

ASECAP DAYS



MILANO 2024



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Implementation of the Road Safety Strategy

Strategy for the years 2021 - 2030

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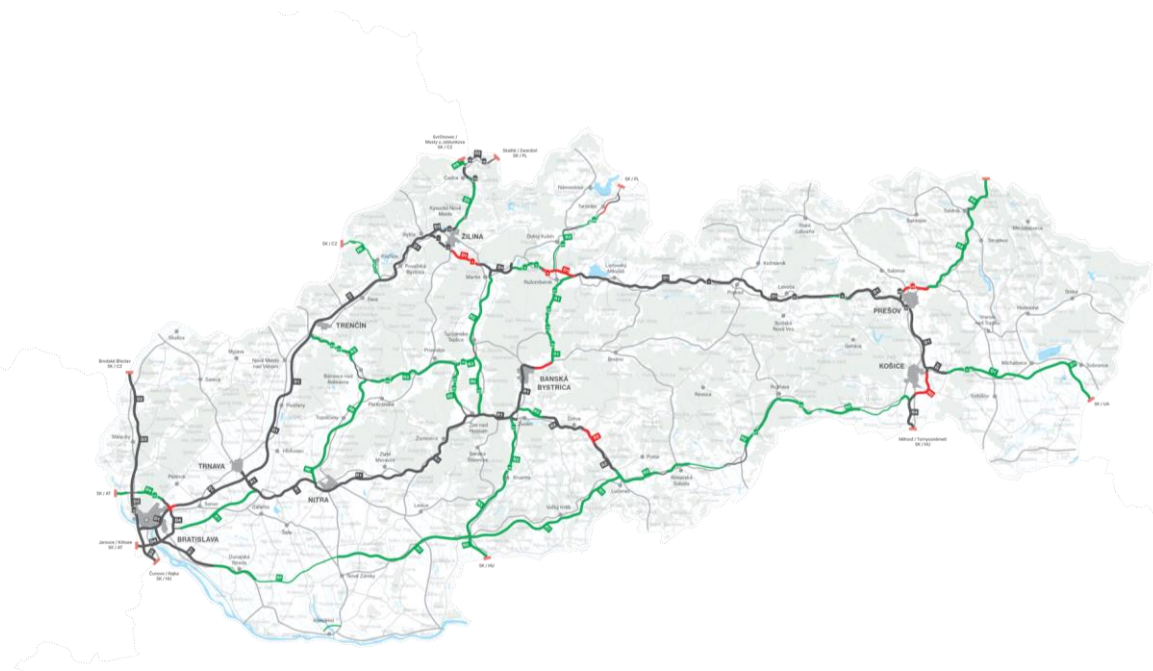
- I. NDS's Network**
- II. NDS Implementation of Road Safety Assessment**
- III. Preliminary Development process**
- IV. Conclusion**

About us

We plan, prepare, build and maintain
motorways in Slovakia

Operation

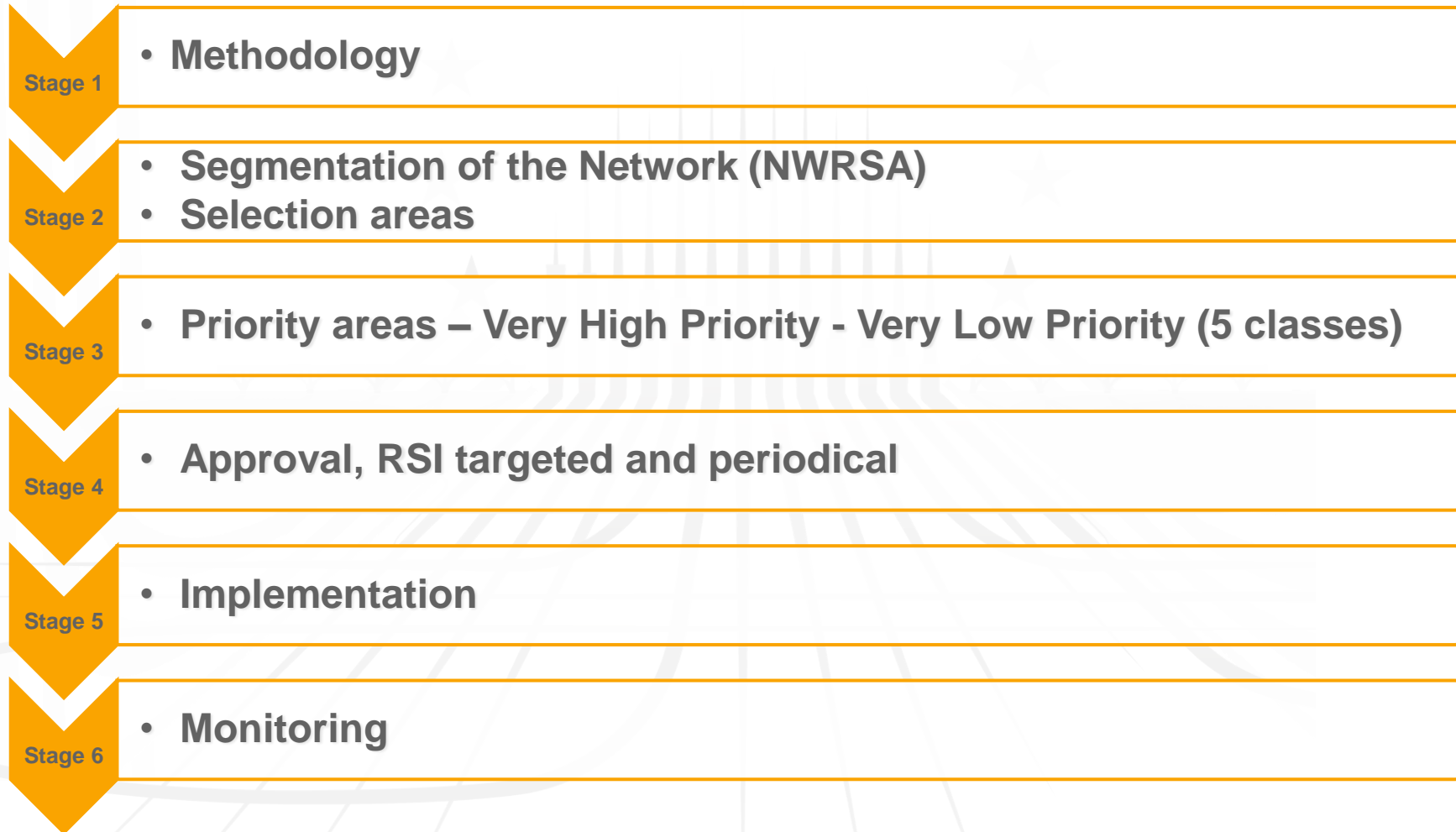
-  853 km of roads, 11 tunnels and 869 bridges
-  Summer and winter maintenance
-  Repairs, reconstructions and modernization
-  15 regional centers and 1 specialized center
-  Support of closures
-  Services for motorists



/02 NDS Implementation of Road Safety Assessment

- **RISM Directive** 2008/96, as updated by Directive 2019/1936.
- Slovak Legislation of **Road Safety Classification** in accordance with the RISM Directive.
- **National Road Safety Strategy** 2021-2030. The strategy sets the target of **reducing** the number of fatalities and injured persons by **50%** compared to the reference year 2020.
- The Network-Wide Road Safety Assessment (**NWA**) **Methodology** - European Commission Endorsement.

/03 Development process



/03 Development process

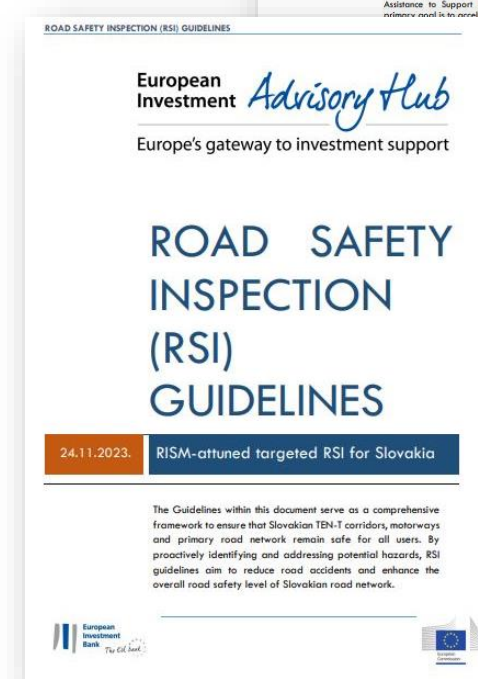
Stage 1 – Methodology

- In collaboration with the Ministry of Transport, the European Investment Advisory Hub and the Joint Assistance to Support Projects in European Regions (JASPERS), **The Network-Wide Road Safety Assessment (NWRSA) and Methodology**, and the **RSI Methodology** have been developed.
 - Combine NWA **proactive** methodology (in-built safety) and NWA **reactive** methodology (accident occurrence) with synthesized results to provide a unified road safety assessment.
 - This integrated approach allows for **effective resource allocation** and **targeted interventions** in improving road safety on motorways in NDS's operation and maintenance.

/03 Development process

Stage 1 – Methodology

- The outcome of the adopted methodologies for **roads in operation**:
 - Network-wide Road Safety Assessment (**NWRSA**):
 - In-built safety parameters:
 - (lane width, roadside assessment, curvature, interchanges, traffic operation centers, pedestrian/cyclist conflicts).
 - Analyzing existing crash data, traffic
 - Road Safety Inspection (**RSI**):
 - targeted
 - periodic

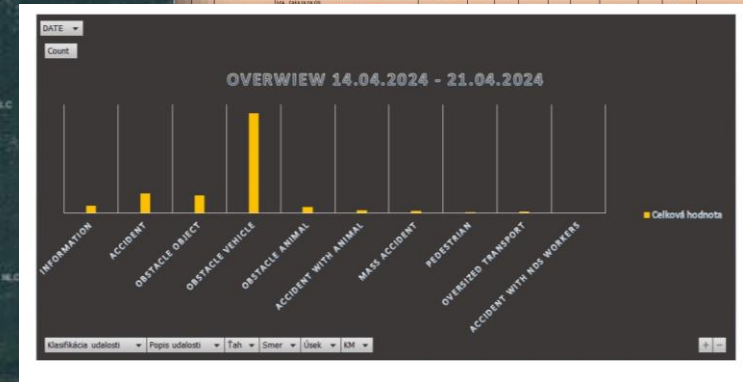


/03 Development process

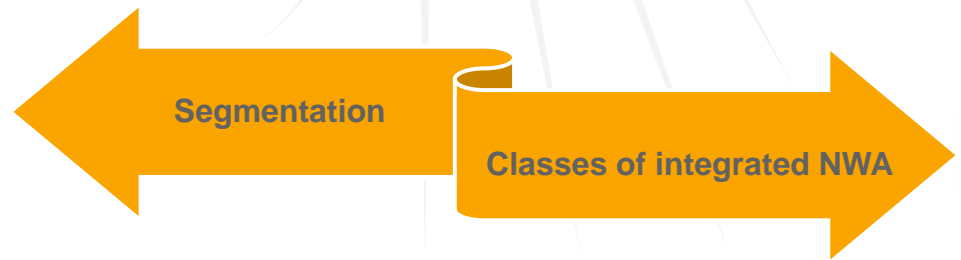
Stage 2 – Segmentation, selection areas

- Optional: the first step is to divide the road network into smaller parts (sections or junctions):
 - 10, max 15km length (Rural motorways)
 - 5, +/- 2 km, max 7km length (Urban motorways)
- The location of interchanges is the first rough segmentation of the network.
- Homogenous road sections.
- Data collection – at least 3 years of road crashes.

Id	Segment	Start	End	Length	Category	Priority	Score	Notes
1	10.000	10.000	10.010	10	Rural	High	85	...
2	10.010	10.020	10.030	20	Rural	High	80	...
3	10.030	10.040	10.050	20	Rural	High	75	...
4	10.050	10.060	10.070	20	Rural	High	70	...
5	10.070	10.080	10.090	20	Rural	High	65	...
6	10.090	10.100	10.110	20	Rural	High	60	...
7	10.110	10.120	10.130	20	Rural	High	55	...
8	10.130	10.140	10.150	20	Rural	High	50	...
9	10.150	10.160	10.170	20	Rural	High	45	...
10	10.170	10.180	10.190	20	Rural	High	40	...
11	10.190	10.200	10.210	20	Rural	High	35	...
12	10.210	10.220	10.230	20	Rural	High	30	...
13	10.230	10.240	10.250	20	Rural	High	25	...
14	10.250	10.260	10.270	20	Rural	High	20	...
15	10.270	10.280	10.290	20	Rural	High	15	...
16	10.290	10.300	10.310	20	Rural	High	10	...
17	10.310	10.320	10.330	20	Rural	High	5	...
18	10.330	10.340	10.350	20	Rural	High	0	...
19	10.350	10.360	10.370	20	Rural	High	0	...
20	10.370	10.380	10.390	20	Rural	High	0	...
21	10.390	10.400	10.410	20	Rural	High	0	...
22	10.410	10.420	10.430	20	Rural	High	0	...
23	10.430	10.440	10.450	20	Rural	High	0	...
24	10.450	10.460	10.470	20	Rural	High	0	...
25	10.470	10.480	10.490	20	Rural	High	0	...
26	10.490	10.500	10.510	20	Rural	High	0	...
27	10.510	10.520	10.530	20	Rural	High	0	...
28	10.530	10.540	10.550	20	Rural	High	0	...
29	10.550	10.560	10.570	20	Rural	High	0	...
30	10.570	10.580	10.590	20	Rural	High	0	...
31	10.590	10.600	10.610	20	Rural	High	0	...
32	10.610	10.620	10.630	20	Rural	High	0	...
33	10.630	10.640	10.650	20	Rural	High	0	...
34	10.650	10.660	10.670	20	Rural	High	0	...
35	10.670	10.680	10.690	20	Rural	High	0	...
36	10.690	10.700	10.710	20	Rural	High	0	...
37	10.710	10.720	10.730	20	Rural	High	0	...
38	10.730	10.740	10.750	20	Rural	High	0	...
39	10.750	10.760	10.770	20	Rural	High	0	...
40	10.770	10.780	10.790	20	Rural	High	0	...
41	10.790	10.800	10.810	20	Rural	High	0	...
42	10.810	10.820	10.830	20	Rural	High	0	...
43	10.830	10.840	10.850	20	Rural	High	0	...
44	10.850	10.860	10.870	20	Rural	High	0	...
45	10.870	10.880	10.890	20	Rural	High	0	...
46	10.890	10.900	10.910	20	Rural	High	0	...
47	10.910	10.920	10.930	20	Rural	High	0	...
48	10.930	10.940	10.950	20	Rural	High	0	...
49	10.950	10.960	10.970	20	Rural	High	0	...
50	10.970	10.980	10.990	20	Rural	High	0	...
51	10.990	11.000	11.010	20	Rural	High	0	...
52	11.010	11.020	11.030	20	Rural	High	0	...
53	11.030	11.040	11.050	20	Rural	High	0	...
54	11.050	11.060	11.070	20	Rural	High	0	...
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74	11.450	11.460	11.470	20	Rural	High	0	...
75	11.470	11.480	11.490	20	Rural	High	0	...
76	11.490	11.500	11.510	20	Rural	High	0	...
77	11.510	11.520	11.530	20	Rural	High	0	...
78	11.530	11.540	11.550	20	Rural	High	0	...
79	11.550	11.560	11.570	20	Rural	High	0	...
80	11.570	11.580	11.590	20	Rural	High	0	...
81	11.590	11.600	11.610	20	Rural	High	0	...
82	11.610	11.620	11.630	20	Rural	High	0	...
83	11.630	11.640	11.650	20	Rural	High	0	...
84	11.650	11.660	11.670	20	Rural	High	0	...
85	11.670	11.680	11.690	20	Rural	High	0	...
86	11.690	11.700	11.710	20	Rural	High	0	...
87	11.710	11.720	11.730	20	Rural	High	0	...
88	11.730	11.740	11.750	20	Rural	High	0	...
89	11.750	11.760	11.770	20	Rural	High	0	...
90	11.770	11.780	11.790	20	Rural	High	0	...
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93	11.830	11.840	11.850	20	Rural	High	0	...
94	11.850	11.860	11.870	20	Rural	High	0	...
95	11.870	11.880	11.890	20	Rural	High	0	...
96	11.890	11.900	11.910	20	Rural	High	0	...
97	11.910	11.920	11.930	20	Rural	High	0	...
98	11.930	11.940	11.950	20	Rural	High	0	...
99	11.950	11.960	11.970	20	Rural	High	0	...
100	11.970	11.980	11.990	20	Rural	High	0	...



Criteria	Value	Weight	Score
Interchanges with ramp 1:000m in the segment, or ramp between sections with ramp spacing	yes	Length of segment: 920 m	1,122
Ramp spacing n. 1 (≥1.600m)	560 m		1,110
Ramp spacing n. 2 (≥1.600m)	640 m		
Ramp spacing n. 3 (≥1.600m)	0 m		
Conflicts between pedestrians/bicyclists and motorized traffic	no		1,000
Incident monitoring & use information systems	no		0,950
NWA-proactive Segment Score Estimation	83.1 / 100		



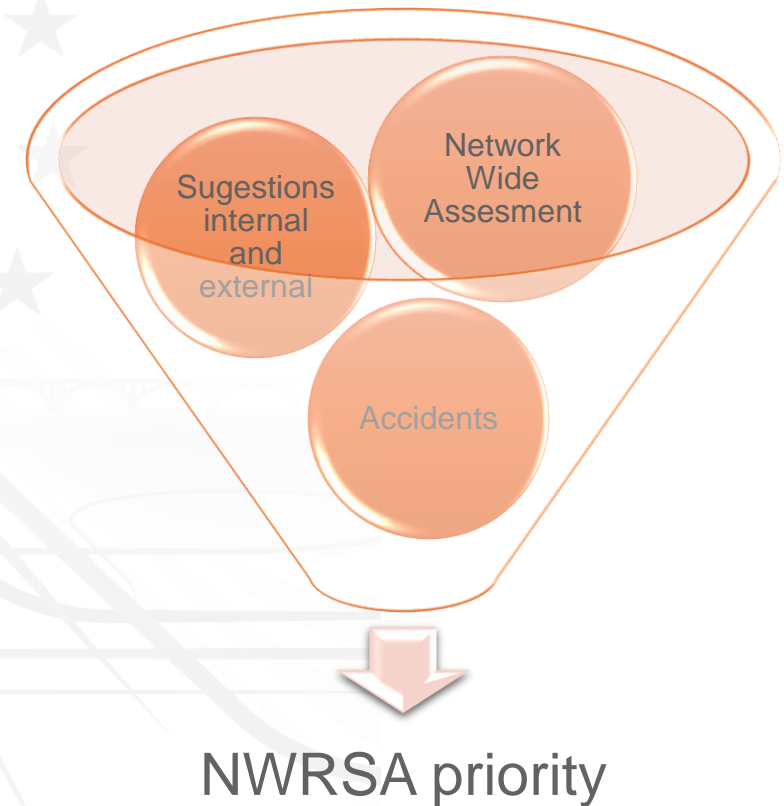
- Very High Priority (class 5)
- High Priority (class 4)
- Intermediate Priority (class 3)
- Low Priority (class 2)
- Very Low Priority (class 1)

/03 Development process

Stage 3 – Priority areas, RSI targeted, periodical

Data collection to analyze from different sources

- After segmentation of the Road Network and analyzing crash data for the last 3 – 5 years, we have started the NWRSA on the Network in operation.
- Suggestions to risk areas from drivers.
- Suggestions to risk areas from police.
- Internal maintenance center suggestions to risk areas.



/03 Development process

Stage 4 – Approval, RSI targeted

NWRSA priority – High risk areas

- After analyzing crash data for the last 3 – 5 years, we have identified **38 High-risk areas** under development, where we have decided to make the first **RSI, targeted** (external).
 - Section of 500m, with at least 3 accidents per zone.
 - RSI Start date 10/2023, end date 04/2024.

Next step – Approval studies

Ústav súdneho inžinierstva Žilinskej univerzity v Žiline

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e-mail: info@usi.sk

Správa o riadení a kontrole bezpečnosti PK

Riadenie a kontrola bezpečnosti pozemnej komunikácie v užívaní „Inšpekcia“

D2 v staničení km 31,000 do km 33,000
Nehodová lokalita km 32,000



Bezpečnostný auditor: prof. Ing. Gustáv Kasanický, CSc., MBA
Zadávateľ: Národná diaľničná spoločnosť, a.s., Dúbravská cesta 14, 841 04 Bratislava
Číslo objednávky: 4500226377
Informácia o úseku PK: D2 v staničení km 31,000 do km 33,000

/03 Development process

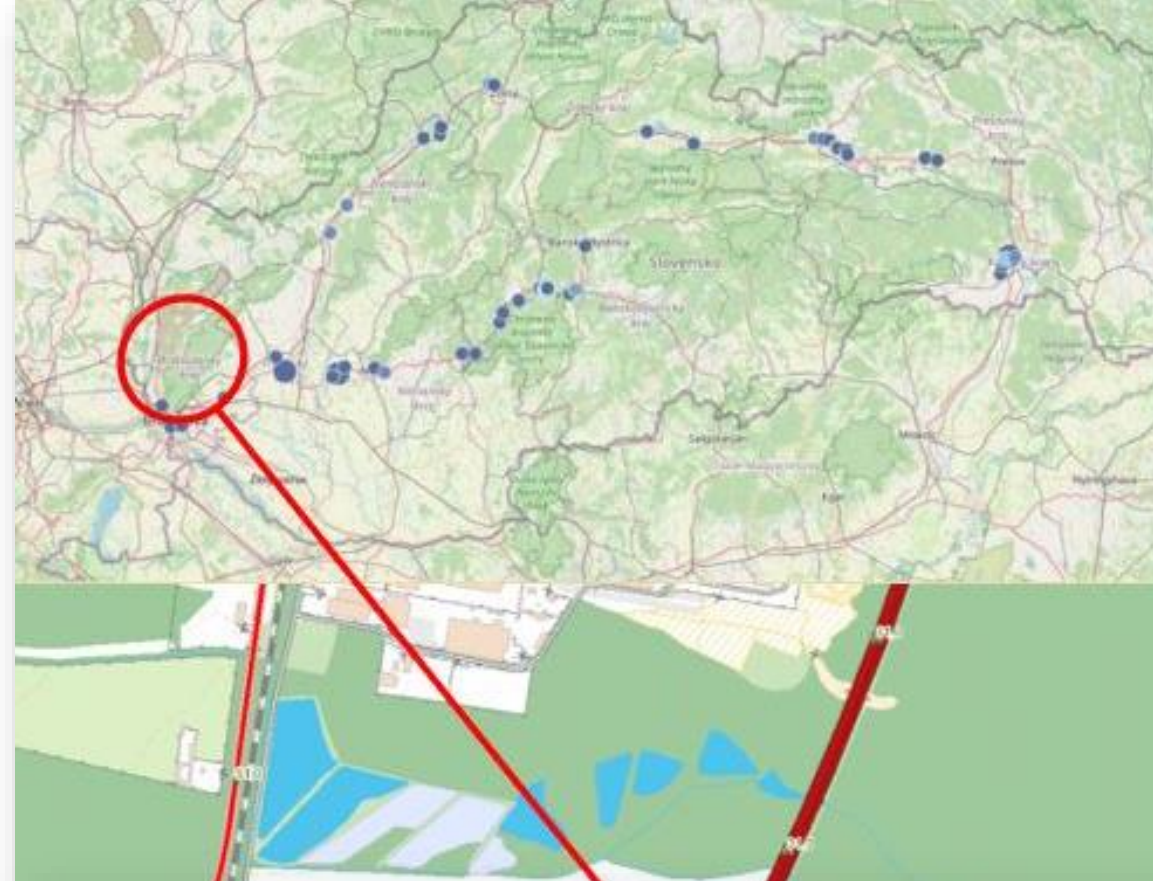
Stage 4 – Approval, RSI targeted

Motorway D2 km 31,485 – 42,500

- Intensity of 30.000 Vehicles/day.
- In the last 3 years, 95 accidents were recorded.
- The oldest motorway in Slovakia.

Conclusion / Measure:

- Oversleeping is the main cause of accidents (HV).
- Implement dynamic line traffic management.
- Increase barrier detention level.



/03 Development process

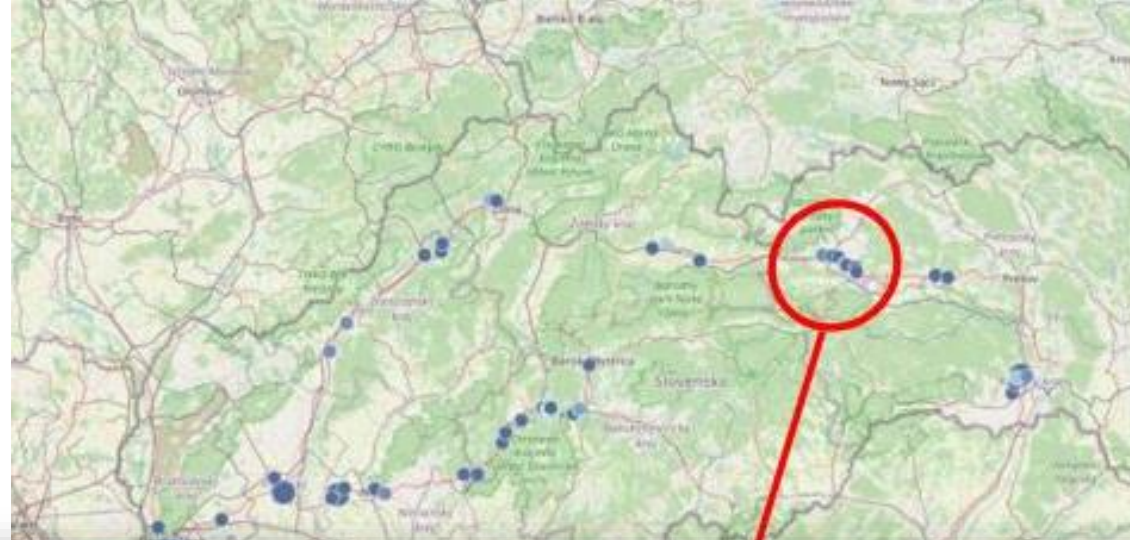
Stage 4 – Approval, RSI targeted

Motorway D1 km 315,000 – 335,000

- Intensity of approx. 18.500 Vehicles/day.
- In the last 3 years, 25 accidents were recorded.

Conclusion / Measure:

- In winter, when there is heavy snow + wind, the phenomenon „White darkness“ occurs.
- Unexpected change in weather conditions.
- Implement Dynamic line traffic management depending on the current traffic situation and weather conditions.



/03 Development process

Stage 4 – Approval, Internal notice to risk area

Motorway D1 km 305,000 – 305,500

- In the last 2 years, 18 accidents were recorded.

Conclusion / Measure:

- Aquaplaning in heavy rain.
- Measure: microcarpet on distance of 600m.
- Measure: Information system to inform drivers about weather conditions and speed limits.

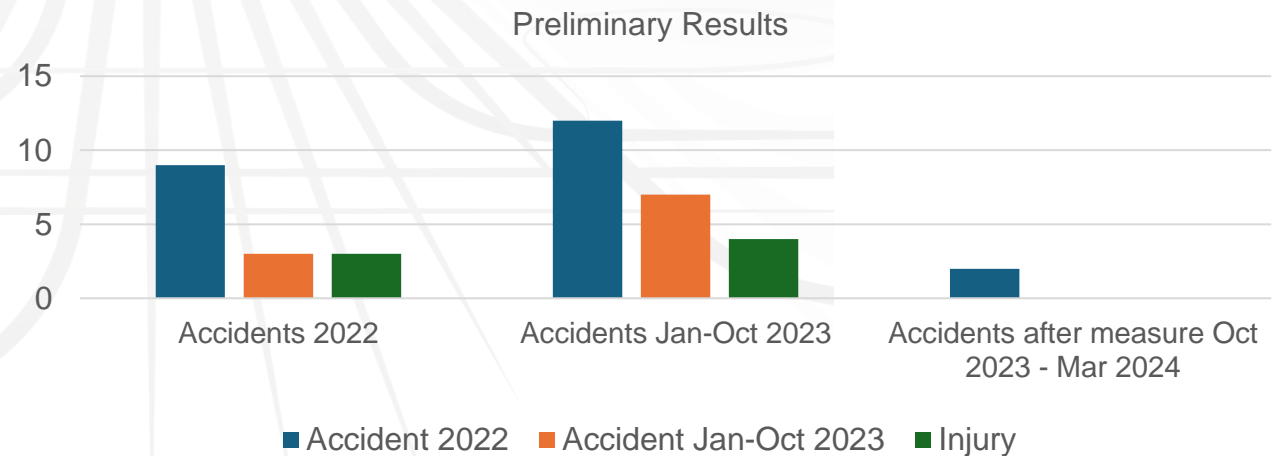


/03 Development process

Stage 5,6 – Implementation and Monitoring



- Application of microcarpet on a distance of 600m in 10/2023
 - **Next step:** put the information LED panel to reduce speed limit - inform about weather and traffic conditions.



/04 Conclusion

Reduce the risk of road accident

- **NWRSA** on motorways in operation
- **Prioritisation** of potential risk areas
- **Find and Allocate funds**
- **Implementation** of measures
 - Short term
 - Long term
- **Monitoring** measures



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THANK YOU

GRAZIE

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