

SMART TRAFFIC SIGN

**The new solution for
recommended speed**

OCTOBER, 2024.

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WHAT IS A SMART TRAFFIC SIGN?

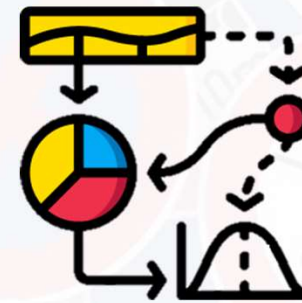
A SIGN THAT IS ABLE TO INDEPENDENTLY



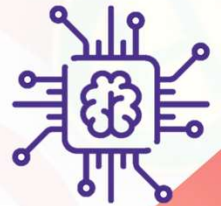
COLLECT DATA



PROCESS AND ANALYZE DATA



DECIDE ON THE SAFEST SPEED



WHERE IS IT USED?

ROAD SECTIONS

CHARACTERIZED BY **UNSTABLE
ATMOSPHERIC CONDITIONS**

(e.g. canyons, gorges, valleys, etc.)

Road sections where **FOG, GLAZE,
WIND, SLEET** etc. occur frequently



WHAT DOES IT REFER TO?

80

RECCOMENDED / ADVISORY
SPEED

80



IDEA



CHANGE OF
DRIVING
CONDITIONS



**CHANGE OF
RECOMMENDED
SPEED**


ON WHAT BASIS DOES IT DECIDE ?



VISIBILITY (m)



ROAD FRICTION



**WIND SPEED
(m/s)**



**TRAFFIC
CONGESTION**

HOW IT COLLECTS DATA ?



VISIBILITY SENSOR



**ROAD CONDITION
SENSOR**



WIND SPEED SENSOR



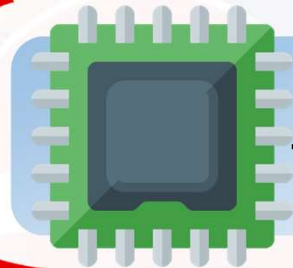
**QUEUE DETECTION
RADAR**

HOW DOES IT WORK?

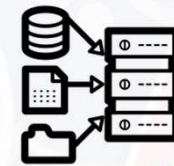
DATA INPUT FROM SENSORS



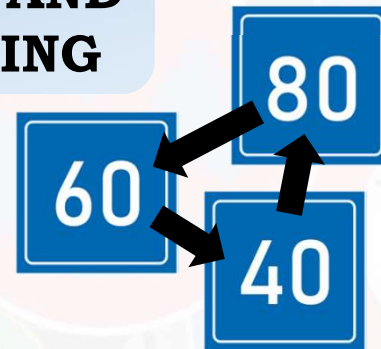
CPU
INTEGRATED IN
THE SIGN



**DATA
ANALYSIS AND
PROCESSING**



**FUZZY DECISION
MAKING SYSTEM**



**CHANDE IN
THE
DISPLAYED
RECCOMENDED
SPEED**

ENERGY EFFICIENT

THE SMART ROAD SIGN USES ELECTRICITY
PRODUCED BY ITS OWN SOLAR PANELS
(RENEWABLE ENERGY SOURCES)



CONNECTION TO THE POWER GRID IS NOT
REQUIRED

NO NEED FOR AN INTERNET
CONNECTION

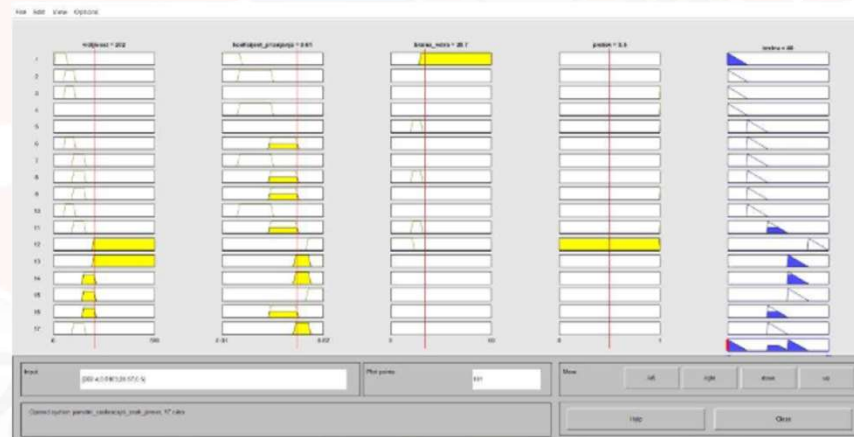


SMART TRAFFIC SIGN TESTING

**THREE
PHASES OF
TESTING**

I SOFTWARE TESTING

computes simulations



SMART TRAFFIC SIGN TESTING

**THREE
PHASES OF
TESTING**

II FUNCTIONAL TESTING

simulations in laboratory conditions



SMART TRAFFIC SIGN TESTING

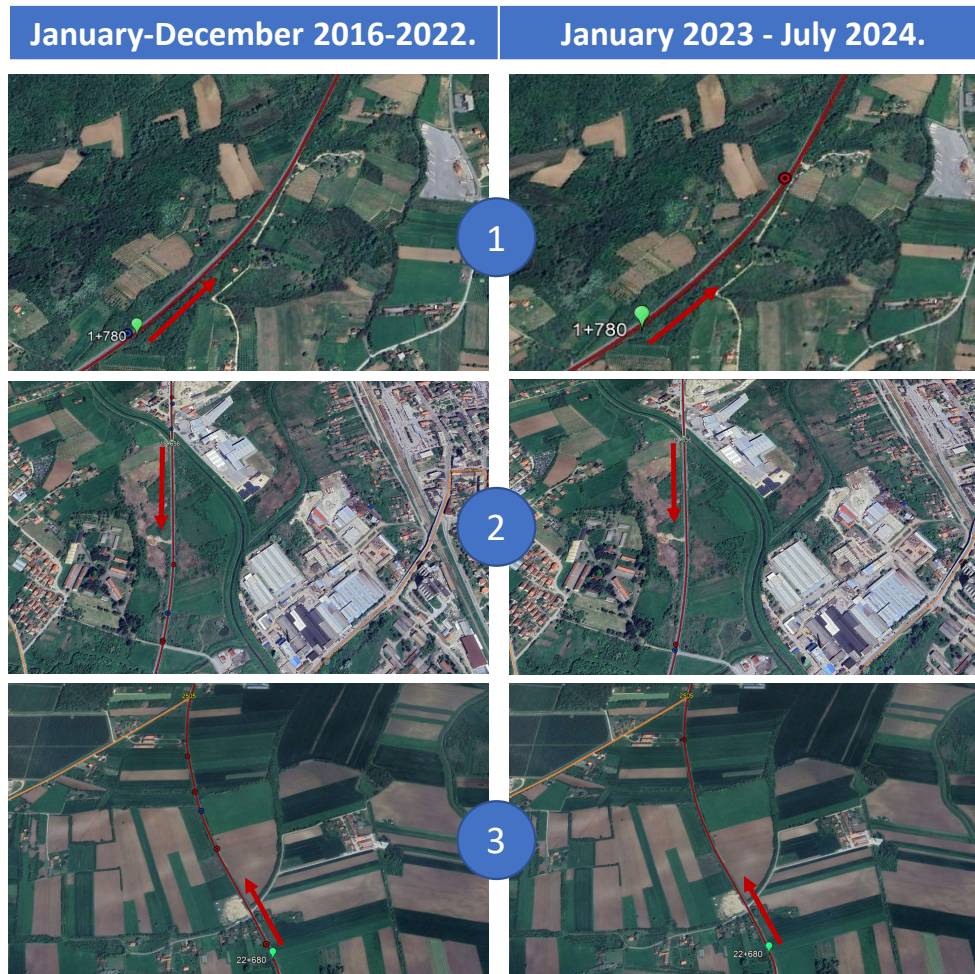
III TESTING IN REAL-WORLD CONDITIONS

testing on the road



THREE
PHASES OF
TESTING

Analysis of road crashes- locations on state road IB 25

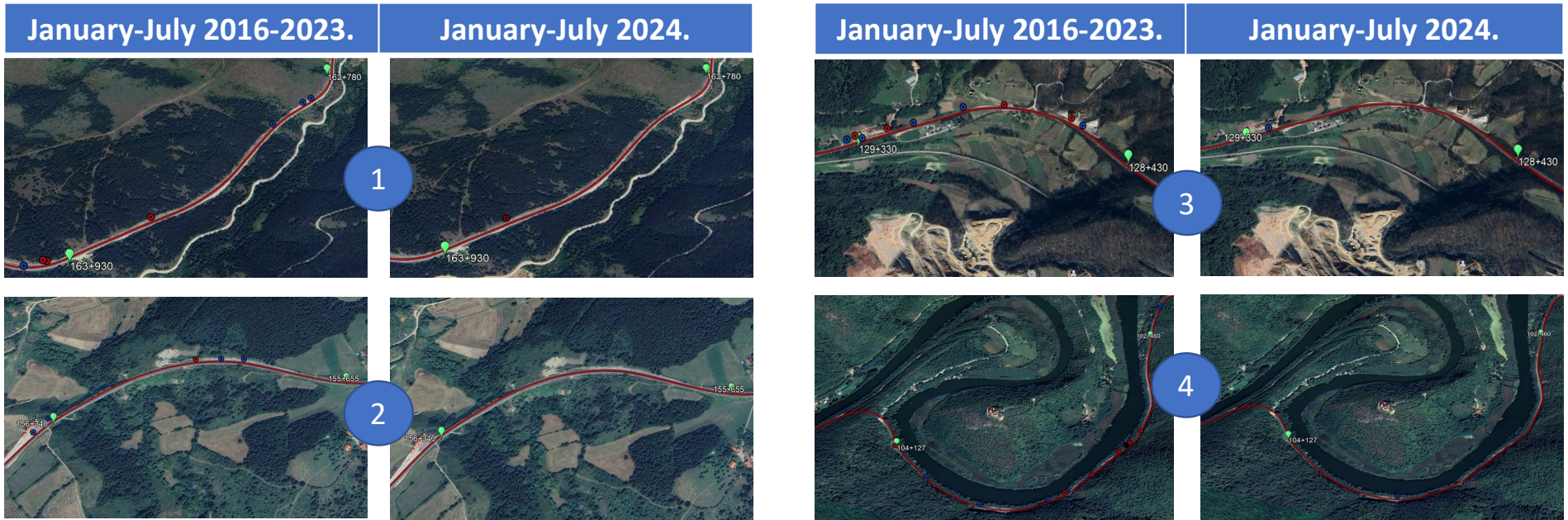


- - road crashes with fatalities
- - road crashes with injuries
- - road crashes with material damage only

pilot locations for testing the functioning of the sign

Location	Location 1	Location 2	Location 3
January 2023 - July 2024.	1 with injures	2 (1 with material damage and 1 with injures)	1 with injures
January-December 2016-2022.	1 with material damage	7 (3 with material damage and 4 with injures)	5 (1 with material damage and 4 with injures)

Analysis of road crashes - segments of state road IB 23



- crashes accidents with fatalities
- crashes accidents with injuries
- crashes with material damage

Segment	January-July 2024.	January-July 2016-2023.
Segment 1	1 with injures	7 (4 with material damage and 3 with injures)
Segment 2	0 traffic accidents	5 (4 with material damage and 1 with injures)
Segment 3	1 with material damage	9 (5 with material damage and 4 with injures)
Segment 4	1 with material damage	14 (6 with material damage and 7 with injures and 1 with fatalities)

Statistical data on road crashes

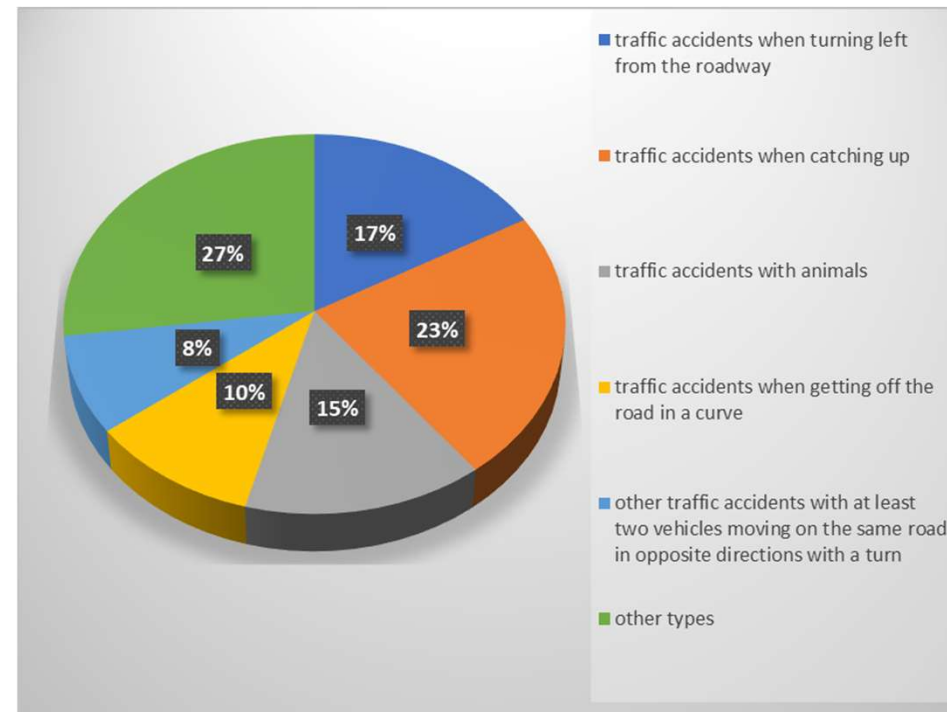
Total number of road crashes

Before – 48 road crashes – 1 with fatalities; **23 with injures** and **24 with material damage**

The most common types of road crashes

Road crashes– Before

- road crashes when catching up (same directions) – **11 (23%)**
- road crashes when turning left from the roadway – **8 (17%)**
- road crashes with animals – **7 (15%)**
- road crashes when getting off the road in a curve – **5 (10%)**
- other road crashes with at least two vehicles moving on the same road in opposite directions with a turn – **4 (8%)**
- other types of road crashes – **13 (27%)**

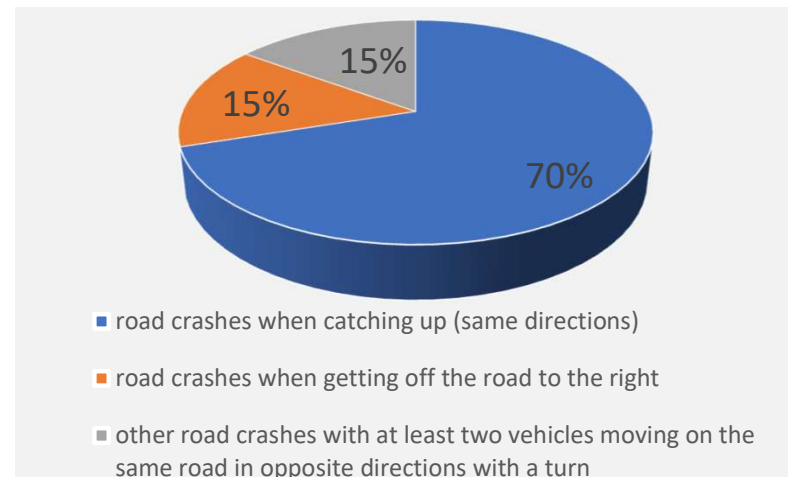


Statistical data on road crashes

After – 7 road crashes – 0 with fatalities; 4 with injures and 3 with material damage

Traffic accidents – After

- road crashes when catching up (same directions) – 5 (70%)
- road crashes when getting off the road to the right – 1 (15%)
- other road crashes with at least two vehicles moving on the same road in opposite directions with a turn – 1 (15%)



Statistical data on road crashes

The most common influencing factors of road crashes

BEFORE

- Unadjusted speed to traffic conditions and road conditions – 21 road crashes
- Loss of vehicle control – 9 road crashes
- Driver fatigue – 7 road crashes
- Unsafe distance or distance between vehicles – 5 road crashes
- Animal or object on the roadway – 5 road crashes
- ...

AFTER

- Complete data on contributory factors are not available
- Analysis of types of road crashes
- Connection of types and contributory factors



Reduction of contributory factors:

- Driver fatigue
- Loss of vehicle control
- Animal or object on the roadway

Positive psychological impact on drivers - increasing caution while driving



**THANK YOU
FOR
ATTENTION!**

