

## **The 2023 Survey on the Technology Cooperation of China-Japan-Korea**

Chinese Academy of Engineering, the Engineering Academy of Japan and the National Academy of Engineering of Korea conduct the 11<sup>th</sup> perception survey on the technology cooperation of China, Japan, and Korea, aiming to provide a cooperative platform for mutual development of the East Asia to resolve common issues laid in the region. As in the last surveys, co-prepared by the members of the National Academies of Engineering of the three countries, the questionnaire is articulated in three sections:

Section I, the Cooperation Indicator will help annually monitor current trends and conditions among these three countries. Section II, the Fact-finding Survey will explore technology in whatever specific sectors are the subject of special focus throughout a given year. Section III is a questionnaire on personal matters, and we intend to analyze it in connection with the results of the previous two-section surveys.

The fact-finding survey for this year focuses on the trends in autonomous driving for future mobility and potential subjects of collaboration among the three countries regarding the technological area.

Thank you in advance for your participation.

## I. Survey on Cooperation Indicator

1. Do you think technological cooperation is necessary among China, Japan, and Korea?  
(      )
  - a. Very necessary
  - b. Necessary
  - c. Neutral
  - d. Unnecessary
  
2. Do you think technological cooperation among China, Japan, and Korea would be mutually beneficial? (      )
  - a. Very beneficial
  - b. Beneficial
  - c. Somewhat unbeneficial
  - d. Completely unbeneficial
  
3. In terms of quantity, how would you evaluate the level of technological cooperation among China, Japan, and Korea? (      )
  - a. Very high
  - b. Somewhat high
  - c. Neutral
  - d. Low
  
4. In terms of quality, how would you evaluate the level of technological cooperation among China, Japan, and Korea? (      )
  - a. Very high
  - b. Somewhat high
  - c. Neutral
  - d. Low
  
5. What is your opinion on the future prospects for technological cooperation among China, Japan, and Korea? (      )
  - a. Very optimistic
  - b. Optimistic
  - c. Pessimistic
  - d. Very pessimistic

## II. Fact Finding Survey

- Autonomous Driving for Future Mobility

1. How much do you know about autonomous vehicle technology? (       )
  - a. I don't know about it at all.
  - b. I don't know about it well.
  - c. I know about it to some extent.
  - d. I know well about it and I am working in a related field.
  - e. I know very well about it and I am working in a closely-related field.
  
2. How many years do you think it will take to commercialize Lv. 4 or higher autonomous vehicle? (       )
  - a. Less than 5 years
  - b. 5 ~ 10 years
  - c. 10 ~ 15 years
  - d. 15 ~ 20 years
  - e. Over 20 years
  - f. It cannot be commercialized.



3. Which of the autonomous driving technologies do you think to be of high importance? (       )
  - a. Highway autonomous driving technology
  - b. Urban autonomous driving technology
  - c. Narrow Space Assistance (NSA) driving technology
  - d. Autonomous parking technology (autonomous valet parking)
  - e. Others (Specify in detail.)

## II-2. Automotive Technology

2-1. Which of the following autonomous driving technologies do you think is the focus area of your country or the world? Select one or two from the following options. ( ) ( )

- a. Autonomous driving sensor technology (Camera)
- b. Autonomous driving sensor technology (Radar)
- c. Autonomous driving sensor technology (Lidar)
- d. Autonomous driving recognition algorithm technology
- e. Autonomous driving software architecture technology
- f. Autonomous vehicle control technology
- g. Others (Specify in detail.)

2-2. Which areas of autonomous-driving-based technologies do you think should be the focus of your country or the world? Select one or two from the following options. ( ) ( )

- a. Autonomous driving platform vehicle technology
- b. Autonomous driving semiconductor fabrication technology
- c. Autonomous driving communication technology
- d. Autonomous driving simulation technology
- e. Autonomous driving safety evaluation technology
- f. Autonomous driving service technology
- g. Others (Specify in detail.)

2-3. Which of the following autonomous driving sensor technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? ( )

- a. Autonomous driving sensor technology (Camera, Radar, Lidar)
- b. Autonomous driving recognition algorithm technology
- c. Securing autonomous driving data from each country
- d. Technology for removing personal driving data and sensitive information
- e. Others (Specify in detail.)

2-4. Which of the following autonomous driving S/W technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan?

( )

- a. Autonomous driving recognition algorithm technology
- b. Autonomous driving software architecture technology
- c. Autonomous driving decision-making algorithm technology
- d. Autonomous driving platform control technology
- e. Others (Specify in detail.)

### II-3. Autonomous Driving Infrastructure Technology

3-1. Which of the following autonomous driving infrastructure technologies do you think is the focus area of your country or the world? Select one or two from the following options.

( ) ( )

- a. Road infrastructure-based sensing technology
- b. Autonomous driving V2X (Vehicle-to-everything) technology
- c. Autonomous driving control and remote control technology
- d. Autonomous driving precise map technology
- e. Establishment of a road dedicated to autonomous vehicles
- f. Others (Specify in detail.)

3-2. Which of the following road infrastructure sensing technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan?

( )

- a. Road infrastructure sensor technology
- b. Data structuring technology
- c. Sensing data transmission technology
- d. Risk information guide and utilization technology
- e. Others (Specify in detail.)

3-3. Which of the following autonomous driving V2X communication technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? ( )

- a. V2V(Vehicle to Vehicle) communication data
- b. V2I (Vehicle to Infra) communication data
- c. V2X communication frequency and protocol
- d. V2X terminal technology
- e. Others (Specify in detail.)

3-4. Which of the following autonomous driving precise map technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? ( )

- a. Data format standards for precise map
- b. Sharing precise map data among countries
- c. Sharing traffic flow and signal data
- d. Establishment of country-specific traffic laws and characteristics expression methods
- e. Others (Specify in detail.)

3-5. Which of the following autonomous driving environment technologies and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? ( )

- a. Unification of traffic infrastructure such as signs and traffic lights
- b. Unification of inter-vehicle communication protocol
- c. Precise map format unification and data sharing
- d. Others (Specify in detail)

## II-4. Application of other autonomous vehicle technologies

4-1. What do you think will be the autonomous driving technology to be applied and commercialized first? Select one or two from the following options. ( ) ( )

- a. Autonomous driving vehicle
- b. Autonomous driving bus and truck
- c. Autonomous driving agricultural machinery
- d. Autonomous driving delivery robot
- e. Autonomous driving ship
- f. Urban Air Mobility (UAM)
- g. Others (Specify in detail.)

4-2. Which of the following technologies subject to autonomous driving application and relevant policies do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? Select one or two from the following options. ( ) ( )

- a. Autonomous driving vehicle
- b. Autonomous driving bus and truck
- c. Autonomous driving agricultural machinery
- d. Autonomous driving delivery robot
- e. Autonomous driving ship
- f. Urban Air Mobility (UAM)
- g. Others (Specify in detail.)

4-3. What do you think is currently lacking for the commercialization of the autonomous driving technology? Select one or two from the following options. ( ) ( )

- a. Autonomous driving sensor technology
- b. Autonomous driving algorithm technology
- c. Autonomous driving laws and institutions
- d. Autonomous driving safety technology evaluation standards
- e. Autonomous driving service
- f. Social recognition on autonomous driving technology
- g. Others (Specify in detail.)

4-4. Which of the following technologies and relevant policies for the commercialization of autonomous driving do you think is the most appropriate subject for joint cooperation among Korea, China and Japan? Select one or two from the following options. ( ) ( )

- a. Autonomous driving sensor technology
- b. Autonomous driving algorithm technology
- c. Autonomous driving laws and institutions
- d. Autonomous driving safety technology evaluation standards
- e. Autonomous driving service
- f. Social recognition on autonomous driving technology
- g. Others (Specify in detail.)

5. Please describe any autonomous driving technology areas not included in 1~ 3 above that you think joint efforts or information exchange among Korea, China and Japan are necessary.

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### III. Personal Information

1. Have you participated in some form of technological cooperation with Korea, China, or Japan during the last five years? If yes, how many times?

If you are from China, please fill in the blanks below.

- A. Japan: ( ) case(s)
- B. Korea: ( ) case(s)
- C. China-Japan-Korea: ( ) case(s)

If you are from Japan, please fill in the blanks below.

- A. China: ( ) case(s)
- B. Korea: ( ) case(s)
- C. China-Japan-Korea: ( ) case(s)

If you are from Korea, please fill in the blanks below.

- A. China: ( ) case(s)



B. Japan: (     ) case(s)

C. China-Japan-Korea: (     ) case(s)

2. Your profession (     )

A. Professor

B. Researcher

C. Business employer or employee

D. Government official or public sector employee

E. Other:

3. Your area of specialty (     )

A. Architectural, Civil and Environmental Engineering

B. Mechanical Engineering

C. Technology, Management and Policy

D. Material and Energy Engineering

E. Electrical and Electronic Engineering

F. Chemical and Biological Engineering

G. Computer Science and Engineering

H. Biomedical Engineering

Other:

4. How long have you been engaged in your research field? (     )

A. Less than 5 years

B. 5-10 years

C. 10-20 years

D. More than 20 years

5. Your age (     )

A. 35-49

B. 50-59

C. 60-69

D. 70-79

E. 80 and older

\*\* If you have any suggestions or feedback on this survey, please comment below.

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Thank you very much for your input. Your information will not be used for any purpose apart from this survey.