

TIC  CONNECTS Systems - Vehicles - Travelers



TMC2V: Bringing VMS to Your Dashboard
ITS Canada
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started 2008*

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About GEWI.

The connected car – tomorrow and today.

VMS history / limitations.

Collecting VMS data.

Processing VMS messages.

Encode and distribute messages using TPEG.

TPEG vs. RDS-TMC Overview.

Questions?



Founded in 1992

Hagen Geppert & Dr. Karl Will.

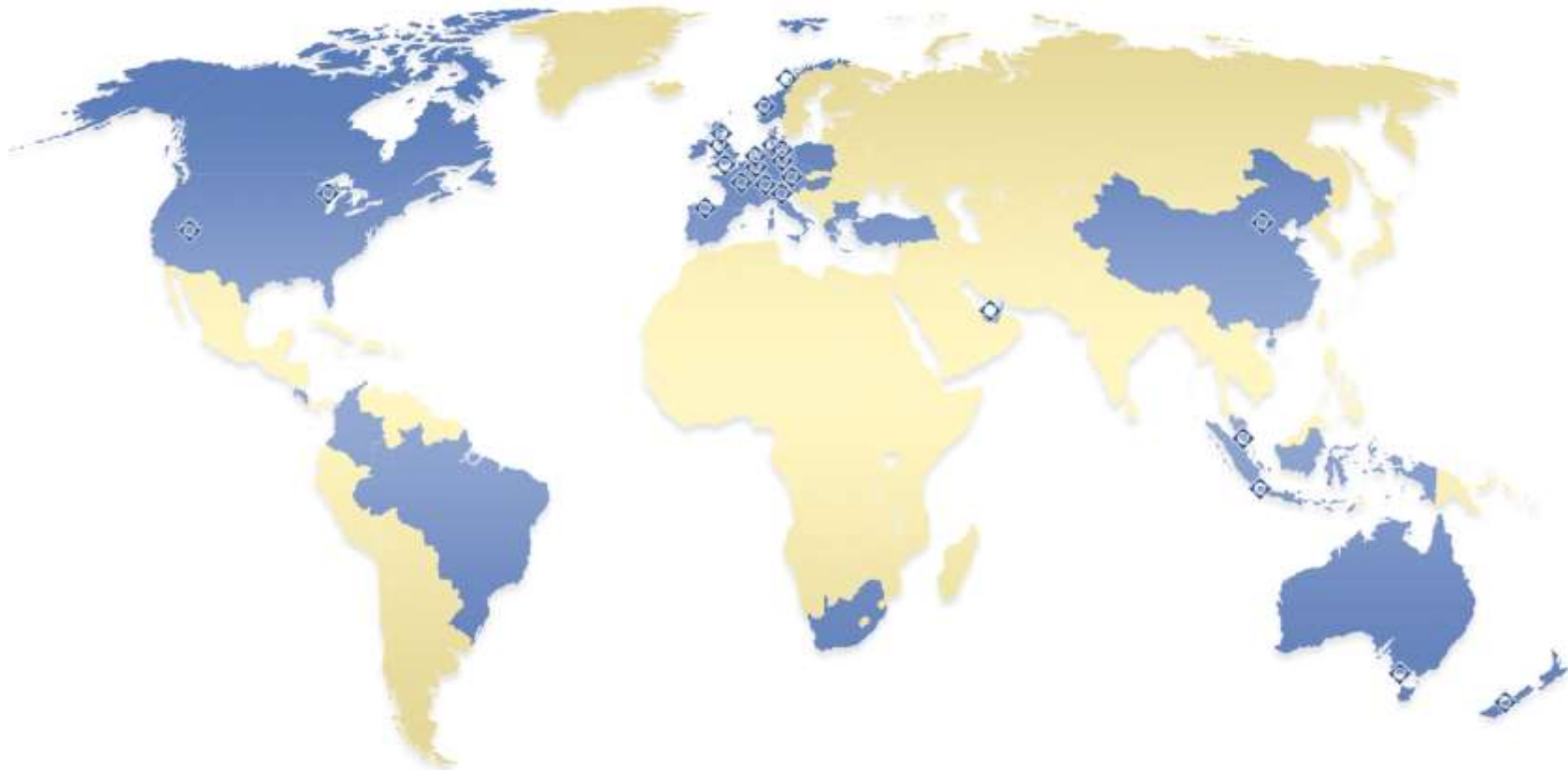
Corporations in Germany, USA, and Singapore.

Headquarter in Bernburg (Germany).

Offices in USA, Singapore, UK.

Certified by ISO 9001:2001 since 1998.





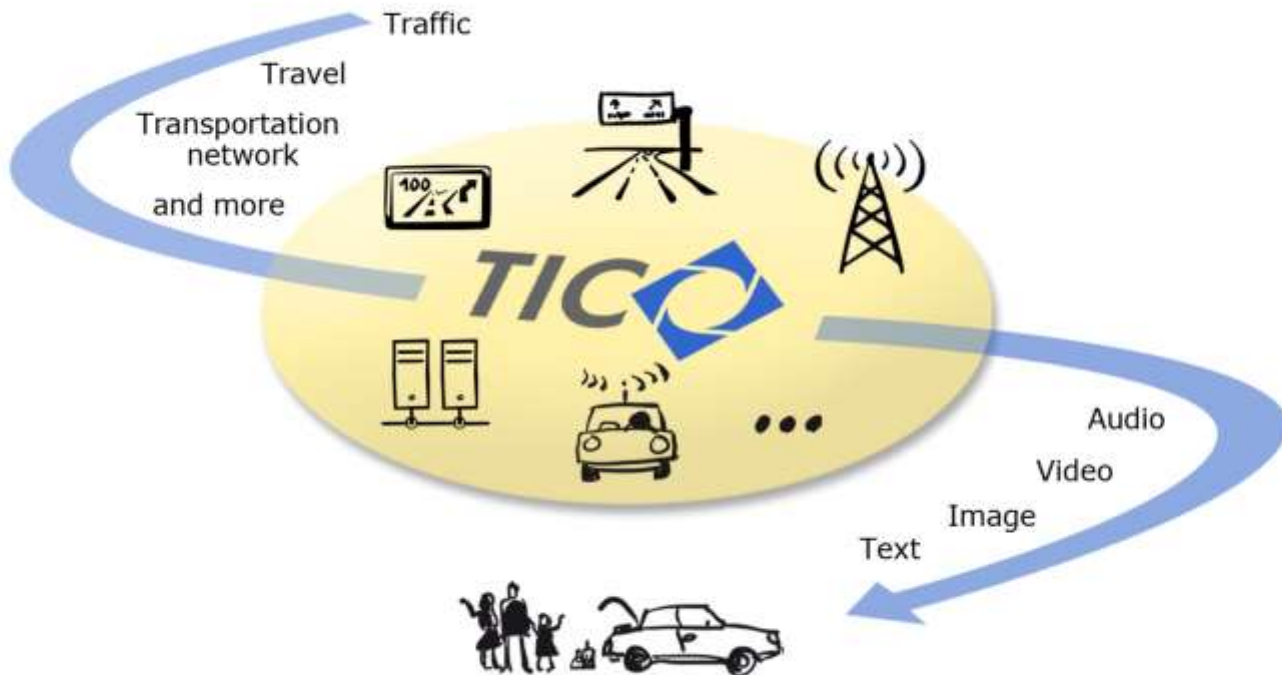




Image from FHWA

Infotainment

- Streaming music, news, social networks, email.

Vehicle Data

- Vehicle ID, miles, fuel usage, velocity, position, registration, insurance.

Emergency assistance

- Breakdown, lockout, diagnostics, anti-theft.

Connected Navigation

- Traffic, weather.
- Search POI's.
- VMS data.

VMS, CMS, DMS

- Variable, changeable, dynamic/digital.

Signs in use since 1970

Early signs had neon tubes and 3 messages

- Freeway closed.
- Accident on Freeway.
- Road work on Freeway.

Early 1980's Wink-O-Matic developed first Changeable Message Sign in US.

- Done using "flip dots".

Early 1990's – all LED Changeable Message Sign.



Cost – limits number of units which can be deployed.

Message length – longer messages need more than one screen.

Driver distraction.

Information not always relevant to current location.

Missed information

- Driver view blocked.
- Driver completely misses sign.
- Driver sees only first/last half of message.

VMS Data

- Created by public agency.
- Created by contractor on site – (portable device)
- Automatically created by system or device.

Data harmonization

- Same data as shown on sign can be delivered to navigation unit.

Data Distribution – same message across all Channels

- To vehicles/devices.
- Web.
- IVR...and more.

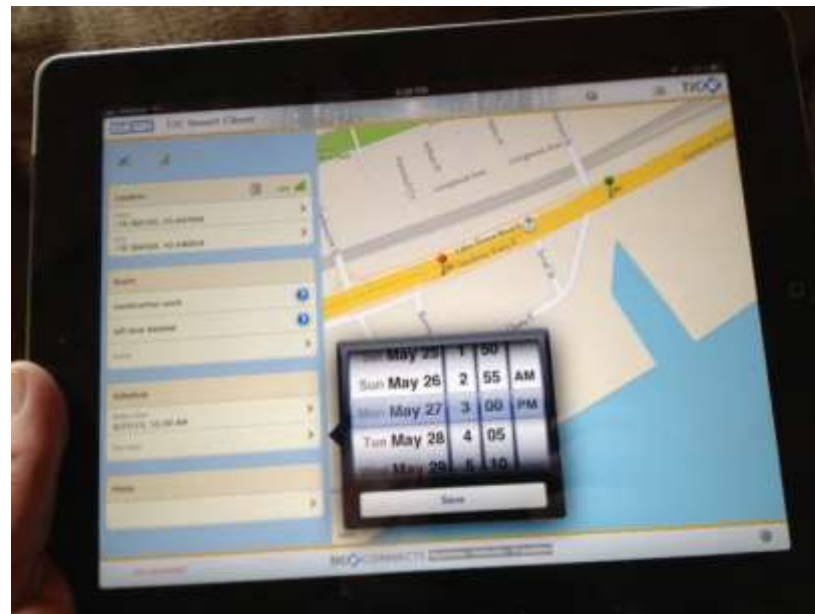
VMS Data

- Created by public agency.



VMS Data

- Created by contractor on site
 - Easy to use.
 - Real-time data.
 - Low device cost.
 - Photo capabilities
 - Document project progress.
 - Incidents.



VMS Data

- Automatically created by system or device
 - Fully automated
 - No staffing required
- Maintenance vehicles or trailers are equipped with GPS or GPRS device.
- Position, bearing and status sent to a server monitoring all devices.
- Data records forwarded to the control center.



GEWI's TIC software receives data records from public agency.

Geo-matching of VMS data onto the road network.

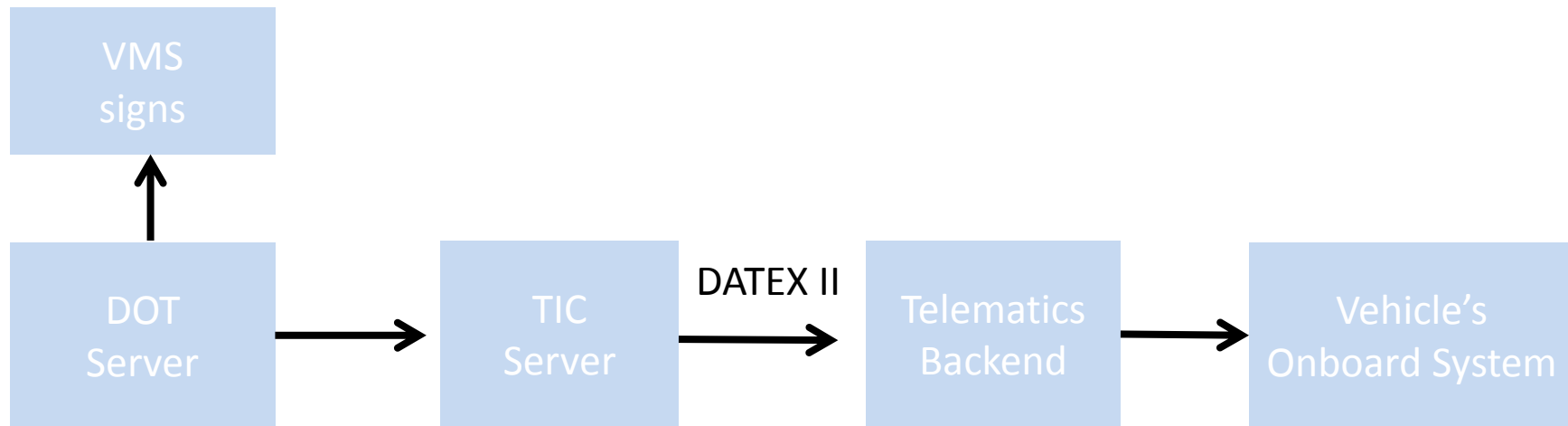
Creating traffic event messages with geo-matched location.

Will be shown to driver at relevant locations on route.

Driver only receives alerts for conditions ahead that will affect their planned route.

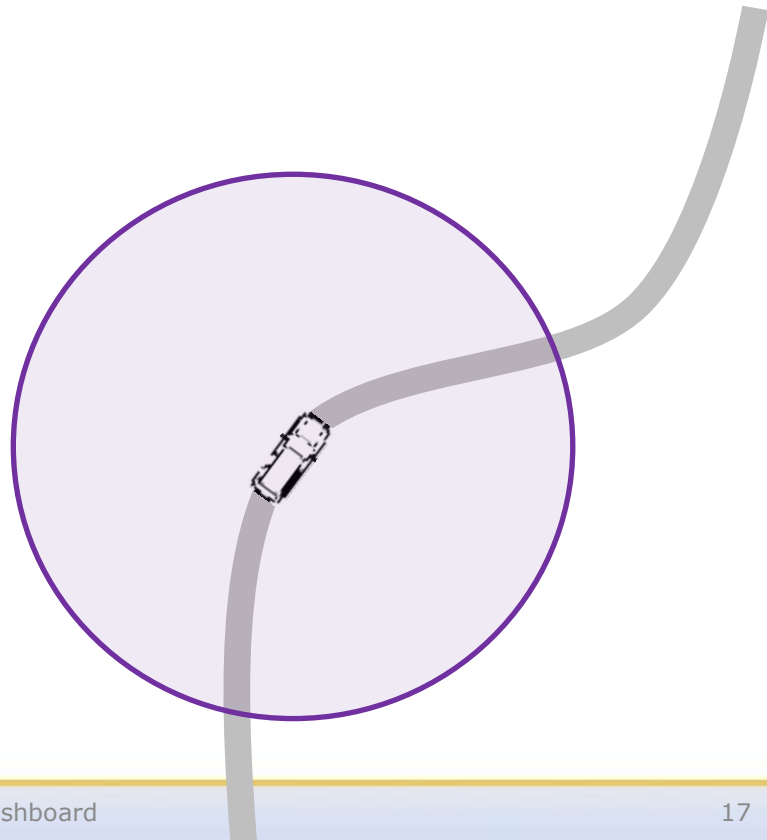
Display received data on approach of VMS and some time after passing VMS.

VMS data needs to include geo-reference (lat/long, heading) and displayed text / symbols.



TPEG over HTTP (THTTP)

- A THTTP Request is send to the server by the vehicle.
- The server gathers all relevant traffic event messages.
- Messages are then coded using TPEG TEC with DLR1 (AGORA-C).
- TPEG messages are packaged and send back to the vehicle through an THTTP Response.



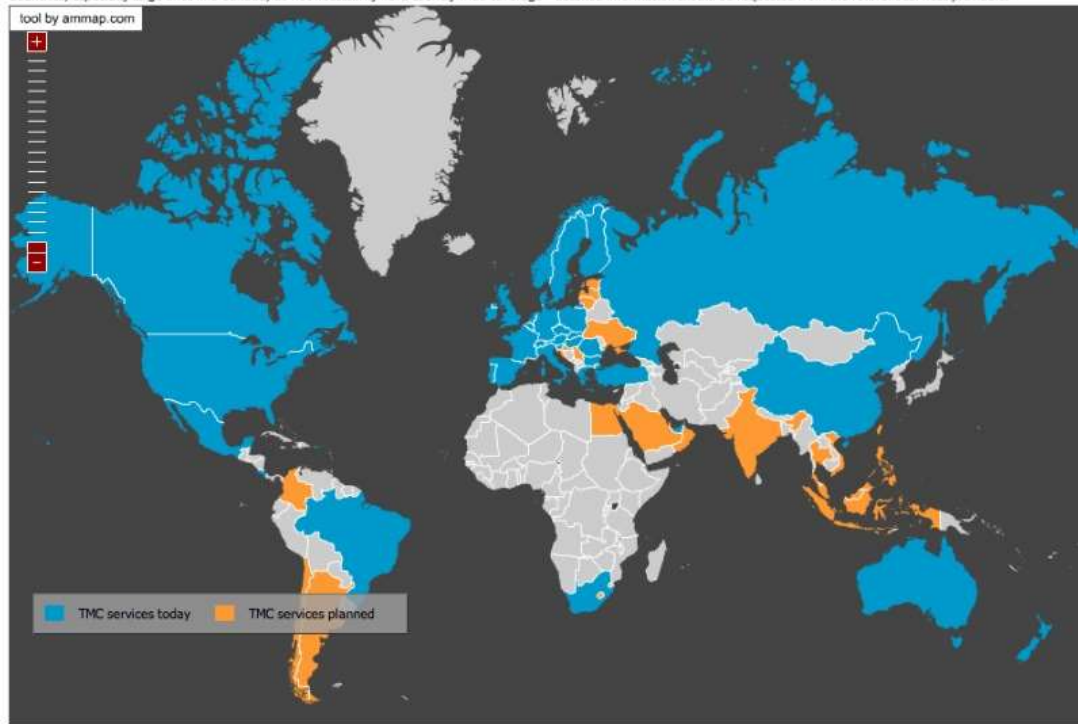
RDS-TMC

- Traffic Message Channel (TMC) messages are broadcast over FM or Satellite using the Radio Data Channel (RDS) with encryption.
- Data can be regionalized by dynamically generating message cycles for individual regions.
- Priority can be given to urgent messages.
- Can only transmit 300 messages in 15 minutes.
- Only the Alert-C standard can be used to transmit traffic events.
- Events can only be referenced to TMC locations.
- Well established with many RDS-TMC receive devices available.

TMC Services

Broadcast delivery by VHF/FM (RDS-TMC)

On the map countries where TMC services are operational or planned are indicated by complete country colour coding. Move the mouse over a country to show information about the service. Countries, especially large ones like Canada, do not necessarily have country wide coverage - detailed information should be requested from the relevant services providers.



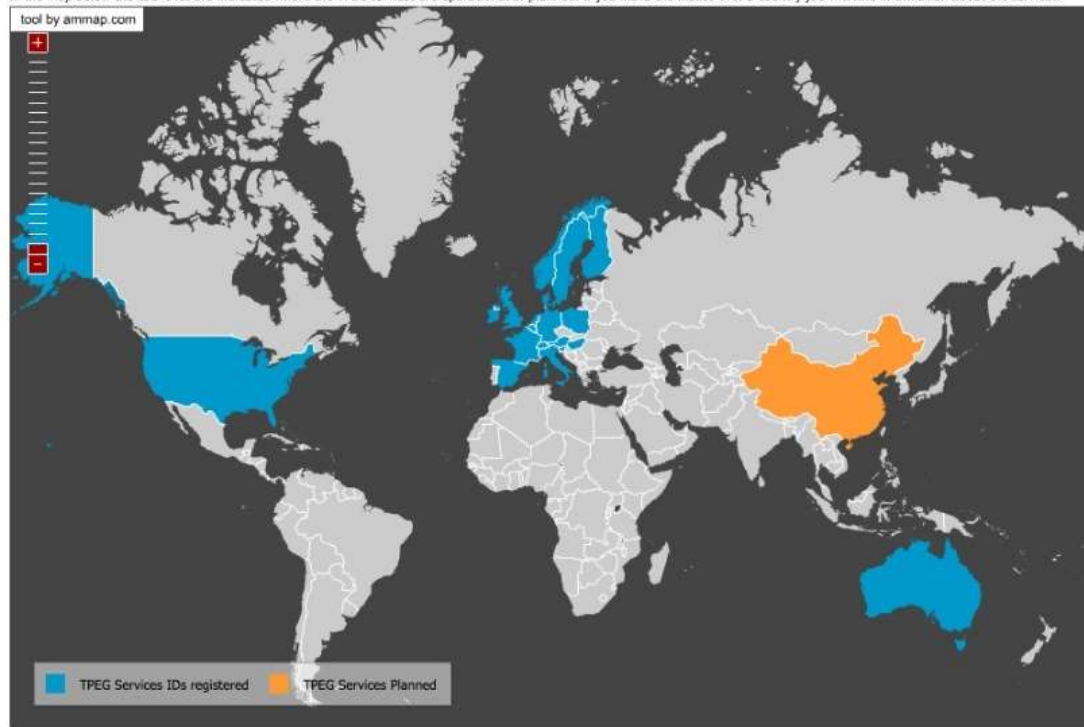
Map courtesy of TISA

TPEG

- TPEG can be broadcast over digital media such as DAB, HD, Satellite Radio, TCP/IP, and mobile telecoms (GPRS, UTMS) using TPEG over HTTP.
- Two way communication.
- Many applications supported to provide more robust information to traveler.
- Travel data can be location referenced to multiple location referencing methods.
- Conditional access: Provides for free or subscriptions services.
- High volume of messages may be transmitted (up to 20,000 per 15 minutes)

TPEG Services

In the map below the countries are indicated where the TPEG services are operational or planned. If you move the mouse over a country you will find information about the services.



Map courtesy of TISA

TPEG

Many applications already standardized:

- Parking Information (PKI),
- Traffic Event Compact (TEC)
- Traffic Flow & Prediction (TFP),
- Fuel Pricing Information (FPI),
- Weather (WEA)


- **Increasing number of maintenance trailers/trucks are equipped with GPS/GPRS modules.**
- **Vehicle manufactures incorporating TPEG capable navigation devices into their cars, e.g. BMW, Audi, - and you can already buy these cars.**
- **The Local Hazard Warning Service was already tested for service provisioning in 2011 in Germany.**
- **TIC software already incorporates all the features necessary and as a COTS product it is cheaper than building your own. All elements of the solution already exist.**

- **Cost**
 - Could reduce # of signs which need to be deployed.
- **Message length**
 - Not limited by VMS type.
- **Reduce distraction**
 - Driver can check info at their convenience, rather than by sign location.
- **Relevant to current vehicle location**
- **No missed information**





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