EGRSS. WP.1

VMS

Contents

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1	How are different parts of road signs named in the 1968 Convention? Searching consistency for VMS proposal	Analyzing specific terms used to refer to different essential parts of road signs (Analysis Concordance Tool)	Obtaining the terms used to refer to different essential parts of road signs Improving consistency of proposals
2	Finding the rationale for combining signs or part of signs within the 1968 Convention	Analyzing different signs attending to their relative complexity (i.e., number of parts and elements)	Identify signs within the 1968 Convention that are similar to VMS in content or structure. Follow their design rationale. Learn lessons applicable to full matrix displays
3	Synthesizing the state of the art: signs (posted, VMS, in-car) within the 1968 Convention	Presenting the key elements concerning road signs design within the 1968 Convention	Are design requisites concerning road signs so different considering the type of infrastructure?
4	Issuing conclusions	Listing conclusions	Basis of draft proposal

Task 1. How are different parts of road signs named in the 1968 Convention?

Searching consistency for VMS proposals

ECE/TRANS/WP.1/2012/1/Add.1

3. The modifications to the existing text of the Convention are marked in bold for new or strikethrough for deleted characters.

4. Annex I contains the explanatory notes provided by the VMS expert group for each proposal. Annex II contains comments by the secretariat, on further consideration for some of the proposals.

II. Proposed amendments to the 1968 Convention on Road Signs and Signals

A. Chapter I, General Provisions, Article 1, Definitions

(w) A Variable Message Sign (VMS) is a sign for the purpose of displaying one of a number of inscriptions and symbols that may be changed or switched on or off as required.

Note by the secretariat: The VMS expert group proposes this definition as a slight re-wording of the definition in R.E.2. However the VMS expert group also agrees with using the R.E.2 definition unaltered, if it is the preference of the Working Party.

B. Chapter II, Road Signs, Article 8

1.ter

Variable Message Signs should only be used for managing temporary events. Issues which require long-term use in a static location should always be shown on permanent (fixed) road signs.

C. Annex 1, Road Signs, Section E, Special Regulation Signs, sub-Section II, Descriptions point 1, Signs indicating a regulation or danger warning applying to one or more traffic lanes

(iv) E, 22a "Traffic may not proceed along the lane over which it is placed."

(v) E, 22b "Traffic may proceed along the lane over which it is placed."

(vi) E, 22c "The lane is about to be closed to traffic and the road users on that lane must move over to the lane indicated by the arrow."

D. Annex 3, "E" Signs

Add:

2

ECE/TRANS/WP.1/2012/1/Add.1

Annex II

Comments and considerations by the secretariat

A. General Comments

1. These amendment proposals, in accordance with the Convention, may be tabled only by Contracting Parties to the Convention. As Spain is currently a signatory but has not ratified the Convention, it is not considered a Contracting Party. Therefore, these amendments cannot be considered by the Working Party as having been tabled by the Government of Spain. While the Working Party may consider these proposals, they should be tabled by a country that has ratified the Convention in order to be endorsed.

B. Wording

2. The wording in all proposals may need to be reconsidered, to ensure both technical and legal clarity, and also for the purpose of maintaining consistency throughout the text. Some terms and expressions are not ideal for use in a legal text. The secretariat recommends that all proposals are re-visited for appropriate legal wording.

Some examples:

The proposed new article 8 paragraph 1ter:

"Variable Message Signs should shall only be used for managing temporary events as a temporary measure {..}

The proposed new article 8bis, paragraph 1:

"When used, pictograms should always provide the main unit of information in any VMS message."

3. The words in bold create a consistency problem. The word "pictogram" is not used or defined anywhere in the convention. In the proposed definition of VMS (new point (w) in article 1), the terms used are "inscriptions and symbols". The word pictogram will either have to be defined, or replaced by wording consistent with the definition.

4. The same applies with the term "unit of information". This is a technical term, which is not mentioned or defined in the Convention.

5. Furthermore, the VMS expert group has proposed that in the definition of VMS (new point (w), article 1), the word "messages" is replaced by "inscriptions and symbols." It is therefore inconsistent to use the word "message" in other parts. The introduction of the term "inscriptions and symbols" also means that VMS will have to conform to the applicable rules on inscriptions and symbols as reflected in the Convention.

C. Fixed and Variable Signs

6. It is useful to differentiate fixed from variable signs, as one is for regular and long term use and the other is for temporary or emergency use. However, fixed/permanent signs are not defined anywhere in the Convention. As a result, if the term "fixed" is used in the new article 8 paragraph. 1.ter, then this term has to also be defined.

6

Task 1. Analyzing specific terms used to refer to different essential parts of road signs

Way forward: method

- □ We have used a free access software tool for Analysis of Text Concordance, named AntConc, available at http://www.laurenceanthony.net/software/antconc/

- □ The main requisite is putting the material subject to analysis (here the 1968 Convention, the European Agreement has been excluded) in *.txt* format. We have prepared different archives differentiating 1968, 1995 and 2006 amends for each chapter and annex. There are 18 text archives in total.

- □ AntConc calculates the number of word types (n=1306) and word tokens (n=23958) within the corpus introduced (1968 Convention). It also recognizes the word *Lemma* (e.g. run) and its main variants, lemma forms or *Lexemes* (e.g., runs, ran, running) within the analysis.

- □ For example, the lemma "shape" appears in the 1968 Convention in 6 hits, distributed in 3 lemma forms or lexemes: *shape* (3), *shapes* (2) and *shaped* (1).

- □ All words are treated disregarding uppercase or lowercase.

- □ Some examples (paragraphs, text) extracted from the 1968 Convention are repeated but giving relevance to the use of a specific term within the Convention.

Making road signs: the layers (an overview)

1. The shape layer
2. The ground layer
   The color(s)
3. The symbol(s) layer
   The color(s)
4. The inscription(s) layer
5. The additional panel(s) layer
6. Principles for combining and mixing road signs

The panel

The sign
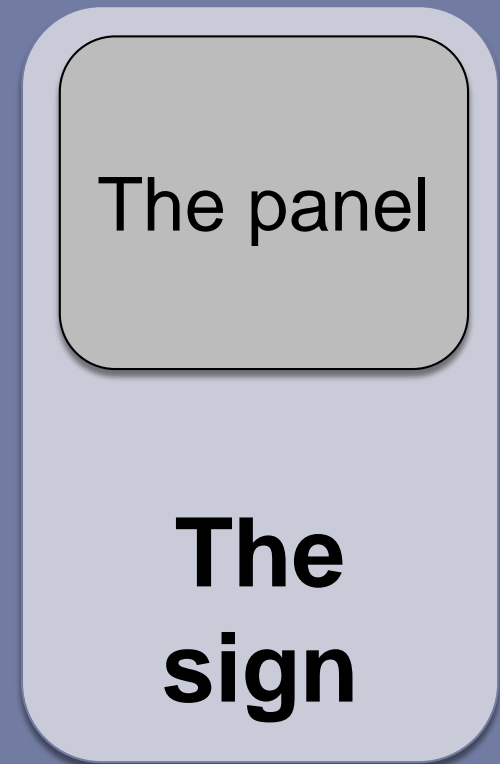
There are a number of contrast requirements:
1. The need of an outer contrast between shape and the surrounding environment
2. The need of an inner contrast between shape and ground
   1. The border concerns both requirements
3. The need of an inner contrast between ground and symbol / inscription

Elementary constituents

- Shape
- Ground

- Colour
- Border (rim)

- Panel

- Symbol

- Inscription

- Additional panel

Counts on the 1968 Convention

- Shap* [6]: shape (3), shapes (1), shaped (2)
- Ground [37]: ground 37 hits
  - Background [4]: background (2), backgrounds (2)
- Colou* [50]: colour (31), colours (6), coloured (13)
- Border* [14]: border (13), borders (1)
  - Rim: 8 hits = thin border
- Panel* [84]: panel (62), panels (22)
  - Plate [6]: plate (5), plating (1)
- Symbol* [181]: symbol (122), symbols (58), symbolize (1)
- Inscription* [37]: inscription (20), inscriptions (17)
  - Inscribe [14]: inscribed (14)
- Additional panel* [42]: additional panel (33), additional panels (9)

Part 1

- The shape
- The ground
  - The colour
  - The border

The panel

Part 2

- The symbol(s)
- The inscription(s)
- The additional panel(s)

The sign

Part 3

- Holding signs together: principles for combining and mixing road signs

The sign of signs

Part 1

- The shape
- The ground
  - The colour
  - The border

The panel

The Panel(s)

- Out of 84 hits concerning "panel*", 42 specifically concern the cluster "additional panel*". Such cluster will be treated later and specifically on this report.

Panel(s): where within the 1968 Convention

Corpus Files

ANN1 1995.txt
ANN1 2006.txt
ANN2 1968.txt
ANN2 1995.txt
CH1 1968.txt
CH1 1995.txt
CH1 2006.txt
CH2 1968.txt
CH2 1995.txt
CH2 2006.txt
CH3 1968.txt
CH3 1995.txt
CH4 1968.txt
CH4 1995.txt
CH4 2006.txt
CH5 1968.txt
CH5 1995.txt
CH6 1968.txt

| Concordance | Concordance Plot | File View | Clusters/N-Grams | Collocates | Word List | Keyword List |

Concordance Hits 84   **Total Plots** 6

HIT FILE: 1   FILE: ANN1 1995.txt

No. of Hits = 59
File Length (in chars) = 55087

HIT FILE: 2   FILE: ANN1 2006.txt

No. of Hits = 2
File Length (in chars) = 2287

HIT FILE: 6   FILE: CH1 1995.txt

No. of Hits = 2
File Length (in chars) = 545

HIT FILE: 8   FILE: CH2 1968.txt

No. of Hits = 3
File Length (in chars) = 10697

HIT FILE: 9   FILE: CH2 1995.txt

No. of Hits = 15
File Length (in chars) = 10682

HIT FILE: 10   FILE: CH2 2006.txt

No. of Hits = 3
File Length (in chars) = 2092

Panel(s) for…

- The sign panel = the panel is part of a sign
- The ground and shape of the panel
- The panel… is a sign
- The panel geometry
- The panel holds signs
- The sign holds panels (changeable?)
- The sign holds squares

"the sign panel":
the panel is part of a sign

Aa

Ab

10%

A. 2a

10%

A. 2b

A, 3c

A, 3d

STOP

STOP

"Sign B, 2: a and b"
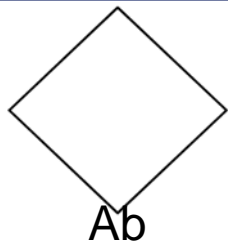
"To give warning of a steep descent symbol A, 2a shall be used with the sign of model Aa, or symbol A, 2b with the sign of model Ab.
The left-hand part of symbol A, 2a shall occupy the **left-hand corner** of the sign **panel** and its base shall extend **over the whole width of the panel**."
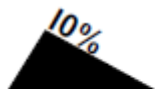
Same for signs A, 2 c and d… A, 3 a-d… A, 11 a and b…, Signs B, 2a and b;

2. "STOP" sign.
(a) The "STOP" sign shall be sign B, 2, of which there are two models:
(i) Model B, 2a is octagonal with a red ground bearing the word "STOP" in white in English or in the language of the State concerned; the height of the word shall be not less than one third of **the height of the panel**;

"the ground and shape of the panel"

E, 12ᵃ

E, 12ᶜ

E, 12ᵇ

G, 3

17 Stockholm 15
G, 4ᵃ
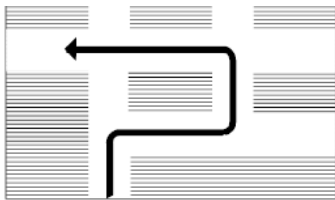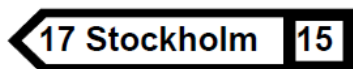
GENEVE 17 Km
G,4ᵇ

10. "PEDESTRIAN CROSSING" sign.
(a) Sign E, 12a, "PEDESTRIAN CROSSING", is used to show pedestrians and drivers the position of a pedestrian crossing. The **ground** of the **panel** shall be blue or black, the **triangle** white or yellow and the **symbol** black or dark blue; the symbol displayed shall be symbol A, 12.

(b) However, the **sign** E, 12b, having the **shape of an irregular pentagon**, a **blue ground** and a **white symbol** or the sign E, 12c, having a dark ground and white symbol may also be used.

1. Informative signs are usually **rectangular**; however, direction signs may be in the **shape** of an **elongated rectangle with the longer side horizontal, terminating in an arrowhead**.

"the panel is a sign"
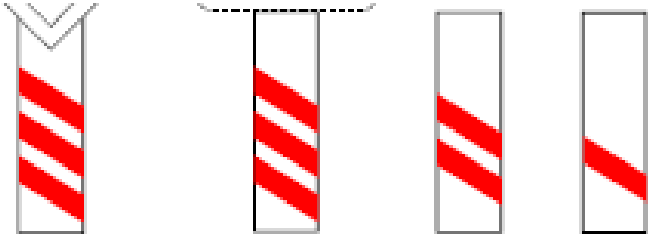
"Models of **panel A, 29 a, b, c**"

But not here...

G, 22ᵃ   G, 22ᵇ   G, 22ᶜ

29. Additional **signs** at approaches to level-crossings or swing bridges.
(a) **The panels** mentioned in Article 9, paragraph 5 of this Convention **are signs A, 29a, A, 29b and A, 29c**. The bars shall slope downwards towards the carriageway.
(b) The **danger warning sign for the level-crossing or swing bridge** may be **placed above signs A, 29b and A, 29c in the same way as it shall be placed above sign A, 29a**.

10. **Signs** notifying an exit from a motorway.
Signs G, 22a; G, 22b and G, 22c are examples of advance signs for notifying an exit from a motorway. These signs shall bear the indication of a distance to the exit from a motorway, as determined by domestic legislation, provided that signs bearing respectively one and two oblique bars are set up at one third and two thirds of the distance between the sign bearing three oblique bars and the exit from a motorway.

"*rectangular, square* panel"

E, 3ª

E, 3ᵇ

E, 14ª

3. "ONE-WAY" sign
(a) Two different "ONE-WAY" signs may be set up where it is necessary to indicate a road or carriageway which is one-way:
(i) Sign E, 3a placed approximately perpendicular to the axis of the carriageway; its **panel** shall be **square**.
(ii) Sign E, 3b placed approximately parallel to the axis of the carriageway; its **panel** shall be an **elongated rectangle** the long side of which is horizontal.

12. "PARKING" sign.
(a) Sign E, 14a, "PARKING", which may be set up parallel to the axis of the road, shall indicate places where the parking of vehicles is authorized. **The panel shall be square**. It shall bear the letter or ideogram used in the State concerned to denote "Parking". The **ground** of this sign shall be blue.

"Sign on the panel"

E, 9ª

E, 9ᵇ

8. Signs having zonal validity
(a) Beginning of a zone
(i) To indicate that a sign applies to all roads in a zone (zonal validity), **the sign shall be displayed on a rectangular panel** with a light-coloured ground. **The word "ZONE" or its equivalent in the national language may be displayed above or below the sign on the panel.** Specific details of the restrictions, prohibitions or obligations indicated by the sign may be given **below the sign on the panel or on an additional panel**.

But we can also see signs (not just symbols) on a panel in the Convention… there are panels holding signs and signs holding signs. In verbal languages, the basic structure -the sentence- is written as: S → NP + VP. But there are sentences holding sentences in all natural languages: S → NP + V + S; this is the notion of linguistic productivity or linguistic creativity, Chomsky, 1957-1980)

C, 14

G, 14

E, 5ª

D, 10ª

D, 10ᵇ

D, 10ᶜ

D, 1ª

"panels on the sign"

D, 9

G, 16

FURKA
1
2
3

G, 15

This is a VMS!
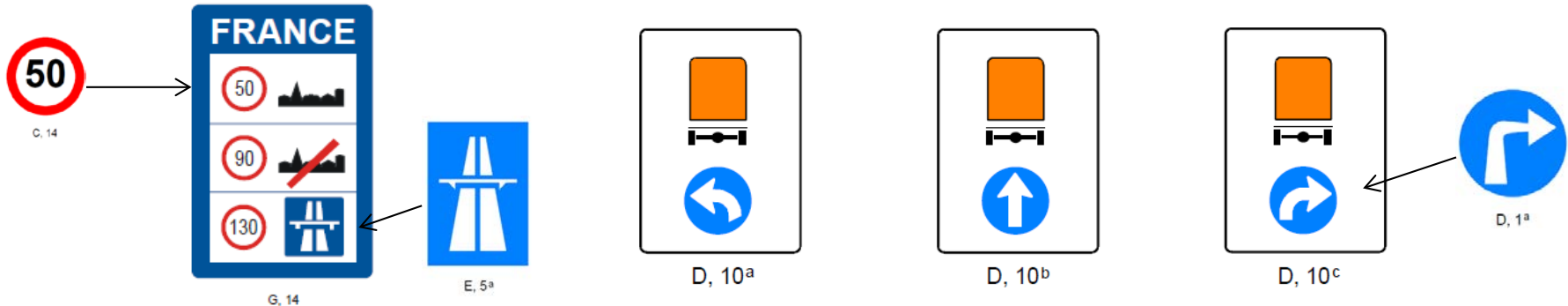
5. "ROAD OPEN OR CLOSED" sign.
(a) Sign G, 15, "ROAD OPEN OR CLOSED", shall be used to show whether a mountain road, particularly a section leading over a pass, is open or closed; the sign shall be placed at the entry to the road or roads leading to the section in question.

The name of the section of road (or pass) shall be inscribed in white. On the sign shown, the name "Furka" is given as an example.

Panels 1, 2 and 3 shall be removable.

(b) If the section of road is closed, panel 1 shall be **red** and shall bear the inscription "CLOSED"; if the section is open, panel 1 shall be **green** and shall bear the inscription "OPEN". The inscriptions shall be in white and preferably in several languages.

(c) Panels 2 and 3 shall have a white ground with inscriptions and symbols in black.

If the section of road is open, panel 3 shall remain blank and panel 2, according to the state of the road, shall either be blank, or **display sign D, 9, "SNOW CHAINS COMPULSORY"**, or display **symbol G, 16, "CHAINS OR SNOW TYRES RECOMMENDED".** This symbol shall be black.

If the section of road is closed, panel 3 shall show the name of the place up to which the road is open and panel 2 shall display, according to the state of the road, either the inscription "OPEN AS FAR AS", or symbol G, 16, or sign D, 9.
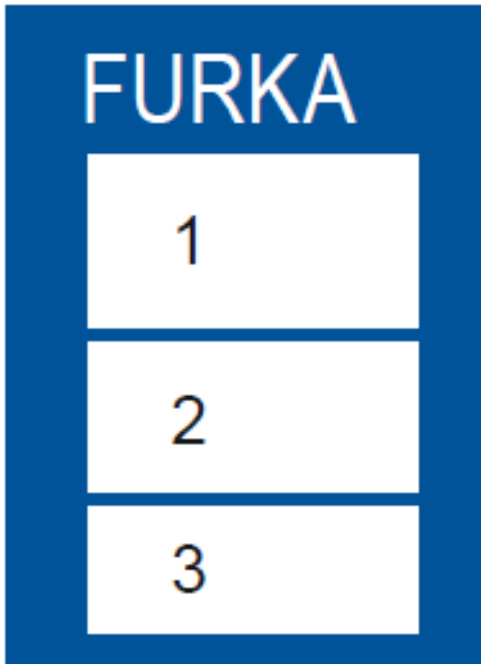
"*squares* on the sign"

FRANCE

50

90

130

G, 14

4. "GENERAL SPEED LIMITS" sign.

Sign G, 14, "GENERAL SPEED LIMITS", shall be used, especially near national frontiers, to notify the general speed limits in force in a country or in a subdivision of that country. The name or distinguishing sign of the country, possibly accompanied by the national emblem, shall be placed at the top of the sign. On the sign the general speed limits in force in a country will be shown in the following order: (1) in built-up areas; (2) outside built-up areas; (3) on motorways.
If appropriate, **the symbol of sign E, 6a, "Road for motor vehicles",** may be used to indicate the general speed limit on roads for motor vehicles.

The border of the sign and its upper part shall be in blue; the country name and **the ground of the three squares** shall be in white. **The symbols used in the upper and central squares** shall be in black and the symbol in the central square shall have an oblique red line across it.

This is a set of signs , inscriptions and symbols within a sign!

Part 2

- The symbol(s)
- The inscription(s)
- The additional panel(s)

The sign

The symbol

Symbol(s): where within the 1968 Convention

Related to symbol

- Silhouette* [12]: Silhouette (9), Silhouettes (3)
- Outline [2]
- Symbol form [1]
- Graphic symbols rather than inscriptions (1)
- in word or symbol form (1)

- No mention of *picture*, *pictogram* or *icon*
- *Symbol here means something close to Saussure's definition of symbol, but not totally*
- *Priority signs bear no symbol*
- *Arrows are not always symbols*

Examples

A, 14   A, 15ª   A, 15ᵇ   A, 16

Symbols… A, 14 to A, 16…

A, 17ᵇ   A, 17ª   A, 17ᶜ

There are three models of **symbol A, 17…**

A, 18ᵈ   A, 18ᵉ   A, 18ᶠ

Symbol A, 18…

A, 22   A, 23   A, 24   A, 25

Symbols… A, 22 to A, 25

A, 21ª   A, 21ᵇ

the symbol used at the approach shall be A, 21a or A, 21b whichever corresponds to the model of sign B, 2 set up.

Task 1. Improving consistency of proposals

- Road signs keywords are: shape, ground, color, panel, border, rim, symbol, inscription (figures, numbers, letters, words), and additional panel

- Describing and defining any sign class should be done through these basic keywords (and no more keywords are actually needed)

- Such key elements present a robust semiotic structure (in terms of shape form, ground colors, borders and rims, contrast mechanisms, symbols and inscriptions use) for **elementary signs** in the 1968 Convention concerning signs of class A, B, C, F, not so perfect for class D and E, and actually quite open for class G and H. In fact, signs of class A, B, C, F present a basically fixed format and appearance (the only exception being the possible use of inscriptions or additional panels), while many signs in class G can be subject to a **handcraft process that is not fully developed or exemplified within the 1968 Convention**. Changes in signs of class A, B, C, F would not make signs unrecognizable. Changes in the basic patters shown in certain signs of class G would.

- The main and unsolved issue within the 1968 Convention is prescribing the way (the place) where certain symbols, inscriptions, signs, and panels should be combined in potentially complex signs within the G class.

- This is also the main issue concerning VMS harmonization. Beyond the fact of newness (i.e., utterly new symbols making new signs) VMS displaying basic signs of class A, B, C, F would not be problematic. The basic issue is the comprehension of such new, simple symbols within their respective shapes and borders. But when several signing elements are combined, some way to integrate that elements is required.
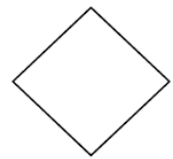
A, B, C, F

Aᵃ

Aᵇ

A, 15ᵇ

A, 16

STOP

B, 2ᵃ

B, 4

50

C, 14

C. 17ᵃ

F

F, 2

D, E, G, H

D, 1ᵃ

D, 10ᵃ

ZONE **P**

E, 9ᶜ

E, 5ᵇ

E, 3ᵇ

Lömal 17
Duln 42
Kronland 4

G, 1ᵃ

↑ Northchurch 1½
Wiggington 4
← Chesham 5
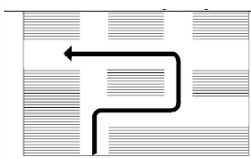Potten End 2
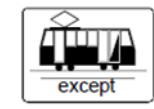Gaddesden 3½
Ashridge 4
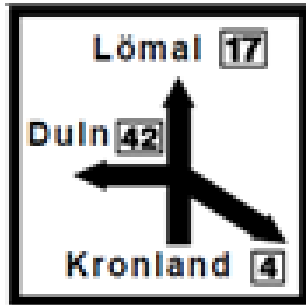
G, 1ᶜ

FRANCE
50
90
130

G, 14

G, 3

H, 5ᵇ

except
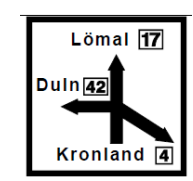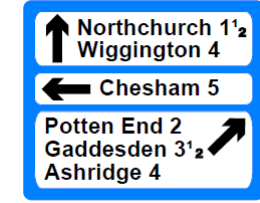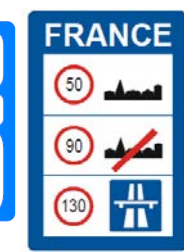
H, 6

H, 8

H, 9

Task 2. Finding the rationale for combining signs or their parts within the 1968 Convention

- ☐ Some signs are quite compact and immutable while other signs may be subject to different manipulations

G, 1ᵃ
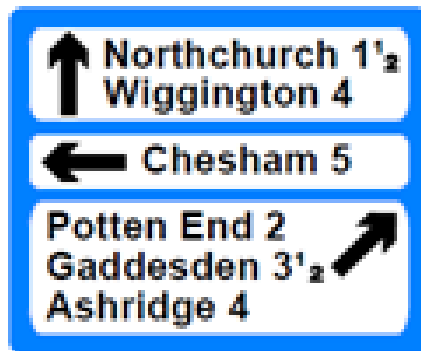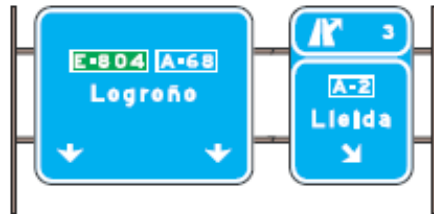

G, 1ᵇ

A, 2ⁿ

A, 5

C, 6

E, 1ᵉ

F, 2

G, 1ᵈ

NOTE: Advance direction signs G, 1 may bear the symbols used on other signs informing road users of the characteristics of the route or of traffic conditions (for example: signs A, 2; A, 5; C, 3e; C, 6; E, 5a; F, 2).
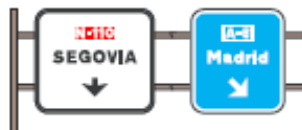
G, 1 = Directional signs

Autopista
Autovía

E·804 A·68
Logroño

A-2
Lleida
3

Vía Rápida

N-634
Pola de Siero

A-66
Oviedo
24

Carretera
convencional

N-110
SEGOVIA

A-1
Madrid

10 km | 188

A-62 Valladolid 32
A-62 Salamanca 81

750 m | 134

a 1,5 km
de 8 a 20 h

Sta. Clara

a 10 km
de 0 a 24 h

Part 3

- Holding signs together: principles for combining and mixing road signs
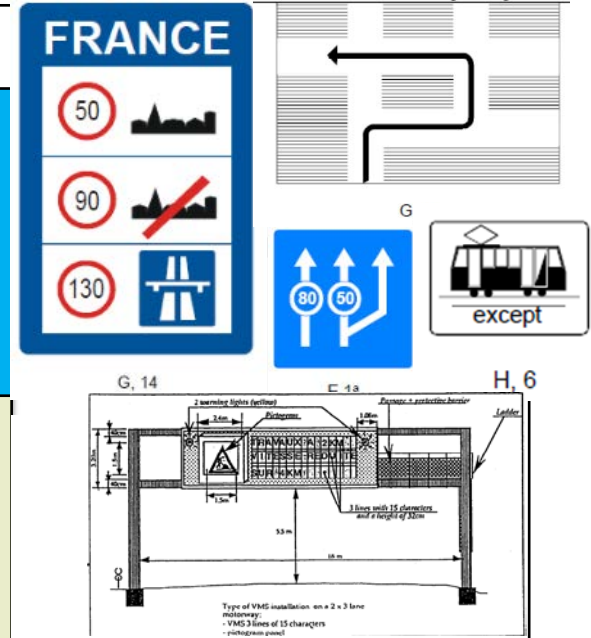
The sign of signs

Design parameters

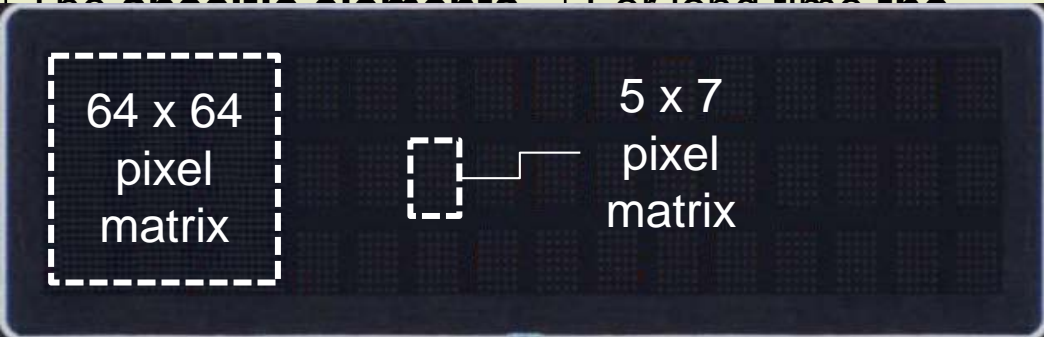|	Parameter	Comment
A	The **function** of signs: danger warning, regulatory, informative	Conveyed through **standard** panels, colors, borders and rims, etc.
B	The **infrastructure**: post, VMS, *dashboard*	Is the infrastructure holding signs what makes them "**official**" within the 1968 C?
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid-VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions i.e. in principle, paint anywhere on the panel
D	The **specific elements** displayed: the symbols and the inscriptions	For long time **the infrastructure** has determined the needs for new elements i.e. permanent / topographic situations
E	The specific criteria followed to **combine** the elements displayed: the **syntax**	This issue has been **disregarded** under 1968 Convention assuming that international non-verbal signs can be universally read True? How?

Design parameters

	Parameter	Comment
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions
D	The specific elements	For long time the
E	elements displayed: the syntax	1968 Convention assuming that international non-verbal signs can be universally read

64 x 64 pixel matrix

5 x 7 pixel matrix

FRANCE

except

Design parameters

	Parameter	Comment	Consequences
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions	Hybrid VMS [having "two parts"] do not fit in this a priori for design. Full matrix VMS may fit.
D	The **specific elements** displayed: the symbols and the inscriptions	For long time **the infrastructure** has determined the needs for new elements	
E	The specific criteria followed to **combine** the elements displayed: the syntax	This issue has been **disregarded** under 1968 Convention assuming that international non-verbal signs can be universally read	

Design parameters

	Parameter	Comment	Consequences
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions	Hybrid VMS [having "two parts"] do not fit in this a priori for design
D	The **specific elements** displayed: the symbols and the inscriptions	For long time **the infrastructure** has determined the needs for new elements	VMS and in-car devices may display new signs previously not required
E	The specific criteria followed to **combine** the elements displayed: the syntax	This issue has been **disregarded** under 1968 Convention assuming that international non-verbal signs can be universally read	

Design parameters

	Parameter	Comment	Consequences	
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions	Hybrid VMS [having "two parts"] do not fit in this a priori for design. Full matrix VMS may fit.	☒
			VMS and in-car devices may display new signs previously not required	☑
E	The specific criteria followed to **combine** the elements displayed: the syntax	This issue has been **disregarded** under 1968 Convention assuming that international non-verbal signs can be universally read	Road signs displays follow differing syntactic strategies altogether	☒

Note that, if we consider message design and display itself, Consequence C is actually a maladaptive sub-case of Consequence E

Design parameters: syntax

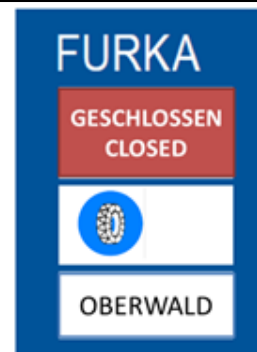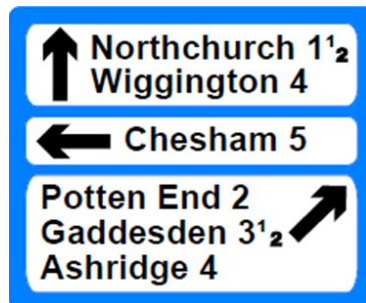|	Parameter	Comment	Consequences
E	The specific criteria followed to **combine** the elements displayed: the syntax	This issue has been **disregarded** under 1968 Convention assuming that international non-verbal signs can be universally read	Road signs displays follow **differing syntactic strategies** altogether: verbal, positional, iconic (or a mixture of these)

VERBAL

We read from left to right and from top to bottom. We build up a sentence following this order (first in, first out; what you read first, comes first) to tell ourselves (or others) what's going on.

POSITIONAL

We scan the panel as if reading, but if we are to understand the sign appropriately we need to know that there are specific functions and meanings assigned to each box, from top to bottom.

ICONIC

We need adopting a bird-like perspective: near is down, far is up (left and right don't change). This is an structural analogy: the road portray (junction) actually corresponds to it.
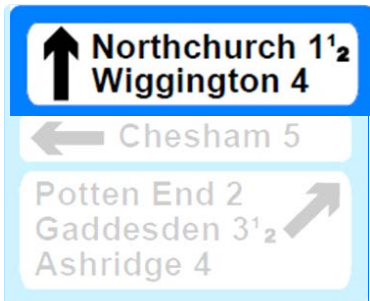
Bringing 1968 VC syntaxes to full matrix VMS: the case of event location

Direction and cities

G, 1^c

Direction and cities and exit and distance to exit

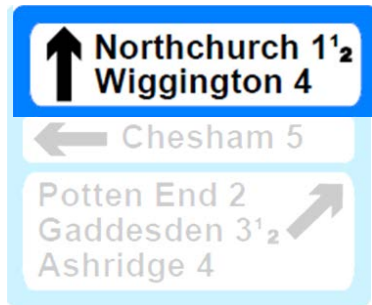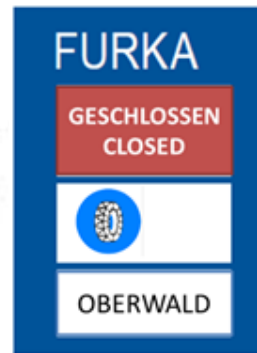Direction and cities *and variable event* (congestion)

Bringing 1968 VC syntaxes to full matrix VMS: the case of event location

ADVANCE DIRECTIONAL SIGNS: GENERAL CASE –G1

VERBAL

We read from left to right and from top to bottom. We build up a sentence following this order (first in, first out; what you read first, comes first) to tell ourselves (or others) what's going on.

POSITIONAL

We scan the panel as if reading, but if we are to understand the sign appropriately we need to know that there are specific functions and meanings assigned to each box, from top to bottom.
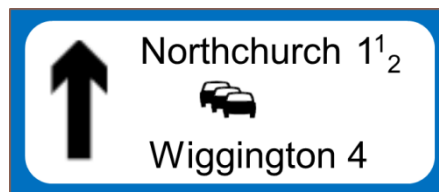
ICONIC

We need adopting a bird-like perspective: near is down, far is up (left and right don't change). This is an structural analogy: the road portray (junction) actually corresponds to it.

G, 1c

G, 15

G, 1b
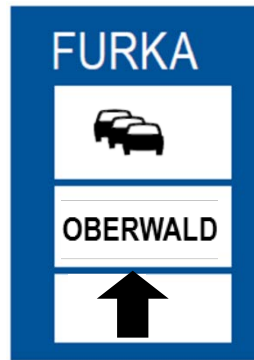
Main city

Event

Previous city

Your position

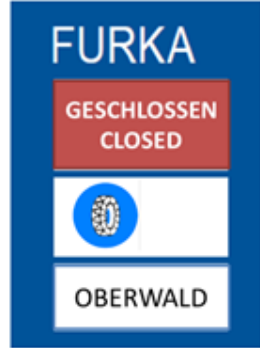# Consequence C is actually a maladaptive sub-case of Consequence E

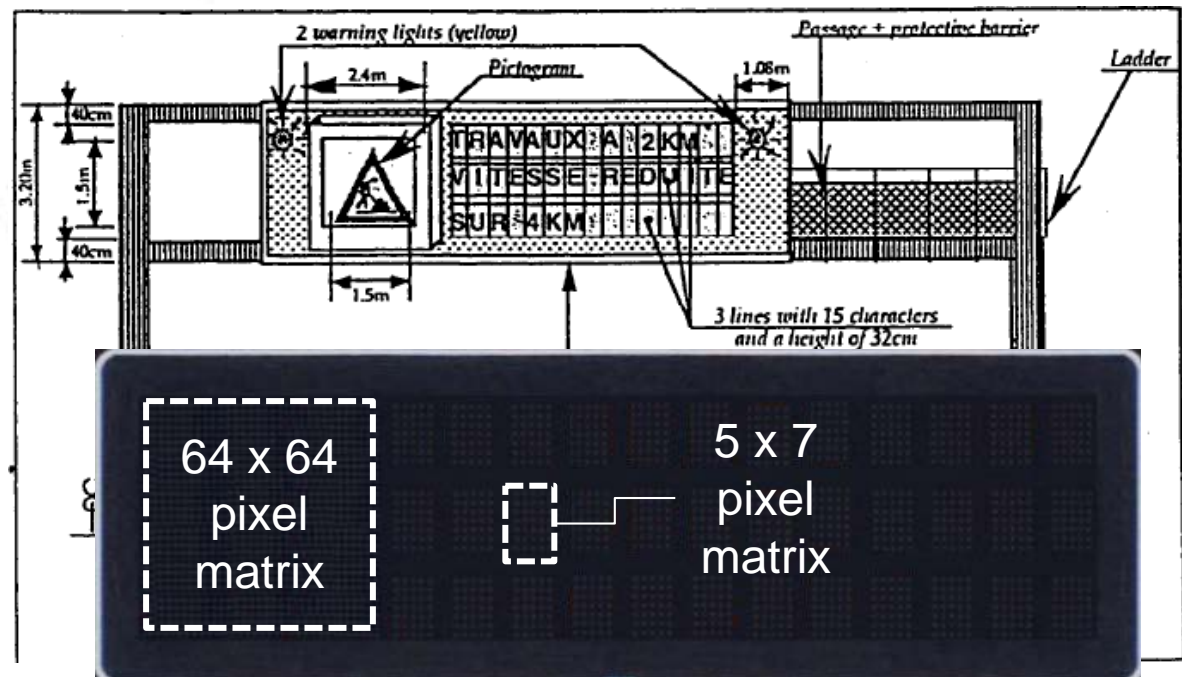|	Parameter	Comment	Consequences
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions	Hybrid VMS [having "two parts"] do not fit in this a priori for design. Full matrix VMS may fit.

VERBAL

POSITIONAL

ICONIC

64 x 64 pixel matrix

5 x 7 pixel matrix

Consequence C is actually a maladaptive sub-case of Consequence E

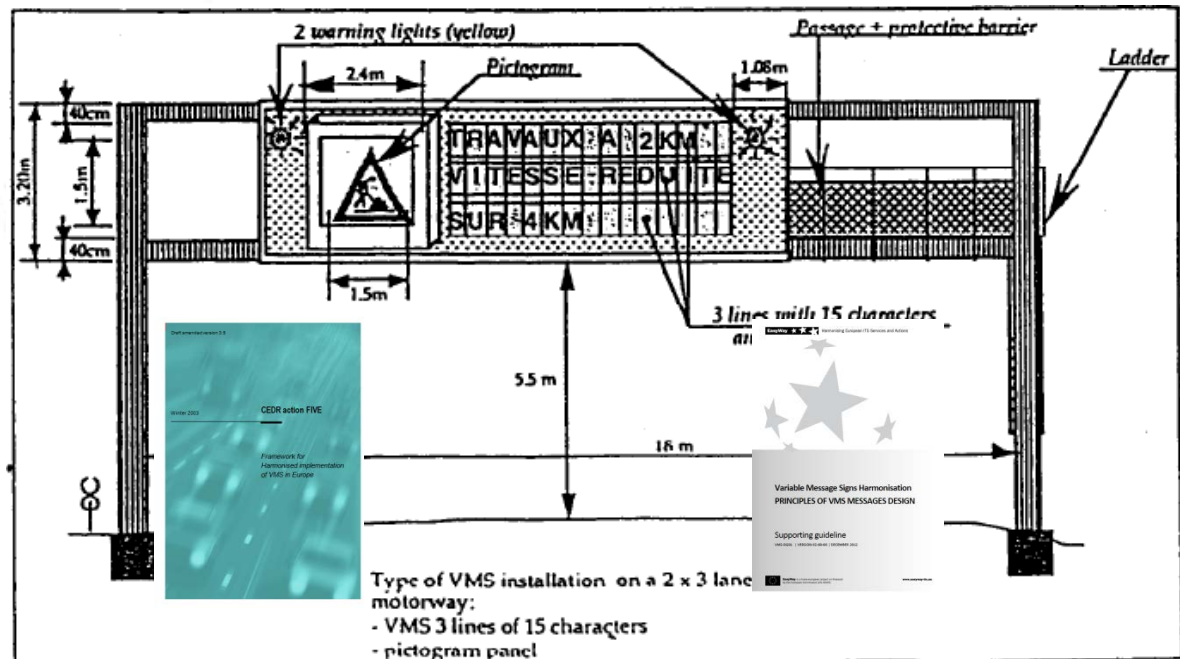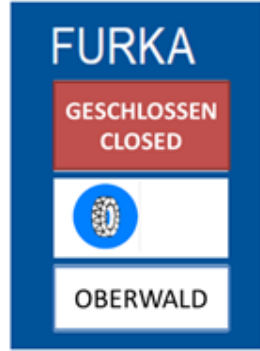|	Parameter	Comment	Consequences
C	The **panel-pigment relationship**: paint coat/ full-matrix LED / other (including Hybrid VMS)	Only **unrestricted** complementarity of panel-pigment is considered under 1968 VC design provisions	Hybrid VMS [having "two parts"] do not fit in this a priori for design. Full matrix VMS may fit.

VERBAL

POSITIONAL

Type of VMS installation on a 2 x 3 lane motorway:
- VMS 3 lines of 15 characters
- pictogram panel

2.4.2.3. Third issue: the use of alphanumeric elements on VMS

Organising informative elements within the alphanumeric (text) area

The Framework for a Harmonized Implementation of VMS in Europe or "FIVE" (1997-2004) is a principal European reference in terms of variable signing [8]. FIVE proposes for danger warning messages, which are the most frequently used on VMS, that the first text line shows information concerning the nature of event, the second text line distance or length, and the third line information concerning the cause of the event or a piece of advice.

However, this is too generic in terms of what can be considered the nature and/or the cause of the event. Secondly, it is not flexible enough considering the diversity and size of location formulations for distance or length and combinations. Thirdly, it is somehow unrealistic in terms of the place that each category (nature, location, advice, cause) should occupy on the VMS i.e. the number of characters per line would need to be very high in order to keep to this order strictly and without variations.

To address these issues, this Guideline adopts the following three rules (see Annex 8):

1. Arrange the information according to an order (not according to a fixed location).

2. Distinguish between consecutive cause-event (e.g., accident-then-congestion) and simultaneous cause-event (e.g., snowing and slippery road).

3. Length may sometimes be seen as part of the event itself. For example, congestion *of 15 kilometres*. Hence, we face a 15 km length congestion...
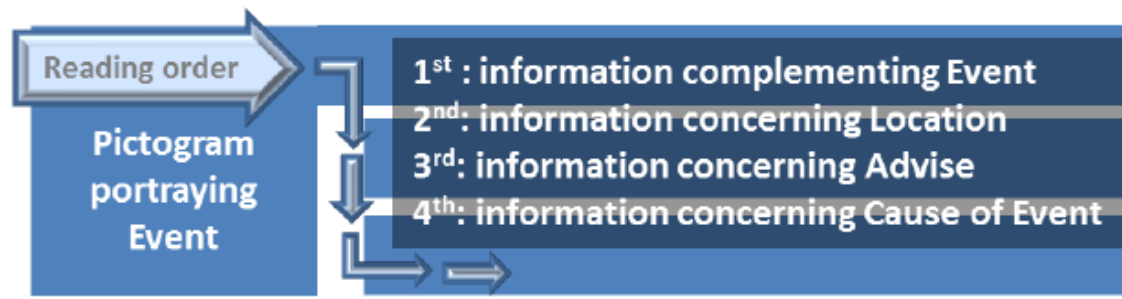

Figure 2: Ordering of information units. An example of a standard VMS display selection

PRINCIPLE 3.1

The Information Units (IU) should be placed on the VMS following a recommended order that depends on message type i.e. Information Unit 1–Main Event; Information Unit 2–Location; Information Unit 3–Advice; Information Unit 4-Cause of the Event.

POSITION ON VMS	ESG4 RECOMMENDATIONS FOR MESSAGE TYPE		
	REGULATORY	DANGER WARNING	REPORTING DANGER OR INFORMATIVE
Inf. Unit 1	E (a pictogram suffices)	E	E^2
Inf. Unit 2	(L)	L	L
Inf, Unit 3/4	(C)	A/C	A/C

Table 2: Recommendations for locating information units in different signing functions in VMS (E = main Event, L = Location, A = Advice or Additional information, C = Cause of event)

Consequence C is actually a maladaptive sub-case of Consequence E

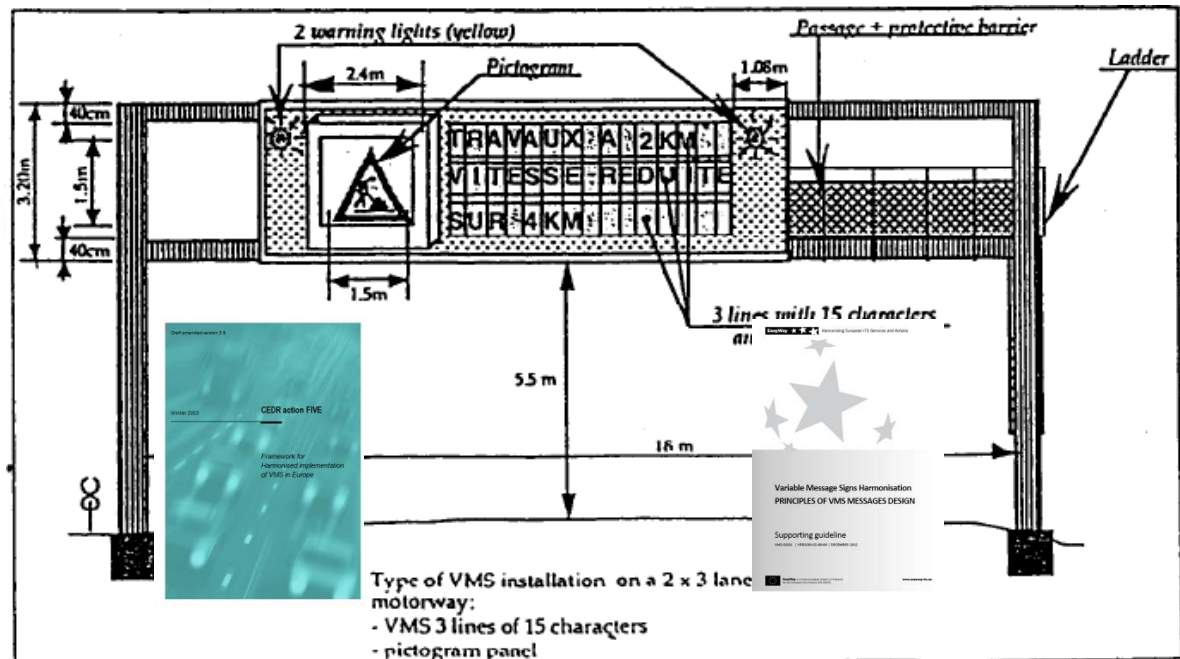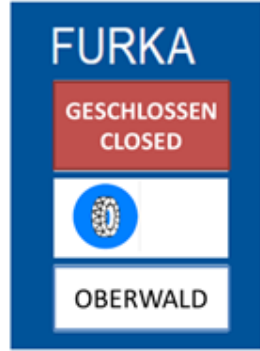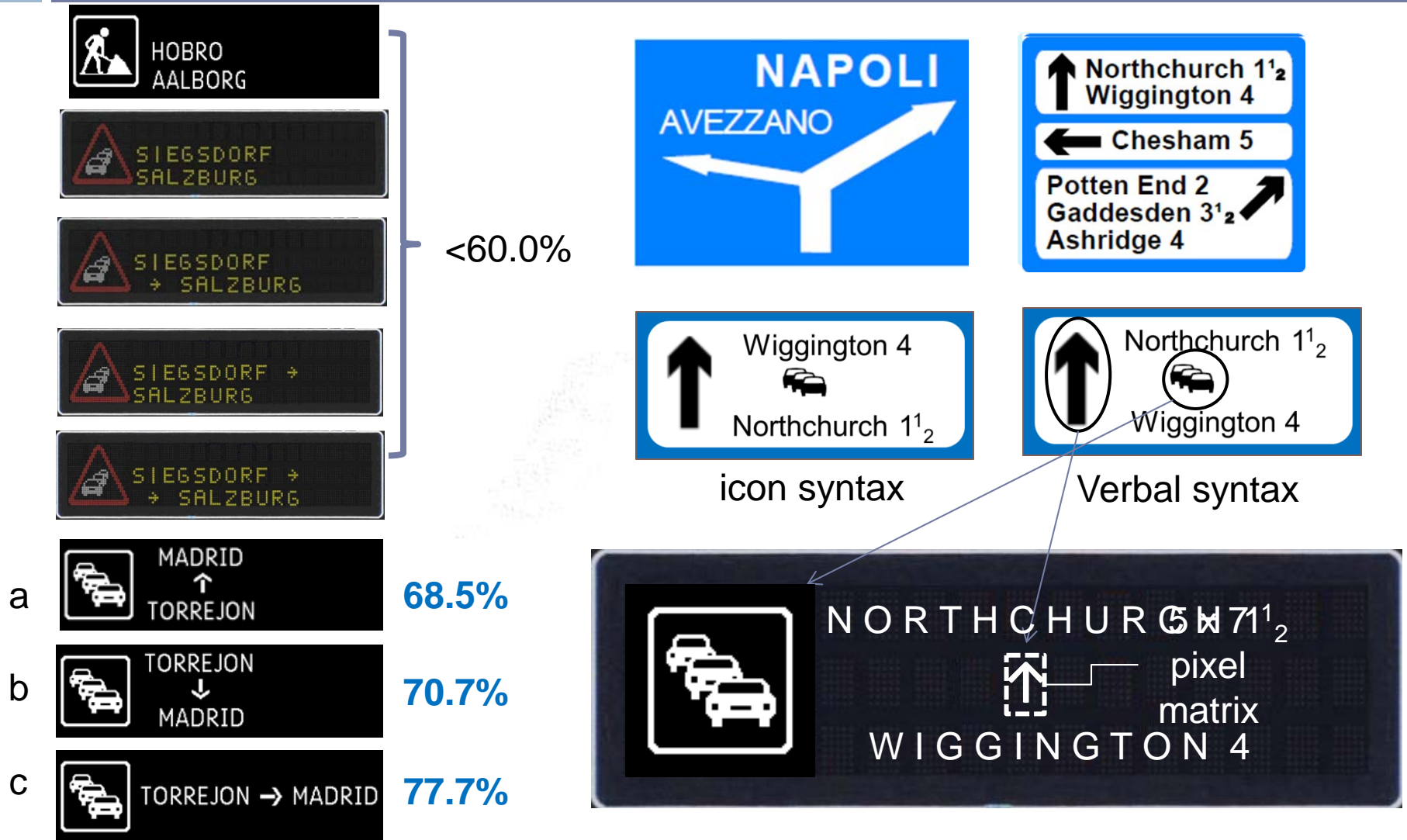|	Parameter	Comment	Consequences
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VERBAL

POSITIONAL

Consequence C is actually a maladaptive sub-case of Consequence E

HOBRO
AALBORG

SIEGSDORF
SALZBURG

SIEGSDORF
→ SALZBURG

SIEGSDORF →
SALZBURG

SIEGSDORF →
→ SALZBURG

<60.0%

NAPOLI
AVEZZANO

Northchurch 1^1_2
Wiggington 4

← Chesham 5

Potten End 2
Gaddesden 3^1_2
Ashridge 4

Wiggington 4
Northchurch 1^1_2

icon syntax

Northchurch 1^1_2
Wiggington 4

Verbal syntax

a   MADRID ↑ TORREJON   **68.5%**

b   TORREJON ↓ MADRID   **70.7%**

c   TORREJON → MADRID   **77.7%**

NORTHCHURCH 1^1_2

pixel matrix
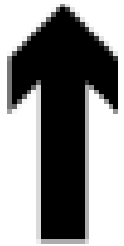
WIGGINGTON 4

↑ Northchurch 1$\frac{1}{2}$ 🚗🚗 Wiggington 4
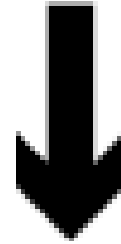
↓ Northchurch 1$\frac{1}{2}$ 🚗🚗 Wiggington 4
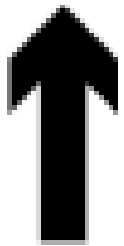
↑ Wiggington 4 🚗🚗 Northchurch 1$\frac{1}{2}$
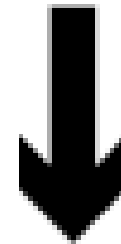
↓ Wiggington 4 🚗🚗 Northchurch 1$\frac{1}{2}$

Consequences

- To locate events VMS need to make reference to at least three elements (not two):
    - Direction ("hey driver, this concerns you")
    - referent points (landmarks -toponyms)
    - the event itself ("the specific concern")
- VMS messages calling for verbal syntax structure generate too many alternatives
- VMS messages calling for iconic syntax **frame** the three elements together more successfully
    - But, what is the right iconic frame?

What is the right iconic frame?
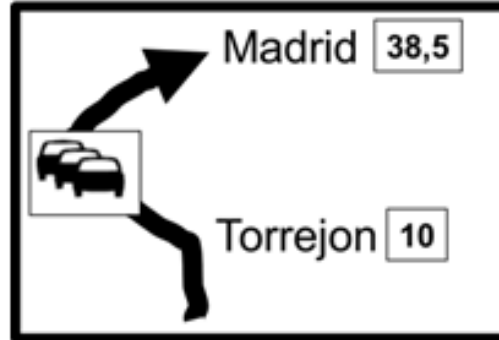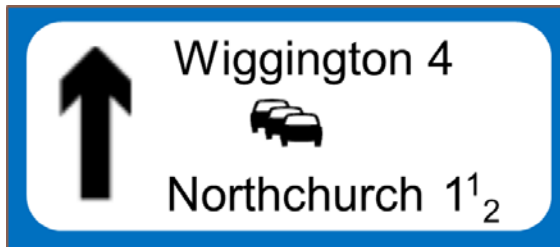
- The 1968 Convention is powerful enough to address and cue design trends regardless of infrastructure (posted, VMS, in-car)
- However, coming needs regarding road signs should be specifically addressed and introduced in the Convention
- VMS: coming needs
  - **Locating variable events**
  - Rerouting (compulsory, recommended, implicit)
  - Strategic messages (i.e., informing about events going on in other roads)

□ Locating events: there are a number of design possibilities concerning full-matrix for three basic situations: here is one

Event before city

If icon syntax presumed…

Madrid 38,5

Event between cities

Madrid 38,5

Torrejon 10

Event after city

Torrejon 10

If verbal syntax presumed…

Madrid 38,5

Torrejon 10

Madrid 38,5

Torrejon 10

□ Locating events: there are a number of design possibilities concerning full-matrix for three basic situations: here is one

Event after city

Event between cities

Event before city

If icon syntax presumed…

3.1

□ The main issue stems from the use of Hybrid VMS because the **panel-pigment relationship** is not flexible enough

□ Here, locating…

Event before city	**Event between cities**	**Event after city**

If icon syntax presumed…

If verbal syntax presumed…

Task 4. Issuing conclusions

- The 1968 Convention is rich enough to allow for different design strategies
- The limit is not actually infrastructure, but the reading approach that is feasible
- Understanding complex road signs (here advance direction-location signs) critically depends on the reading approach followed by drivers
- Two main approaches, verbal and iconic, are possible:
  - The verbal approach follows the standard text reading pattern (e.g., left-right and top-down, as in G, 1^c)
  - The icon approach follows cues that indicate that the sign is read as an analogy to a map (as in G, 1^a and G, 1^b)
- New functions demanded by signing infrastructures should be carefully identified and then analyzed:
  - Location formulations
  - Rerouting
  - Strategic messages
- Families of signs allowing for the complete case (e.g. set of towards, between, after) under the same design paradigm should be prioritized
- New subclasses of signs –exemplifying that families- should then be added to the 1968 Convention with the corresponding nomenclature codes.