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EUROPEAN NEW CAR
ASSESSMENT PROGRAMME

BEYOND NCAP ASSESSMENT PROTOCOL

Version 1.1
February 2010

1 Introduction

- 1.1 Advancing technology has resulted in an increasing number of automotive products and features that could offer consumers a potential safety benefit. Euro NCAP believes that it should be able to help consumers recognise and choose safer cars by rewarding those technologies which offer a significant safety benefit. However, Euro NCAP's ratings have, until now, been based exclusively on full-scale tests, performed to a well-defined protocol. Such an approach makes it impossible to respond quickly to new technology. The development of effective, robust test and assessment protocols can take several years, by which time a technology may have become well established and in widespread use by the car industry, or may even have been mandated by legislation. Euro NCAP is then unable to help consumers differentiate between vehicles on the basis of safety.
- 1.2 A new approach, known as 'Beyond NCAP' seeks to improve the responsiveness of Euro NCAP to emerging technologies. Manufacturers are invited to present their innovations for assessment allowing Euro NCAP to offer an appropriate reward, and guide consumers towards safer cars, from an early stage. An independent organisation such as Euro NCAP must have a rigorous process to assess the innovations brought to it by the car manufacturers in order to ensure that it is offering meaningful, useful and unbiased information to consumers.
- 1.3 The assessment process was established by the 'Beyond NCAP' subgroup. This protocol defines the actions that should be taken by all relevant parties to establish the reward, if any, that is appropriate to the innovation presented by a manufacturer. The protocol also makes the assessment process transparent so that manufacturers can know in advance how their innovations will be assessed.
- 1.4 It is the intention of Euro NCAP that, in the mid to long term, assessments of new technologies be incorporated into its overall rating scheme. Therefore, where several similar technologies have been considered through the 'Beyond NCAP' process, Euro NCAP may consolidate the test methods demonstrated in those assessments into a single protocol. Future vehicles can then be assessed and scored against that test protocol.

2 Definitions

- 2.1 'Innovation' means a new technology or a new application of existing technology which addresses a demonstrable safety issue and for which the manufacturer seeks a reward by Euro NCAP.
- 2.2 'Assessment Group' is a group of experts formed by the Secretariat to determine the extent of the safety issue being addressed by the Innovation and the effectiveness of the Innovation in reducing casualties.
- 2.3 'Reward' is the recognition that Euro NCAP will give to an Innovation which has been successfully assessed in the Beyond NCAP process. Euro NCAP will publish information about the Innovation on its website and will state that

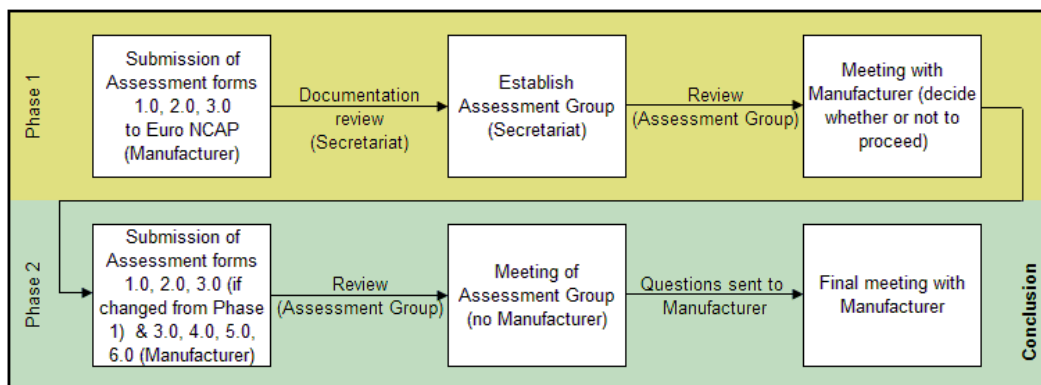
a positive safety benefit can be expected. Euro NCAP will also make available to the manufacturer any logos or other visual identities for use in promotional material. More detail is given in Section 8.

3 Conditions

- 3.1 Euro NCAP will consider only innovations which are commercially available as optional or standard on a Euro NCAP tested vehicle model. To qualify, the minimum star rating for the vehicle (or vehicles) is 3 stars.
- 3.2 Euro NCAP will only entertain applications submitted by one or more vehicle manufacturers. The system will not be open to submissions from third parties, after market systems, prototype inventions etc. forwarded without consent of the vehicle manufacturer.

4 Process Overview

- 4.1 To establish whether or not an innovation should be rewarded, Euro NCAP requires a comprehensive dossier describing the safety issue being addressed, technical details about the way in which the innovation works and details of the tests done to establish its effectiveness.
- 4.2 A two phased approach is used:
 - 4.2.1 In Phase 1, the manufacturer must make an initial submission giving technical details of the innovation, the safety issue it is intended to address and the mechanism by which accidents and/or injuries are prevented or mitigated by the system. This information is reviewed by the Assessment Group.



- 4.2.2 If it is agreed that the innovation offers a potential safety benefit then, in Phase 2, the manufacturer must provide details of the ways in which the potential effectiveness of the system has been evaluated: the targets set for the system, the tests which have been performed to assess performance and the number of casualties the system could be expected to prevent.
- 4.3 Details of the information required in each phase are given in the assessment forms, provided as annexes to this protocol, and in a template dossier, available separately. Manufacturers are encouraged to make use of the Assessment forms and the template when preparing their submissions to Euro NCAP in order to ensure that the information provided is as complete as possible.

- 4.4 Members of the Assessment Group will be asked to score the innovation against the criteria listed in the assessment forms. However, it should be noted that the ‘Beyond NCAP’ reward is not based on these scores, or any calculation based upon them. The scores are used to indicate the extent to which the submission provides the information needed to make a thorough assessment and will be used by the Assessment Group to highlight differences of opinion and to stimulate discussion.
- 4.5 The Assessment Group will discuss the dossier until a consensus is achieved (i.e. a conclusion with which all the experts agree) regarding the comments and the accompanying scores for each evaluation criterion. In the event of persistent disagreement, the chairman may – but is not obliged to - bring in additional experts to examine the dossier. The consensus decision on the merits of the Innovation will be based on the quality of the submission (the clarity with which the operation and effectiveness of Innovation have been demonstrated) and the impact of the Innovation (the scale or severity of the safety issue which the Innovation addresses and the extent to which it does so)
- 4.6 It is anticipated that an assessment may take around six months to complete. Therefore, if a Reward is sought for an innovation on a car to be assessed in the overall rating programme, manufacturers should ensure that submissions are made sufficiently early for the assessments to be completed at the same time.

5 Pre-Submission

5.1 Informal Discussions

- 5.1.1 Manufacturers are encouraged to speak informally to the Programme Manager before making a submission. Euro NCAP’s ability to assess an innovation, and the time it takes to do so, will depend on current workload. It will be useful for both parties to understand the likely scheduling of the process.
- 5.1.2 Informal discussions may take place between the manufacturer and the Secretariat at any time before a formal submission is made.
- 5.1.3 Such informal discussions will not constitute a commitment by either party.

6 Phase 1: Initial Submission

- 6.1 The aim of this phase is to establish an understanding of the Innovation and its potential for recognition by Euro NCAP on the basis of a sub-set of the total required information.
- 6.2 Formal submission for assessment of an innovation shall be made to Euro NCAP’s Programme Manager. The Programme Manager shall confirm the receipt of the submission and inform the manufacturer of the estimated time to complete the assessment.
- 6.3 The submission shall be in electronic format.
- 6.4 The manufacturer will submit to the Programme Manager a detailed technical description of the following:

- a) The **INNOVATION**: whether it is a completely new technology or a new application of an existing technology; what restrictions there are on its use
- b) The **SAFETY ISSUE**: what is the safety issue which the innovation is seeking to address; whether the innovation prevent accidents or prevents or mitigates injuries in the event of an accident; the extent of the safety problem on European roads.
- c) The **ACCIDENT/INJURY MECHANISM**: the way in which the accident or injury is caused.

6.5 Review of Documentation

- 6.5.1 The Secretariat shall review the submission made by the manufacturer to ensure that all the information needed for the initial assessment has been provided and that company confidential content has been appropriately identified.
- 6.5.2 The Secretariat may ask the manufacturer for additional information or for clarification of certain points.

6.6 Formation of the Assessment Group

- 6.6.1 Based on the information provided by the manufacturer, the Secretariat will form an Assessment Group
- 6.6.2 The Secretariat will contact all Euro NCAP members and ask them to propose representatives to sit on the Assessment Group.
- 6.6.3 Each of the representatives:
 - a) will have recognised expertise in one or more of the areas identified by the manufacturer as being relevant to the Innovation;
 - b) will preferably but not necessarily work for an organisation affiliated to a Euro NCAP member;
 - c) will not work directly for a vehicle manufacturer or components supplier;
 - d) will not have contributed to the development of the Innovation;
 - e) will be prepared to sign the confidentiality agreement.
- 6.6.4 From the responses provided by Euro NCAP members, the Programme Manager will decide who will form the Assessment Group, bearing in mind the following:
 - a) the group should be the smallest that can properly assess the Innovation and its impact on road safety (expected normally to be five to eight persons);
 - b) Impartial subject experts can be called upon on an ad-hoc basis if additional expertise should prove necessary.

6.7 Initial Assessment

- 6.7.1 The Programme Manager will ask all Assessment Group members to complete and return the confidentiality agreement.
- 6.7.2 On receipt of the signed confidentiality agreements, the Programme Manager will circulate the manufacturer's initial submission to the Assessment Group members.

- 6.7.3 Assessment Group members will individually consider the initial application, making use of Assessment forms 1.0, 2.0 and 3.0.
- 6.7.4 Assessment Group members will be given a time limit by which they should respond. The time limit depends on the volume of information to be reviewed and the overall agreed timing for the assessment, as set by the Programme Manager.
- 6.7.5 If Assessment Group members need additional information, they should ask the Programme Manager to request this information from the manufacturer.
- 6.7.6 The Programme Manager will arrange a meeting between the Assessment Group and the manufacturer. Suppliers are allowed to attend the meeting at the invitation of the vehicle manufacturer.
- 1) The meeting will be facilitated and chaired by the Euro NCAP Secretariat.
 - 2) The meeting will be an opportunity for the manufacturer to explain in detail the assumptions made in the initial assessment and the method by which the safety benefit has been estimated.
 - 3) At the end of the meeting, the Assessment Group should fully understand the methods used by the manufacturer to estimate the safety benefit of the Innovation.
- 6.7.7 The Assessment Group will discuss the dossier until a consensus is achieved. After agreement is reached, the Assessment Group will inform the manufacturer of its decision, either
- 1) not to proceed with a further detailed assessment of the Innovation, or
 - 2) to proceed with the detailed assessment of the Innovation, or
 - 3) to consider the submission further on the basis of new or additional information. In this case, the manufacturer will be informed of the areas in which the original submission was incomplete. If, after submission of additional information, the dossier is still deemed to be incomplete, the manufacturer will be informed that the submission will not be further assessed.
- 6.7.8 A ‘consensus report’ will be provided to the manufacturer, which will reflect the opinions expressed in the completed assessment forms and the discussions of the Assessment Group members.
- 6.7.9 At the end of Phase 1, the manufacturer may decide to withdraw the submission, regardless of the outcome of the decisions of the Assessment Group.

7 PHASE 2: DETAILED TECHNICAL ASSESSMENT

7.1 Detailed Submission

- 7.1.1 The manufacturer will submit to the Programme Manager a detailed technical description of the following:
- a) **INNOVATION, SAFETY POTENTIAL and ACCIDENT/INJURY MECHANISM** for the Innovation (updated from Phase 1, if required);

- b) **TARGET REQUIREMENTS** for the Innovation: identification of specific performance targets for the Innovation.
- c) **TEST PROCEDURES**: the way in which the Innovation has been tested to establish whether or not it is meeting its targets.
- d) **EXPECTED BENEFIT**: given the performance identified in tests, the proportion of the Safety Issue which the Innovation is likely to address in practice.
- e) **REAL WORLD EVALUATION**: information, if any exists, on how the Innovation works in practice; whether or not a safety benefit can be seen in accident statistics.

7.1.2 This submission will be made in an electronic format.

7.2 Review by Assessment Group

7.2.1 The Programme Manager will check the dossier and make sure that company confidential content has been appropriately identified. He will distribute the manufacturer's detailed technical submission to the members of the Assessment Group, together with assessment forms 1.0, 2.0, 3.0, 4.0, 5.0, 6.0 and 7.0.

7.2.2 The Assessment Group will review the submission, using the assessment forms. Assessment Group members will be given a time limit by which they should respond.

7.2.3 Following the review, the Programme Manager will ask the manufacturer for any additional information or clarification that has been requested by the Assessment Group.

7.3 Consensus Meeting

7.3.1 The Programme Manager will organise a meeting of the Assessment Group to review the submission made in Phase 2. The completed assessment forms will be used as the basis for discussion. A 'consensus report' will be completed, based upon the completed assessment forms and the group's discussions.

7.3.2 The meeting will be chaired and facilitated by the Euro NCAP Secretariat.

7.4 Final Review Meeting

7.4.1 The Programme Manager will arrange and chair a meeting between the Assessment Group and the manufacturer.

- 1) The conclusions drawn by the Assessment Group during the Consensus Meeting will be explained to the manufacturer.
- 2) The meeting will be an opportunity for the manufacturer to respond to the points raised by the Assessment Group and to clarify aspects of the submission

7.4.2 At the end of the meeting, the Assessment Group should have a clear understanding of:

- a) the accident mechanism and the methods used by the manufacturer to establish that mechanism;

- b) the way in which injury is caused and the methods used by the manufacturer to understand that mechanism;
- c) the way in which the Innovation addresses the accident mechanism and/or the injury mechanism;
- d) the test methods used by the manufacturer to demonstrate the effectiveness of the Innovation
- e) the potential effectiveness of the Innovation in addressing the safety problem;

7.5 Conclusion

7.5.1 The manufacturer will be informed of the decision of the Assessment Group:

- 1) To reward the Innovation, or
- 2) To issue no reward to the Innovation.

7.5.2 A 'consensus report' will be provided to the manufacturer explaining the rationale for the decision.

8 Publication

8.1.1 Following a successful evaluation of the Innovation, the Programme Manager will draft text for the website, describing the Innovation and how it works; and the fact that Euro NCAP has assessed the Innovation and believes it offers a positive safety benefit.

8.1.2 The draft text will be forwarded to the Manufacturer to ensure that technical details and references to the innovation are correct and that the wording fairly and accurately reflects the findings of the Assessment Group.

8.1.3 Euro NCAP will prepare a web page containing the agreed text and some visual illustrations of the Innovation. On a date agreed with the manufacturer, the web page will be published on Euro NCAP's website.

8.1.4 From the date of publication of the web page (and not before), the manufacturer may reference Euro NCAP's successful evaluation of the Innovation in advertising or other promotional material.

8.1.5 Euro NCAP will make available to the manufacturer any appropriate logos/visual identities for use in promotional material. The use of the logo will be subject to Euro NCAP's publication guidelines.

8.1.6 If the Innovation cannot be properly assessed, or if it is judged not to have been satisfactorily tested or evaluated, Euro NCAP will not publish any reference to the Innovation on its website.

9 Feedback to Industry

9.1 No information shall be made public regarding the assessment of the innovation or its Beyond NCAP application before official publication of the formal Euro NCA overall rating.

9.2 Euro NCAP believes it is important to provide information to other manufacturers regarding the outcome of submissions made through the

'Beyond NCAP' process. This feedback will encourage manufacturers to submit their Innovations and will promote a better understanding of what is required by Euro NCAP for a successful assessment.

- 9.3 If a submission is successful and is rewarded, or if it is unsuccessful, Euro NCAP will work with the manufacturer to prepare a 'desensitised' version of the submission dossier i.e. one which contains no confidential information.
- 9.4 The desensitised dossier, together with the consensus report (from Phase 1 or Phase 2 as appropriate) will be made available to other manufacturers.
- 9.5 Euro NCAP will report on completed submissions made to it through the Beyond NCAP process at the Industry Liaison Meeting.

10 APPENDICES

Assessment form 1.0 – Innovation

Assessment form 2.0 – Safety Issue

Assessment form 3.0 – Accident-Injury

Assessment form 4.0 – Target Requirement

Assessment form 5.0 – Test Procedure

Assessment form 6.0 – Expected Benefit

Assessment form 7.0 – Real World Evaluation



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ASSESSMENT PROGRAMME

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Appendices: Individual Evaluation Reports 1-7 (Assessment Forms)

Version 1.1
February 2010

Manufacturer :
Technology :

Beyond NCAP - Individual Evaluation Report

1.0 Innovation

SCOPE

This part of the assessment addresses the technical description of the innovation, its originality and usability. The level of technical detail provided must be sufficient for Euro NCAP to understand its operation and potential side effects. Euro NCAP seeks to reward real technologies that are well-described, that are not already covered by one of the existent protocols and which wide spread application is not unnecessarily hindered by existing legislation or patents.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Clarity in description

A high score should be given to the clarity in description if the dossier provides a proper level of technical detail about the innovation, sufficient to understand its main functionality, relevant components, and intended availability. In particular, answers to the following questions should be provided:

- Does the dossier mention the car models to which the innovation is to be fitted (including brand names and breakdown into variants)?
- Does the dossier make clear if the technology is independent of vehicle characteristics or not?
- Is the functionality of the system (what the system does and how it addresses the safety issue) described in understandable terms?
- Does the dossier define the safety area to which the innovation applies, e.g. primary, secondary, tertiary or combined?
- Are the terms used in the dossier clearly defined?

[Please add comments to support your score]

Score 1.1:

Manufacturer :
Technology :

2. Uniqueness

A high score should be given to uniqueness if the innovation is regarded as new, i.e. addressing a safety issue not previously addressed, or addressing an already targeted safety issue in a completely new way. In particular, answers to the following questions should be provided:

- Does the dossier make clear whether or not a similar system has previously been addressed by Euro NCAP?
- Is the innovation already covered by Euro NCAP normal assessment?

[Please add comments to support your score]

Score 1.2:

3. Usability

A high score should be awarded to those innovations that are nearly free of any restrictive patents, or company confidentiality. The innovation should also not conflict with existing standards. In particular, answers to the following questions should be provided:

- Does the dossier clearly define any restrictions of use of the innovation e.g. restricted by patent, unrestricted or company confidentiality?
- Does the dossier make clear whether or not the innovation is covered by or conflicting with existing standards or protocols and, if so, what those standards are (directives, regulations, etc.)?

[Please add comments to support your score]

Score 1.3:

**Average
score
(1.1+1.2+1.3)
/3**

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer :
Technology :

Beyond NCAP - Individual Evaluation Report

2.0 Safety Issue

SCOPE

This part of the assessment scrutinises the extent of the safety problem that exists. The manufacturer should make the case that there is a *safety issue* which needs to be addressed and should identify the extent of that problem. The extent to which the safety issue can be addressed by the innovation is the *safety potential* of the system. Euro NCAP seeks to reward innovations with a high safety potential. Greater reliance can be placed on a safety potential which has been derived using high quality data which is relevant to European roads.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Problem at Large

The safety issue is the number of casualties who suffer from accidents or injuries of the identified type across Europe. A high score should reflect an issue which is clearly identified and which represents a significant safety problem in Europe. Injuries of all severities should be considered: a significant safety issue could represent a high number of low-severity injuries or a relatively small number of very severe or fatal injuries.

- Is there a clear estimation of the number of casualties resulting from the safety issue?
- Is the severity and/or the societal dimension of the injuries which are typically sustained made clear?

[Please add comments to support your score]

Score 2.1:

Manufacturer :
Technology :

<p>2. Safety Potential</p> <p>The <u>safety potential</u> is the <u>number of casualties</u> addressed by this innovation in EU 27 i.e. that part of the Safety Issue which the Innovation seeks to address. The score should reflect the <u>scale of the expected safety benefit</u> and its impact on road safety in EU 27:</p> <ul style="list-style-type: none">• Is there a clear estimation of the number of casualties expected to be addressed by the Innovation?• Is it clear whether the Innovation is addressing all injury severities or focussing on high or low-severities only? <p><i>[Please add comments to support your score]</i></p>	<p>Score 2.2:</p>
<p>3. Data Reliability</p> <p>The score should reflect the reliability of the <u>data</u> on which the <u>Safety Issue</u> is based. A high score should be given to the use of data in which a <u>high level of trust</u> can be placed, and which is <u>independent</u>, widely <u>available</u> and <u>accessible</u> so that it may be scrutinised by others if necessary. Consideration should be given to the following:</p> <ul style="list-style-type: none">• Does the dossier refer to studies published and repeated by others?• Does the dossier refer to papers published in scientific press?• Are published papers available?• Does the dossier refer only to internal industry reports? <p><i>[Please add comments to support your score]</i></p>	<p>Score 2.3:</p>
<p>4. Data Validity</p> <p>The score should reflect the validity of the <u>data</u> to the <u>car fleet, infrastructure and driving conditions of EU27</u>. Validity is based on <u>the relevance</u> and the <u>representativeness</u> of the data to European roads and car fleet. Consideration should be given to the following in descending order of validity:</p> <ul style="list-style-type: none">• Are the data considered representative and in-depth?• Are data mostly taken from national statistics?• Are the data considered system-specific? <p><i>[Please add comments to support your score]</i></p>	<p>Score 2.4:</p>
	<p>Average score (2.1+2.2+2.3+2.4)/4</p>

Manufacturer :
Technology :

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer :
Technology :

Beyond NCAP - Individual Evaluation Report

3.0 Accident Mechanism & Injury Causation

SCOPE

The dossier should demonstrate a clear understanding of the *mechanisms* which lead to the accidents and/or injuries identified in the Safety Issue. The greater this understanding, the clearer it will be that the Innovation is addressing the causes of the casualties. The data used to establish the mechanisms of accidents/injuries may be different from that used to identify the Safety Issue. Again, greater reliance can be placed on high quality data which has been published or which is openly available. An understanding of the injury mechanism and/or driver behaviour may not be relevant in all cases: the Innovation may address an accident type which may result in a broad range of injuries which cannot be closely defined.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Accident Mechanism

The score should reflect the extent to which the dossier identifies the accident scenarios and circumstances in which the system is designed to work, in particular:

- Are the parameters clearly identified? Such as:
 - Circumstances (Standing traffic, Driving, Junction, ...);
 - Involved / potential collision partners (Car to Car, Car to Object, Pedestrian, ...);
 - Impact or accident configuration (Side, Run-off, Roll-over ...);
 - Role of driver behaviour (distracted inappropriate reaction...);
 - Role of driver condition (alcohol, drowsiness ...);
 - Causations.
- Does the accident mechanism clearly fall within the scope of the Safety Issue?

[Please add comments to support your score]

Score 3.1:

Manufacturer :
Technology :

2. Injury Mechanism (if applicable)

This section may not be relevant if the Innovation aims to prevent an accident type rather than a particular injury. If relevant, a high score should be given if the dossier demonstrates a detailed understanding of the way in which the injury targeted by the Innovation is caused.

- Are the impact kinematics and occupant/human kinematics well described?
- Is the injury mechanism well known, accepted and validated?
- Is subjective evaluation avoided?
- Are side effects and related injuries sufficiently considered?

[Please add comments to support your score]

Score 3.2:

3. Driver Behaviour (if applicable)

Driver behaviour plays an important role in the some technologies, particularly those which alert the driver to a hazard. The efficacy of other technologies (airbags, for example) is independent of driver response. The score should reflect the extent to which the influence of human behaviour is considered, determined and evaluated. Average behaviour should be the guideline.

- Is it made sufficiently clear whether driver behaviour is or is not a factor?
- How was the driver reaction obtained (in simulator)?
- Was the system tested mostly by simulation or in real-world?
- Has the relationship with car environment / settings been examined?
- Does muscle tone play a role, and if so has it been quantified?
- Was unintended behaviour considered?

[Please add comments to support your score]

Score 3.3:

4. Transfer Function

A clear link should be demonstrated between the function and efficacy of the system and its likely influence on mitigating real-world accidents or injuries, taking account of driver influence and side effects, in particular:

- Has the relationship between cause and effect been clearly explained?
- Has the safety potential been logically derived from assumed effectiveness?
- Has the transfer function been validated?
- Were side effects and adverse effects sufficiently taken into account?

[Please add comments to support your score]

Score 3.4:

Manufacturer :
Technology :

5. Data Reliability

The score should reflect the reliability of the data on which the analysis of accident and injury mechanisms is based. A high score should be given to the use of data in which a high level of trust can be placed, and which is independent, widely available and accessible so that it may be scrutinised by others if necessary. Consideration should be given to the following:

- To what extent were one or more of the below sources used?
 - In depth studies (CCIS, LAB, GIDAS,...);
 - National statistics (STATS 19,...);
 - Insurance data;
 - Overview relevant statistics (CARE, IRTAD,...);
 - Field Operational Trials and Field studies;
 - Test data (EuroNCAP, industry data,...);
 - Simulation data (Parametric studies, drive simulator,...);
- Did different sources confirm the same findings?
- Has any of findings related to accident and injury mechanisms been published?
- Are the data publicly available, or is access limited?
- Will permission be granted to access the data if required?

[Please add comments to support your score]

Score 3.5:

6. Data Validity

Note: The score should reflect the validity of the data to the car fleet, infrastructure and driving conditions of EU27. Validity is based on the relevance and the representativeness of the data to European roads and car fleet. Consideration should be given to the following in descending order of validity:

- Are the data considered representative and in-depth?
- Are data mostly taken from national statistics?
- Are the data considered system-specific?
- Is the data relevance clearly stated?
- Are the limitations of the data given?
- Should quality assessment by independent panel of experts be required?

[Please add comments to support your score]

Score 3.6:

Manufacturer :
 Technology :

7. Methods and Tools

The dossier should clearly define the *methods used to analyse the data* and establish the accident/injury mechanism. A high score should be given to a *well-established method of analysis which gives a reliable interpretation of the data*. Less reliance can be placed on analyses which are unproven and/or which are not clearly explained in the dossier.

- Are the methods used generally accepted?
- Are critical references provided?
- Are limitations clearly stated?

[Please add comments to support your score]

Score 3.7:

Average score
(SUM(3.1:3.7)/7*)

**Divide by less than 7 if any of Sections 2 and/or 3 are not applicable*

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer :
Technology :

Beyond NCAP - Individual Evaluation Report

4.0 Target Requirement

SCOPE

This part of the assessment focuses on the safety benefit (in terms of accidents, fatalities or injuries reduced) that the innovation is targeting on a European scale, taking into account the overall safety potential, accident and injury mechanisms and the expected effectiveness of the system. Euro NCAP rewards systems for which the target setting is "SMART".

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Target Impact

The dossier should define specific outcomes (in terms of safety benefit or impact) which the innovation is expected/required to achieve. Different targets should be defined for each safety issue which the innovation might address (if more than one). The higher the expected impact in terms of casualty reduction, the higher the score.

- Does the dossier clearly indicate to which safety benefit target it has been developed?
- If the innovation offers a safety benefit in more areas (or scenarios), are the target benefits in each respective area identified? (The benefit expected, and therefore the manufacturer's target, might be different for each of the areas/scenarios).

[Please add comments to support your score]

Score 4.1:

Manufacturer :
 Technology :

2. Target Setting

The target(s) defined should be 'SMART'. The score in this box should reflect how well the targets fulfil the following criteria. A high score should be given where SMART targets have been set.

- Specific: Are the targets well described, concrete and limited to a well defined operating area?
- Measurable: Are the expected benefits "quantifiable" (be it with objective or subjective measurements)? Can the manufacturer indicate what tests that he has used "in-house" to verify the validity of developing the "innovation"
- Achievable: Is the way the technology needs to operate to reach the goals achievable or beyond expectation?
- Realistic: Is the way the technology needs to operate to reach the goals realistic?
- Timely: Is the time allowed to achieve the safety target acceptable e.g. the introduction of the technology in the majority of the car fleet may take a long time, so the benefits may not be significant in the real world for a long time?

[Please adds comments to support your score]

Score 4.2:

**Average
score
(4.1+4.2)/2**

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer :
Technology :

Beyond NCAP - Individual Evaluation Report

5.0 Test Procedures and Criteria

SCOPE

This part of the assessment addresses the test procedures, criteria and limits by which the *performance* of the innovation was verified. The level of technical detail provided must be sufficient for Euro NCAP to understand under what circumstances and environment the system was tested, and whether state-of-the-art methods have been applied. Euro NCAP seeks to reward innovations for which the validation methods, criteria and limits are well-documented, relevant and credible and where system performance has been independently verified. Preference is given to the use of open, accepted standards.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Clarity in description

A high score should be given if the dossier provides a proper level of technical detail about the methods and procedures by which the innovation was validated and what criteria and limits were applied.

- Does the dossier clearly mention in what test scenarios the system was evaluated? Are the tests described in understandable terms?
- Does the dossier specify where and under what conditions tests were carried out?
- Does the dossier make clear if the technology was evaluated independent of vehicle, dependent or both?
- Are the test criteria and limits clearly identified and explained?

[Please add comments to support your score]

Score 5.1:

Manufacturer :
Technology :

2. Data Reliability

Note: A high score should be given where the system was exposed to a range of different test conditions, both physically and virtually. A high score should be given to the use of data in which a high level of trust can be placed, for instance when data originates from established, independent labs and is widely available and accessible so that it may be scrutinised by others if necessary. Consideration should be given to the following:

- Were the tests carried out by a technical service for regulatory tests in Europe and/or accredited EuroNCAP test lab? By a technical service for regulatory tests in USA, Japan, Korea, Canada or Australia and/or accredited other NCAP test lab? Or by industry test lab only (OEM and/or Suppliers)?
- Did several physical tests take place in different test labs?
- Were physical tests repeated in one test lab?
- Was physical testing combined with modelling / virtual testing (sensitivity, parameter variation); if so, are references given to models used and the validation levels?
- Was testing / modelling performed on material, subcomponent, full scale levels?

[Please adds comments to support your score]

Score 5.2:

3. Methods and Tools

The highest score should be given to innovations which performance was assessed using well established test methodologies and tools. For example: Are the test methods or tools used or referenced by:

- European Regulation or EuroNCAP?
- Other countries' Regulation (e.g. NHTSA) or other NCAP?
- Standards (ISO, SAE)?
- EEVC, European research projects, scientific papers?
- Industry's own set-ups (open-standards) and tools (driving simulator...)?

[Please adds comments to support your score]

Score 5.3:

4. Criteria

A good score should reflect how the acceptance of the assessment criteria used (i.e the parameters by which the system performance meaningfully can be measured) in the analysis of the test results. For example: Are the criteria used or referenced by:

- European Regulation or EuroNCAP?
- Other countries' Regulation (e.g. NHTSA) or other NCAP?
- Standards (ISO, SAE)?
- EEVC, European research projects, scientific papers?
- Industry own criteria (driving simulator...)?

[Please adds comments to support your score]

Score 5.4:

Manufacturer :
Technology :

5. Limits

A high score should be given where the limits applied to the criteria are well accepted and beyond professional criticism. For example, are limits best practice or derived from biomechanical data? Are they taken from existing standards and, if so, how widely recognised are those standards? Are the limits used or referenced by:

- European Regulation or EuroNCAP?
- Other countries' Regulation or other NCAPs?
- Standards (ISO, SAE)?
- EEVC, European research projects, scientific papers?
- Industry own limits (driving simulator...)?

[Please add comments to support your score]

Score 5.5:

**Average
score
(5.1+5.2+5.3
+5.4+5.5)/5**

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer :
Technology :

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6.0 Expected Benefit / Side Effects

SCOPE

The dossier should clearly quality the *expected benefit* that the innovation is finally capable to deliver on a European scale. This expected benefit relies on whether the innovation meets the target requirements, but also how widely available the innovation will be made available and whether possible side effects have been sufficiently considered.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Potential level of dissemination (availability)

Current or planned fitment of the technology across model ranges(s) provides additional assurance that the expected benefit is real. Highest confidence should be given to technologies that are fitted as standard on all variants, guaranteeing the highest likelihood of an impact throughout Europe. However the score should only reflect the inclusion (or not) of adequate information in the dossier, in particular with regards to the following questions.

- Has the expected benefit been presented in clear terms?
- What is the applied fitment scheme
 - Is the technology fitted standard on all variants in all markets?
 - Is the technology standard on all variants in EU27?
 - Is it standard on best selling or high-end variant only?
 - Is it optional on all variants?
 - Is it optional on some variants only?

Score 6.1:

[Please add comments to support your score]

Manufacturer :
Technology :

2. Potential level of dissemination (market share)

Similar to availability, expected sales volumes may bring further confidence to the expected safety benefit on a European scale. The score should reflect the inclusion (or not) of adequate information in the dossier, in particular with regards to the following questions.

- Are sales expected > 75.000 units/year?
- Are sales > 50.000 units /year but 75.000 units/year?
- Are sales > 10.000 unit /year but 50.000 units/year?
- Are sales > 500 units/year but 10 000 units/year?
- Are sales 500/year (small volume series according to EU)

[Please add comments to support your score]

Score 6.2:

3. Reliability of accident data

The source, the accessibility and the field of applicability of the data upon which the expected safety benefit is based should be made clear. The score should reflect the reliability of the data, for example:

- Were representative in-depth data used (e.g. GIDAS, ... own study)?
- Were national statistical data used (e.g. from police reports)?
- Were system specific data used?
- Were data used based on simulations of real world conditions?

[Please add comments to support your score]

Score 6.3:

4. Available and accepted methods

Note: The dossier should clearly define the methods used to analyse the data and calculate the expected benefit. A high score reflects an analysis using established, recognised methods leading to a high level of confidence in the expected benefit.

- Was the methodology used transparent, appropriate, scientific and generally accepted?.

[Please add comments to support your score]

Score 6.4:

Manufacturer :
Technology :

5. Analysis of side effects / operational benefit

Possible side effects should have been identified and analysed. A high score should be given when the extent and seriousness of any side effects (as well as the certainty with which they have been established) is well understood and accepted.

- Have side effects been identified, and if so, to what extent have these been analysed?
- What is the number and seriousness of the side effects?

[Please add comments to support your score]

Score 6.5:

**Average
score
(6.1+6.2+6.3
+6.4+6.5)/5**

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	

Manufacturer:
Technology:

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7.0 Real World Evaluation

SCOPE

If available, the dossier should summarize the findings from real-world or simulated real-world evaluations. Examples are so-called field operational trials (FOT) or driving simulator studies, although the possibilities to generalize the conclusions in the latter case are limited. The most reliable real-world data source is the actual tracking of system performance using instrumented vehicles in the whole or parts of Europe. Such studies however are rare and hard to perform.

SCORING

Scores must be in the range 0-5. Half marks may be given.

Interpretation of the scores:

0 - The dossier fails to address the criterion under examination or cannot be judged due to missing or incomplete information

1 - Very poor. The criterion is addressed in a cursory and unsatisfactory manner.

2 - Poor. There are serious inherent weaknesses in relation to the criterion in question.

3 - Fair. While the dossier broadly addresses the criterion, there are significant weaknesses that would need further explanation.

4 - Good. The dossier addresses the criterion well, although certain improvements are possible.

5 - Excellent. The dossier successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

1. Data Reliability (if available)

The dossier should clearly reference any real-life evaluations, if any exist. The score should reflect the reliability (independence) of those evaluations.

- Are studies published and repeated by others?
- Are papers published in the scientific press (peer review)?
- Unreferenced papers only?
- Internal industry reports only?

Score 7.1:

[Please add comments to support your score]

2. Data Validity (if available)

The score should reflect the validity of data used to evaluate the real-world effectiveness of the innovation. For instance, was it based on:

- Real life studies, statistical data (insurers, etc.), national or regional?
- Fleet tests or Field Operation Trials?
- Simulations, what are the limitations?

Score 7.2:

[Please add comments to support your score]

Manufacturer:
Technology:

3. Verification of target value

The real world evaluation should broadly support the safety potential expected. A high score should be given if the dossier compares and explains the results of field studies to the safety potential and target requirement given earlier.

- Does the real life evaluation support the target based on the estimation of the number of casualties addressed by this innovation identified in the safety issue?
- Are potential differences well explained?

[Please adds comments to support your score]

Score 7.3:

**Average
score
(7.1+7.2+7.3)**

Any other remarks

E.g. recommendations for face to face discussion.

Name	
Signature	
Date	