What is NCAP?

- New Car Assessment Programs provide consumers with independent and transparent information on
  - car occupant protection
  - pedestrian protection
  - crash avoidance

- They use internationally recognised crash tests and technology assessments (protocols)

- US NCAP began in the late 1970s. Australasian NCAP began in 1992
NCAPs operate in 9 regions

US, Japan, Korea & China NCAPs are government operated
IIHS is operated by insurers
Others are a combination of government, insurers, motoring clubs and consumer organisations
Independent of vehicle manufacturers

Test & Assessment Protocols

Each NCAP conducts tests and assessments in accordance with published protocols

For a variety of reasons NCAP rating systems are not aligned but, where possible, they use similar test protocols

NCAPs regularly meet under the Global NCAP network and exchange information about protocols & plans
From 2018 ANCAP is aligning its rating system with Euro NCAP.

Test protocols published by Euro NCAP will become joint protocols.

Euro NCAP protocols currently include some provisions for assessing HMI but this does not directly cover driver distraction.

A Euro NCAP working group has been formed to look at HMI - this will be described by another speaker.
Requirements of Test & Assessment Protocols to be used by NCAPs

- **Test protocols** set out the test methods and the measurements/observations to be recorded.

- **Assessment protocols** describe the way in which the measurements and observations are turned into test scores and how these scores affect the overall rating.

To ensure credibility in the rating system the test and assessment protocols used by NCAPs need to be “regulation quality”.

Many NCAP tests are based on regulations but are conducted at a higher speed, with more stringent criteria.

**Issues & Challenges**

Protocols should be:

- **Objective**
- **Discriminating** (spreading the field)
- **Repeatable** (e.g. different labs obtain same scores)
- **Equitable** (fair across the range of vehicle types)
- **Economically feasible**
- **Cost Effective** (real world crash savings)
Challenge - how to make assessments more objective?

Try to provide a range of scenarios for the assessor to evaluate, instead of just pass/fail: Hypothetical examples of Human Factors/Ease of Use criteria for Intelligent Speed Assistance (ISA)

<table>
<thead>
<tr>
<th>Criteria Description</th>
<th>Weight (1-5)</th>
<th>Rating (Score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good (3)</td>
<td>Acceptable (2)</td>
<td>Marginal (1)</td>
</tr>
<tr>
<td>ISA is default application</td>
<td>3</td>
<td>ISA is not default but can be selected in one simple action</td>
</tr>
<tr>
<td>ISA is default (or only) application on the device</td>
<td>3</td>
<td>ISA is not default but can be selected in one simple action</td>
</tr>
<tr>
<td>Driver interaction</td>
<td>5</td>
<td>Driver must turn on device initially</td>
</tr>
<tr>
<td>Audible alert type</td>
<td>4</td>
<td>High pitch alarm AND &gt; 3Hz</td>
</tr>
<tr>
<td>Alert reoccurrence</td>
<td>2</td>
<td>Alert reoccurs less than every 10 seconds</td>
</tr>
</tbody>
</table>

Example from shaded cells: $3 \times 2 + 5 \times 3 + 4 \times 2 + 2 \times 1 = 31$ points

The steps to adoption of a new protocol by NCAPs

- Research into real world car crashes
- Identify where an NCAP test can lead to improvement
- Develop prototype tests and assessment criteria
- Conduct trials of draft protocol
- Circulate draft protocol to stakeholders
- Protocol goes through NCAP approval process
- If approved, the protocol is implemented (e.g. separate rating or incorporated into existing protocols)
NCAP tests are the building blocks to autonomous driving

Current tests
Proposed for 2020

How will these systems interact in a way that avoids overloading/distracting the driver and/or computer?