



Safer Cars for ASEAN Region

ASEAN NCAP ROADMAP 2021 - 2030

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FIA Foundation
for the Automobile and Society

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NCAP



On our 7th Years

➤ New Car Assessment Program for Southeast Asia region (ASEAN NCAP) has been established since 8th December 2011 on MOU Signing between Global NCAP and MIROS in New Delhi, India.



#	Est. year	Countries	#	Est. year	Countries
1	1959	USA	6	1999	South Korea
2	1978	USA	7	2006	China
3	1991	Japan	8	2010	South America
4	1992	Australia & New Zealand	9	2011	Southeast Asian countries
5	1997	FRA, GER, ITA, ESP, SWE, NED, UK (EU)			



Summary of Achievements

➤ How many cars have been tested?

➤ To date

➤ **79** models & variants

➤ **100** ratings

➤ How many brands?

➤ **23**

➤ All Japanese brands have been tested.

➤ **17** brands from Top 20 ASEAN brands (left out BMW, Mercedes & Hino)

➤ What is the market coverage?

➤ By End of 2017

➤ **Complete Top 30 models**

➤ **46** models from Top 60

➤ **90%** market share

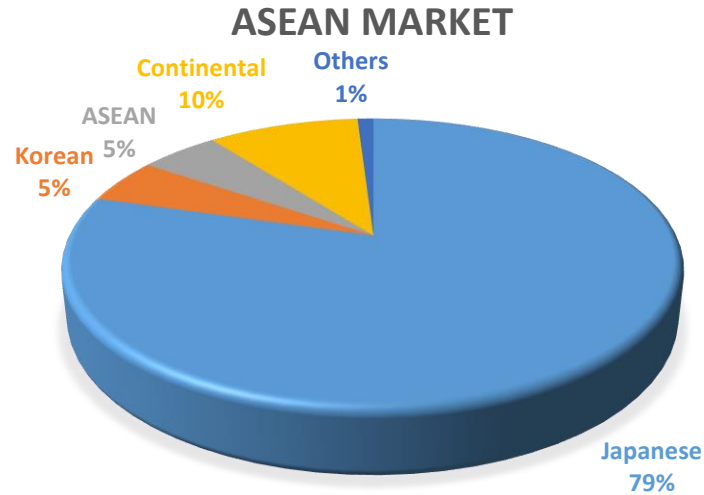
➤ 9 out of 10 car sold in ASEAN Region rated with ASEAN NCAP.

➤ **96%** is 4-star & above



PASSIVE
SAFETY

Summary of Achievements



- It is estimated about 400 models are being sold in the region by all OEMs

Rank	Number of Units
1-3	Over 100,000 units
4-6	Below 100,000 units
7-11	Below 60,000 units
12-15	Below 50,000 units
16-19	Below 40,000 units
20-28	Below 30,000 units
29-60	Below 20,000 units
61-144	Below 10,000 units
145-400	Below 1,000 units



Current Test & Assessments

50%

ADULT OCCUPANT PROTECTION

Starting from 2017 until 2020, instead of a separate rating for AOP and COP, a single rating system is introduced in which AOP contributes 50% of the overall rating with a maximum 36 points from three main assessments; offset frontal, side impact and HPT evaluation.

The test protocol for offset frontal test remains the same except for the inclusion of Q dummies replacing the existing P dummies. On the other hand, the requirement for side impact test has improved considerably from a legislation test (UN R95) to a more comprehensive test.

In addition, realizing the need to further improve the safety of occupants from side impacts, ASEAN NCAP has introduced additional requirement on the fitment of HPT in which the score is based on Fitment Rating System (FRS). HPT can be other than an airbag, as long as it protects the head. However, for technologies other than the conventional curtain or head airbags, manufacturer is requested to provide evidence that the system is effective, at least in principle, before a test can be allowed.

2012 – 2016 (AOP Single Rating)

Offset Frontal Test
• Maximum score of 16

Side Impact Test
• Compliance with UN R95
• 4-Star & above (September 2013–2014)
• 3-Star & above (2015–2016)

2017 – 2020 (50% of the Overall Rating)

Offset Frontal Test
• Maximum score of 16

Side Impact Test
• Maximum score of 16

HPT Evaluation
• The calculation is based on FRS with a maximum of 4 points

MAXIMUM OF 36 POINTS

25%

CHILD OCCUPANT PROTECTION

Protection for children in a vehicle is as important as adult protection. Currently ASEAN NCAP is separately rating adult and child.

Instead of a separate rating in 2012–2016 requirement, the new requirement for COP comprising 25% of the overall safety rating. This step is taken to ensure a vehicle receives the highest star award and also provides the best protection for the child.

Child Occupant Protection						
2012–2016 (COP Single Rating)		2017–2020 (25% of the Overall Rating)				
Dynamic Assessment (24 Points)		Dynamic Assessment (24 Points)				
Frontal Impact	P series dummy		Q series dummy			
	PL5	P3	Q1.5	Q3		
	Head	3	6	Head	4	4
	Chest	3	6	Chest	2	2
	Neck	3	N/A	Neck	2	2
				Head	4	4
				Side Impact		
CRS Based Assessment (12 Points)		CRS Installation Assessment (12 Points)				
CRS Marking	8 points per CRS	References List Assessment	10 points			
CRS to Vehicle Interface	4 points per CRS	OEM Assessment	2 points			
Vehicle Based Assessment (13 Points)		Vehicle Based Assessment (13 Points)				
Use of CRS on the Front Seats	5 points	Provision of Three-point Seatbelts	1 point			
Provision of Three-Points Seatbelts	1 point	Gabari Installation	2 points			
Gabari Assessment	2 points	2 Simultaneous Use Seating Positions	2 points			
ISOFIX	3 points	ISOFIX Usability	2 points			
Integrated CRS	2 points	Two or more Largest ISOFIX Positions	1 points			
		Passenger Airbag Warning Marking and Disabling	5 points			

Furthermore, assessment method has been improved in the new protocol for dynamic assessment by introducing Q dummies replacing P dummies. Q dummy provides better biofidelic response compared to P dummy. In addition, side impact test assessment has been added to the dynamic assessment criteria. CRS based assessment section has been replaced by CRS installation assessment. As for Vehicle Based Assessment, there will be apparent changes which includes additional requirement on passenger airbag warning, marking and disabling. The list of the CRS required for the assessment is as follows.

CRS Installation Assessment			
Reference Use	Group 0+	Maxi Cosi CabrioFix	8
	Group 0+/II	Combi Malgot	8
	Group II/III	Combi Buon Junior Air	8
	Group 0+	Britax Baby Safe Plus ISOFIX Base	1
	Group 0+/I	Maxi Cosi Milofix	1
	Group I	Britax Duo Plus	1
	Group II/III	Britax Parkway SGL	8
Q&A	Q 1.5	Manufacturer Selection	
	Q3	Manufacturer Selection	

25%

SAFETY ASSIST

Promotion of Safety Assist Technologies (SATs) has become of the main pillars in the new road map 2017–2020.

It contributes 25% of the overall rating with a maximum of 18 points focusing on Effective Braking and Avoidance (EBA), SBR, BST and Advanced SATs. This differs significantly from previous requirement in which only ESC and frontal SBR systems are considered as prerequisite for 5-Star AOP rating. Furthermore, the score calculation for all four elements is based on Fitment Rating System (FRS) except for advanced SATs.

Instead of only ESC, ABS is also considered in the new road map under EBA. Based on ASEAN NCAP's observation, ABS fitment rate in certain ASEAN countries is still lacking and it is still being offered as optional rather than standard equipment. As an encouragement for vehicle manufacturers, incentive is given to those vehicles fitted with rear SBRs in addition to frontal SBR. This is also part of ASEAN NCAP's mission to increase wearing rates among rear passengers beyond legislation approach.

Apart from that, in vision to reduce the number of lane-changing/merging crashes especially involving motorcycles, ASEAN NCAP introduces additional incentive for vehicle equipped with BST. This is part of ASEAN NCAP's strategic approaches in curbing the number of accidents and injuries involving motorcycles in the region. Furthermore, as a way forward for autonomous vehicle initiative around the world and harmonization with other NCAPs, advanced SATs such as AEB and several others are also included.

2012 – 2016 (Prerequisite for 5-Star AOP)

Electronic Stability Control

Seatbelt Reminder

• Driver
• Front Passenger

2017 – 2020 (25% of the Overall Rating)

Effective Braking & Avoidance

Seatbelt Reminders

Blind Spot Technology

Advanced Safety Assist Technologies*

• Anti-lock Braking System
• Electronic Stability Control

• Driver
• Front Passenger
• Rear Passengers

• Near-side
• Off-side

• Integrated CRS
• AEB Inter-urban
• AEB City
• AEB VRU
• Lane Departure Warning System
• Forward Collision Warning System

The calculation is based on FRS with a maximum of 8 points

The calculation is based on FRS with a maximum of 6 points

The calculation is based on FRS with a maximum of 2 points

A score of 1 point is awarded for each SAT available in any variant (minimum 1 country for each sector) with a maximum of 2 points

MAXIMUM OF 18 POINTS

*Manufacturers are encouraged to propose any Advanced SATs subject to ASEAN NCAP approval.

Current Test & Assessments

FITMENT RATING SYSTEM

It is recognized that ASEAN NCAP has changed the landscape of automotive safety in the region. Apart from the increasing number of vehicles with higher ASEAN NCAP ratings, the demand for those vehicles among the consumers is gaining as well. Nevertheless, the positive impact is still imbalance as the safety features of specific models sold are not necessarily similar among the countries in the region and sometimes can be adversely different. Thus, ASEAN NCAP has formulated a Fitment Rating System (FRS) in order to minimize the substandard treatment.

The system applies for technologies i.e., HPT, EBA, SBR and BST. For Fitment Rating System, ASEAN NCAP has developed a formula for car technology fitment score (CTFS) summarized as follows.

$$CTFS = \frac{\sum_{i=1}^n \frac{CS_i}{CS_i}}{\sum_{i=1}^n CS_i} \times TFS$$

CTFS – Car Technology Fitment Score
CS – Country Score
TFS – Technology Fitment Score
CS – Fitment Rating Score

Each CS is determined based on the criteria and CS as listed in the respective FRS tables. It is to be noted that the value of TFS has been set forth for HPT (4 points), EBA (8 points), SBR (6 points), and BST (2 points). As for the CS, the value is based on the sectors the countries represent. The philosophy behind the country score is the 3+2 concept that was introduced by ASEAN NCAP in 2013. Generally, the 10 countries in the region are divided into three tiers (3 [Laos, Cambodia, Myanmar] - 5 [Malaysia, Thailand, Indonesia, the Philippines, Vietnam] - 2 [Brunei, Singapore]) based on their similarities in terms of road safety situation and automotive industry. The concept is further refined and categorized into four sectors; Sector 0, Sector 1, Sector 2, and Sector 3. Each country in the same sector represents similar CS. For example, in Sector 0, both Brunei and Singapore carry similar CS of 2 points each.

Sector 0
• Brunei
• Singapore
CS 2 points per country
Sector 1
• Malaysia
• Thailand
• Indonesia
CS 3 points per country
Sector 2
• The Philippines
• Vietnam
CS 5 points per country
Sector 3
• Laos
• Cambodia
• Myanmar
CS 1 point per country

Fitment Type	Details	Calculation Criteria
Fitment Rating System for Head Protection Technology		
Option A	Vehicle model is equipped with HPT as standard equipment	3
Option B	Vehicle model is equipped with HPT as optional equipment	0.5
Option C	Vehicle model is not equipped with HPT	0
Fitment Rating System for Effective Braking and Avoidance		
Option A	Vehicle model is equipped with ESC as standard equipment	1
Option B	Vehicle model is equipped with ESC as optional equipment but ABS as standard equipment	0.5
Option C	Vehicle model is equipped with ESC but equipped with ABS as standard equipment	0.375
Option D	Vehicle model is equipped with ESC and ABS as optional equipment	0.25
Option E	Vehicle model is not equipped with ESC but equipped with ABS as optional equipment	0.125
Option F	Vehicle model is not equipped with either ESC or ABS	0
Fitment Rating System for Seatbelt Reminders		
Option A	Vehicle model is equipped with SBR for driver, front passenger and rear passengers as standard equipment	1
Option B	Vehicle model is equipped with SBR for driver and front passenger as standard equipment but rear passengers as optional equipment	0.75
Option C	Vehicle model is equipped with SBR for driver and front passenger only as standard equipment	0.5
Option D	Vehicle model is equipped with SBR for driver only as standard equipment	0.25
Option E	Vehicle model is not equipped with SBR	0
Fitment Rating System for Blind Spot Technology		
Option A	Vehicle model is equipped with BST for both rearview and offside as standard equipment	1
Option B	Vehicle model is equipped with BST for both rearview and offside as optional equipment	0.5
Option C	Vehicle model is equipped with BST for one side only as standard equipment	0.5
Option D	Vehicle model is equipped with BST for one side only as optional equipment	0.25
Option E	Vehicle model is not equipped with BST	0

FROM DUAL RATING TO SINGLE STAR RATING


From 2012, the dual rating system has been able to increase the availability of safer cars in the market. ASEAN NCAP recorded almost 90% cars with 4-Star and above in its evaluation until August 2015. The result shows that the current system has benefited the market.

However, the weakness of the system was detected particularly in the promotion of safety. Most of the cars were promoted as a country based not on regional based. Hence, manufacturers intend to promote higher ratings compared to the lower ones.

The road map presented in this document was created based on extensive consultation with all stakeholders, especially manufacturers. The first vision draft was released in January 2014 for public comments. In February 2015, the visible structure of the ratings was announced. ASEAN NCAP received massive feedbacks from various organizations related to this road map.

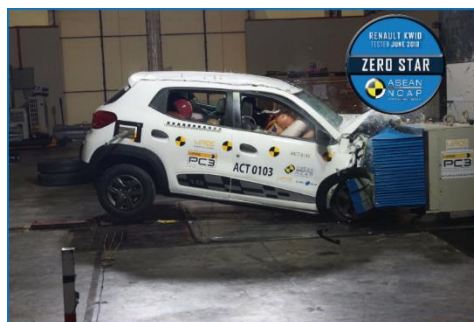
The new rating system will emphasize on current and future. The AOP (current) will be given the most allocation to strengthen the crashworthiness of the cars. The future COP and Safety Assist is resilient to produce and promote better ASEAN car specifications in the future. The basis of the division is equally important to current and future. As collision avoidance is essential, protecting the child in car is an obligation. Both are equally important subject to future safer cars and require similar attention.

Although it is almost impossible to prioritize safety issues, ASEAN NCAP pledges to solve prominent issues i.e. pedestrian, crash compatibility and autonomous driving in different forms. In line with ASEAN NCAP strategic approach, ASEAN NCAP will continue to improve the road safety situation in the region.

	AOP	COP		Safety Assist*		2017-2020 ASEAN NCAP RATING	
	ODB	16	Dynamic Assessment Frontal	16	Effective Braking & Avoidance		8
	SIDE	16	Dynamic Assessment Side	8	Seatbelt Reminders		6
	HPT Evaluation*	4	Installation of CRS	12	Blind Spot Technology		2
			Vehicle Based Assessment	13	Advance SATs		2
Max. Score (2)		36		49		18	
Normalized Score (2)	actual score / (1)		actual score / (1)		actual score / (1)		
Weighting (2)	50%		25%		25%	Overall Score	
Weighted Score	(2) x (3)		(2) x (3)		(2) x (3)	Total	
Rating							
minimum: normalized (2) / actual score by base for the respective star rating							
5-Star	75%	27.0	75%	34.75	60%	10.80	
4-Star	60%	23.4	60%	29.40	50%	9.00	
3-Star	45%	16.2	30%	16.70	40%	7.20	
2-Star	30%	10.8	20%	12.25	20%	3.60	
1-Star	20%	7.20	15%	7.35	10%	1.80	
Min. Overall Score							

* Apply FRS

Results : 2017 onwards



	AOP			COP			SAFETY ASSIST			2017 - 2020 ASEAN NCAP RATING
	Item	Point	Max	Item	Point	Max	Item	Point	Max	
	ODB	7.29	16.00	FRONTAL	14.55	16.00	EBA	-	8.00	0
	SIDE	-	16.00	SIDE	4.00	8.00	SBR	-	6.00	
	HPT Evaluation	-	4.00	Installation	7.00	12.00	BST	-	2.00	
				Vehicle Based	3.00	13.00	Advanced SATs	-	2.00	
Score		7.29	36.00		28.55	49.00		-	18.00	OVERALL SCORE
Normalized Score		0.20			0.58			0.00		
Weighting		50%			25%			25%		
Weighted Score		10.12			14.56			0.00		
Maximum Star Rating		1			3			0		0



	AOP			COP			SAFETY ASSIST			2017 - 2020 ASEAN NCAP RATING
	Item	Point	Max	Item	Point	Max	Item	Point	Max	
	ODB	-	16.00	FRONTAL	9.74	16.00	EBA	8.00	8.00	2
	SIDE	14.09	16.00	SIDE	8.00	8.00	SBR	1.50	6.00	
	HPT Evaluation	-	4.00	Installation	9.69	12.00	BST	-	2.00	
				Vehicle Based	4.00	13.00	Advanced SATs	-	2.00	
Score		14.09	36.00		31.43	49.00		9.50	18.00	OVERALL SCORE
Normalized Score		0.39			0.64			0.53		
Weighting		50%			25%			25%		
Weighted Score		19.58			16.03			13.19		
Maximum Star Rating		2			4			4		2



	AOP			COP			SAFETY ASSIST			2017 - 2020 ASEAN NCAP RATING
	Item	Point	Max	Item	Point	Max	Item	Point	Max	
	ODB	15.80	16.00	FRONTAL	13.45	16.00	EBA	8.00	8.00	5
	SIDE	16.00	16.00	SIDE	8.00	8.00	SBR	3.46	6.00	
	HPT Evaluation	4.00	4.00	Installation	11.44	12.00	BST	1.46	2.00	
				Vehicle Based	8.00	13.00	Advanced SATs	2.00	2.00	
Score		35.80	36.00		40.89	49.00		14.92	18.00	OVERALL SCORE
Normalized Score		0.99			0.83			0.83		
Weighting		50%			25%			25%		
Weighted Score		49.72			20.86			20.73		
Maximum Star Rating		5			5			5		5

Results : 2017 onwards



Score 31.14 36.00
Normalized Score 0.87
Weighting 50%
Weighted Score 43.25
Maximum Star Rating 5

AOP		
Item	Point	Max
ODB	12.50	16.00
SIDE	14.64	16.00
HPT Evaluation	4.00	4.00
Score	31.14	36.00
Normalized Score	0.87	
Weighting	50%	
Weighted Score	43.25	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	16.00	16.00
SIDE	8.00	8.00
Installation	8.81	12.00
Vehicle Based	9.00	13.00
Score	41.81	49.00
Normalized Score	0.85	
Weighting	25%	
Weighted Score	21.33	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	6.00	6.00
BST	-	2.00
Advanced SATs	-	2.00
Score	14.00	18.00
Normalized Score	0.78	
Weighting	25%	
Weighted Score	19.44	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING

5

OVERALL SCORE

84.03

5



Score 33.36 36.00
Normalized Score 0.93
Weighting 50%
Weighted Score 46.34
Maximum Star Rating 5

AOP		
Item	Point	Max
ODB	13.36	16.00
SIDE	16.00	16.00
HPT Evaluation	4.00	4.00
Score	33.36	36.00
Normalized Score	0.93	
Weighting	50%	
Weighted Score	46.34	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	12.66	16.00
SIDE	8.00	8.00
Installation	11.44	12.00
Vehicle Based	10.00	13.00
Score	42.10	49.00
Normalized Score	0.86	
Weighting	25%	
Weighted Score	21.48	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	6.00	6.00
BST	1.40	2.00
Advanced SATs	2.00	2.00
Score	17.40	18.00
Normalized Score	0.97	
Weighting	25%	
Weighted Score	24.17	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING

5

OVERALL SCORE

91.98

5



Score 28.14 36.00
Normalized Score 0.78
Weighting 50%
Weighted Score 39.08
Maximum Star Rating 5

AOP		
Item	Point	Max
ODB	14.22	16.00
SIDE	13.92	16.00
HPT Evaluation	0.00	4.00
Score	28.14	36.00
Normalized Score	0.78	
Weighting	50%	
Weighted Score	39.08	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	8.00	16.00
SIDE	8.00	8.00
Installation	11.63	12.00
Vehicle Based	9.00	13.00
Score	36.63	49.00
Normalized Score	0.75	
Weighting	25%	
Weighted Score	18.69	
Maximum Star Rating	4	

SAFETY ASSIST		
Item	Point	Max
EBA	6.00	8.00
SBR	3.00	6.00
BST	0.00	2.00
Advanced SATs	1.00	2.00
Score	10.00	18.00
Normalized Score	0.56	
Weighting	25%	
Weighted Score	13.89	
Maximum Star Rating	4	

2017 - 2020
ASEAN NCAP
RATING

4

OVERALL SCORE

71.66

4

Results : 2017 onwards



Score	35.14	36.00
Normalized Score	0.98	
Weighting	50%	
Weighted Score	48.81	
Maximum Star Rating	5	

AOP		
Item	Point	Max
ODB	15.14	16.00
SIDE	16.00	16.00
HPT Evaluation	4.00	4.00
Score	35.14	36.00
Normalized Score	0.98	
Weighting	50%	
Weighted Score	48.81	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	14.34	16.00
SIDE	8.00	8.00
Installation	12.00	12.00
Vehicle Based	9.00	13.00
Score	43.34	49.00
Normalized Score	0.88	
Weighting	25%	
Weighted Score	22.11	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	4.50	6.00
BST	-	2.00
Advanced SATs	2.00	2.00
Score	14.50	18.00
Normalized Score	0.81	
Weighting	25%	
Weighted Score	20.14	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING

5

OVERALL SCORE

91.05

5



Score	9.20	36.00
Normalized Score	0.26	
Weighting	66.7%	
Weighted Score	17.04	
Maximum Star Rating	1	

AOP		
Item	Point	Max
ODB	-	16.00
SIDE	9.20	16.00
HPT Evaluation	-	4.00
Score	9.20	36.00
Normalized Score	0.26	
Weighting	66.7%	
Weighted Score	17.04	
Maximum Star Rating	1	

COP		
Item	Point	Max
FRONTAL	-	16.00
SIDE	8.00	8.00
Installation	12.00	12.00
Vehicle Based	13.00	13.00
Score	-	49.00
Normalized Score	0.00	
Weighting	0%	
Weighted Score	0.00	
Maximum Star Rating	0	

SAFETY ASSIST		
Item	Point	Max
EBA	-	8.00
SBR	-	6.00
BST	-	2.00
Advanced SATs	-	2.00
Score	-	18.00
Normalized Score	0.00	
Weighting	33.3%	
Weighted Score	0.00	
Maximum Star Rating	0	

2017 - 2020
ASEAN NCAP
RATING

0

OVERALL SCORE

17.04

0



Score	9.25	36.00
Normalized Score	0.26	
Weighting	66.7%	
Weighted Score	17.14	
Maximum Star Rating	1	

AOP		
Item	Point	Max
ODB	9.25	16.00
SIDE	-	16.00
HPT Evaluation	-	4.00
Score	9.25	36.00
Normalized Score	0.26	
Weighting	66.7%	
Weighted Score	17.14	
Maximum Star Rating	1	

COP		
Item	Point	Max
FRONTAL	-	16.00
SIDE	8.00	8.00
Installation	12.00	12.00
Vehicle Based	13.00	13.00
Score	-	49.00
Normalized Score	0.00	
Weighting	0%	
Weighted Score	0.00	
Maximum Star Rating	0	

SAFETY ASSIST		
Item	Point	Max
EBA	-	8.00
SBR	-	6.00
BST	-	2.00
Advanced SATs	-	2.00
Score	-	18.00
Normalized Score	0.00	
Weighting	33.3%	
Weighted Score	0.00	
Maximum Star Rating	0	

2017 - 2020
ASEAN NCAP
RATING

0

OVERALL SCORE

17.14

0

Results : 2017 onwards



Score	32.19	36.00
Normalized Score	0.89	
Weighting	50%	
Weighted Score	44.70	
Maximum Star Rating	5	

AOP		
Item	Point	Max
ODB	12.19	16.00
SIDE	16.00	16.00
HPT Evaluation	4.00	4.00
Score	32.19	36.00
Normalized Score	0.89	
Weighting	50%	
Weighted Score	44.70	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	16.00	16.00
SIDE	8.00	8.00
Installation	11.44	12.00
Vehicle Based	7.00	13.00
Score	42.44	49.00
Normalized Score	0.87	
Weighting	25%	
Weighted Score	21.66	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	3.00	6.00
BST	-	2.00
Advanced SATs	-	2.00
Score	11.00	18.00
Normalized Score	0.61	
Weighting	25%	
Weighted Score	15.28	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING

5

OVERALL SCORE

81.63

5



Score	32.71	36.00
Normalized Score	0.91	
Weighting	50%	
Weighted Score	45.43	
Maximum Star Rating	5	

AOP		
Item	Point	Max
ODB	14.79	16.00
SIDE	15.91	16.00
HPT Evaluation	2.00	4.00
Score	32.71	36.00
Normalized Score	0.91	
Weighting	50%	
Weighted Score	45.43	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	14.79	16.00
SIDE	8.00	8.00
Installation	11.35	12.00
Vehicle Based	9.00	13.00
Score	43.14	49.00
Normalized Score	0.88	
Weighting	25%	
Weighted Score	22.01	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	6.00	6.00
BST	-	2.00
Advanced SATs	1.00	2.00
Score	15.00	18.00
Normalized Score	0.83	
Weighting	25%	
Weighted Score	20.83	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING

5

OVERALL SCORE

88.27

5



Score	34.02	36.00
Normalized Score	0.94	
Weighting	50%	
Weighted Score	47.25	
Maximum Star Rating	5	

AOP		
Item	Point	Max
ODB	14.76	16.00
SIDE	16.00	16.00
HPT Evaluation	3.26	4.00
Score	34.02	36.00
Normalized Score	0.94	
Weighting	50%	
Weighted Score	47.25	
Maximum Star Rating	5	

COP		
Item	Point	Max
FRONTAL	15.65	16.00
SIDE	8.00	8.00
Installation	11.11	12.00
Vehicle Based	10.00	13.00
Score	44.76	49.00
Normalized Score	0.91	
Weighting	25%	
Weighted Score	22.84	
Maximum Star Rating	5	

SAFETY ASSIST		
Item	Point	Max
EBA	8.00	8.00
SBR	3.00	6.00
BST	0.47	2.00
Advanced SATs	2.00	2.00
Score	13.47	18.00
Normalized Score	0.75	
Weighting	25%	
Weighted Score	18.71	
Maximum Star Rating	5	

2017 - 2020
ASEAN NCAP
RATING



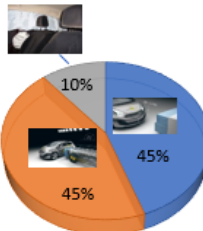

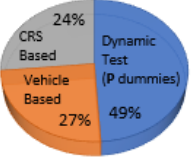
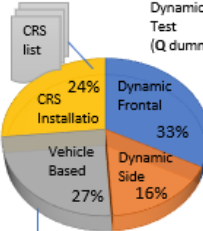

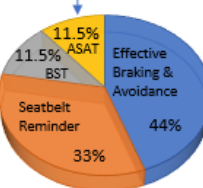


5

OVERALL SCORE

88.80

5

New Honda CR-V

Ratings	2011 - 2016		2017 - 2020	
	Assessment	Weightage	Assessment	Weightage
Adult Occupant Protection (AOP) 	 100% <u>Pre-requisite</u> Pass UNR95 Lateral Collision Test >> 3-star	100% separate rating	 10% 45% 45%	50%
Child Occupant Protection (COP) 	 24% 27% 49%	100% separate rating	 24% 27% 16% 33% Dynamic Test (Q dummies)	25%
Safety Assist 	ESC & SBR for Driver & Front Passenger >> 5-star	Pre-requisite	 11.5% 11.5% 33% 44% Integrated CRS	25%
Rating Plate	 *Dual Rating is possible			



+ Grand Prix Awards Every 2 years
**Safety Performance*
**Most Affordable 5-Star car in each country.*

*Credit EuroNCAP for Illustration

ASEAN NCAP Test Facilities



JARI, JAPAN



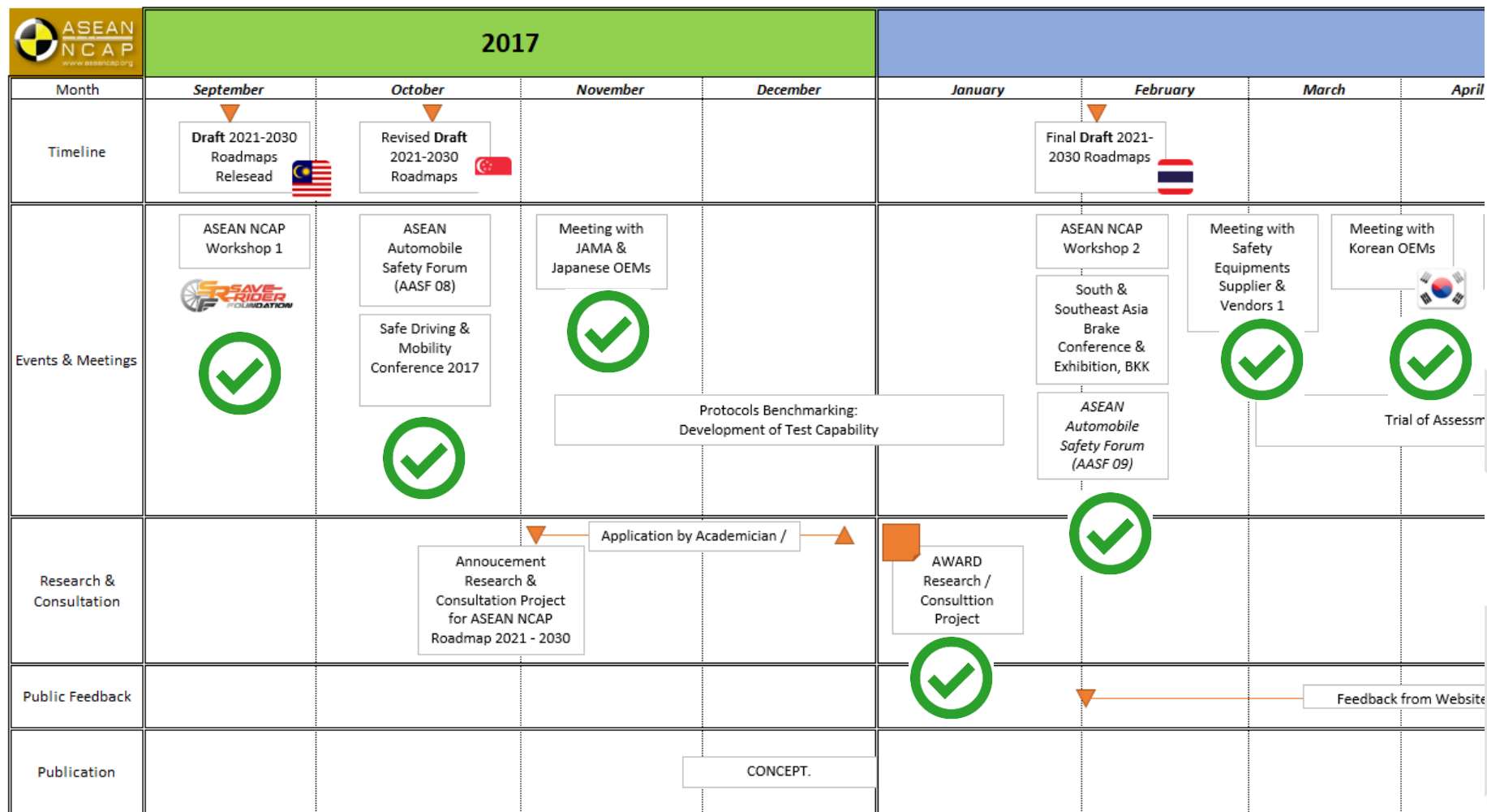
Next...In CHINA



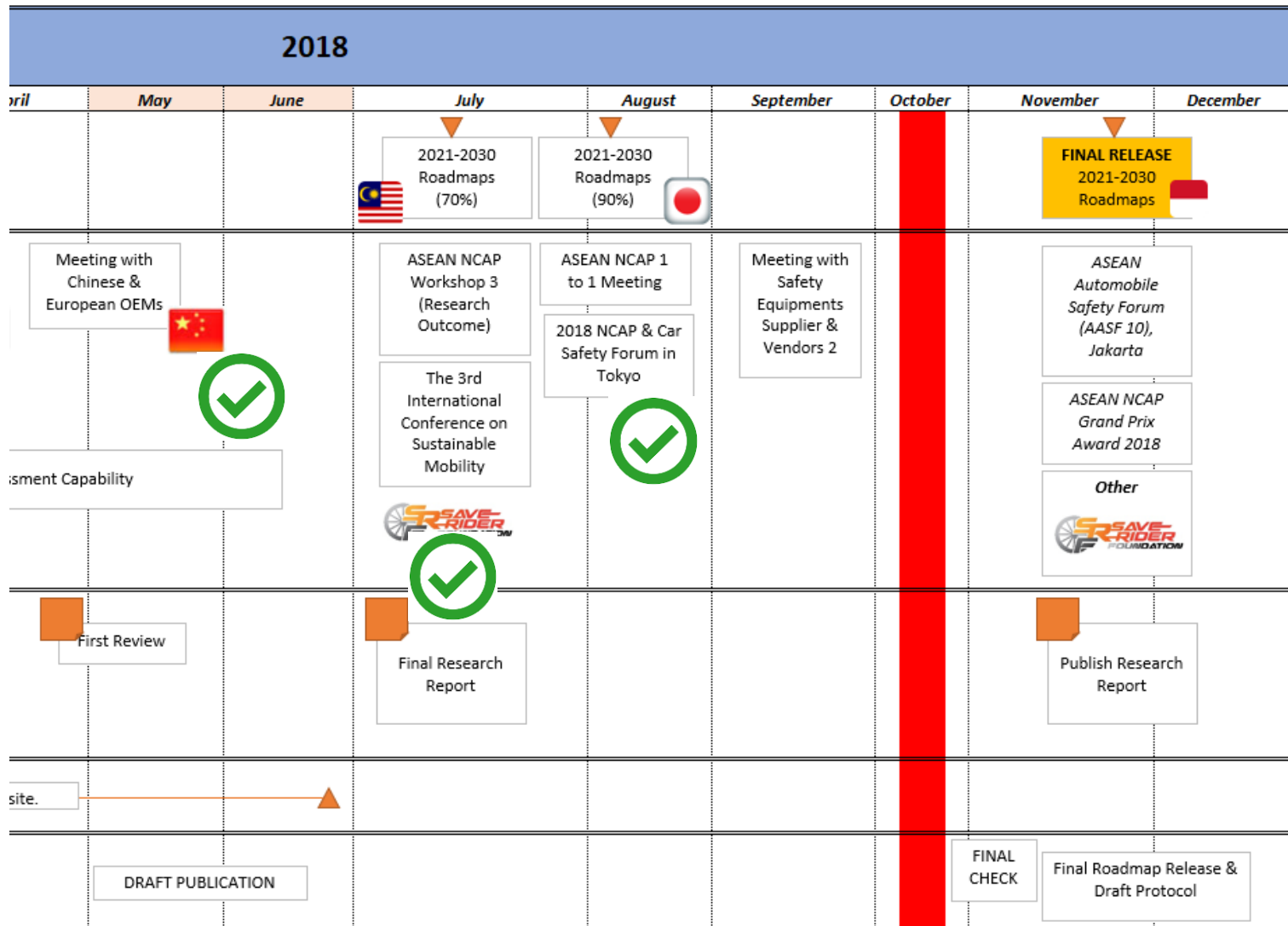
Developing New Roadmaps

- Starting September 2017, we have performed brainstorming with industry, our steering and technical committee members, academicians, NGOs etc.
 - What is the safety issue in ASEAN?
 - Readiness of safety technology by the region.
- Starting ASEAN NCAP Collaborative Holistic Research (ANCHOR) and OEM research to support the road map.
- Consultation with OEMs, Organization i.e. JAMA and suppliers.
- Various workshops all around the world

The Plan 1/2



The Plan 2/2



ACADEMIA/RESEARCHERS

- Project Leader
- Member(s)

Propose a research project relating to ASEAN NCAP, and execute the research work

ASEAN NCAP Member(s)

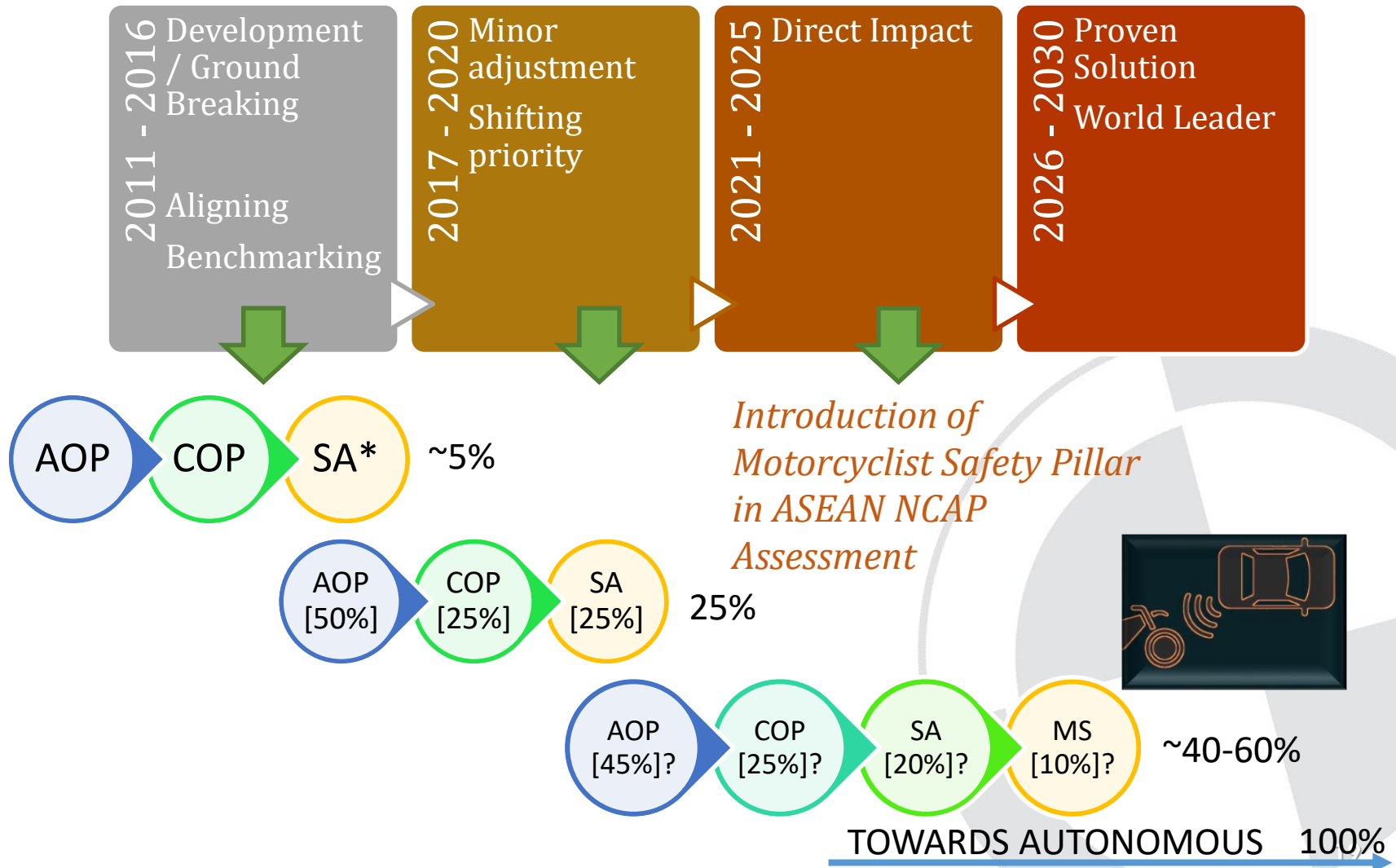
Support and advise the research project, and act as financial person-in-charge

Assigned by ASEAN
NCAP/ANCHOR
Secretariat

List of ANCHOR 1 Researches

COUNTRY	UNIVERSITY	TITLE	LEAD
MALAYSIA	UTM (KL)	A Study on Effectiveness of Blind Spot Detection System and Introduction of Detection and Warning System for Motorcycle Vehicular Collision Avoidance System (DEWAMCA)	Dr. Wira Jazair bin Yahya
MALAYSIA	UTM (KL)	A STUDY ON MALAYSIAN MOTORCYCLIST BEHAVIOR FROM THE PERSPECTIVE OF PICK UP TRUCK	Dr. Wira Jazair bin Yahya
MALAYSIA	UTeM	Review, Survey and Driver Behaviour Study of AEB system in Pre-crash Situation	DR NUR HAZWANI BINTI MOKHTAR
MALAYSIA	UMP	Prioritizing Adult Occupant Protection of ASEAN NCAP: Current and Future Consideration	DR EZRIN HANI SUKADARIN
THAILAND	KING MONGKUT	Identification of motorcycle accident scenarios and post-crash kinematics of motorcyclists in Thailand	Dr. Julaluk Carmai
MALAYSIA	UniMAP	A study on vehicles deceleration rate at primary accident location to avoid secondary accidents/collisions/crashes due to rubbernecking phenomena for improvement of ASEAN NCAP through implementation of Autonomous Emergency Braking (AEB) technology	ASSOC. PROF. DR. SHAHRIMAN ABU BAKAR
MALAYSIA	UniMAP	Design of Camera-based Side Ways Blind Spot Detection and Warning System in Visual Overlay Side Mirrors for Collision Prevention	DR. MOHD SANI MOHAMAD HASHIM
MALAYSIA	UniMAP	A study on the optimal visibility range of a traffic controller wirelessly in a CAV test bed to improve traffic controls and Advance Safety Braking (ASB) technology in autonomous vehicles to compliment ASEAN NCAP future vision	ASSOC. PROF. DR. SHAHRIMAN ABU BAKAR
MALAYSIA	UniMAP	Exploring the perception and attitude of car safety and its impact in designing and manufacturing a new car: a study on Malaysia's car manufacturers	ASSOC. PROF. DR. SHAHRIMAN ABU BAKAR
MALAYSIA	UKM	Feasibility Study on Autonomous Emergency Braking (AEB) Systems for Pedestrian Protection for ASEAN NCAP	DR. MOHD RADZI ABU MANSOR
MALAYSIA	UKM	Functional Assessment of Unattended Child Presence Detection Systems for ASEAN NCAP	DR. MOHD RADZI ABU MANSOR
MALAYSIA	UTHM	Visual Performance and Safety-Related Impacts of Various High Beam Headlights Intensities	DR.-ING. JOEWOONO PRASETIJO
INDONESIA	ITB	Rollover Risk Probability Analysis for SUV's and Buses in ASEAN Market	Sigit P. Santosa
MALAYSIA	UTM/PROTON	Child Restraint Systems for ASEAN NCAP	DR. NURUL

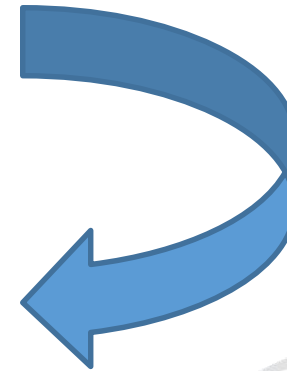
Roadmap 2021 - 2030



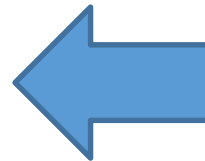
DRAFT				
	2011 - 2016	2017 - 2020	2021 - 2025	2026 - 2030
AOP	ODB 64	ODB 64	ODB 64	TBD
	UN R95*	SI 50 (ES2)	SI 50 (ES2)	TBD
		HPT assesment	HPT assesment	
		SBR	AEB City	
COP	Dummy : P1.5 & P3	Dummy : Q1.5 & Q3	Dummy : Q1.5 & Q3	TBD
	Dynamic Test Result from ODB only	Dynamic Test Result from ODB & SI	Dynamic Test Result from ODB & SI	TBD
	CRS Based Assessment	Replaced with CRS Installation	Replaced with CRS Installation	
	Vehicle Based Assessment	Assesment based on Reference List	Assesment based on Reference List	
	+Integrated CRS	-Integrated CRS	-Integrated CRS	
			Child Presence Detection	
			RCAR Reverse AEB	
SA	ESC*	ESC Standard = 8 points	AEB**	Automatic Emergency Steering
	Driver & Front Passenger SBR*	All seats SBR = 6 points	LDW	
		Blind Spot Technology = 2 points	LKA	
		Advanced SATs = 2 points	Driver Attention Monitor	
			AEB Pedestrian	AEB Pedestrian Nighttime
MS	-	-	Blind Spot Detection	
			AEB Junction Assist	
			Auto Beam	Motorcycle Detection V2X
			Speed Assistance System	
Rating	Dual Rating allowed	Single Rating Only	Single Rating Only	TBD





*Pre-Requisite

**Main SA Technology



FINAL (90%)
1.8.2018



	2021 - 2025	2026 - 2030
	<div>ODB 64</div> <div>HPT ASSESSMENT</div> <div>SEAT BELT REMINDER</div> <div>SIDE IMPACT 50</div> <div>PEDESTRIAN (ADULT)</div> <div>AEB CITY</div>	<div>New Assessment might be considered upon development of new test facilities in the region</div>
	<div>DYNAMIC TEST Q1.5 & Q3</div> <div>PEDESTRIAN (CHILD)</div> <div>REVERSE AEB</div> <div>NEW CRS LIST</div> <div>CHILD PRESENCE DET.</div>	<div>New Assessment might be considered upon development of new test facilities in the region</div>
	<div>AEB INTERURBAN</div> <div>LANE DEPARTURE WARN.</div> <div>DRIVER ATTENTION MON.</div> <div>AEB PEDESTRIAN</div> <div>LANE KEEP ASSIST</div> <div>SPEED ALARM (MANUAL)</div> <div>AEB PEDESTRIAN (NIGHT)</div> <div>AUTOMATIC EMERGENCY STEERING</div> <div>INTELLIGENT SPEED ASSISTANCE</div> <div>TOP SPEED LIMITER</div> <div>ECALL</div>	
	<div>BLIND SPOT DETECTION</div> <div>BLIND SPOT VISUALIZATION (SIDE)</div> <div>BLIND SPOT VISUALIZATION (REAR)</div> <div>REVERSING COLLISION AVOIDANCE</div> <div>AUTOMATIC HIGH BEAM</div> <div>MOTORCYCLIST PROTECTION</div> <div>NIGHT VISION ENHANCEMENT</div> <div>V2X</div> <div>INTERSECTION COLLISION WARNING (JUNCTION ASSIST)</div>	

ASEAN NCAP Roadmap 2021 - 2025

AOP

COP

SA

MS

- They will be no change on type of dummy for frontal and side impact test.
- Side Impact points will be **reduced** from 16 to 8.
- HPT points will be **increased** from 4 to 8.
- HPT points required
 - Airbag deployment test (after side impact test)
 - UN Regulation No. 135 (Pole Side Impact Protection)
- Capping limit for offset frontal result
 - 12.5 > 5-star
 - 10.0 > 4-star

- New requirement for frontal and side impact crash test
 - At least, one of the child seats **must** use Top Tether and ISOFIX.
 - To check the strength of the seat.
 - ASEAN NCAP is not planning to upgrade the usage to Q6 and Q10 as Euro NCAP until 2025.
- New List for Vehicle Based Assessment
 - List by November 2018
- Inclusive of tertiary safety for child sector
 - Child Presence Detection
 - Rear Door Alert
 - Ultrasonic Alert

Child Vehicular Heat Stroke Fact Sheet

- The most dangerous mistake a parent or caregiver can make is to think leaving a child alone in a vehicle could never happen to them or their family.
- More than 50% cases, they unknowingly left them in the vehicle.



- Rear facing car seats look the same whether there is baby in it or not
- Babies often fall asleep, becoming quiet.

Summary Usage Percentage

Year/ Season	CNY		Aidilfitri	
	Before Ops %	During Ops %	Before Ops %	During Ops %
2013	11.80	9.00	3.30	1.90
2014	N/A	N/A	N/A	N/A
2015	N/A	N/A	3.30	7.20
2016	16.90	12.50	7.20	4.40
2017	30.06	23.12	24.96	26.30





VIDEO

LIVE

SHOWS



Hospital CEO Leaves Child to Die in Hot Car

By ABC NEWS July 5

 Share

 Tweet



Authorities in Iowa are trying to decide whether to file charges against a hospital CEO whose 7-month-old daughter died after being accidentally left in a minivan while she rushed off to attend meetings.

The county medical examiner has ruled the death accidental, but prosecutors have yet to decide whether to charge Kari Engholm over the death of her daughter Clare.

Engholm left Clare in a minivan last month on a day when outside temperatures approached 90 degrees. Engholm was rushing to attend a series of meetings at Dallas County Hospital in Perry, Iowa.

Engholm's family, it seems, has forgiven her, calling the death a tragic mistake, the result of an overstressed woman who was used to her husband dropping the little girl off with the baby sitter.

"Kari is a loving mother and my best friend," her husband, Dennis, said at a memorial service for Clare last month. "She loved Clare deeply. She always remembers and celebrates our children's milestones."

- Main Technology:
 - AEB for City and Interurban
 - AEB Pedestrian will not be included
- EBA and AEB sharing same points of 6.
- SBR as follow slides (6 points)
- Advance SAT = 3 points (1 point for each technology as follows
 - LKA, LDW, SAS, Reverse AEB, or any technology approved by ASEAN NCAP

NCAP Incentives for Seat Belt Reminders

- Most NCAP's have implemented SBR incentives
- Advanced SBR = audiovisual warning
- Advanced SBR requires occupant detection for front passenger & rear seats

NCAP	Front seats	Rear seats
Japan	Advanced SBR	Buckle monitoring & Advanced SBR
Europe	Advanced SBR	Buckle monitoring & Advanced SBR
Australia	Advanced SBR	Buckle monitoring & Advanced SBR
Korea	Advanced SBR	Buckle monitoring
Latin	Advanced SBR	Buckle monitoring
ASEAN	Advanced SBR	Buckle monitoring
China	Visual warning SBR & Advanced SBR	Buckle monitoring

NCAP Incentives for Seat Belt Reminders

- Driver and front passenger SBR points (for 3 points)
- Driver & front passenger, basic rear SBR as standard (4.5 pts)
- Incentive for advanced SBR on all seats (Includes rear seat occupant detection) (6 pts)



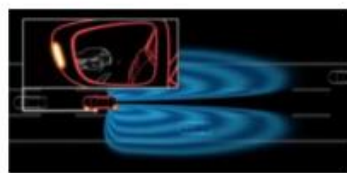




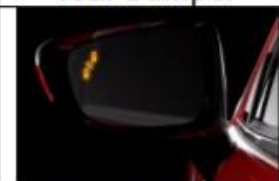
- New Pillar for ASEAN NCAP
- Main Technology will be Blind Spot Technology which is
 - Blind Spot Detection (for 5-star level)
 - Blind Spot Visualization (for 5-star level)
- Blind Spot Visualization i.e. Lane Watch Technology
- Supported by Rear View Enhancement Technology i.e. Intelligent Rear View Mirror.
- Pedestrian Protection based on UN Regulation 127 or GTR 9 is added into this pillar as part of VRU.

Motorcyclist Safety

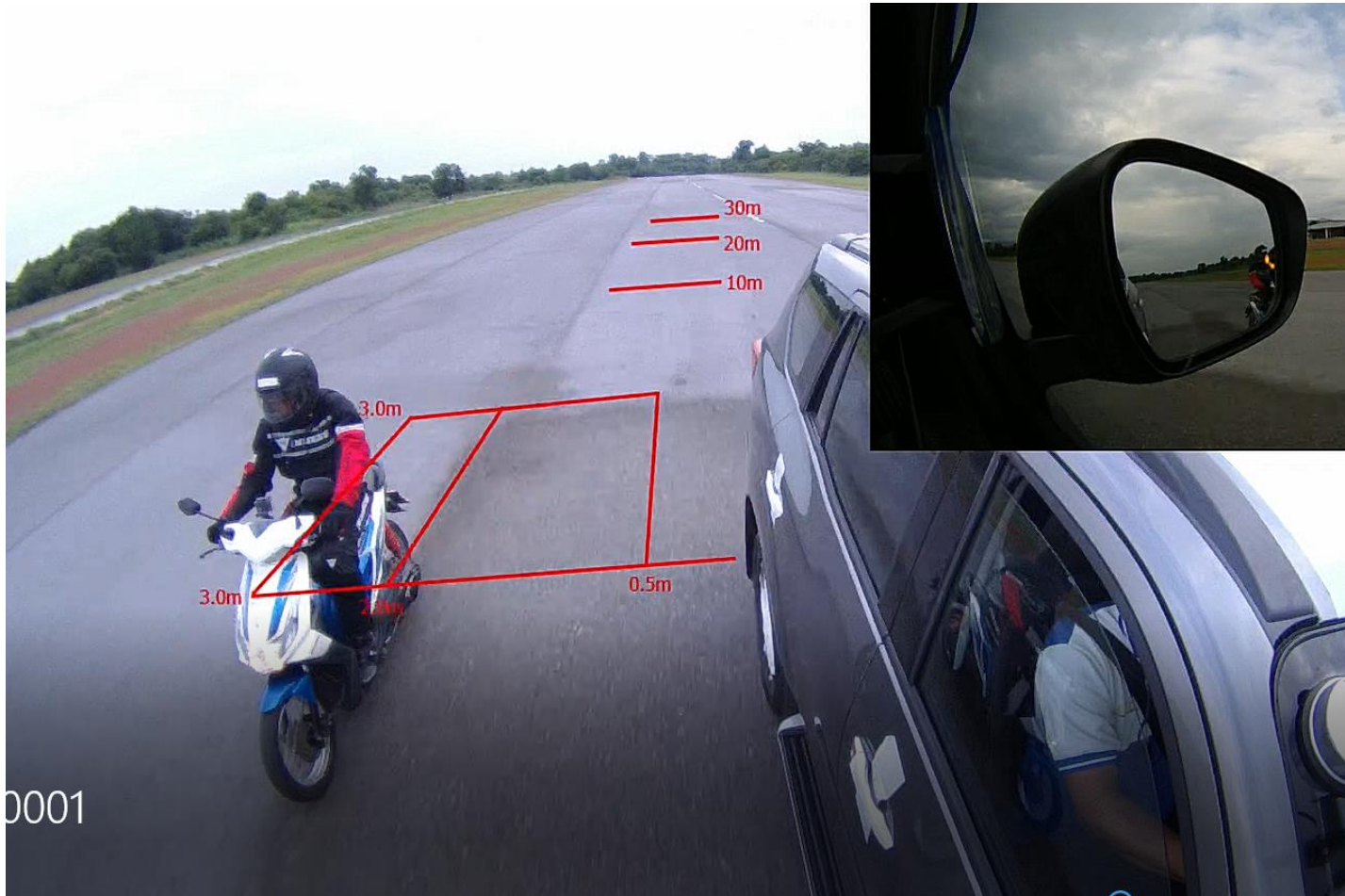
- Advance Motorcyclist Safety would be awarded based on proposal to ASEAN NCAP



Example of BST

Vehicle	A	B	C	D
Model	Mercedes S400	Honda Odyssey EXV	Mazda CX-5 2017	Mazda 3
Body style	4-door sedan	5-door MPV	4-door SUV	4-door sedan
BSM Illustration				
Trade Name	Blind Spot Assist (BSA)	Blind Spot Illustration (BSI) System	Blind Spot Monitor (BSM)	Blind Spot Monitor (BSM)
Technology	radar	vision	radar	radar
Sensor Location (s)	Two sensor mounted one in each corner of the rear bumper	Two sensor mounted one in each corner of the rear bumper	Two sensor mounted one in each corner of the rear bumper	Two sensor mounted one in each corner of the rear bumper
BSM Icon				
Icon description	LED is a triangular area on end left of the side mirror	LED warning lamp icon integrated to the side mirror face	warning lamp icon integrated to the side mirror face	lighted lamp icon integrated to the side mirror face
Audible warning	none	none	has	has

Blind Spot Detection



Numbers of Motorcycle in the world

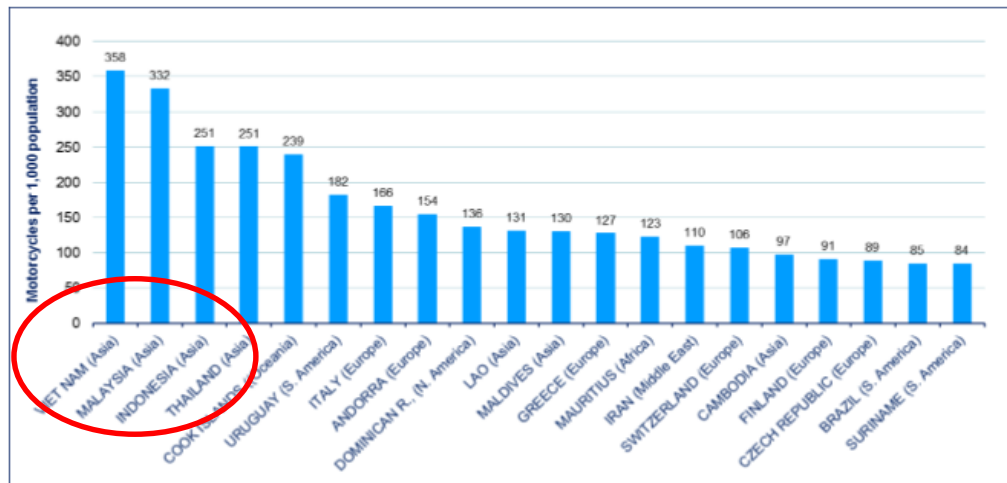


Figure 1. The 20 countries with the greatest number of motorcycles per 1,000 population

Data source: Global Status Report on Road Safety, WHO 2013

No.	Continent/Region	Registered Motorcycles (2010)	Percentage of total motorcycles (%)	Motorcycles per 1000 population	Percentage of MCs of all vehicles (%)
1	Asia	359,567,713	78.94	100.80	59.35
2	Middle East	13,240,634	2.91	28.35	25.21
3	Europe	38,767,389	8.51	43.90	9.56
4	Africa	7,938,939	1.74	10.35	22.88
5	South America	22,801,731	5.01	58.12	22.54
6	North America	12,395,764	2.72	23.82	3.86
7	Oceania	778,936	0.17	21.80	4.01
Total		455,490,566	100 (%)	World's rate = 68.68	30% of all vehicles

Data source: Global Status Report on Road Safety, WHO 2013

Fatalities per 100,000 population

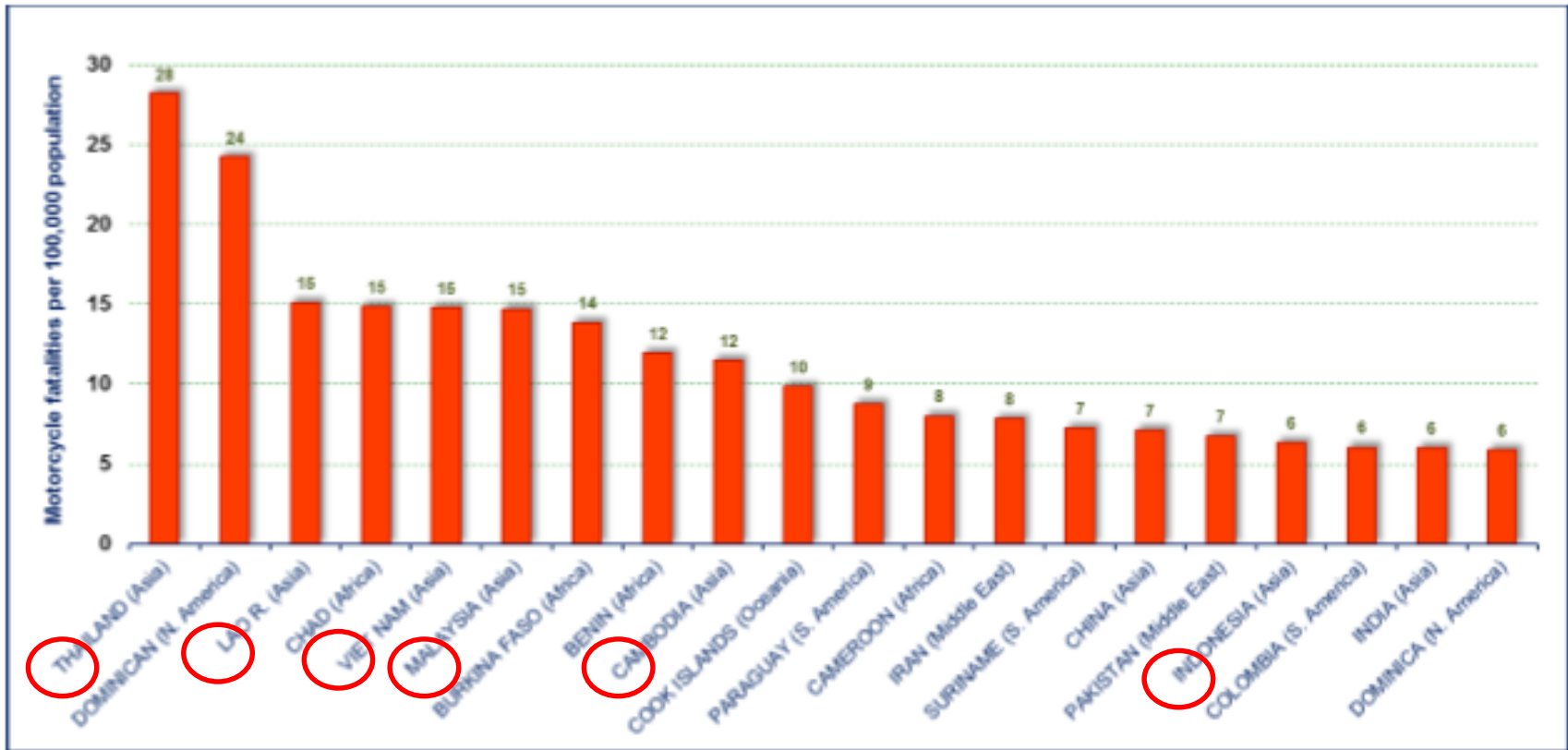


Figure 3. The 20 countries with greatest rate of motorcycle deaths per 100,000 population

Data source: Global Status Report on Road Safety, WHO 2013

In Malaysia

Road User	2010	2011	2012	2013	2014	2015
Motorcycle	4,036	4,169	4,178	4,294	4,179	4,203
Car	1,421	1,389	1,435	1,399	1,258	1,358
Pedestrian	626	530	530	455	515	482
Bicycle	192	172	156	159	124	107
Van	97	93	86	80	73	71
Bus	77	29	32	60	29	20
Lorry	202	247	194	210	221	223
4WD	154	151	159	158	129	130
Other	67	97	147	100	146	75
Total	6,872	6,877	6,917	6,915	6,674	6,706

59%

61%

60%

62%

63%

63%



- Some researchers are not keen to solve the motorcyclist issues,
 - Due to its complexity
 - They “decided” it couldn’t be solved.
 - Everyone needs to admit that it is a “problem”.
- How serious is the motorcycle industry to solve this problem
 - They may spend millions for training centre, but not to improve simple things i.e. conspicuity (by adding more reflector perhaps) to the motorcycle.
 - Passenger Car segment is moving towards technology that could detect the existence of motorcyclist – This is a good sign.

- WORLD SID is considered.
- Side Impact test might involve higher speed similar to Euro NCAP (AE MDB is considered)
- Due to high volume of SUV/MPV sold in the region, roll over requirement might need to be considered.
- THOR dummy usage might not be feasible until 2030.
- Q6 & Q10 usage depends on CRS usage success and ISOFIX installation.

- Expecting more variant of AEB technology will be implemented.
- Whiplash, Pedestrian and Cycling Safety will be depending on Motorcyclist Safety implementation success rate.
- AEB Pedestrian will be reviewed with research project.
- Rescue, Extrication and Safety will be proposed depending on EV usage rate in ASEAN.
- AEB for motorcycle will be the most technology ASEAN NCAP is interested in future.

ASEAN NCAP 2021 – 2030

-DRAFT-

ASEAN NCAP 2021 - 2025	AOP			COP			Safety Assist			Motorcyclist Safety		
	Item	Result	Max	Item	Result	Max	Item	Result	Max	Item	Result	Max
	Frontal	12.5	16	Frontal	12.5	16	EBA	6	6	BSD / BSV	8	8
	Side	7	8	Side	8	8	SBR(Fr.)	3	3	Rear View Technology	0	4
	HPT Evaluation	7	8	CRS Installation	10	12	SBR(Rr.)	1.5	1.5	AHB	2	2
				Vehicle Based Assessment	9	13	SBR(Rr.) Advanced	1.5	1.5	Pedestrian Protection	2	2
				Child Present	2	2	AEB City	2.5	2.5	Advance MST	0	2
							AEB Inter-Urban	3.5	3.5			
							Advance SAT	1.5	3			
	Score	26.5	32		41.5	51		19.5	21		12	18
Normalized Score		0.83			0.81			0.93			0.67	
Weighting		40%			20%			20%			20%	
Weighted Score		33.13			16.27			18.57			13.33	
Maximum Star Rating		5			5			5			5	

	AOP(%)	Points	COP(%)	Points	Safety Assist(%)	Points	Motorcyclist Safety (%)	Points	Overall(%)
5★	80	25.6	75	38.25	70	14.7	60	10.8	73
4★	70	22.4	60	30.6	50	10.5	40	7.2	58
3★	60	19.2	30	15.3	40	8.4	30	5.4	44
2★	50	16	25	12.75	30	6.3	20	3.6	35
1★	40	12.8	15	7.65	20	4.2	10	1.8	25

- Roadmap Launching in Karawang, Indonesia on
 - **15th** November 2018
 - 10.30 AM – 12.30PM
 - Mercure Karawang Hotel



-DRAFT-

- 2 days full program.
- Arrival
 - Monday 12th Nov 2018
 - Dinner with respected guest
- 1st Day
 - Tuesday 13th Nov 2018
 - TRIAL at Bridgestone Circuit
 - Visit from Indonesian Authority for Safety Demonstration
- 2nd Day [PT. Bridgestone Tire Indonesia Karawang]
 - Wednesday 14th Nov 2018
 - Vehicle Safety Workshop
- 3rd Day [Mercure Karawang Hotel]
 - Thursday 15th Nov 2018
 - The 12th ASEAN NCAP Steering Committee Meeting
 - AASF – ASEAN NCAP New Roadmap 2021-2030
 - Presentation by ASEAN NCAP and experts (identified by ASEAN NCAP)
 - MOU Signing – KATRI
 - MOU Signing – Indonesian Transport Authority
 - Hi Tea – ASEAN NCAP Grand Prix Award 2018

- ASEAN NCAP is offering sponsor opportunity to OEM/Vendors/Industry.
- 1 slot = RM 50,000
- 1 representative from the company will be invited to ANCHOR Technical Committee.
- ANCHOR Technical Committee will be run by Chief Research Officer (CRO).
- ANCHOR Technical Committee will be given chance to primarily review ASEAN NCAP Protocol for 2021 – 2025.
- BE WITH US!!