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PUBLISHED PROJECT REPORT PPR009

IN-VEHICLE INFORMATION SYSTEM (IVIS) USER MANUAL
USABILITY AND SAFETY CHECKLIST

Version 1

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Client: VTS, DfT

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<tr>
<td>Project Manager</td>
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INTRODUCTION

This is a Checklist for the assessment of in-vehicle information system (IVIS) User Manuals against established ergonomic custom and practice. The Checklist enables the assessment of the usability and effective provision of safety information of IVIS User Manuals. The primary function of the Checklist is to provide a structured aid to an expert for the assessment of usability and safety related information of the IVIS User Manual, in order to lead to a conclusion regarding the IVIS User Manual usability and effective provision of safety information regarding use of the IVIS.

The Checklist assessment proforma is accompanied by Supportive Information, which provides greater explanation about the application of the Checklist, as well as allowing assessor(s) to clarify Checklist questions and understand the rationale behind them. Assessors should read the supportive Information before completing the Checklist.

Recommendations for using the Checklist

The Checklist is intended for use by assessors who have a background knowledge of ergonomics and road vehicle safety. It is recommended that two assessors make up a team to carry out each assessment of the IVIS User Manual and that a minimum of two assessments be conducted on any given manual.

The evaluation involves the following three stages:
- Completion of the assessment Scenario
- Conducting the Checklist Assessment
- Completing the Assessment Summary Report.

Assessors will need to detail whether the concerns they have relate to the usability of the User Manual or the safety implications of following the instructions provided by the User Manual, when completing the Assessment Summary report. Questions 1-18 of the Checklist Assessment concern the usability of the User Manual. Questions 19-25 of the Checklist Assessment relate to the safety implications of the User Manual. It should be noted that poor usability of the User Manual may in turn have implications for safety. For example, if instructions cannot be read, as the font size is too small, then important safety information might be missed. Such issues should be detailed in the Assessment Summary Report.

Following the individual assessments the teams of assessors should meet and discuss findings, resolving any discrepancies. A final version of the Checklist proforma and summary report should then be produced.

It is recommended that the IVIS be available for the assessor to use in parallel with the IVIS User Manual in order to fully assess the accuracy of the User Manual instructions in relation to the IVIS. Further, it would be beneficial, if possible, for the IVIS User Manual to be investigated in-situ with the IVIS and the vehicle. Finally, some aspects of the IVIS User Manual might require further assessment through methods such as user trials. Assessors should state where appropriate if they feel that the response to a question requires further clarification by use of such methods.
The Assessment Scenario

Before carrying out the Checklist Assessment, the assessment Scenario table should be completed by the assessors. This includes details of the User Manual under assessment such as the name of the product to which the User Manual belongs, the manufacturer and supplier, the build status and the type of documentation which has been provided. Details of the nature of the assessment should also be given such as whether the manual was assessed in the vehicle and with the system to which it belongs.

The Checklist Assessment

The Checklist uses a series of response boxes (described in the section below) to allow the assessors to reach a qualitative assessment of the IVIS User Manual. It should be noted that more sophisticated objective measures may be required to fully assess some aspects of the IVIS User Manual, particularly in relation to the usability of the manual for specific user groups such as technically naïve users, users with poor literacy, and elderly users. In many cases the Checklist is considered a first step for identifying potential problems and further user studies are sometimes likely to be required.

The response boxes

Response boxes follow each Checklist question. For each question only one response box should be ticked.

| None | Minor | Major | NA |

The box marked ‘None’ refers to ‘No Concerns’, ‘Minor’ to ‘Minor Concerns’, ‘Major’ to ‘Major Concerns’, and ‘NA’ to ‘Not Applicable’.

No concerns

None

This box should be ticked when no concerns exist and the User Manual is usable and promotes safe use of the IVIS.

Not Applicable

NA

This box should be ticked when the IVIS User Manual does not have the particular attribute the question is addressing or for some reason the question does not apply.
The type of concern

In order to decide whether there are concerns, an assessment should be made of the usability of the User Manual as well as the provision of instructions relating to safe use of the IVIS by the User Manual.

Questions 1-18 concern the usability of the User Manual, such as small font size. The associated response box should therefore be ticked according to the degree of concern regarding usability.

Questions 19-25 relate to the safety implications of the User Manual, such as missing instructions. The associated response box should therefore be ticked according to the level of concern regarding safety.

Minor Concerns - Usability

Minor

This box should be ticked when concerns are likely to have a minor impact on the usability of the User Manual for some users.

Major Concerns - Usability

Major

This box should be ticked when concerns are likely to have a major impact on the usability of the User Manual for a significant number of users.

Minor Concerns - Safety

Minor

This box should be ticked when concerns are likely to have a minor impact on promotion of safe IVIS use of the system, by the User Manual, for some users.

Major Concerns - Safety

Major

This box should be ticked when concerns are likely to have a major impact on promotion of safe IVIS use of the system, by the User Manual, for a significant number of users.
True / False / NA

Each question is followed by a short list of statements, which can be used to identify important features that will assist in the final decision for that question. Each of these statements can be answered True, False or Not Applicable. ‘True’ statements indicate that User Manual design is consistent with good ergonomics and practice and unlikely to cause the user problems. ‘False’ indicates poor or inappropriate User Manual design and may identify a potential problem. Not Applicable applies when the User Manual does not have the particular attribute the statement is addressing or for some reason the question does not apply. The assessors must use their own professional judgement in relating the True/False/NA markings to the overall mark. The short statements are intended to assist in identifying specific factors, but their relevance and weighting vary and depend on each individual IVIS User Manual.

It is recommended that comments and/or reasoning behind significant box markings should be recorded at appropriate places on the Checklist proforma, in order to assist any further evaluation studies and as an aid for input into the Assessment Summary Report.

User groups

The assessors should bear in mind throughout the assessment the full range of user groups, including users at the extremes of the user population such as colour blind users, technically naïve users, users with poor literacy, and elderly users.

Assessment summary report

Following completion of the Checklist questions, the Assessment Summary Report should be completed. Here both good and bad features of the IVIS User Manual and design should be noted. Also comments should be provided about any concerns noted and possibly recommendations made about how they might be overcome.
## ASSESSMENT SCENARIO

### IVIS under assessment

<table>
<thead>
<tr>
<th>Product name and version</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Manufacturer / Supplier</td>
<td></td>
</tr>
<tr>
<td><strong>Build status</strong></td>
<td>(e.g. prototype, production)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Documentation included</strong></th>
<th>(e.g. driver’s manual, quickstart leaflet)</th>
</tr>
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</table>

### IVIS User Manual under assessment

<table>
<thead>
<tr>
<th>User Manual title and version</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Description of User Manual</strong></th>
<th>(e.g. “Large 40 page manual containing large amounts of text and few diagrams”)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assessed with / without product</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assessed in / out of vehicle</th>
<th></th>
</tr>
</thead>
</table>

Assessors:  
Date:
CHECKLIST ASSESSMENT

User Manual quality

1. Is the User Manual appropriate?
   - The User Manual is of a size small enough to fit in the vehicle glove box and large enough to easily find and read
   - The User Manual is made of hard-wearing material
   - The print is not smudged or blurred

   Usability
   - None
   - Minor
   - Major
   - NA

2. Is the size and quality of the User Manual text and diagrams large enough and well spaced?
   - Font size is not too small or difficult to read and is consistent
   - Text is not cluttered, but spaced and spacing is consistent
   - Diagrams are not too small or cluttered and are consistent

   Usability
   - None
   - Minor
   - Major
   - NA

Information

3. Does the User Manual avoid the use of lengthy information, the presentation of too much information, and the presentation of information not required to operate the system?
   - Lengthy explanations are avoided
   - Information is not excessive, overly complex or immaterial

   Usability
   - None
   - Minor
   - Major
   - NA

4. Are abbreviations explained within the User Manual and does the User Manual avoid the use of jargon or unfamiliar words?
   - The User Manual provides a glossary
   - Abbreviations are explained within the User Manual text
   - Numerous unfamiliar abbreviations are avoided
   - The User Manual avoids the use of jargon and words likely to be unfamiliar to the novice user

   Usability
   - None
   - Minor
   - Major
   - NA
5. Is information provided by the User Manual correct?

| The User Manual does not contain discrepancies or conflicting Information | TRUE/FALSE/NA |
| The User Manual does not contain erroneous information | TRUE/FALSE/NA |

**Usability**
- None
- Minor
- Major
- NA

6. Is the use of all functions clearly explained within the User Manual?

| Instructions relating to all functions are provided | TRUE/FALSE/NA |

**Usability**
- None
- Minor
- Major
- NA

7. Are the instructions clear and easy to follow?

| Instructions are presented as simple command statements | TRUE/FALSE/NA |
| Instructions indicate to the user what to do, not what not to do | TRUE/FALSE/NA |
| The language uses only short simple sentences and short simple words | TRUE/FALSE/NA |
| After following instructions the system does what is expected | TRUE/FALSE/NA |

**Usability**
- None
- Minor
- Major
- NA

8. Are full explanations of control functionality provided?

| It is clear from the User Manual how to operate each control | TRUE/FALSE/NA |
| It is clear from the User Manual how to use controls differently if they possess more than one function | TRUE/FALSE/NA |

**Usability**
- None
- Minor
- Major
- NA

9. Does the User Manual have a useful troubleshooting/help section?

| A troubleshooting/help section is provided | TRUE/FALSE/NA |
| The trouble shooting section is easy to follow | TRUE/FALSE/NA |
| The troubleshooting/help section addresses all common problems likely to occur when using the IVIS | TRUE/FALSE/NA |

**Usability**
- None
- Minor
- Major
- NA
Diagrams

10. Does the User Manual present important information in diagrams and are these diagrams helpful and easy to follow?

- The User Manual presents important information in diagrams as well as text: TRUE/FALSE/NA
- The User Manual diagrams are big, simple and clear: TRUE/FALSE/NA
- The User Manual diagrams are not overly complex and confusing: TRUE/FALSE/NA
- The User Manual diagrams provide enough information for them to be useful: TRUE/FALSE/NA
- Complex functions are explained using a sequence of diagrams: TRUE/FALSE/NA

Usability

None ☐ Minor ☐ Major ☐ NA ☐

11. Are the User Manual diagrams appropriately placed?

- User Manual diagrams are positioned close to their accompanying text: TRUE/FALSE/NA
- Diagrams and text are cross-referenced: TRUE/FALSE/NA
- The order of text and diagram placement is consistent: TRUE/FALSE/NA
- User Manual diagrams are not out of sequence or misplaced: TRUE/FALSE/NA

Usability

None ☐ Minor ☐ Major ☐ NA ☐

12. Do control operation diagrams aid the operation of system controls?

- Control operation diagrams are provided in the User Manual: TRUE/FALSE/NA
- Control operation diagrams are located at the beginning of the User Manual: TRUE/FALSE/NA
- It is clear how to use the system controls from the control operation diagram: TRUE/FALSE/NA
- The system reacts in the manner suggested by the control operation diagram: TRUE/FALSE/NA

Usability

None ☐ Minor ☐ Major ☐ NA ☐

13. Does the User Manual provide the user with a clear model of the system’s menu structure?

- The system’s menu structure is clearly presented within the User Manual: TRUE/FALSE/NA
- It is clear how to navigate the system’s menu: TRUE/FALSE/NA
- It is clear where functions are within the menu structure: TRUE/FALSE/NA

Usability

None ☐ Minor ☐ Major ☐ NA ☐
Navigation of the User Manual

14. Is information easy to find in the User Manual?

- The method of navigating the User Manual is effective: TRUE/FALSE/NA
- The User Manual has an index: TRUE/FALSE/NA
- The index is easy to find: TRUE/FALSE/NA
- The index consists of key words: TRUE/FALSE/NA
- The User Manual has a contents page: TRUE/FALSE/NA
- The contents page is clear and easy to use: TRUE/FALSE/NA
- The User Manual contains headings and subheadings: TRUE/FALSE/NA
- The headings and subheadings are appropriate and useful: TRUE/FALSE/NA
- Text highlighting techniques are used appropriately: TRUE/FALSE/NA
- Instructions are presented in a logical order: TRUE/FALSE/NA

Usability

<table>
<thead>
<tr>
<th>None</th>
<th>Minor</th>
<th>Major</th>
<th>NA</th>
</tr>
</thead>
</table>

15. Does more important information stand out within the User Manual?

- Important information is highlighted/bolded/a different colour: TRUE/FALSE/NA
- Information is provided in chunks and not in lengthy pieces of text: TRUE/FALSE/NA

Usability

<table>
<thead>
<tr>
<th>None</th>
<th>Minor</th>
<th>Major</th>
<th>NA</th>
</tr>
</thead>
</table>

16. Are useful cross-references used within the User Manual?

- Related information is cross-referenced: TRUE/FALSE/NA
- Critical information is repeated in more than one location if required: TRUE/FALSE/NA

Usability

<table>
<thead>
<tr>
<th>None</th>
<th>Minor</th>
<th>Major</th>
<th>NA</th>
</tr>
</thead>
</table>
The User Manual user

17. Are User Manual instructions provided in an appropriate language in view of the likely driver population?

Instructions are provided in the majority language of the country in which the system is being sold
Instructions are provided in minority languages of the country in which the system is being sold
Instructions are provided in the official language of the country in which the system is being sold
The language is colloquial to the countries in which the manual will be used
Diagrams and warning symbols conform to accepted stereotypes and conventions of the intended user population

TRUE/FALSE/NA

Usability
None [ ] Minor [ ] Major [ ] NA [ ]

18. Do the instructions make it clear if any training is required to use the system?

Information is provided if training is required by the driver to use the system

TRUE/FALSE/NA

Usability
None [ ] Minor [ ] Major [ ] NA [ ]

Safety

19. Are instructions provided that clearly state which aspects of the system are intended for use by the driver while driving and which are not intended to be used while driving?

Clear warnings are provided of unintended use
The user is advised not to access the functions which require lengthy interaction time

TRUE/FALSE/NA
TRUE/FALSE/NA

Safety
None [ ] Minor [ ] Major [ ] NA [ ]

20. Does the User Manual make it sufficiently clear that the driver retains absolute responsibility for the operation of the vehicle and compliance with traffic regulations regardless of information provided by the system?

The User Manual clearly states that the driver retains overall responsibility for vehicle operation
The User Manual clearly states that the driver retains responsibility for complying with traffic regulations

TRUE/FALSE/NA
TRUE/FALSE/NA

Safety
None [ ] Minor [ ] Major [ ] NA [ ]
21. Does the User Manual represent system use with realistic expectations of the system and discourage potential users from carrying out unsafe or illegal use of the system?

Descriptions, photographs and sketches do not promote inappropriate, unsafe or illegal use of the system  TRUE/FALSE/NA

Safety
None  Minor  Major  NA

22. Does the User Manual contain useful and appropriate warnings?

Warnings are provided for all potential hazards connected with the system  TRUE/FALSE/NA
Warnings are provided for all foreseeable misuse of the system  TRUE/FALSE/NA
Warnings are located where they are connected to the text  TRUE/FALSE/NA
Warnings stand out from the general text  TRUE/FALSE/NA
Warnings are simple and direct  TRUE/FALSE/NA
Warnings clearly communicate the nature of the hazard and how it can be avoided  TRUE/FALSE/NA

Safety
None  Minor  Major  NA

23. Does the User Manual provide instructions on aspects of installation?

The User Manual provides instructions on installation of the system  TRUE/FALSE/NA

Safety
None  Minor  Major  NA

24. Does the User Manual provide instructions on aspects of maintenance?

The User Manual provides instructions on maintenance of the system  TRUE/FALSE/NA

Safety
None  Minor  Major  NA

25. Does the User Manual include contact details if the driver were to require further help or advice?

Contact details for further help are provided  TRUE/FALSE/NA

Safety
None  Minor  Major  NA
# ASSESSMENT SUMMARY REPORT

IVIS User Manual being assessed: 
Assessors: 

<table>
<thead>
<tr>
<th>Date:</th>
</tr>
</thead>
</table>

## SUMMARY OF CHECKLIST ASSESSMENT

**Serious Safety Concerns / reasons** *(refer to specific questions if necessary)*

**Minor Safety Concerns / reasons** *(refer to specific questions if necessary)*

**Serious Usability Concerns / reasons** *(refer to specific questions if necessary)*

**Minor Usability Concerns / reasons** *(refer to specific questions if necessary)*

**Overall Assessment**

**Further studies required**

(Continue over the page if necessary)

## ADDITIONAL COMMENTS AND DESIGN RECOMMENDATIONS

**Additional comments**

**Recommendations**

(Continue over the page if necessary)
SUPPORTIVE INFORMATION

User Manual quality

1. Is an appropriate User Manual provided with the system?

A written hardcopy User Manual should be provided with the system.

The system should be provided with a User Manual which is separate from the system packaging. Instructions which are only present on packaging material are not considered sufficient as packaging is likely to be discarded rather than being passed on to subsequent users.

The booklet should be of a size small enough so as to fit in the car glove box, so that it is likely to accompany the system and large enough so that it can be easily located and contain text and diagrams of a legible size. The User Manual bindings, paper and covers should be sturdy and hard wearing, so that the User Manual will last as long as the expected life of the vehicle.

Print should not appear smudged or blurred. Printed material should be on paper (or other material) providing a reasonable durability and the printing should be permanent on that material. Porous paper should be avoided as it picks up dirt and allows ink to bleed.

2. Is the size and quality of the User Manual text and diagrams large enough and well spaced?

The written text in the User Manual should be of a font style and size that is easy to read, not be too small and unlikely to be missed. A font size no smaller than 8-point and preferably 10-point or 12-point should be used. Further, text should not be presented in too many different font styles. Text should be spaced and not too cluttered and spacing should be kept consistent.

Diagrams should be large and clear and not cluttered and should be consistent with one another.

Information

3. Does the User Manual avoid the use of lengthy information, the presentation of too much, and the presentation of information not required to operate the system?

Lengthy explanations should be avoided; there should not be too much information. The information should not be overly complex, but kept simple and concise. Only useful information that is required by the user in order to operate the system efficiently and safely should be provided.
Example of superfluous information

“The GPS system is based on the reception of navigation signals from a total of 26 GPS satellites, which orbit the earth at an altitude of 21,000 km in approximately 12 hours”

4. Are abbreviations explained within the User Manual and does the User Manual avoid the use of jargon or unfamiliar words?

Explanations of abbreviations should be provided either every time they first appear in each small section of the User Manual or within a glossary at the back of the User Manual. It would be preferable for both methods of explanation to be incorporated. Further, numerous abbreviations or jargon words that may be unfamiliar to the novice user should be avoided where possible.

Example of undefined abbreviations

“Once in contact with the RAM Network the letters M, T or W will be displayed…”

Defined abbreviations

“The system uses PIN numbers, this stands for ‘Personal Identification Number’”

5. Is information provided by the User Manual correct?

The User Manual should not contain any discrepancies or conflicting information and all information provided within the User Manual should correspond exactly with the IVIS. The User Manual should not contain any misleading or erroneous information.

Instructions

6. Is the use of all important functions clearly explained within the User Manual?

In addition to diagrams of system functions operation there should be text that clearly explains the diagrams and the use of system functions. Information on use of all system functions should be provided.

Information should be clear and easy to follow and all necessary information should be provided, so that the user can operate the system effectively and knows how the system will respond.

Information that is not required in order to operate the system safely and efficiently should not be included and information should not be overly complex or contain lots of jargon or unfamiliar words. Information should be kept simple and concise and should be presented in a language familiar to the user. However, the vocabulary should match that displayed on the system. Further, information should instruct the user what to do rather than what not to do.

Instructions should be presented as simple command statements, for example ‘turn the knob’ as opposed to ‘the knob should be turned’. They should begin with an action verb which
describes the required user behaviour, followed by the object which is to be acted upon and a qualifier of the action such as how fast or how much, finishing with an explanation of why the action needs to be done.

**Example of overly complex instructions**

“If the TJF button is pressed the asterisk is removed from the display”

**Alternative wording**

“Press the TJF button to remove the asterisk”

7. Are the instructions clear and easy to follow?

The language used in the User Manual should be aimed at a low level of literacy to increase the readability of the text. The language and grammar used should not be too complex; short simple sentences and short, simple, common words should be used.

8. Are full explanations of control functionality provided?

Alongside the control operation diagram an explanation of exactly how to operate the various controls should be provided. It would be preferable for even the simplest control functionality to be explained within the User Manual. Therefore, explanations of how to operate each control should be provided (e.g. push/pull/turn).

**Example of an unclear explanation**

“Use the VIEW control to switch between different display modes”

This explanation does not describe the actions required to switch between modes e.g. push, pull or turn.

**Example of a clear instruction**

“Press and hold the view control to switch between display modes”

Additionally, if a control has more than one function, the operation of all these functions should be described. For example, turn the dial to move the cursor and push the dial to select the desired option, or push the control once to select and twice to return to the main menu.

9. Does the User Manual have a useful troubleshooting/help section?

A help section should be provided within the User Manual explaining how to overcome common problems which may be experienced when using the IVIS and answering common questions often asked relating to IVIS use.

This might include what the user should do when for example a navigation system fails to find a requested destination or what to do in the event of power failure to the IVIS.
The help section should be easy to locate within the User Manual and each potential problem should be clearly listed. Troubleshooting instructions should be easy to follow, detailing common options for solving a problem with the IVIS.

Diagrams

10. Does the User Manual present important information in diagrams and are these diagrams helpful and easy to follow?

Diagrams should be used within the User Manual to help explain use of the IVIS. Important information should be presented in diagrammatic form as well as in the text to aid the illiterate user or the user with declining literacy.

Diagrams should be big, clear and simple and should not be cluttered. Diagrams should not contain too much information so as to overload the user. Complex processes and functions should be broken down into a series of diagrams to avoid complex diagrams.

Diagrams should contain enough information to be useful and represent controls and functionality effectively. Further, diagrams should correspond exactly to how the system both looks and operates.

11. Are the User Manual diagrams appropriately placed?

User Manual diagrams should be positioned as closely as possible to their accompanying text, so that it is clear which piece of text belongs to which diagram. Further, the order in which text and diagrams are presented should be kept consistent, i.e. text is either always presented before the diagram or always presented after the diagram. To assist the referencing of text to diagrams captioning and cross-referencing should be used. Finally, diagrams should be presented in the correct order, the same order as the textual descriptions, and should not be misplaced.

12. Do control operation diagrams aid the operation of system controls?

Control operation diagrams should be provided within the User Manual and should be positioned in a prominent position at the beginning of the User Manual. The control operation diagram should mirror how the system looks and labels of each control should be provided.

The control operation diagram should correspond exactly to how the system operates. It should not be overly complex but should provided enough information so that the user understands exactly how each control is operated.

The User Manual should also contain diagrams for use of system functionality. System functionality diagrams should illustrate the operation of various functions in an appropriate form (such as step by step illustrations of system status after each control action).
13. Does the User Manual provide the user with a clear model of the system’s menu structure?

System menu structure refers to the order in which menus and submenus, which allow operations and functions to be accessed, are presented within the presented within the system.

A model of the system menu structure should be provided within the User Manual, preferably in the form of a flow diagram or series of diagrams. This menu structure model should make it clear how to navigate menus so that the user will not get lost within the menu structure and knows where desired menus and submenus can be found. The user can easily see where they are in the menu structure, i.e. which menu is in front of them and which menu is behind them.

Navigation of the User Manual

14. Is information easy to find in the User Manual?

A method for navigating through the User Manual should be provided such as a contents page or index unless the User Manual is very small and therefore easy to navigate. These navigation aids should be easy to find; the contents page should be at the beginning of the User Manual and the index at the back of the User Manual. It would be preferable for the User Manual to contain both forms of navigation aid.

The contents page should contain all chapter headings and sub-headings, and be easy to use. Both chapter numbers and page numbers should be indicated.

The index should contain useful key words, and be easy to use. Important and frequently required keywords should not be omitted from the index. The index should be ordered alphabetically and indicate appropriate page numbers.

The User Manual text should be separated into headings and subheadings. These headings should stand out from the rest of the text by using a different font size and by bolding the text. No more than three levels of text should be used as this can be confusing to the reader. Headings should be useful, indicating clearly to the user the contents of the section to which they refer.

Text highlighting techniques should be used to draw the readers’ attention to important information. The use of highlighting techniques should be consistent; bolding and underlining are recommended. No more than two highlighting techniques should be used.

Instructions should be provided in a logical order, for example, the User Manual should not tell the user how to adjust the volume before telling the user how to switch the system on.

In the case of User Manuals that apply to a number of products it should be explicitly clear which product particular instructions refer to.
15. Does more important information stand out within the User Manual?

Important information should be presented in different ways in order to make it stand out. For example, important information such as warnings, safety advice, section headings and control operations might be bolded, in a different colour or in capitals.

Each piece of information should be provided in a chunk rather than providing the user with cluttered lengthy text.

16. Are useful cross-references used within the User Manual?

Related information should be cross-referenced within the User Manual. For example, information on inputting data into the IVIS should be cross-referenced to the input control functionality diagram, the controls operation diagram and to safety related information on inputting data whilst driving. Alternatively, critical information which is required to accompany instructions should be presented within the manual more than once.

**Example of Cross Referencing**

“The position of traffic congestion is shown by a symbol on the map view. See page 15 for a list of symbols and definitions”

The User Manual user

17. Are User Manual instructions provided in an appropriate language in view of the likely driver population?

The driver population should be considered in relation to the likely and intended use of the system as well as the native languages and other languages spoken and read. Published statistics on language proficiency by country could be used as a reference. As a minimum, instructions should be provided in the majority language of the country in which the system is being sold. Official and minority languages might also be considered. The language used in the manual should also be the naturally spoken, everyday language of the user population.

When using diagrams and warnings, accepted stereotypes and conventions for the intended population should also be considered.

18. Do the instructions make it clear if any training is required to use the system?

The need for training should be specified in the User Manual. If any initial training is required, then all product information should make this clear.
Safety

19. Are instructions provided which clearly state which aspects of the system are intended for use by the driver while driving and which are not intended to be used while driving?

Instructions should make the driver fully aware of the use of the system intended by the manufacturer. Any restriction on intended use should be described clearly and in full in the User Manual.

Certain functions may require lengthy interaction time and significantly increase workload while driving, therefore compromising safety. These functions should either be disabled whilst the vehicle is in motion, or the manual should clearly state that they are not to be used while the vehicle is in motion. Clear warnings should be provided against unintended use.

After becoming aware of the instructions, drivers should be in no doubt about which aspects of the system are designed for use while driving and which have not been designed for use while driving.

Example of clear guidelines

“Destination input should be completed before the start of the journey. Under no circumstances should the destination be entered when in motion”

20. Does the User Manual make it sufficiently clear that the driver retains absolute responsibility for the operation of the vehicle and compliance with traffic regulations regardless of information provided by the system?

Regardless of any information received from the system, the driver retains absolute responsibility for safe operation of the vehicle, and compliance with presiding traffic regulations. This should be made clear within the User Manual.

Example of explicit instructions

“The use of the Navigation system by no means relieves the driver of their responsibilities. The Highway Code must always be observed”

21. Does the User Manual represent system use with realistic expectations of the system and discourage potential users from carrying out unsafe or illegal use of the system?

Representations of system use (e.g. descriptions, photographs and sketches) should neither create unrealistic expectations on the part of the potential user nor encourage unsafe or illegal use. For example, a photograph of a user driving and manually inputting a destination into a navigation system would be seen as encouraging inappropriate use of the system. Rather, the User Manual should assist the user in appreciating the functionality, benefits and limitations of the system before (and during) use, and promote road safety and compliance with existing traffic regulations and codes concerning road and vehicle use.
22. Does the User Manual contain useful and appropriate warnings?

The manufacturer has a duty to warn users of dangers present in using the system both in normal and foreseeable misuse. Warnings should therefore be provided for all potential hazards or foreseeable misuse connected with the system.

Warnings should follow existing guidelines. A good warning might be presented in three parts: a single word and colour to convey the severity of the hazard, a symbol or pictogram showing the nature and consequences of the hazard and words to describe how to avoid the hazard.

Wording of warnings should be simple, direct and active, clearly communicating the nature of the hazard and how it can be avoided. Warnings should be consistent and should never be mixed with general text in the User Manual. Warnings should stand out and be easily readable.

Warnings should not be grouped together as they may lose their impact. Warnings should instead be placed next to the text to which they are connected, preferably at the beginning of the associated instruction.

Example of warnings grouped together

“Do not leave the panel open when driving. Do not touch the metal contacts on the portable panel or on the radio”

High Impact Warning

“WARNING – DO NOT leave panel open while driving”

23. Does the User Manual provide instructions on aspects of installation?

The User Manual should include information on installation such as the fitting of systems and sub-systems within the vehicle, including loading software. (Systems that are fully pre-installed do not require these instructions).

24. Does the User Manual provide instructions on aspects of maintenance?

The User Manual should provide full instructions on the maintenance of the system such as the replacement of sub-systems (e.g. batteries, licenses, software), periodic cleaning and checking and calibration procedures. It should also address the consequences of disregarding maintenance advice.

25. Does the User Manual include contact details if the driver were to require further help or advice?

The User Manual should provide the driver with contact details should they require further help or assistance. For systems which are simple and not very complex further contact details may not be necessary.