

SOLUTION TO INFORM IN CASE OF WRONG WAY DRIVING



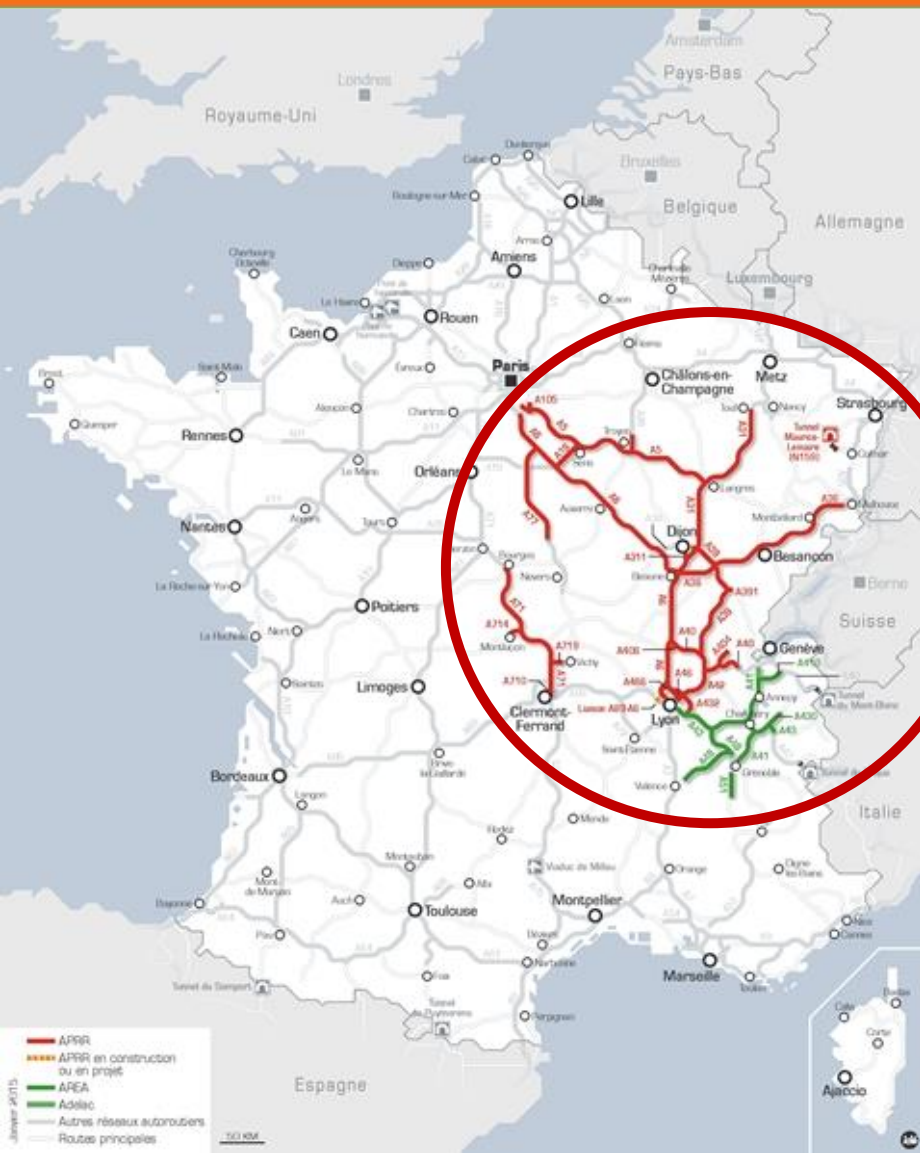
Driving the wrong way means :

- driving against the traffic flow
- or reversing against the traffic flow



The accidents caused are often head-on collisions
→ 1 accident in 2 is fatal

DETECTING DRIVERS IN THE WRONG WAY



APRR/AREA network : 2.300 km

- 150 cases of drivers driving in the wrong direction per year (confirmed)
- 2013-2014 : 21 accidents
10 of which caused physical injury and 5 were fatal (9 deaths)
- Types of drivers :
elderly drivers, drivers consuming drink and/or drugs

DETECTING DRIVERS IN THE WRONG WAY



An experiment :
(launched in 2014)

to automatically detect drivers
driving the wrong way

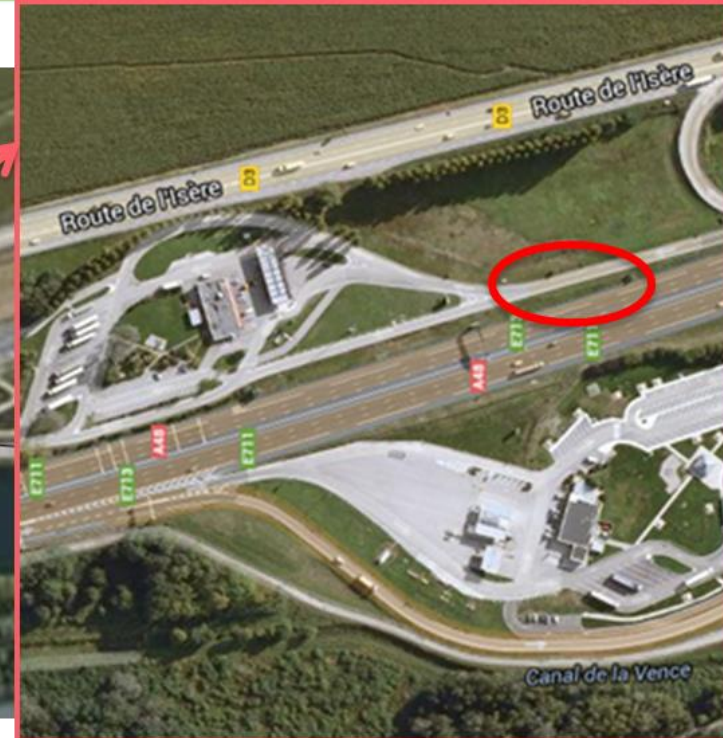


One priority identified : to warn drivers driving the
right way and give advice on
the action to take

→ Faster information to drivers, allowing serious, or
even fatal, accidents to be prevented

THE EXPERIMENT

A48 near Grenoble



Detection zone :

- slip road entering a service area
- and an ordinary 3-lane section

THE EXPERIMENT



Installation of : → 6 systems based on
different technologies
→ 1 confirmation camera



Planning : 4 months (May – Sept. 2014)

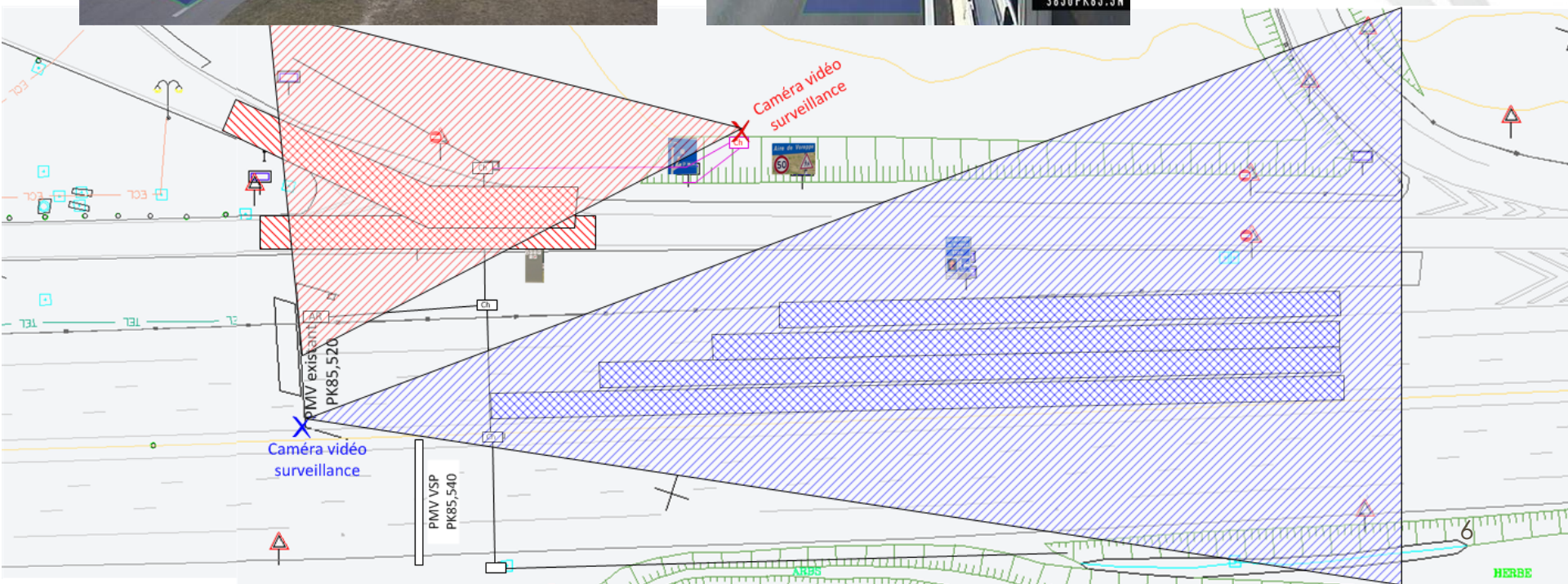


Common test protocol for all systems :

- 2 days for test set-up with road markings
- analysis of the continuous video recordings

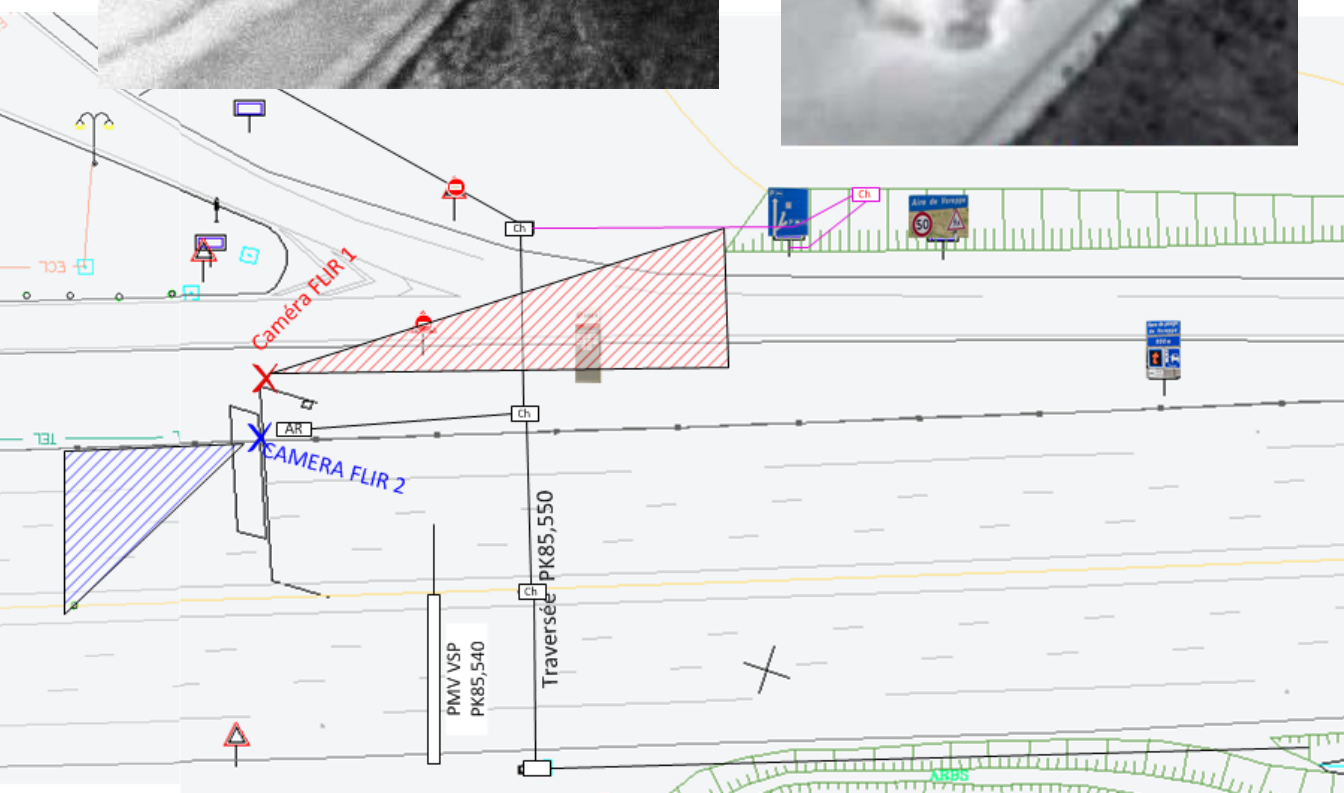
THE EXPERIMENT

1/ Automatic Incident Detection (AID) camera



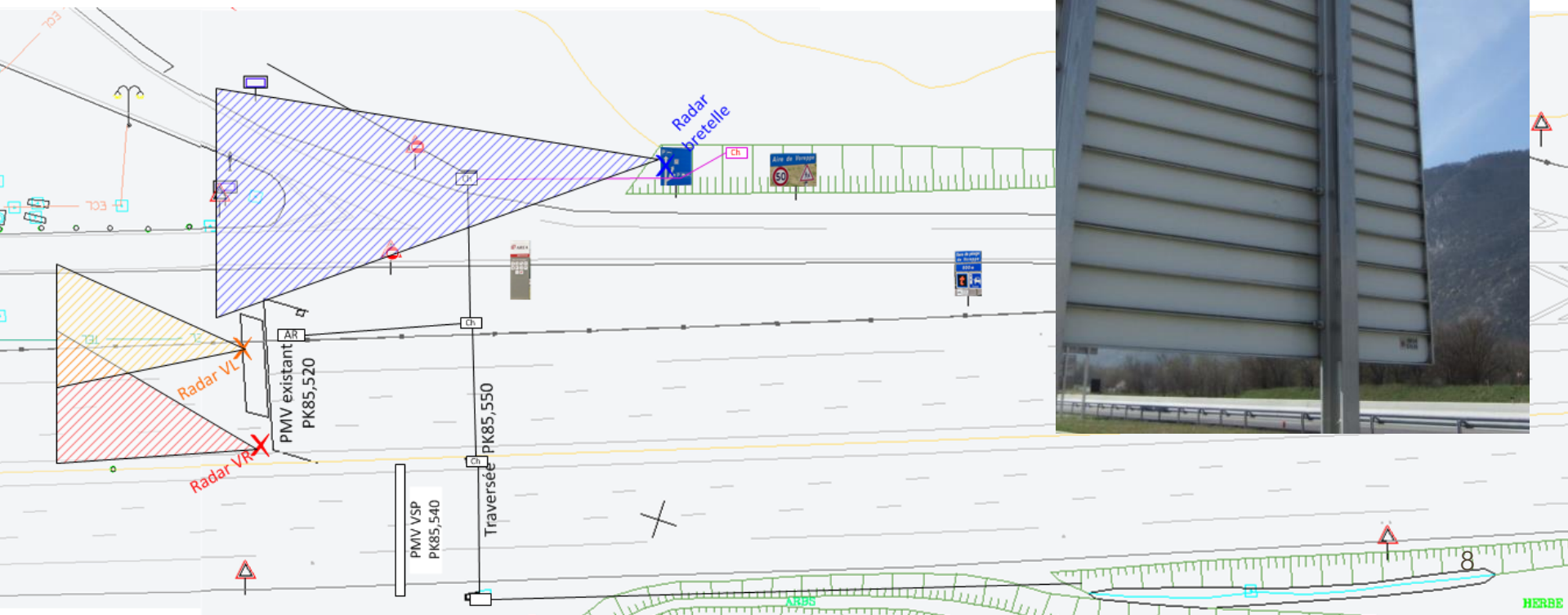
THE EXPERIMENT

2/ Thermal AID camera



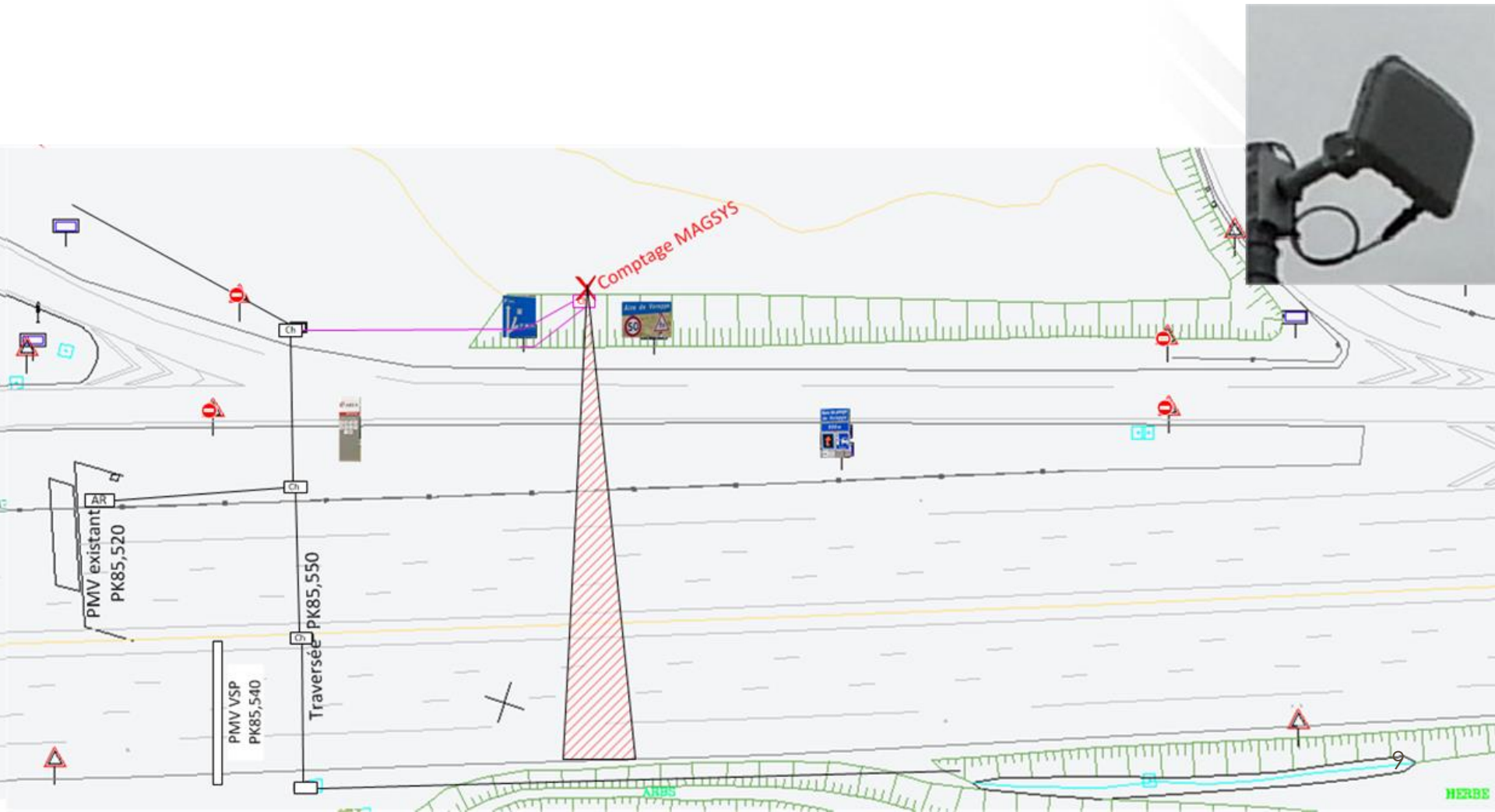
THE EXPERIMENT

3/ Doppler sensor over the road lanes



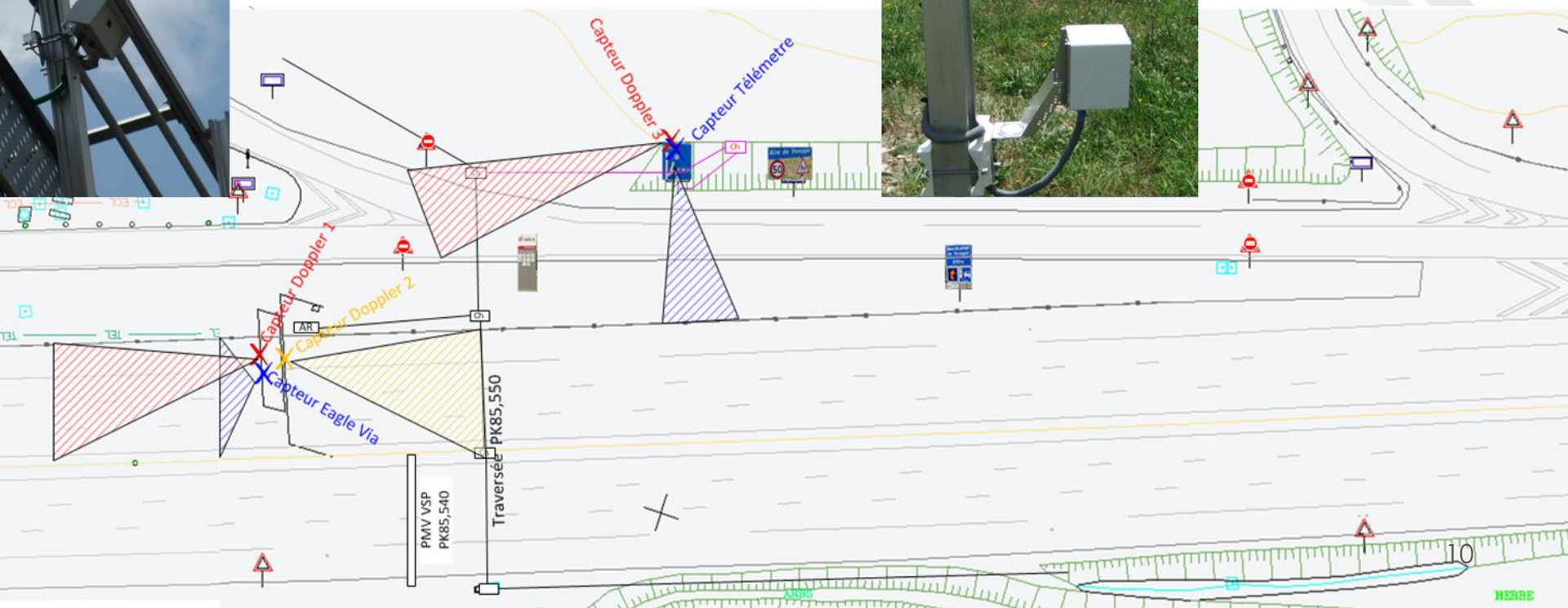
THE EXPERIMENT

4/ Microwave sensor at the side of the road lanes



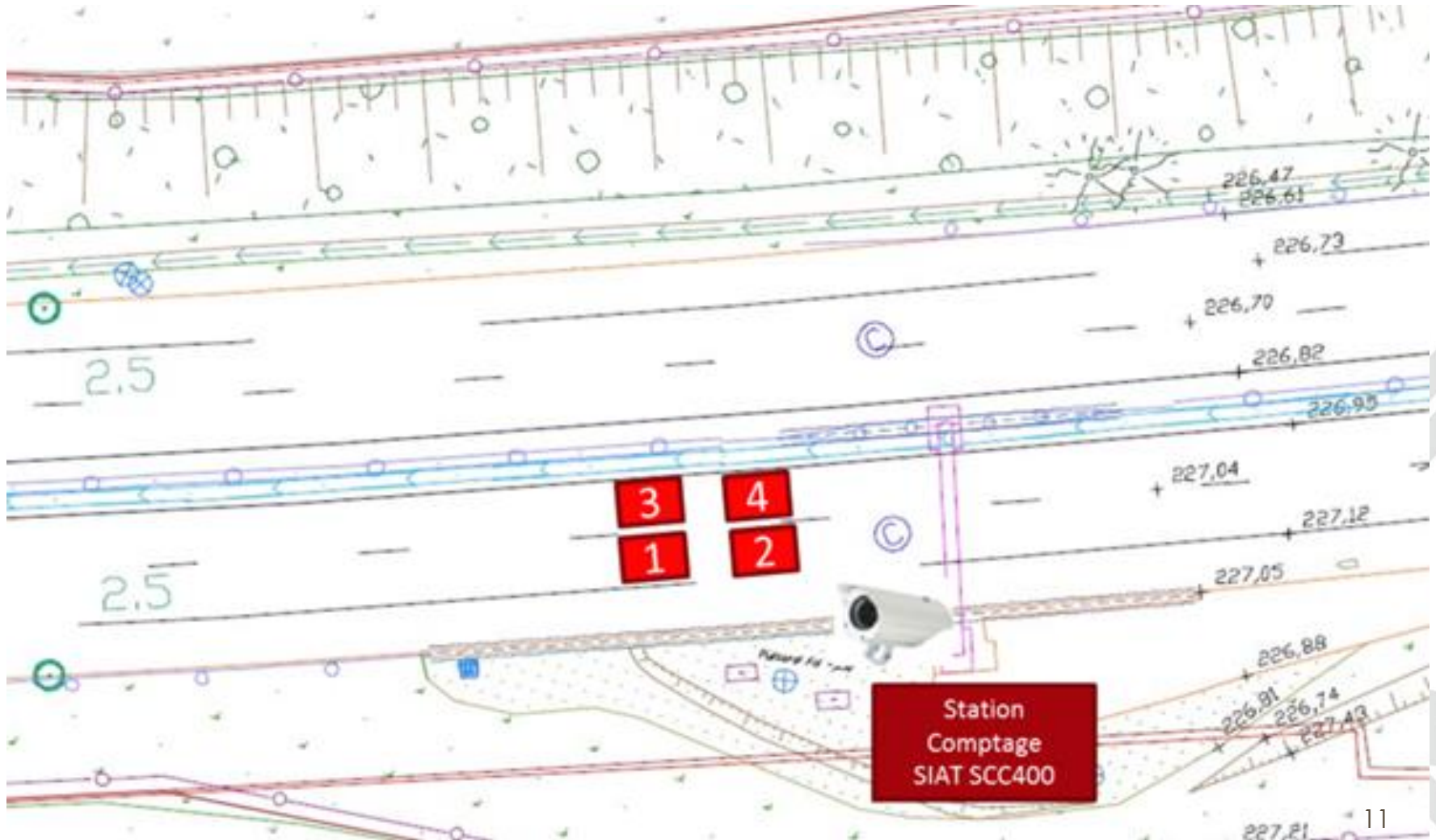
THE EXPERIMENT

5/ Multi-sensor system with powerful analysers



THE EXPERIMENT

6/ Counting station with magnetic loops



THE EXPERIMENT

Test results	Difficulties encountered	Detection quality	False detections
2/ Thermal AID camera	Sensitivity to insects	1	< 2 / month
6/ Counting station with magnetic loops	Hard shoulders not equipped with magnetic loops	1	< 2 / month
4/ Microwave sensor at the side of the road lanes	False alarms caused by multiple reflections from radar waves	1	< 2 / month
5/ Multi-sensor system with powerful analysers	Vehicles travelling at slow speed or near to the sensors : not detected	2	> 2 / month
3/ Doppler sensor over the road lanes	Sensitivity to weather conditions: false alarms caused by rain	3	> 20 / month
1/ AID camera	False alarms caused by the shadows of vehicles travelling in the opposite direction	3	> 2 / month 12

THE EXPERIMENT



Two systems to be used :

- Thermal camera with AID (FLIR)
- Counting station with magnetic loops (SIAT FARECO)



Installation of a pilot site :

- IT developments currently under way
- Operational in 2016 - 3rd quarter

THE EXPERIMENT



Unit costs for equipment (excluding civil engineering work) :

- Thermal camera : 5 k€
- Counting station : extension 5,5 k€
new 5 k€ + magnetic loops
- Confirmation camera : 3 k€

Total project cost : 1,3 M€

- Pilot site : 320 k€
- Deployment over 25 sites : 980 k€

THE PRIORITY : TO WARN OF DANGER

Alert and intervention procedure launched by the control point :



- Messages automatically displayed on signs in the section and on entering the network



- Information broadcast by the motorway information radio 107.7 FM



- Operations on the ground: toll booths closed, motorway maintenance operatives

- Information for the police forces



Transmission of the video sequence to the operator for confirmation

A SINGLE MESSAGE IN FRANCE



On Variable Message Signs :



On motorway radio stations 107.7 FM :

- specific jingle alerting drivers of a vehicle in the wrong direction
- 3 warnings : do not overtake / stop at a rest area as soon as possible / increase safety distance



DETECTING DRIVERS IN THE WRONG WAY



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