



# 臺歐盟新車安全評等制度(NCAP)

2018 EU-Taiwan New Car Assessment Programme Forum

車輛安全論壇

2018



指導單位

主辦單位 財團法人車輛安全審驗中心

協辦單位 財團法人車輛研究測試中心

# 2018年車輛安全論壇-臺歐盟新車安全評等制度(NCAP)

## 議 程

時間	內容	主講者
13：00-13：30	報到	
13：30-13：40	致詞與合影	交通部長官
13：40-14：40	專題演講(一) Euro NCAP 過去、現在與未來	Euro NCAP 紘書長 Dr. Michiel van RATINGEN
14：40-15：00	專題演講(二) 台灣 NCAP 推動構想與建議	車安中心周維果執行長
15：00-15：20	休息	
15：20-16：10	座談議題(一) 台灣 NCAP 發展願景-對車輛安全技術及產業競爭力影響與再進化	主持人：交通部路政司陳文瑞司長 與談人： 1.Euro NCAP 紘書長 Dr. Michiel van RATINGEN 2.財團法人國防安全研究院國防資源與產業研究所蘇紫雲所長 3.台灣區車輛工業同業公會吳智魁處長 4.台北市汽車代理商業同業公會殷建復總幹事 5.財團法人車輛研究測試中心許樹林協理
16：10-17：00	座談議題(二) 台灣 NCAP 發展願景-對消費者及行車安全管理實質效益與期望	主持人：行政院消費者保護處吳政學副處長 與談人： 1.Euro NCAP 紘書長 Dr. Michiel van RATINGEN 2.中華民國消費者文教基金會郭守穗教授 3.旭傳媒科技股份有限公司 U-CAR 陳鵬旭創辦人 4.中央研究院社會所博士後研究學者劉清耿博士 5.財團法人車輛安全審驗中心吳湘平處長
17：00-17：10	休息	
17：10-17：40	綜合座談	交通部長官、座談主持人及講師

備註： 1.會場安排有同步口譯。

2.主辦單位保有變更議程與主題之權利，恕不另行通知。

3.本論壇全程禁止錄影及錄音。



Department  
for Transport

TRAFIKVERKET



Bundesministerium  
für Verkehr und  
digitale Infrastruktur



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère du Développement durable  
et des Infrastructures



Ministry of Transport, Public Works  
and Water Management



Thatcham  
Research

Generalitat de Catalunya  
Government of Catalonia



## The Past, Present and Future of Euro NCAP

Dr. Michiel van Ratingen

2018 EU-Taiwan New Car Assessment Programme [NCAP] Forum – 21 November 2018

# Contents

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## Background

Road safety problem & Vision Zero

02

## About Euro NCAP

What is Euro NCAP and how does it work?

03

## Rating Evolution

Advancement of safety testing over the last twenty years

04

## Roadmap 2025

Euro NCAP's plans for the future

05

## Closing remarks

Wrap up and time for questions



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# Road Traffic Injuries

**1.25 million**  
road traffic deaths occur every year

#1 cause of death among those aged 15-29 years

The chance of dying in a road traffic crash depends on where you live



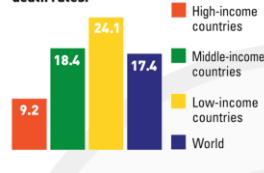
3 out of 4 road deaths are among men



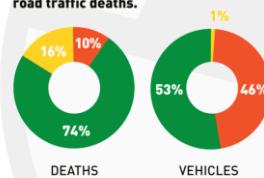
49%

of all road traffic deaths are among pedestrians, cyclists and motorcycles.

Low-income countries have the highest road traffic death rates.



Although low- and middle-income countries have only half of the world's vehicles, they have 90% of the world's road traffic deaths.



World Health Organization



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## Vision Zero

- A safe system's approach: accept that mistakes will always be made



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## How to Improve Car Safety?

- Basic regulation
- Innovation
- Empowerment
- Competition
- Tools for fleet operators
- Educate the importers
- Increase awareness



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# A Market for Safety



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## About Euro NCAP

- Independent information about vehicle safety to consumers since 1997
- Encourage manufacturers to exceed the legal requirements and continuously improve
- Promote standard fit across the market



Putting safety first, Euro NCAP's test results drive standardisation and reward the safest cars on the road.

REPORT by Clodagh O'Donnoghue  
Assessment  
• Best in Class cars of 2015  
• Pedestrian Testing  
• Child Seats

The European New-Car Assessment Programme, Euro NCAP, seeks to provide motorists consumers with an objective assessment of the safety performance of new cars on sale in Europe. The programme aims to help consumers to compare vehicles more easily and identify the safest cars. It also helps manufacturers to benchmark their performance against a series of vehicle tests, which represent the most common types of accident in Europe. The overall aim of the programme, in a simplified way, is to increase the fatality rate for car occupants in collisions. Euro NCAP results incentivise manufacturers to improve the safety of their cars and to meet the minimum safety standards required by legislation. The overall fatality rate for car occupants in collisions has continued to decrease over the last decade, with the continuing improvements in vehicle safety playing a key role.

In Euro NCAP ratings, the number of stars reflects how well the car performs when tested but it is also influenced by the safety equipment that each manufacturer is offering in each market. It is important to remember that not only that the test results were good but that safety equipment on the market is increasing all the time and will continue to do so. This means that consumers in Europe, the star rating given to a car is not the only thing to consider. It is also important to look at the other safety options that a car offers. These options should take note of those vehicles that received a five star rating and learn from them.

**The tests**  
Euro NCAP introduced its overall safety rating in 2009, based on the evaluation of five key areas of vehicle safety: Adult

March 2016

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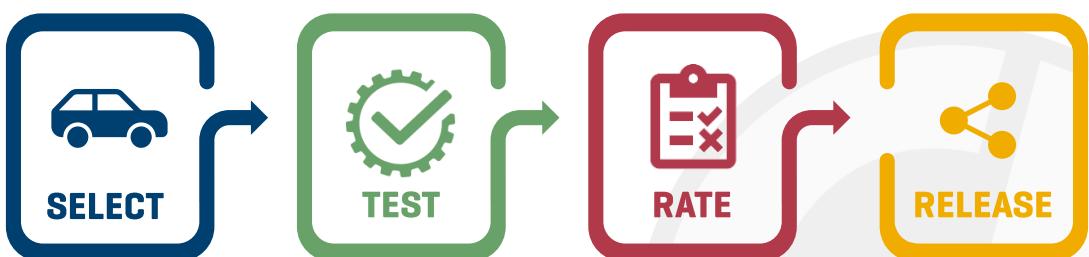
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## Who's Behind the Programme?

- Member States | Economic Regions
  - UK, France, Germany, Sweden, Netherlands, Luxembourg, Catalonia
- Automobile Clubs
  - FIA Region 1, ADAC, ACI
- Consumer Associations
  - International Consumer Research & Testing
- Insurer Industry
  - Thatcham Research



## How Does it Work?



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# Vehicle Specification



Model Variants

## Test Variant



Best selling in EU-28 market  
LHD or RHD  
Base safety specification  
Standard equipment only



Application of Star Rating

Vehicle used as illustrative example only.

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# Vehicle Procurement

## From List of VINs



Test vehicles are randomly selected from a list of VIN numbers

## From Production



Test vehicles are hand-picked from the serial production line

## From Dealership



Test vehicles are anonymously purchased at dealers



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# Vehicle Testing



## Vehicle Inspection

Post-crash examination

01

## Vehicle Preparation

Adjust to test weight, conditioning, instrumentation, install ATDs, robots etc.



**Audit**  
Verification and quality control

05

03

02

## Testing\*

Full-scale crash, component, track and road tests  
→ Euro NCAP test & assessment protocols

\*Carried out at Euro NCAP approved test centres



## Reporting

Laboratory and inspector report

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## 1-2-1 Meeting

Review test results with vehicle manufacturer

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# Overall Safety Rating

## VRU Protection



## Safety Assist



## Adult Occupant Protection

Child  
Occupant  
Protection



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# Media Outreach



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# Market Coverage



**71% sold**



**16% sold**



**7% sold**



**6% sold**

Unrated



*EU-28 passenger car and SUV sales, 2017. Total 15.1 million units.*



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## Rating Evolution



Improved structures & restraints



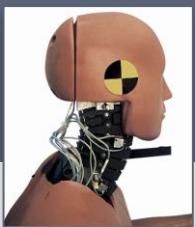
The onset of crash avoidance and ADAS

1997 - 2008

2009 - 2012

2013 - 2016

2016 - 2020



Safety for all road users: fatal and non-fatal injuries



Foundations of automation



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## Full-scale Crash Tests



**Frontal Offset  
Deformable  
Mobile Barrier**  
[Since 1997]



**Frontal Full-width  
Rigid Barrier**  
[Since 2015]

**Side Mobile  
Deformable Barrier**  
[Since 1997, updated 2015]



**Side Pole**  
[Since 2001, updated 2015]



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# Improved Structures & Restraints

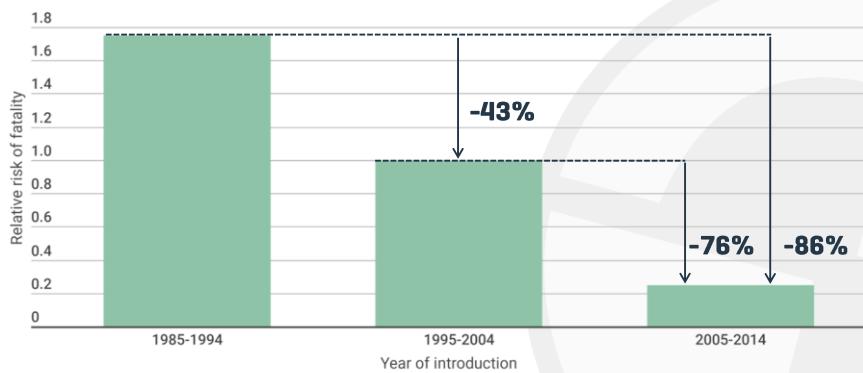


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# Crashworthiness

## Fatality Risk for Car Occupants

Cars with year of introduction 1995-2004 colliding with other cars



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# Seatbelt Usage

- The safety belt is the single most effective means of reducing injuries



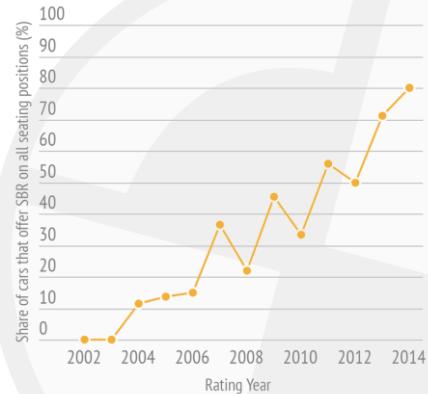
SBR Fitment	Total Seat Belt Wearing Rate
Cars with SBR	97.5% +/- 0.5%
Cars without SBR	85.8% +/- 0.8%

[Source: Lie, Krafft, Kullgren, Tingvall, 2008]



## Seat Belt Reminders

Share of Euro NCAP rated cars that offer SBR on all seating positions, rating years 2002 to 2014



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# Whiplash Seat Ratings

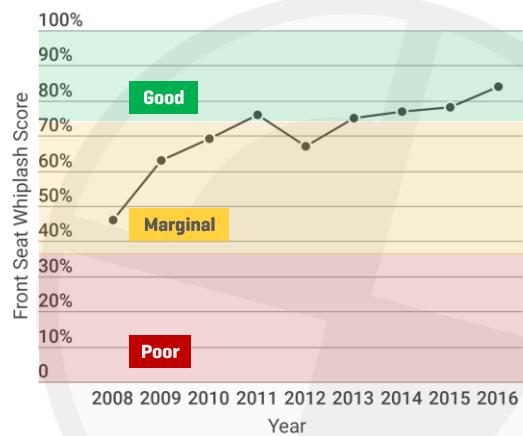
- Dedicated seat-only test introduced in 2008 – reduce neck injury risk
- Seat performance measured against 7 “seat criteria”



- NIC
- Nkm
- Rebound velocity
- Upper Neck Shear Fx
- Upper Neck Tension Fz
- T1 acceleration
- T-HRC

## Whiplash Injury Risk

Average total score obtained in geometric and dynamic Whiplash tests. Euro NCAP cars from 2008 to 2016.



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# Safer Transport of Children



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## Availability of safety provisions

ISOFIX, i-Size, Airbag disabling switch, Integrated CRS, etc.

02

## CRS compatibility and ease-of-use

Universal belt mounted, ISOFIX and i-Size CRS installation

03

## Verification of crash protection

Child dummies in suitable CRS in front and side crash test

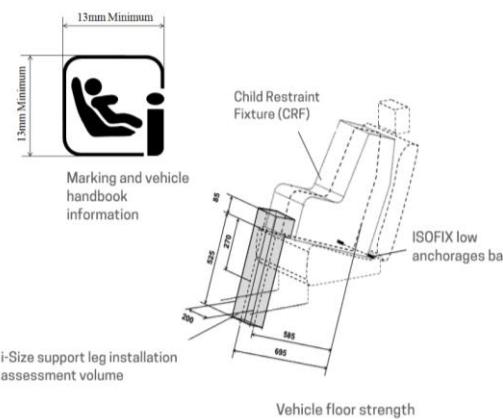


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# i-Size Compatible Cars

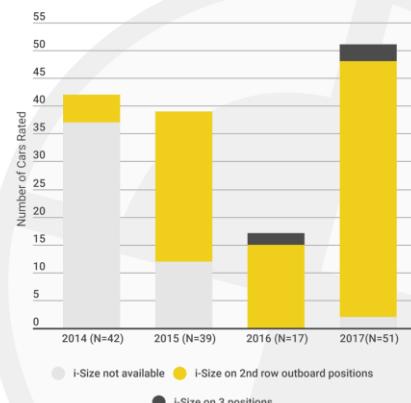
What is an i-Size seating position?



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## i-Size Availability

Standard i-Size positions in Euro NCAP tested cars from 2014 to 2017



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# Protection of Vulnerable Road Users

## Promoting forgiving front-end design



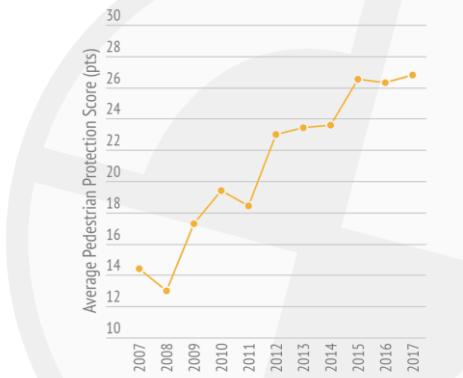
Mean risk of serious consequences (%) - Strandroth (2011)

	30 km/h	50 km/h	70 km/h
Poorly rated	24	28	40
Improved design	14	21	40



## Pedestrian Subsystem Tests

The total pedestrian score is based on the result achieved in head form to bonnet, upper legform to leading edge and lower leg to bumper impact tests.



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# Emerging Driver Assistance Systems



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# Speed Assist Systems

- Euro NCAP has evaluated Speed Assistance Systems since 2009
  - Rewarding camera based, digital map based and combined systems
  - Improve functionality, increase reliability



Introduction in Rating	Adding Speed Limit Info	Updating SLIF Requirements	
2009	2013	2016	2018
<ul style="list-style-type: none"> <li>UN-ECE R89</li> </ul>	<ul style="list-style-type: none"> <li>Speed Limit Information</li> <li>Manual Speed Assist</li> <li>Intelligent Speed Assist</li> </ul>	<ul style="list-style-type: none"> <li>Inclusion of sub-signs</li> <li>Speedometer accuracy</li> </ul>	<ul style="list-style-type: none"> <li>SLIF scoring update</li> <li>Speed Control Functions</li> </ul>



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# Speed Assist Systems

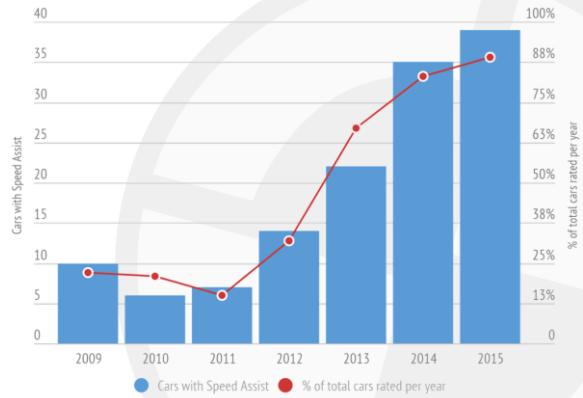
## Advanced SAS Functions (2016)

Required advanced Speed Assistance functions with regards to conditional and implicit speed limits

Function	Condition / Exception	Required Action
Weather	Rain / Wetness	Show correct speed limit
Weather	Snow / Icy	Warning only and ignore if irrelevant
Time	Time	Show correct speed limit
Distance	Distance for / in	Show correct speed limit
Arrows	Arrows	Show correct speed limit or ignore if irrelevant
Vehicle categories	Other vehicle / weight categories	Ignore if irrelevant
Implicit speed limits	Highway / Motorway	Show correct speed limit
Implicit speed limits	City Entry / Exit	Show correct speed limit
Implicit speed limits	Residential zones	Show correct speed limit
Dynamic speed limits	Dynamic speed signs including road works	Show correct speed limit

## System Uptake

Cars that offer Speed Assistance technology as standard. Euro NCAP rated cars from 2009 to 2015.



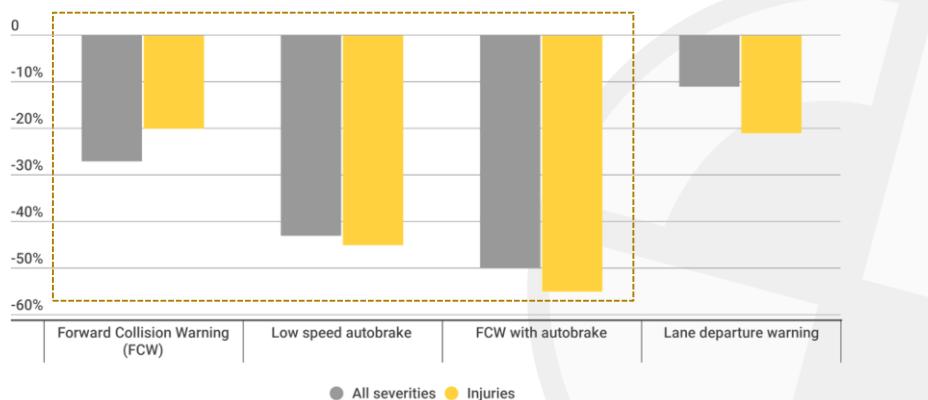
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# Autonomous Emergency Braking

Real world reductions in relevant police-reported crashes

Percent change in relevant crash type for various vehicle technologies



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# Autonomous Emergency Braking

- AEB “City” and AEB “Interurban” testing since 2014
- Car-to-car rear-end test scenarios – including offsets from 2018

2014-2017: Testing with EVT (2D)



2018-Present : Testing with GVT (3D)



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## AEB for Pedestrians

- 2016: Evaluation of systems that prevent/mitigate pedestrian crashes – representing typical real world crashes but considering sensor limitations



\*Night-time and longitudinal test scenarios added in 2018

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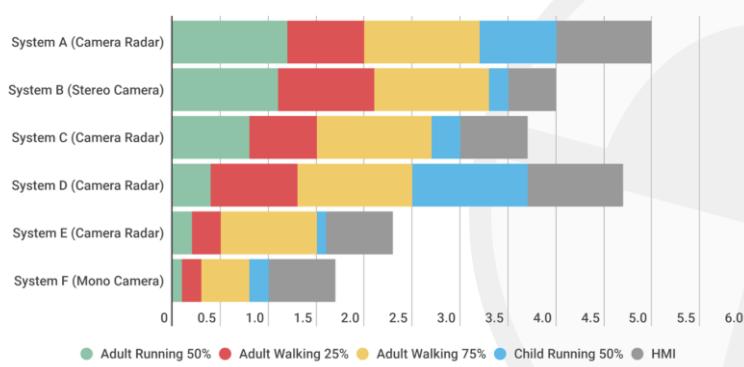


## AEB Pedestrian Test Results

- Camera-radar fusion is most expensive but also gives best results

### AEB Pedestrian Sensor Comparison

Test results for 6 different vehicles (2016)



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## AEB for Cyclists

- In 2018 AEB VRU test scenarios have been extended to cyclist crashes, using a bicyclist target [EBT]

	Car-to-Bicyclist Adult Nearside	Car-to-Bicyclist Adult Longitudinal [Centre/Off-centre]	
<b>Vehicle speed</b>	20-60 km/h	25-60 km/h	50-80 km/h
<b>Cyclist speed</b>	15 km/h	15 km/h	20 km/h
<b>Obstruction</b>	No	No	No
<b>Impact point</b>	50%	50%	25%
<b>AEB/FCW</b>	AEB	AEB	FCW
			



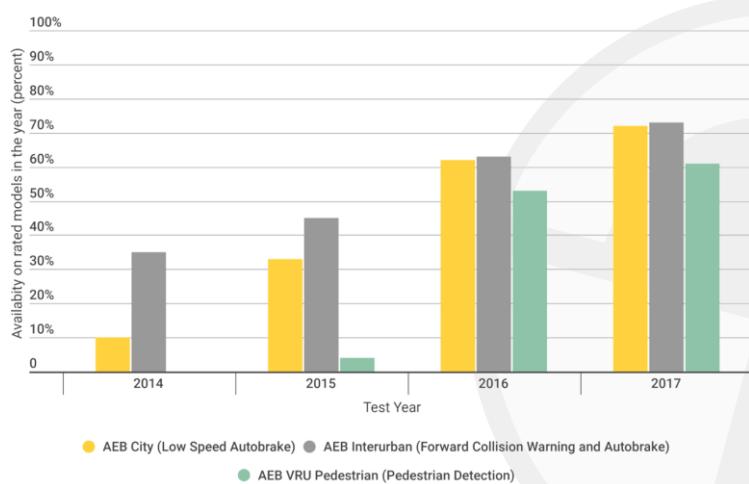
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## Autonomous Emergency Braking

### Uptake of AEB Technology

AEB City, AEB Interurban and AEB VRU as standard. Share of Euro NCAP annually rated cars from 2014-2017



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# Lane Departure Crashes

- Typical crashes in Europe occur on straight roads with different types of markings - often high severity and single vehicle crashes



## Lane Departure Warning

- Audible, visual and/or haptic warning
- Requires fully marked lanes
- Perceived as annoying – default OFF

## Lane Keep Assist

- Automatic heading correction
- Optional: Lane Centering
- Requires fully marked lanes, only one lane or road edge

## Emergency Lane Keeping

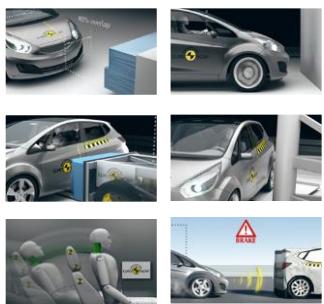
- Automatic heading correction
- Default ON system which intervenes only when threat is detected
- Requires fully marked lanes, only one lane or road edge and detection of obstacles ahead



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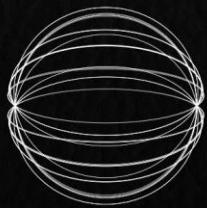
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# Euro NCAP Test & Assessment 2018



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## How to Drive Further Improvement?

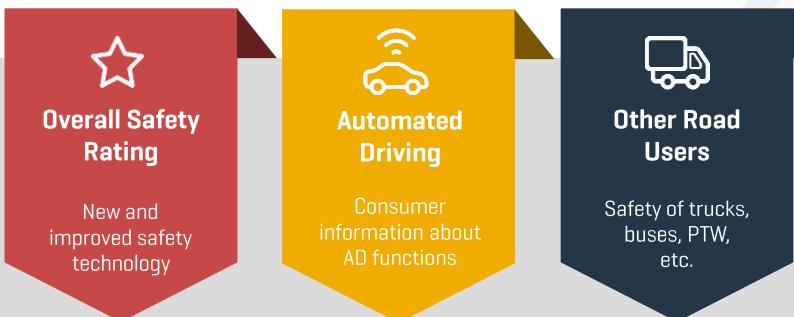


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# Roadmap 2025

“ Euro NCAP aims to highlight **automated driving technologies** and raise awareness of their benefits. It will continue to challenge vehicle manufacturers to offer the best possible **safety as standard in all car segments and markets**, protecting car **occupants of all ages, gender, and sizes** and to also look out for the **other road users** in traffic. ”



**In Pursuit of Vision Zero**

## Key Safety Rating Updates

### **Adult Occupant Protection**

- Revised frontal offset test
- Improved near and far-side protection
- Rescue, extrication & safety



### **VRU Protection**

- Revised subsystem tests (head and leg)
- Expanded AEB VRU test scenarios – including Reverse AEB and PTW



### **Child Occupant Protection**

- Improved biomechanical assessment
- Child Presence Detection



### **Safety Assist**

- Occupant Status Monitoring
- Extended AEB test scenarios – including AES, Crossing and Junction Assist

## What's New?



### 2020 | Frontal Impact

New Mobile Progressive Deformable Barrier (MPDB) test with THOR 50M and compatibility assessment



### 2020 | Side Impact

Increased severity mobile barrier test and new far-side BIW sled test with WorldSID 50M



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## What's New?



### 2020 | Post-crash

Encouraging open-source information and technology that aid the work of first responders



### 2022 | Child Presence

Test technology that can detect forgotten children inside hot cars to save them from heatstroke



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## What's New?



### 2020 | Reverse AEB

New auto-brake test of systems that prevent reverse crashes with pedestrians



### 2022 | VRU Protection

New leg device and revised head form test conditions for the protection of pedestrians and cyclists



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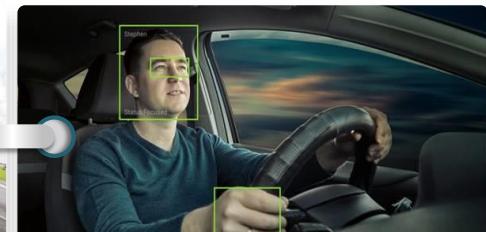
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## What's New



### 2020 | Crash Avoidance

Test systems that intervene in critical junction, crossing & head-on situations by braking and steering



### 2020 | Status Monitoring

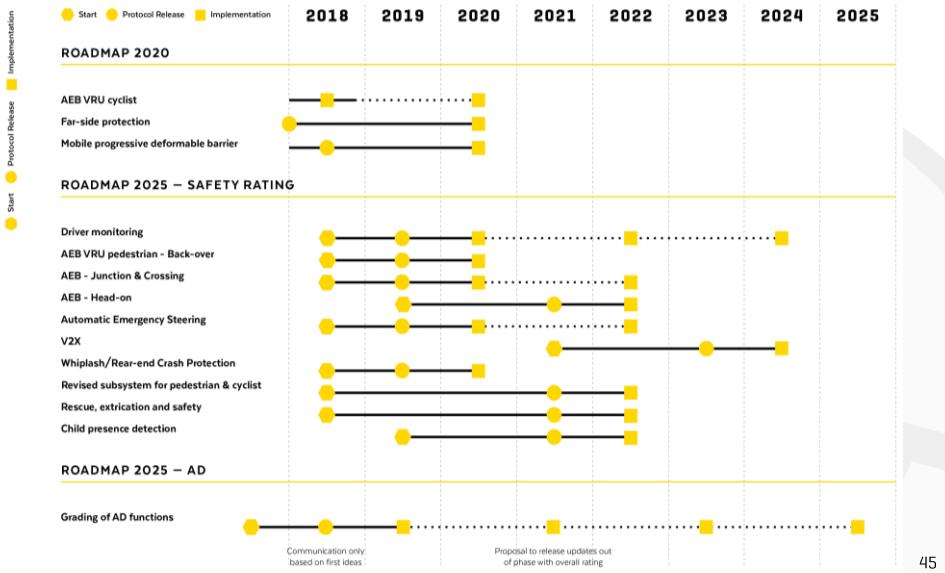
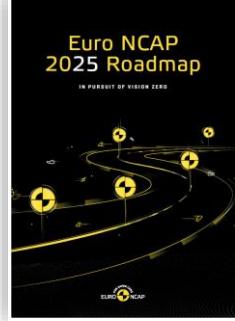
Assess driver monitoring systems that detect impaired driving and alert and support the driver



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# Timeline



## Rating Scheme 2022

- In the next 4 years, several updates to the safety rating will be introduced

AOP		COP		VRU		SA	
MPDB	8	Performance Front	16	Ped Adult Head	6	Occupant Status inc. SBR	3
FWRB	8	Performance Side	8	Ped Child Head	6	SAS	3
AMDB	6	CRS Installation	12	Cyclist Head	6		
Pole	6	Vehicle Based [inc. CPD]	13	Leg	18	AEB/AES CCR	3
Far-side	4			AEB/AES Ped	7	AEB C2C JA	3
Whiplash front	3			AEB Reverse Ped	2	AEB/AES Head-on	3
Whiplash rear	1			AEB/AES Cyclist	9	LSS	3
Rescue	4			AEB PTW JA	9		
<b>Total</b>	<b>40</b>	<b>Total</b>	<b>49</b>	<b>Total</b>	<b>63</b>	<b>Total</b>	<b>18</b>



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# Automated Driving

- Guiding consumer expectations by applying a standardized evaluation of varying levels of automation – starting with Highway Assist systems

A

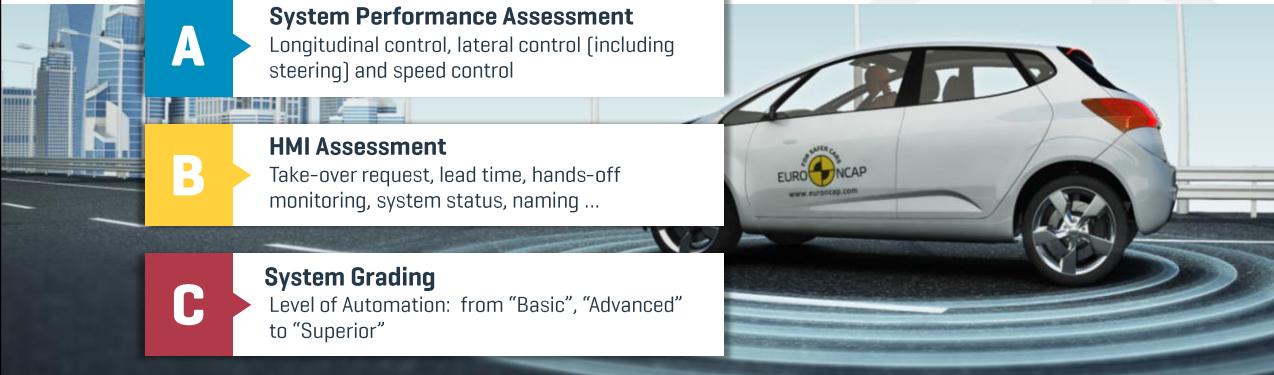
**System Performance Assessment**  
Longitudinal control, lateral control [including steering] and speed control

B

**HMI Assessment**  
Take-over request, lead time, hands-off monitoring, system status, naming ...

C

**System Grading**  
Level of Automation: from "Basic", "Advanced" to "Superior"



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## Putting Automation to the Test



**HMI**

HUMAN MACHINE INTERACTION

**ACC**

ADAPTIVE CRUISE CONTROL

**LC**

LANE CENTERING

- System Name
- Official Media
- System Features
- User Manual

- Stationary Car
- Slower Moving Car
- Braking Car
- Cut-in
- Cut-out

- Obstacle Avoidance
- Steering In S-curve



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# Putting Automation to the Test

**AUTOMATED DRIVING 2018**

**2018** Highway Assist System

**Tested Vehicle:** Tesla Model S

**System Name:** Autopilot

**Standard Active Safety Systems:** AEB Car-to-Car, AEB V2V, LSS, SAS

**Available on:** Tesla Model S (2017) | Tesla Model X (2017)

**Comments:**

"Autopilot" on the Tesla Model S gives the driver a high level of support with the vehicle primarily in control in both braking and steering scenarios. This results in a risk of over-reliance as, in some situations, the system still needs the driver to instantly correct and reduce the risk of a collision. The name "Autopilot" implies a fully automated system where the driver is not required. However, the limited scenarios tested clearly indicate that is not the case, nor is such a system legally allowed. The handbook mentions that the system is intended only for use in the "Autopilot mode" and that the driver must remain in control at all times. The driver must take responsibility for the vehicle at all times. The legally-required hand-off warning requires no more than a gentle touch of the steering wheel to avoid system deactivation. However, the driver must still take responsibility for the vehicle at all times. The driver must take responsibility for the vehicle at all times where Autopilot is not available for the remainder of a journey if the driver fails to nudge the steering wheel occasionally.

In the braking tests, the Model S shows full braking support by the system in nearly all scenarios except for the car-in and car-cutting-in scenarios. In these two scenarios, the driver is required to apply the brakes in due time, which may reduce the driver's confidence in the system. However, in the car-in and cut-out scenarios, the driver is required to apply the brakes in due time, which may reduce the driver's confidence in the system.

In steering scenarios, the Tesla does not allow the driver to use the steering himself and the system will provide all the steering required in the S-blind scenarios. When system steering limits are reached, the vehicle will slow down to make the turn, again reducing the driver's confidence in the system. The driver must take responsibility for the vehicle at all times when driving on a road with turns. However, with the sensors the Tesla has, this is nearly impossible to do reliably and implies to the driver that the vehicle can take all corners while, again, they should be very relaxed.

Overall, the Tesla system is primarily in control with a risk of driver becoming over-reliant on the system.

**Adaptive Cruise Control Tests**

**Approaching a stationary car:** Good

**Approaching a slower moving car:** Good

**Car cutting-in or cutting-out:** Good

**Steering Support**

**Steering to avoid an obstacle:** Good

**Steering in a curve:** Good

**Comments:**

In the steering tests, Autopilot gives the impression that the car is in full control and the driver does not need to provide any input, which may reduce driver engagement. Where a driver wants to maintain the car within the lane, for example to avoid an object or to move between traffic, the driver must take responsibility for the vehicle.

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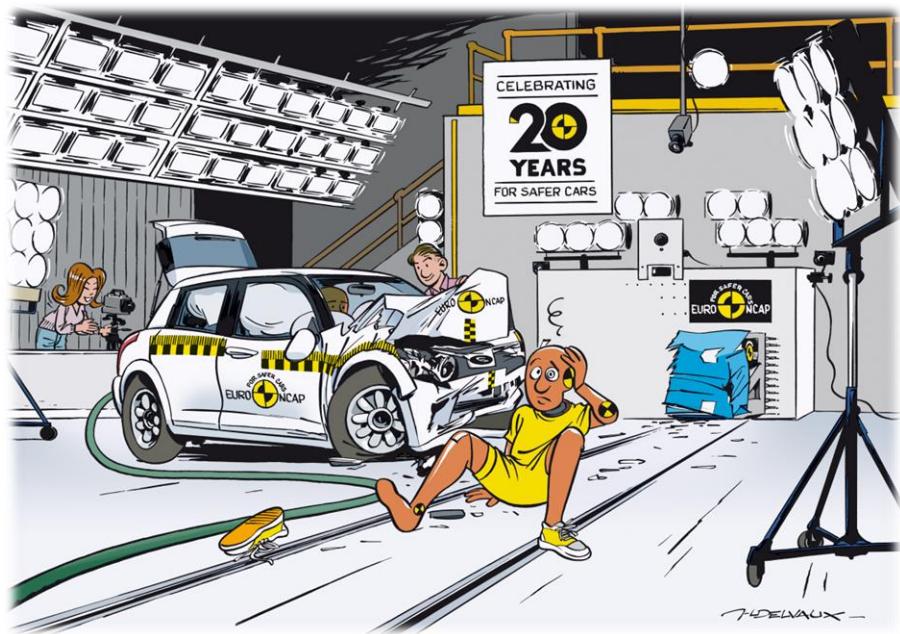
## Closing Remarks

- Consumer ratings are an effective instrument for the pursuit of Vision Zero
- Rapid advancements in crash avoidance technology will continue and deliver real casualty reductions
- Future focus is on consumer information about automated driving and the safety of car occupants and other road users

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# 臺灣NCAP推動構想與建議

周維果 執行長

2018年11月19日

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## 簡報大綱

- 國外NCAP概況
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# 國外NCAP概況(1/4)

## ● 新車安全評等制度(New Car Assessment Program, NCAP)

現況國外共計有12個NCAP制度，因各國國情不同，故於制度發展亦有所差異，惟各國NCAP目的皆為提供消費者車輛安全資訊，進而提升車輛安全性、降低道安事故傷亡以及促進車輛技術發展。



## ● 國外NCAP組織



圖片來源：Global NCAP

# 國外NCAP概況(2/4)

## ● 國外NCAP推動效益

### ➤ Euro NCAP



Euro NCAP Marks 20th Anniversary of Life-Saving Crash Tests

資料來源：<https://euroncap.newsmarket.com>

① 2nd February 2017

● Euro NCAP crash tests helped save more than 78,000 lives since 1997. ● Cars now 'safest ever' after Euro NCAP crashes 1,800 cars in tests costing 160 million Euro since 1997. ● Euro NCAP continues...

94%  
of new cars sold\* in EU28 hold an Euro NCAP safety rating

3%  
\*\*\*\*\*

16%  
\*\*\*\*\*



● 自1997年成立迄今，共投入1.6億歐元執行1,800輛碰撞測試，提升整體汽車安全性，挽回超過78,000條生命。

● 依據2016年歐洲新車銷售統計資料顯示，94%歐洲市售車型經過Euro NCAP星級評等，且高達75%車型獲得5顆星。

### ➤ JNCAP

Q

安全性能試験をすることにより、車の安全性はどのくらい向上しましたか？

A

アセスメントの効果分析の結果、平成19年の乗車中の事故死者645人の減少に車両の衝突安全性能の向上が貢献した試算されています。詳しくは、[自動車アセスメントパンフレット27ページ](#)をご覧下さい。

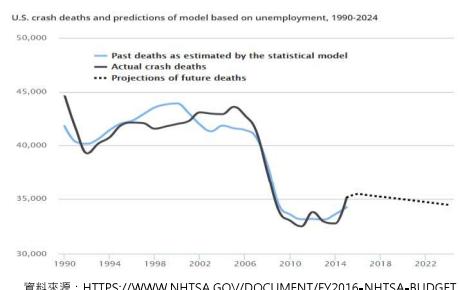
資料來源：<http://www.nasva.go.jp>

● 依據官網說明JNCAP推動上有助提高汽車碰撞安全性能，使得2007年事故減少645人死亡。

## 國外NCAP概況(3/4)

### ● 國外NCAP推動效益

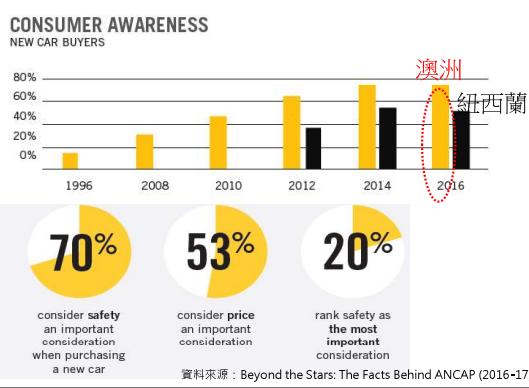
#### ➤ NHTSA



- 依據2016年NHTSA預算報告與事故死亡分析報告顯示，美國過去十年交通事故死亡人數減少約25%，可歸因於車輛安全技術提升(含NCAP)、交通環境改善與更安全駕駛行為等因素。

#### ➤ ANCAP

**3 in 4**  
(74%) Australian new car buyers are aware of ANCAP



依據2016年ANCAP年報資料顯示：

- ANCAP自1992年推行至今，澳洲新車消費者有高達74%知悉ANCAP新車安全評等資訊。
- 70%消費者認為「車輛安全性」為購車的優先考量條件。

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## 國外NCAP概況(4/4)

### ● 聯合國鼓勵施行NCAP

聯合國2011至2020年道路安全行動計畫中，具體行動的第三支柱為增強車輛安全，鼓勵世界各區域實施NCAP，並進一步提供車輛安全性能資訊予消費者。

#### Global Plan for the Decade of Action for Road Safety 2011-2020



DECADE OF ACTION FOR  
ROAD SAFETY 2011-2020

#### Pillar 3: Safer vehicles

Encourage universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies.

Activity 1: Encourage Member States to apply and promulgate motor vehicle safety regulations as developed by the United Nation's World Forum for the Harmonization of Vehicle Regulations (WP 29).

Activity 2: Encourage implementation of new car assessment programmes in all regions of the world in order to increase the availability of consumer information about the safety performance of motor vehicles.

Activity 3: Encourage agreement to ensure that all new motor vehicles are equipped

資料來源：[Global Plan for the Decade of Action for Road Safety 2011-2020](#)

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## 國內車輛安全管理制度(1/5)

### ● 完整的車輛安全管理制度

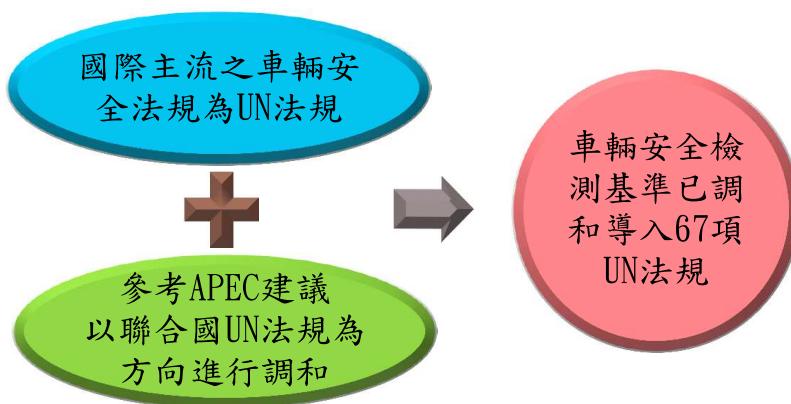


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# 國內車輛安全管理制制度(2/5)

## ● 車輛安全審驗制度

- 國際間除美加採自我認證制度符合車輛安全法規(未與國際法規調和)外，我國與歐盟、日本、澳洲等大多數先進國家均採政府(強制)認證制度符合車輛安全法規(調和聯合國UN)，且國內自1998年10月26日起推動實施車輛型式安全審驗制度。
- 目前我國車輛安全檢測基準計有87項檢測項目，其中67項檢測基準為調和導入聯合國UN法規。



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# 國內車輛安全管理制制度(3/5)

## ● 小客車應符合之車輛安全法規項目

\*：指有安裝才需符合  
紅字：NCAP評等項目



# 國內車輛安全管理制度(4/5)

## ● 公路監理檢驗制度

- 制度目的：於車輛使用過程中，藉由各項必要的檢驗，確保車輛符合道安規則相關條文所列之基本安全規定。
- 法源依據：「道路交通安全規則」第39條、第39條之1、第39條之2及第39條之3。

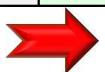
## ● 汽車安全性調查召回改正制度

- 制度目的：藉由車輛使用狀況之回饋，找出可能之車輛安全瑕疵並要求車輛業者進行召回與改正。
- 法源依據：「公路法」第63條之1、「汽車安全性調查召回改正及監督管理辦法」。

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# 國內車輛安全管理制度(5/5)

	安全審驗	NCAP
安全驗證	 → 安審制度  <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">法規</span> <span style="margin-right: 10px;">上市前</span> <span style="margin-right: 10px;">市售車輛</span> <span style="margin-right: 10px;">主動安全評等</span> <span>上市後</span> </div> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">檢測基準</span> <span style="margin-right: 10px;">合格</span> <span style="margin-right: 10px;">NCAP</span> <span>評等公告</span> </div>	
目的	1. 確保上市車輛符合基本安全性 2. 與歐盟/日本等先進國家作法一致	1. 提供消費者選購安全車之參考 2. 提升車輛安全性與技術發展
約束性	強制性	非強制性
車輛送測	廠商自行送測	獨立公正單位從市場購置
測試內容	法規/檢測基準檢測	主、被動安全系統評等
難易度	基本門檻	較嚴苛(標準高)
測試結果	合格 / 不合格 (不公告)	分數+星等 ★★★★★(評等公告)
總結	車輛通過法規測試才可上市	藉由T-NCAP評等機制向社會大眾揭露市售車型安全等級



NCAP與安審雙軌制度互補 - 共同提升安全

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## T-NCAP緣起(1/3)

### ● 民眾向國發會平台提案

- 2016年11月「國產車上市前，必需強制公開ARTC撞擊測試結果，並比照國外將結果分級」，訴求政府將撞擊測試結果數據公開並分級，作為民眾購車資訊參考。
- 2017年7月「臺灣增設TW-NCAP」，訴求政府能設立機構比照國外NCAP制度進行國產車撞擊測試，以保障民眾用車安全。



資料來源：公共政策網路參與平台& 獨立特派員(國產車安嗎)

### ● 民意代表與媒體關注

- 林俊憲、徐永明、林淑芬及周春米等立法委員關切國內推動新車安全評等制度，以提升車輛安全性及保障消費者權益。
- 公共電視獨立特派員節目亦呼籲交通部建立T-NCAP制度。

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## T-NCAP緣起(2/3)

### ● 座談會

交通部為回應前述民眾提案之國內推動NCAP建議，於2017年委請車安中心辦理「臺灣新車安全評等制度研議」，研擬具體方案供交通部作為後續政策推動參考。車安中心並於該年度6月與8月分別召集產、官、學、研等代表進行座談會，會議共識內容如下：



日期	議題	會議共識
6月9日	研商新車安全法規數據揭露及必要分級制度座談會	與會各單位均表示 <u>期望我國能參考其他國家經驗推動NCAP制度，並不支持車安數據揭露與分級。</u>
8月24日	台灣新車安全評等制度初步構想座談會	<ol style="list-style-type: none"> <li>與會單位均贊同推動T-NCAP，並表示無需再推動車安數據揭露。</li> <li>認同應由交通部主導T-NCAP組織運作，並以Euro NCAP評等項目及方法為參考方向規劃T-NCAP。</li> </ol>

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## T-NCAP緣起(3/3)

### ● 政府機關對外回應

- 2017年9月交通部新聞稿說明審慎評估參照歐盟Euro NCAP評價項目與方法，並參考日本JNCAP組織管理做法，增設「臺灣新車安全評等制度」之可行性。
- 2017年10月行政院賴清德院長允若，政府將編列預算設置臺灣新車安全評等制度，並要求交通部年底前向立法院提檢討報告，確實保障民眾行車安全及消費者資訊。
- 2018年3月交通部向立法委員說明臺灣新車安全評等項目與標準將比照2017年版Euro NCAP。
- 2018年7月交通部路政司張舜清副司長接受中央社訪問證實，已向行政院提報「臺灣新車安全評價制度」(T-NCAP)計畫，預計2020年底前上路，讓消費者購車時，對車輛安全性有明確參考依據。

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## 中心對國內T-NCAP推動建議(1/4)

### ● T-NCAP制度與評等建議

考量Euro NCAP為國際主流、涵蓋國家最多、評等項目與標準較高以及民眾關注度高等因素，爰建議參照2017年版Euro NCAP評等項目(下表)與標準作為國內NCAP制度建立之參考，未來長期則可滾動式檢討適合我國國情之NCAP標準。

評價項目	內容
乘員保護	前方正面撞擊、前方偏置撞擊、側面撞擊、側面柱撞、座椅鞭甩、AEB City
行人保護	頭部撞擊、上/下腿部撞擊、AEB VRU-Pe
兒童保護	撞擊測試(Frontal, Side)、兒童束縛系統檢測、車輛安全功能評價
安全輔助	安全帶提醒裝置、車速輔助系統、車道輔助系統、AEB-Inter-Urban

### ● T-NCAP組織架構建議

建議可參考國情較為相近的JNCAP組織架構，由交通部委託車輛安全專業機構執行T-NCAP計畫。

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# 中心對國內T-NCAP推動建議(2/4)

## ● T-NCAP檢測能量建議

依據2017年版Euro NCAP評等項目內容大致可區分為主、被動安全試驗項目(共17項)，並盤點國內檢測能量狀態(如下表)，爰建議規劃方向如下：

- ✓ 主動安全檢測能量：車輛中心已建有國際級試車場，僅「車道輔助系統」尚缺部分軟、硬體設備，建議交通部編列預算委由ARTC補足主動安全能量。
- ✓ 被動安全檢測能量：經查國內相關檢測機構皆未具完整檢測能量，建議交通部編列預算補足ARTC被動安全檢測能量。

測試項目 技術項目	被動安全					主動安全
	前方正面	前方偏置	側面撞擊	側面柱撞	座椅鞭甩	
主設備 / 場地	○	○	○	○	○	○
人偶	△	△	×	×	×	—
感測器	△	△	×	×	×	△
台車/治具	○	○	×	○	○	—
測試技術	○	○	○	○	○	○
補充說明	僅1套H3-5F人偶及感測器(尚缺2套)	無Q6及Q10人偶及感測器	1. 無WorldSID、Q6及Q10人偶、及感測器 2. 無台車(AE-MDB,1300kg)	無WorldSID人偶及感測器	無BioRID人偶及感測器	無方向盤控制裝置之扭力感測器、軟體及訊號擷取裝置

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# 中心對國內T-NCAP推動建議(3/4)

## ● T-NCAP評等車型數

- ✓ 經查國際NCAP每年評等之車型數隨該國車輛市場規模與各年度車型發表狀況而有差異，近年度國際NCAP評等車型數說明如下：

年份 NCAP	評等車型數			
	2014年	2015年	2016年	2017年
Euro NCAP	42	44	25	70 /
JNCAP	15	12	13	15
KNCAP	11	12	12	8
C-NCAP	38	49	33	40

2018年改版前申請評等的車型劇增

- ✓ Euro-NCAP每年約執行37車型評等(扣除2017年度例外)，而鄰近國家JNCAP與KNCAP每年約執行12車型評等。
- ✓ 考量政府財源有限且參考鄰近國家的年度評等車型數，初步建議車型數為6~10車型。(實際車型數仍須視年度預算及購車費用多寡而定)

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# 中心對國內T-NCAP推動建議(4/4)

## ● 評等對象建議

參考Euro NCAP作法以及考量提升T-NCAP評等車型之市場佔有率目標，運作初期將優先規劃評等小客車為主，未來再滾動式檢討納入其他車型。

## ● 評等機制建議

- ✓ 政府預算僅用以評等標準安全配備等級車型(base rating)，受評車型遴選原則將依據新車市場銷售量進行排序。
- ✓ 允許車廠自費申請車型評等，惟應由執行機構挑選受評車輛與購置方式，且該車型須先有標準安全配備評等，才得申請選配安全設備評等(optional rating)。

## ● 配套修法建議

考量政府機關依法行政須有法律授權俾利後續執行，且推動NCAP將車輛安全資訊揭露也涉及民眾與車輛業者之權利義務關係，且為獲得長期穩定的財務支持等因素，建議應考量在公路法訂定相關法源依據，並由政府編列預算以作為後續維持T-NCAP制度營運之支應。

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# T-NCAP評等項目建議(1/5)

- T-NCAP 評等項目建議：**

依據2017年版Euro NCAP評等項目內容大致可區分四大類安全領域：成人保護、兒童保護、行人保護、安全輔助，共計17項評等項目，如下表說明。

安全領域 試驗項目	成人保護(AOP)	兒童保護(COP)	行人保護(PP)	安全輔助(SA)
1	前方全寬撞擊	動態試驗(Frontal/Side)	頭部撞擊	安全帶提醒裝置
2	前方偏置撞擊	兒童保護裝置安裝性	上腿部撞擊	車速輔助系統
3	側方撞擊	車輛安全功能評等	下腿部撞擊	車道輔助系統
4	側方柱撞	-	緊急煞車輔助-弱勢道路使用者(行人)(AEB VRU-PE)	緊急煞車輔助-快速道路(AEB-Inter-Urban)
5	鞭甩試驗	-	-	-
6	緊急煞車輔助-市區(AEB City)	-	-	-

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# T-NCAP評等項目建議(2/5)

- 成人保護評等建議**

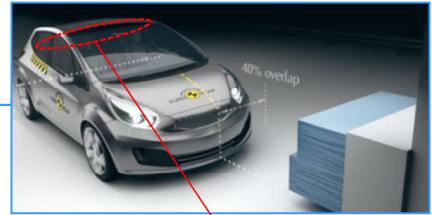
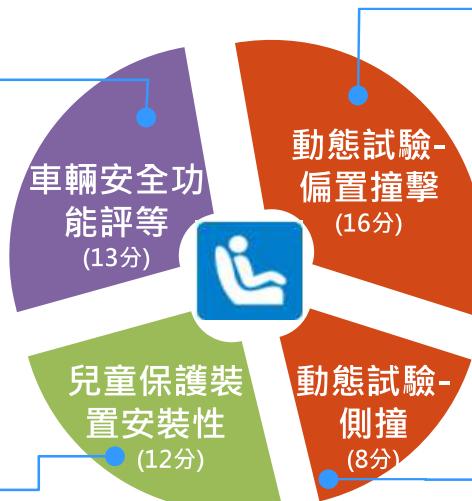


成人保護領域涵蓋主、被動安全試驗，其中被動安全領域(全寬、偏置、側撞、柱撞及鞭甩試驗)為模擬實際生活中最常發生的車輛碰撞，用以評估車輛結構設計與安全設備是否可提供足夠的乘員防護。另AEB City為主動式安全試驗，用評等受評車輛是否有效避免或降低追撞事故之風險。

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# T-NCAP評等項目建議(3/5)

- 兒童保護評等建議

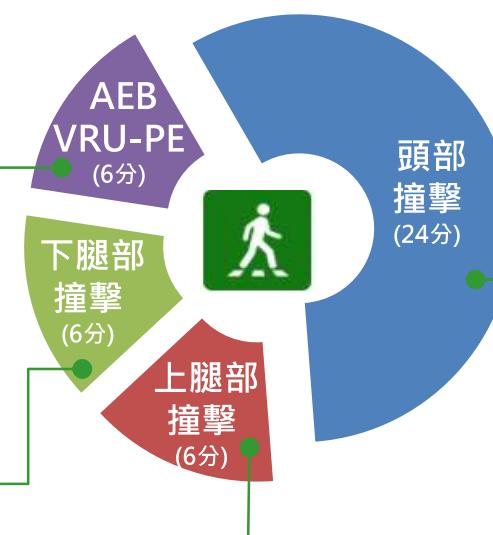
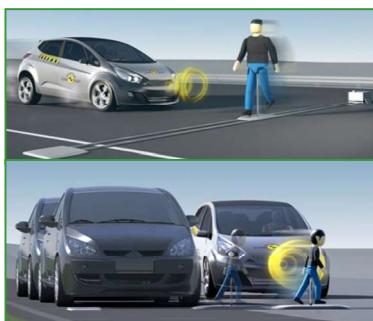


兒童保護動態試驗係使用Q6與Q10人偶進行前方偏置與側面撞擊。靜態試驗則包含「車輛安全功能」與「兒童保護裝置(CRS)安裝性」評等，用以評估受驗車型對CRS束縛性與安裝性，並確保車主可正確與輕易地將CRS安裝於合適的座椅上。

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# T-NCAP評等項目建議(4/5)

- 行人保護評等建議



1. 模擬行人(頭部與上/下腿部)與受驗車輛前端結構物(如引擎蓋、保險桿等)撞擊，此試驗係以評估行人遭受車輛碰撞後的頭、腿部潛在傷害風險。
2. 評等AEB防撞技術是否可有效避免或降低車輛碰撞成人/兒童行人的傷害風險。

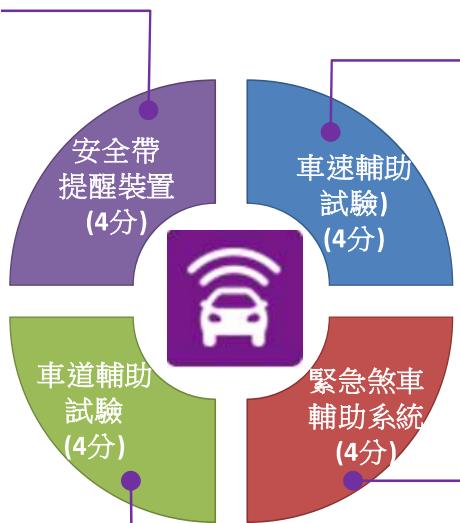
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# T-NCAP評等項目建議(5/5)

## • 安全輔助評等建議



安全帶提醒裝置可監測車輛各座椅的使用狀態，並以聽覺、視覺警示方式提醒駕駛、乘客繫上安全帶。



該系統應依據道路標誌或數位地圖辨識行駛區段的限速要求，即時提供駕駛者車速限制資訊及/或將車速控制在設定值範圍內。



模擬車輛偏離行駛之車道標線時，車道偏移警示與車道維持輔助系統應發出警示訊息或提供轉向修正輔助，以避免因駕駛者分心跨越車道風險。



AEB試驗(評等該系統是否有效避免碰撞)：  
1. 模擬車輛行駛於市區、快速道路的車對車碰撞情境  
2. 模擬車輛直駛時與橫向穿越道路成人/兒童碰撞情境

# 簡報大綱

- 國外NCAP概況
- 國內車輛安全管理制度
- T-NCAP緣起
- 中心對國內T-NCAP推動建議
- T-NCAP評等項目建議
- 未來展望與建議

## 未來展望與建議

- **長期投入資源**：因NCAP制度須長期持續推動方能使其效益最大化，國外NCAP均須有長期穩定的財務支持，故國內為永續推動T-NCAP需長期投入資源供運作執行。
- **研議降低政府財政負擔作法**：為降低T-NCAP運作成本，建議交通部參考國外作法，可由車輛業者或其他單位以自費方式申請評價；另車輛評價試驗後相關數據、圖像資料及試驗後車輛可有償對外提供，以降低政府財政負擔。
- **發展在地化特色之T-NCAP**：國際間各NCAP機構均會考量當地交通環境、車種、道路使用人、事故樣態、車輛科技發展趨勢及車廠技術水平等多項因素訂定自己一套NCAP測試項目與標準，故未來國內亦應考量我國型態進行前述相關資料的蒐集、建立與分析後，以發展符合我國國情之T-NCAP。
- **建立T-NCAP效益評估機制**：作為T-NCAP執行成效之檢視，並向外界進行政策溝通，說明T-NCAP之目的與實際效益，強化與社會之互動。

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簡報結束  
敬請指教

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