CIVITAS CAPITAL

RTTI - Real Time Traffic Information

Roadmap and Priority Zones Guidance

June 2015

Contents

1. This document

1.1 Document context

The European Commission published a draft Delegated Regulation (C(2014)9672) on 18 December 2014, concerning Real Time Traffic Information (RTTI). This Regulation addresses Priority Action B, under Article 3 of Directive 2010/40/EU (the ITS Directive).

It imposes a duty on Member States to publish road and traffic data relating to the trans-European road network and motorways, in a standardised format and in a timely manner, to support the development of improved RTTI services. RTTI is acknowledged as a useful tool to address congestion and other traffic-related problems. However the benefits of RTTI are not limited to this network; many urban areas face recurrent congestion and other road traffic-generated problems, such as air pollution and noise, which RTTI can usefully mitigate. The draft Regulation therefore invites Member States to designate additional roads as "Priority Zones", notably urban areas, where the Regulation would also apply.

1.2 Document scope

As its name suggests, this roadmap has mapped out the key issues that need to be addressed in order to facilitate the adoption of the RTTI Regulation in urban areas. The document presents guidance to Member States on the implementation of the draft Regulation, and in particular on how to designate, manage and support Priority Zones.

The document is structured as follows:

- Section 2 reviews the legislative context
- Section 3 describes the Priority Zone concept and its potential benefits
- Section 4 proposes actions intended to accelerate the implementation of the RTTI specifications on urban roads
- Section 5 summarises the recommendations, relevant both nationally and at European level

Annex A presents a series of "case studies", which demonstrate how some early relevant activity is already underway in a number of areas. These case studies may provide models that could be copied or adapted elsewhere:

- MDM Mobility Data Marketplace
- Rome & Italy joint discussion about Priority Zones
- Open specifications and standards
- DATEX II and cities
- The TM2.0 platform

1.3 Document contributors

This document has been prepared for the European Commission under the CIVITAS CAPITAL project, by the Urban ITS Advisory Group.

The Group has been chaired by Polis. Drafting of this document has been led by Polis, UTMC and OCA. Other members of the Urban ITS Advisory Group (representing the cities of Copenhagen, Madrid, Rome and Vienna) as well as the European Commission and an external stakeholder (TomTom) have contributed through meetings, document review, and documentation of the case studies.

The members of the Urban ITS Advisory Group are grateful for support from other cities, from the EC and from Member States representatives for helpful discussions during the course of preparing this document.

2. The RTTI specifications

2.1 The requirements of the RTTI specifications

The draft Regulation establishes a set of specifications to ensure the accessibility, exchange, reuse and update of road and traffic data for the provision of Real Time Traffic Information (RTTI) services in the European Union. Road and traffic data is categorised as static road data, dynamic road status data and (real-time) traffic data.

The Regulation only applies to data that is:

- already held/collected by a road authority
- available in a machine-readable format

It does not require the collection of new data nor data that is not in machine-readable format. Member States are nonetheless encouraged to move towards the digitisation of static road data.

The data shall be made available through a national access point, which 'shall constitute a single point of access for users to the road and traffic data'. The regulation does not stipulate what form this national access point should take. National access points are also required in other delegated acts adopted under the ITS Directive.

The RTTI specifications apply to the comprehensive trans-European road network (TEN-T Road) and to other motorways. Member States also have the option of applying the specifications to other parts of the road network (eg, urban roads) through the designation of 'Priority Zones'.

2.2 Priority Zones

The Priority Zone concept was introduced to the RTTI specifications, at the suggestion of several Member States, as a means to enable the geographic coverage of the RTTI specifications to be extended to other key road sections (eg, urban zones/roads, urban-interurban interfaces, secondary roads).

The RTTI specifications indicate that a Priority zone:

- applies to road sections identified, where relevant, by the national authorities
- is relevant in particular to urban areas, that are not part of the comprehensive trans-European road network and are not motorways
- should focus on roads with recurring traffic congestion or other traffic management considerations

Member States are solely responsible for designating Priority Zones. However, this is likely to be undertaken with the active engagement and endorsement of the local authority responsible for the road network of the Priority Zone in question. Both the Italian and German ministries responsible for transport are setting up a framework for engaging with cities in this regard (see Rome & Italy Joint Discussion case study).

The RTTI specifications provide no formal procedure for the designation of Priority Zones; hence, it is up to each Member States to develop its own mechanism.

3. Defining a 'Priority Zone'

3.1 From a zone to a Priority Zone

In a road network, a "zone" may be considered to have:

- a spatial extent: it is defined as covering a part of an urban road network, encompassing roads/segments and nodes/junctions, which may have interfaces to other urban or interurban zones and has a set of associated ITS equipment already in place
- a classification of operating environments for ITS services:
  - based on characterising the network topology (network links, circulation/traffic management plans, traffic signs, etc)
  - a current road status (driving restrictions like road closures, speed limits, parking regulations, etc)
  - traffic related characteristics (traffic load with environmental impact and probability of traffic related problems like congestion, incidents, accidents, etc)
  - and the level of ITS infrastructure available (from data collection to information provision to the user)
- an organisational dimension encompassing processes and workflows related to ITS operations and appropriate personnel resources
- a financial dimension relating to investments, operations and maintenance

A zone may be identified by the competent authority as a candidate for a Priority Zone – as per the Regulation - if it can be reasonably considered that:

- publication of data leads to additional and/or improved information services which should contribute to mitigating traffic-related problems for that specific zone
- data specified in the Annex of the RTTI specifications are currently available in a machine readable form
- data collection, processing, publication and quality assurance of the RTTI data service is affordable and manageable (by local authorities themselves or with external support)
- The whole-life benefit/cost ratio exceeds a given threshold

3.2 Possible shape of a Priority Zone

There is no pre-determined form for a Priority Zone: it is a very flexible concept. For instance, in the case of an urban environment, a Priority Zone may take the form of a corridor (eg, an arterial road, ring road) or an area (eg, city centre, industrial/business area, port area) or some other spatial construct.

A Priority Zone can be implemented incrementally. For instance, it is possible to start with designating one key road and then, if appropriate, extend this to other key roads over time (to be defined by the competent authority). The flexibility notion applies to the data set too. It is possible, and most sensible, to start by providing access to one set of data in the first instance.

The Priority Zone can be implemented in a flexible and incremental manner in spatial, temporal and data terms

Given the effort required to fulfil the requirements of the RTTI specifications from a city viewpoint (explained in chapter 4), substantial additional benefits would need to be generated. Hence the most likely application of the Priority Zone concept is the extension of a service already available on another network to connected road(s) of the city network. For instance, freight information services which are already provided on a motorway could be extended to a connected urban area, as a Priority Zone. In this case, the Priority Zone is not isolated but rather a continuation of a network which is already covered by RTTI services.

Areas relevant for implementation of the RTTI specifications could be selected on the basis of being a challenging traffic management environment (high traffic density, multiple modes, urban-interurban interface, hot spot situations generated by large sporting events or fairs, congestion issues, network bottlenecks, freight routes, environmental hot spots) where real time traffic information would bring the greatest benefit.

3.3 Potential benefits of becoming a Priority Zone

There is widespread recognition of the benefits of ITS – specifically RTTI – for all roads. Added value may be brought to some specific areas by becoming a Priority Zone. The potential benefits are described below for an urban road authority.

- Where the Priority Zone is connected to the motorway network (eg, 'last mile' concept) and extends an RTTI service from the motorway to the Priority Zone (eg, freight information), the city should see added value in various transport policy terms – the lack of coordination at the urban-interurban interface is widespread in Europe and is detrimental to network management.
- Improved cooperation between the city and third party service providers, leading to a more a joined-up approach to delivering information services, which ultimately may improve network management. This is the goal of the TM2.0 case study which is building a framework for interactive traffic management between road authorities/operators and service providers
- Better quality information services for the road user provided by the market at lower costs for the road authority (in the medium to long term), ie, the local authority may cease to deliver new information services focusing instead on quality data management – this trend has already started with the open data movement.
- Cities may become part of the TEN-T Road community, enabling them to build up/strengthen their relationship with the motorway community and their Member State.
- European and national funding may in future be made available on a preferential basis to cities with Priority Zones[1].

[1] At least two recent CEF proposal are understood to cover Priority Zones and cities

- Cities may benefit from guidance on how to implement the RTTI specifications, both technically and organisationally. A ‘Priority Zone’ community may emerge which could act as a forum for knowledge sharing on RTTI implementation issues.
- Cities may be more inclined to give greater consideration to the European dimension (and added value) in their investment plans for urban ITS/RTTI. This is especially important for the cities with high levels of cross-border traffic, notably road freight traffic.

4. Implementing the RTTI specifications in cities

4.1 National context as strategy background

RTTI implementation (outside the TEN-T Road) is a national responsibility rather than a European obligation, and will need to take account of the different national contexts.

The most significant factors are as follows:

- **Road network shape*:*** Some Member States have dense networks, while others are relatively sparse. Some are exposed to a lot of international (including transit) traffic, while others have much less. Most have a mix of dense metropolitan and sparse rural environments. These factors affect both the cost of collecting and processing data, and the value of distributing it.
- **National roads policy*:*** National policies tend to have very similar targets in terms of access regulation, congestion, safety and environment, but they differ in which specific policy tools are most relevant. For cities, promoting public transport use may be highest priority; for industrial development areas, attracting commercial traffic may be more relevant.
- **Technology readiness*:*** Some Member States have a lot of ITS, a strong local industry, and experienced road users. Others have much less, and their RTTI implementation will therefore be starting from a less-developed baseline.
- **Legal structures*:*** The way in which the national road network is managed differs between Member States. In larger countries, there is usually at least one sub-national tier of Government with roads responsibility; some smaller countries, however, manage the whole network centrally. Where there are local/regional roads authorities, they differ in how autonomous they are.
- **Project mechanisms*:*** Because of all of the above factors, the relevant support for RTTI projects will vary. Where national control and interest are strong, a regulatory obligation on local authorities may be sufficient. More often, there will need to be some kind of national support (skills, finance) either to implement national projects or to encourage/assist local projects.

However, within these constraints it is possible to collate a general framework to optimise the designation and delivery of Priority Zones. The recommended approach is outlined in section below.

Once the strategy has been developed, a range of support tools will typically be required to deliver it – especially if delivery is dependent on local Government (rather than being done through national projects directly). Section 5 presents some key support measures which should be considered.

4.2 Identification of Priority Zones

4.2.1 Relevant considerations

Subject to considerations of national context, the recommended approach to designating Priority Zones will need to respect:

- The (local) marginal cost of implementation

- The (local) marginal benefit of implementation
- The need to manage coherently across the whole road network
- Progressive approach

These are considered below. This should not be considered a “recipe” for designation, rather a way of generating a shortlist of the best candidates. It should always be borne in mind that a Priority Zone could be of any size, down to a single road link.

4.2.2 Project costs

The cost of implementation depends on a number of factors, including how much ITS already exists; the difficulty of implementing and maintaining ITS (eg because of terrain, distance or climate); the local costs of labour; etc.

These factors are best judged by local experts, and weighed against the expected benefits – as with any other project.

4.2.3 Local impact

The general (potential) benefits of Priority Zone designation are described in section 3.4. Locally, these will be greatest when the relevant network section is used by road users who are:

- Present in large numbers
- Travelling long distances
- Unfamiliar with the local network
- Familiar with the use of electronic road information services

This suggests the following should be considered for designation:

- Motorways and other strategic roads (that are not already part of the TEN-T Roads
- City ring roads and radial arteries
- Freight routes, and the areas around freight depots, ports and airports
- Routes to and from major social attractions such as sports stadia, conference/ exhibition centres and concert venues
- Passenger hubs/multi-modality

4.2.4 Network connectivity

One of the key benefits of deploying standardised mechanisms for RTTI is that road users can be provided with a seamless information experience across a wide proportion of the road network. It is therefore unlikely to be sensible to designate Priority Zones which are isolated, and separated by regions of no (or non-standard) RTTI.

In addition, having (standardised) RTTI for roads which are of a similar “class” helps road users to know when they might expect RTTI services to be available.

Since the core of RTTI specifications is the TEN-T Road, this suggests that early Priority Zone designation should be considered for motorways and other strategic roads (that are not already part of the TEN-T Road)

Where a city has its own strategic network – as for example London's "Red Routes" or Cologne's last mile preference network for freight traffic – consideration should be given to designating this network, or a coherent core of it, as a whole.

4.2.5 Progressive approach

While the benefits of RTTI are well understood, the specific mechanisms of the RTTI specifications are not well tested outside the TEN-T Road domain. It is therefore reasonable for Member States to take a step by step approach to designating Priority Zones.

As well as allowing local benefits to be carefully assessed, this approach will:

- Allow good practice to be developed and shared between within the national context
- Allow local RTTI services to be introduced gradually to road users
- Provide reasonable time for the local industry to deploy systems

A typical migration programme might include, in these approximate stages:

- First, deploy on key non-TEN-T Road highways
- Second, deploy on international freight corridors
- Third, deploy on major city ring roads
- Fourth, deploy on smaller city ring roads and major city arterials

However the local context will inevitably colour the precise details. For example, it may be preferred to formally designate as Priority Zones (say) only the first two steps, but nevertheless to promote similar technical solutions to the remainder of the network.

4.3 Key enablers for implementing the RTTI specifications in cities

4.3.1 Building appropriate standards and frameworks

Most of the data listed in the annex of the RTTI specifications are not covered by appropriate standards. Even where standards already exist, they might be not sufficient for local circumstances.

DATEX II – for dynamic road and traffic data

While DATEX II may not be a widely used data format in the urban traffic environment, its uptake is growing (see MDM and DATEX II case studies). A common pan-European DATEX II profile standardisation initiative and activity for the urban domain is therefore indispensable to avoid that each city creates an own profile leading to a very fragmented use and post processing of data.

In the meantime, cities will need to be guided and encouraged to make use of existing urban open ITS standards frameworks; and those frameworks should be encouraged to align with emerging European standards (see the Open Specifications and Standards case study).

In view of the growing momentum for cities to open up their data sets and city efforts to foster the growth of apps, the needs of app developers should be taken into account in standardisation activities. App developers are not comfortable with DATEX II, therefore, the 'urbanisation' of DATEX II should be undertaken in a way that makes it more accessible to

smaller players with limited resources and unfamiliarity with this data format. The proposed development of an API to query DATEX II data (*see DATEX II case study*) is one such activity that should be supported.

Other frameworks

There are several developments afoot to define new technical frameworks and approaches for publishing static road data and sharing traffic circulation plans with third parties[2]. These initiatives are currently industry and national road authority driven, which is not surprising given that trunks roads must be compliant with the RTTI specifications within two years following publication of the regulation.

If these technical frameworks do indeed become the reference models for implementation of the RTTI specifications, it is paramount that the cities perspective is taken into account in the developments, to ensure that the new procedures and requirements take due account of the urban policy and operational context.

4.3.2 Strengthening the legal framework

In the absence of a robust legal framework for data ownership, quality and liability (particularly for privately sourced data), cities have developed local practices – for example through their own contract clauses, which do not always fit with the RTTI specifications[3].

Long term systems contracts (eg, 10-15 years) mean that local authorities may not have the freedom – or even the technical ability – to publish all the data they control. Hence the need to plan for this by including relevant provisions in future system contracts is an important issue.

Member States may wish to review other aspects of their legislation to enable, or remove blockages to, the standardised publication of RTTI.

4.3.3 Developing the local organisational framework

Existing urban traffic organisations and processes are designed to deliver traffic management services, rather than data publication services.

They are not typically set up to publish data in a timely manner and in an appropriate quality, as required by the RTTI specifications.

It is a misconception that static, dynamic and real-time traffic data – where it already exists – 'only' has to be made available at a publicly accessible interface.

Road and traffic data is not necessarily easily accessible in a machine readable format. More often, it is scattered across different departments in various formats (paper and machine readable).

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[2] The the TM2.0 platform is one such framework

[3] National and European frameworks do of course exist, but they are generic and the specific applicability to RTTI is often dependent on local practices.

Data quality has not traditionally been the most important consideration for traffic managers. The data has been considered fit for the purpose of managing traffic. However, this may not meet the more exacting requirements of information service providers.

Local authority departments may therefore need to establish new structures and new procedures in order to deliver the RTTI specifications effectively. In this regard, the local momentum for open data in recent years has already created interest in data as an asset, rather than a systems by-product. Many cities are therefore already on the way to the changes necessary to improve the handling, dissemination and quality of their data.

4.3.4 Raising local political awareness

Although traffic management experts are convinced of the benefits of RTTI as an effective tool to support urban traffic management, and although many cities have made significant investments in RTTI in recent years, this is not always reflected at the political level. A limited understanding of the beneficial impact of ITS coupled with a chronic squeeze of city budgets means that RTTI is rarely high on the political agenda.

The contribution of transport data (and particularly RTTI) to policy needs to be brought to the attention of city politicians and key decision makers. This may require the development of a stronger evidence base on the benefits of ITS: once the evidence is available, local authorities are more likely to invest in systems development. The current open data momentum is starting to make some inroads to the awareness and interest of city politicians in systems and ITS.

4.3.5 Providing a financial incentive

Existing urban ICT infrastructure are unlikely to fulfil all the technical requirements for publishing data according to the RTTI specifications. For instance, dynamic traffic data is not typically generated in DATEX II format, and road/traffic rules are rarely published at all and are not typically available in a standardised form. This implies the need for system development whose potential costs (for system migration, management etc) are likely to be a barrier at a time where cities are suffering budget cuts.

Hence financial incentives are needed to support technical developments and related costs. Such support can take the form of European and/or national R&D funding or other grants. National support was instrumental for German cities to make their data available on the Mobility Data Marketplace in the prescribed DATEX II format, and European project funding was the lever for the UK's second city Birmingham to publish data in this format too (*see MDM and DATEX II case studies*). It is interesting to note that while funding was the trigger for several German to get involved in the MDM; more and more cities are now joining this virtual marketplace on a voluntary (unfunded) basis.

Financial incentives are required in particular for system design, personnel resources and processes, engagement with standardisation bodies, service deployment (including the interface to the national access point), service operation (eg, ongoing costs of managing data publication), compliance validation, and, where relevant, integration with the RTTI services on the national network

4.3.6 Member State support

Though the operation of a Priority Zone is a local issue, Member States are solely responsible for their designation. For this reason, Member States may need to create a mechanism to help local authorities develop suitable organisational and procedural structures. This is particularly the case where the Priority Zone is intended to enhance or extend services delivered at national level (ie, on the motorway network).

Such organisational and procedural structures should include:

- Processes for the identification, description and documentation of Priority Zones
- Recommendations for organisational structures and processes to deliver the requirements of the RTTI specifications, including:
- Recommendations on data quality levels and updating frequency for each of the data sets in the annex of the RTTI specifications
- processes for ensuring compliance with the RTTI specifications (ideally through self-assessment)
- Guidance on how to bring the data to the national access point
- Recommendations on how to motivate and engage private parties

5. Recommendations

5.1 Introduction

This final section summarises the recommendations that would support the extension of the RTTI specifications to urban areas. The majority of these apply primarily to the European Commission and Member States, although there will be a need for follow-through at local level.

5.2 Measures to promote early Priority Zone adopters → EC & MS

To facilitate early uptake we recommend:

- Early proactive outreach activity among key cities to present the Priority Zone concept, and encourage them to consider designation
- Financial support for pilot Priority Zone deployments, to cover required technical developments, service deployment (including the link to the national access point), compliance validation, among others
- The creation of "blueprint" Priority Zone projects: ie model descriptions for some typical low-risk PZ projects that could be considered by cities (building on the experiences of the first adopters)

5.3 Creation of a national procedural and support framework → MS

To encourage coordinated management we recommend:

- Set-up, agreement and promulgation of a national organisational structure and processes concerning the designation, approval, support and monitoring of standardised RTTI
- Integration of the Priority Zones into national ITS Action Plans – which may enable them to obtain specific financial support to achieve compliance
- Reporting on the identification and progress of Priority Zones through the Member State status reports of their respective ITS Action Plan, to facilitate experience sharing within and between Member States
- Ongoing support for Priority Zones and documentation of Priority Zone applications (process, impact, lessons learned, etc)

5.4 Assessment of benefits of RTTI services → EC & MS

To encourage local political support we recommend:

- An assessment of the impacts of existing initiatives whereby cities are publishing standardised traffic data via a national access point, eg, in The Netherlands, Germany and Sweden. Key questions: Are third party service providers using this published data? What is the impact locally?
- Development and dissemination of a "guideline" document on the broader context of the RTTI specifications in terms that local policymakers can relate to – jobs, environment, road safety, social integration, etc

- Specific focus on the impact on long distance freight movements, which are a common local issue
- A stronger ITS evaluation culture in Europe which is holistic in its approach

5.5 Dissemination activity → EC

To spread the knowledge more widely, including to later adopters, we recommend:

- A "marketing" activity to encourage other cities to create/adopt Priority Zones based on available case studies
- Research, possibly via an observatory, to collate and analyse city experiences and analysis of cost-benefit in their Priority Zone projects
- Establish a labelling process (eg “EU compliant”) as part of a Member State promotional campaign – especially if European support funding is available
- Clearly these activities would build on, and connect with, work done under other tasks identified above

5.6 Standardisation activity → EC

The development of a standards strategy, and the creation of the necessary urban profiles, which responds to urban requirements and involves urban ITS experts

While the market is still emerging, it may be necessary to adopt a lenient approach to specification enforcement in the early stages – even if this becomes tougher over

Annex – Case studies

- MDM Mobility Data Marketplace
- Rome & Italy joint discussion about Priority Zones.
- Open specifications and standards
- DATEX II and cities
- The TM2.0 platform