HD Radio - TMC

Peter Davies, Castle Rock

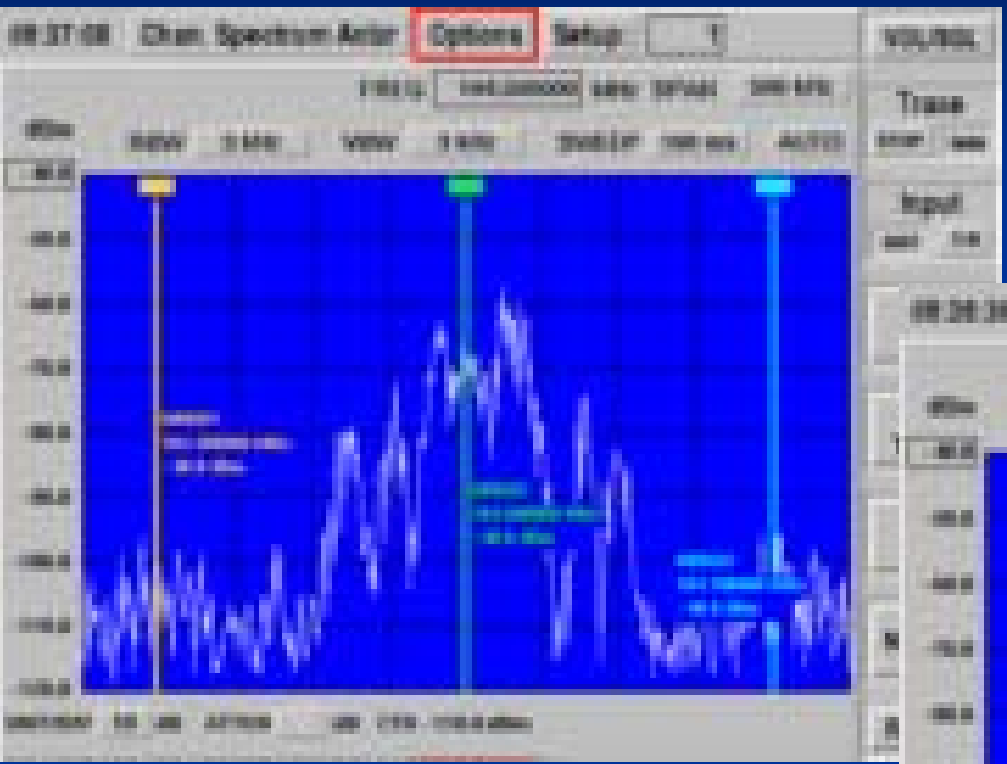
Structure

- What is HD Radio?
- Traffic Message Channel (TMC)
- Operational Examples
- Summary

HD Radio

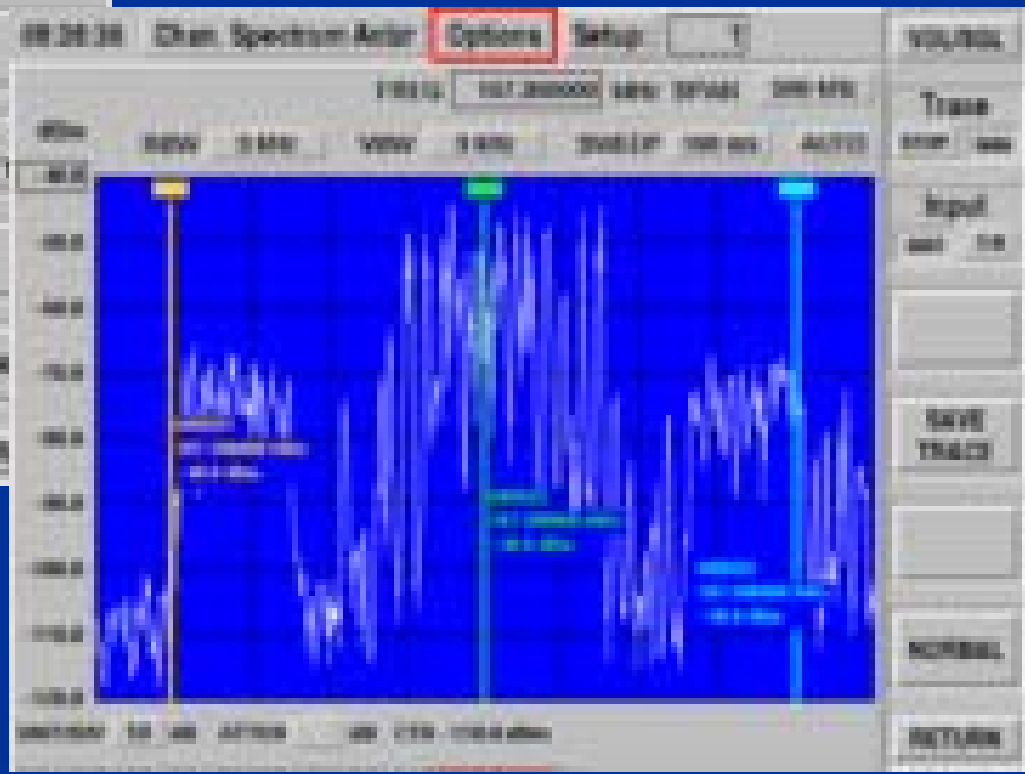
- US terrestrial digital radio standard
- In-band digital / analogue hybrid
- FM (96 kb) and AM (36 kb) versions
- Multicasting option: main program + traffic, weather
- Datacasting option: e.g., Traffic Message Channel

How does HD Radio Work?



Normal FM

HD Radio FM



Traffic Message Channel

- Broadcasts digital traffic data into vehicles
- FM, DAB, Satellite Radio … HD Radio
- Alert C standard: Event, Location, Duration
- Developed by Castle Rock, BBC, Ford, Volvo, Philips, Blaupunkt, CCETT, etc., 1986-1994

National TMC Services

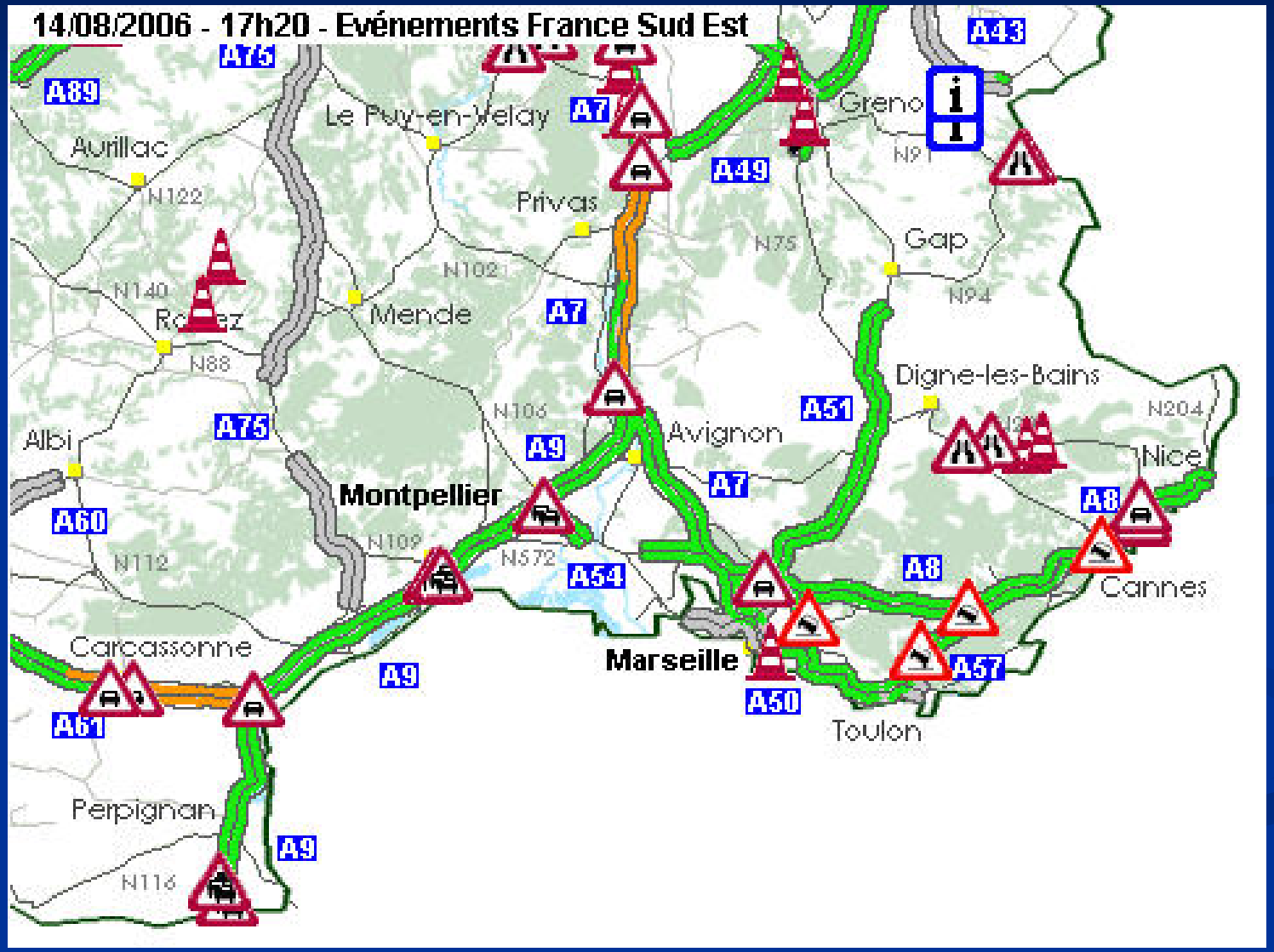
- Austria
- Belgium
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Italy
- Netherlands
- Norway
- Portugal (planned)
- Spain
- Sweden
- Switzerland
- UK
- USA

XM Radio TMC

Seattle
Portland
Sacramento
San Francisco
San Jose
Las Vegas
Los Angeles
San Diego
Phoenix
Denver
Minneapolis
Milwaukee
Detroit
Buffalo
Boston
Providence
Hartford
New York
Philadelphia
Wilmington
Baltimore
Washington DC
Norfolk
Chicago
Cleveland
Columbus
Pittsburgh
Indianapolis
Cincinnati
St Louis
Kansas City
Nashville
Charlotte
Memphis
Atlanta
Dallas
Austin
Houston
San Antonio
Orlando
Tampa
West Palm Beach
Miami
Sarasota
XM NAVTRAFFIC
Incident and Flow Data
Incident Data Only
XM NavTraffic Coverage, Aug 1 2006

Operational Examples

RDS-TMC - Southern France



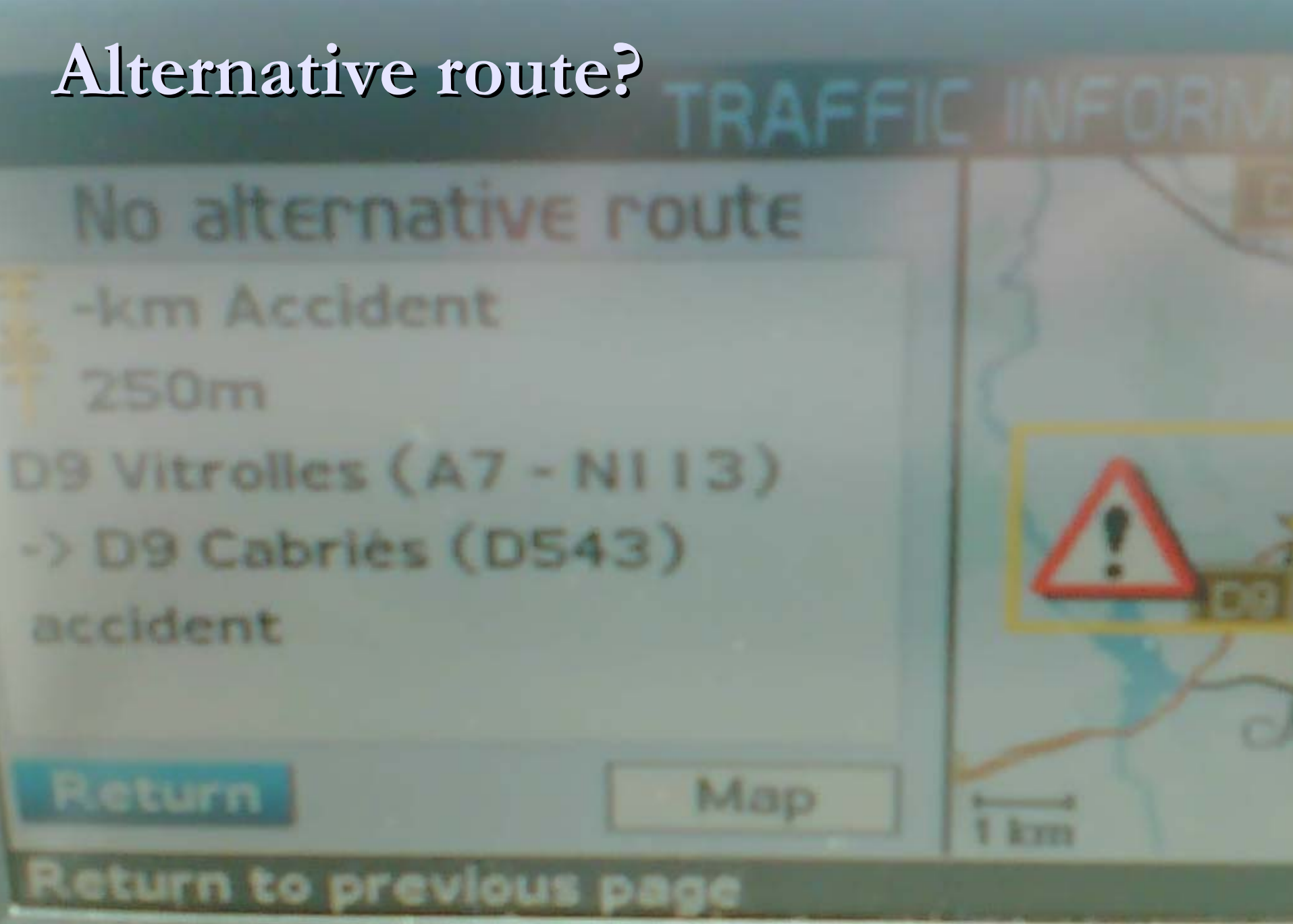
Example 1: Accident

Traffic message

D9 Cabries (D543) -> D9 Vitrolles (A7 – N113)

accident

Alternative route?

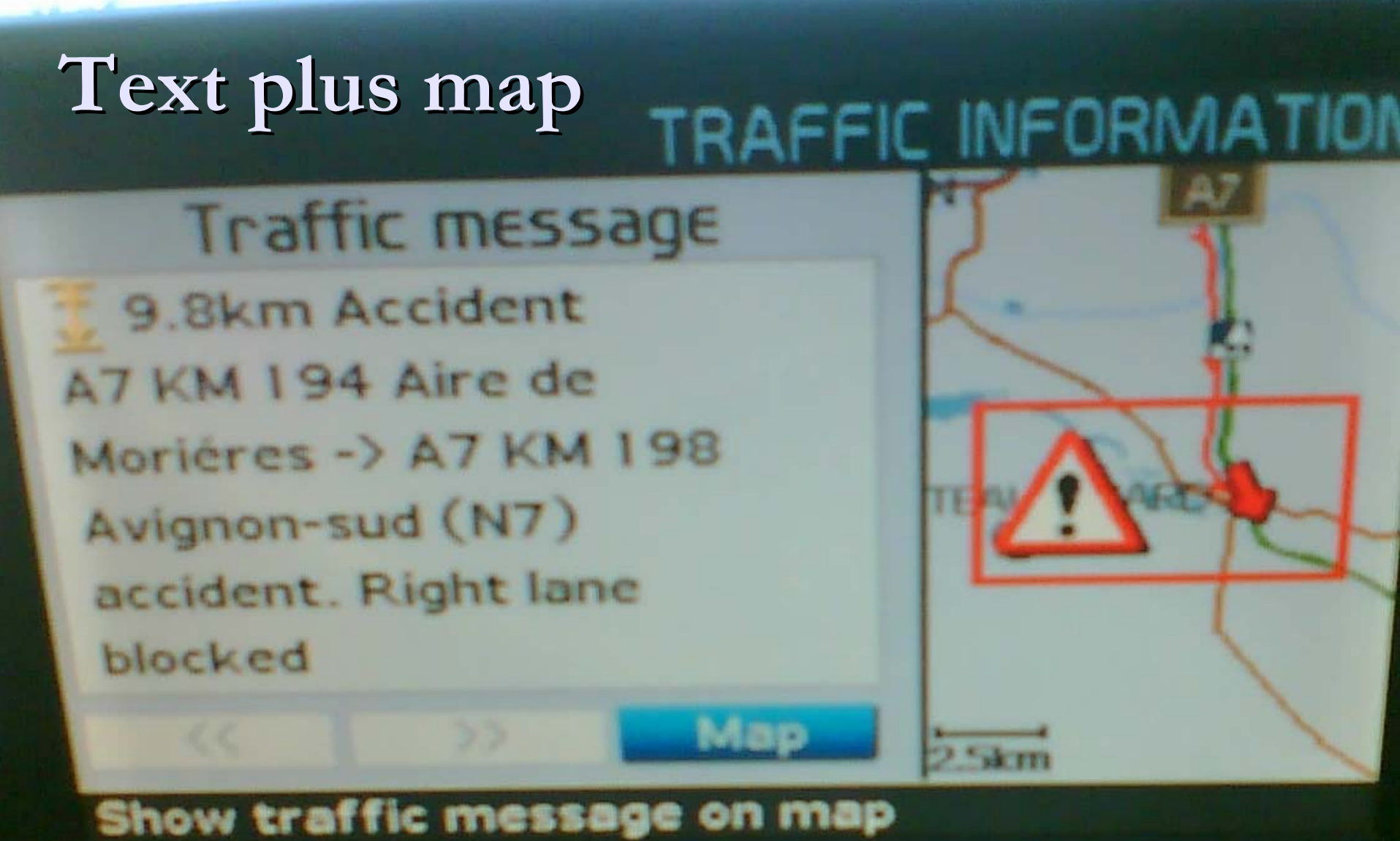


Accident Site: Truck rollover

Real-time Navigation

Example 2: Accident, right lane blocked

Text plus map



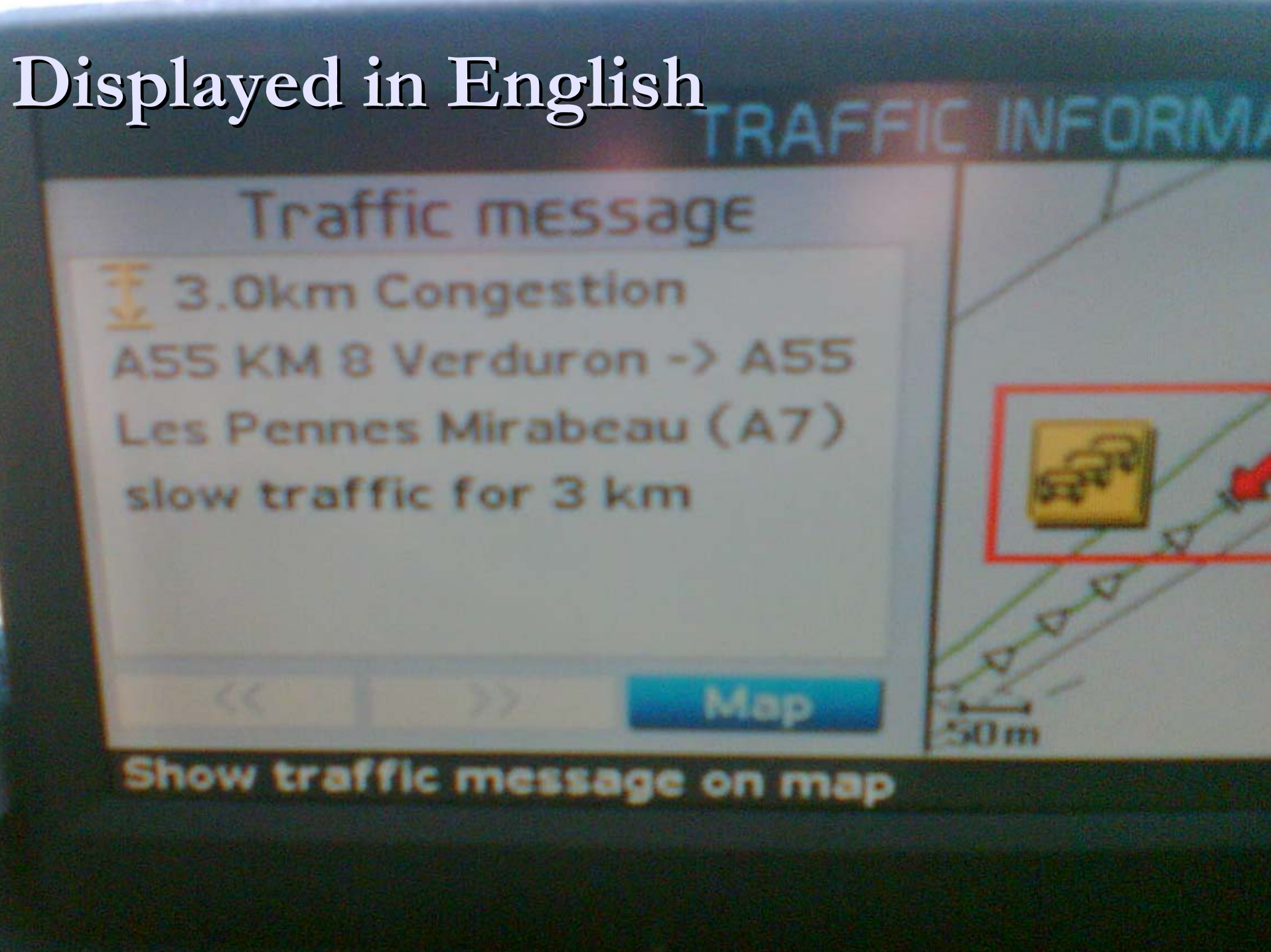
Map detail

Following a Nav System detour

Real-time Navigation

Example 3: Slow traffic

Displayed in English



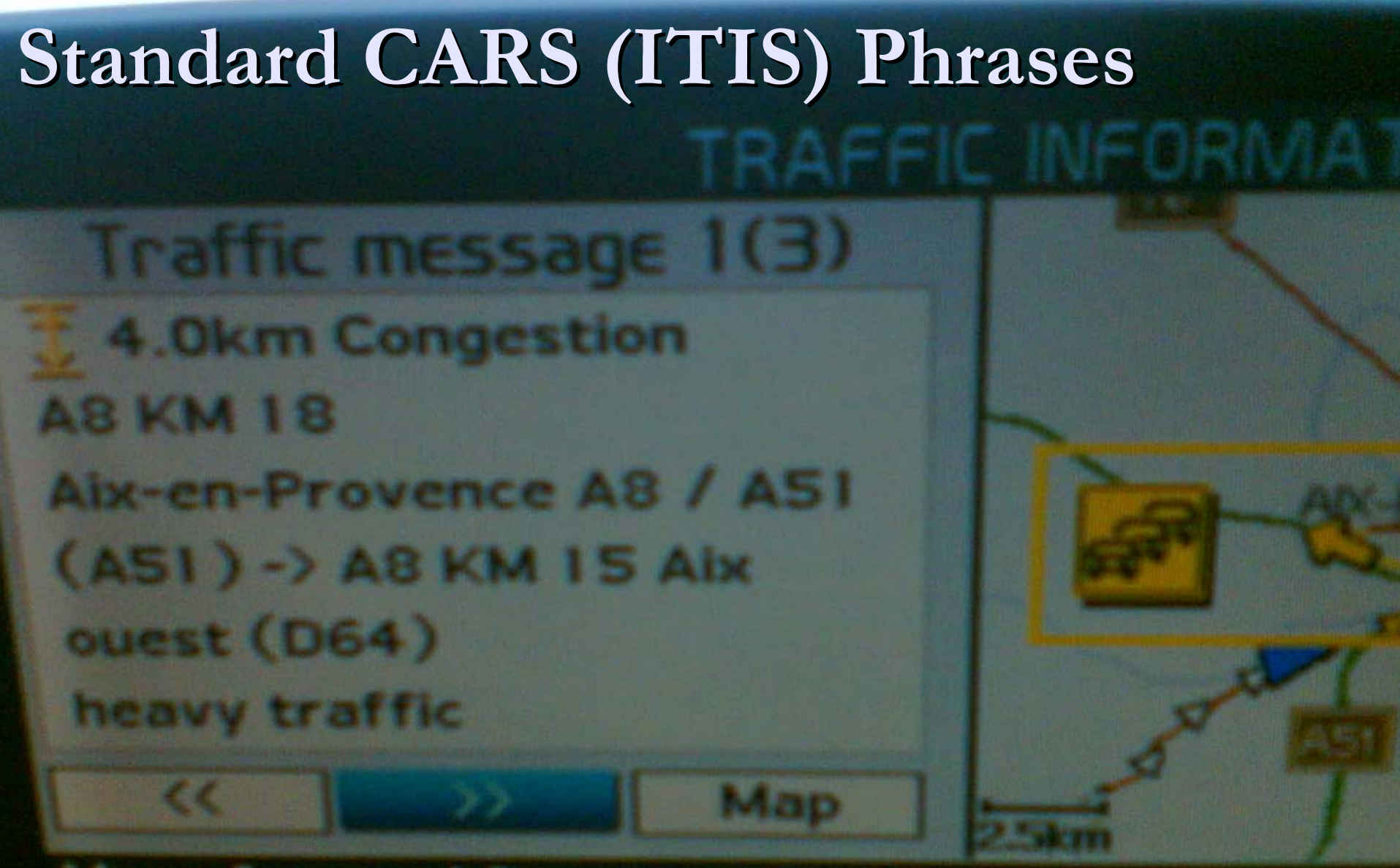
Displayed in French

Slow traffic for 3 km

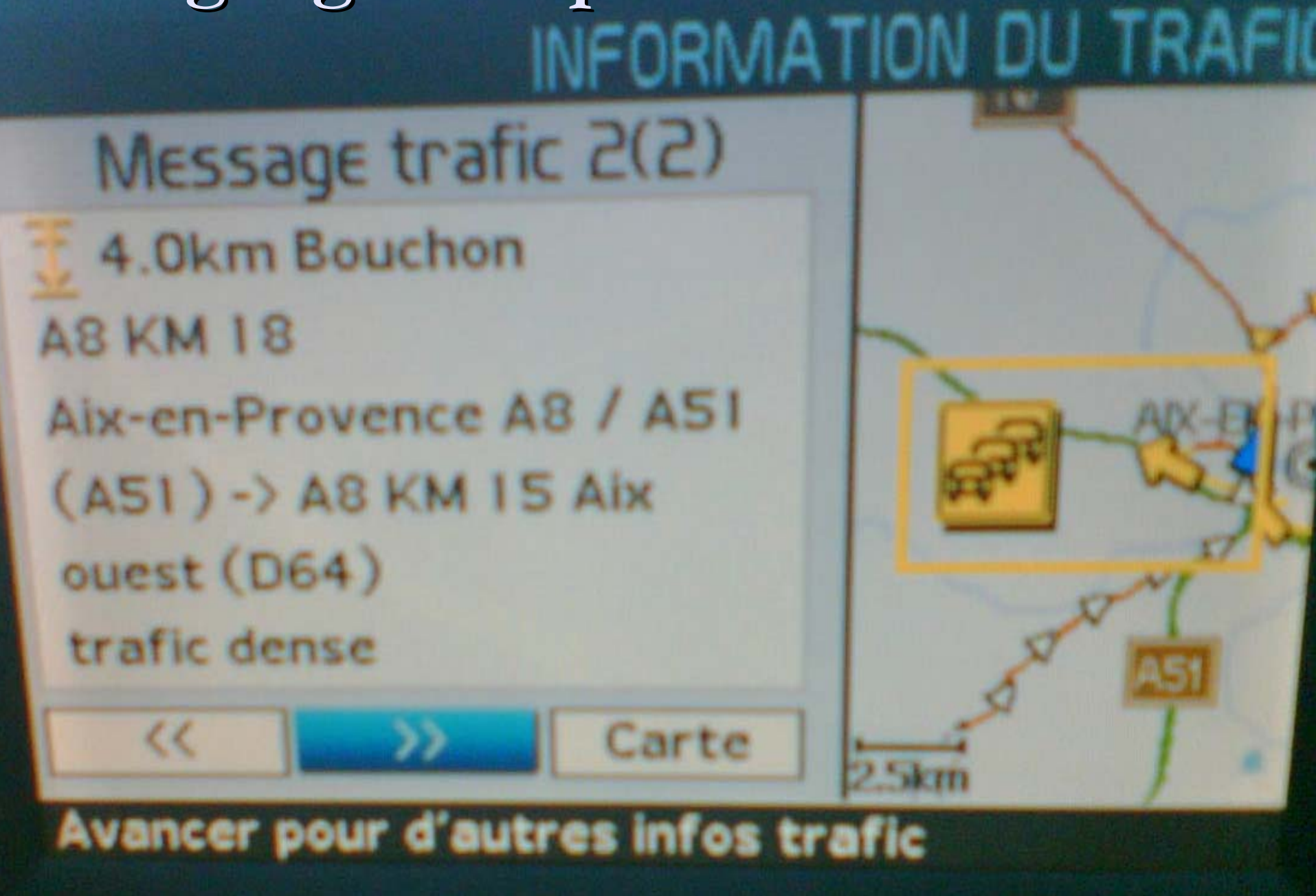
Real-time Navigation

Example 4: Heavy traffic

Standard CARS (ITIS) Phrases

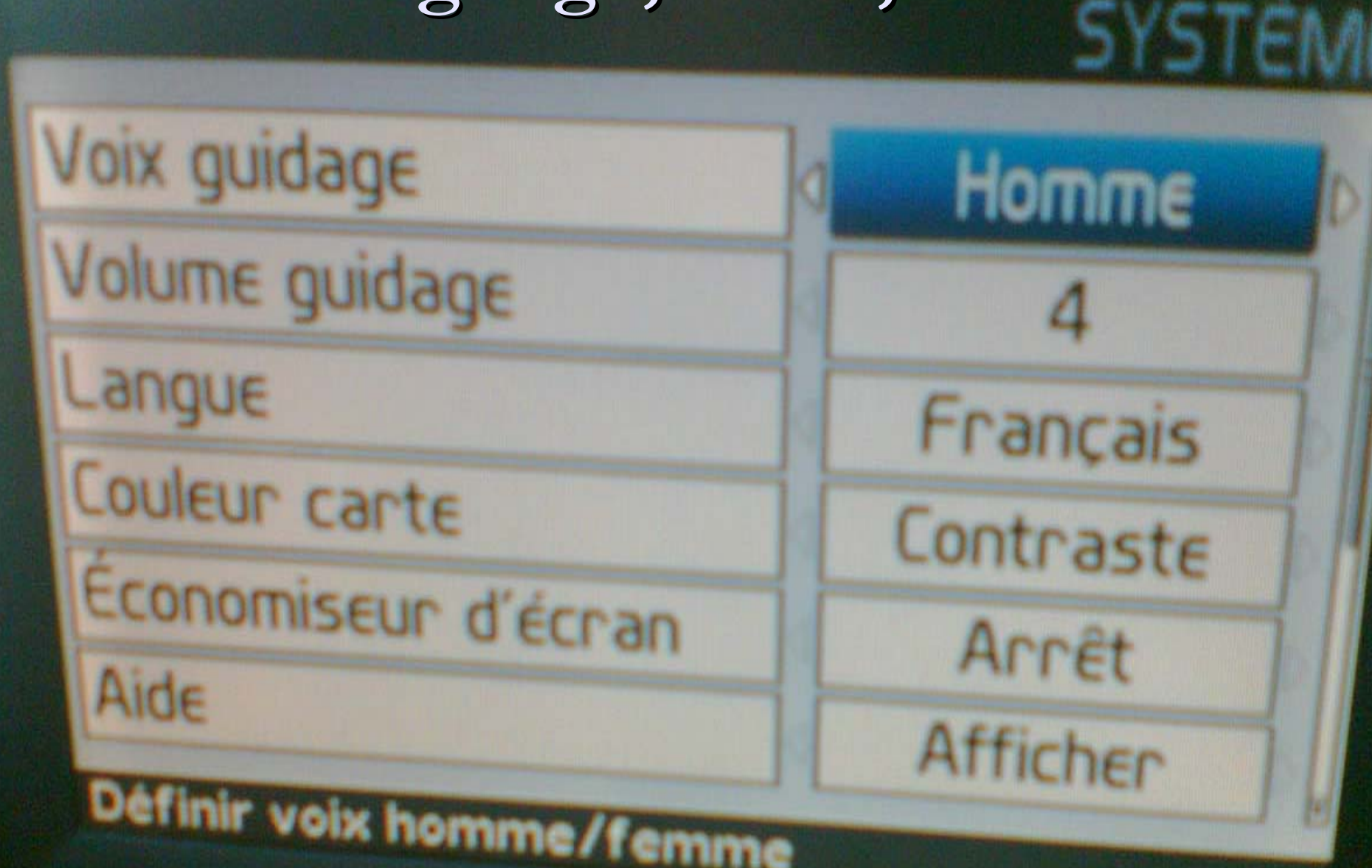


Language-independent



The heavy traffic
was real
110
5934 ZS 13

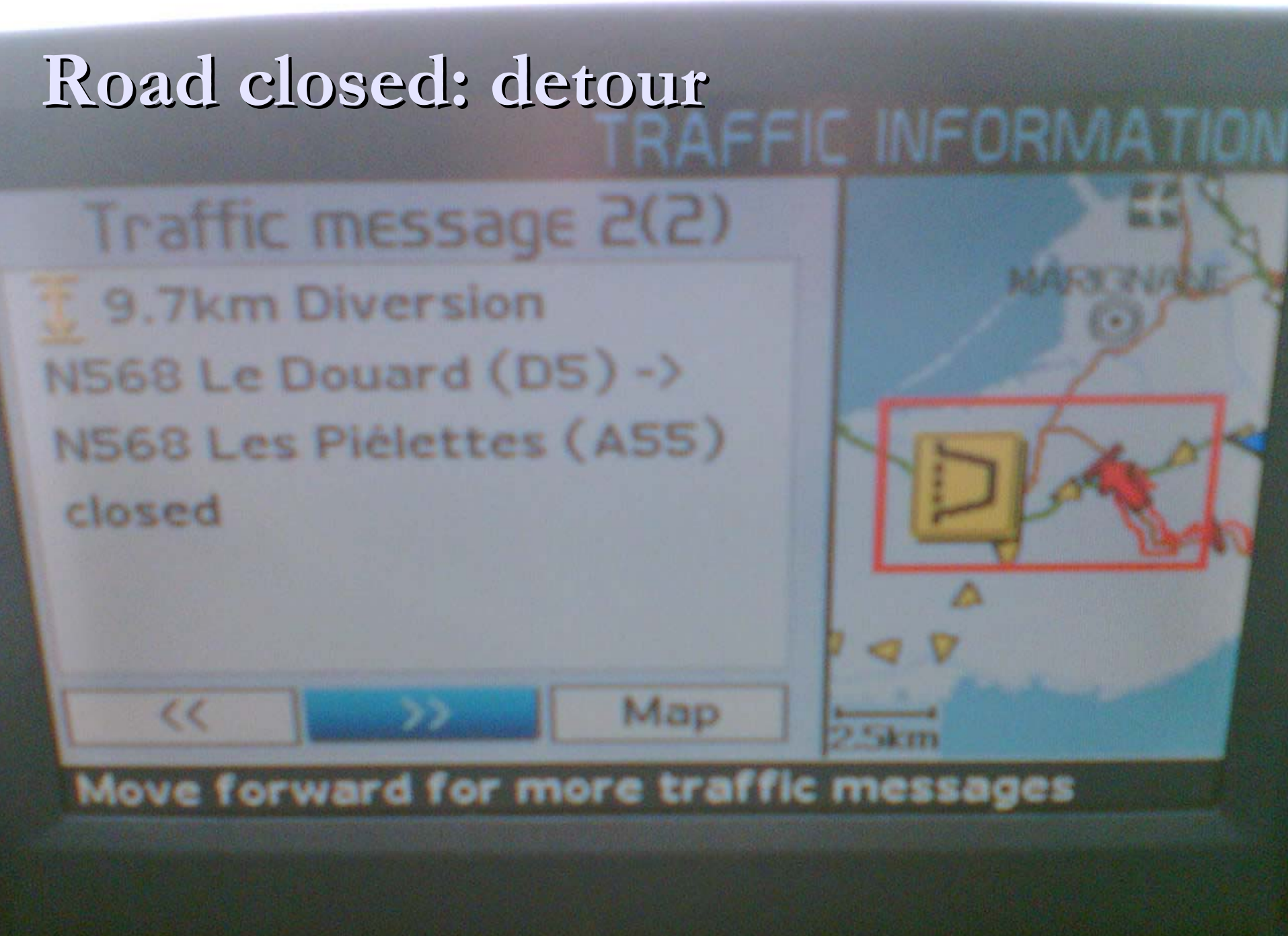
Choose language, voice, etc.



Real-time Navigation

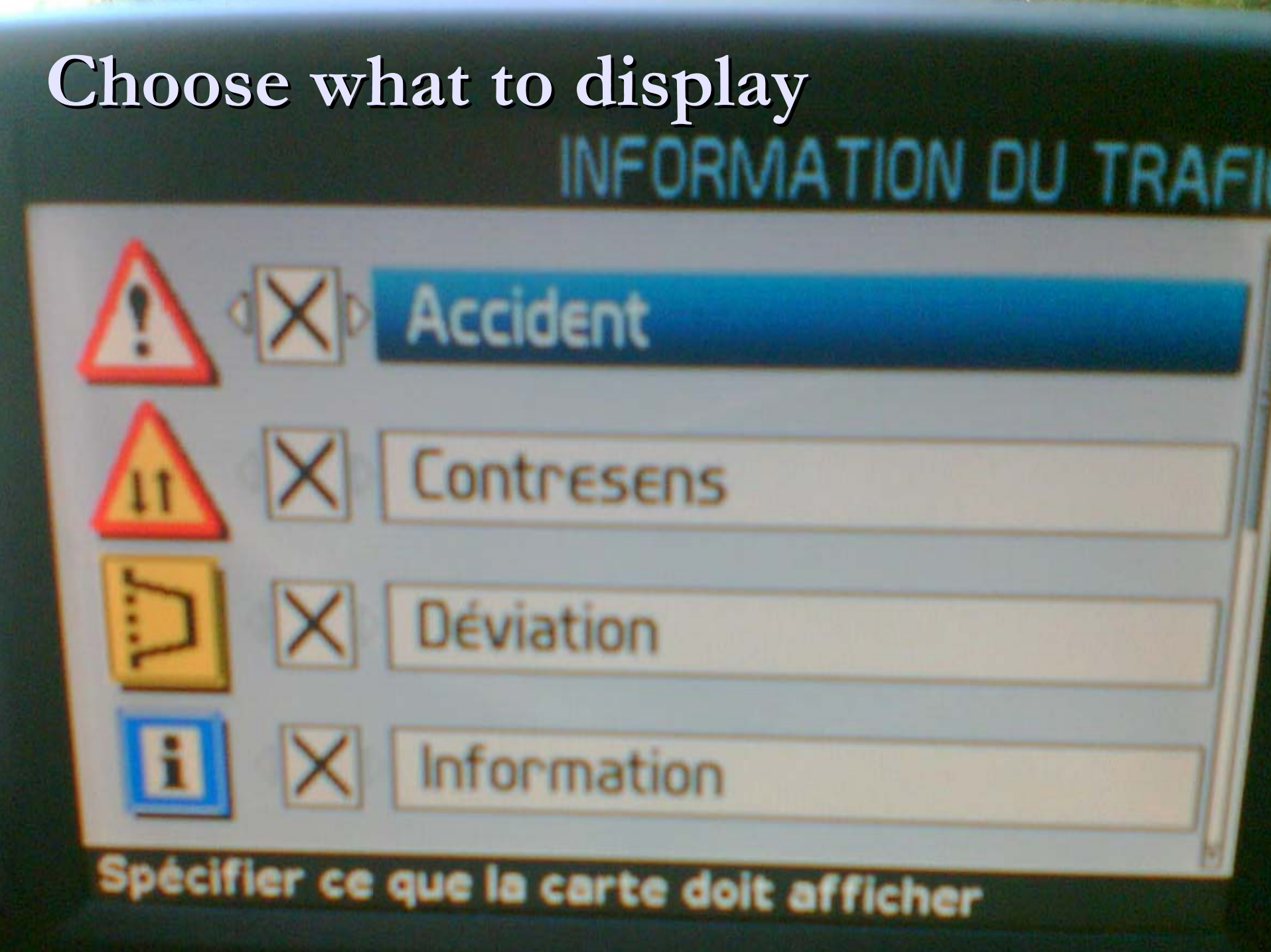
Example 5: Closure, detour

Road closed: detour

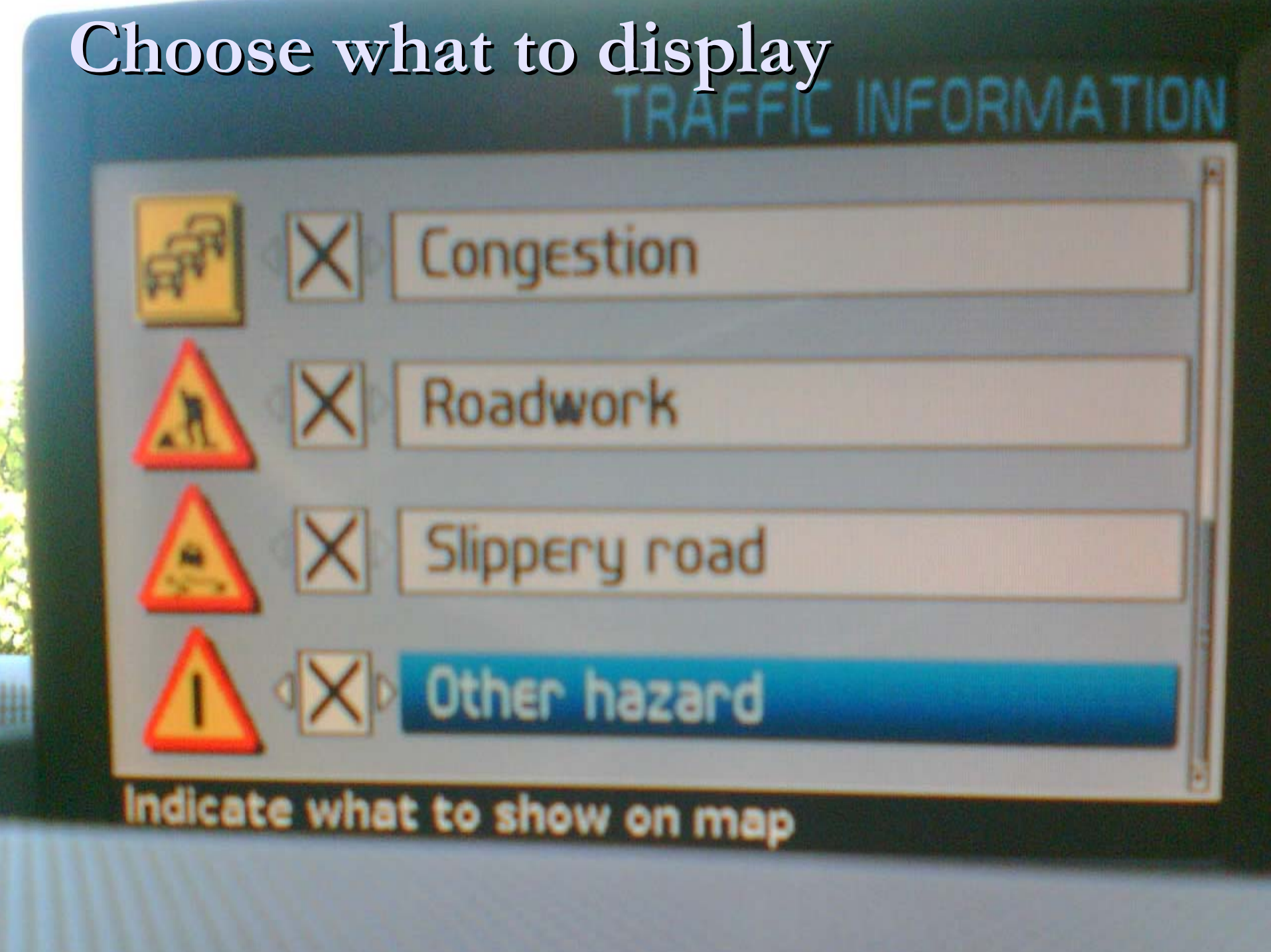


Closure/detour were due to brush fire

Choose what to display



Choose what to display



Real-time Navigation

Finally: more languages

German

VERKEHRSMELDU
Verkehrsmeldung
-km Unfall
D9 Cabriès (D543) -> D9
Vitrolles (A7 - N113)
Unfall
Karte
1 km
Verkehrsmeldung auf d. Karte anzeigen

Spanish

INFORMACIÓN DE TRÁFIC
Mensaje de tráfico 1(2)
-km Accidente
D9 Cabriès (D543) -> D9
Vitrolles (A7 - N113)
accidente
<<
>>
Mapa
A7
2.5km
Ananzar para más mensajes de tráfico

Conclusion

- What is HD Radio?
- Traffic Message Channel
- Operational Examples
- Summary