

# HD Radio - TMC



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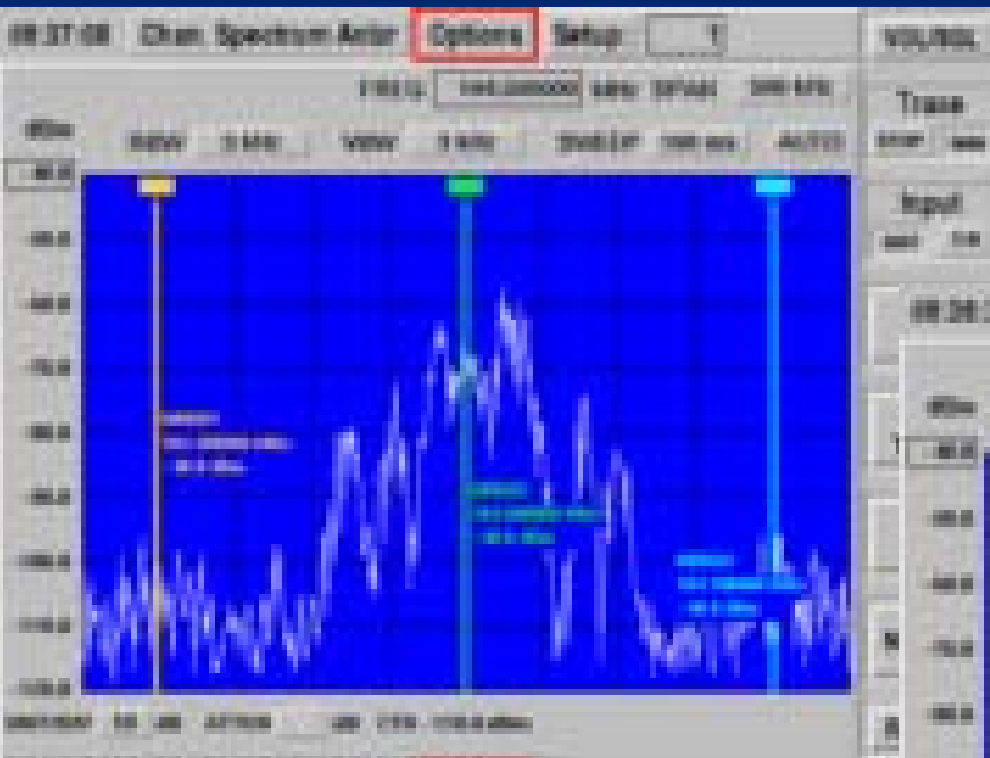
# Structure

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

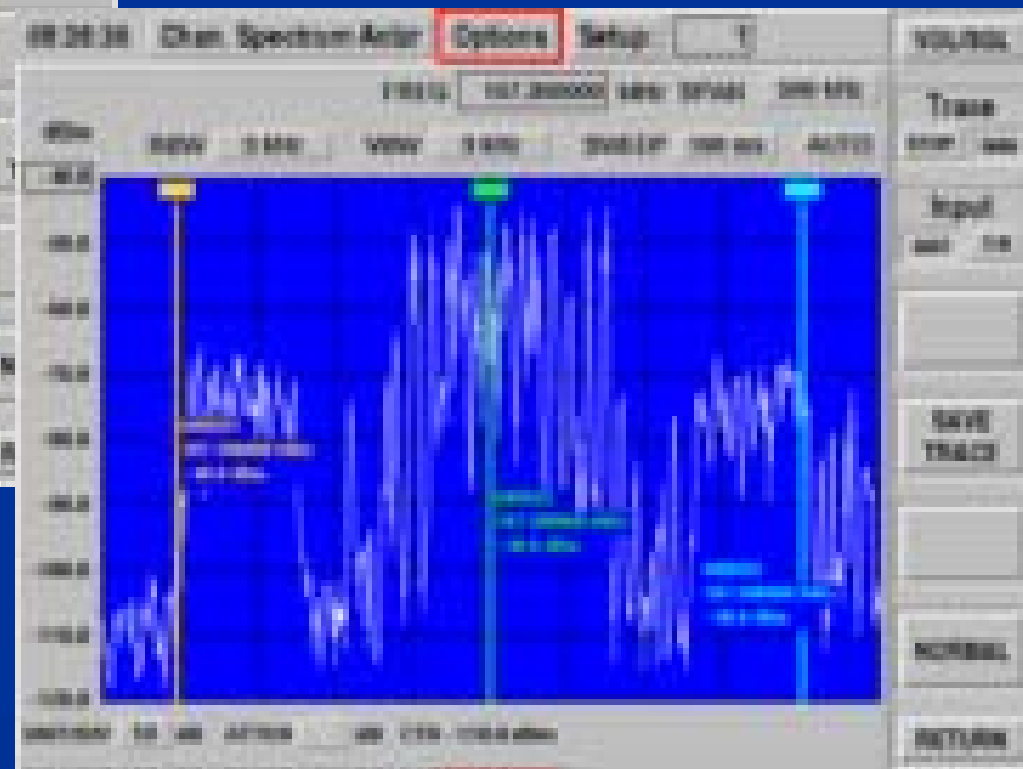
# HD Radio

- 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





# Operational Examples





14/08/2006 - 17h20 - Evénements France Sud Est

The map displays the road network in the southern and eastern regions of France, including major cities like Paris, Lyon, Marseille, and Nice. The map is color-coded by region: blue for Île-de-France, orange for Centre-Val de Loire, green for Rhône-Alpes, and yellow for Provence-Alpes-Côte d'Azur. Major roads are shown in red, and smaller roads in grey. Traffic incidents are marked with red triangles containing white symbols: a car for accidents, a truck for heavy vehicle incidents, and a car with a flame for fires. The map also shows the location of various police units and their current status, with some units marked as 'en route' or 'à la disposition'. The map is titled '14/08/2006 - 17h20 - Evénements France Sud Est'.

# Example 1: Accident



## Traffic message

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

# Alternative route?

TRAFFIC INFORMATION

No alternative route

-km Accident

250m

D9 Vitrolles (A7 - N113)

-> D9 Cabriès (D543)

accident

[Return](#)

[Map](#)

1 km

[Return to previous page](#)





# Accident Site: Truck rollover




# Real-time Navigation

Example 2: Accident,  
right lane blocked

# Text plus map

## TRAFFIC INFORMATION

### Traffic message

 9.8km Accident  
A7 KM 194 Aire de  
Morières -> A7 KM 198  
Avignon-sud (N7)  
accident. Right lane  
blocked



Map



**Show traffic message on map**



# Map detail



# Following a Nav System detour



# Real-time Navigation


## Example 3: Slow traffic



# Displayed in English

## TRAFFIC INFORMATION

### Traffic message

 3.0km Congestion  
A55 KM 8 Verduron -> A55  
Les Pennes Mirabeau (A7)  
slow traffic for 3 km



Map


Show traffic message on map



# Displayed in French

## INFORMATION DU TRAFIC

### Message trafic 1(4)

 3.0km Bouchon  
A55 Les Pennes Mirabeau  
(A7) -> A55 KM 8  
Verduron  
trafic ralenti sur 3 km



Carte



Avancer pour d'autres infos trafic



Slow traffic for 3 km






# Real-time Navigation

## Example 4: Heavy traffic

# Standard CARS (ITIS) Phrases

TRAFFIC INFORMATION

Traffic message 1(3)

 4.0km Congestion

A8 KM 18

Aix-en-Provence A8 / A51

(A51) -> A8 KM 15 Aix

ouest (D64)

heavy traffic

<<

>>

Map

25km


Move forward for more traffic messages



# Language-independent

INFORMATION DU TRAFIC

Message trafic 2(2)

 4.0km Bouchon

A8 KM 18

Aix-en-Provence A8 / A51

(A51) -> A8 KM 15 Aix

ouest (D64)

trafic dense

<<

>>

Carte

2.5km

Avancer pour d'autres infos trafic





The heavy traffic  
was real



Choose language, voice, etc.

SYSTÈME

Voix guidage

Homme

Volume guidage

4

Langue

Français

Couleur carte

Contraste

Économiseur d'écran

Arrêt

Aide

Afficher

Définir voix homme/femme

# Real-time Navigation


## Example 5: Closure, detour



# Road closed: detour

## TRAFFIC INFORMATION

### Traffic message 2(2)

 9.7km Diversion  
N568 Le Douard (D5) ->  
N568 Les Piélettes (A55)  
closed



Map

Move forward for more traffic messages

Closure/detour were due to brush fire





# Choose what to display

## INFORMATION DU TRAFIC



Accident



Contresens



Déviation



Information

Spécifier ce que la carte doit afficher

# Choose what to display

## TRAFFIC INFORMATION



Congestion



Roadwork



Slippery road



Other hazard

Indicate what to show on map

# Real-time Navigation


Finally: more languages



German

# VERKEHRSMELDUNG

## Verkehrsmeldung

 -km Unfall

D9 Cabriès (D543) -> D9

Vitrolles (A7 - N113)

Unfall



Karte




Verkehrsmeldung auf d. Karte anzeigen



Spanish

## INFORMACIÓN DE TRÁFICO

### Mensaje de tráfico 1(2)

 -km Accidente

D9 Cabriès (D543) -> D9

Vitrolles (A7 - N113)

accidente



Mapa



Ananazar para más mensajes de tráfico

# Conclusion

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