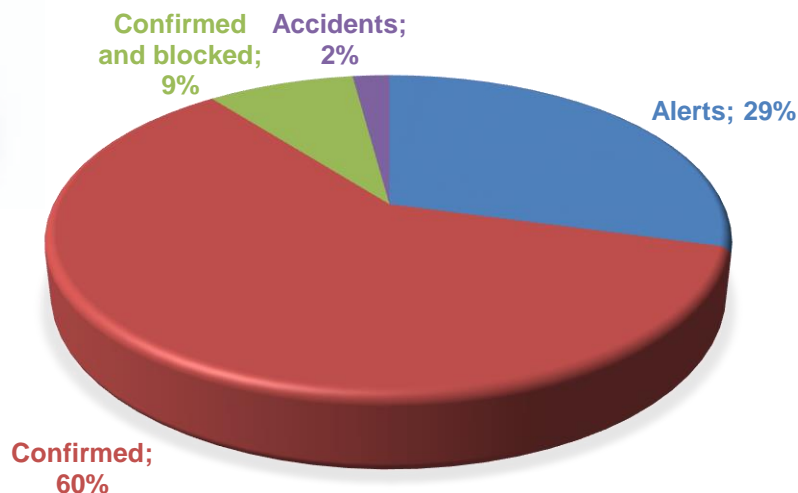


ASSESSING THE ACCEPTABILITY OF AN INNOVATIVE SAFETY SYSTEM TO WARN ROAD USERS OF WRONG WAY DRIVING ON THE APRR MOTORWAY NETWORK

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C.Roy (APRR), A.Bacelar (Cerema)

WRONG-WAY DRIVING: A MAJOR CHALLENGE



Over the 2016-2021 period, 1,769 wrong-way events occurred on the APRR network.



In light of this fact, **APRR group** decided to implement two new, complementary systems for managing these events :

- An **automated detection system** ;
- **Information at tollgates** explaining why some lanes are closed, in case of wrong-way event.

OBJECTIVES OF THE EXPERIMENTATION

Inform drivers



EVALUATION OF THE SYSTEM

In case of wrong-way on motorway, one of the challenges is to keep other users safely.

The APRR Group asked Cerema to assess a new system for securing users in cas of wrong-way event.

The results of the second real test, which was carried out at the Saint-Maurice tollgate (Montbéliard) on the A36 in March 2022, at night, are presented.

SYSTEM ORGANISATION

- A message displayed, the day of the experiment, on a variable message sign (VMS) located round 1 km of toll gate
- 2 audio messages played at the tollgate
- 32 testers interviewed at a rest area at the end of the experiment



ON THE WAY...

A VMS message is displayed one km before the toll gate warning for the test



PRESENTATION OF THE TEST



When arriving at the toll gate, the drivers must enter the middle lanes with red cross and **stayed around 3 minutes to hear audio messages** ;

Two audio messages are played by loudspeakers ;

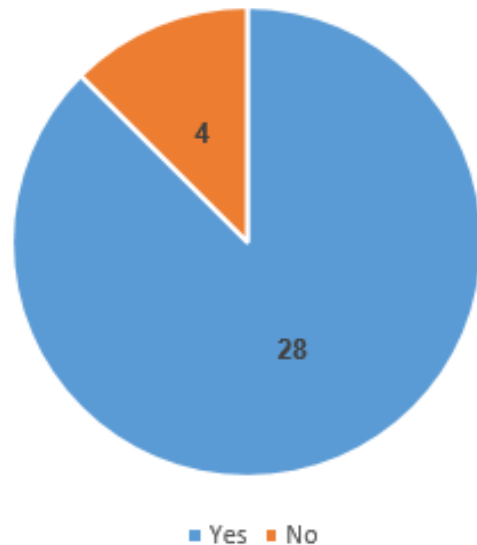
REST AREA FOR THE INTERVIEW OF TESTERS



The interview included **evaluation of VMS messages signs and audio messages**

EVALUATION OF THE FIRST VMS MESSAGE

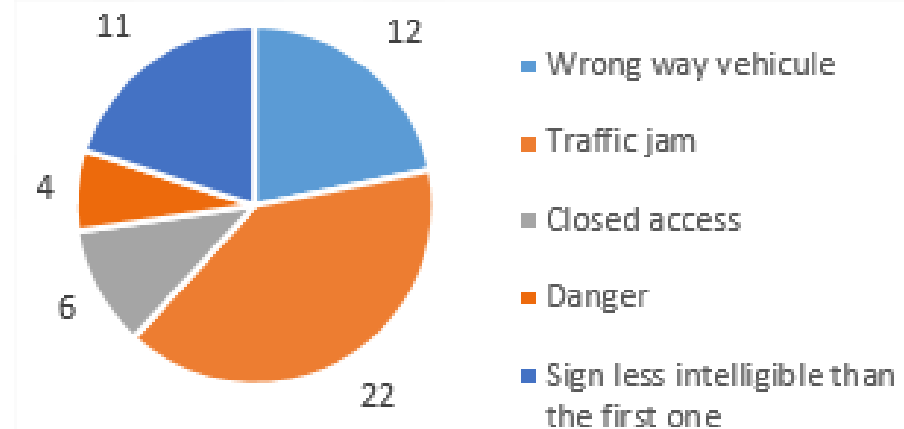
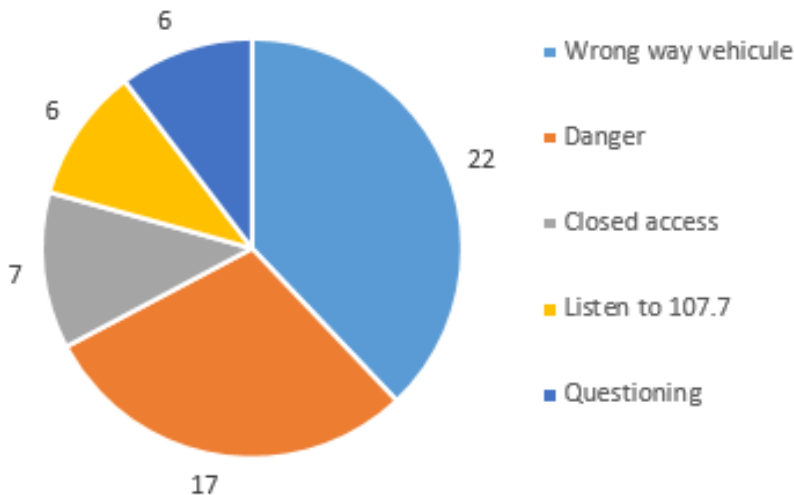
Did you see the displayed message ?



Test in progress listen to 107,7	20
Listen to 107,7	4
Test or test in process	2
Saw another message / not memorized	2

EVALUATION OF VMS MESSAGES

In case of real wrong way, the following messages would be displayed and have been evaluated by testers during the interview



EVALUATION OF THE 2 AUDIO MESSAGES

All the 32 participants heard the 2 audio messages broadcast at toll gate.

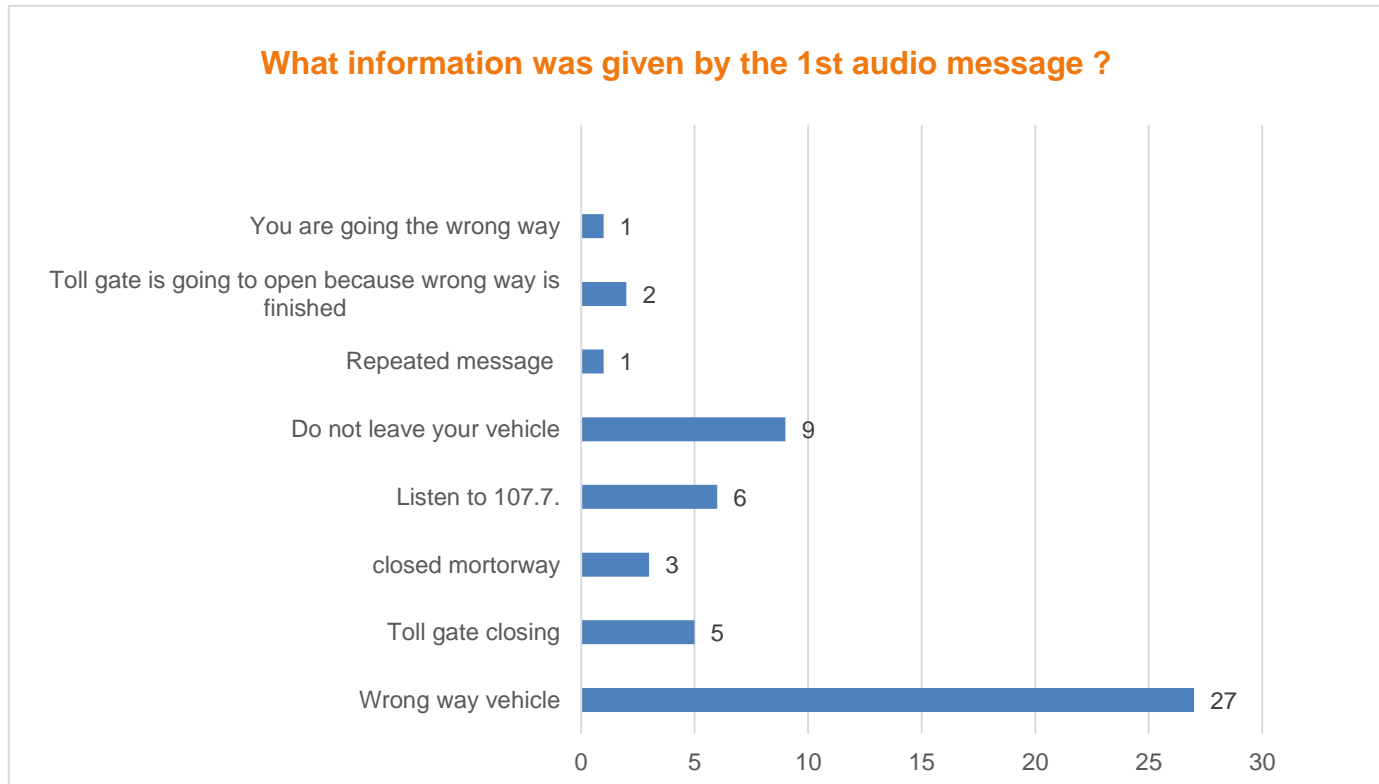
windows open	
No	17
Yes	15

Sound level	
well	22
Not strong enough	8
Inaudible	2

HOW many different messages heard ?	
Two messages	18
One message	8
More than two messages	4
don't know	2

THE FIRST ONE :

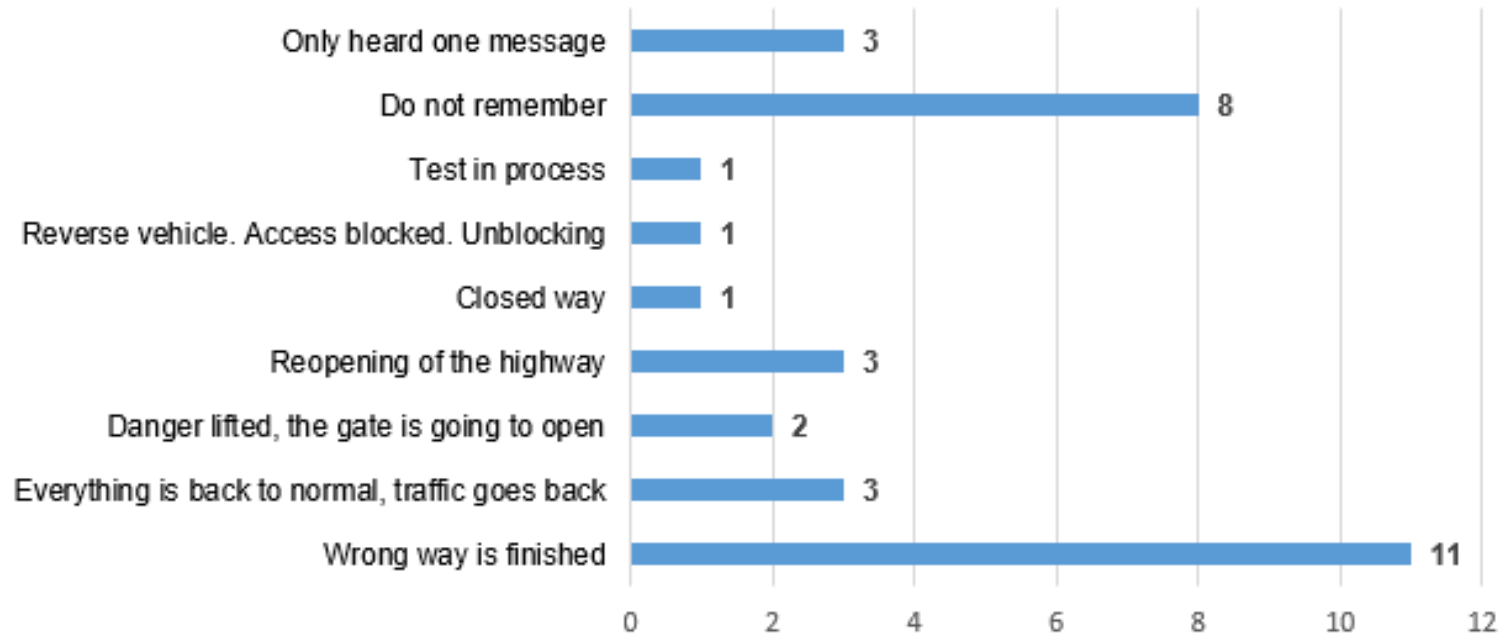
"DANGER: WRONG-WAY DRIVING. LANE TEMPORARILY CLOSED, TUNE IN TO 107.7. FOR YOUR OWN SAFETY, PLEASE REMAIN INSIDE YOUR VEHICLE"



THE SECOND ONE :

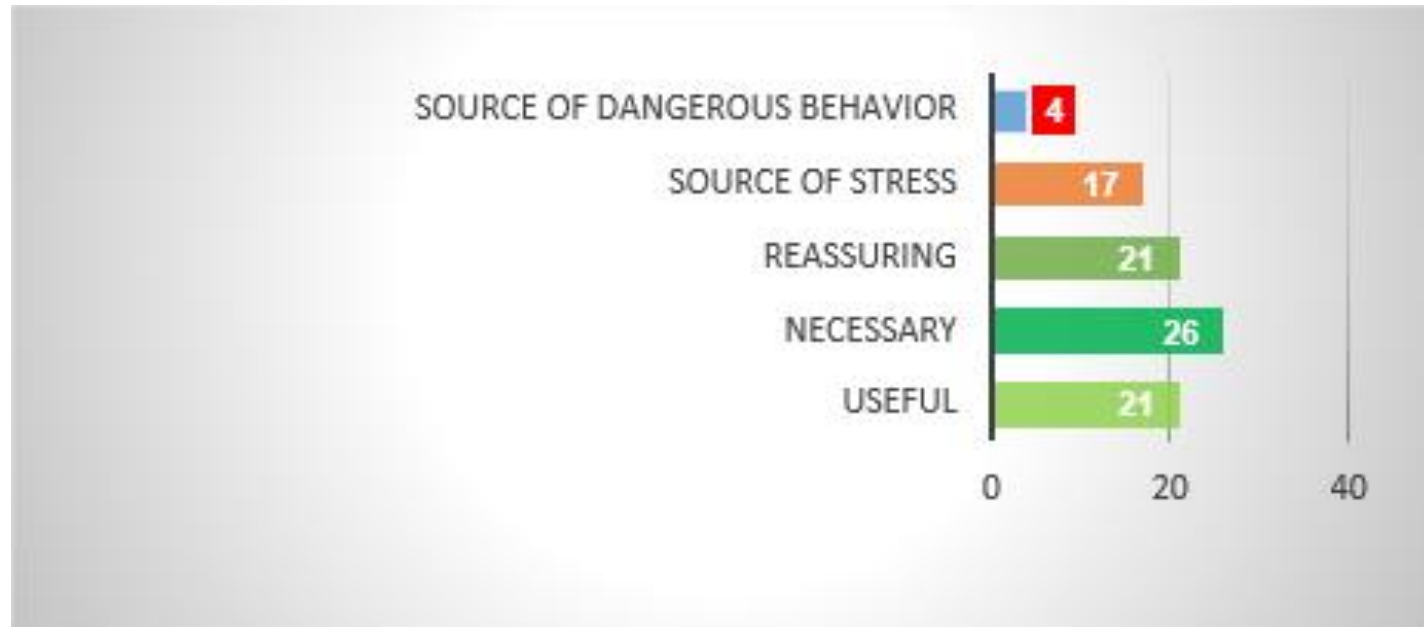
”END OF WRONG WAY ALERT. LANE NOW OPEN”

What information was given by the second audio message ?



GENERAL UNDERSTANDING AND ACCEPTABILITY

In case of real wrong way, the system is judged :



CONCLUSION

The tested system is considered understandable and useful by the majority of testers who participated in the test, 24 people out of 32. For 8 people, it is necessary to bring more clarification to the messages ("vehicle").

The sound level was of better quality during this second experiment, it was considered correct by 22 people out of 32 against 6 out of 28 during the first experiment.

31 testers replied that the combination of the two messages (audio and VMS) was useful. Only one person replied that it was not.

This evaluation demonstrated the good functioning of this new system. It led to a positive assessment with a goal for APRR to generalize this system, which is useful and well accepted by users. Currently, 7 toll gates are equipped.

THANK YOU FOR YOUR ATTENTION !

CATHERINE.ROY@APRR.FR
ALEXIS.BACELAR@CEREMA.FR