

# KI-API

**KOREA  
INTELLIGENT  
AUTOMOTIVE PARTS  
PROMOTION  
INSTITUTE**

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# KIAPI

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## Message from President



KIAPI(Korea Intelligent Automotive Parts Promotion Institute) is an vehicle testing institute established in 2014 to support related parts suppliers and research institutes developing next-generation automotive technology. Considering that the development of next-generation vehicles, which consist of intelligent vehicles centered on autonomous vehicles and green cars such as electric cars and hybrid cars, are major activities of automotive companies, In order to facilitate the development of next-generation automobile technology in Daegu region, we have vehicle evaluation and testing facility and work on the needs of companies and research institutes.

We have facilities and test engineers to test chassis dynamo, impact durability test equipment, vehicle driving test in various conditions such as High speed circuit and Multipurpose test track. In particular, we have a system capable of various intelligent driving tests and related tests using wireless communication network(WAVE).

We will not only have a support system to cope with various next-generation automobile development of automobile-related companies and research institutes centered on Daegu region, but will continue to reinforce the support system in accordance with the changing market conditions in the future.

From President **Myung Ho Sung**



## Summary of KIAPI

### Purpose of Establishment /

Contributing to the strengthening and development of international advanced competitiveness of High premium auto parts industry and related industries through infrastructure construction and efficient management and operation to foster the rights of auto parts makers and to foster ITS-based automotive parts base valley

### Summary of Foundation /

Denomination : Korea Intelligent Automotive parts Promotion Institute  
 Form of Establishment : Non-profit Foundation under Civil Code No. 32(2008. 05. 06.)  
 Organization : 3 Headquarters and 1 Department

### History /

- 2007. 12. 24. Conclusion of a contract for establishing
- 2008. 04. 02. infrastructure for regional innovation
- 2008. 05. 06. Permission to establish corporation (Ministry of Knowledge, Economy)
- 2008. 05. 30. Registration of Foundation
- 2011. 04. 04. Foundation launch event (temporary board of directors)
- 2014. 04. 02. Holding groundbreaking ceremony of proving ground  
Completion of proving ground
- 2017. 03. 22. Agreement of construction of test center for Renault group agreement

### Status of proving ground /

Location : 201, Gukgasandanse-ro, Guji-myeon, Dalseong-gun, Daegu, 43011, Korea.  
 Scale : test track of 394,565m<sup>2</sup> and operation of related equipment



# Panorama of KIAPI & Daegu Proving Ground

Daegu proving ground will support evaluation of parts of autonomous cars and ADAS for local auto parts suppliers with limited development and continuous growth due to changes in internal and external conditions, and to become a necessary facility in the local auto parts industry.

# DAEGU PROVING GROUND

Be the BEST  
Biggest Engineering Service Team

**Major business**

- Establishment of proving ground, management and operation of facility
- Performance test, research, evaluation and certification of automobile parts using proving ground
- Technical support and professional training of intelligent auto parts
- Construction of Infrastructure and R&D for development of intelligent auto parts
- Automobile parts related business entrusted by the government or local government

Korea's first ITS-based drive proving ground  
With the WAVE wireless communication networks

## / DAEGU PROVING GROUND

# DAEGU PROVING GROUND

Korea Intelligent Automotive Parts Promotion Institute

Daegu proving ground can carry out 37 items among test items of International Standard Certification Standard (ISO/TC) for intelligent auto parts and ITS Specialized Test of Future Cars.

We also perform hybrid environmental tests such as performance, durability and noise of general vehicles.

In particular, **For the first time in the world, we have installed the most advanced intelligent transportation system that enables DSRC and WAVE technology**, the next-generation wireless traffic communication, to test and provide information services between vehicles and between vehicles and centers.



## About Daegu Proving Ground

### A. Multipurpose Test Track



It is a test track that can perform testing of ADAS related devices such as BSD, LDWS, LKAS as well as vehicle power related, braking related and related tire performance test which is difficult to carry out in high speed circuit or straight line.

- Applications**
- Vehicle power performance test
  - Vehicle braking performance test
  - Parts of ADAS performance test
  - Steering stability test
  - Tire performance test

**Specification** Size : length 440m X width 70m



- A. Multipurpose test track
- B. High speed circuit
- C. Steering pad
- D. Vehicle-infra connected test intersections
- E. Special condition test track
- F. Pass by noise test track
- G. Wet grip test track
- H. Wet handling test track
- I. Hydroplaning track
- J. Test hills



**B.**  
High Speed  
Circuit



It is a test track in the shape of a telephone receiver, consisting of a straight line portion and a bank portion of one-way third lane. Based on the bank of curvature radius R=100 and the straight line with a maximum distance of 1.5 km, it is possible to drive up to a maximum speed of 204 km/h. Driving directions can be different according to test conditions.

- Applications**
- ACC (Adaptive Cruise Control)
  - BSD (Blind Spot Detection)
  - LDW (Lane Departure Warning)
  - LCW (Lane Change Warning)
  - DDW (Driver Drowsiness Warning)
  - LKA (Lane Keeping Assistance)

- Specification**
- Straight portion : maximum 1500m
  - Bank portion : Radius of curvature R=100m, slope 30°
  - Road width : one-way Three lanes
  - Total length : 3681m
  - Driving time : 2minutes 1second(100km/h)



**C.**  
Steering Pad



A round test track in the bank section of the high-speed circuit. There are 9 turning lanes to evaluate the turning ability, turning stability, and braking ability in various conditions.

- Applications**
- High speed steady state circular test
  - Braking in curve test
  - Minimum turning radius test
  - Vehicle rollover test
  - Steering performance test

- Specification**
- Turn radius : R=12, 20, 25, 30, 40, 50, 60, 70, 80, 85m
  - Cross slope : 0.5%
  - Coefficient of friction : 0.9(ASTM E274 applied)



**D.**  
Cooperative  
Vehicle-Infra  
Test Intersections



A test track with two 4-way intersections and one 3-way intersection, created a road and traffic environment that fuses ITS to develop ADAS-related technologies through simulations of intersection conditions.

- Applications**
- Evaluation test of collision avoidance active safety system
  - Pedestrian protection device test
  - Active Brake Assist Device Test

- Specification**
- Size : Four lanes, length 382m X width 16.5m
  - Composition : two 4-way intersections and one 3-way intersection, intelligent signal facilities, camera



**E.**  
Special  
Test Track



It is a test track that can test the durability and vibration characteristics of vehicle and related parts in harsh environments such as impact, vibration, flood, etc., and provides a total of 13 different test environments, so that you can carry out the performance tests according to the conditions.

- Applications**
- Durability tests
  - Rigidity tests
  - Water tightness, Corrosion & Immersion resistance tests

- Specification**
- Belgian road
  - Washboard road
  - Pebble road
  - Mauvais pave road
  - Rough asphalt road
  - Flooding test road
  - 3 Bump road
  - Deep water ford road
  - Water tight test road
  - Stone chipping road
  - Salt spray corrosion test road
  - Long waveform road
  - Body twist road





## F. Pass by Noise Test



It is a test track which is located on a Multi-purpose test track and consists of road surface of ISO standard. It can perform tests to measure external and internal noises that occur during driving.

### Applications

- Pass by noise test
- Internal and external noise test
- Sound quality and comfort test
- Tire noise test

### Specification

- Size : length 560m X width 20m
- Certification road surface : ISO 10844, length 20m X width 3m



## G. Wet Grip



It is a straight test track located at the side of the Multipurpose test track, and it can generate the water film of about 1mm through the spray nozzle installed at regular intervals to realize the wet road surface test condition. This allows you to test the characteristics of your tires, as well as anti-slip technologies such as ABS.

- Applications**
- Tire  $\mu$ -peak measurement test
  - Braking performance test
  - ABS development test

- Specification**
- Size : Length 150m X width 4m
  - Water film : about 1mm



## H. Wet Handling



A test track composed of a circular path and a first curve located in the steering pad, which can generate 1mm of water film through the injection nozzle to test the characteristics of the tire on the wet road surface and the steering characteristics.

- Applications**
- Tire handling characteristic test
  - Steering characteristic evaluation test
  - Steering response test

- Specification**
- Turn radius : R=30, 50, 60m
  - Water film : about 1mm



## I. Hydroplaning, Low Friction wet Concrete



It is a test track that can test the stability and braking power through high speed running on the road surface with water film. It consists of a straight line and a curved line, and the spraying nozzle installed at regular intervals can maintain the water film of about 8mm for about 40 to 50minutes.

- Applications**
- Tire characteristics test
  - Tire water film test
  - Steering characteristic evaluation test
  - Steering response test

- Specification**
- Straight portion : Length 150m X width 3.5m
  - Curved portion : Length 25m X width 6m, Radius of curvature R=100
  - Water film : about 8mm
  - Duration : about 40 to 50 minutes



## J. Test Hills



A test track that can test the performance of the vehicle's climbing ability or holding ability of braking status and the parts related to the shift or braking. The test can be carried out using three different types of ramps depending on the conditions.

- Applications**
- Hill climbing ability test
  - Clutch performance test
  - Variable headlight test of vertical ramp operating conditions
  - Ramp Parking brake performance test

- Specification**
- Slope : 12%, 20%, 30%



## About Test & Evaluation Division



The Test & Evaluation Division provides the best test evaluation service to the customers based on the best technology and trust in Advanced Driver Assistance System (ADAS), Vehicle Dynamics(Ride and Handling, Steering), Braking, NVH, Road Load Data and Durability, Emission part. In addition, We are striving to support SMEs in securing their technological capabilities through the development of evaluation methods and testing and evaluation solutions such as equipment training.

### Steering Robot System



**Usage purpose** Steering input test under the same conditions

- Specifications** Steering Robot(SR60)
- Motor type : Brushless Type
  - Maximum torque : 70Nm or more
  - Maximum speed : 1,800 deg/s or more
  - Angular resolution : ≤ 0,05 deg, Angle accuracy: ≤ 0,3 deg
  - Torque Sensor Type & Performance
    - Strain Gauge Type, ±125Nm(Nominal) or more

### Brake & Acceleration Robot System



**Usage purpose** Brake & Acceleration test under the same conditions

- Specifications** Braking Pedal Robot BR1000
- Maximum load : 1,400N or more
  - Maximum operating speed : 800mm/s or more, maximum stroke : 140mm or more
  - Load cell for pedal pressure measurement
    - Type : Strain Gauge Type Load Cell, Load Capacity : 2,000 N (FSO) or more
- Acceleration Pedal Robot
- Maximum stroke : 120mm or more, Maximum operating speed : 300mm/s or more
  - Maximum torque : 150N or more (70mm), Encoder accuracy : 0,001 deg or more

### Lane Mark Detection & Analysis System



**Usage purpose** Analysis of System for Lane Detection and Departure

- Specifications** 20Hz Glonass and RTK System 2ea
- Velocity : Accuracy ≤ 0,1km/h, Resolution ≤ 0,01km/h
  - Distance : Accuracy ≤ 50cm/km, Resolution ≤ 1cm
  - Absolute Positioning : Accuracy ≤ 2cm
- DGPS Base-Station, Video Data Logger(4Camera) 1set
- Correction Method : RTCM and RTCA
  - Receive Distance(Open Environment) ≥ Radius 2km
  - GPS Update Rate ≥ 20Hz
  - Resolution ≥ 720×480, 30FPS
- Analysis Software
- Analysis and evaluation of LDWS, FVCWS, BSD





### Wheel Vector Sensor

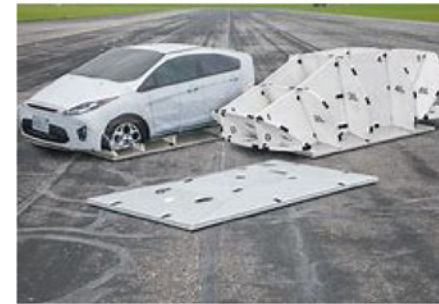
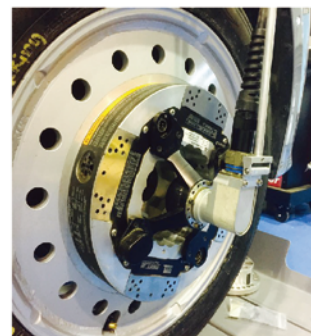
**Usage purpose** Evaluation & Measurement System for Wheel System (Angle, Speed, Camber)

- Specifications** Wheel vector sensor(AD7852-WPS)
- Measurement range : X  $\pm 30^\circ$  이상 / Y Unlimited / Z  $\pm 180^\circ$
  - Resolution : X, Y 0,024mm / Z 0,01mm
  - Resolution Angle : X, Z 0,0027° / Y 0 to 360°
  - Encoder : 17bit / rotation
  - Tire rotary encoder : range 0 to 360° / resolution 0,09°
  - Maximum tire rotation : 3000 RPM
  - Calculation rate : 1kHz
  - Measured factors : Displacement x, y, z / Angle around x, y, z axes / Wheel speed / Angle speed
  - Low pass filter : 4 dimension butterworth / Selectable from 1, 2, 5, 10, 20, 50, 100, 200, 500 Hz
  - Power supply : AC 100 – 240V / DC 12V AC adaptor / DC 12V $\pm 10\%$
  - Operating temperature : 5 – 40°C
  - Operating humidity : 5 – 90% R.H.

### Road Load Data Acquisition & Analysis System

**Usage purpose** Road Load Data Acquisition for Fatigue and Durability Analysis

- Specifications** H/W (Somat eDAQ)
- ECOM Module : 3 High speed CAN, GPS Antenna Module : EGPS-5Hz
  - EHIL-AO 32ch(ICP Accelerometer)
  - EBRG-350-AO 32ch (Strain Gauge Signal Input)
  - SMITC 8ch(Thermocouple)
- S/W(nCode Version 7,0)
- GlyphWorks Fatigue Pro Package + IMSL Statistics
  - DesignLife Virtual Shaker Package + CAE Vibration Fatigue



### Guided Soft Crash Target

**Usage purpose** Autonomous Robot-Based Target Vehicle for ADAS Test

- Specifications** Guided Soft Crash Target
- Max Speed : 80km/h, Max Acceleration : 0,2g
  - Max Deceleration : 0,8g, Max Lateral Acceleration : 0,4~0,5g
  - Weight : 300kg
  - Chassis Size (Euro NCAP Compliant Specification, 22deg edging)  
Length : 2,950mm, Width : 1,680mm, Wheelbase : 1,400mm
  - Wi-Fi : 5Ghz



### Soft Pedestrian Target

**Usage purpose** Euro NCAP Vehicle Target for AEB System Test

- Specifications** Soft Pedestrian Target
- Max Speed : 20km/h, Peak Acceleration : >0,8g (with 15kg payload)
  - Drive Unit Dimensions(L x W x H) : 1,040 X 610 X 230 mm
  - Platform Dimensions(L x W x H) : 800 X 440 X 30 mm
  - EuroNCAP Cyclist & Pedestrian Adult & Child Dummy

### NVH Evaluation System

**Usage purpose** Vehicle NVH(Noise, Vibration, Harshness) Test

- Specifications** Pass-by Noise 16ch
- 16ch V/ICP/TEDS Input Module, Telemetry System
- On-Road NVH 16ch
- 40ch V/ICP/Charge Input Module
- Analysis software
- Exterior Pass By Noise Testing, Signature Testing, Structural Testing, Modal Testing, Transfer Path Analysis, Sound Quality(Binaural Headset)



**Rollover Test System**

Usage purpose Rollover Test, FMVSS126 Test

Specifications Outriggers & Height Sensor Package  
 - Outrigger NHTSA Standard Type : 2,725kg  
 - Height Sensor HF-500C X 10ea  
 - 8 wheel height & 2 body height sensors  
 - Measuring Range : 125~625mm  
 - Resolution : 0,2mm

**Active Safety System Testing Equipment**

Usage purpose Evaluation & Analysis for Vehicle Dynamic Characteristic and Active Safety System

Specifications Wheel Speed Sensor 2ea  
 - Permissible rotational speed : 6,000/min  
 Steering Wheel Sensor 1ea  
 - Angle resolution : 0,1°, Maximum steering speed : 1,000° /sec  
 Pedal Load Cell 1ea  
 - Measurement Range : 1,000N  
 Camber Angle Measurement System 2ea  
 WFT 30A 4ea

**Inertial & DGPS Measurement System**

Usage purpose Vehicle Dynamic Characteristics for ADAS Test (with Position Accuracy : 2cm)

Specifications GPS/INS(RT 3002) 2ea, DGPS 1ea, RT-Range 2ea, RT-Range Survey Trolley 1ea  
 - Velocity Accuracy : 0,05km/h RMS  
 - Roll, Pitch 0,03°, Heading 0,1°, Slip Angel 0,15°  
 Driverless Base-Station System  
 Rotating Laser Scanner System(ibeo LUX 2010) 2ea  
 Analysis Software  
 - Analysis and evaluation of ADAS(LDWS, ACC, BSD, LCA, etc.)

**48inch 4x4 Chassis Dynamometer & Emission Test System**

Usage purpose ADAS Performance Evaluation Test in the Integrated Simulation Environment and Fuel Efficiency Test

Specifications Chassis Dynamometer 1set  
 - Max Speed : 260km/h  
 - Tolerance of Speed Measurement ≤ 0,02km/h  
 - Roll Diameter : 48inch, 4X4  
 Emission Test System 1set  
 - Gasoline & Diesel Emission Test System  
 - Fuel Efficiency Test System  
 Integrated Simulation Environment Software 1set



**Ride & Handling analysis software**

Usage purpose Analysis for Ride & Handling Test

Specifications Handling Module  
 - Step steer(ISO 7401), Steady-state turning(ISO 4138), Frequency response(ISO 8726), Pulse(ISO 7401), Continuous sine(ISO 7401)  
 Stability Module  
 - Fishhook(NHTSA), Dwell sine(FMVSS-126), Lane change(ISO 3888-1/2), Power-off(ISO 9816), Brake in a turn(ISO 7975), Cross-wind(ISO 12021-1), Free Steer(ISO 17288-1)  
 Steering Module  
 - On centre weave(ISO 13674-1), On centre transition(ISO 13674-2)  
 - Parking steering effort, Return ability



**Electro Dynamic Vibration Test System**

Usage purpose Durability Test in the Combined Environment (Temperature, Humidity, Vibration)

Specifications Sine Force : 16,000kgf, Random Force : 16,000kgf, Shock Force : 48,000kgf  
 Max. Displacement : 76mm, Max. Acceleration : 100g, Max. Velocity : 2,0m/s  
 Frequency Range : 1 ~ 2,000 Hz  
 Head Expander Size(Table) : 1,000 X 1,000 mm(circle)  
 Environmental Chamber  
 - Internal Size : 1,300 X 1,300 X 1,500 mm  
 - Temperature Range : -50°C to + 160°C(5,0°C/min)  
 - Humidity Range : 20% ~ 98% RH(5,0°C/min)



**3-Axis Simultaneous Vibration Test System**

Usage purpose 3-Axis(X,Y,Z)Simultaneous Durability Test in the Combined Environment(Temperature, Humidity, Vibration)

Specifications Sine Force : 5,000kgf, Random Force : 5,000kgf  
 Max. Displacement : 40mm, Max. Acceleration : 10g peak(At no load), Max. Velocity : 1,6m/s  
 Frequency Range : 5 ~ 1,000Hz(Sine), 5 ~ 2,000Hz(Random)  
 Head Expander Size(Table) : 600 X 600 mm(circle)  
 Environmental Chamber  
 - Internal Size : 800 X 800 X 900 mm  
 - Temperature Range : -50°C to +160°C(5,0°C/min)  
 - Humidity Range : 20% ~ 98% RH(5,0°C/min)

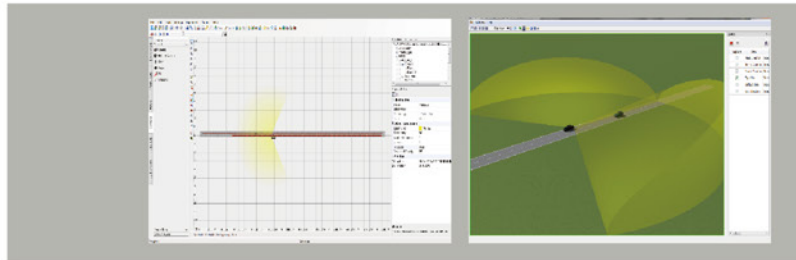


Test and evaluation work of the ADAS vehicle

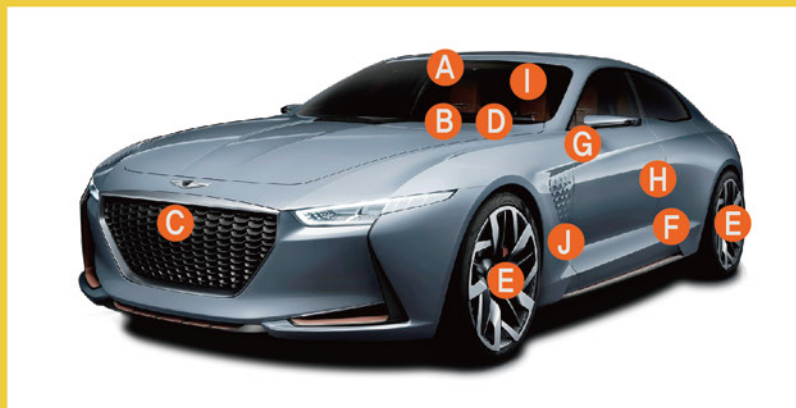
We evaluate ADAS products(LDWS / LKAS, BSD, LCA, AEB, FCW, CTA, TJA, SCC, HDA, etc.) and conduct conformity assessment of EuroNCAP regulations(LD-WS/LKAS, AEB).



Prescan SW



Measurement

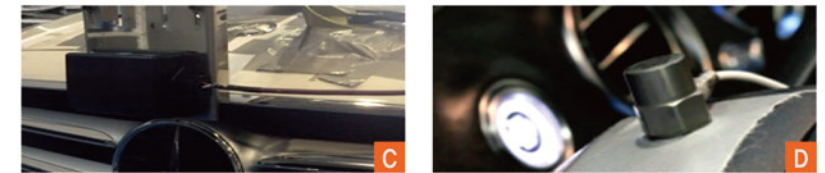


- A. Lane recognition Sensor
- B. Parallel NTS, Steering Robot(SR60)
- C. RADAR SENSOR
- D. Acceleration Sensor
- E. Brake hydraulic Sensor(FR,FL,RR,RL)
- F. DAQ(SIRIUS)
- G. 4 CAMERA
- H. Gyro Sensor
- I. Microphone
- J. Acceleration & Deceleration pedal robot

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- B. Parallel NTS, Steering Robot (SR60)



- C. RADAR SENSOR
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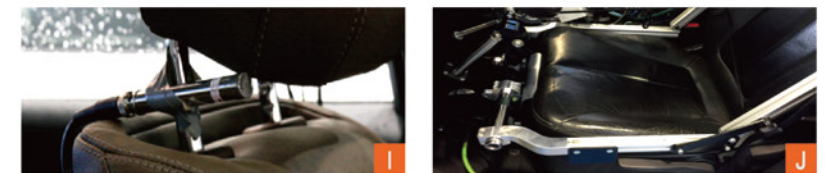
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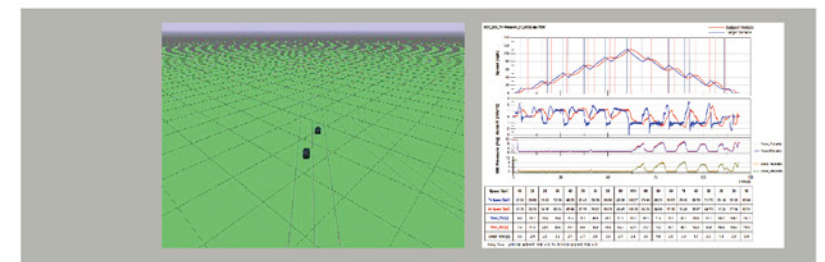
- G. 4 CAMERA
- H. Gyro Sensor



- I. Microphone
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DIAdem SW / Dynasoft SW



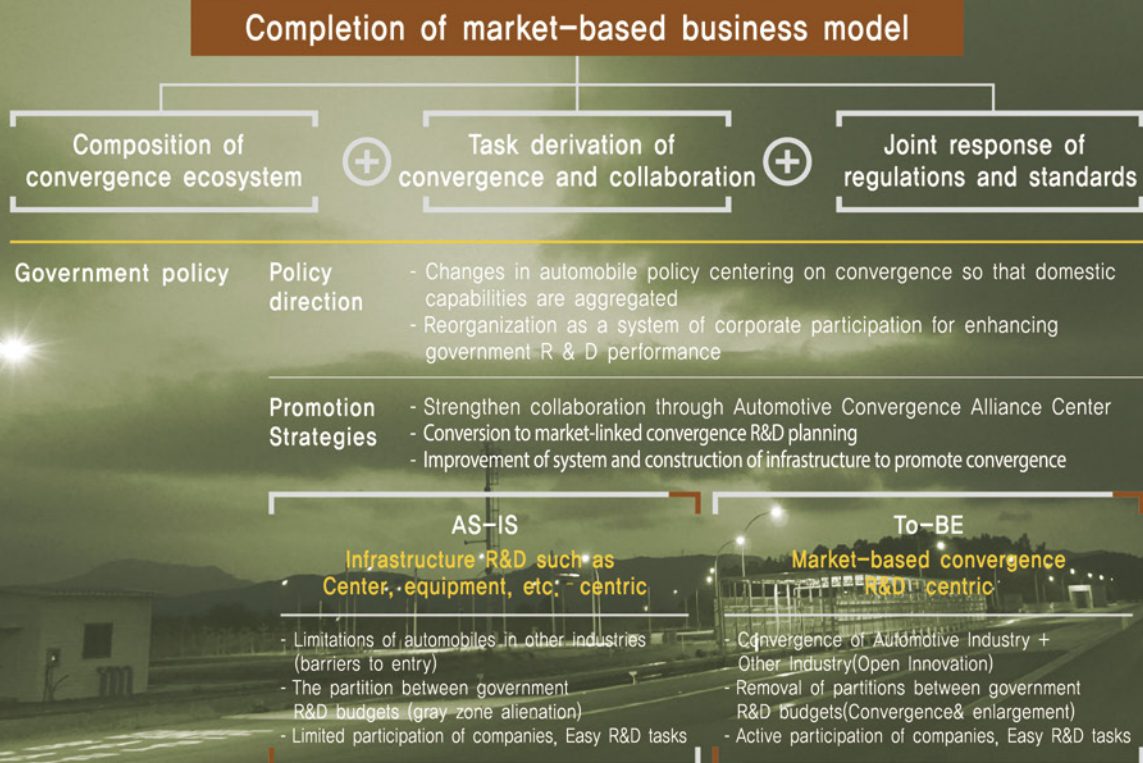
# About Automotive Convergence Alliance Center

The Automotive Convergence Alliance Center aims to exchange information on industry, university, research Institute and government in order to find voluntary cooperation projects (Business Model) between automobile and other industries in response to the paradigm shift of the future automobile market.

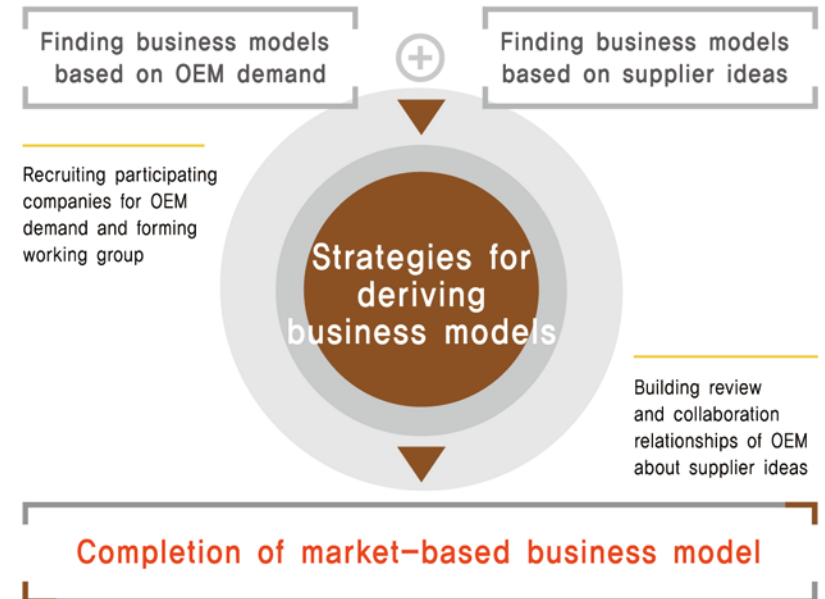
## Goals and Strategies

### “Changes in Automobile Industry Policy toward convergence of Automotive Industry + Other Industry”

– Management and Operation of Automotive Convergence Alliance Center



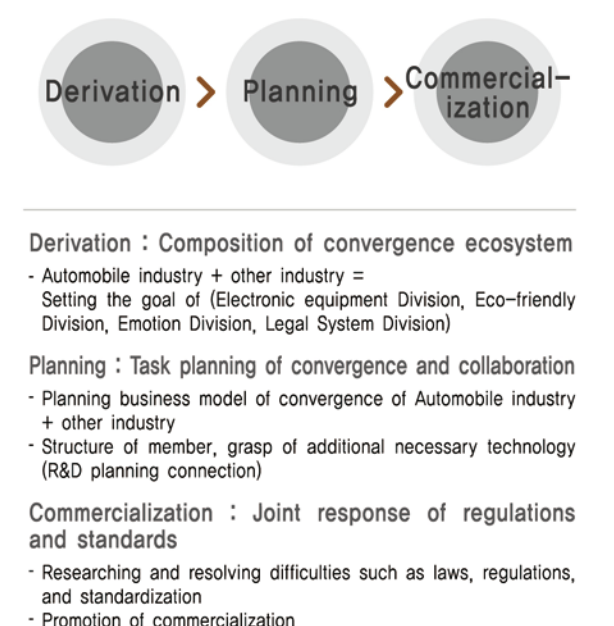
## Strategies for deriving business models



## Organization and participation status



## Role of the Automotive Convergence Alliance Center



## About National Project

# Construction of Advanced Driver Assistance System(ADAS) Platform

It is aimed at establishing infrastructure to support technology development and product improvement of small and medium enterprises related to ADAS, and to create ecosystem for industrial upbringing.

### Vision

“Preemption of global market through establishment of future automobile industry support system”

Completion of dedicated platform for strengthening global competitiveness of ADAS related parts

### Business overview

Project Name : Construction of Advanced Driver Assistance System(ADAS) Platform  
 Project period : April 1, 2017 to December 31, 2020  
 Organizer : KIAPI  
 Participants : Gyeongbuk hybrid technology institute

### Challenge task



#### Building dedicated test bed for ADAS test

- Test of conformity of laws and regulations (Enhanced Euro NCAP)
- Building ADAS test bed in the test center

#### Building a test Research Center

- Private space for business execution and operation(2nd floor)

#### Operation of industrial ecosystem creation program

- Holding technical seminar on ADAS and future automobile
- Construction of ADAS Industrial Network (Technology Exchange Meeting)
- Activation support(Operation of Working Group)

#### Construction of equipment for ADAS evaluation

- Equipment for vehicle test(6 kinds)

### Weighed strategy

Strengthening technology and market competitiveness and preempting the market (ADAS/autonomous driving)

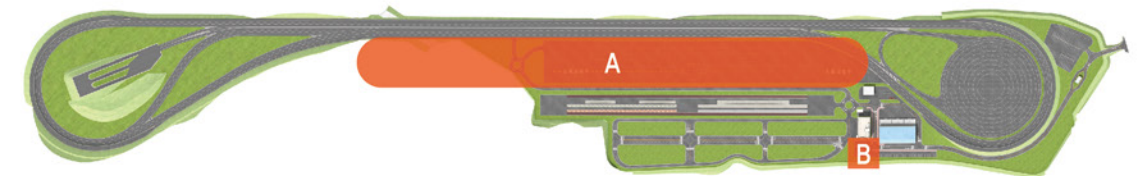
Responding to Global Market Regulatory Issues

Responding to Social, Economic and Technical Issues

Contribution of New automotive industry ecosystem

### ADAS test bed

Construction of ADAS dedicated test bed for enhanced Euro NCAP and autonomous vehicle performance evaluation



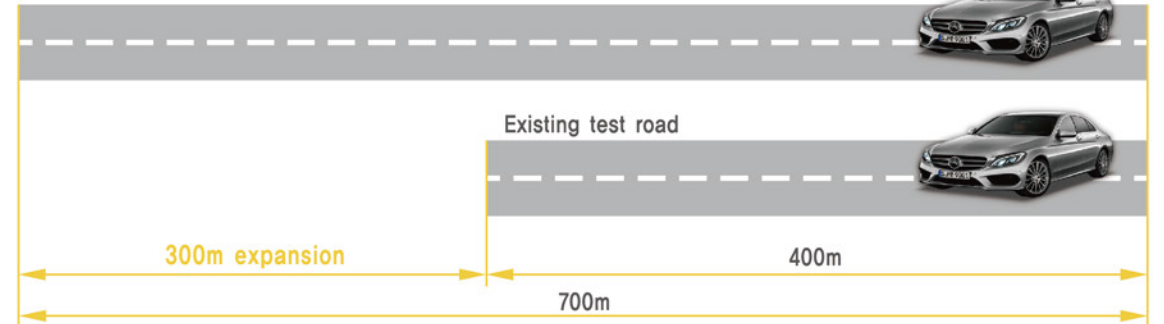
A. Dedicated test bed for the ADAS



B. Test Research Center



### Dedicated test bed for the ADAS



Expansion of the ADAS test due to the establishment of dedicated test bed

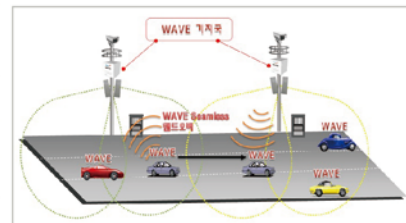
Test Items	Multipurpose test track	Dedicated test bed for the ADAS	Related regulations
Stop target mode of Autonomous Emergency Braking(AEB)	Possible	Possible	Euro NCAP
Moving target mode of Autonomous Emergency Braking(AEB)	Target speed up to 40kph	Target speed up to 80kph (40kph increase in speed)	Euro NCAP : 80kph
Front braking target mode of Autonomous Emergency Braking(AEB)	Impossible	Possible	Euro NCAP
Blind Spot Detection(BSD)	Target speed up to 50kph	Target speed up to 80kph (30kph increase in speed)	ISO 17387
Smart Cruise Control(SCC)	Following the preceding vehicle speed	Speed pattern, third vehicle In/Out pattern (additional testing available)	Following the preceding vehicle speed
Lane Keeping Assist System(LKAS)	KNCAP, Euro NCAP, NHTSA Possible response of the 2017 Legal test	Enhanced 2018 Euro NCAP (additional responding to new protocol lanes)	KNCAP, Euro NCAP, NHTSA

Possibility of existing facility connection test

Precision map of driving test ground(digital map)



Test intersection



WAVE communication network



Construction of ADAS evaluation equipment

Steering Robot System  
Brake & Acceleration Robot System



Establishment of compliance test equipment for the purpose of responding to Euro NCAP, NHTSA, and Kncap

Guided Soft Target(GST)



Soft Pedestrian & Cyclist Target



Technical exchange meeting and activation support

[Daegu International Future Auto Expo] Mobilizing the relevant experts, such as competencies industry, academia through the hosting of international-scale expositions  
 ADAS Consultative Body : Sharing technology trends and development directions and responding to global issues  
 - Forum : Invited lectures and seminars by experts from Korea and abroad  
 - Exhibition : ADAS, Future Automobiles and Parts Exhibition, Business Consulting, etc.

Providing information related to ADAS(patent, technology trends)  
 - Providing analysis of patent analysis and technology roadmap for promising technologies related to ADAS

ADAS test evaluation accreditation  
 - ①AEB(C2C) ②AEB(VRU) ③CTA ④LDWS ⑤LKAS ⑥BSD ⑦CLA ⑧SCC ⑨TJA

Establishment of ADAS development activation system  
 - Operation of Working Group(Automobile Convergence Alliance), participation in exhibition



## About National Project

# Construction of precise map for autonomous car

Precise map for autonomous car Supports the upbringing of new industry such as autonomous vehicle technology, unmanned mobile object, VR / AR with 3-dimensional digital map expressing lane information, regulation and safety information and various road facilities.

### Implementation of a pilot project for Constructing of precise map for autonomous car in Daegu drive proving ground

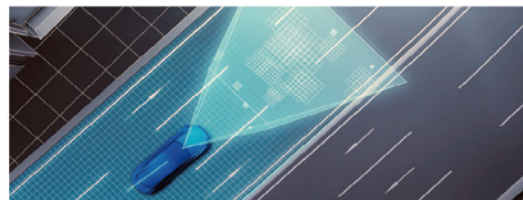


Construction of precise electronic map using Daegu drive proving ground

Designation and activation of Autonomous demonstration complex in Daegu

Establishment and evaluation system of public standard DB to support development of recognition technology of intelligent vehicle

- Development of evaluation method of recognition technology /DB construction
- Vehicle based PER test, RTT test, RSSI measurement
- Monitoring real-time vehicle location and measuring packet reception sensitivity (communication radius)
- Display of test results by RSSI by distance, RSSI by speed, analysis of maximum communication radius, analysis of latency



Promoting the development of systems, infrastructure and transport information systems required for autonomous driving safety operations

- 3D digital map representation including lane, regulation, safety, facilities
- 25cm accuracy of road related information
- Providing information that meets the complex trend of maps, sensors, etc.
- Supporting and expanding autonomous vehicle technology development



## About National Project

# Indian AIS Certification Supporting Program for Automotive Parts Manufacturers

KIAPI provides Indian AIS certification supporting program for automotive parts manufacturers to solve problems and difficulties from the process of certification and invigorate automotive part exporting market.

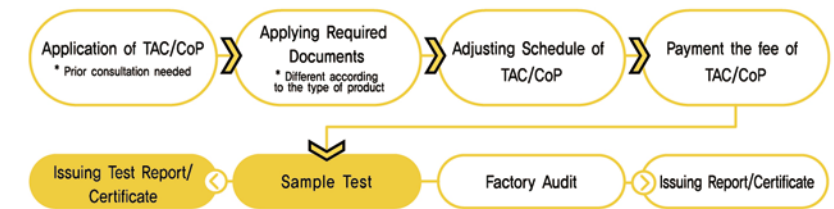
### Indian AIS Certification



KIAPI signs on MOU with ICAT who is one of the official certificate institutes of Indian government satisfying the Rule 126 of India CMVR(Central Motor Vehicles Rules), to provide Indian AIS certification with affordable price and period for manufacturers who export automotive parts to India.

As regards Indian AIS certification, KIAPI works as a representative partner of ICAT in Korea and Asia region and supports the whole process of certification of products and/or factories which need to be certified to be exported to the Indian market.

### Process of Certification



### Major Products of Certification

- 1 Safety Glass
- 2 Brake Hose
- 3 Horn
- 4 Tyre
- 5 CNG Regulator
- 6 LPG Vaporizer /Regulator
- 7 Bulb
- 8 Rear View Mirror
- 9 Speed Limiting Devices
- 10 Seat Belt
- 11 Wheel Rims
- 12 Light/Light Signaling Devices
- 13 Retro Reflectors
- 14 Warning Triangle
- 15 Light/Light Signaling Devices
- 16 Light/Light Signaling Devices
- 17 Door Locks and Retention Components
- 18 Fuel Tanks
- 19 Reflective Tapes
- 20 Rear Warning Triangles
- 21 Replaceable LED Light Source
- 22 Wheel Rims
- 23 Rear Marking Plate
- 24 Wiper Blades
- 25 Traction Battery

### Contact

Practical affairs & consultation  
T 053. 670. 7825 / E hongeik@kiapi.or.kr



PARTNERS

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 PYUNG HWA OIL SEAL INDUSTRY CO., LTD.  
 VALEO PYUNG HWA CO., LTD.  
 KOREA POWERTRAIN CO., LTD.  
 Pyeong Hwa Automotive Co., Ltd.  
 Erae Automotive Systems Co., Ltd.  
 Kyung Chang Industrial Co., Ltd.  
 Dongwon Metal Co., Ltd.  
 Motonic Co., Ltd.  
 HWASHIN CO., LTD.  
 SAMBOMOTORS CO., LTD.  
 SANGSIN BRAKE  
 THN Corp.  
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 Sam Yung Metal Co., Ltd.  
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 DATWYLER  
 GUMCHANG Co., Ltd.

NEXEN TIRE  
 HYUNDAI MOTOR COMPANY  
 KIA MOTORS CORP  
 HYUNDAI MOBIS  
 RENAULT SAMSUNG MOTORS

Electronics and Telecommunications Research Institute  
 Daegu Gyeongbuk Institute of Science & Technology



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By highway

Hyeonpung IC(Guji direction) > Gukgasandanbuk-ro(Move 2,29km) > Turn left into National Industrial Complex > Gukgasandan-daero(Move 1,75m and turn right) > Gukgasandan-daero 39 gil(After 743m, turn left) > Gukgasandanse-ro 40 gil(Move 667m) > Entrance of Daegu drive proving ground(Main building and parking lot after going straight 500m after passing the main gate)

# KIAPI

## KOREA INTELLIGENT AUTOMOTIVE PARTS PROMOTION INSTITUTE



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