



Submitted by the expert from the Rep. of Korea

2023

KNCAP 2023 Roadmap

Korean NCAP Roadmap



Informal document GRSP-63-22
(63rd GRSP, 14 - 18 May 2018,
agenda item 26 (a))



TS Korea Transportation Safety Authority
Korea Automobile Testing and Research Institute

Strategy of 2023 KNCAP Roadmap | 2019-2023

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Strategies

- ✔ Protection of passengers who are relatively less safe
- ✔ Strengthening the protection of VRU
- ✔ Promoting the deployment of ADAS

* Revising existing test protocol and Introduction of new test items

Category 1 Crash Protection

Category 2 Pedestrian Protection

Category 3 Accident Prevention

Category 4 Rating system



Advisory Committee

- Consider Technology development plan of makers
- Share data among stake holders
- Feasibility, Applicability
- Opinions of experts



2019~2023 KNCAP Roadmap

Establish Reasonable Assessment Plan by considering technology trends, real world accidents, and foreign countries; NCAP Development of KNCAP 2023



Crash Protection

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Development strategy



Revise assessment method for reflecting real world accidents



Consider new technologies and world NCAP trends



Comprehensive assessment for combination of Passive and Active safety

Revise Existing Items

B e f o r e

TASK 1 Full Frontal

- ✔ Female passenger in 2nd row seat(2019)
- ✔ Increase penalty(Modifier)



TASK 2 Offset Frontal

- ✔ Apply Car-to-Car crash replacing offset frontal(2022)
- ✔ Increase penalty(Modifier)

TASK 3 Side Impact

- ✔ Increase weight and speed of moving barrier(2020)

TASK 4 Pole Side Impact

- ✔ Include head/thorax/abdomen/pelvis injury criteria(2020)

TASK 5 Whiplash

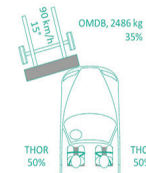
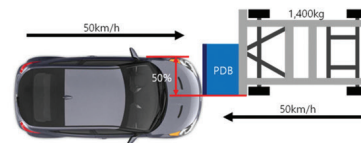
- ✔ Static evaluation of passenger in 2nd row seat(2018)

Consider New Items

A f t e r

TASK 1 Car-to-car Protection | 2022

- ✔ European test method (speed 50km/h car-to-moving barrier)
- ✔ US test method(Small overlap / Small oblique)
- ✔ THOR dummy



Source: ESV Conference 2017, 17-0168 Source: ESV Conference 2011, 11-0343

TASK 2 Far-side passenger protection | 2022

- ✔ European test method (driver oriented)
- ✔ US test method (driver-passenger interaction)



Source: theengineer.co.uk

Pedestrian Protection

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Development
strategy



Revise test method by considering bicycle riders



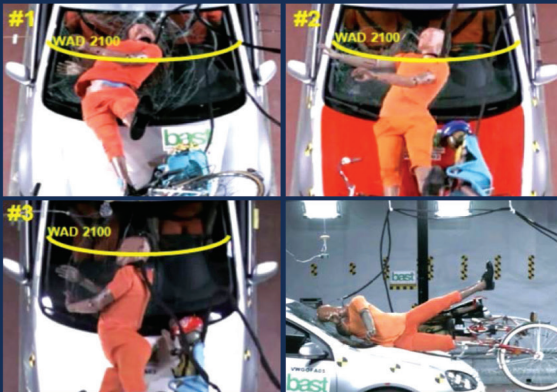
Reflect new technologies and world trends

Revise Existing Items

B e f o r e

TASK 1 Expand WAD | 2022

- ✓ Expand WAD considering bicycle riders
- ✓ Review feasibility/applicability using simulation



Source: crash.tech 2012, O Zander

Consider New Items

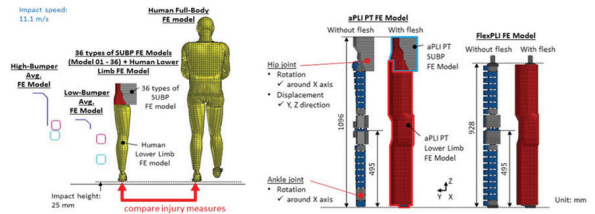
A f t e r

TASK 2 Advanced PLI | 2023

- ✓ Use Advanced PLI with high Bio-fidelity
- ✓ Produce Japanese's Prototype
- ✓ Possible evaluation of upper leg

TASK 3 Study Thorax Evaluation

- ✓ Search studies in Europe
- ✓ Consider Joint research with vehicle makers



Source: IRCOBI Conference 2016, IRC-16-98

Accident Prevention

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03

Development strategy



Consider commercialization of autonomous vehicle of Level 3 by 2020



Consider new technologies and Fade out existing items



Convergence of assessment technology : Development of multidimensional comprehensive assessment technology

Revise Items & New Items

A f t e r

TASK 1

Fade out Existing Items | 2020

- Abolish braking due to wide AEBS application
- Abolish roll-over due to mandatory ESC application (evaluate only SSF)

TASK 2

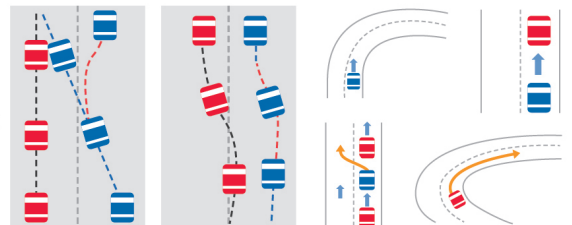
Revise Existing Items | 2020

- Revise offset test protocol Introduce Articulated dummy
- Include evaluation for bicycle riders

TASK 3

Consider New Items | 2022

- Add new item for ESF(Emergency Steering Function) evaluation
- Develop comprehensive evaluation scenario reflecting real world accidents
- Evaluate autonomous system(AEBS+ESF, ACSF Cat. E+AEBS)



Development strategy



Consider the number of night time accidents and the injury severity



Reflect the development status and trend of overseas technologies

Consider New Items

A f t e r

TASK1 AEB-Low Luminance Assessment | 2022

- ✓ Review Euro NCAP Assessment Protocols
- ✓ AEB: Development & Application of Low Luminance Assessment Protocols

TASK2 Lighting System Performance | 2023~

- ✓ Consider the introduction of IIHS Assessment Method
 - ✓ Review Euro NCAP Assessment Protocols
- *Need to develop an assessment protocol suitable to the domestic environment

i Night and obscure lighting | Euro NCAP

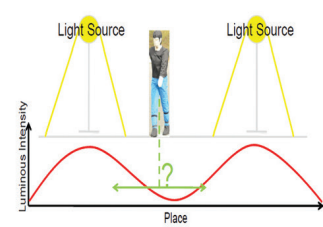
- National Accident Data from Germany (2008-2010)

Accident Scenarios	Light condition	Fatalities (83%)
	Day	8
	Night	15
	Day	7
	Night	23
	Day	3
	Night	1
	Day	1
	Night	3
	Day	1
	Night	2
	Day	5
	Night	14
TOTAL	Day	25
	Night	58

Source: carhs.de

Night time crash accidents with pedestrians show the high injury severity

- Most pedestrian accidents at night occur with light sources (2018 Euro NCAP)



Source: carhs.de

Mid-to-long term planning

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Field	Item	Revised, Added	2017	2018	2019	2020	2021	2022	2023
Passive Safety	Full Frontal crash	Female passenger in 2nd row	○→		○				
		Increase penalty (Modifier)			○				
	Offset Frontal crash	Increase penalty (Modifier)			○				
		Side Impact	WorldSID 50%ile	○					
	Increase crash speed and barrier weight					○			
	Increase penalty (Modifier)				○				
	Pole Side Impact	Include head/thorax/abdomen/pelvis injury criteria				○			
		Increase penalty (Modifier)				○			
	Whiplash	Static evaluation of 2 nd row seat		○					
	Child protection	Protection for 6 & 10 yrs child	○						
Far-side passenger protection	Consider European or US method	○→					○		
Car-to-car crash	Consider European or US method THOR dummy	○→					○		
Pedestrian protection	Pedestrian protection	Expand the assessment area			○→			○	
		Advanced PLI				○→			○
		Study on Thorax Injury					○→		

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Field	Item	Revised, Added	2017	2018	2019	2020	2021	2022	2023	
Active Safety	Rollover	Measure SSF	○							
		Abolish Rollover (obligate ECS)				○				
	Braking	Abolish braking distance				○				
	FCWS	Revise test protocol for AEB+FCW Function				○				
	AEBS	Interurban		○						
		City		○						
		Pedestrian(Static)		○						
		Expand Pedestrian dummy(Articulated)					○			
		Cyclist					○			
	LDWS	Revise test protocol for LKA+LDW Function				○				
	LKAS		○							
	ISA		○							
	RCTA		○							
BSD		○								
ACC						○				
ESF	Emergency Steering Function			○				○		
Development of the Assessment Scenario based on traffic situation	AEBS + ESF + LKAS + ACC					○				
Night Safety	AEBS Low Luminance (Night)			○		○				
	Enhancing night time visibility (Lighting Systems)				○			○		