TN-ITS: a fast channel for updates of road attributes from road authorities to the ITS map providers

Kees Wevers, President TN-TS

EU EIP Sub-activity 4.7 kick-off - 4 February 2016, Brussels

Source of image: ROSATTE web site (ertico.com/rosatte/)

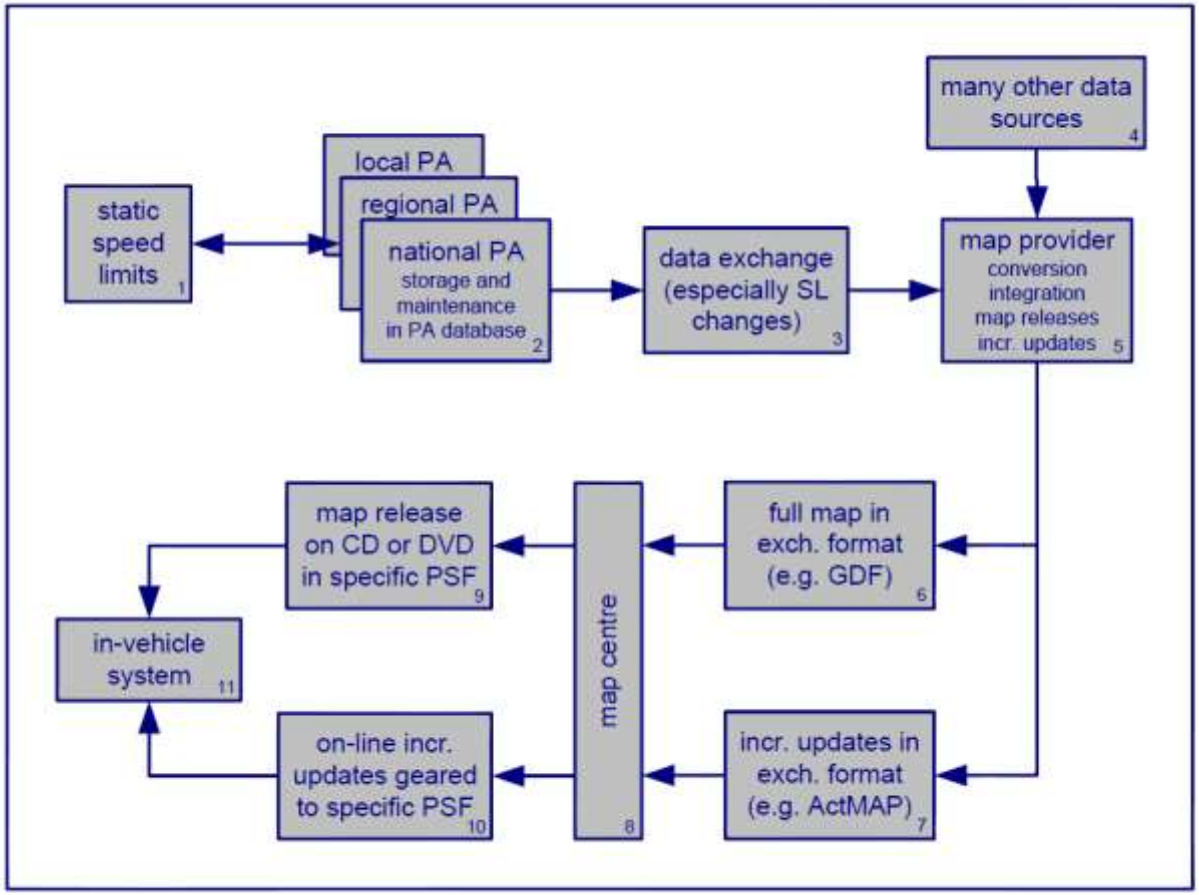
32 years of evolution of the digital map for ITS

1984	foundation of Tele Atlas, Belgium
1985	foundation of Navigation Technologies (NavTech), USA
1985	start of GDF development (Demeter project)
1986	start of the development of the Carin navigation system (Philips)
1991	foundation of European Geographic Technologies (EGT), The Netherlands
1995	(around this time) first use of term ADAS and gradual start of development (from ~1999 real take-off)
1996	first factory-installed vehicle navigations system (Carin, BMW)
1996	Philips merges EGT into NavTech, headquarters Chicago
1996	completion of CEN GDF 3.0 as ENV14825:1996
1999	IN-ARTE project, on integration of ADAS applications
2000	Tele Atlas acquires Etak (USA) from Sony
2001	foundation of the ADASIS Forum
2004	start of EU-funded PReVENT/MAPS&ADAS project (Feb 2004/Jan 2007) - developed ADASIS v1
2004	start of the work on the Navigation Data Standard (NDS)
2004	Navigation Technologies renamed to NAVTEQ & NYSE IPO
2004	completion of ISO GDF 4.0 as ISO14825:2004
2006	start of SAFESPOT (01/2006-12/2009) and CVIS (06/2009-06/2010) projects on cooperative systems
2007	TomTom acquires Tele Atlas
2008	Nokia acquires NAVTEQ / start of ROSATTE project
2011	Nokia integrates NAVTEQ as a division
2011	completion of ISO GDF 5.0 as ISO14825:2011
2012	gradually increasing interest in automated driving, start WG Automation of iMobility Forum
2013	NAVTEQ renamed to HERE
2013	foundation of the Transport Network ITS Spatial Data Deployment Platform
2015	consortium of German car manufacturers acquires HERE

TN-ITS concept: immediate updating of ITS maps

- Highly up-to-date ITS maps increasingly important
  - ADAS, Cooperative ITS, Automated Driving
  - multimodal applications
- Public road authorities control road network changes:
  - traffic signs/regulations, public transport information
  - other road attributes
  - even geometry
- If well organised, the most efficient source for information on changes
- Mission of TN-ITS
  - foster pan-European roll-out of a data chain for ITS spatial data serving immediate updates
  - provide common exchange infrastructure to address the multitude of solutions on the side of authorities
  - implementation support
- Updates that can be directly incorporated into ITS digital maps
  - trusted source, high reliability
  - single data points (no big data processing)
  - immediate availability

The vision of the data chain: 2005



Overview of the data chain for static speed limits

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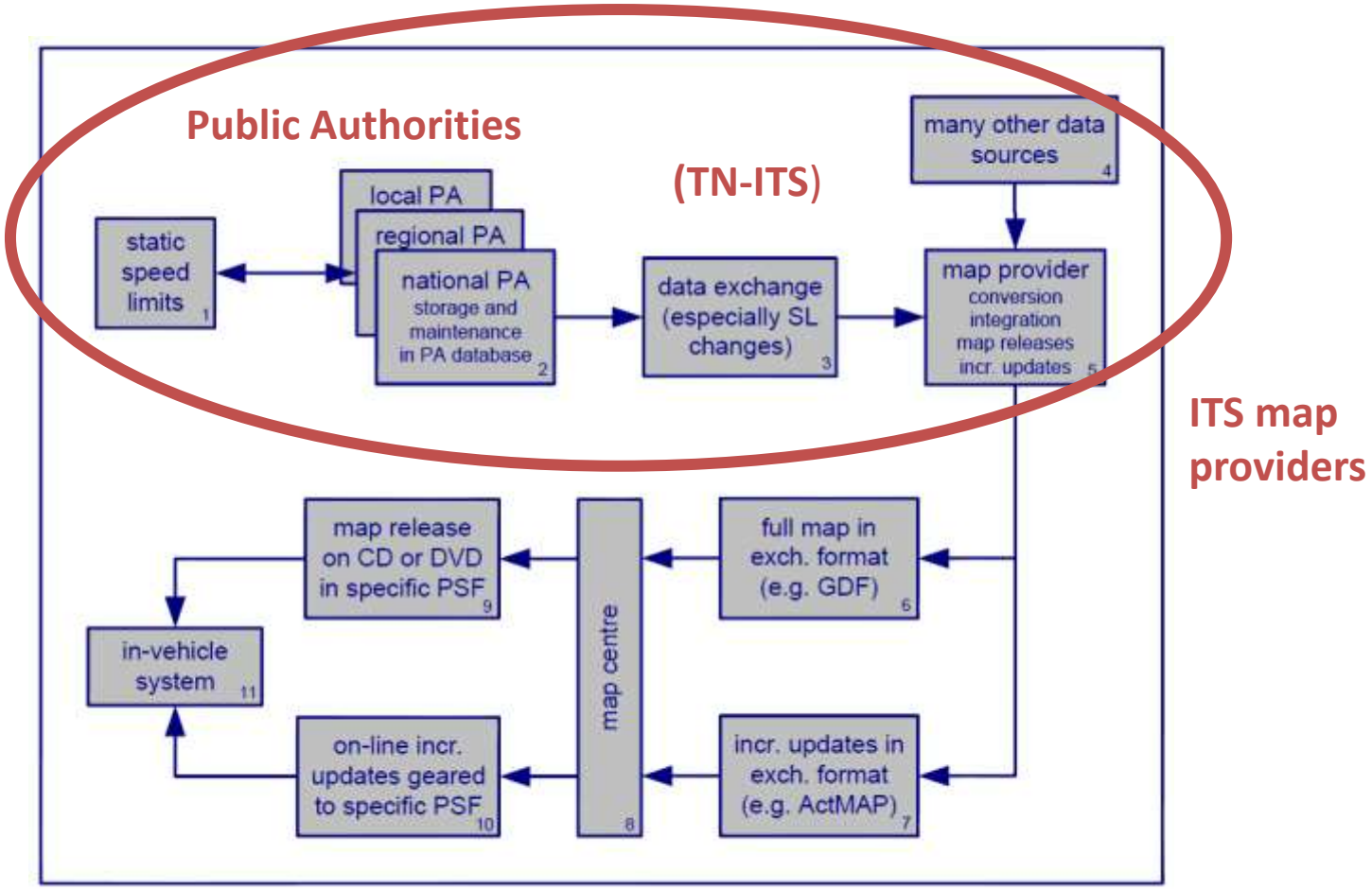

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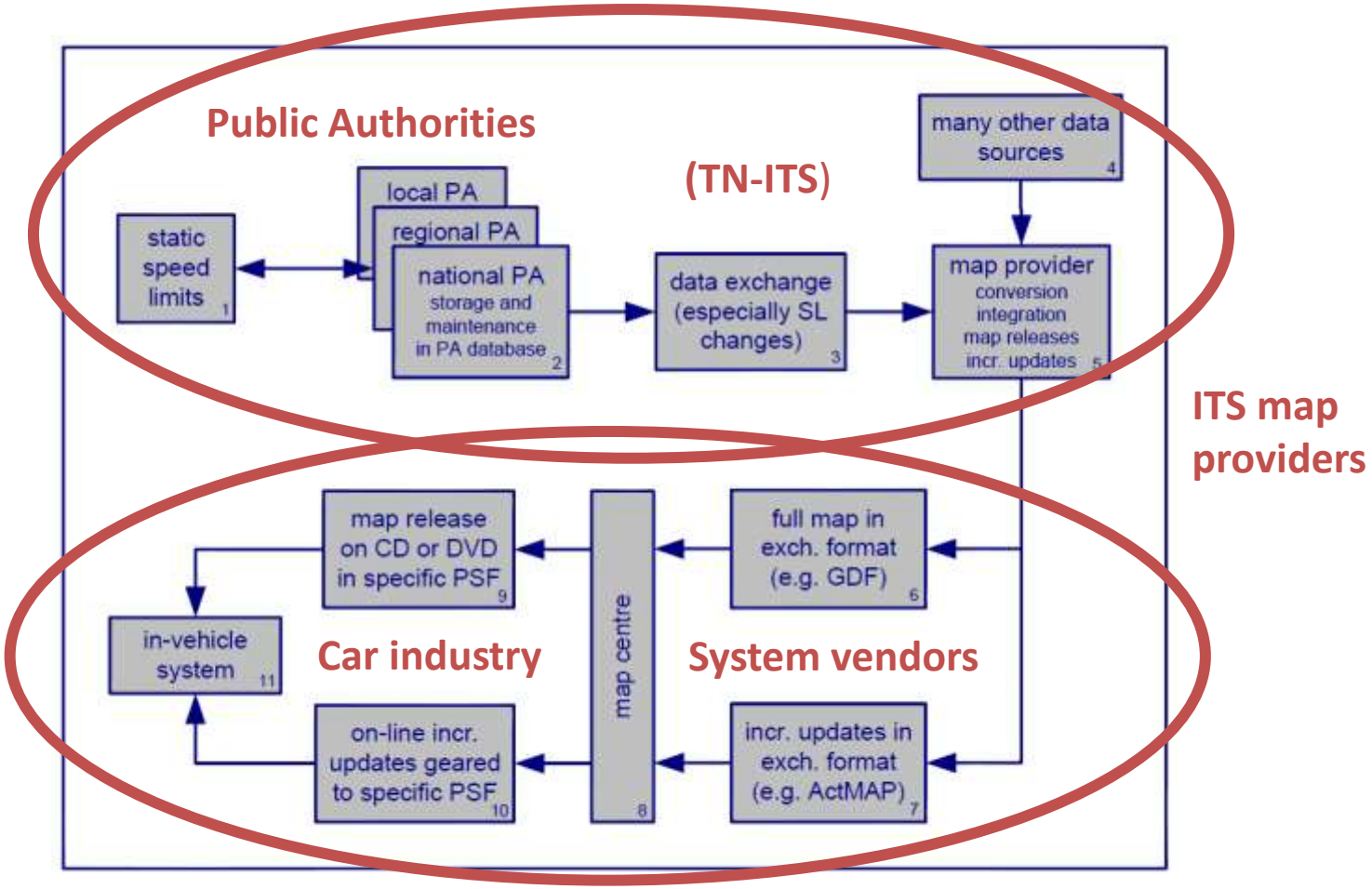

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TN-ITS development - important milestones

- Several EU-funded projects
  - MAPS&ADAS (2004/07), SpeedAlert (2004/05), ROSATTE (2008/10), eMaPS (2011/13)
- INSPIRE Directive (15 May 2007)
  - infrastructure for Spatial Information in the European Community
  - Transport Networks (TN) specification
- ITS Action Plan (16 Dec 2008) priority action 1.3
  - procedures for ensuring the availability of accurate public data for digital maps and their timely updating through cooperation between the relevant public bodies and digital map providers
- ITS Directive (7 July 2010) (specification B)
- Foundation of TN-ITS (Dublin, 5 June 2013)
- Commission Delegated Regulation (EU) 2015/962 (23 June 2015)
  - focus on RTTI services, but includes elaborate rules for the provision of updates of static road data ("road data that do not change often or on a regular basis")

Commission Delegated Regulation

- Article 1 - Subject matter and scope
  - This Regulation establishes the specifications necessary in order to ensure the accessibility, exchange, re-use and update of road and traffic data by road authorities, road operators and service providers for the provision of EU-wide real-time traffic information services.
  - It shall apply to the comprehensive trans-European road network, as well as motorways not included in this network, and priority zones identified by national authorities where they consider this to be relevant.
  - It shall apply in accordance with Article 5 of Directive 2010/40/EU.

Commission Delegated Regulation

- Article 4 - Accessibility, exchange and re-use of static road data
  1. For the purpose of facilitating the provision of compatible, interoperable, and continuous real-time traffic information services across the Union, road authorities and road operators shall provide the static road data they collect and update pursuant to Article 8 in a standardised format, if available, or in any other machine readable format.
  2. The data referred to in paragraph 1 and the corresponding metadata including information on the quality thereof shall be accessible for exchange and re-use by any digital map producer or service provider within the Union:
     1. on a non-discriminatory basis;
     2. within a time-frame that ensures the timely provision of the real-time traffic information service;
     3. through the national or common access point referred to in Article 3; (d) Road authorities, road operators, digital map producers and service providers using the static road data referred to in paragraph 1 shall collaborate in order to ensure that any inaccuracies related to static road data are signalled without delay to the road authorities and road operators from which the data originates.

Static road data	Dynamic road status data	Traffic data
Road network links and physical attributes (e.g. geometry, road width, number of lanes, gradients, junctions)	Road / lane / bridge closures, Accidents, Incidents	Traffic volume
Road classification	Overtaking bans on HGV	Speed
Traffic signs on traffic regulations and dangers (e.g. access conditions for tunnels / bridges, permanent access restrictions, other)	Road works, Poor pavement conditions	Location and length of queues, Travel times
Speed limits	Dynamic speed limits	Waiting time at border crossings to non-EU countries
Freight delivery regulations, Traffic circulation plans	Temporary traffic management measures	
Location of tolling stations	Direction of travel on reversible lanes	
Tolled roads, fixed RUC, payment methods	Variable RUC, payment methods	
Location of parking places / service areas	Availability of parking places, cost of parking	
Location of charging points for EV and conditions of use	Availability of charging points for EV	
Location of CNG / LNG / LPG stations	Availability of delivery areas	
Location of public transport stops and interchange points	Weather conditions affecting road surface and visibility	
Location of delivery areas		

Source: Julie Raffaillac, DG MOVE, ITS Unit, Presentation "EU-wide Real-time Traffic Information Services" at ITS Nationals & TN-ITS Joint Workshop on Spatial Data, 4 June 2015, ERTICO, Brussels

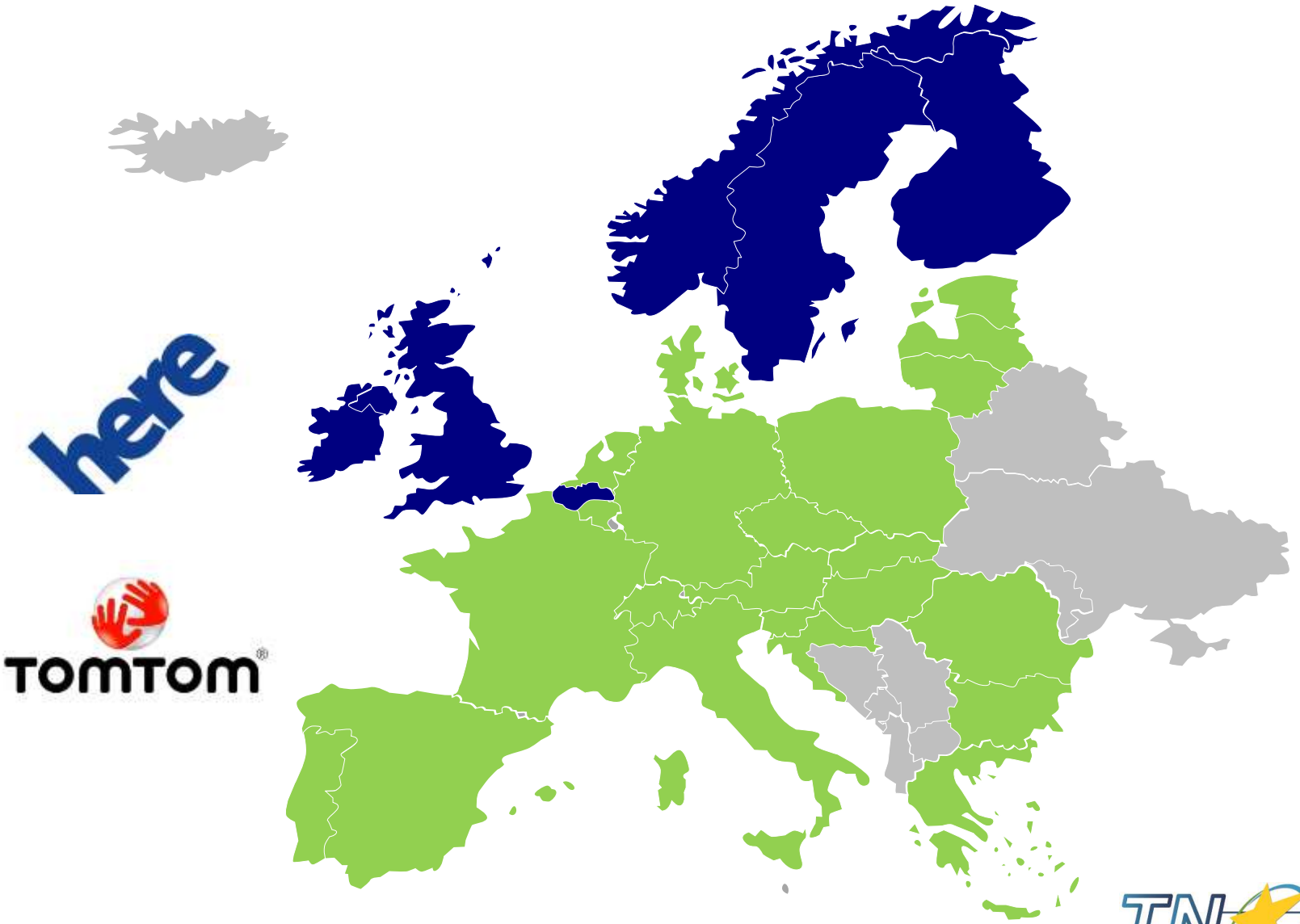
TN-ITS status and achievements

- Intensive collaboration with the INSPIRE community
  - joint Transportation Pilot (2014/2015) with the JRC and the ELF project
  - realisation of TN-ITS implementations in Norway and Sweden
- Interaction with DG MOVE on the development of Delegated Regulation on RTTI
- Standardisation of the TN-ITS exchange specification is underway in CEN/TC 278
  - data content spec / physical exchange format / service specification
  - highly aligned with INSPIRE
- Reports on NO and SE implementations in Transportation Pilot
- *Implementation Support* document
  - guidance for Member States planning to set up an TN-ITS infrastructure
- TN-ITS sub-activity in CEF-funded project EU EIP
  - additional TN-ITS implementations in FI, BE (FL), UK, IE and FR
  - other partners: HERE, TomTom, ERTICO
  - start 01-01-2016, duration one year, actual start today

Status of TN-ITS working groups

- Have been working at slow pace
  - A model for task forces was proposed but not adopted
  - A practical approach will be taken; members to reconfirm membership
- WG 1 - Location referencing
  - Important topic, also for CEF project
- WG 2 - Standardisation
  - PT proposal is underway
  - Outline of tasks available from Transportation Pilot
  - CC meeting together with CEN/TC 278 WG 7 to be organised end Feb
- WG 3 - Implementation support
  - Outline document is available, pointing to sources, and indicating topics for further work; priorities were set in Joint WG meeting 2015
  - Task Force will be set up to work on highest priority topic
- WG 4 - Reference implementation
  - Will be activated; reuse of results from TP and CEF project

TN-ITS membership



Message both ITS map providers

- At session on Transportation Pilot at ITS World Bordeaux
  - In their presentations at the session, the ITS map providers HERE and TomTom, partners in the Pilot, gave a positive and supporting message. They have experienced the availability of TN-ITS updates of road attributes as a very valuable data source for keeping their maps highly up-to-date. Which is in the interest of both the road authorities and the general public, and especially important in view of cooperative ITS and automated driving.