

# 1st. Asia Automobile Institute Summit

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## ***Introduction of JARI***

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# 1. Outline

## 1) JARI vision in 2020

JARI will challenge advanced research, and contribute to motorized society in the world.

## 2) Number of personnel: 351 (As of April 1, 2012)

## 3) Business scale in 2011

- Income: 77 million US dollars (6.1billion JPY)
- Number of test & research projects: 377 in total
  - Public projects: 58      JAMA projects: 69
  - Private projects: 225      Independent research projects: 25

## 4) Publications and presentations

- Domestic: 129
- International: 24

## 2. Organization



### 3. History of JARI

- Apr. 1961: Former Automobile High-Speed Proving Ground Foundation founded
- Oct. 1964: Former high-speed oval testing track completed and entered service
- Apr. 1969: Original institute reorganized into the Japan Automobile Research Institute (JARI)
- Aug. 1976: Japan Electric Vehicle Association (JEVA) founded
- Sep. 1979: Association of Electronic Technology for Automotive Traffic and Driving (JSK) founded
- Jul. 2003: Three organizations integrated to form the new JARI
  - JEVA: Japan Electric Vehicle Association
  - JSK: Association of Electronic Technology for Automotive Traffic and Driving
  - JARI: Japan Automobile Research Institute
- Oct. 2005: Shirosato Test Center completed and entered service  
(Location: Shirosato town, Ibaraki Prefecture)

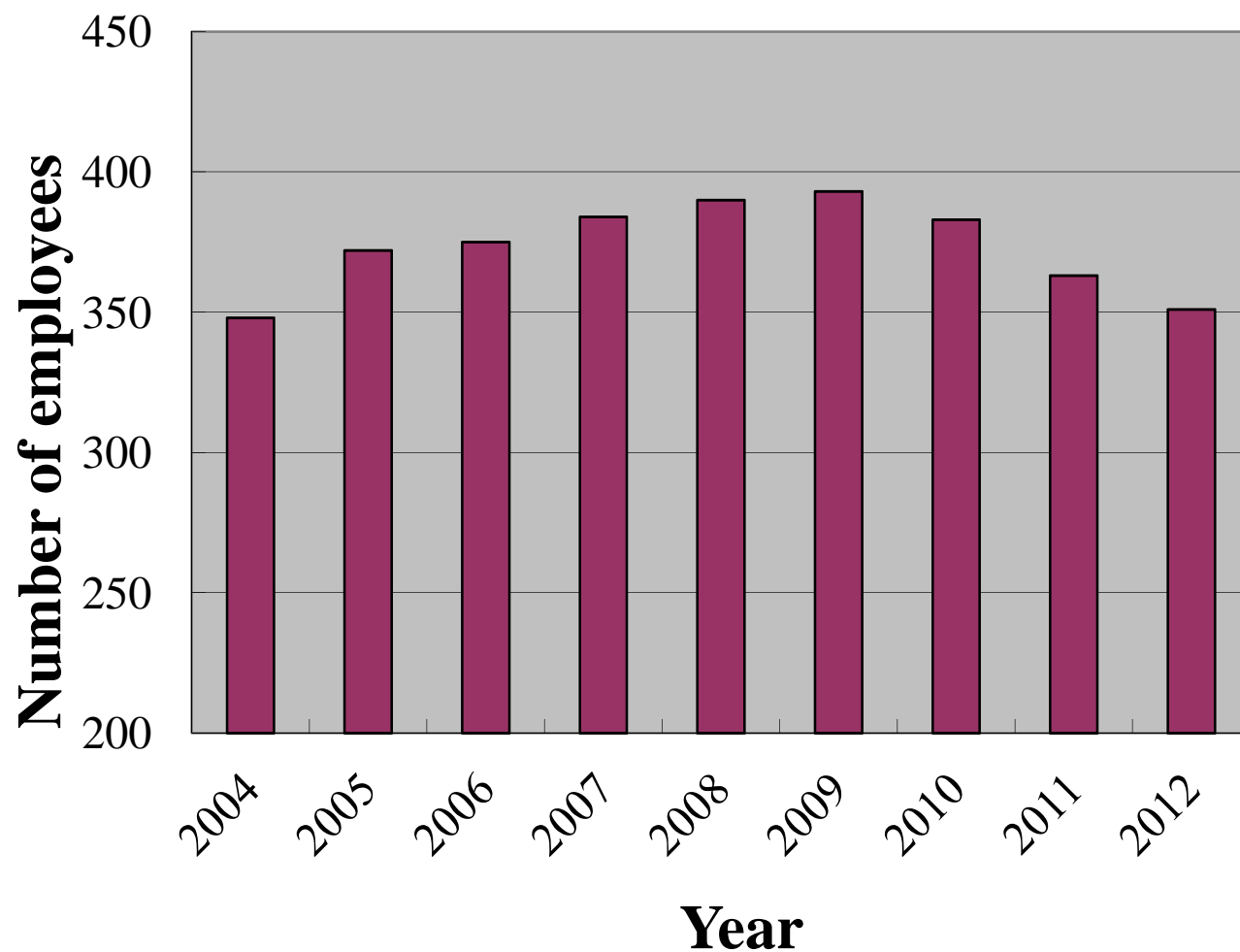


# ***Completion of automobile high-speed proving ground in 1961***

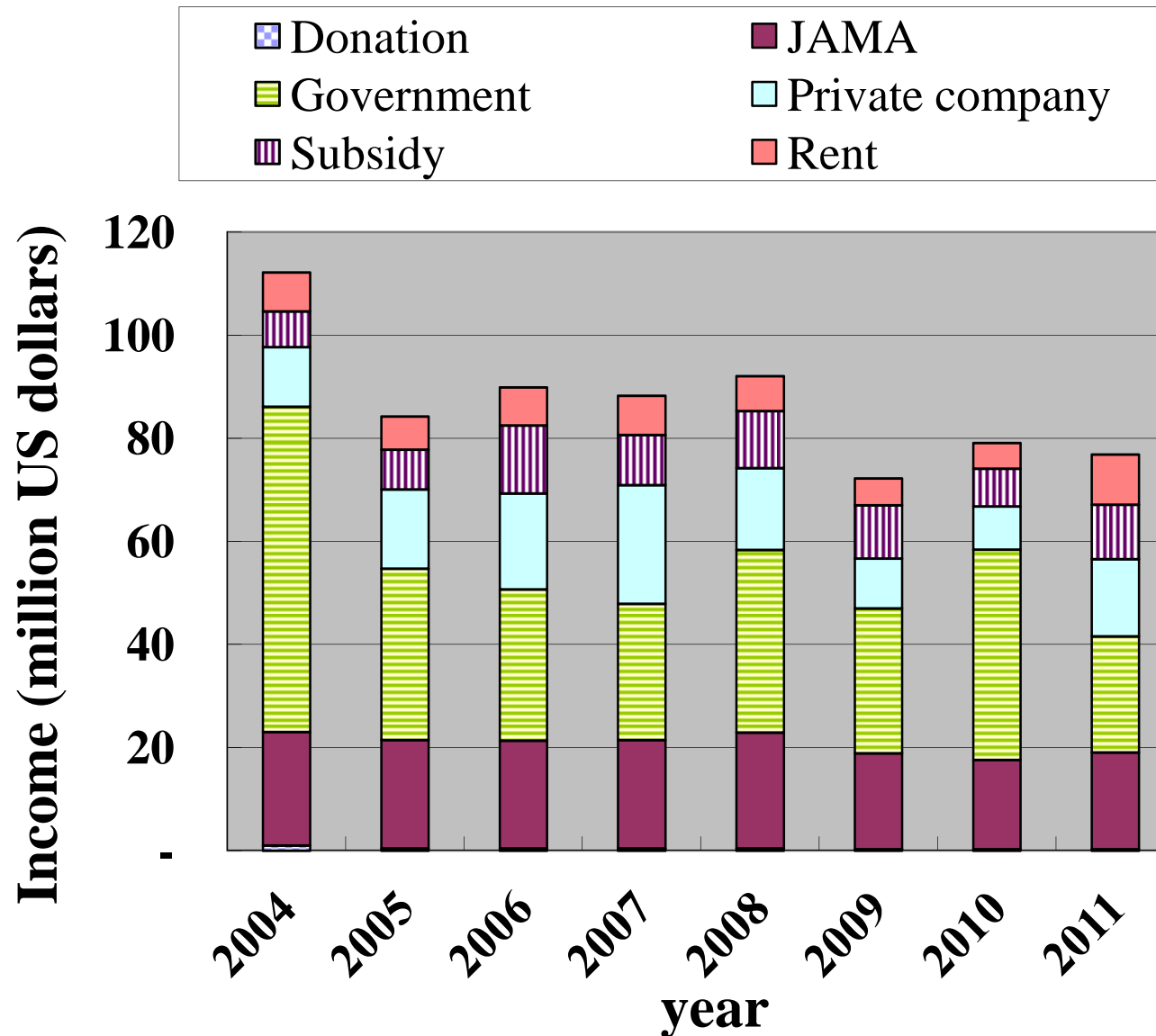


The high-speed proving ground allowed Japanese car manufacturers to begin experiments into speed, noise, stability, etc., which led to the beginning of motorization in Japan.

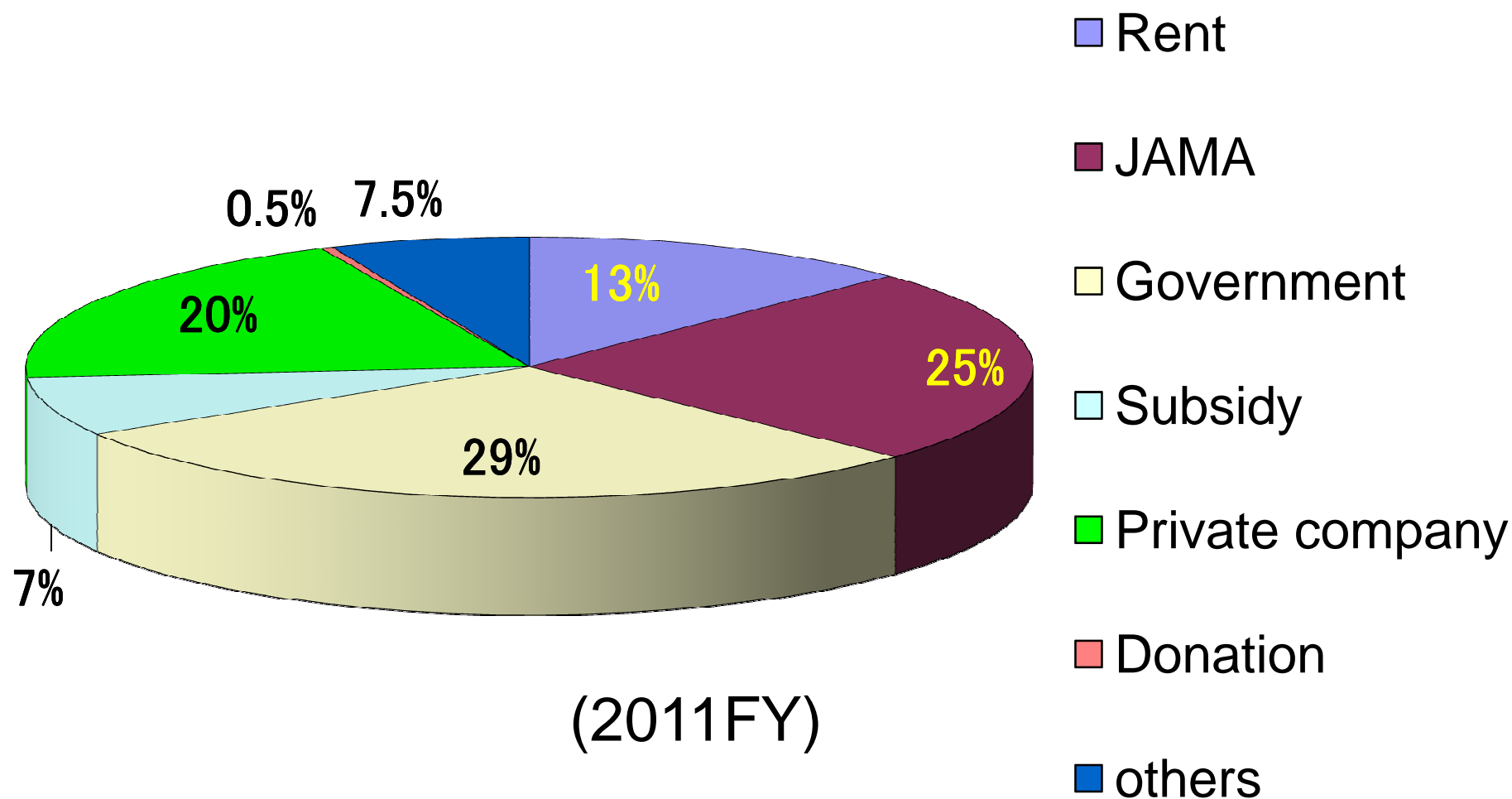
## 4. Trends in the number of employees



## 5. Changes in Income



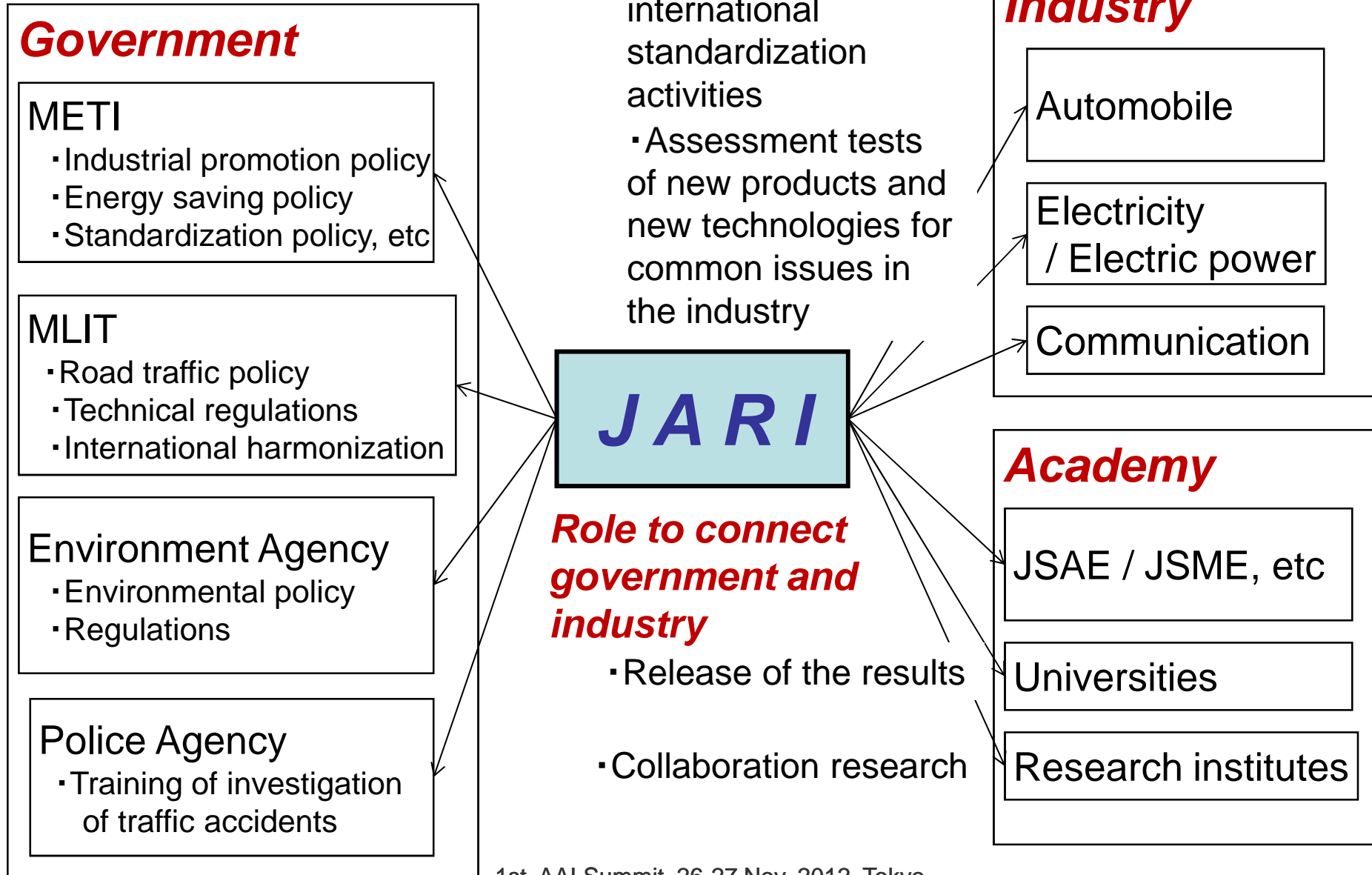
## 6. *Percentage of Each Customer for Research Activity Income*





# 7. Role of JARI

- Contribution to policy making



## 8. *Contribution to government*



### Contribution to policy making

Research results with high reliability concerning vehicle technology have been provided by JARI as a neutral organization.

- 1) Influence of diesel emissions on carcinogenicity
- 2) Environmental prediction by atmospheric simulation
- 3) Fuel consumption evaluation methods of heavy-duty diesel trucks and buses
- 4) Fuel consumption evaluation methods of four-wheel drive vehicles and HEVs
- 5) Standardization of fuel cells
- 6) Evaluation methods of automotive safety
- 7) Safety evaluation methods of life support robots

## 9. *Contribution to automotive industry*

Common problem solutions for the automotive industry

Technical standards and guidelines concerning efficiency improvement, standardization, and test methods are decided.

- 1) Promotion of Global Technical Regulations (GTR) of examination methods for emission, noise, safety, etc.
- 2) Impact biomechanics research
- 3) Research of drive recorders
- 4) Fuel quality investigation
- 5) Development and proposal of examination methods for new technology and tightening regulations

# 10. Cooperation with countries in Asia

- Technological exchanges
- Holding seminars
- Round table discussions
- Training business



Round table



Seminar in Indonesia

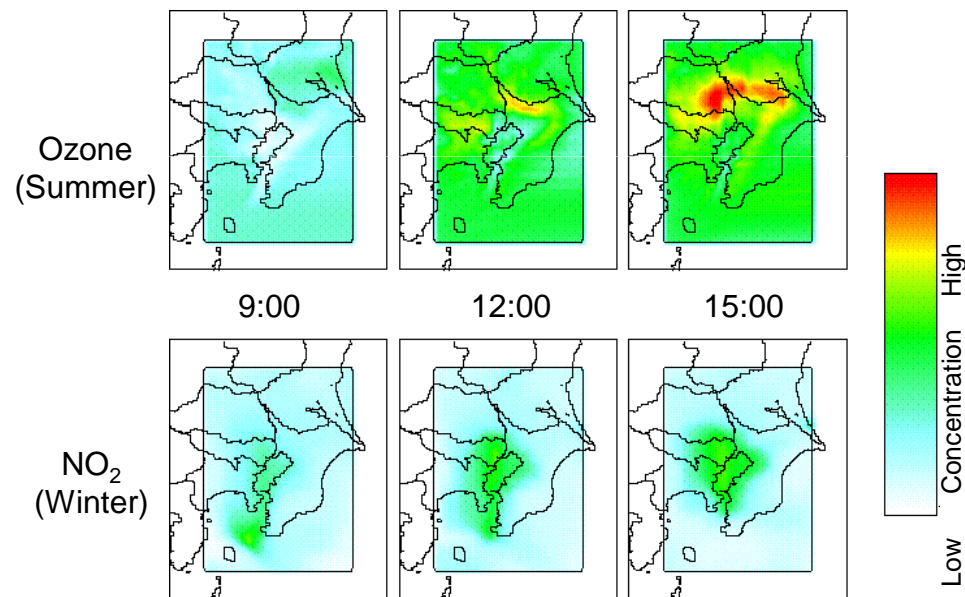


JICA Group Training

# 11. Research and testing activities

## ① Environment / Energy

- New fuel
- Hazardous air pollutants
- Health effects
- Air quality / Environmental simulations
- Advanced power train systems
- Ultra-fine particles
- Road traffic noise



Simulated distributions of regional ozone (O<sub>3</sub>) and nitrogen dioxide (NO<sub>2</sub>)



Exhaust gas emission test



## ② *Hydrogen & Fuel Cells / Fuel Cell Vehicles, Hybrid Electric Vehicles, Battery Electric Vehicles*

- Performance & safety evaluation
- Standardization
- Highly efficient batteries



Hydrogen and Fuel Cell Vehicle Safety Evaluation Test Facility (Hy-SEF)



JARI standard cell

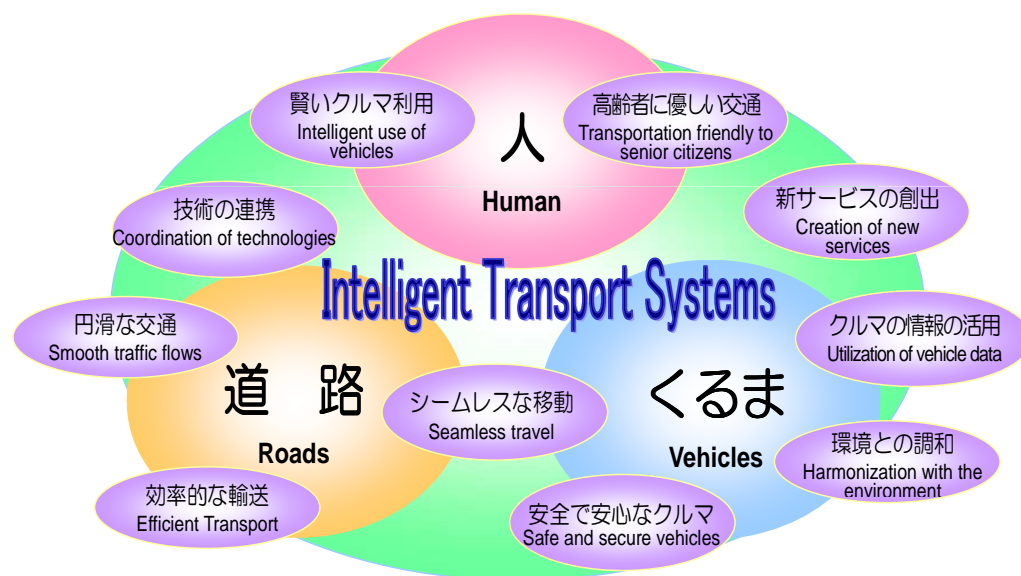


Vehicle fire testing

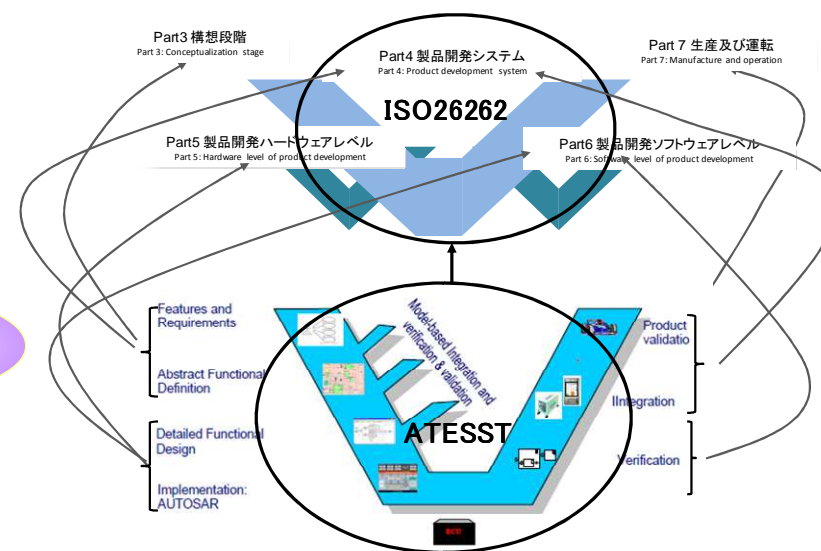


### ③ ITS

- Energy ITS
- Smart vehicle network
- Probe-car information system
- Base strengthening of electronic technology
- Standardization
- ISO26262



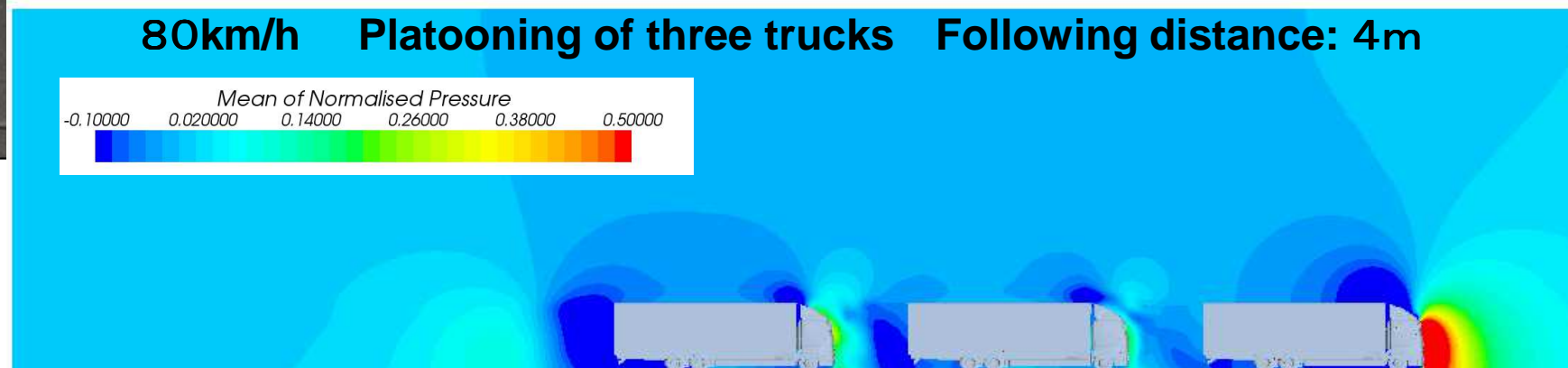
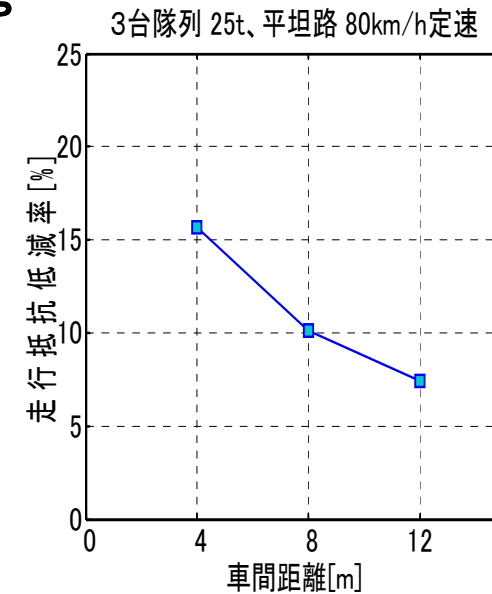
Areas of ITS research at JARI



Development scenario for ISO 26262-compliant electronic systems

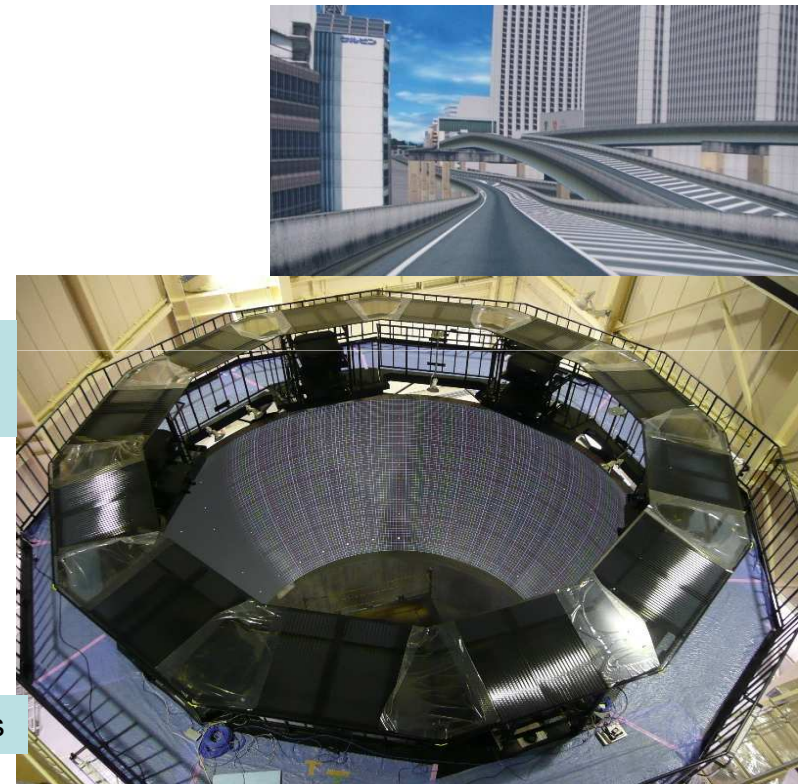
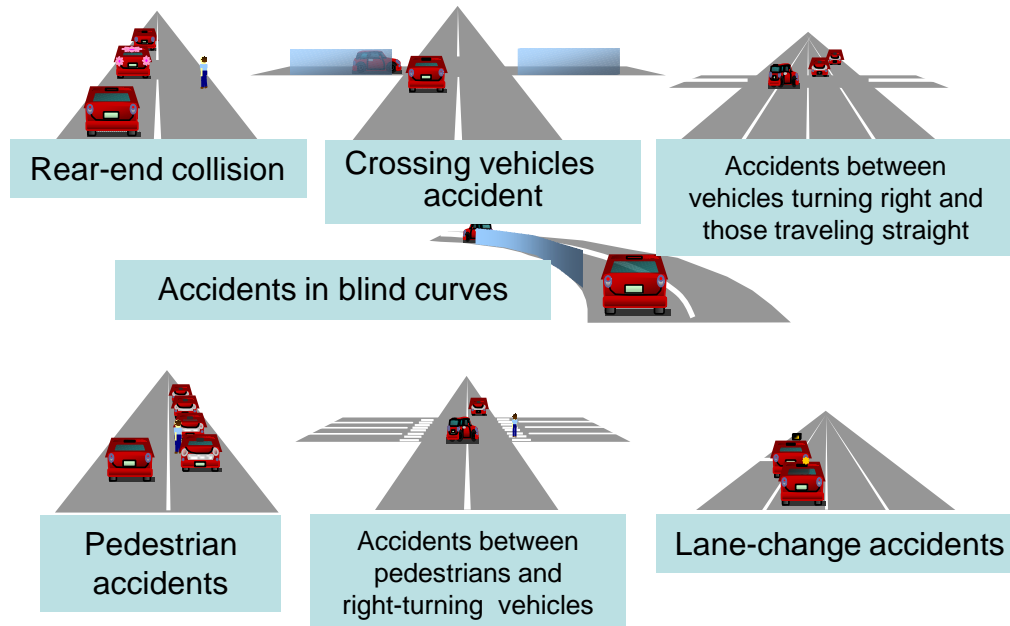
# Development of energy-saving ITS technologies

## R&D for autonomous driving and platooning



## ④ Active safety

- Driver support system
- Elderly drivers
- Vehicle dynamics
- Human machine interface
- Lighting / Visibility



Driving simulator

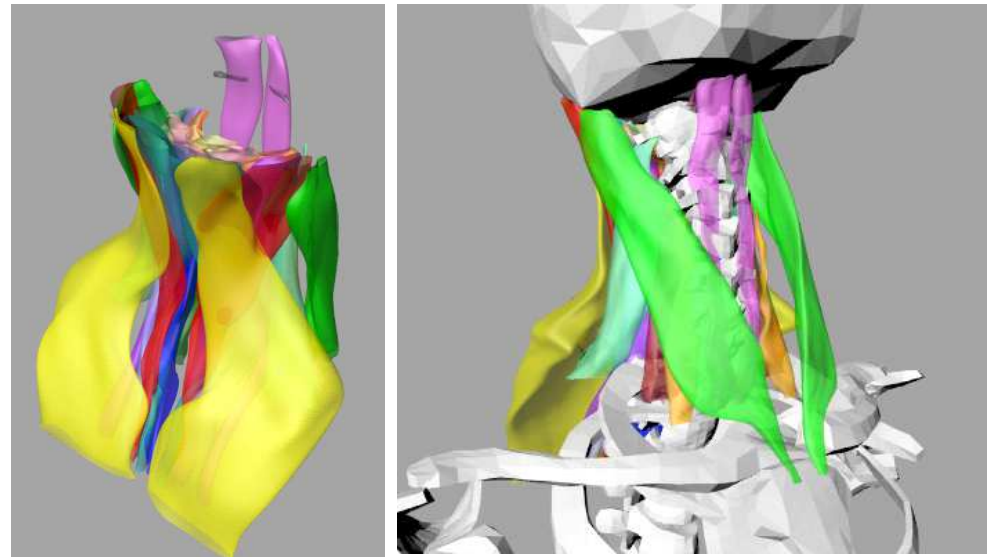
## ⑤ *Crash safety*

- Occupant protection
- Impact biomechanics
- Pedestrian protection
- Traffic accident analysis



### Collision Test

(Upper : Frontal crash, Lower : Side impact crash)



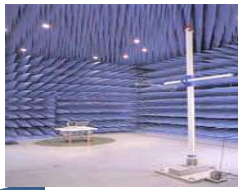
### Cervical muscle model for human neck



## ⑥ Safety evaluation of life support robots

### The overall approach of robot safety verification

- Execution of tests & research
- Installation of test organization for verification
- Installation of certifying organization
- Promotion of standardization and investigation



Project began in 2009

A center for robot safety examination will be constructed in JARI in the future.

***Thank you for your attention!!***

**If you have any comments and questions,  
please feel free to contact me: Takeshi Ishiyama.**

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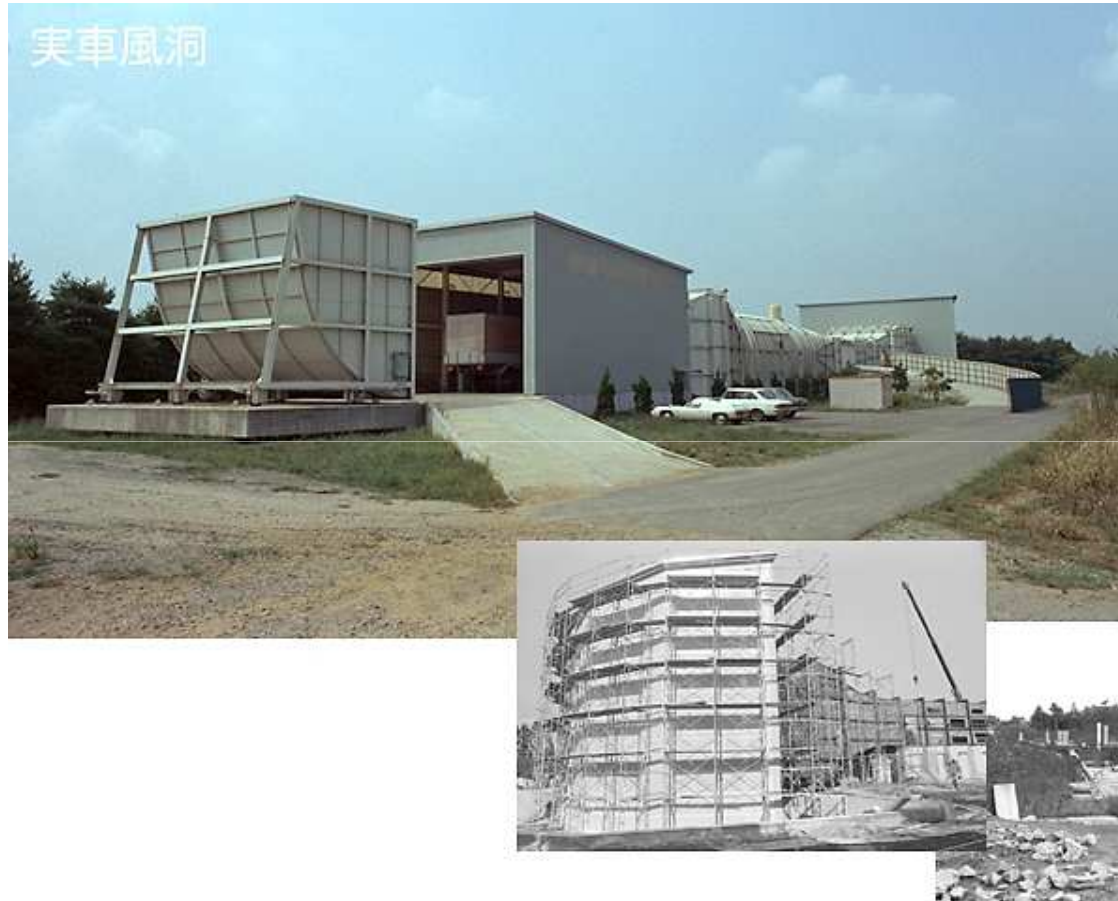


# *ESV collision experiment for the public* *in 1973*



- Reports on the result at an international conference in 1976.
- JARI came to be known internationally.

# ***Completion of wind tunnel for actual cars in 1976***



This wind tunnel was the pilot plant in Japan. For the first time, the automotive industry could collectively use such a facility.

# *Start of research for health effects in 1983*



Prompt work on health effect research of diesel exhaust emissions by tests using animals

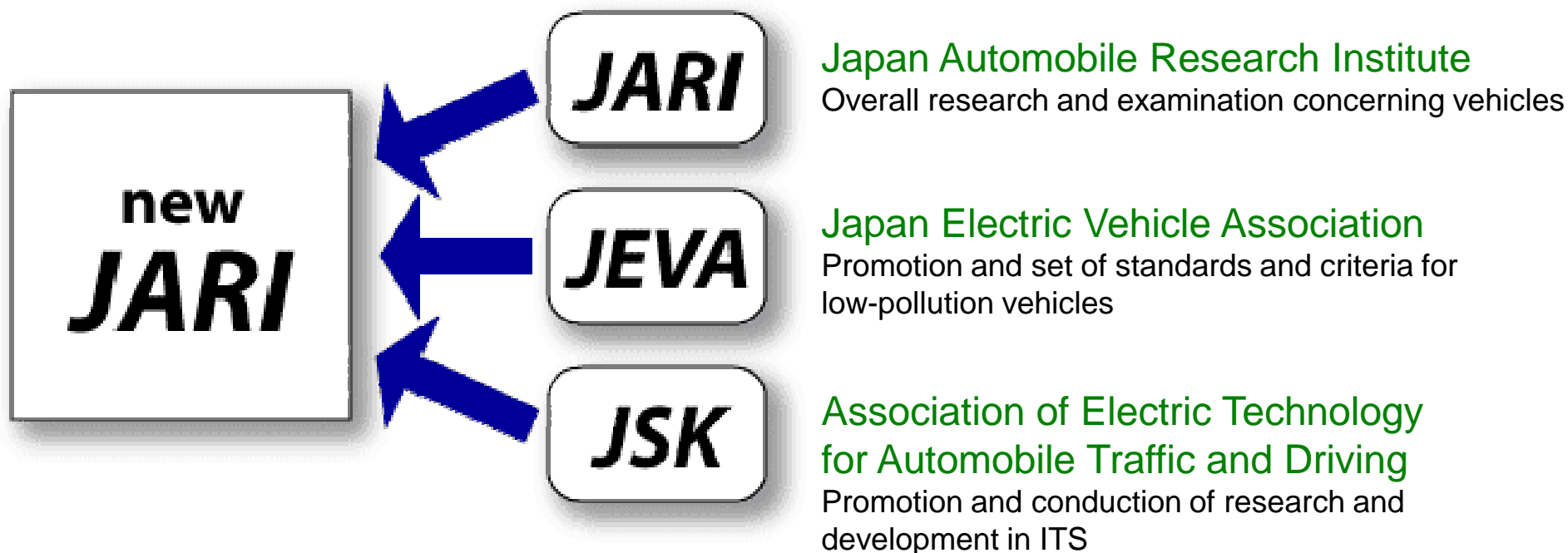


# *Development of ceramic gas turbine from 1990 to 1999*



Lead to the joint development of the advanced technology

# *The three organizations integrated to form the new JARI in July 2003*



# Shirosato Test Center

(Entered service: Oct. 2005)

