



DARS presentations: Cross-border traffic management plans and Digital twin preparation

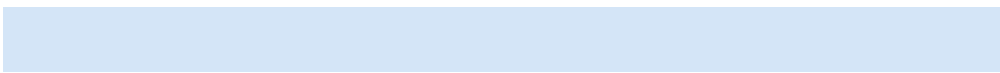
mag. Ulrich Zorin, Jaka Gorišek

ZALAZONE TRILATERAL CONFERENCE, July 2022

Part 1 – Cross-border traffic management plans

2009

- Fax forms in use
 - +
 - No main control center in Slovenia
 - +
 - Difficult communication between countries
 - +
 - Uncoordinated communication between ministries, concessionaries (maintenance, management, directors,...), state police, ...
- = traffic jams on motorways

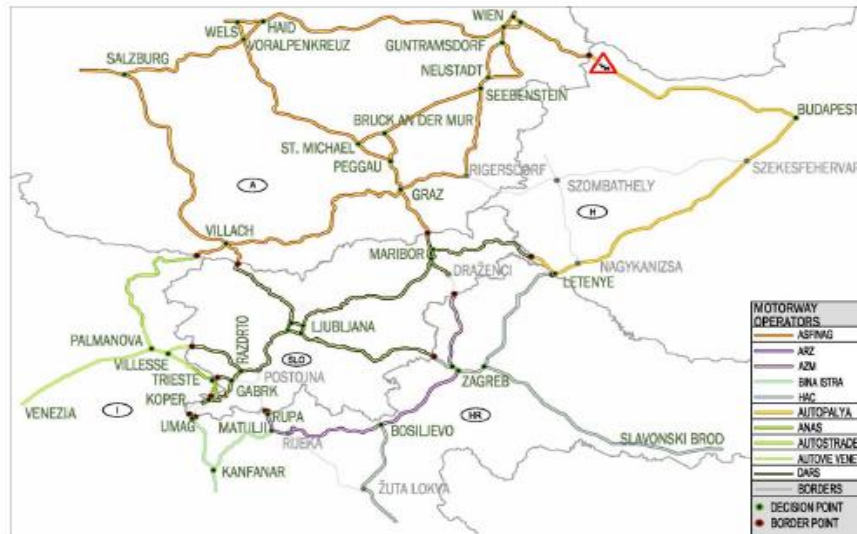


TMP
A-H-HR-I-SLO



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TEL: +36 1 8199194
FAX: +36 1 3151545

Valid from: **31.7.2016** **9.30**
Predicted end: date hour



Next info expected: date hour

Important note: delays 60-120 min due to border control, estimated traffic congestion length 3-4 km

Motorway section: H H, Budapest -> A, Hegyeshalom/Nickelsdorf

Location note: near Hegyeshalom

2009



COMMISSARIO DELEGATO PER L'EMERGENZA DELLA
MOBILITA' RIGUARDANTE LA A4 (TRATTO VENEZIA-TRIESTE)
ED IL RACCORDO VILLESSE-GORIZIA

DARS

autostrade // *per l'italia*



ASIFINAG

AUTOVIE VENETE

Memorandum of Understanding

Cooperation for Traffic Management and Traffic Information Exchange
Zusammenarbeit für Verkehrsmanagement und –informationsaustausch
Cooperazione per la gestione e lo scambio di informazioni del traffico
Sodelovanje za upravljanje in izmenjavo informacij o prometu

between
DARS, Družba za avtoceste v Republiki Sloveniji, d.d., Ulica XIV. divizije 4 SI-3000 CELJE
and
Autobahnen- und Schnellstrassen-Finanzierungs-Aktiengesellschaft, A-1011 WIEN, Rotenturmstrasse 5-9
and
Autostrade per l'Italia - Direzione X° Tronco S.S. 13 Km 134 +100 - 33010 Tavagnacco (Udine, Italia)
and
ANAS S.p.A. - Sede Compartimentale via Fabio Severo 52 - 34127 Trieste (Italia)
and
S.p.A. Autovie Venete, via Locchi 19 - 34123 Trieste (Italia)

2014



Memorandum of Understanding

Cooperation for Traffic Management and Traffic Information Exchange
Zusammenarbeit für Verkehrsmanagement und –informationsaustausch

Suradnja za upravljanje prometom i razmjenu prometnih informacija
Együttműködés a forgalomirányításban és a forgalmi információk
cseréjében

Cooperazione per la gestione e lo scambio di informazioni del traffico
Sodelovanje za upravljanje in izmenjavo informacij o prometu

between

ASFINAG Service GmbH, Traunuferstrasse 9, A-4052 Ansfelden,
im Vollmachtsnamen der

Autobahnen- und Schnellstrassen-Finanzierungs-Aktiengesellschaft, A-1011 WIEN, Rotenturmstrasse 5-9
and

Hrvatske autoceste d.o.o., Širolina 4, 10000 Zagreb

and

Autocesta Rijeka-Zagreb d.d., Širolina 4, 10000 Zagreb

and

Bina-Istra d.d., Zrinščak 57, 52426 Lupoglav

and

Autocesta Zagreb-Macelj d.o.o., Velika Ves 116/a, Lepajci, 49000 Krapina

and

Magyar Közút Nonprofit Zártkörűen Működő Részvénytársaság, H-1024 Budapest, Fényes Elek utca 7-13.
(Magyarország)

and

S.p.A. Autovie Venete, via Locchi 19 – 34123 Trieste (Italia)

and

ANAS S.p.A. Compartimento della Viabilità per il Friuli - Venezia Giulia (Italia)

and

DARS, Družba za avtoceste v Republiki Sloveniji, d.d., Ulica XIV. divizije 4 SI-3000 CELJE

Traffic Management Services

TRAFFIC MANAGEMENT PLAN FOR CORRIDORS AND NETWORKS

Deployment Guideline

TMS-DG07 | VERSION 02-02-00 | DECEMBER 2015



The Deployment Guidelines have been developed in EasyWay, EIP and EIP+
Co-financed by the European Union
Trans-European Transport Network (TEN-T)

www.its-platform.eu

Application for International Traffic Management Plans

2020

CHALLENGES:

- **A lot of international heavy goods vehicles** (about 6.500 per day) from East to the West Europe via Slovenian motorways
- 4 neighboring countries – **4 different kind of traffic management in different languages**
- **No special parking spaces**
- More than **1800 heavy goods vehicles parked on motorways in winter** time (dangerous) + more than **10 hours = about 430.000,00 EUR of economic damage** for the transport company

SOLUTION:

- **UNIFORM TRAFFIC MANAGEMENT** plans for all motorway links between states
- **ONE COORDINATION** (Slovenia)
- **UNIFIED APPLICATION FOR CONTROL CENTRES AND EQUAL GUIDELINES FOR TRAFFIC MANAGERS**



OBJECTIVES ACHIEVED:

- **Quick international coordination** between traffic control centres
- **Frequency flow of freight vehicles, especially in winter**
- **Positive impact on the economy, traffic safety and traffic flow**



Translation to app

3.2 TRAFFIC MANAGEMENT STRATEGY: RW-1-N, RW-2-N

ROUTE:

1.) Rijeka-Kozina-Ljubljana-Maribor-Graz-Vienna:

Detour **RW-1-N**: 5 h 00 min, 505 km

Decision point: Rijeka

DIFFERENCE with the fastest route: +15 min, +5 km (driving time for a

2.) Rijeka-Kozina-Ljubljana-Villach-Graz-Vienna:

Detour **RW-2-N**: 5 h 45 min, 565 km

Decision point: Rijeka

DIFFERENCE with the fastest route: +1 h, +65 km (driving time for a

| RW-1-N | Passenger cars | Commercial vehicles |
|---------------------------|----------------|---------------------|
| Fuel costs | 42,93 € | 212,10 € |
| Toll costs | 26,34 € | 251,55 € |
| Labour costs | 0,00 € | 126,25 € |
| TOTAL COSTS (EUR): | 69,26 € | 589,90 € |

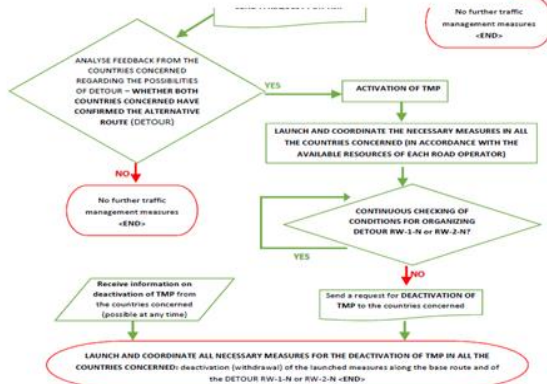
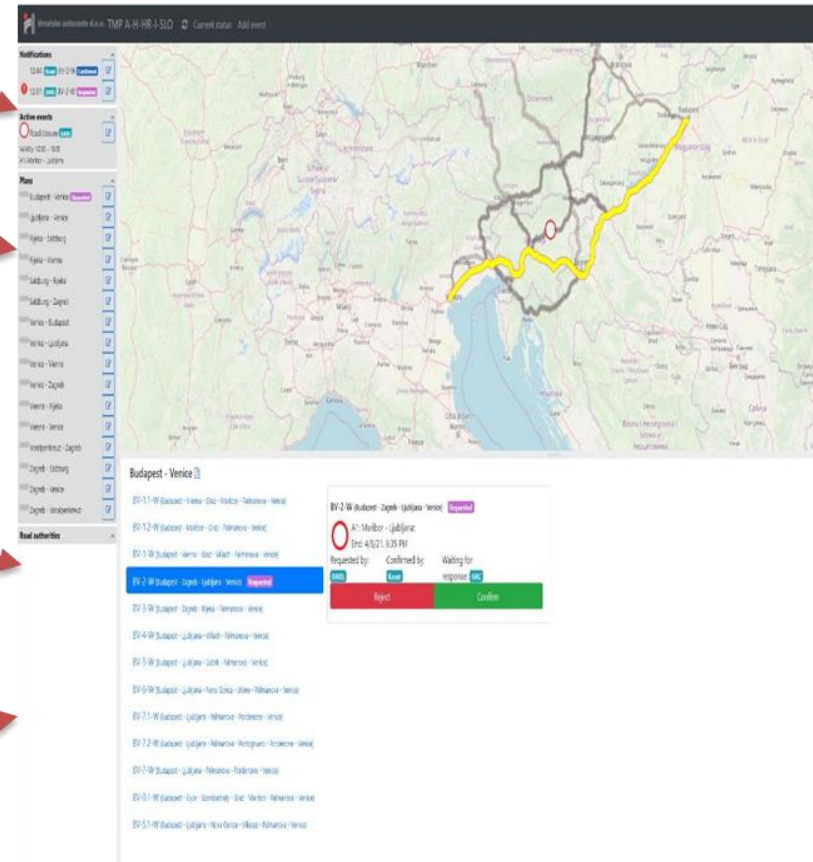
| RW-2-N | Passenger cars | Commercial vehicles |
|---------------------------|----------------|---------------------|
| Fuel costs | 48,03 € | 237,30 € |
| Toll costs | 26,34 € | 281,45 € |
| Labour costs | 0,00 € | 141,25 € |
| TOTAL COSTS (EUR): | 74,36 € | 660,00 € |

(Rijeka-Zagreb-Maribor-Graz-Vienna: the fastest route: 4 h 45 min, 500



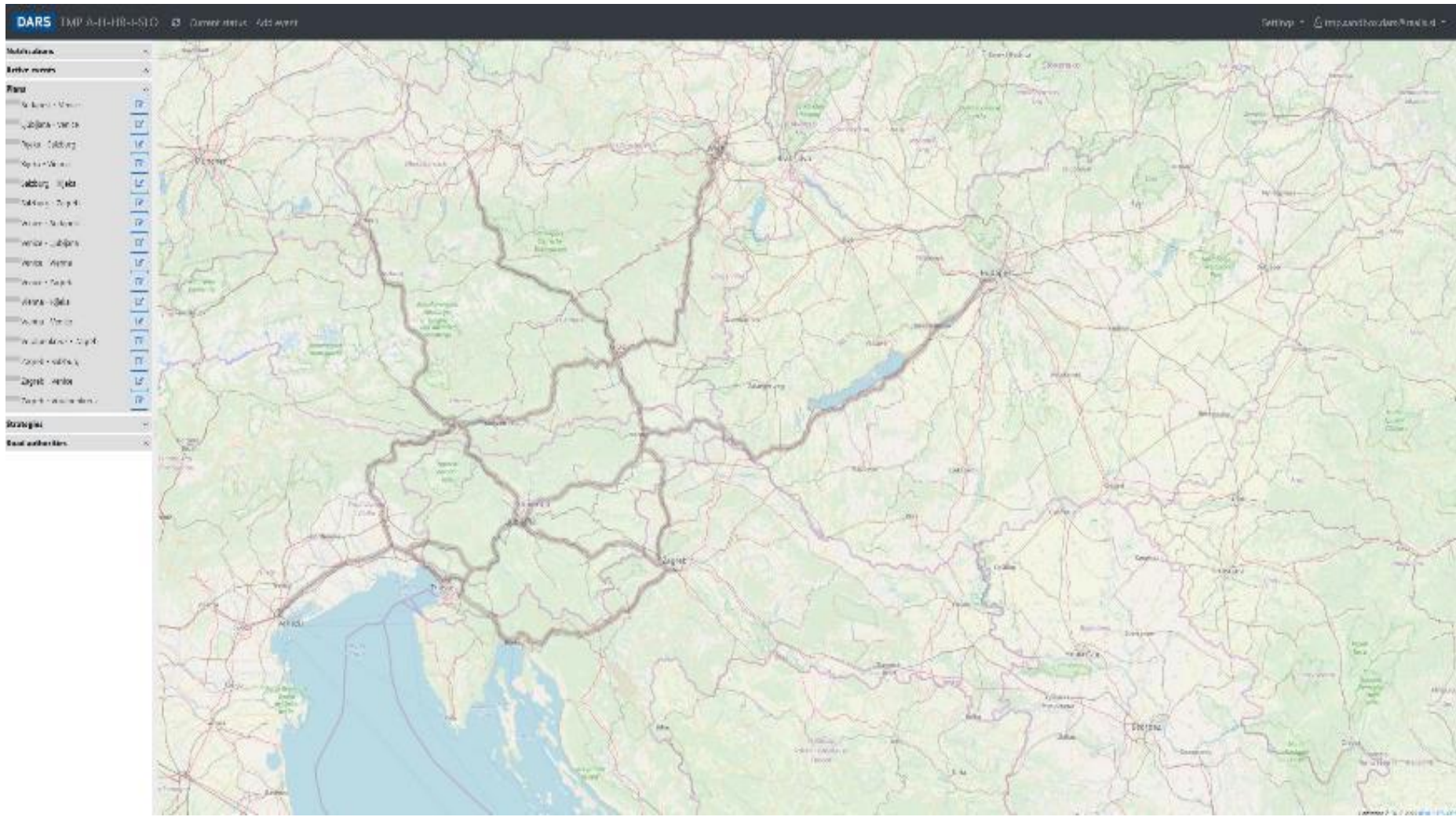
Figure 9: Display of detours in case of an extraordinary event between Rijeka and Zagreb

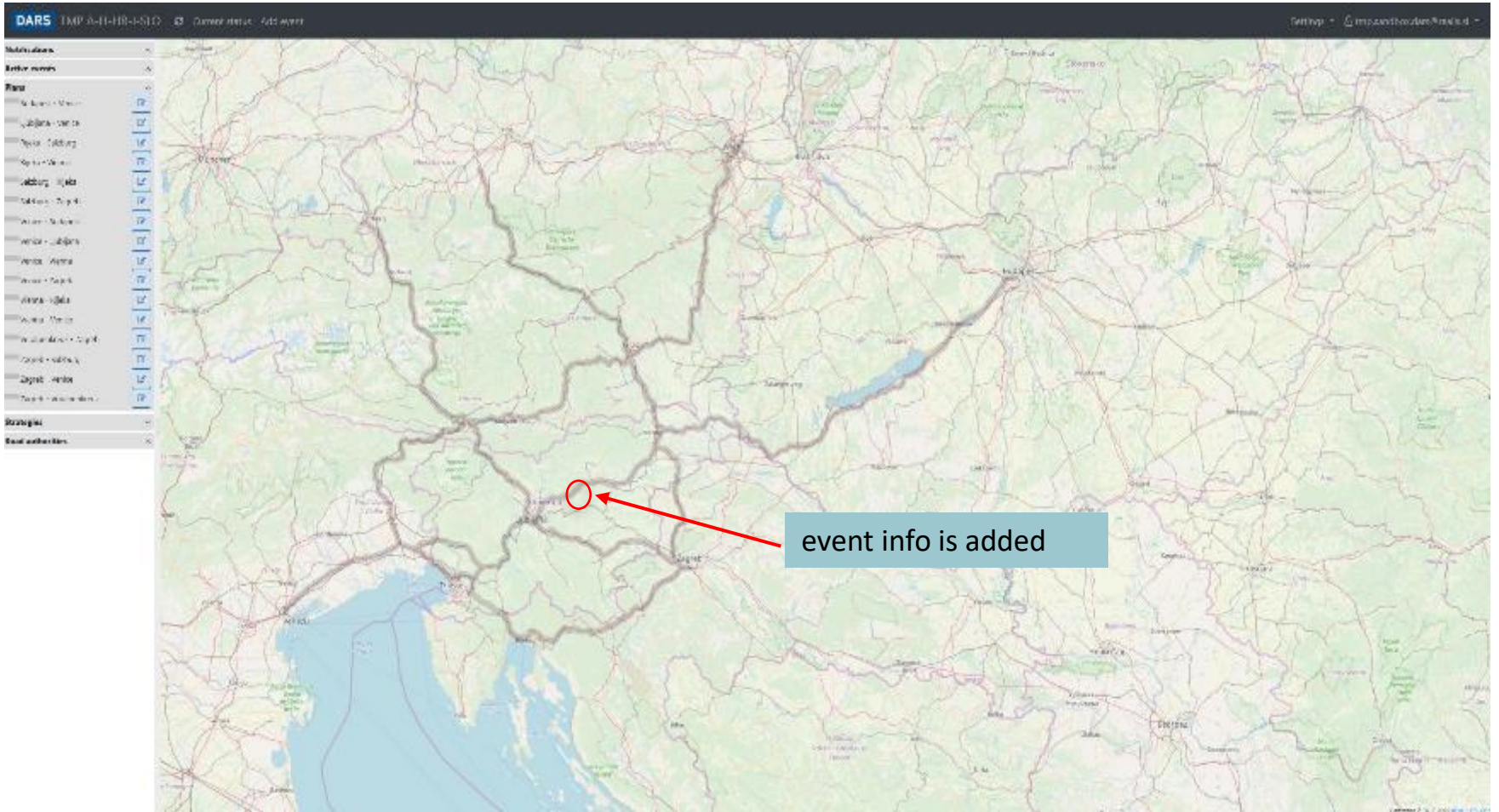
| Detour strategy in case of an extraordinary event | | | | | | |
|---|---|------------------------------|----------------|------------------|---------------|---------------|
| Section: Rijeka-Zagreb-Maribor-Graz-Vienna | | | | | | |
| | Event type | Limit value | Decision point | Detour strategy | Activation | Deactivation |
| Subsection: Rijeka-Zagreb | Planned full closure (FC) | Duration of FC ≥ 1 h 00 min | Rijeka | RW-1-N RW-2-N | Start of FC | End of FC |
| | Unplanned full closure (FC) | Duration of FC ≥ 1 h 00 min | Rijeka | RW-1-N RW-2-N | Start of FC | End of FC |
| Distance from the Rijeka exit: 0-150 km | Ban for commercial vehicles (BCV) > 7.5 t | Duration of BCV ≥ 1 h 00 min | Rijeka | RW-1-N RW-2-N | Start of BCV | End of BCV |
| | Congestion / traffic jam | Length ≥ 8 km | Rijeka | RW-1-N RW-2-N | Length ≥ 8 km | Length ≤ 5 km |

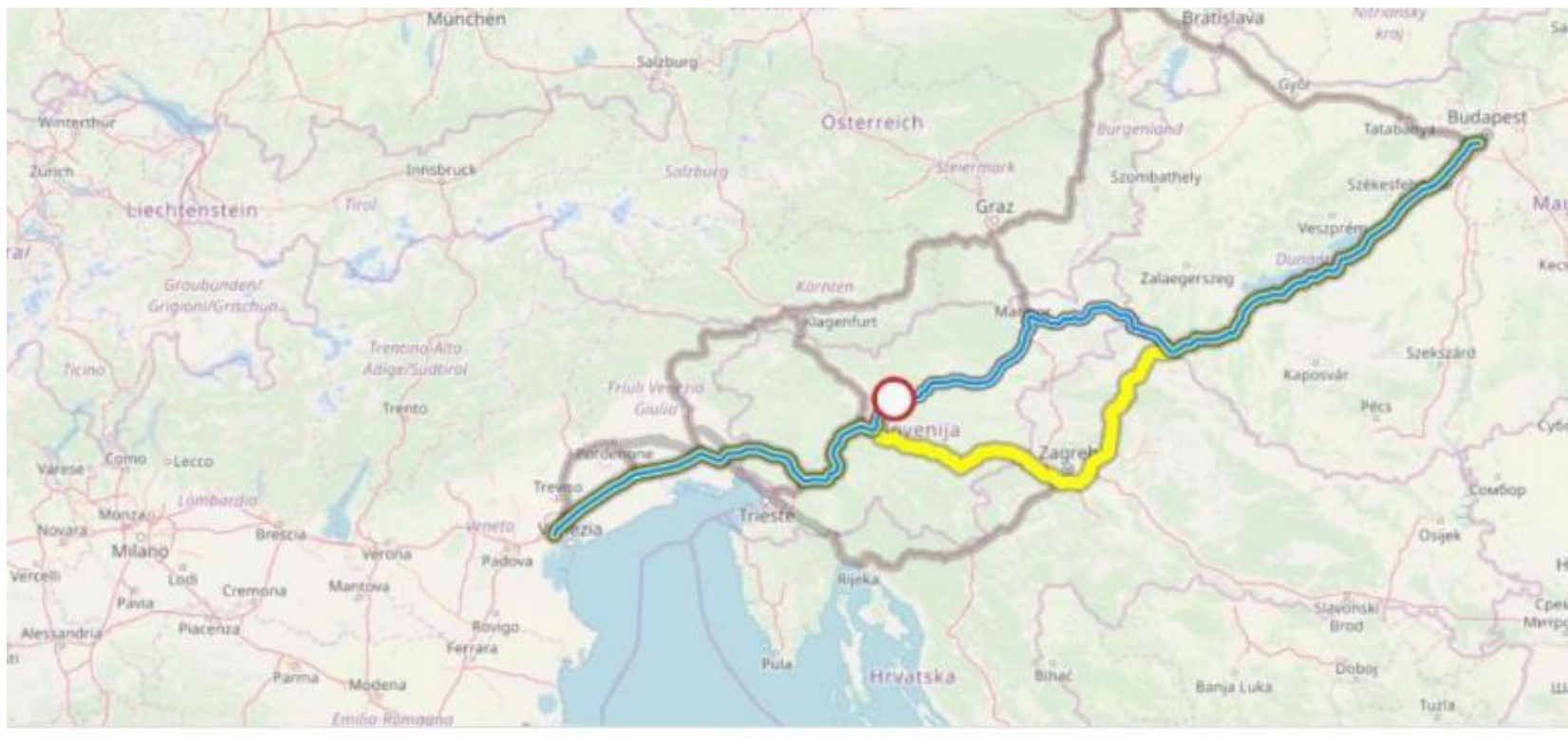


TMP APP

How it works








Budimpešta - Benetke

BV-2-W (Budimpešta - Zagreb - Ljubljana - Benetke) Predlagano

BV-1.2-W (Budimpešta - Maribor - Gradec - Palmanova - Benetke)

Ostale strategije na tem planu 

BV-2-W (Budimpešta - Zagreb - Ljubljana - Benetke) Predlagano

Zaproši

Road closure

Direkt tip:



Created:

04-20-2021 10:16:04

Valid from:

04-20-2021 12:00:00

Free until end:

04-20-2021 02:00:00

Next info expected:

Important note:

Eng. št.

Motorway section:

A1-Murica - E. del. av.

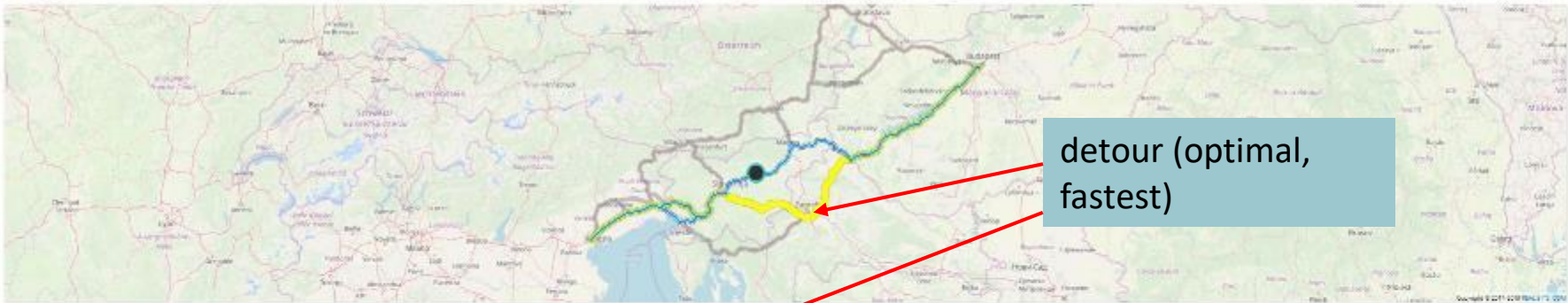
Location name:

Eng. št.

Coordinates:

45.967144; 16.461144

45.967144; 16.461144



detour (optimal, fastest)

Relevant plans

Budapest - Venice

Budapest - Venice

04-20-2021 (04:00:00 - 02:00:00) A1-Murica - Venice

Suggested

04-20-2021 (04:00:00 - 02:00:00) A1-Murica - Venice

Suggested

04-20-2021 (04:00:00 - 02:00:00) A1-Murica - Venice

Delete this event

Road closure **WWS** [#1102](#) [#1103](#) [#1104](#) [#1105](#) [#1106](#)

1/1

| | |
|---------------------|---|
| Event type: | |
| Created: | 24.07.2021 12:37 PM |
| Valid from: | 24.07.2021 12:37 PM |
| Planned end: | 24.07.2021 6:35 PM |
| More info expected: | |
| Important note: | English |
| Motorway section: | A1-Markó - Lujtóra |
| Location note: | English |
| Coordinates: | 45.817768542 <input type="text"/> 16.949772853 <input type="text"/> |



waiting for feedback

Relevant plans

- Budapest - Venice** **Approved**

Budapest - Venice

BV-2-W (Budapest - Zagreb - Lujtóra - Venice) **Approved**

BV-1-L-W (Budapest - Venice - Croatia - Rijeka - Venice)

Download map of this plan

BV-2-W (Budapest - Zagreb - Lujtóra - Venice) **Approved**

Requested: Waiting for response

by: **WWS**

Done

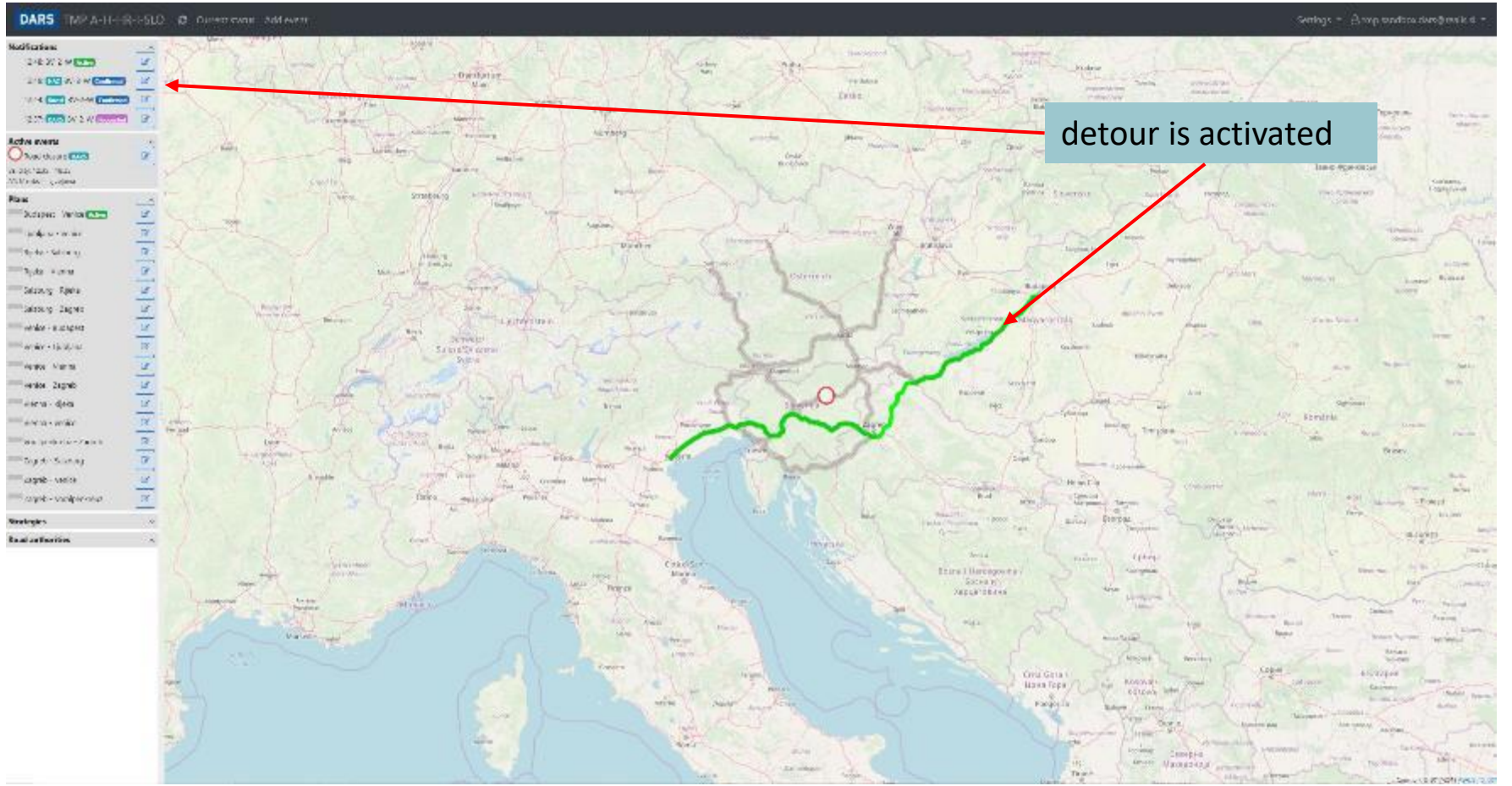
Stop

Report

The screenshot shows a web interface for a travel agency. At the top, there's a header with the company name 'T.M.P. A.H.H.R.-I.S.I.O.' and a 'Current status: Add event' button. On the left, there are navigation menus for 'Notifications', 'Active events', and 'Plus'. The main area is a map of Central Europe, with a yellow line indicating a route from Budapest, Hungary, to Venice, Croatia. A red circle highlights a confirmation dialog box for the event 'UV-2 W Budapest Zagreb Ljubljana Venica'. The dialog shows the event details and a table for confirmation status:

| Requested by | Confirmed by | Waiting for |
|--------------|--------------|-------------|
| IMAC | IMAC | IMAC |

At the bottom of the dialog are two buttons: 'Reject' (red) and 'Confirm' (green). To the right of the dialog, a text box contains the text 'Hungary confirmed Croatia - waiting' with a red arrow pointing to the dialog box.



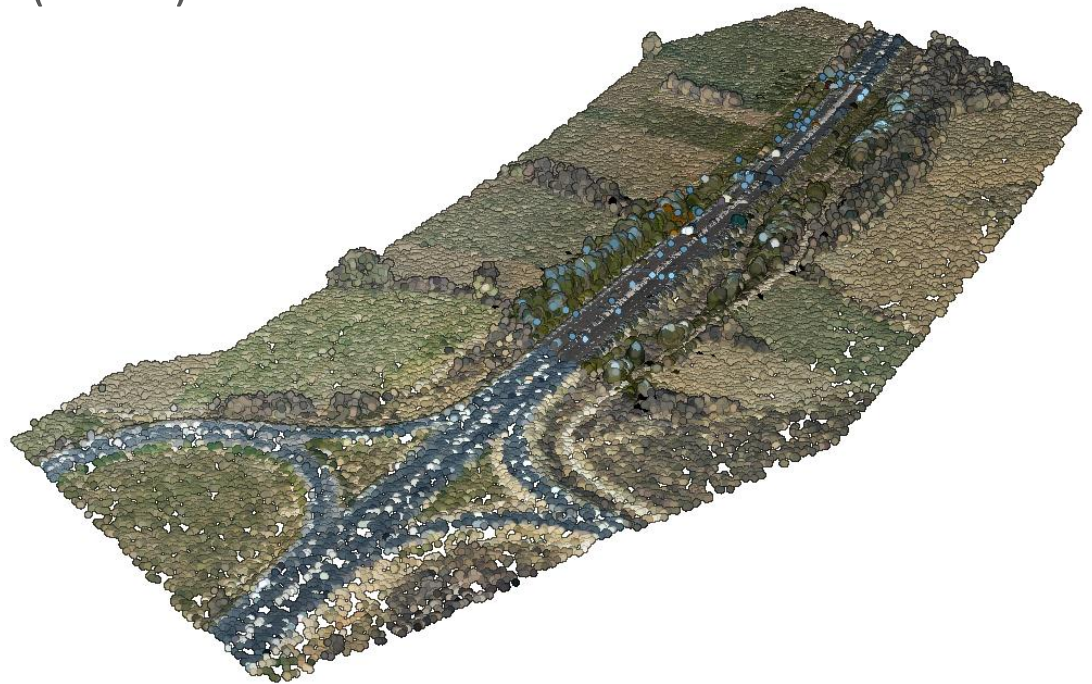
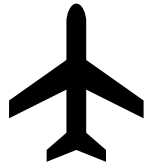
detour is activated

BENEFITS

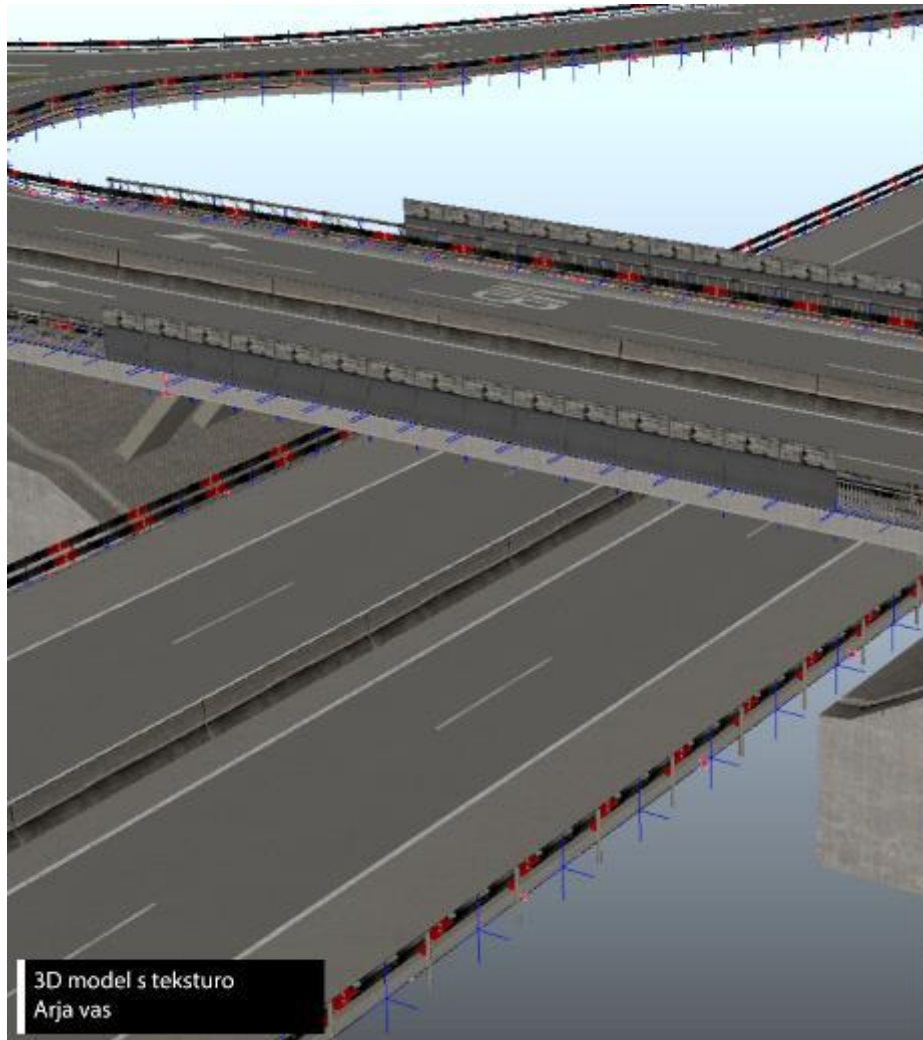
- Quick international coordination between main traffic control centres
- Unobstructed traffic flow of trucks, especially in the winter time
- Unobstructed traffic flow in the summer time
- Positive impact on the economy & traffic safety & environment
- International traffic info exchange

Part 2 – Digital twin preparation

- Digital twin definition
 - *“A digital twin is a virtual representation that serves as the real-time digital counterpart of a physical object or process”* [From Wikipedia].
- 3D large scale data capture (LIDAR)



3D data modelling



Use case - Traffic Safety and Infrastructure Simulator



Next steps in DARS digital twin for road infrastructure

- Create digital UI with 3D mesh + additional data from static DB
- Add additional dynamic (live) data traffic and road sign info
- Add support for future 3D models (BIM)
- Basis for HD-maps