



## TPEG Digital Radio Traffic Data

Next generation of Traffic and Travel Information services

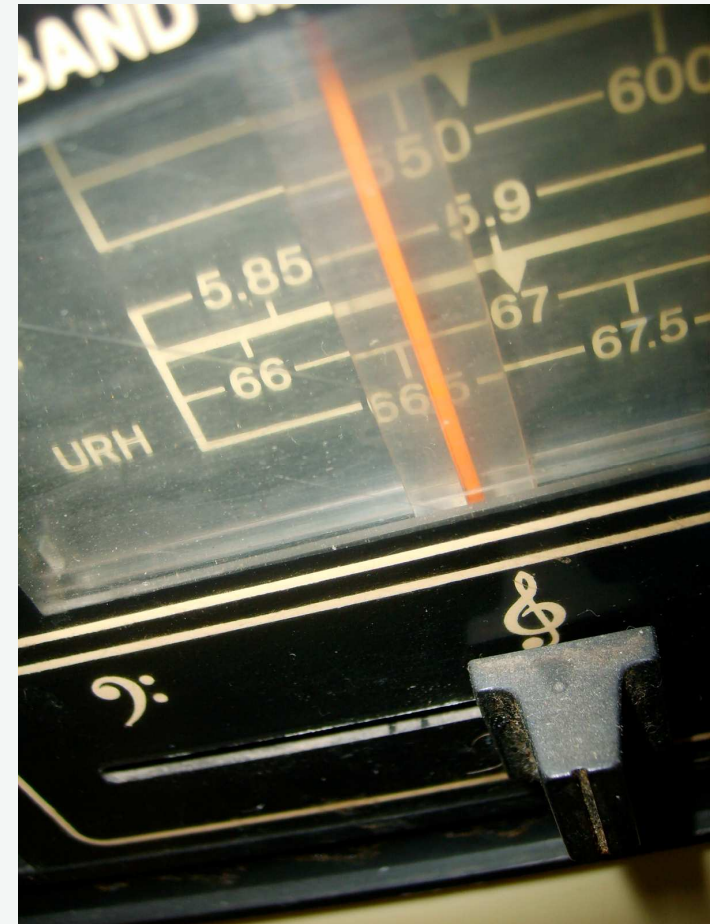
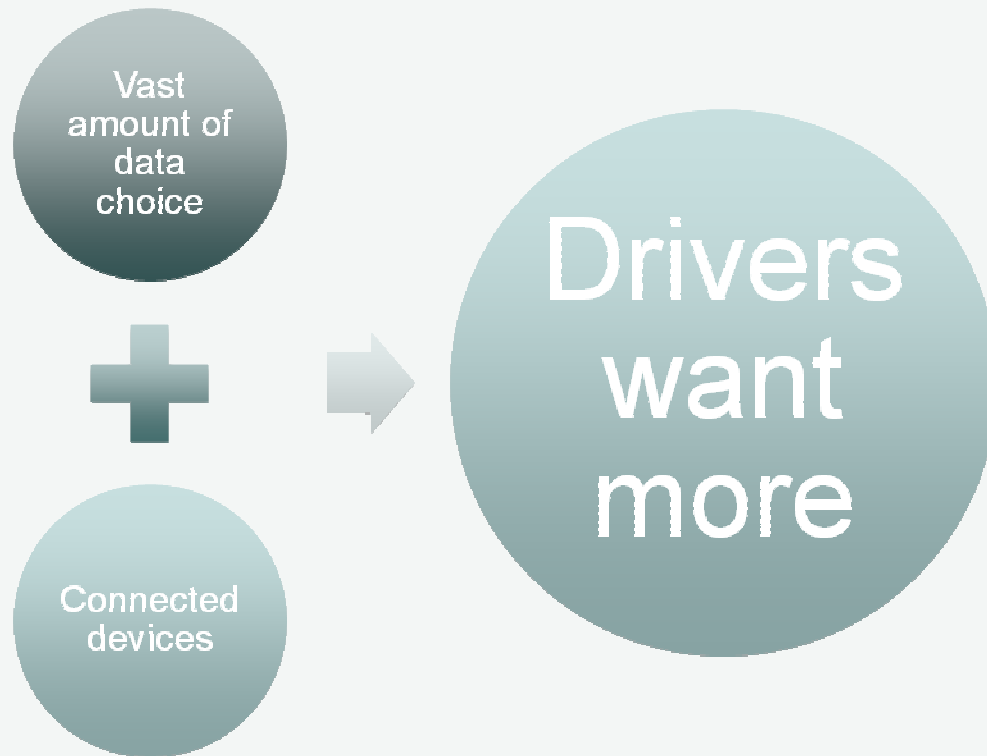
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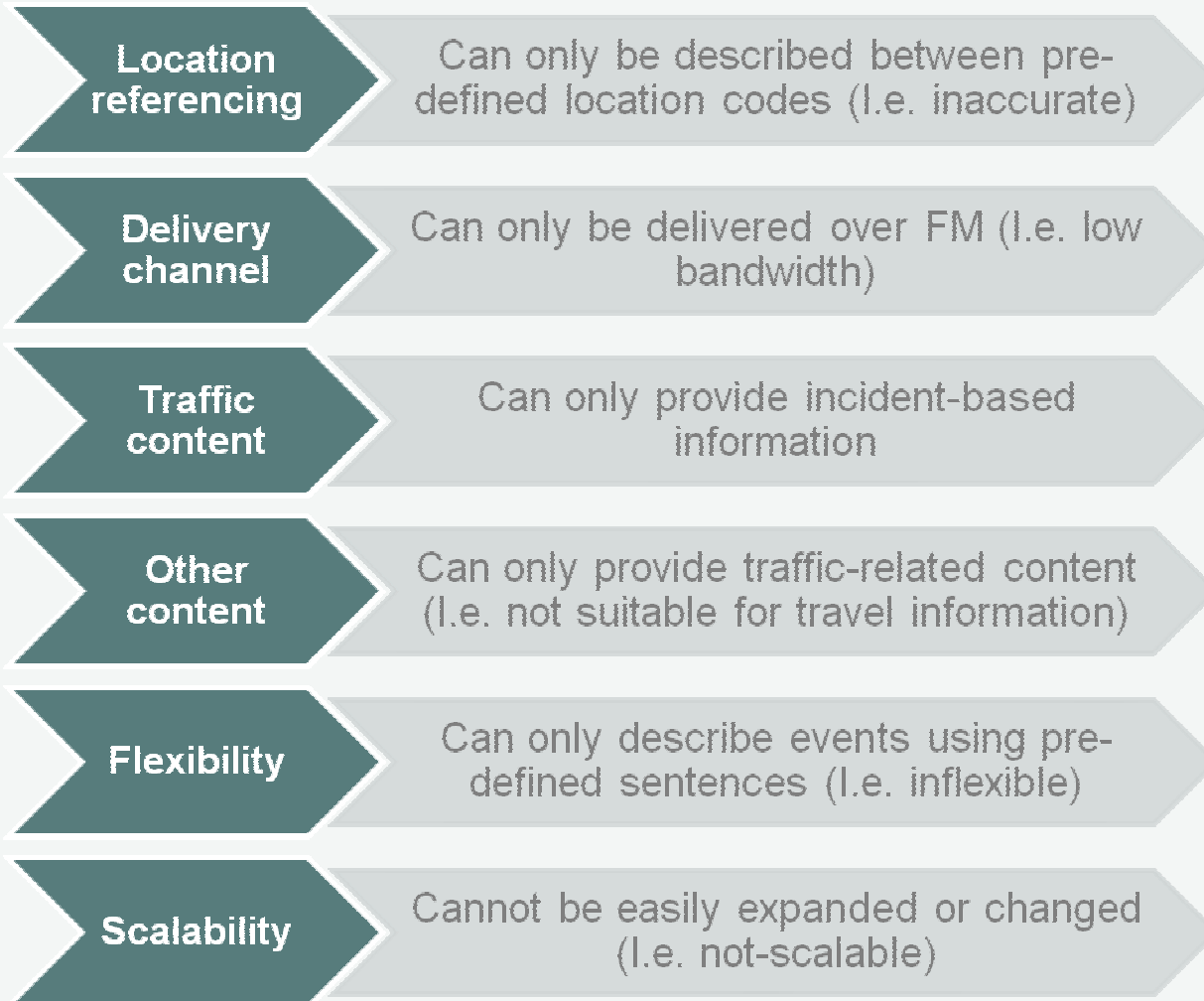


CLEARLY AHEAD

# Expectation has increased



# The problem ~ Despite success of RDS TMC, drivers now expect more



**Customer expectation surpasses RDS TMC capabilities**

# DAB - A Bigger Pipe

DAB provides a step  
change in speed to  
deliver new content  
( 500-1000+ times faster than RDS-TMC)

RDS-TMC 37b/s

DAB-TPEG 8-32kb/s (typ)

# The vision

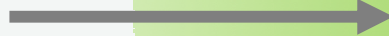
## PrecisionTraffic

### Traffic 1.0

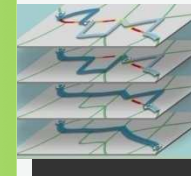


Incident information

Added value from traffic services focussed on the driver's needs



Full network flow information



Predictive/historic data  
Additional Applications



Multimodal travel information  
“Confidence”



High-speed delivery channel  
More information detail  
Less latency in delivery



Improved driver experience  
- additional services

# TPEG ....?

- TPEG technology standardised method for providing the delivery of all types of Traffic and Travel Information content by any required digital delivery channel.
- Provides Language independent human and machine readable content.
- Extensible with multiple applications
- TPEG applications use a set of Location Referencing
- Coordinated and controlled by industry users via TISA
- <http://www.tisa.org>



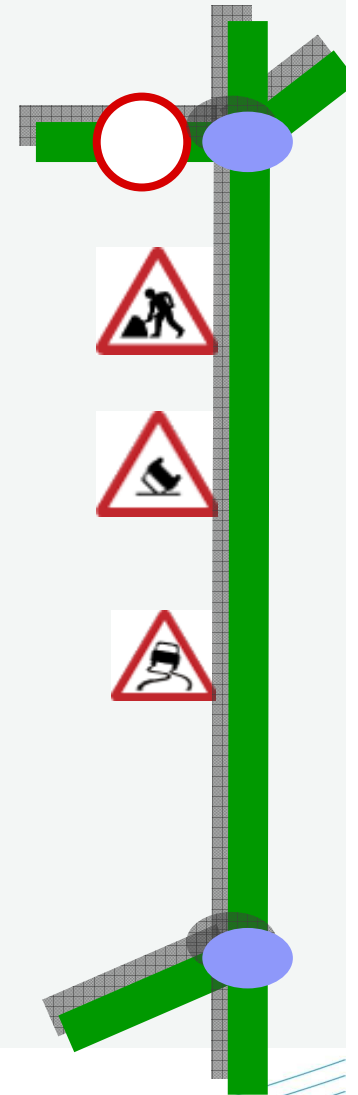
# Applications

- TPEG Applications have been defined for several types of data.
- There are many more in development.
- Others due to be developed.
- For the Automotive use (Navigation Systems) the applications with most focus are **TEC** and **TFP**.



# Applications: TPEG-TEC

- TPEG-TEC
- Basic Traffic information for navigation systems is focused on TPEG-TEC (Traffic Event Compact)
- Similar application to TMC; incident based.
- Provides machine and human readable incident information. In a compact form with defined structured content.





## Applications: TPEG - TEC

- Specifically designed for use with Automotive Navigation systems with DRG.
- Preferred over RTM due to Clearly defined Cause and Effect fields
- Also used to provide a sub-set application called Local Hazard Warning informing of dangerous situations on road.

(ice, bad corner, broken down vehicle... etc)

## TPEG - TFP (Traffic Flow and Prediction)

- **Traffic Flow and Prediction** provides detailed flow information to Navigation devices.

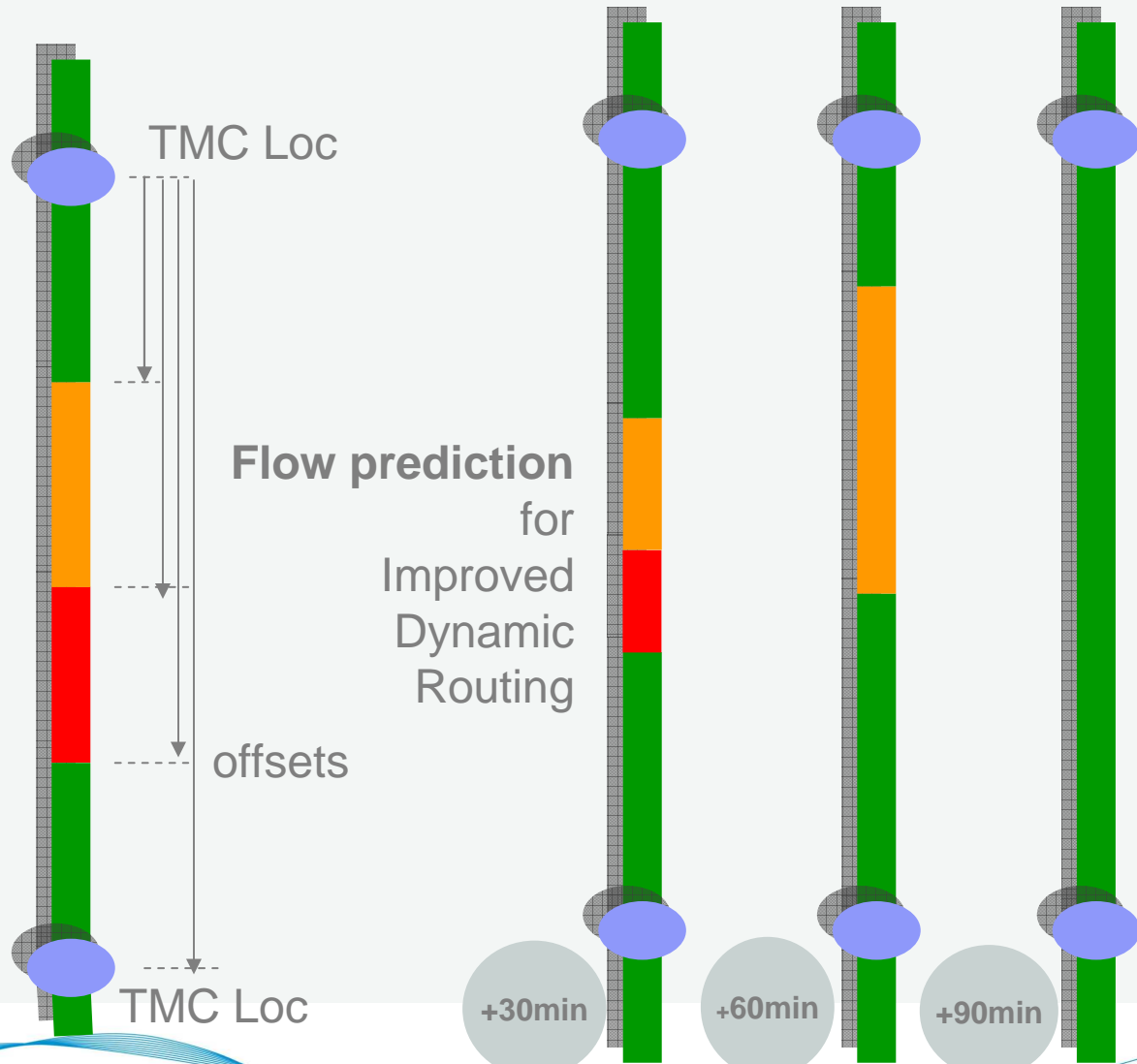


- Improved routing choice and ETA calculations.
- Highly accurate reporting of traffic flow typ. 100m resolution

# TPEG - TFP (Traffic Flow and Prediction)

Improved route choice based on live network speeds

Resolution not limited to TMC ; offsets can be used



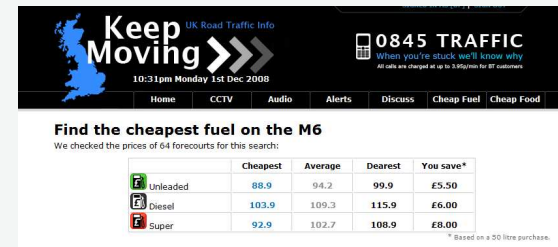
# TPEG-PKI (Parking Information)

- PKI application allows dynamic and semi dynamic information to be sent.
- Available Spaces
- Opening Times and Pricing
- Not available in Mapping data
- Currently broadcast in ITIS UK Broadcast TPEG service



# TPEG-FPI (Fuel Price Information)

- Fuel price information could save drivers money by allowing them to find cheapest fuel in local area or along their route.
- FPI application is fully defined TISA spec ready for implementation



UK Road Traffic Info  
0845 TRAFFIC  
10:31pm Monday 1st Dec 2008

Home CCTV Audio Alerts Discuss Cheap Fuel Cheap Food

### Find the cheapest fuel on the M6

We checked the prices of 64 forecourts for this search:

|          | Cheapest | Average | Dearest | You save* |
|----------|----------|---------|---------|-----------|
| Unleaded | 88.9     | 94.2    | 99.9    | £5.50     |
| Diesel   | 103.9    | 109.3   | 115.9   | £6.00     |
| Super    | 92.9     | 102.7   | 108.9   | £8.00     |

\* Based on a 50 litre purchase.

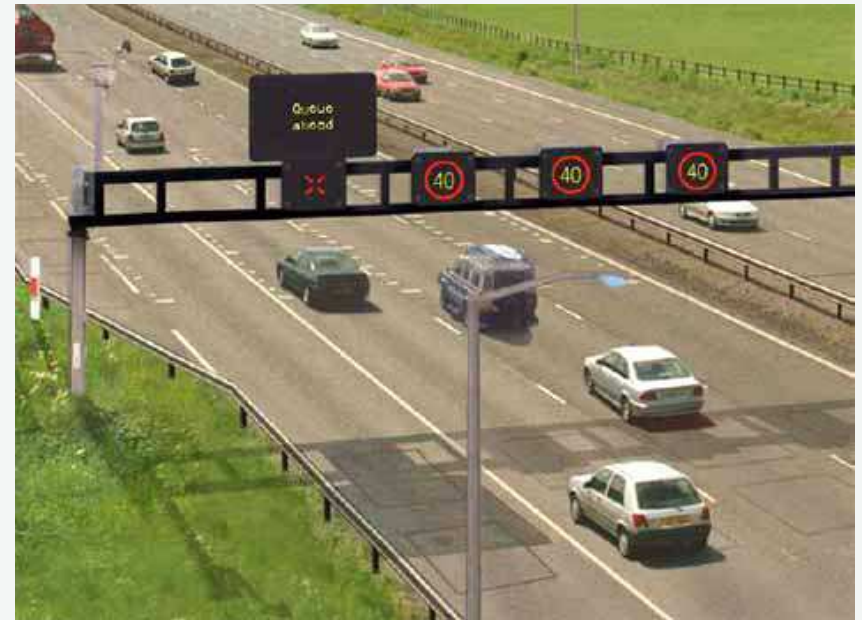


- Data readily exists, often based on fuel card transactions.
- UK Situation requires ~10,000 stations for national coverage.
- Data transmission needed within 10-15 minutes.
- Provides challenges to find best coding structure to limit required bandwidth.



# Applications: TPEG-SPI

- Variable Speed limits in Active Traffic Management zones
- Additional notification to driver of current speed limit
- Potentially large Infrastructure Cost saving for road agencies.
- Additional Safety for drivers
  - Audible warning/Speed limiter?
- Supplements embedded fixed speed limit datasets in Navigation maps.
- Under development
  - Currently only Speed defined,  
Other lane signage to be included



# Applications: TPEG-RPI

- Road Pricing Information
  - Road, Bridge & Tunnel Tolls
  - Time of day Pricing, payment/ticket collection locations
  - Booth lane identification, payment methods, car side access
- Enables journey cost calculation before journey starts
- Lane selection prior to approach
- Under development





# Applications: TPEG-WEA

- General Weather Related Information
  - Emergency/Severe weather situations
  - Environmental conditions (Smog/Pollen/ Air Quality)
  - Current status, Forecast
  - Include evacuation information
- 
- Early stage of development



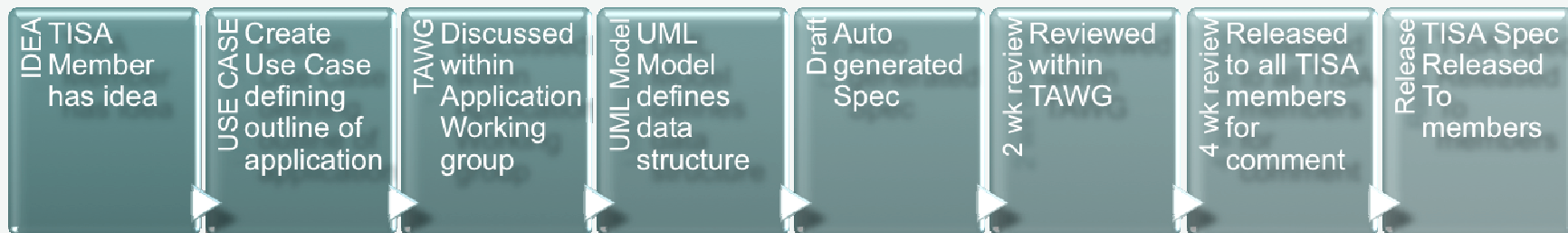
# On Air in UK

- In UK there are 2 DAB-TPEG test services already on air.
- Transmission via commercial DAB multiplex “Digital 1”
  - Incident Data
  - Flow Data
  - Parking Information
- Development s on going with several OEMs and receiver manufacturers
- Commercial service rollout during 2011



# TISA TPEG Application development

- New applications are developed by TAWG
- Anyone TISA member with an idea can raise a use case
- Specs Developed by volunteers
- Data format defined by UML Model
- Auto generation (partly) of Specification Document
- Binary and XML versions



# TPEG Applications Status

- TEC** *Traffic Event Compact OnAir*
- TFP** *Traffic Flow & Prediction On Air*
- SPI** *SPeed Information Definition*
- PKI** *ParKing Information On Air*
- RTM** *Road Traffic Message Standardised Application*
- PTI** *Public Transport Information Standardised Application*

- WEA** *WEAther Information Application being developed*
- FPI** *Fuel Price Information Application developed*
- RPI** *Road Pricing Information Application just started*
- SCA** *Safety/Speed CAmera Information Use Case*
- ?**
- ?**

# Adaption Layer Profiles for DAB

- TPEG is bearer agnostic
- TISA has created a clear definition about how to transmit TPEG over DAB

## TPEG Adaption Layer Profile, Part1:Digital Audio Broadcast(DAB)-Packet Mode with Data Groups

- Similar documentation for HD-Radio has also been developed



## Transition to DAB-TPEG enabled traffic services

- DAB TPEG traffic data provides many advantages
- In the move to switch to DAB, we must be aware of our existing FM clients.
- Careful consideration of switchover timing needed
- FM and DAB need to coexist for several years to allow new systems to be developed and deployed in vehicles by OEMs
- Must be aware of the lifecycle of OEM Navigation systems



# Summary

- “TPEG” ..... Not just a 4-letter word
- now an enlarging set of Applications and supporting documents
- RTM, PTI, PKI, TEC, CAI, FPI, SPI, WEA, TFP...
- becoming more and more an important additional offer to service providers within the DAB/DMB family.





*“TPEG.....The right tool for the job”*

- Thank You

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