



44TH ASECAP STUDY & INFORMATION DAYS 2016

New ways of traffic incident detection

Intercontinental Hotel
23-25 May 2016

www.asecapdays.com

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Organized by



Current conditions

General Data

The Slovenian motorway system

- 610 kilometers of motorways and expressways
- 21 tunnels in the Slovenian motorway system
- 20 km total length of the tunnels
- 38 km total length of tunnel tubes

Traffic incident detection

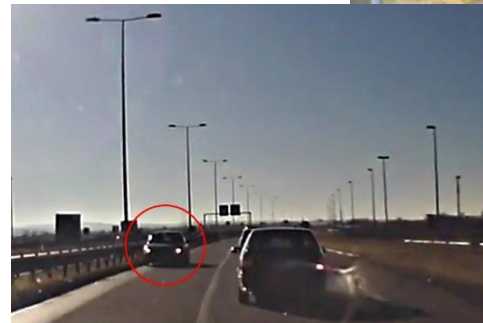
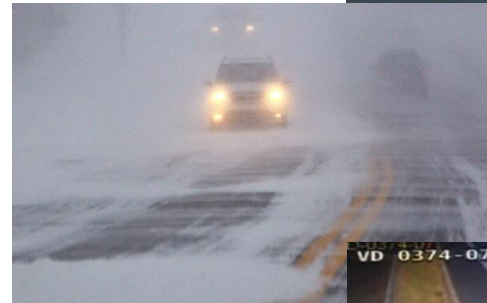
- 800 video detection cameras in tunnels
- 100 video detection cameras on open road
- 200 microwave detectors



Identification of problems

Problems occurring during current detection:

- detection of incidents in poor visibility (fog, night, snow storms, smoke in tunnel)
- false alarms (driving in the wrong direction, light effects)
- detector reliability (in some situations alarm is not activated)
- unequipped areas of the motorway for detecting the incidents.



Pilot projects

Three pilot projects for detecting incidents:

1. detection of incidents in a tunnel with radar detection
2. detection of incidents on open road with thermal vision cameras
3. detection of vehicles driving in the wrong direction with inductive loops



Radar detection

The main problem:

- high number of false alarms (at entry and exit zones of the tunnel)
- non-functionality of detection in smoke circumstances

We have implemented a simulation of the following incidents:

- stopped vehicle
- slow vehicle
- vehicle driving in the wrong direction
- pedestrians
- congestion
- object on the carriageway



Radar detection

The advantages of the radar system:

- distance of up to 500 meters in each direction
- 360 degree radar detection area (180 degrees in tunnels)
- it operates in all situations, including fog, smoke or dust
- not sensitive to light effects or solar illumination on tunnel portals,
- the testing showed an extremely low number of false alarms,
- reliable detection of objects, including pedestrians
- minor sensitivity to dirt
- there is less chance of shifting of the detection zones,
- the life cycle of a radar detector is 20 years

Thermal camera

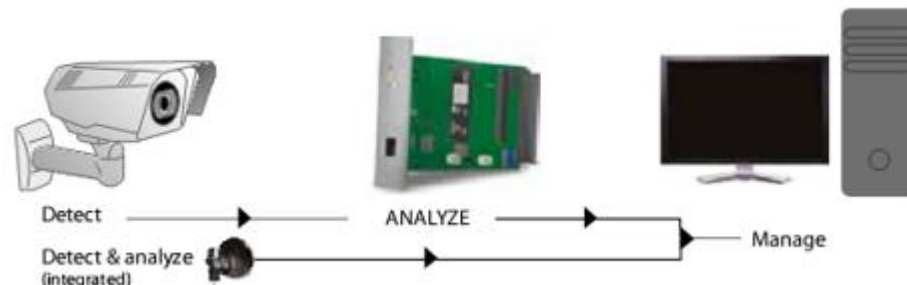
The detection of traffic incidents is even more difficult on an open road

- visual and weather conditions are not constant;
- false alarms (driving in the wrong direction)



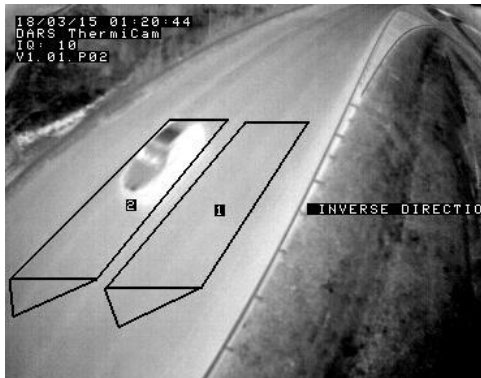
The test system encompassed:

- thermal vision cameras,
- optical converters for image and data transfer
- servers with installed application

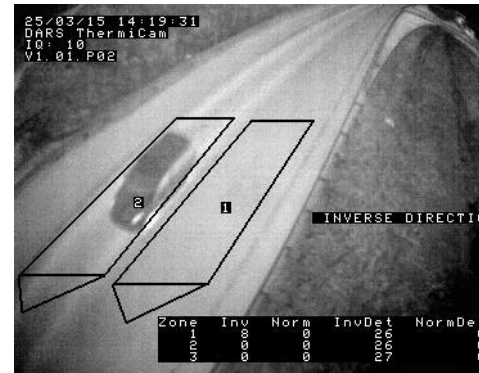


Thermal camera

In the testing period, the camera operated in all weather conditions



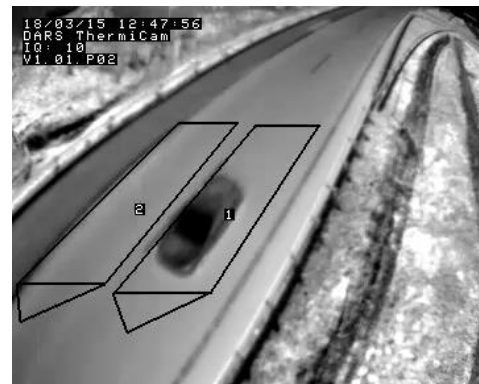
night



rain



snow



sun

Thermal camera

Based on testing results, we established that the thermal vision camera is suitable for video detection on an open road:

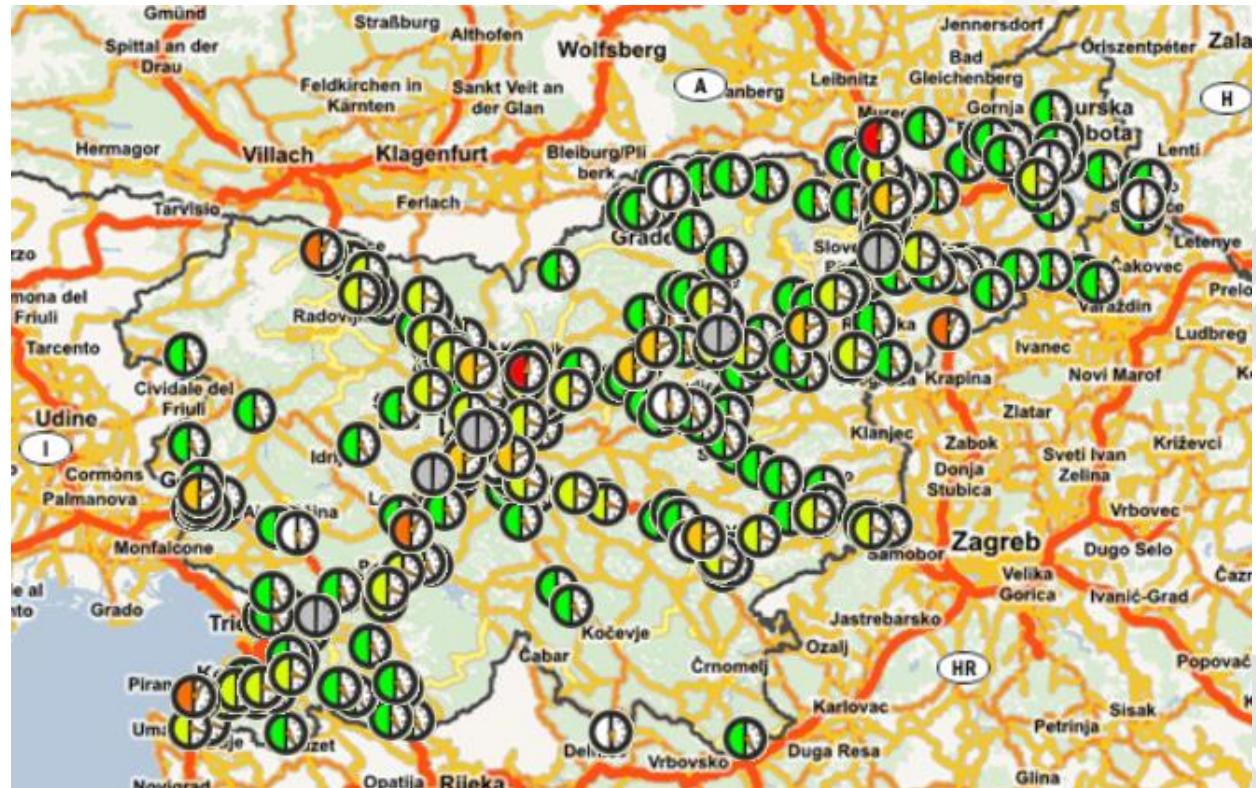
- light and weather conditions do not impact system operation
- there were no false events or system errors reported in the test period.
- all vehicles driving in the wrong direction were detected.



Inductive loop

Current conditions:

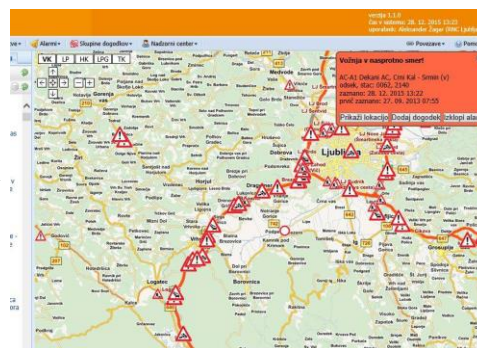
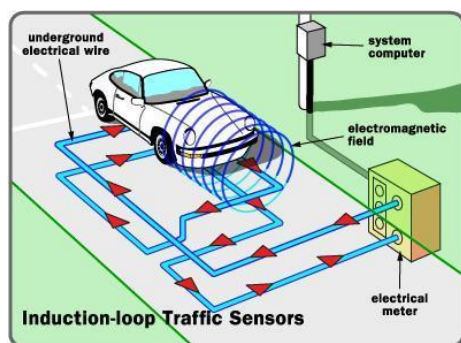
- traffic counters (no incident detected)
- 250 detected points
- connected to TMC
- 100 WWD/year
- 25% detected



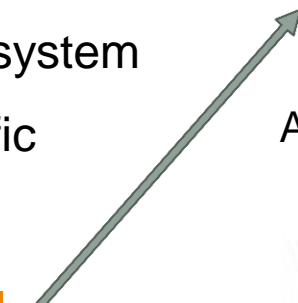
Inductive loop

Pilot project:

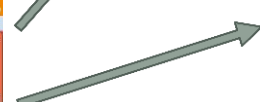
- 20 detected points
- application for detection driving in the wrong direction
- send this information to the DARS information system
- forwarded in real time to the participants in traffic



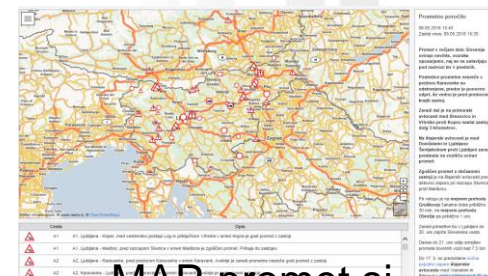
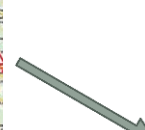
DARS MAP-kažipot.si



APP (DarsTraffic+)

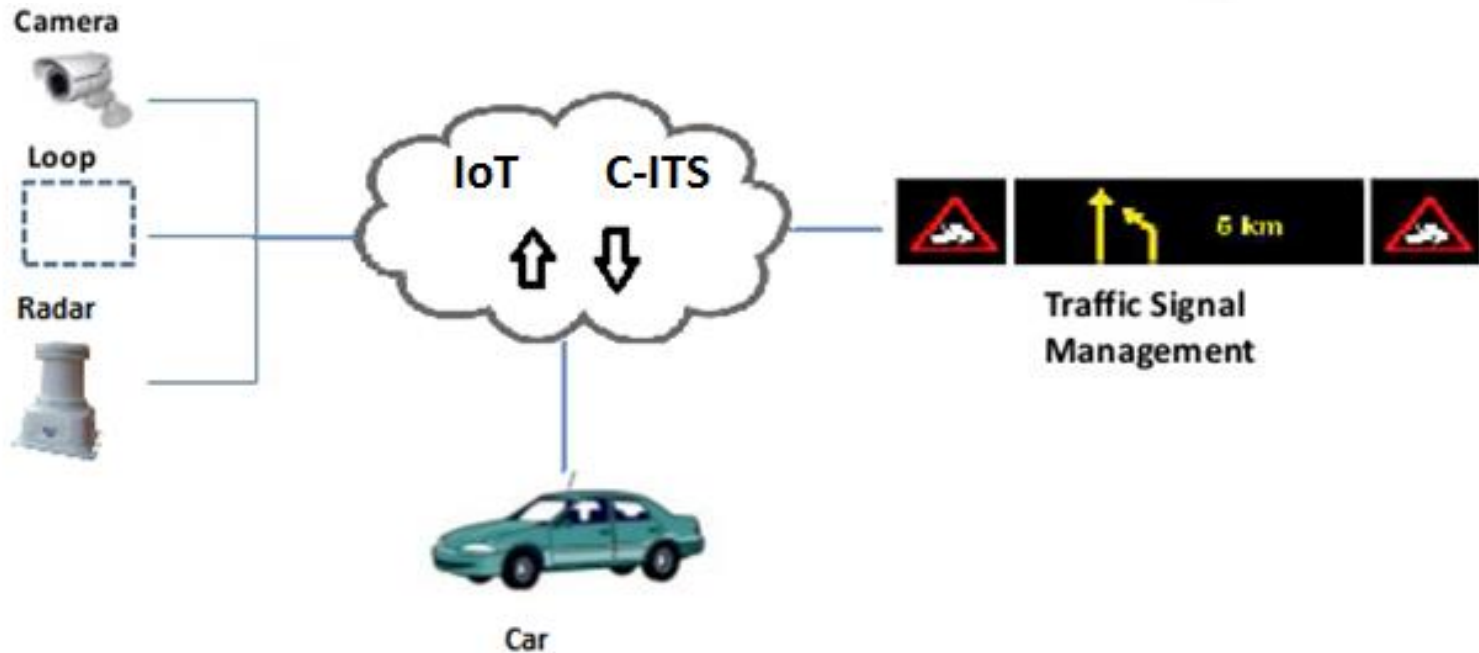


RDS



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Conclusion



THANK YOU FOR YOUR ATTENTION!