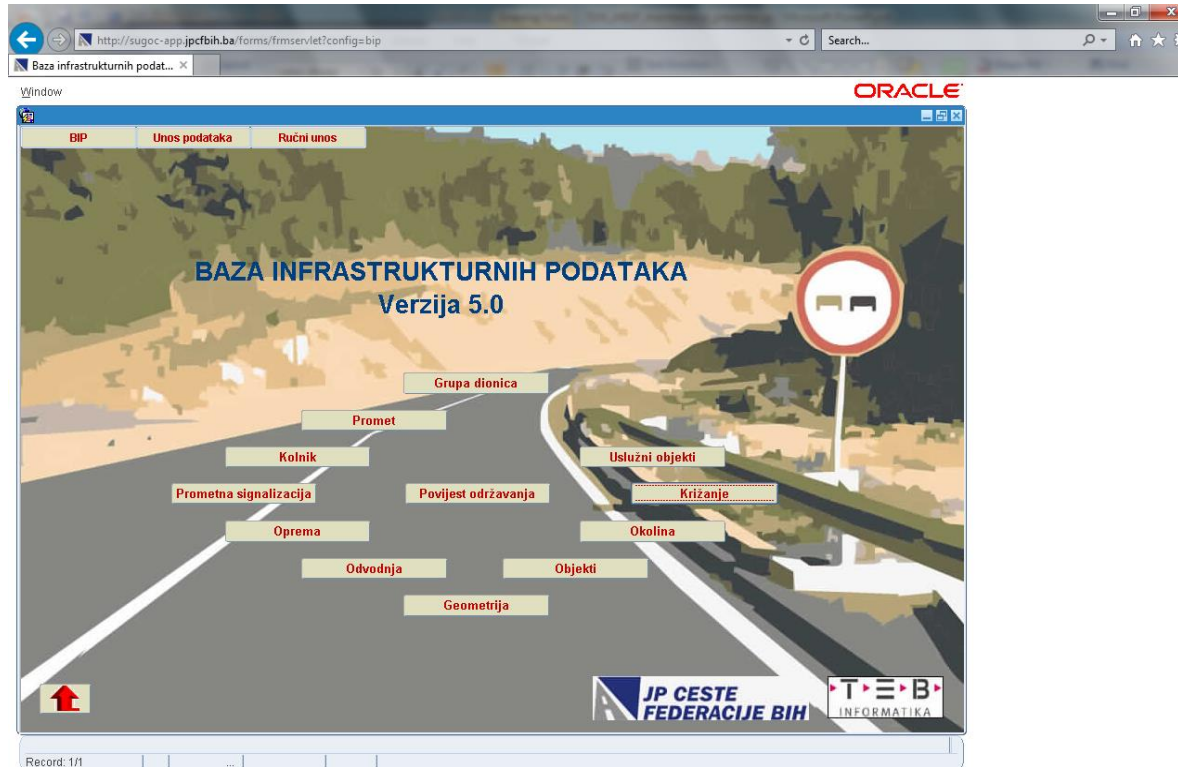
DATA-DRIVEN MAINTENANCE

- *According to Federal Law of accounting and auditing at least once a year PC Roads of F B&H has to make Assets Inventory and estimate its value.*
- *Inventory contain all data about roads, asphalt pavement (width, thickness, number of layers), length of guardrail, slopes protected with steel mesh, length of gutters, ditches, number and type of culverts, bridges, tunnels etc.*
- *We collect data about traffic census, number of accidents on main roads (submitted by the police), consumption of electric energy of tunnels and intersection lighting, third parties activities, our database is updated on daily basis with all activities performed on routine or winter maintenance works.*
- *These data support maintenance in a way that point what the priority should be in maintenance works, in a case where we have more accidents on some locations than usually, possibility of rockfall or landslide, asphalt surface damage etc.*
- *Electric energy consumption pointed out need for modernisation of lighting system and need to reduce consumption. Study made by Electrotechnic faculty from Sarajevo defined the way of reducing electric consumption and now we are in the process of replacing classic lights with LED and adjusting our electric network.*



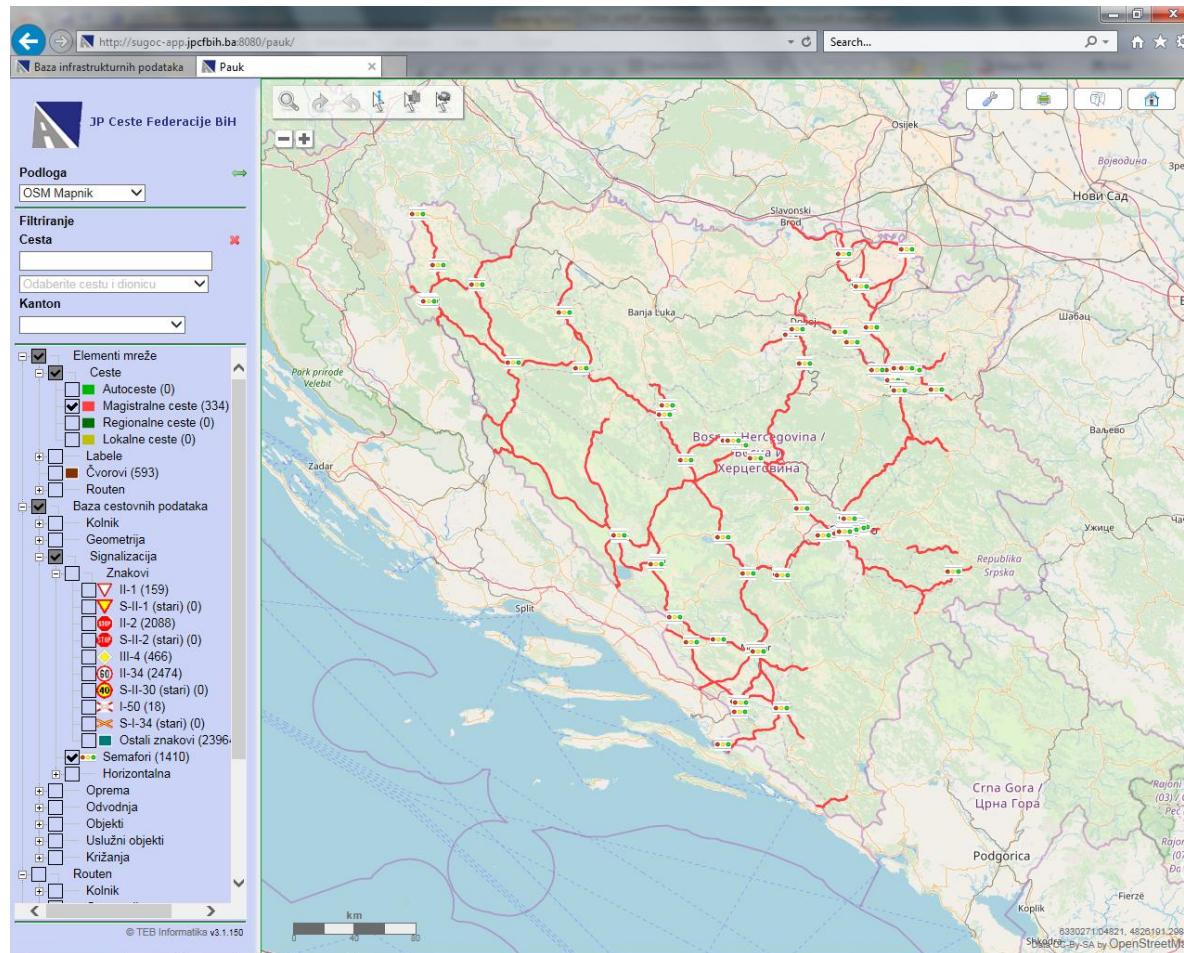
DATA-DRIVEN MAINTENANCE

database sample page



DATA-DRIVEN MAINTENANCE

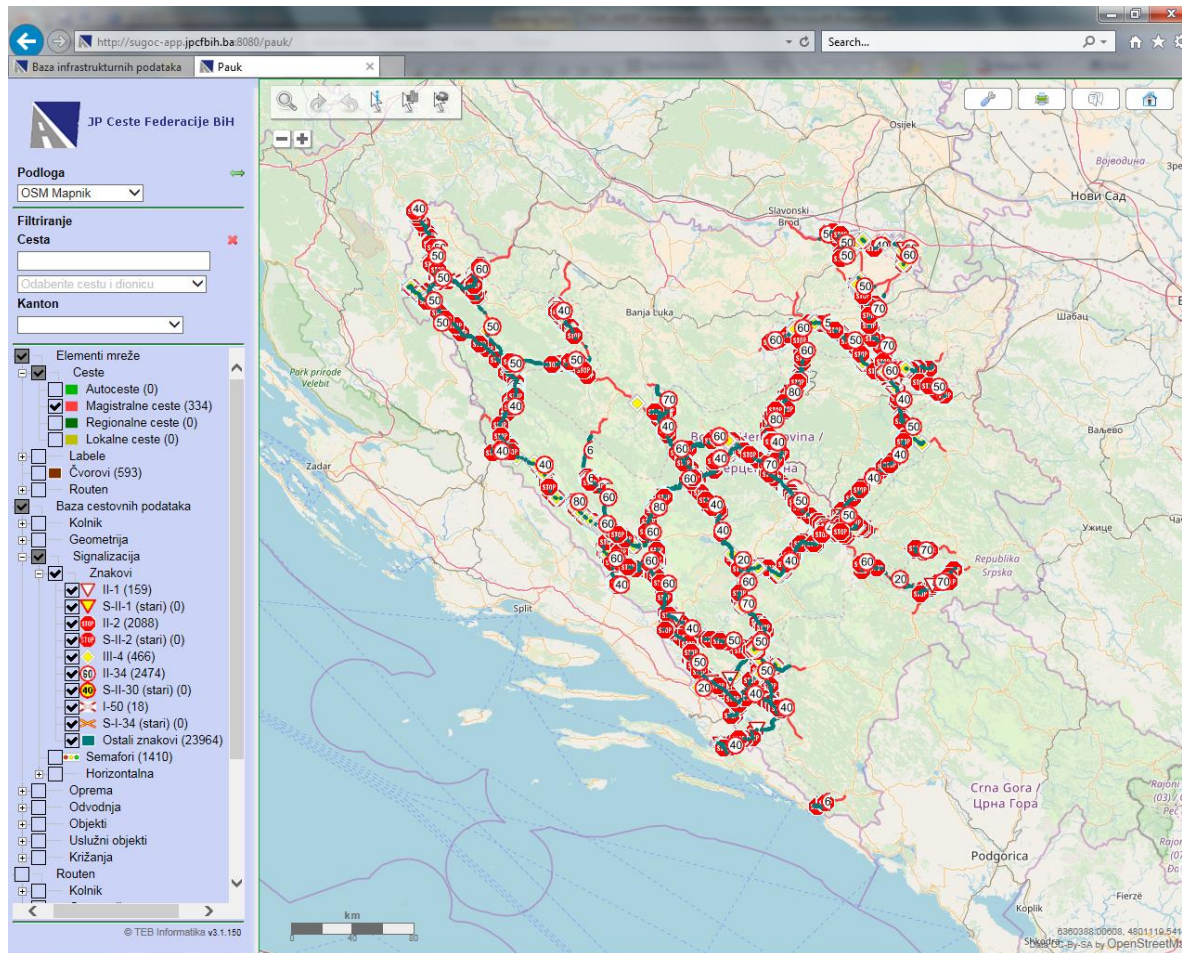
database sample page, traffic lights



TRANS-EUROPEAN NORTH-SOUTH
MOTORWAY (TEM)

DATA-DRIVEN MAINTENANCE

database sample page, traffic signs



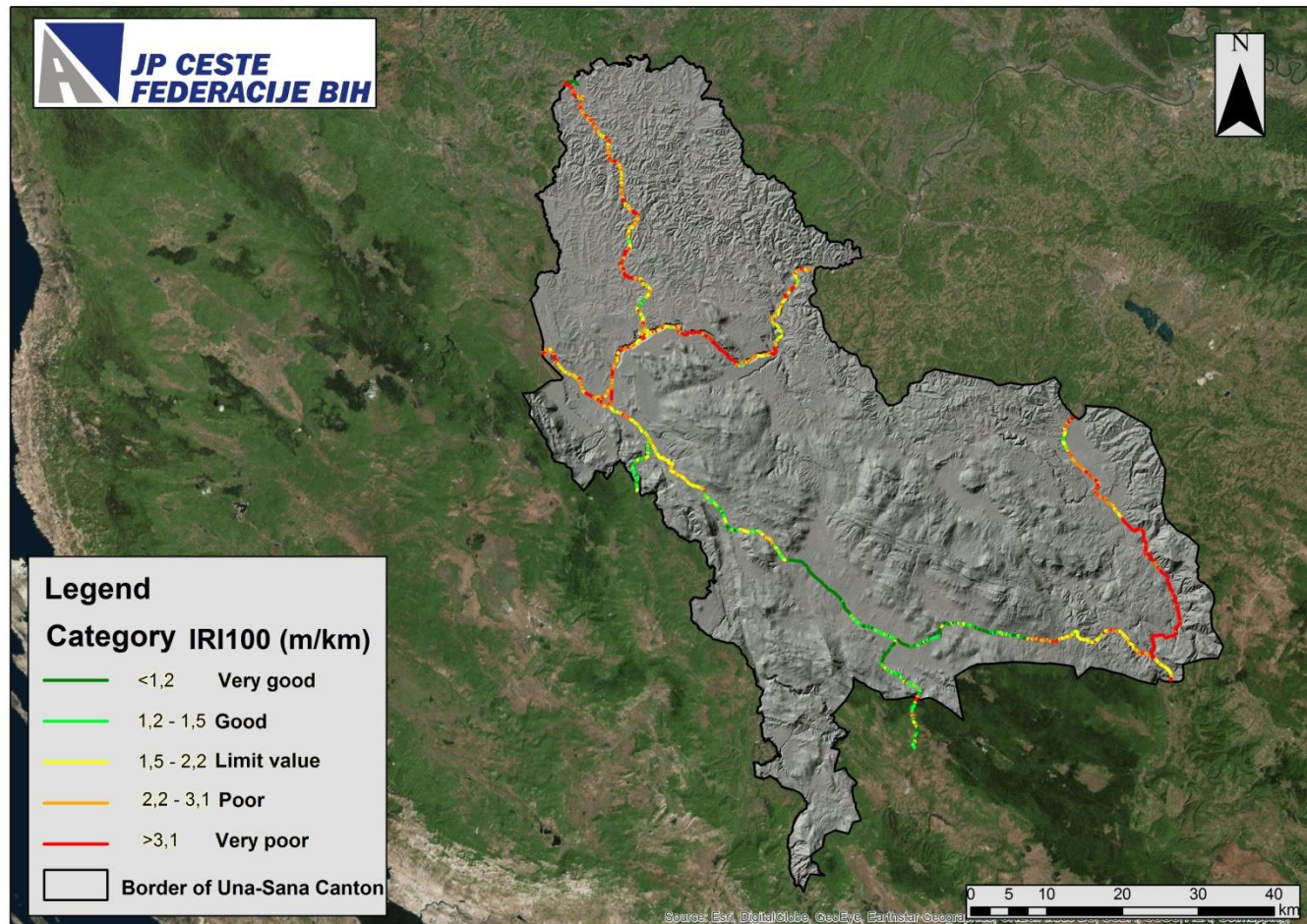
TRANS-EUROPEAN NORTH-SOUTH
MOTORWAY (TEM)

ASSETS CONDITION

- *Asset condition is checked, depend of the type, visually or by measuring.*
- *For the asphalt it is roughness*
- *For particular characteristics it is IRI*
- *Current technical condition of the network demand investment in resurfacing of existing roads, build a new roads, reconstruction of tunnels and bridges, slope protection, strenghtening of existing guardrail etc.*



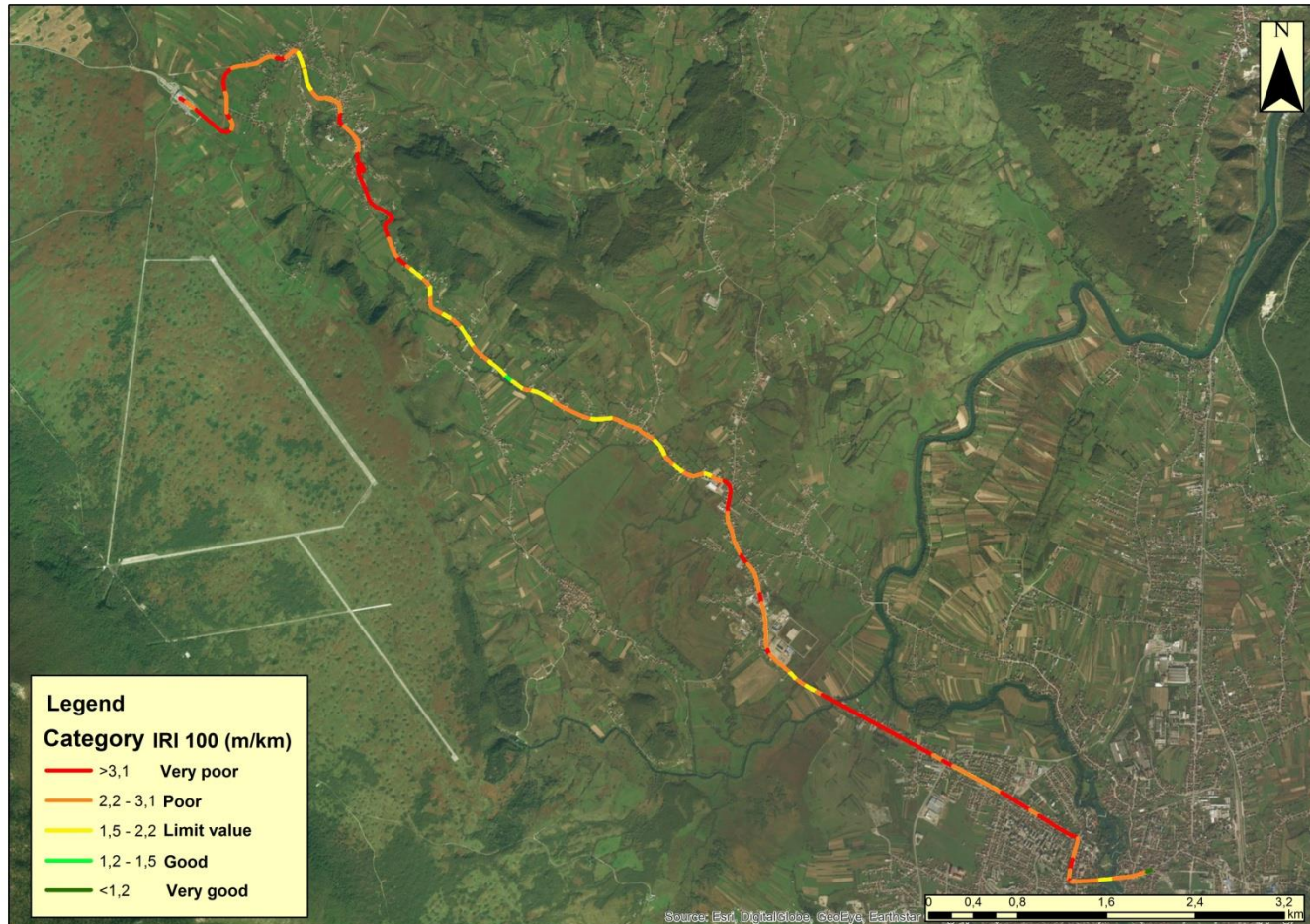
ASSETS CONDITION sample



TRANS-EUROPEAN NORTH-SOUTH
MOTORWAY (TEM)

ASSETS CONDITION

sample main road M5



TRANS-EUROPEAN NORTH-SOUTH
MOTORWAY (TEM)

MAINTENANCE SERVICE LEVELS

- *Maintenance strategy is defined in accordance with Three year strategy plan developed by PC Roads.*
- *Maintenance service levels are defined in Rules Book for routine and winter maintenance.*
- *Performance measures are defined in Rules Book for each item of routine maintenance.*
- *Performance measures are based on engineering and non-engineering considerations.*
- *Performance indicators are input-based.*
- *Targets are defined in Three year strategy plan and detailed in One year maintenance plan.*

MAINTENANCE WORKS PLANNING

- *We do not carry out performance gaps analysis.*
- *Routine maintenance works are planned thru one year plan. Plan has to be completed up to December of present year for next year. Plan contain all works needed to be done on main roads network, divided on roads and its sections.*
- *Based on collected data and informations periodic maintenance works are included in Year plan and executed in planned time schedule.*
- *When planning maintenance works all kind of data and information are taken into consideration (info from police, local communities demands, etc)*
- *To support maintenance planning we use our software ROC and SUGOC, which contain informations about all works done in routine and winter maintenance and is a database of main roads network.*



MAINTENANCE BUDGET

- *Expenditures for capital investments and maintenance are defined in PC Roads Year Plan. Plan has its structure and according to planned income works are executed.*
- *To plan maintenance works we collect data from the lot supervisors, works done in previous period, demands of local communities...*
- *We use data collected thru ROC system and adjust maintenance plan with available budget.*
- *Sources of funding for all our works are from fuel, car registration, asset use by third parties, overload and oversized cargo taxes, billboards, credits and all money is then collocated for maintenance, capital expenditures and other things.*
- *Current budget?*
 - *For routine maintenance is about 17.000.000 €*
 - *For periodic maintenance is about 2.000.000 €*
 - *About 30% of our capital expenditures*

FINANCIAL GAP MANAGEMENT

- *Gap between network requirements and available budget is complex calculation. It depends of factors such as road network age (approx 40 years), aplicable standards and regulations (any change of standard means new costs)*
- *The gap is managed with:*
 - *New technologies*
 - *Employees training*
 - *Decrease of maintenance service level*



Thank you for your attention

