



"The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723205"

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University of Zagreb, Faculty of Transport and Traffic Sciences

LEVEL CROSSING SAFETY CAMPAIGN IN CROATIA

Madrid, 10 October 2018



PROJECT IMPLEMENTATION OF MEASURES TO INCREASE SAFETY OF THE MOST VULNERABLE ROAD USERS AT LEVEL CROSSINGS

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LCs ON THE CROATIAN RAILWAYS



RAILWAYS NETWORK:

2,605km of railway tracks

1,519 LCs: 37% Active, 63% Passive

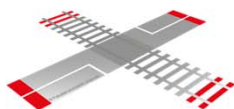
59 Pedestrian crossings

DAILY RAIL TRAFFIC:

649 passenger rails

192 cargo rails

160 km/h max speed

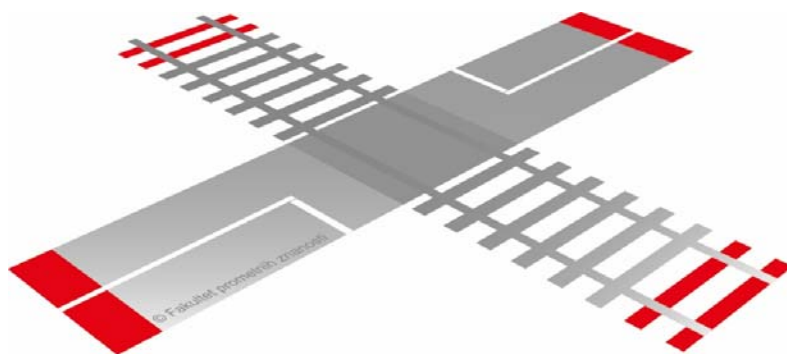


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NATIONAL ROAD TRAFFIC SAFETY PROGRAMME OF REPUBLIC OF CROATIA 2011 - 2020



**Project
IMPLEMENTATION OF
MEASURES TO INCREASE
SAFETY OF THE MOST
VULNERABLE ROAD USERS AT
LEVEL CROSSINGS**

Coordinator: University of Zagreb, Faculty of Transport and Traffic Sciences

Partner: HŽ Infrastruktura (Croatian Railways), preventive-educational action „Train is always faster”



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PROJECT MEASURES

"Safety begins with you"

"Your opinion is important"

"Book Month"

„Traveling exhibition - Safety and design"

„Conscientious driver"

"Social Networks"

"Media"

„LC-locator"





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SURVEYS





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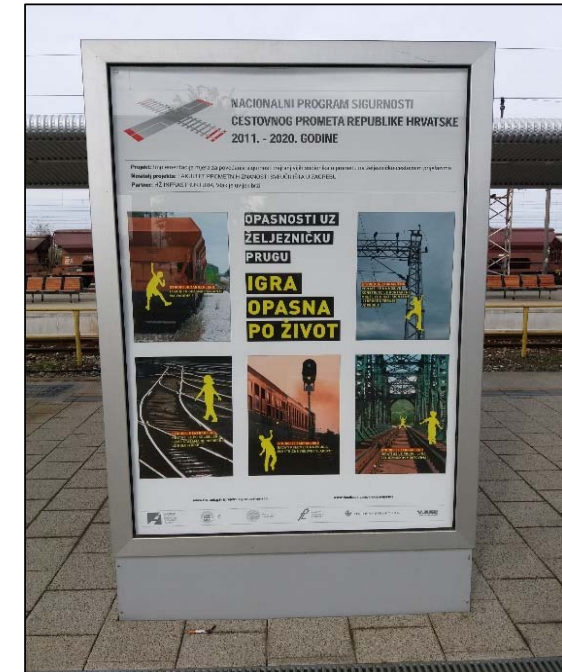
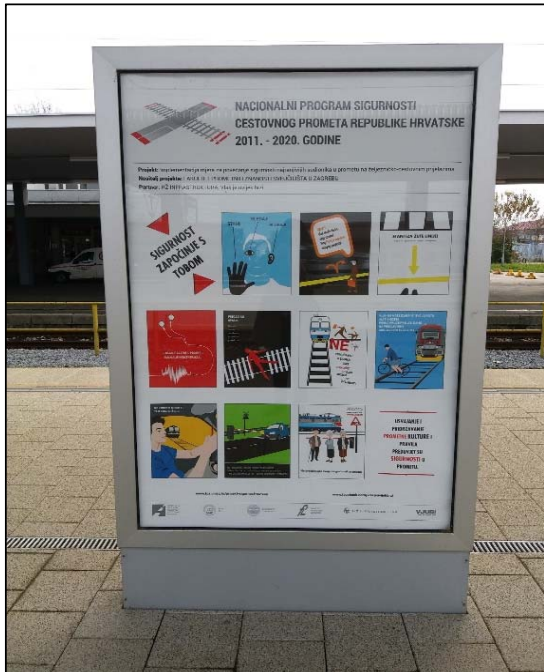


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TRAFFIC BONTON

RAILWAY STATIONS IN VINKOVCI AND SLAVONSKI BROD





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SAFETY EDUCATION IN SCHOOLS





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TRAVELING EXHIBITION – „Safety and design“





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COMPETITION – WRITE A SAFETY STORY OR A POEM!

PROJEKT IMPLEMENTACIJA MJERA ZA POVEĆANJE SIGURNOSTI NAJRAJANJIVLIJIH SUDIONIKA U PROMETU NA ŽELJEZNIČKO-CESTOVNIM PRIJELAZIMA

Fakultet prometnih znanosti Sveučilišta u Zagrebu raspisuje

Natječaj za izradu kratke priče/pjesme „Sigurno na željezničko-cestovnom prijelazu“

Natječaj se organizira u okviru Nacionalnog programa sigurnosti cestovnog prometa Republike Hrvatske 2011. – 2020. pod projektom Implementacija mjera za povećanje sigurnosti najranjivijih sudionika u prometu na željezničko-cestovnim prijelazima sa svrhom promoviranja i edukacije o sigurnosti na željezničko-cestovnim prijelazima, a namijenjen je učenicima osnovnih škola.

PRIJAVE TRAJU DO 14. LIPNJA 2017. GODINE

Prijaviti se možete u 8 (osam) kategorija:

1. razred
2. razred
3. razred
4. razred
5. razred
6. razred
7. razred
8. razred

Svi će sudionici natječaja biti nagrađeni simboličnim, a najuspješniji vrijednim nagradama.

Svi će radovi biti objavljeni u zborniku radova.

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Željezničko-cestovnim prijelazom naziva se mjesto prijelaza cestovne prometnice preko željezničke pruge. Većinu nesreća na željezničko-cestovnom prijelazu uzrokovali su nesavjesni sudionici cestovnog prometa koji se nisu (svjesno ili nesvjesno) pridržavali prometnih pravila.

Na natječaj se mogu javiti učenici iz svih osnovnih škola u Republici Hrvatskoj. Literarni uradci trebaju biti do 1000 riječi neovisno o kategorijama. Mogući su razni naslovi uradaka koji se tematski odnose na sigurnost na željezničko-cestovnom prijelazu.

Rad prijavljujete slanjem uratka i prijavnice na adresu e-pošte sigurnost-na-zcp@fpz.hr i adresu pošte: Fakultet prometnih znanosti, Vukelićeva 4, 10000 Zagreb (ZA NATJEČAJ PRIČA/PJESMA "SIGURNO NA ŽELJEZNIČKO-CESTOVNOM PRIJELAZU").

Sve informacije o Natječaju, kao i prijavnice, možete potražiti na <http://www.fpz.unizg.hr/projekt-sigurnost-na-zcp/>, ili se obratite na e-poštu: sigurnost-na-zcp@fpz.hr.

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SIGURNO S ANDRIJOM NA PUTU DO ŠKOLE!

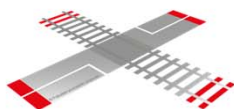
PRUGA NIJE MJESTO ZA IGRU!
SIGURNOST U PROMETU ZAPOČINJE S TOBOM!

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ZBORNIK UČENIČKIH RADOVA
„Sigurno na željezničko-cestovnom prijelazu“

Zagreb, 2017.

<http://www.fpz.unizg.hr/projekt-sigurnost-na-zcp/index.php/novosti/>



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WRITE A SAFETY STORY OR A POEM! – AWARDS!





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SAFETY TIPS - video

https://www.youtube.com/channel/UC_8WyiVQmWEX7NIHpadRj6A

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SIGURNO S ANDRIJOM NA PUTU DO ŠKOLE!

NACIONALNI PROGRAM SIGURNOSTI CESTOVNOG PROMETA

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ZNAM RAZMIŠLJAM SUDJELUJEM

SIGURNOST U PROMETU ZAPOČINJE SA MNOM

POŠTUJEM PROMETNE PROPISE I ZNAKOVE!

NACIONALNI PROGRAM SIGURNOSTI CESTOVNOG PROMETA

SAŽETAK AKTIVNOSTI - FPZ - Nacionalni program sigurnosti ...

165 prikaza • prije 2 mjeseca

6:39

Projekt IMPLEMENTACIJA MJERA ZA POVEĆANJE SIGURNOSTI NAJRAZLIČITIJIH SUČIONIKA U PROMETU NA ŽELJEZNIČKO-CESTOVNIM PRIJELAZIMA

PREPORUKE VOZAČIMA ZA SIGURAN PRELAZAK PREKO ŽELJEZNIČKO-CESTOVNOG PRIJELAZA

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SAFE WITH ANDREW ON THE WAY TO SCHOOL!

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VIDEO – „Railway tracks are not a playground!”



This video was made
by high school
students.

https://www.youtube.com/watch?v=Mf_n8f0y85w

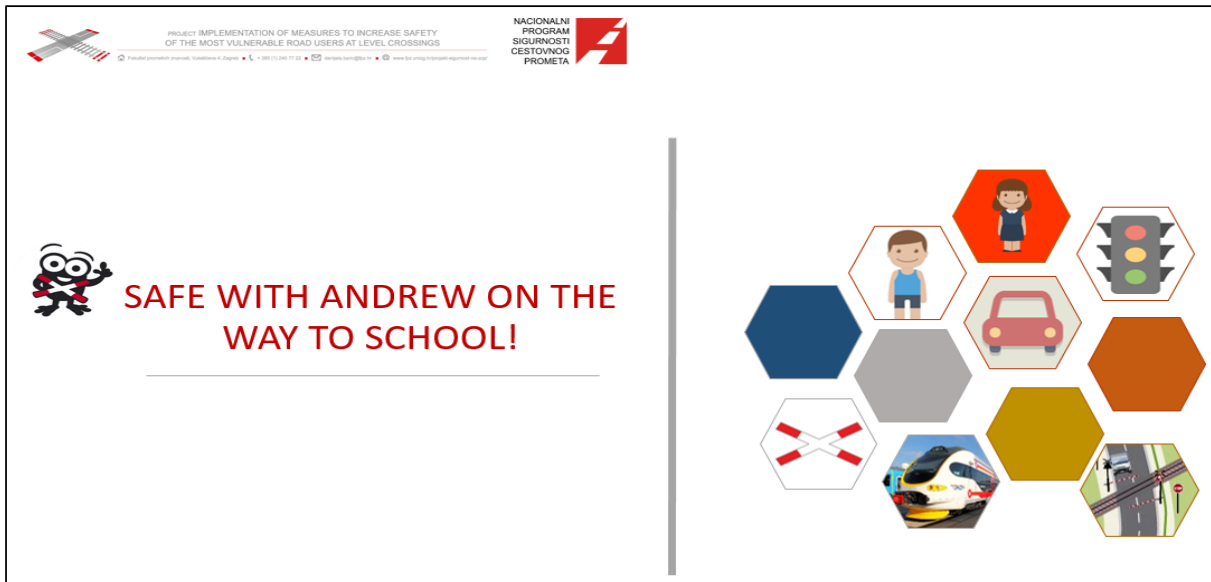


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VIDEO – „Safe with Andrew on the way to School!”

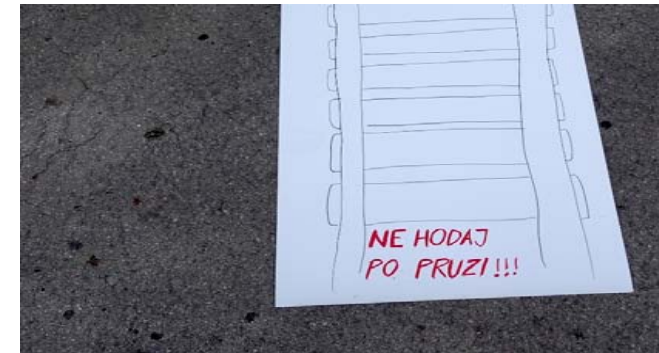


<https://www.youtube.com/watch?v=C2ZplhRYGko>

ILCAD – 7 June 2018 – Zagreb, CROATIA – „Conference”



ILCAD – 7 June 2018 – Zagreb, CROATIA - „Safety Village”



ILCAD – 7 June 2018 – Zagreb, CROATIA - „Technical visit”






10 YEARS
INTERNATIONAL LEVEL CROSSING AWARENESS DAY
ZAGREB **JUNE 7, 2018**



ILCAD TECHNICAL VISIT JUNE 8, 2018

Sponsored by:




- ### TIMELINE
- 9.20-9.30h** - meeting at the old locomotive (Zagreb Main Train Station)
 - 9.36-9.51h** - train ride to the Buzin train station
 - 10.00-11.30h** - ALTPRO factory tour
 - 11.50-13.17h** - train ride to the Poznanovec station
 - 13.17-13.45h** - Poznanovec level crossing technical visit; presentation of installed equipment
 - 13.52-14.31h** - train ride to the City of Krapina
- City of Krapina walking tour
- Oldtimer Museum Presečki visit
- Krapina Neanderthal Museum visit
 - 17.00-19.00h** - lunch at local ethno restaurant "Vuglec Breg"
 - 19.47-20.57h** - train ride to the Zagreb Main Train Station



ILCAD – 7 June 2018 – Zagreb, CROATIA - „www”

Watch the video summarizing the Conference and side events on 6-7-8 June 2018:

Introduction video: <https://www.youtube.com/watch?v=MDzyqYMRh5c>

Conference: <https://www.youtube.com/watch?v=ORTLQJ7bqDg>

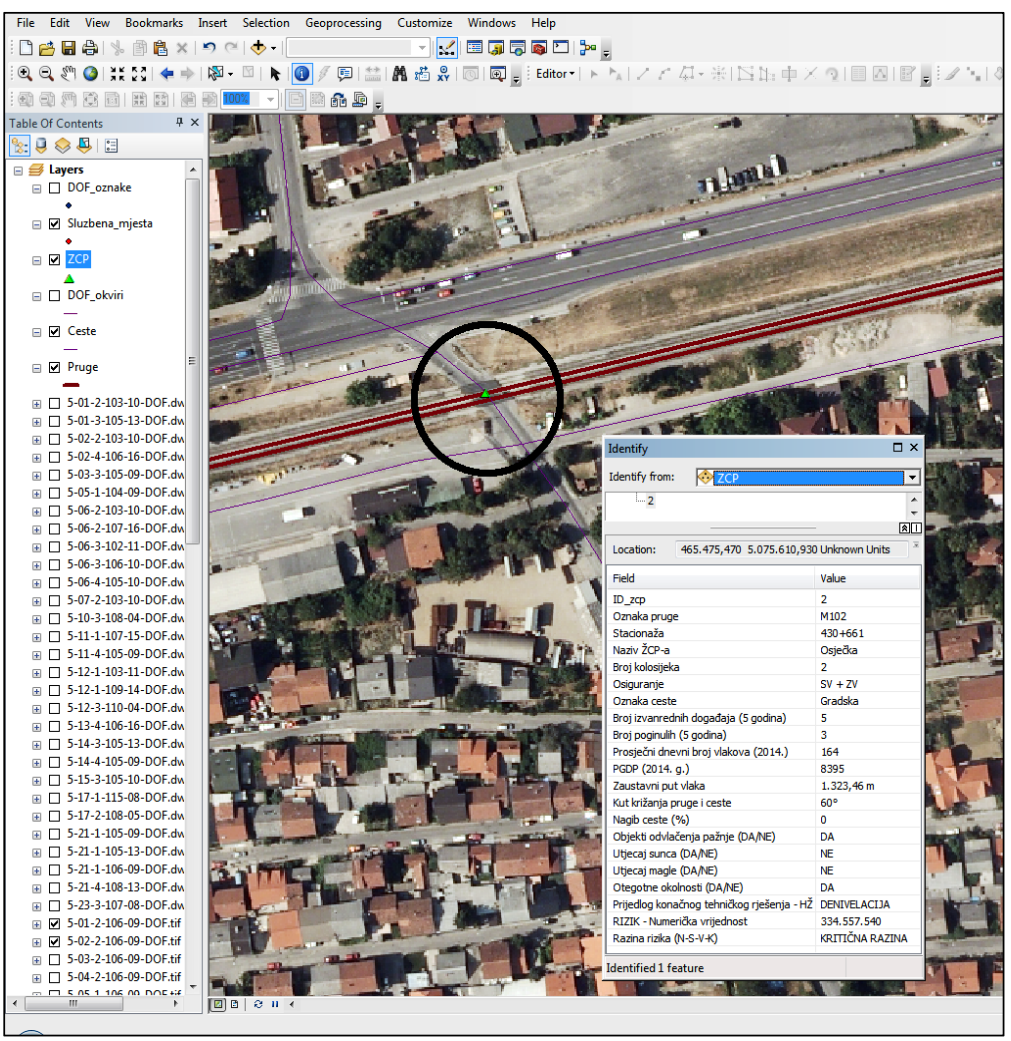
Conference Summary, 6 - 8 of June 2018:

<https://www.youtube.com/watch?v=q3e8J6D8j0M>



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LC LOCATIONS IN ZAGREB URBAN AREA



EQUIPMENT



METHODOLOGY FOR COLLECTING DATA

Day	Camera		Researcher		Police officer visible	Survey	Educational poster	HŽ gate keeper visible
	Hidden	Visible	Hidden	Visible				
Monday	✓		✓					✓
Tuesday	✓		✓					✓
Wednesday		✓		✓				✓
Thursday		✓		✓	✓	✓	✓	✓
Friday	✓		✓				✓	✓



METHODOLOGY

Analysis of the current condition of LC

(characteristics of the current traffic network, collection of real data about the size and distribution of the current traffic load, traffic count, survey of LC users, determining the drivers' habits, and their traffic culture, etc.);

Development of simulation of the existing condition in the software tool PTV VISSIM;

Proposal of new variants of reconstruction;

Evaluation of the variants using MCDM and AHP method with the application of the software tools Expert Choice

Development of simulation of the optimal variant in software tools PTV VISSIM.



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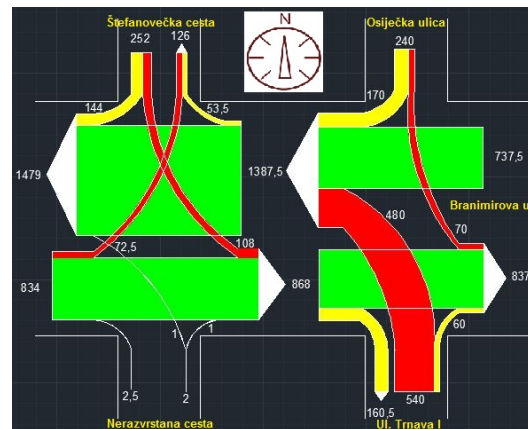
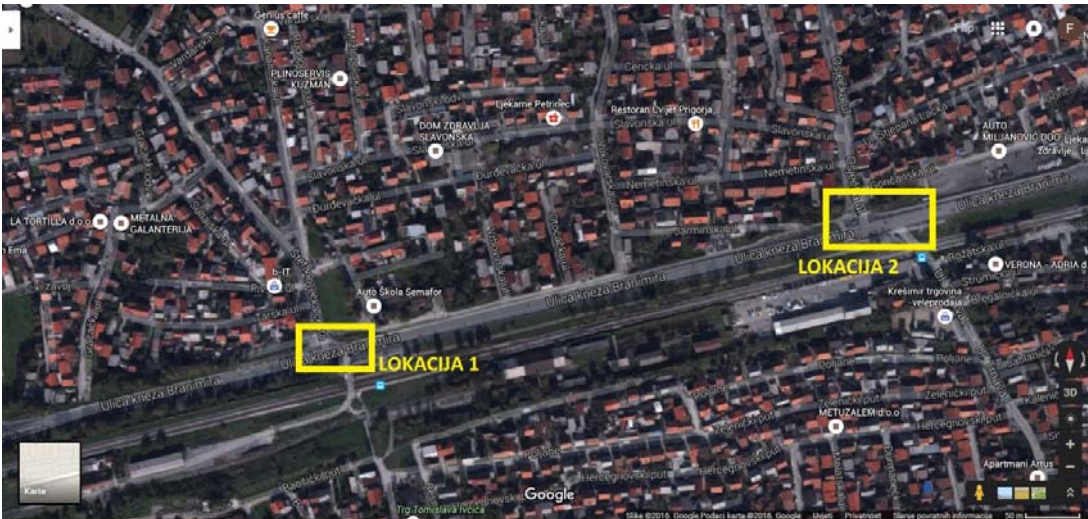
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LOCATION





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SURVEY



- 200 respondents – 55% F i 45% M
- the highest number of respondents belonged to the group of 26-60 years of age (61%)
- 84% of respondents use the LC Trnava every day
- 61% live within 500 m of the LC
- 73% of respondents do not know how much is the fine for illegal crossing
- 33% of respondents indicate that the reason for illegal crossing is because they are in a hurry
- 93% of respondents think that it is necessary to build an underpass (for pedestrians and for vehicles)

Reasons for legal and illegal crossing of the LC:

- 33% of respondents stated that they are in a hurry
- 13% of respondents think it is safe to pass because they do not see any train arriving
- 12% of respondents think that the barrier stays lowered for too long
- 9% say that they are tired of waiting
- 6% estimate that it is safe
- Only 29% of respondents cross the LC in a proper and legal way

SIMULATION – PTV VISSIM

LC Trnava

Queue: 240 m

The longest average waiting of vehicles: 19,8 s

The largest average vehicle delays: 26,06 s

The highest emission of harmful CO gases: 932 PPM

Fuel consumption: 13 L

LC Osječka - Trnava I

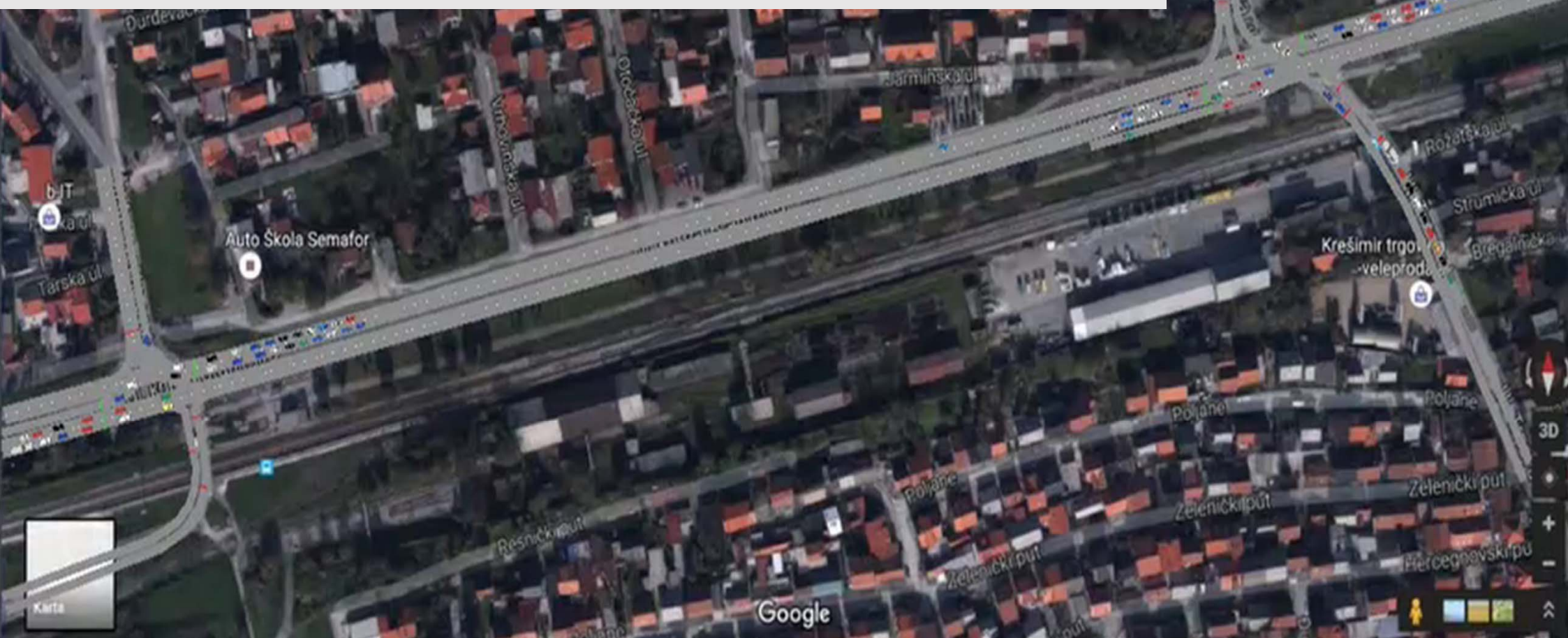
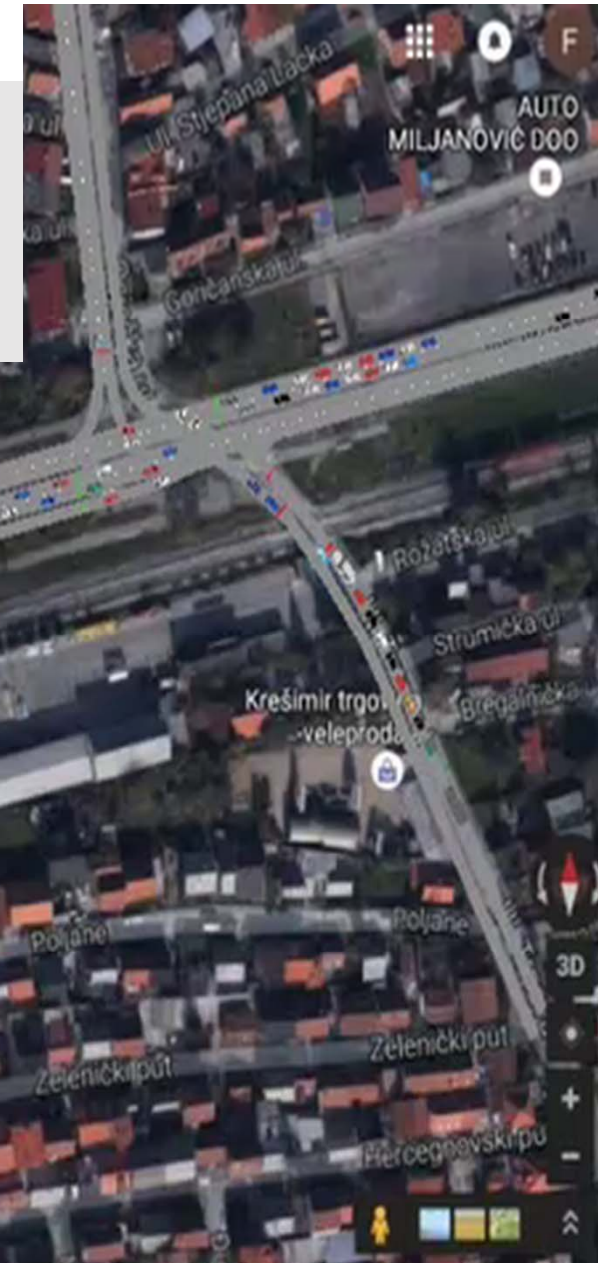
Queue: 143 m

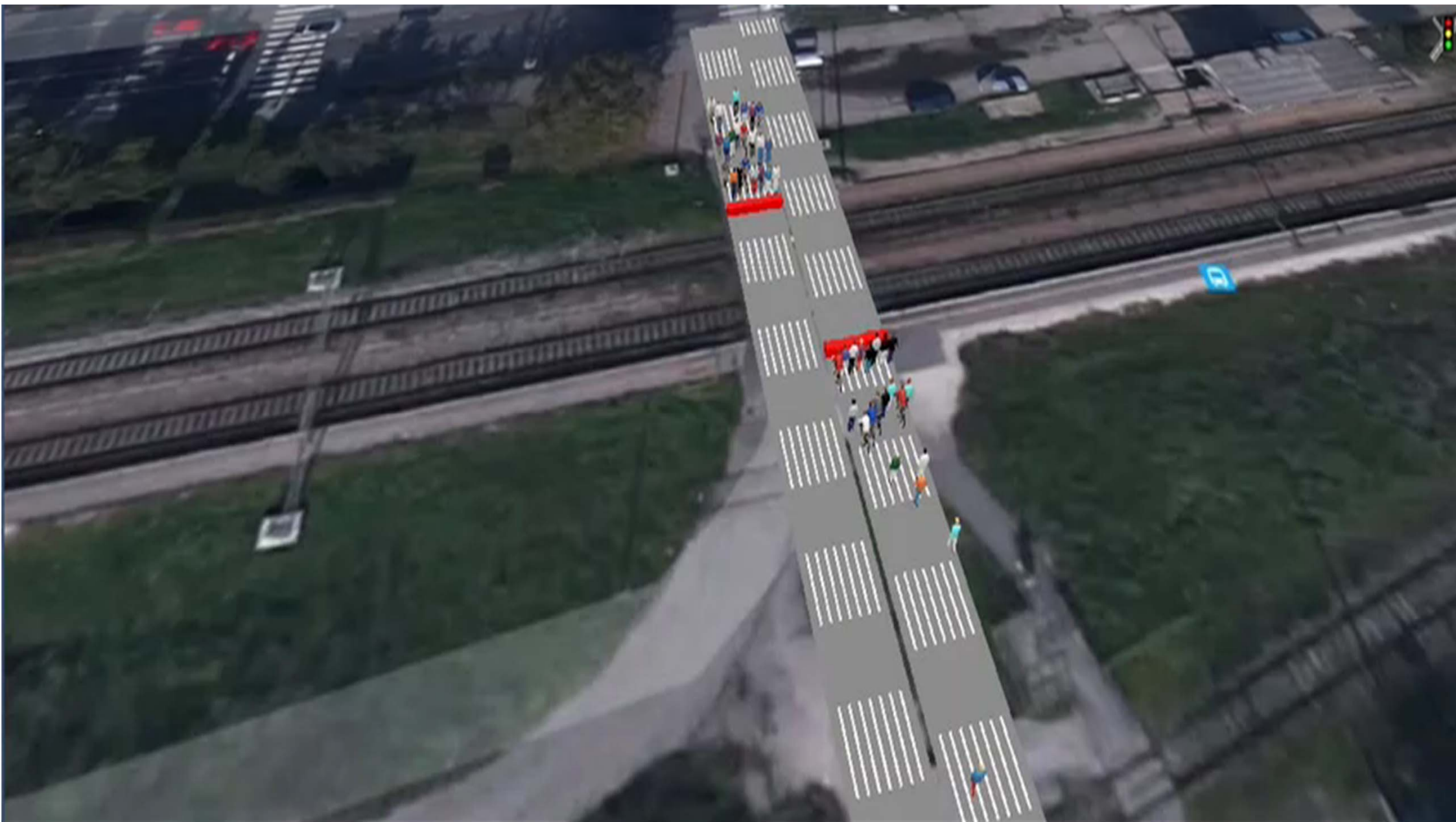
The longest average waiting of vehicles: 69,7 s

The largest average vehicle delays: 80,44 s

The highest emission of harmful CO gases : 1182 PPM

Fuel consumption: 17 L





VARIANTS

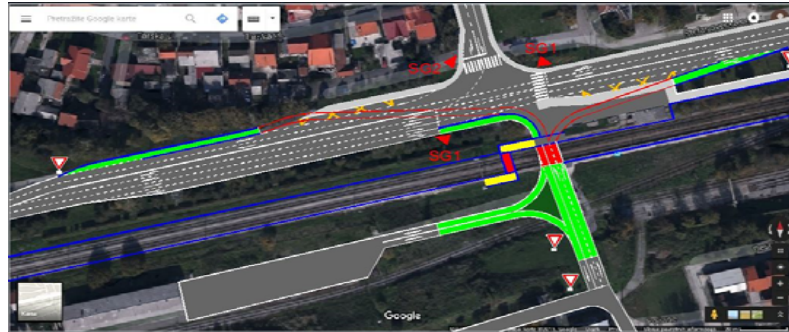
Variant 1



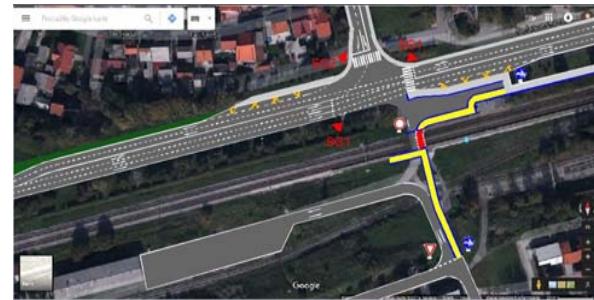
Variant 2



Variant 3



Variant 4

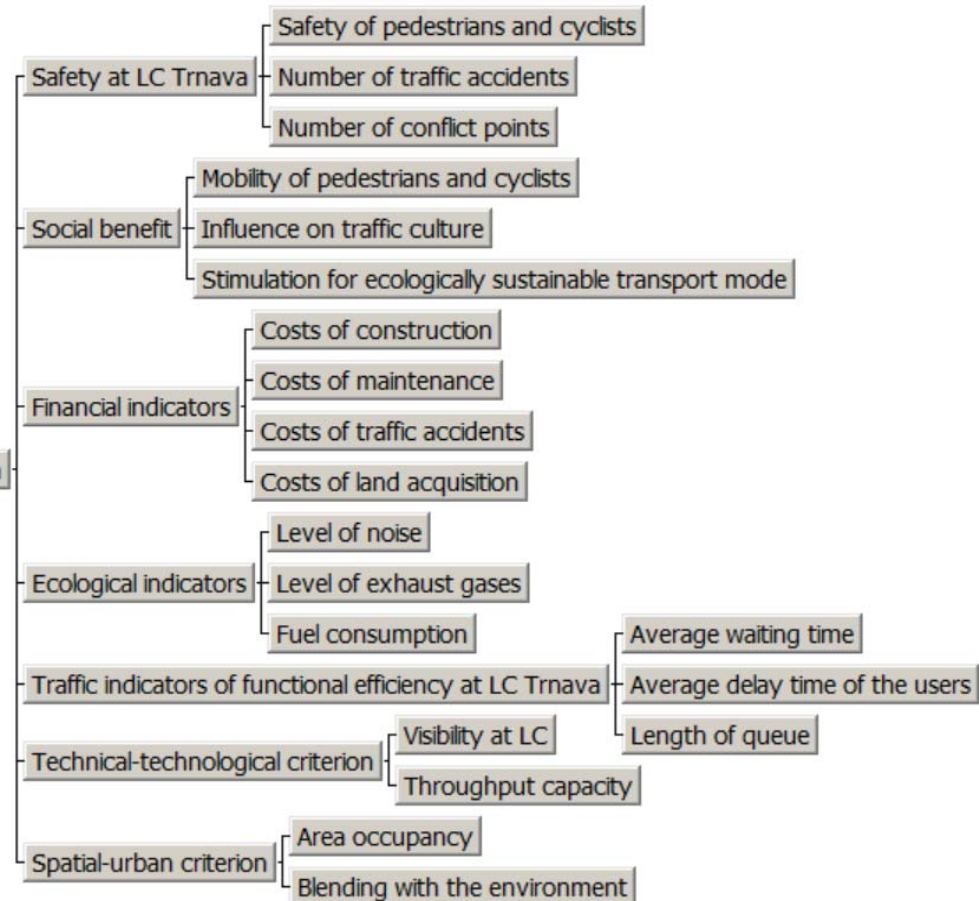




AHP MODEL

- hierarchical structure of AHP model (goal, alternatives/variants, criteria, sub-criteria)
- ranking of criteria and sub-criteria (pairwise comparison)
- evaluation of variants
- selection of the optimal variant
- sensitivity analysis

Goal: Selection of optimal design solution



Synthesis with respect to: Goal: Izbor optimalnog projektnog rjesenja

Overall Inconsistency = ,01

Variant 3	,431	<div style="width: 43.1%;"></div>
Variant 4	,238	<div style="width: 23.8%;"></div>
Variant 2	,172	<div style="width: 17.2%;"></div>
Variant 1	,158	<div style="width: 15.8%;"></div>



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SAFETY & VIRTUAL REALITY – VR 360°



360° Video

