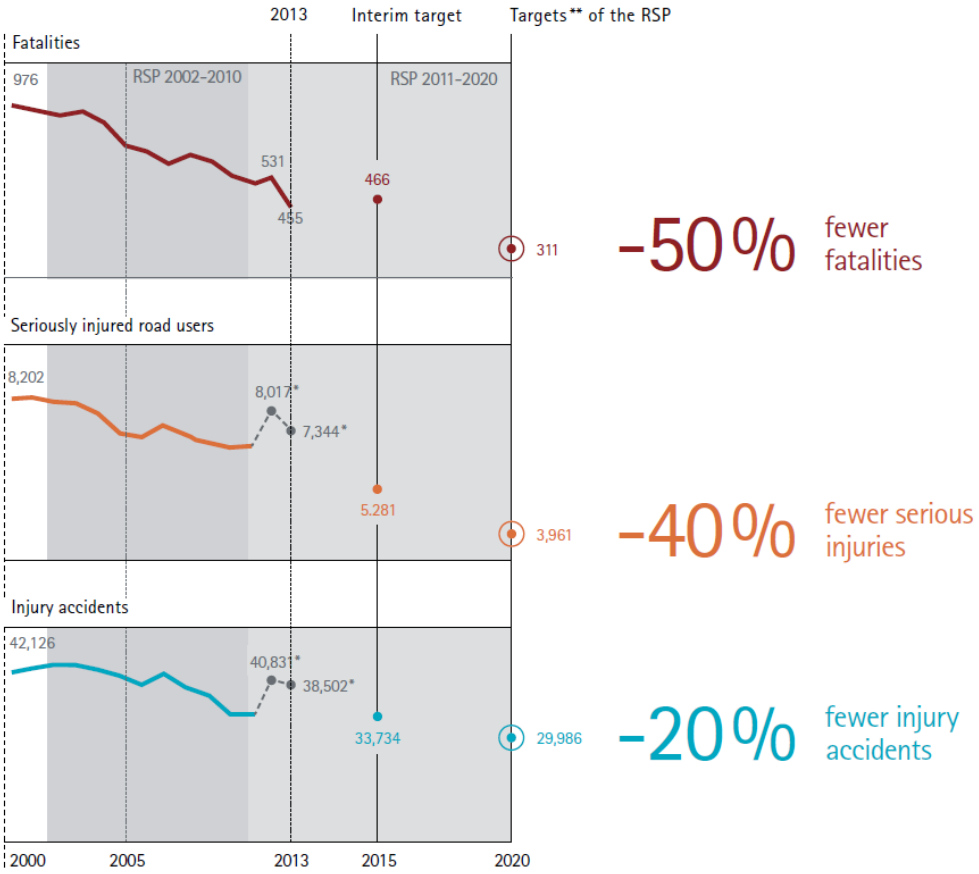
Road Safety Management in Austria

International Road Safety Conference

"Good Practices and Experiences of the PIN Programme"

Alexander Nowotny
IVVS 2 / BMVIT
Bucharest, March 21st 2019

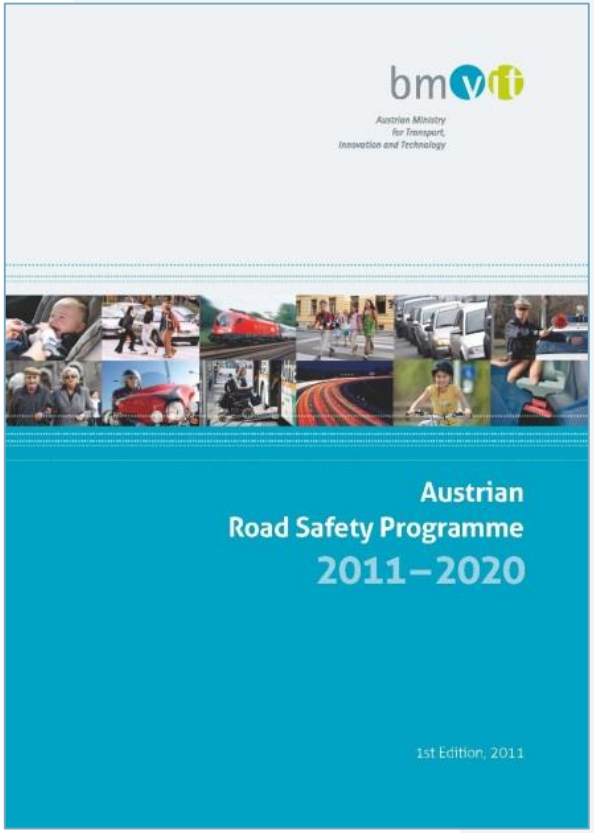
Statistics & Targets of the Austrian Road Safety Programme 2011-2020



–50 % fewer fatalities

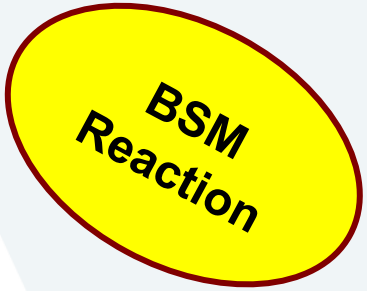
–40 % fewer serious injuries

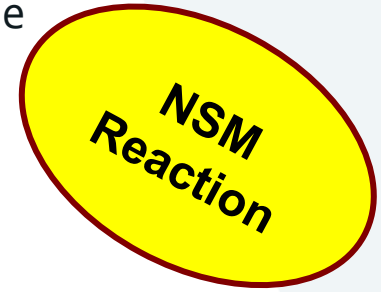
–20 % fewer injury accidents



Road Safety Inspection (RSI) - basics

- Classification of road sections with high accident risk (black spot management)
- detection, analysis and classification of road sections with high number of accident
  - About 10 years in use
  - High number of fatalities in relation to the volume of traffic
- Classification of the safety of the road network (network safety management)
- detection, analysis and classification of the road network in use
  - Potential for improvement of road safety
  - Decreasing accident costs

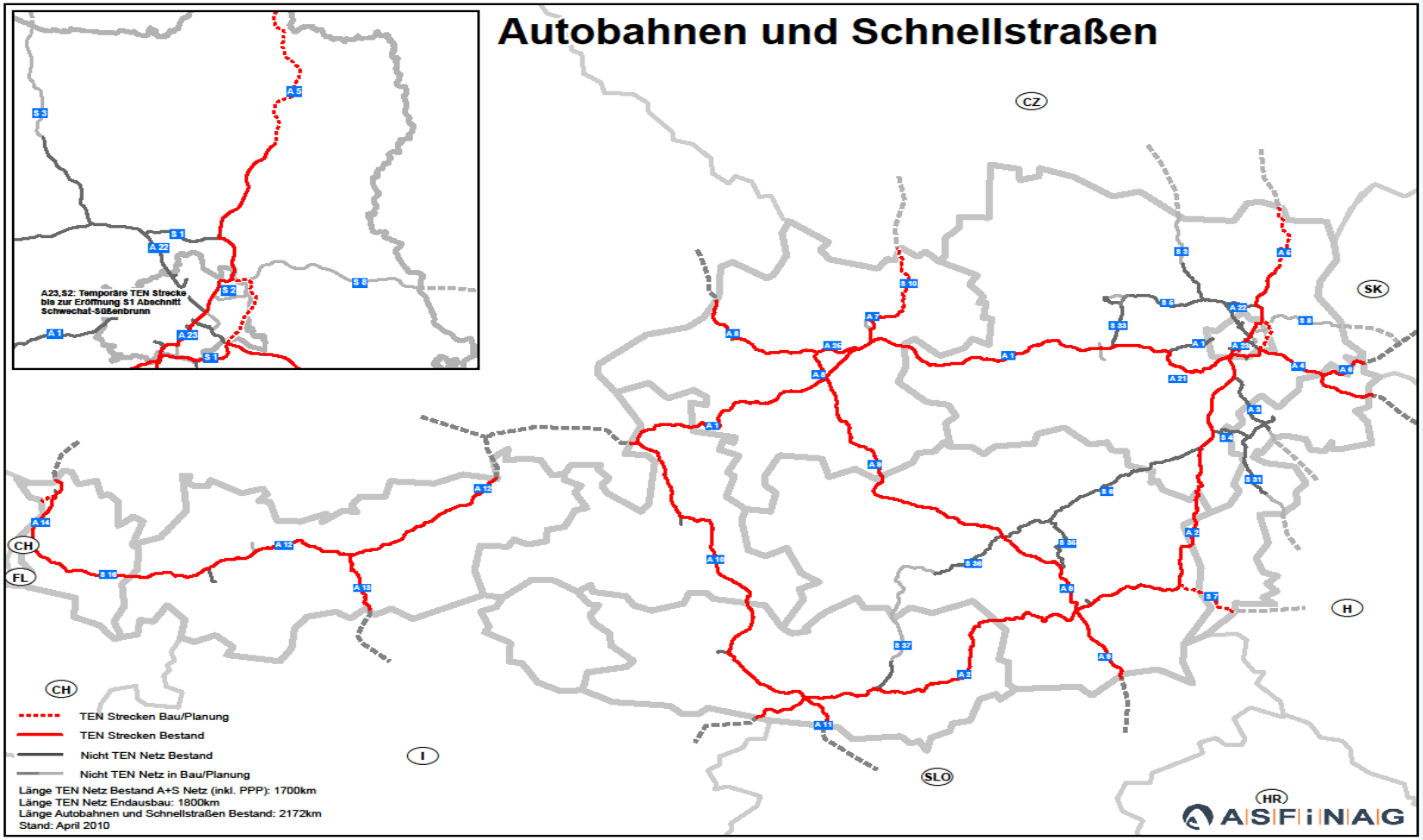




Road Safety Inspection (RSI) - application

- Periodic inspections of the road network in use (including road surrounding)
- Consultants check these roads for safety with list of deficiencies and proposals for improvements
- Correlation between accidents and on-site enquiries

Road Safety Inspection (RSI) – TEN-T network



Road Safety Inspection (RSI) - application

- spatial: TEN-T network
- since 2011: July (law: BStG)/ August (regulation)
- exceptions:
  - Impact assessment:
    only for projects caused by changes
    in the list of the BStG 1971
  - Audit:
    only for projects after legal validity of the law

Road Safety Inspection (RSI) - application

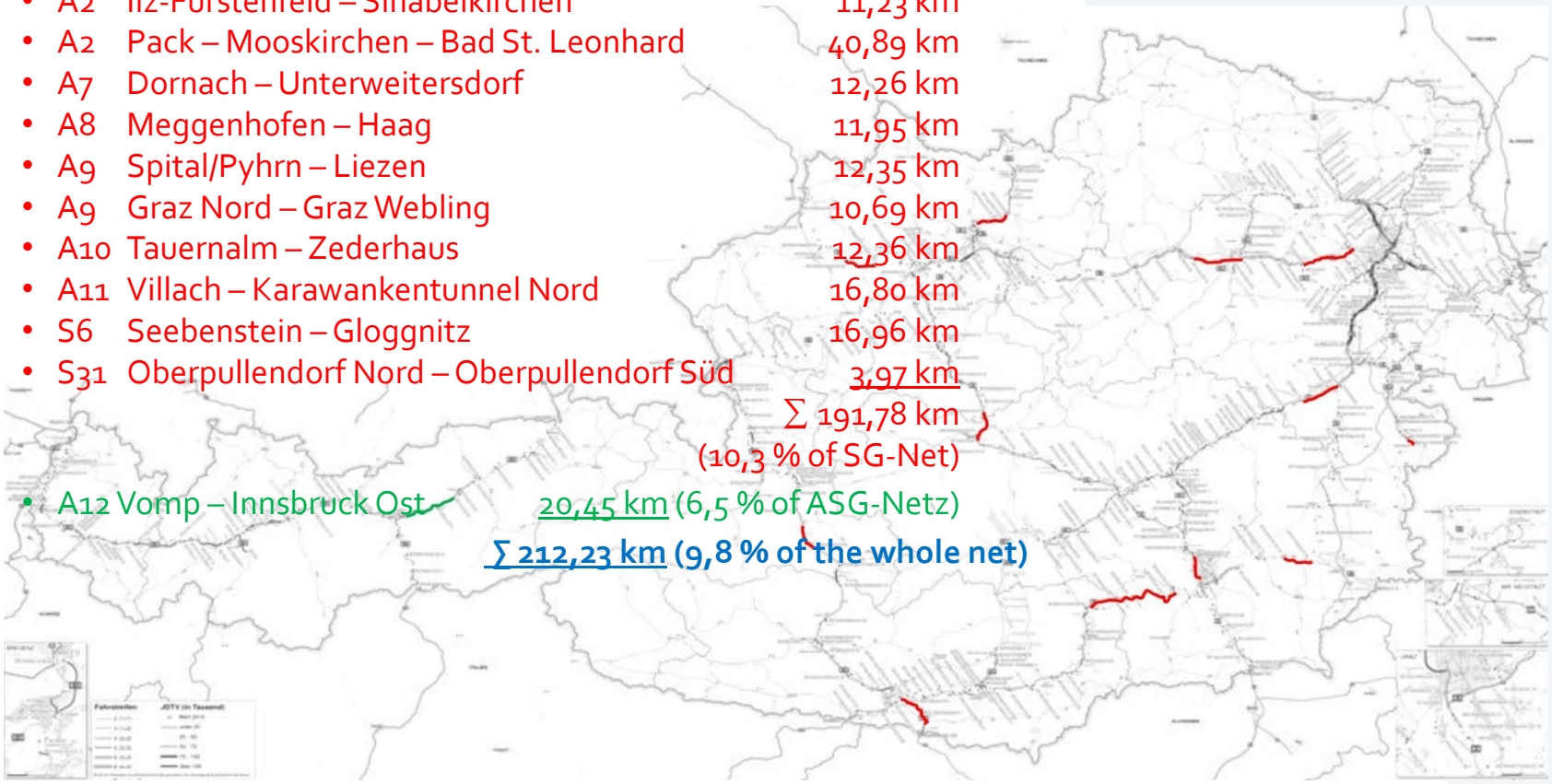
- Concerning road network in use
- recurring 1 time a year – basic road safety inspection
  - eg keeping free the visual field, good conditions of the road surface
  - logging
- recurring 1 time in 10 years – in-depth road safety inspection
  - new roads within 3 years after opening
  - eg condition, lightning, information
  - report with findings and proposal for refurbishment
  - within 1 month after completion

Road Safety Inspection (RSI) - practice

- **Cooperation** between ASFINAG and the competent departments at BMVIT leads to **clear standards** with enough **flexibility** for **efficient solutions** to increase road safety
- Application of the **instruments** also on the **minor road net** would be **recommended**, according to the **origin european intentions**

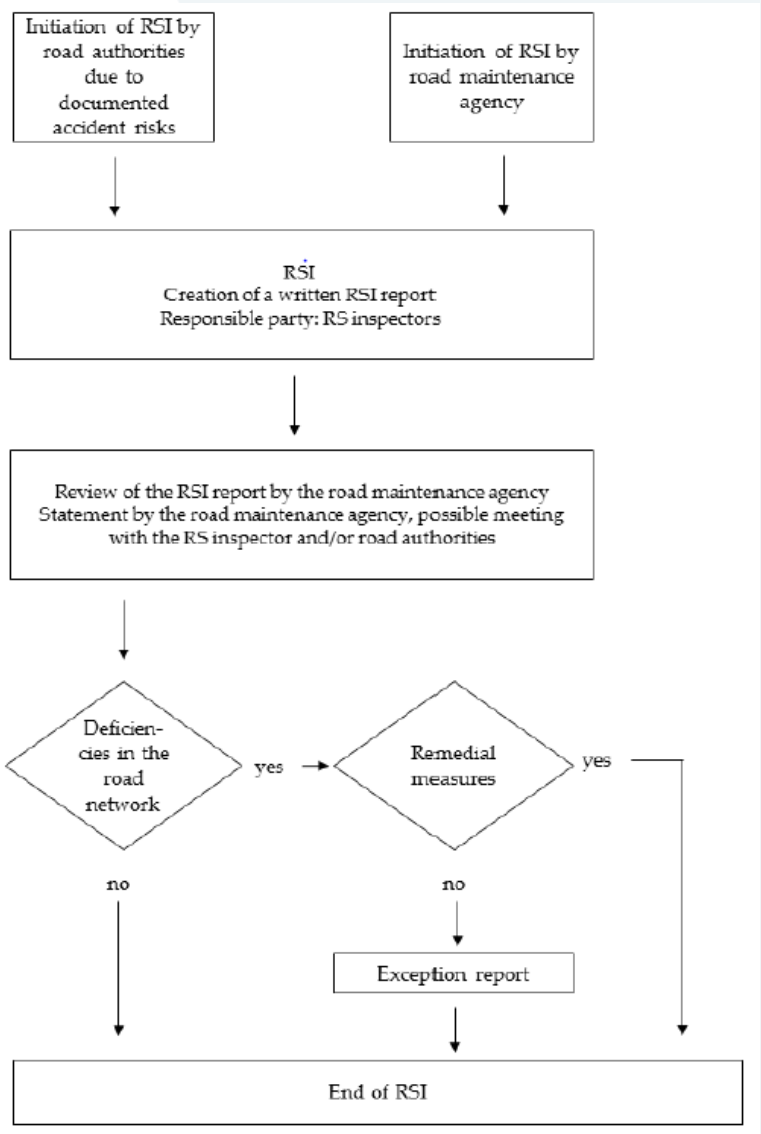
Road Safety Inspection (RSI) – practice (2011)

• A1	Wien Auhof – Steinhäusl	21,80 km
• A1	St. Pölten – Loosdorf	20,52 km
• A2	Ilz-Fürstenfeld – Sinabelkirchen	11,23 km
• A2	Pack – Mooskirchen – Bad St. Leonhard	40,89 km
• A7	Dornach – Unterweitersdorf	12,26 km
• A8	Meggenhofen – Haag	11,95 km
• A9	Spital/Pyhrn – Liezen	12,35 km
• A9	Graz Nord – Graz Webling	10,69 km
• A10	Tauernalm – Zederhaus	12,36 km
• A11	Villach – Karawankentunnel Nord	16,80 km
• S6	Seebenstein – Gloggnitz	16,96 km
• S31	Oberpullendorf Nord – Oberpullendorf Süd	3,97 km
		∑ 191,78 km
		(10,3 % of SG-Net)
• A12	Vomp – Innsbruck Ost	20,45 km (6,5 % of ASG-Netz)
		∑ 212,23 km (9,8 % of the whole net)



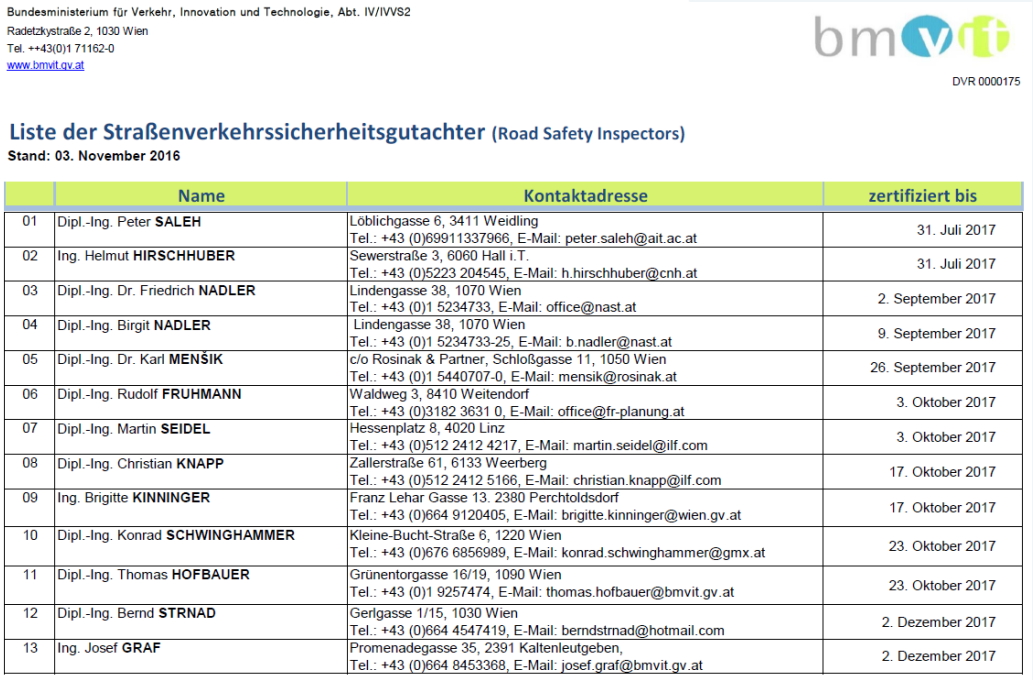
Road Safety Inspection (RSI) - practice

- procedure



Certification of experts

- Since December 2012 the expert for an RSA/RSI has to be certified (at least 1 member of the team)
- The official list of experts is published on the website of the ministry
- duration of certification: 5 years from issuing



Bundesministerium für Verkehr, Innovation und Technologie, Abt. IV/IVVS2
Radetzkystraße 2, 1030 Wien
Tel. ++43(0)1 71162-0
www.bmvit.gv.at

DVR 0000175

Liste der Straßenverkehrssicherheitsgutachter (Road Safety Inspectors)
Stand: 03. November 2016

	Name	Kontaktadresse	zertifiziert bis
01	Dipl.-Ing. Peter **SALEH**	Löblichgasse 6, 3411 Weidling Tel.: +43 (0)69911337966, E-Mail: peter.saleh@ait.ac.at	31. Juli 2017
02	Ing. Helmut **HIRSCHHUBER**	Sewerstraße 3, 6060 Hall i.T. Tel.: +43 (0)5223 204545, E-Mail: h.hirschhuber@cnh.at	31. Juli 2017
03	Dipl.-Ing. Dr. Friedrich **NADLER**	Lindengasse 38, 1070 Wien Tel.: +43 (0)1 5234733, E-Mail: office@nast.at	2. September 2017
04	Dipl.-Ing. Birgit **NADLER**	Lindengasse 38, 1070 Wien Tel.: +43 (0)1 5234733-25, E-Mail: b.nadler@nast.at	9. September 2017
05	Dipl.-Ing. Dr. Karl **MENŠIK**	c/o Rosinak & Partner, Schloßgasse 11, 1050 Wien Tel.: +43 (0)1 5440707-0, E-Mail: mensik@rosinak.at	26. September 2017
06	Dipl.-Ing. Rudolf **FRUHMANN**	Waldweg 3, 8410 Weitendorf Tel.: +43 (0)3182 3631 0, E-Mail: office@fr-planung.at	3. Oktober 2017
07	Dipl.-Ing. Martin **SEIDEL**	Hessenplatz 8, 4020 Linz Tel.: +43 (0)512 2412 4217, E-Mail: martin.seidel@ilf.com	3. Oktober 2017
08	Dipl.-Ing. Christian **KNAPP**	Zallerstraße 61, 6133 Weerberg Tel.: +43 (0)512 2412 5166, E-Mail: christian.knapp@ilf.com	17. Oktober 2017
09	Ing. Brigitte **KINNINGER**	Franz Lehar Gasse 13. 2380 Perchtoldsdorf Tel.: +43 (0)664 9120405, E-Mail: brigitte.kinninger@wien.gv.at	17. Oktober 2017
10	Dipl.-Ing. Konrad **SCHWINGHAMMER**	Kleine-Bucht-Straße 6, 1220 Wien Tel.: +43 (0)676 6856989, E-Mail: konrad.schwinghammer@gmx.at	23. Oktober 2017
11	Dipl.-Ing. Thomas **HOFBAUER**	Grünentorgasse 16/19, 1090 Wien Tel.: +43 (0)1 9257474, E-Mail: thomas.hofbauer@bmvit.gv.at	23. Oktober 2017
12	Dipl.-Ing. Bernd **STRNAD**	Gerlgasse 1/15, 1030 Wien Tel.: +43 (0)664 4547419, E-Mail: berndstrnad@hotmail.com	2. Dezember 2017
13	Ing. Josef **GRAF**	Promenadegasse 35, 2391 Kaltenleutgeben, Tel.: +43 (0)664 8453368, E-Mail: josef.graf@bmvit.gv.at	2. Dezember 2017

Veröffentlichung gemäß § 5a (11) des Bundesstraßengesetzes 1971 BGBl. Nr. 239/1975 idgF

1 von 2

Certification of experts

The certificate is issued by the minister for transport, innovation and technology.

Requirements

- written request for certification
- Relevant studies
- practical knowledge of
  - road planning (infrastructure planning, road design,…)
  - road safety facilities (safety planning, road environment, road operation,…)
  - accident analysis and road safety

Certification of experts

Requirements

- RSI/RSA-course (40 hours)
- Expertise from a training facility on the existence of certification requirements

At least 2 of the following business operating areas

- analysis of accident sites
- examination of traffic conflicts and accident types
- accident examination
- analysis of specific road user groups
- in depth analysis of accidents
- accident reconstruction
- accident simulation
- others

Certification of experts

The way to an expert certificate

Responsible to examinate the competence is an advisory board within the Austrian Association for Research on Road - Rail – Transport
(FSV, http://www.fsv.at/home/default.aspx).

This Association is also responsible for the training of candidates.

Certification of experts from other EU-Member states

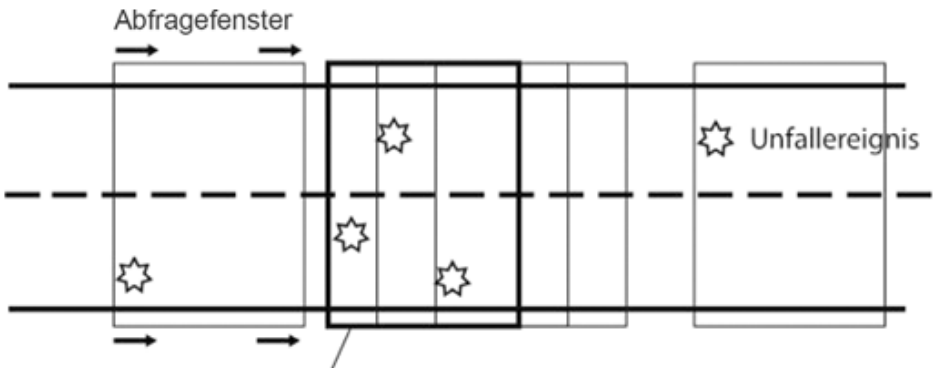
They need

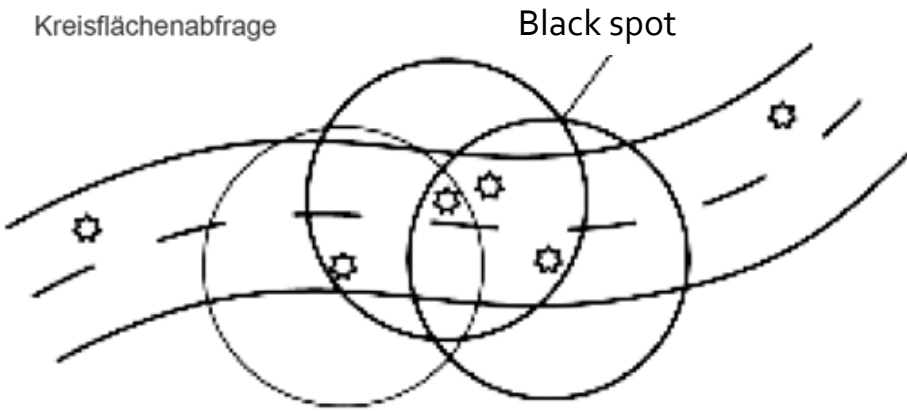
- a valid license as a road safety expert in another member state of the EU
- Expertise from the Austrian training facility that the training completed by them is equivalent in content and scope to the course in Austria

costs for expertise (both austrian and abroad): € 1.400

Black Spot Management (BSM)

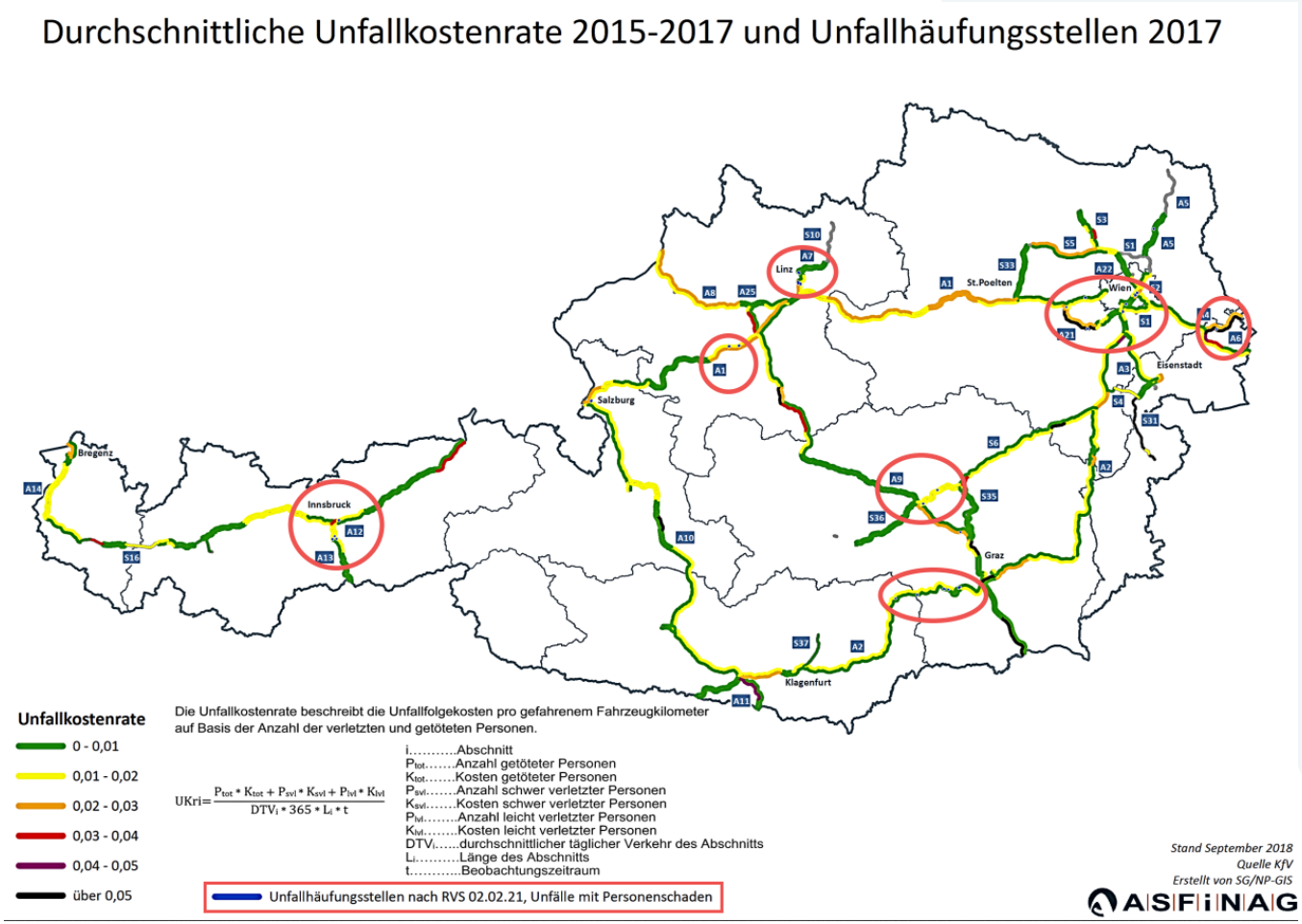
- Black spot = the definition for „black spots" is regulated in the „Richtlinien und Vorschriften für das Straßenwesen" (RVS). The RVS 02.02.21 defines spots with a high accident frequency as a part of road, which is at maximum 250m long and where there have been at least three similar accidents including physical injuries in the last three years or at least five similar accidents (including accidents with material damage only).





window size/ diameter for area respectively circle ≤ 250 m

Black Spot Management (BSM)



Network Safety Management (NSM)

Accident density (UD) $$UD = \frac{UPS}{L * t}$$

UPS = accident with personal damage
L = length in km, t = time period

Accident rate (UR) $$UR = \frac{UPS * 10^6}{JDTV * L * t}$$

JDTV = annual average daily traffic amount

Casualty rate (VR) $$VR = \frac{V * 10^6}{JDTV * L * t}$$

V = casualties

Fatality rate (GR) $$GR = \frac{G * 10^6}{JDTV * L * t}$$

G = fatalities

Accident cost rate (UKR) $$UKR = \frac{K * 10^3}{JDTV * L * t}$$

K = accident costs

Network Safety Management (NSM)

NSM Abschnitt					Unfallzahlen		Verunglückte 2014-2016			mittlere Fahrleistung		UPS		Verunglückte		Getötete		Kosten		RePo	
ID	Beschreibung	Länge (km)	Richtung	Strecke	UPS	UPS mit tot	tot	svl	lvl	mittlere FL	mittl. jFL in Mio	UR	UD	VR	VD	GR	GD	UKR	UKD	€/Kfz-km	Rang
22	A1 km 169.189-175.574 (Kn Linz -Kn Haid)	6,385	2	A1	36	4	0	6	42	346.565	126,50	0,095	1,879	0,126	2,506	0,000	0,000	0,010	188.319	-0,040	130
23	A1 km 175.574-196.318 (Kn Haid -Kn Voralpenkreuz)	20,744	2	A1	33	8	2	11	42	517.248	188,80	0,058	0,530	0,097	0,884	3,531	0,032	0,020	185.295	-0,030	46
24	A1 km 196.318-223.702 (Kn Voralpenkreuz -ASt Regau)	27,384	2	A1	69,5	16	1	19	103	647.782	236,44	0,098	0,846	0,173	1,497	1,410	0,012	0,019	163.099	-0,031	52
25	A1 km 223.702-264.566 (ASt Regau -ASt Mondsee)	40,864	2	A1	44	3	0	4	55	766.573	279,80	0,052	0,359	0,070	0,481	0,000	0,000	0,004	26.395	-0,046	200
26	A1 km 264.566-281.416 (ASt Mondsee -ASt Wallersee)	16,836	2	A1	17,5	4	1	3	20	373.005	136,15	0,043	0,346	0,059	0,475	2,448	0,020	0,012	94.842	-0,038	104
27	A1 km 281.416-288.470 (ASt Wallersee -ASt Salzburg Nord)	7,054	2	A1	24	2	0	3	38	226.571	82,70	0,097	1,134	0,165	1,937	0,000	0,000	0,009	108.321	-0,041	132
28	A1 km 288.470-301.003 (ASt Salzburg Nord -Staatsgrenze Walserberg A/D)	12,533	2	A1	71	7	0	7	97	474.877	173,33	0,137	1,888	0,200	2,766	0,000	0,000	0,011	150.309	-0,039	111
29	A2 km 1.017-4.387 (Kn Inzersdorf -Kn Vösendorf)	3,37	1	A2	40	4	0	6	53	273.290	99,75	0,134	3,956	0,197	5,836	0,000	0,000	0,013	388.137	-0,037	91
30	A2 km 4.387-8.864 (Kn Vösendorf -ASt Wr.Neudorf)	4,477	1	A2	31	5	1	8	37	340.731	124,37	0,083	2,308	0,123	3,425	2,680	0,074	0,019	537.987	-0,031	49
31	A2 km 8.864-14.775 (ASt Wr.Neudorf -Kn Guntramsdorf)	5,911	1	A2	32	4	0	4	44	428.687	156,47	0,068	1,805	0,102	2,707	0,000	0,000	0,006	162.245	-0,044	173
32	A2 km 14.775-20.852 (Kn Guntramsdorf -ASt Baden)	6,077	1	A2	21	4	1	3	22	307.835	112,36	0,062	1,152	0,077	1,426	2,967	0,055	0,014	266.713	-0,036	72
33	A2 km 20.852-46.496 (ASt Baden -Kn Wr.Neustadt)	25,644	1	A2	66,5	12	3	11	78,5	1.055.407	385,22	0,058	0,864	0,080	1,202	2,596	0,039	0,014	204.139	-0,036	83
34	A2 km 46.496-57.116 (Kn Wr.Neustadt -Kn Seebenstein)	10,62	1	A2	21	7	0	7	20	331.029	120,83	0,058	0,659	0,074	0,847	0,000	0,000	0,009	104.155	-0,041	133
35	A2 km 57.116-68.683 (Kn Seebenstein -HASt Edlitz)	11,567	1	A2	10	1	0	1	12	262.021	95,64	0,035	0,288	0,045	0,375	0,000	0,000	0,003	21.805	-0,047	228
36	A2 km 68.683-76.428 (HASt Edlitz -HASt Krumbach)	7,745	1	A2	5	1	0	1	7	155.933	56,92	0,029	0,215	0,047	0,344	0,000	0,000	0,003	25.649	-0,047	208
37	A2 km 76.428-81.050 (HASt Krumbach -HASt Aspang, Landesgrenze N/St)	4,622	1	A2	2	1	0	1	2	89.518	32,67	0,020	0,144	0,031	0,216	0,000	0,000	0,005	32.148	-0,045	193
38	A2 km 81.072-87.541 (HASt Aspang, Landesgrenze N/St -ASt Schäffern)	6,469	1	A2	11	1	0	1	11	121.085	44,20	0,083	0,567	0,091	0,618	0,000	0,000	0,006	37.873	-0,044	181

Road Safety Inspection (RSI) - practice

- Preparatory work such as a review of the existing documents, collection of accident data, etc.
- Site visit including discussions with people responsible for the road
- Creation of the RSI report
- Implementation of the proposed measures, monitoring

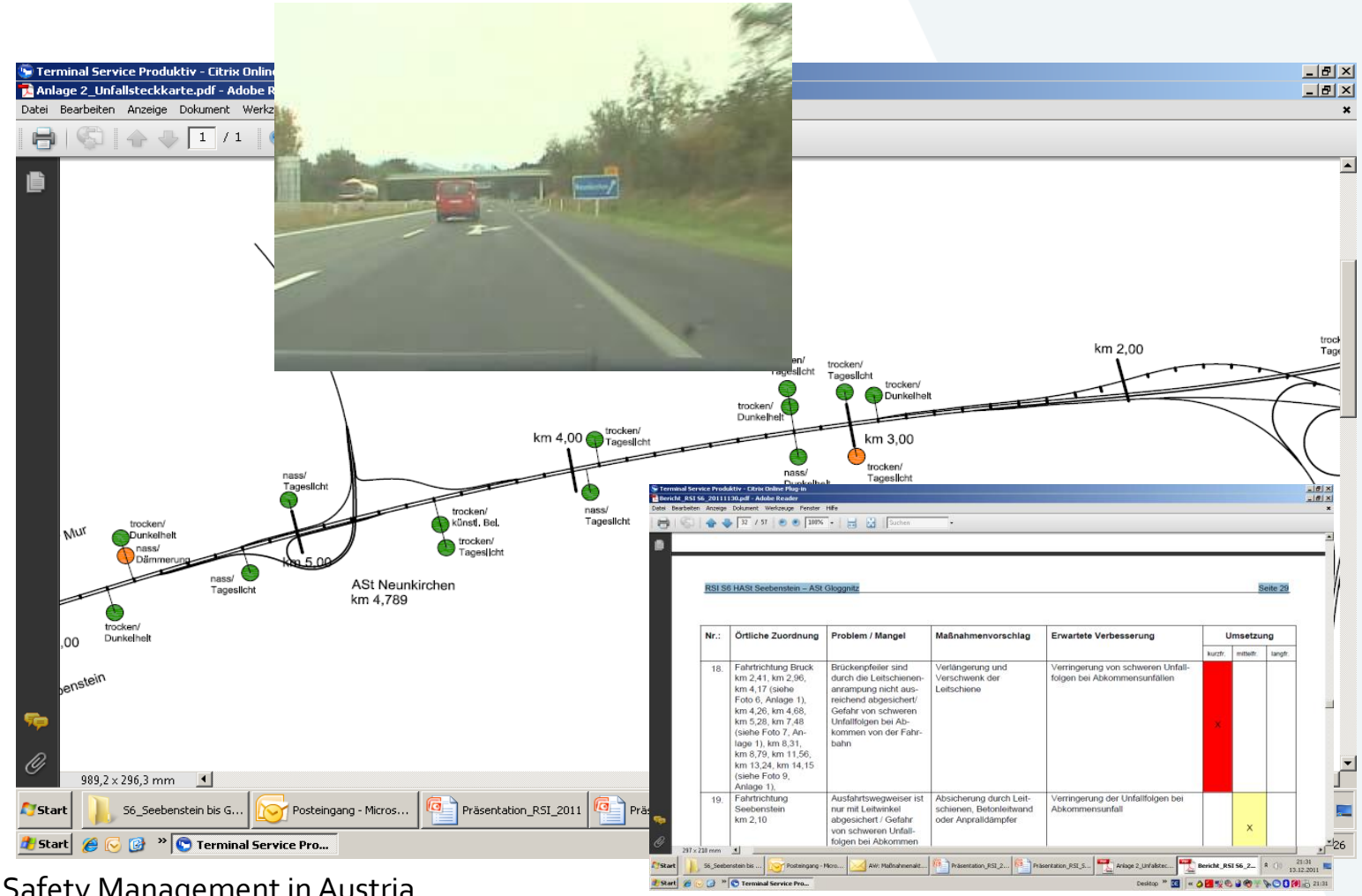
Road Safety Inspection (RSI) – practice 2011-14

criteria according to RSI manual (old)

- Safety-relevance:
  colour code marks the safety-relevance by road safety inspectors
  red: high relevant
  yellow: middle relevant
  green: low relevant

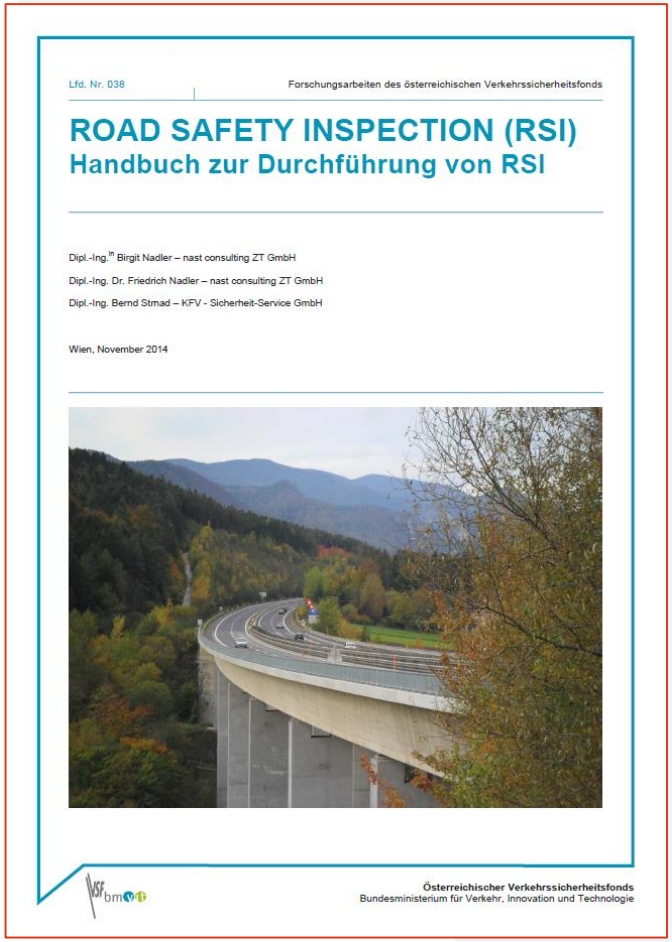
- Time schedule:

Example 2011-14



RSI manual

- 1st time published in 2010
- 2nd edition 2014/2015
  - Updates caused by legal changes
  - Consideration of the experiences of the last years
  - avoidance/ reduction of redundancies
  - Specifications and standardisations



Road Safety Inspection (RSI) - report

The **RSI report** consists of

- General information
- Checklist and accident data
- List of measures
- Summary

RSI manual

- Checklist

Checklist for Motorways and Expressways			
Inspected section: [designation, length, from–to] Date/time: Ambient conditions: [weather, road conditions, etc.] Inspectors:			
Maximum permissible speed: [any other available speed data can also be entered here] Traffic statistics: [indication of ADT, share of heavy vehicles, special features]			
1) Structural conditions	Safety relevant?		Comments
	Yes	No	
Site plan			
Longitudinal section			
Alignment			
Cross section			
Road surface condition			
Sight conditions			
Drainage			
Junctions			
Tunnels			
Service facilities (parking spaces, etc.)			

RSI manual

- Checklist

2) Equipment and roadside environment	Safety relevant?		Comments
	Yes	No	
Traffic signs / guidance			
Markings			
Guidance systems			
Vehicle restraint systems			
Lighting			
Vegetation			
Wildlife protection systems			
Signal systems / telematics			
Roadside environment, non-traffic systems, other			

RSI manual

- Assessment – ranking the safety relevance

Assessment of the possible accident consequences → / Assessment of the accident risk ↓	low	moderate	severe
low			
moderate			
high			

RSI manual

- proposed measures

Road Safety Inspection Measures Proposals	Legend:	High safety relevance Moderate safety relevance Low safety relevance	No. X

Road / section	Direc-tion	Location
Road X / km XX.XX–km XX.XX	X	km XX.XX (and/or indication of coordinates)

Problem / deficiency			
Proposed measure / expected improvement			
Assessment of the accident risk	low/ moderate/ high		
Assessment of possible accident consequences	low/ moderate/ severe		
Assessment of implementation timeframe and safety relevance	Short term	Medium term	Long term

Place holder for photo

Place holder for further diagrams and explanations if needed/sensible	Place holder for further diagrams and explanations if needed/sensible

Effects of the changes of the Directive 2008/96/EC on road safety management in Austria

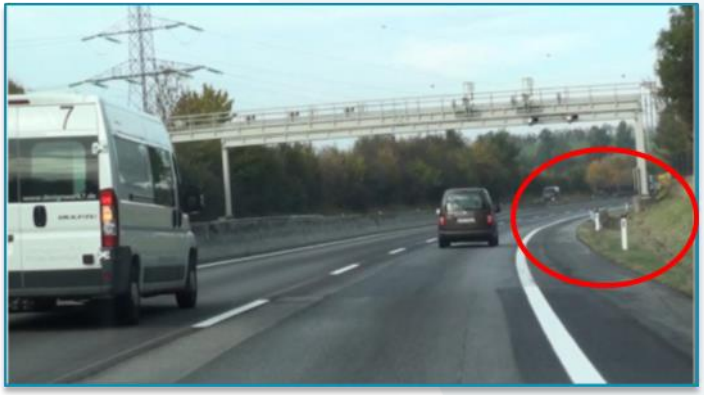
- Definition of primary roads
- Implementation of the new network-wide road safety assessment including the safety classification of the road network (first assessment until 2024)
- Higher focus on protection of vulnerable road users
- Specific attention to road markings and signs concerning detectability and readability for human drivers and automated driver assistance systems
- Report of the safety classification to the commission (until 31.10.2025)

RSI

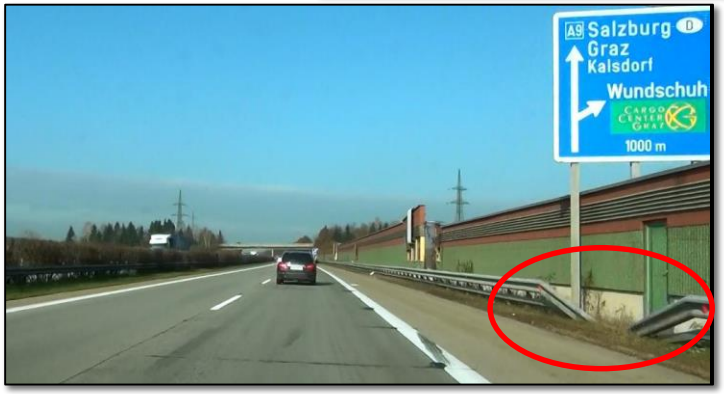
Example for lack of covering obstacles

A10 Tauern Autobahn

A8 Innkreis Autobahn



A9 Pyhrn Autobahn



RSI

Example for lack of covering obstacles

A10 Tauern Autobahn

A21 Wiener Außenring Autobahn

A2 Süd Autobahn

RSI

Various Examples

A23 Autobahn Südosttangente

A9 Pyhrn Autobahn

A2 Süd Autobahn

RSI manual

example for
proposed measures

Road Safety Inspection Maßnahmenvorschläge	Legende:	Hohe Sicherheitsrelevanz	Nr. 8
		Mittlere Sicherheitsrelevanz	
		Geringe Sicherheitsrelevanz	

Straße / Strecke	FR	Örtlichkeit
A 6 / km 0,000 – km 21,952	1	km 6,000 – km 8,500

Problem / Mangel	zahlreiche Abkommensunfälle mit Personenschaden (vor allem durch überhöhte Geschwindigkeiten und Übermüdung laut Autobahnmeisterei und Exekutive) / Gefahr von schweren Unfallfolgen durch Abkommen von der Fahrbahn (z.B. durch Sekundenschlaf)	
Maßnahmenvorschlag / erwartete Verbesserung	Anbringung von taktilen Fräsungen (Rumpelstreifen) an den Randlinien/ Verringerung von Abkommensunfällen	
Abschätzung der Unfallgefahr	hoch	11 UPS (Abkommensunfälle km 6,300 – km 8,500)
Abschätzung möglicher Unfallfolgen	mittel	schwere Unfallfolgen durch Abkommen von der Fahrbahn

Beurteilung von Umsetzungshorizont & Sicherheitsrelevanz	kurzfristig	mittelfristig	langfristig
	X		

RSI manual

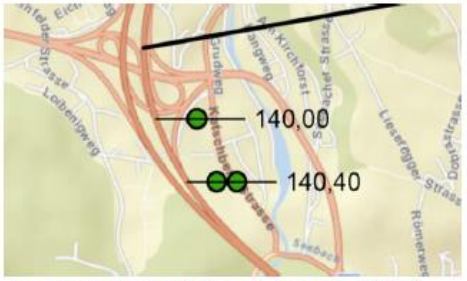
example for
proposed measures

Road Safety Inspection Maßnahmenvorschläge	Legende:	Hohe Sicherheitsrelevanz Mittlere Sicherheitsrelevanz Geringe Sicherheitsrelevanz	Nr. 11

Straße / Strecke	FR	Örtlichkeit
A10 Tauern Autobahn km139,685 – km159,600	2	Km140,7-km140,55

Problem / Mangel	Leitschienenlücke im Bereich einer Felswand	
Maßnahmenvorschlag / erwartete Verbesserung	Schließung der Leitschienenlücke	
Abschätzung der Unfallgefahr	mittel	2 UPS im Nahbereich im Zeitraum 2009 bis 2013 (davon 1x Abkommen rechts)
Abschätzung möglicher Unfallfolgen	schwer	Anprall gegen Felsen bei einem Abkommen von der Fahrbahn

Beurteilung von Umsetzungshorizont & Sicherheitsrelevanz	kurzfristig	mittelfristig	langfristig
		x	



Ausschnitt Unfallsteckkarte (Quelle: KFV)

RSI manual

example for
proposed measures

Road Safety Inspection Maßnahmenvorschläge	Legende:	Hohe Sicherheitsrelevanz / Mittlere Sicherheitsrelevanz / Geringe Sicherheitsrelevanz	Nr. 17
Straße / Strecke	**FR**	**Örtlichkeit**	
A10 Tauern Autobahn km139,685 – km159,600	1	ASt Spittal Ost, Rampe 1	

Problem / Mangel	9 Wegweiser an einem Standort; zu viel Information	
Maßnahmenvorschlag / erwartete Verbesserung	Reduktion der Wegweiseranzahl (lt. RVS 05.02.12 max. 6 Ziele übereinander pro Standort)	
Abschätzung der Unfallgefahr	Gering	kein UPS zwischen 2009 und 2013
Abschätzung möglicher Unfallfolgen	Gering	

Beurteilung von Umsetzungshorizont & Sicherheitsrelevanz	kurzfristig	mittelfristig	langfristig
	x		

Ausschnitt Unfallsteckkarte (Quelle: KFV)

Thank your for your attention!

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