

ITS DEPLOYMENT GUIDELINES

FACT SHEET - UPDATE 2015

Variable Message Signs

Two basic parameters structure the use of road signs: Where and What. The evolution of these parameters is clear: from posted infrastructures-fixed contents (traditional signs) to posted infrastructures-variable contents (Variable Message Signs) and to variable devices-variable contents (in-car signs). Traditional signs, based on paint, represent the most proficient and flexible design matrix –but they cannot be switched off. VMS represent the first stage towards electronic signage making salient its main challenges: to find some missing signing constituents (e.g., new pictograms), integrating them together to communicate complex variable events, and tune well with the design philosophy of traditional signs. Current VMS evolve towards full-matrix signs (including in-car ‘virtual VMS’) making our present efforts to identify pictograms, signage structures and to reach flexible ways to harmonise them a relevant task for the future.

Objective and benefits

Road signs are meant to inform drivers about compulsory actions, dangerous events, directions, locations, and the like. We aim for Europeans moving through Europe safely and efficiently to work, to enjoy, and to learn. But European drivers speak no less than 24 official languages and so they will benefit of road signs, and in particular of VMS, that are both international and coherent. International road signs do not rely on words, but mainly on pictograms, symbols and abstract characters, and adequate ways to put them together. VMS-DG01 is the first specific tool towards VMS harmonisation developed to date. It comprises 31 specific design principles that are divided into 6 categories:

Safety and mobility

VMS are complex displays holding a close relationship with *Advance Location Signs* in the 1968 Convention. In order to optimise existing road infrastructures and be relevant, VMS displays need to be good at locating unexpected events, at facilitating rerouting or detour, and also informing about network conditions in near, adjacent roads. The harmonisation VMS displays helps safety and mobility at least in three ways. First: harmonized displays are expected by drivers, and so are easier to read (i.e., less distractive and less dangerous; for example, *good* pictograms are seen and read twice as fast as text). Second: harmonization improves comprehension and action for both national and international drivers. Complex messages are functional (for drivers and for road operators) if they are finally understood and followed. Such basic considerations (VMS displays that are easy to read,

Bridging mobility domains

Drivers do not need to know who manages or owns posted or electronic road signs in the wide road network. In fact, as far as VMS are road signs, they should display appropriate signs in cities, conurbations, rural roads, highways or motorways the same. Critical information displays should be truly seamless and affordable. In our view, this is an organisational problem, a matter

Bridging road sign display domains

Drivers do not need to know who manages or owns public road signs displayed in whatever place: post, VMS, in-car, or the internet. Public road signs are critical for safety and mobility purposes and should embrace the qualities aimed for the coming electronic signs: harmonised, international, coherent. VMS play a

1. Considerations that should be made before using VMS.
2. The use of pictograms.
3. The use of alphanumeric elements.
4. Strategies in relation to certain road/traffic events.
5. The use of regulatory messages.
6. Specific principles of design.

In sum, VMS-DG01 is a first step summarising the broad ergonomic and design principles that should be assumed when VMS are written.

understand and be followed) apply for both safety related and mobility related messages the same. A third consideration is now emerging: the adequate coexistence of signs (posted, VMS, in-car) that help to each other well and so to drivers.

Besides this, the specific content of the message itself (e.g. improving safety by indicating “congestion ahead” or by recommending “take diversion”) is an operative, managerial, situational based decision. Our mission is furnishing road information managers and operators all over Europe with specific elements (pictograms, abbreviations, and abstract alphanumeric), structures and principles for VMS design that are functional, perhaps not identical, but sharing the main underlying design principles.

for cooperation between different partners both within and between countries the same. A recent, excellent example of such organisational effort concerning the harmonisation of VMS displays has been made in the Netherlands (National, Regional, Local administrations involved) and is also ongoing in Italy (several motorway companies involved).

key role here. VMS are bridge road signs – between posted and in-car - because they were born in the early times of road telematics. The inception of VMS somehow anticipated our context today: from full static (posted), to partially dynamic (VMS) to utterly dynamic (in-car).

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VMS are meant to be switched on and off as required. VMS can display one of many different signs, and this is particularly true since the advent of LED. Virtual VMS messages can also be displayed in-car and so they both can change and move. Contrary to simple road signs (pictograms), complex road signs may adopt official yet differing design strategies (as G, 1 signs do in the 1968 Convention) and this allows for certain diversity and flexibility:

VMS and road signs harmonization

Variable Message Signs may be used as stand-alone systems or combined with other traffic management services. Furthermore,

Empirical efforts

VMS harmonization depends on consensus between partners. Consensus is brought by results after empirical studies. There have been four consecutive studies in the past and there is now an ongoing fifth comprehension test. The empirical studies focus on a number of specific issues: a) finding the right design for specific pictograms (e.g., ghost driver, bad visibility, truck parking, accident in tunnel, etc.), b) checking the comprehension signs concerning exits (event on exit; event on main trunk and exit free) with different pictograms (congestion, road works, snow-ice, wind, truck

Broader harmonisation efforts

The great majority of European countries have ratified the 1968 Vienna Convention. A proposal was presented to UNECE's WP.1 which is now on the way to acceptance by WP.1 floor. Certain obstacles in our proposal concern the absence of definition of what road signs are. The Expert Group on Road Signs and Signals is working on that matters in 2014-2016 and some of us are part of it. The work within this group should help to improve and push forward our proposal. UNECE issues are slow and densely bureaucratic, but we feel our proposal will progress.

New issues ahead

To date, the main issues concerning the harmonisation of electronic signage have been developed under the EIP and EIP+ frames. A questionnaire issued to check the use of VMS-DG01 by corridors (Arc Atlantique, Crocodile, Med-TIS, Next-ITS, Scan-Med, URSA MAJOR), point to broad differences between countries and corridors. The questionnaire also pinpoints present and coming signage needs concerning driver type (truck driver, tourist/seasonal drivers), and specific events (rerouting, detour, truck parking) that will need attention in the coming future.

Also interesting are the forecasts made by respondents with regards to who should rule road signs designs (WP.1 UNECE), if some roads signs (e.g., posted VMS) will disappear and if posted, VMS and in-car displays should follow and share, or not, the same overall design philosophy.

provided that the expected Mental Model comes in the driver's mind the very same message can be displayed in different manners. These options and differences, already present in the 1968 Convention, are good as they may give way to the evolution of better electronic signs. However, the same overall approach to design should be the background of public and private road operators, telecommunication companies or car makers the same.

Variable Speed Limits may be used in different operating environments (types of roads) and with different benefits in mind.

parking, and so on), c) finding the right visual syntax for complex location messages concerning a number of specific events (e.g., congestion, road works, wind before city A /between city A and city B / after city B), d) finding the right way to indicate exit numbers associated with exit pictograms, e) travel times formulations, and f) testing complex signs to indicate location and number of available truck parking places. The ongoing test also incorporates, for the first time, road signs that are thought for full matrix displays, either on VMS on in-car.

However, the complexity of electronic signage is but growing. Car manufactures, telecommunication companies, road operators distributing Apps that inform about events on private motorways are examples. And very important international standardization bodies as ISO, CEN or ETSI are also playing a part. The solution is not "laissez faire" to be sure. The solution is agreeing on the basic overall design standards to follow and then allow for private initiative to play that rules for the benefit of potential customers, and then generalize such *wining* benefits to other citizens as well.

Here we see a tangled mixture of perspectives, expectations and forecasts, probably as a consequence of our inability to fix the criteria about what is actually going to happen with ITS in the coming years. But with regards to the contents flowing in different devices, some 20 years ago no one was actually thinking that different national languages would evolve when using together television, radio, telephones, computers, laptops, smartphones, tablets, or e-books. And, by the way, the only adaptation has been some recognisable abbreviations (SMS) and pictograms...

We should perhaps learn from that recent past and differentiate the signing contents we necessarily share to communicate and understand road events from the devices we may optionally use to make them seamlessly flow.

Further Information

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Questions and help

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