European Standardization in support of Urban Intelligent Transportation and Mobility

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As cities and urban environments expand, new technologies create opportunities to provide integrated mobility. Journeys can become multimodal, pollution can be better managed, and the comfort, speed and safety of urban journeys improved. New transport systems, from protected cycleways to ride hailing taxi and bus services, and, in the near future, automated vehicles will provide significant potential for society as a whole. But this cannot be left to chance and innovation alone. Standards have an important role to play in enabling these new paradigms to coexist and work seamlessly together and improving safety throughout Europe. CEN/TC 278/WG 17 - Urban ITS is the focus and driving point for the development of standards to support this integrated urban mobility paradigm.

CEN, The European Committee for Standardization, aims to ensure that standards address opportunities, impediments and hazards to enable seamless transportation and mobility options for European cities in the 21st Century. CEN develops and adopts European Standards that support Intelligent Transport Systems.

The European Commission (EC) recognizes the important role played by European Standards in promoting the Urban ITS model. EC mandates support the interoperability of co-operative systems for Intelligent Transport in the European Community and provide requests to the European Standardization Organisations, asking them to carry out specific standardization activities.

Standardization Requests (Mandates) from the European Commission related to ITS are: M/546, Commission Implementing Decision of 12.2.2016 as regards Intelligent Transport Systems (ITS) in urban areas; Directive 2010/40/EU of the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport); M/453 in the field of Information and Communication Technology (ICT).

CEN is developing and will publish standardization deliverables and guides on how to achieve seamless mobility in cities. These will be intended both as explanatory and informative publications and supported with tools for experts.

COOPERATIVE, CONNECTED AND AUTOMATED VEHICLES

Almost everyone has seen news in media about autonomous and automated vehicles. It is perhaps less widely known that, for nearly 25 years, the intelligent transport sector (national governments, road administrations, local authorities, vehicle manufacturers, service providers and advisors) has, with the help and coordination of the European Commission, been addressing and solving the issues concerned with so called 'connected vehicles' – meaning, connected or cooperative vehicles that 'talk' to each other and the road infrastructure.

CEN/TC 278 is now addressing issues related to 'automated vehicles' and 'CCAM' (Cooperative, Connected and Automated Mobility) to enable these transformative developments. The European Commission is developing regulations that will soon require vehicles to have one or more means of 'connectivity' to other vehicles as well as with infrastructure. This will be based on a mix of CEN, ISO, ETSI and IEEE standards. CEN/TC 278, working closely with its fellow standards development organisations, is at the forefront of developing standards for connected and automated vehicles. CEN/TC 278/WG 16 - Cooperative ITS lead the work associated with communications aspects and general systems support. CEN/TC 278/WG 17 - Urban ITS leads the development of standards for the application of these technologies in urban environments.

BENEFITS
- Safer roads, significantly fewer road deaths and injuries;
- Increased mobility and a more predictable travelling experience (both in cities and on other roads);
- Coordinated and often multimodal journeys that offer more enjoyable experiences;
- Better management of congestion and better use of urban roads, particularly when incidents occur;
- Better management of pollution, and therefore more sustainable transportation;
- Ability to successfully support the trend to ever larger cities while at the same time improving the environment of our cities.

Intelligent Transport Systems have already made major contributions to the reduction of death and accidents on European roads. They have further contributed to a more relaxed driving experience and a more coordinated and efficient use of the different modes in the transport system. Cooperative, Connected and Automated vehicles present opportunities for further improvements to the travelling experience, and for the enjoyment and sustainability of our cities, but require Europe-wide standards to enable this to happen.

Gerhard Menzel
European Commission, DG Joint Research Centre

MOBILITY, MULTIMODALITY AND MIXED VENDOR ENVIRONMENTS

Imagine a world where a traveller can move seamlessly from place to place, where you plan your journey and travel preferences on your device and are presented with a number of journey choices. See fully integrated public and private transport modes; where you don't need to own a car; where there are multiple on-demand travel options with real-time journey information. The transition from one mode of transport to another will be guided step-by-step, perfectly timed and effortless; congestion is minimised, air quality improved, and passenger comfort enhanced.

Such a world is now a realistic possibility, but at the same time, local and regional transport authorities face increasing uncoordinated competition from demand-responsive private sector services, electric and automated vehicles, and other potentially disruptive innovations.

Yesterday's vision of the car-friendly city is increasingly becoming obsolete. Consider transport, not with a narrow view of driving a car or catching a bus, but as a service. We must rethink how transportation in cities works.

It is predicted that by 2050, 70% of the world's population will live in cities. However if current trends continue, city dwellers are likely to face even more crowded conditions, polluted air, and overburdened infrastructures. While the use of private cars is decreasing, we have the opportunity to use new technology, such as automated vehicles and connectivity, both to improve the environmental impact on, and the sustainability of, the cities we live in, and, at the same time, improve the journey experience.

Combining old and new ways of getting around will transform transport in cities, but this cannot be done inconsistently and differently in every city. Vehicles move around cities and countries. People travel around with their smartphones and expect similar services everywhere they go. European standards are required to enable this transformation and CEN/TC 278 is at the forefront of developing and gaining consensus for such standardized solutions.

BENEFITS

■ Transition from one mode of transport to another is straightforward, perfectly timed and effortless; congestion is minimised, air quality improved, and passenger comfort enhanced.

" *A great advantage of having harmonized European standards is that they give interoperability of these technical innovations consistently and seamlessly throughout the whole of Europe and beyond, but flexibly enough to meet local requirements.* "

Knut Evensen,
Convenor CEN/TC 278/WG 17 - Urban ITS

MANAGEMENT OF ELECTRONIC TRAFFIC REGULATIONS (METR)

To date, the majority of so called 'self-driving' cars have utilised cameras to read road signs and street markings. However, while they work well enough for tests and demonstrations, these systems are not good enough to roll-out on a commercial scale. Signs become blurred, hidden, or damaged; road markings get obscured by snow, leaves and rain, wear away or become dirty.

In the short term, for automated driving demonstrations, car manufacturers research every road in the trial area and install precise digital maps for the vehicles' sensors to check (making sure that the vehicle does not drive in automated mode outside of these precisely mapped areas). Whilst acceptable for a trial to prove the technology, this does not scale up well for European commercial rollout. It is now recognised that the only way to roll out automated vehicles, is to have accurate and trustworthy information provided by the road authority. Clearly software providers to local authorities must not do this in a different manner.

Standards are required to provide a regular format for regulatory information, and there need to be standardized methods, both to access such data securely and reliably, and to make it available to electronic map providers. The CEN METR project is an ambitious family of standardization deliverables being developed to make this possible.

BENEFITS
- Harmonised means to record and digitally store road traffic regulations;
- Harmonised means to safely and securely make this information available to connected and automated vehicles, and to electronic map providers.

Connected and 'automated' driving can only be safely achieved and rolled out if vehicles have access to accurate road regulation information at any section of roadway at all times. We are confident that these Standards will provide Local Authorities and National Jurisdictions with practicable harmonized solutions that will provide both the means and incentive to make this vital information available.

Hans Nobbe
Rijkswaterstaat & Chairman CEN/TC 278 - Intelligent Transport Systems

CONTROL ZONES TO MANAGE POLLUTION AND CONGESTION

Movement of vehicles in cities producing traffic congestion, overcrowding on public transport at peak periods, or the management of pollution levels, are issues that a jurisdiction may wish to control in order to allow cities to better manage the flow of traffic and the environment of the city.

A Controlled Zone (CZ) is the enactment of a traffic restriction, usually to adhere to a permanent, sometimes temporary, regulation. It is recognised that different Member States will design and introduce their own CZ regulations that will manage and use control mechanisms in different ways. However, independent of the goal to be achieved or the political objective, the basic technical requirements and the basic methodologies are similar.

'Geofenced' CZs use ITS technology to enable adherence to traffic regulations and limit access to/within a controlled zone by creation of a virtual geographic boundary. The Urban ITS standard sets access restrictions based on physical parameters (height, weight), emission parameters (CO_2, NOx) or usage characteristics (public transport, private car). This allows city authorities a fine granularity to manage access to defined parts of the city and traffic through zones and corridors.

CEN/TC 278/WG 17 - Urban ITS is also identifying air quality requirements and options as well as providing standards and guidance on how to set up a policy, and how to deploy reliable and scalable technologies to monitor air quality on continuous or regular basis, and to react with adequate measures.

BENEFITS

■ A means for connected and automated vehicles to be guided away from, or have their route guided through, controlled zones, and to advise drivers of existing vehicles via personal smartphones or retrofitted navigation devices;
■ Guidance and standards on how to set up policies and deploy reliable technologies to monitor air quality on a continuous or regular basis and to react with adequate measures.

European Standards for Emissions Management and wireless Controlled Zone Management help to improve the quality of living in urban environments and meet the goals of administration in these respects.

Jacob Trondsen
Norwegian Public Roads Administration

HOW TO GET INVOLVED

Participation in the standardization process allows stakeholders to have a say on the content of draft standards, and enable them to be better informed about developments relating to standards that may be relevant to their area of interest or sector of activity.

Companies, public bodies and other (national) organizations wishing to participate in CEN or CENELEC activities should contact the CEN Member (National Standardization Body - NSB) or CENELEC Member (National Committee - NC) in their country. Through the NSB or NC, they can participate in the national mirror committee, which is responsible for providing input to the relevant Technical Committee (TC) at European level, or be put forward by their NSB/NC to be an active member of a European Standardization Committee/Working Group.

A full list of CEN Members can be found on the CEN website: **www.cen.eu** ;
CENELEC Members on the CENELEC website: **www.cenelec.eu**

European or international organizations and other stakeholders wishing to participate in standardization activities at European level may apply to become a Partner or Liaison Organization of CEN and/or CENELEC.

For further information, please contact: **partners@cencenelec.eu**

ABOUT CEN

CEN (European Committee for Standardization) is recognized by the EU and EFTA as the European Standardization Organization responsible for developing standards at European level. These standards set out specifications and procedures for a wide range of materials, processes, products and services.

The members of CEN are the National Standardization Bodies of 34 European countries. European Standards (ENs) and other standardization deliverables adopted by CEN are accepted and recognized in all of these countries.

European Standards contribute to enhancing safety, improving quality, facilitating cross-border trade and strengthening the European Single Market. They are developed through a process of collaboration between experts nominated by business and industry, research institutes, consumer and environmental organisations and other stakeholders. CEN works to promote the international alignment of standards in the framework of the technical cooperation agreement with ISO (International Organization for Standardization).

For more information, please visit: **www.cen.eu**

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