

# **2nd. Asia Automobile Institute Summit**

**25-26 November 2013, Bali**

## **Introduction of JARI**

**Mitsuo Yonezawa**

**General Manager**

**Global Networking**

**Japan Automobile Research Institute**



# Today's Agenda



- 1. JARI's Location, Outline, Organization and History**
- 2. JARI's Role & Responsibility**
- 3. Research and Testing Activities**
- 4. The First AAI Summit's Review**

# Location



**Kanto region, Japan**



**Shirosato Test Center**



**Tsukuba Research Facility**

# Tsukuba Research Facility



Laboratory for heavy-duty ultra-low emission vehicles

Laboratories for EV, FC and Batteries

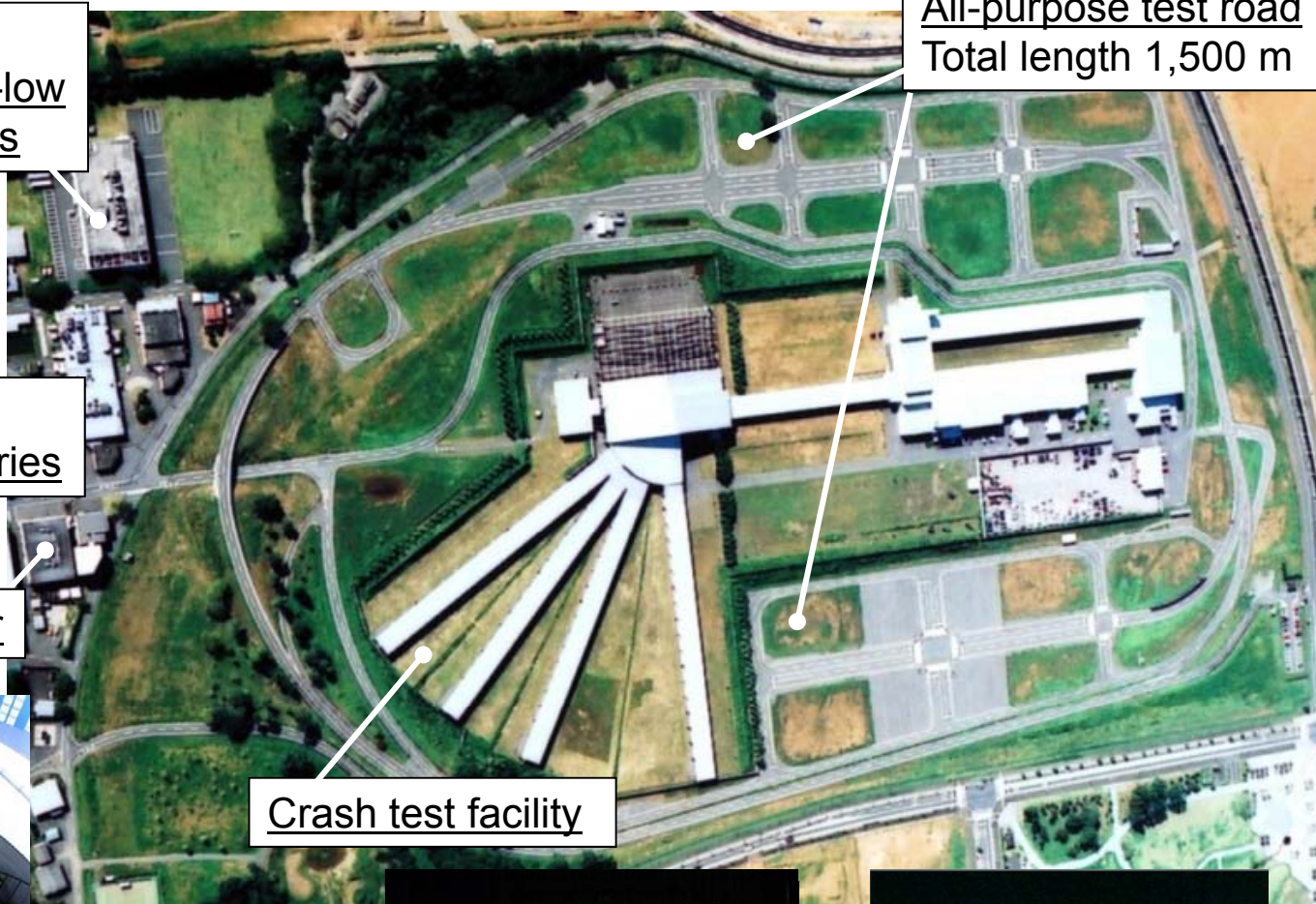
Driving simulator



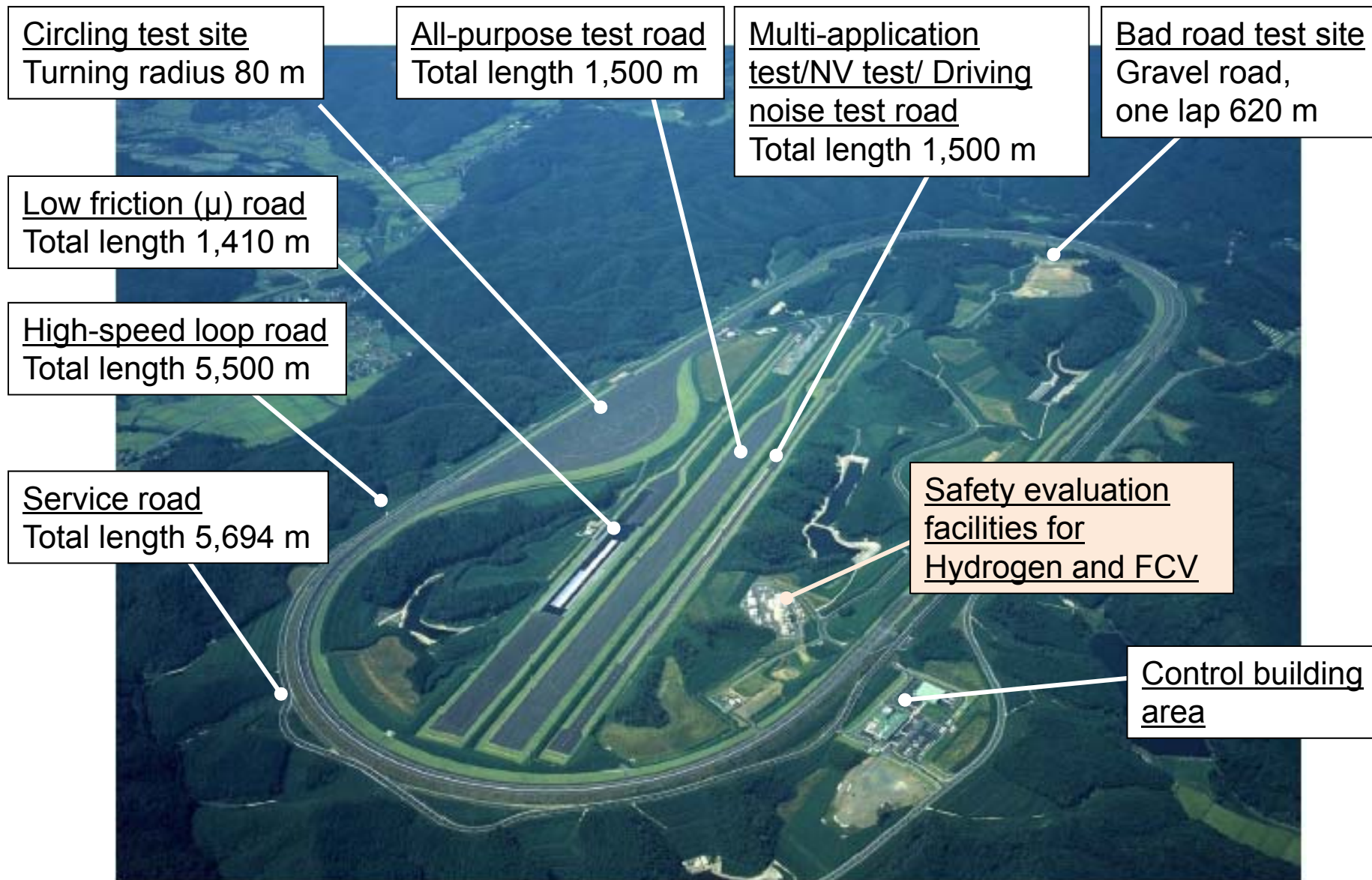
Crash test facility



All-purpose test road  
Total length 1,500 m



# Shirosato Test Center



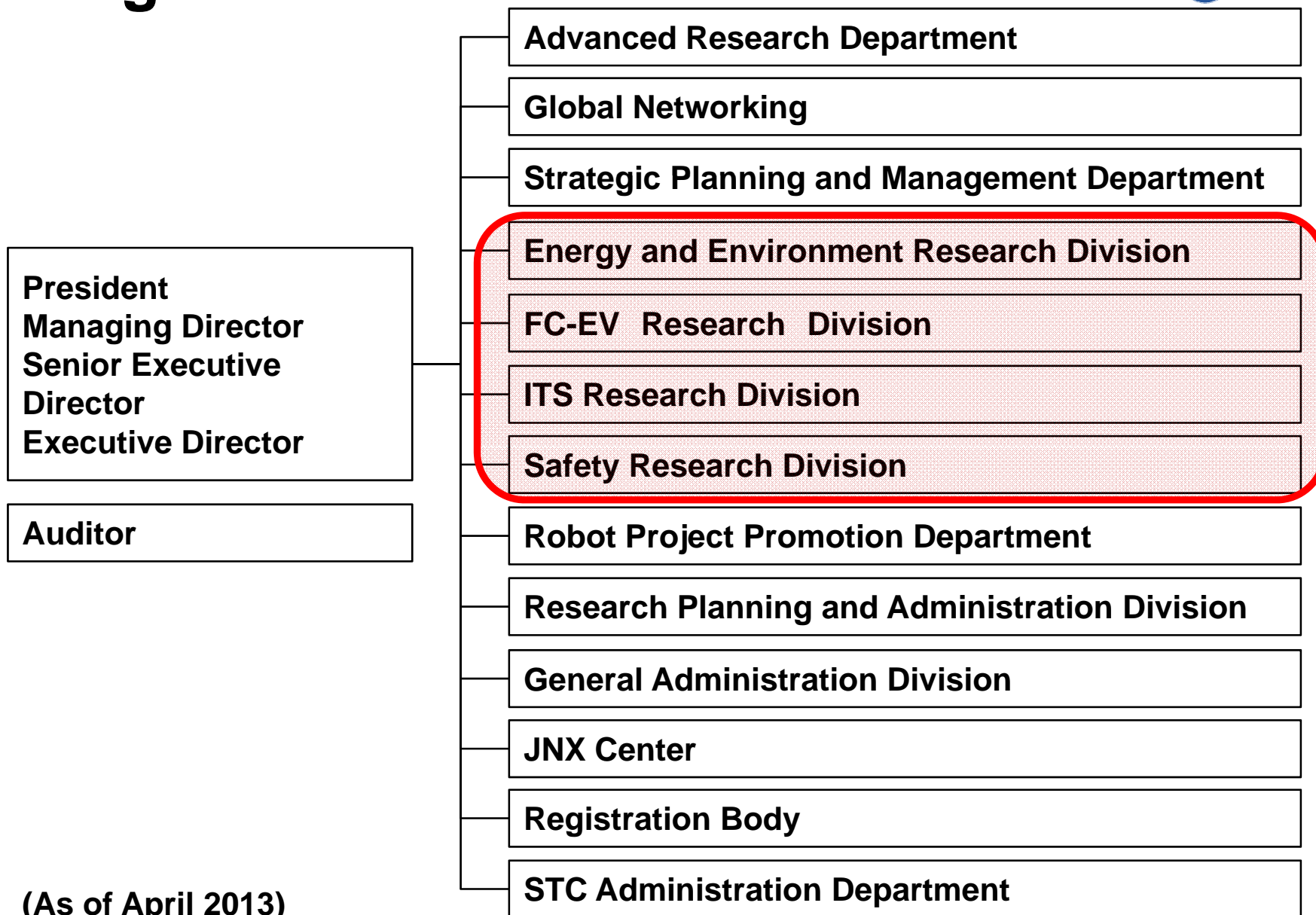
Total area: 302 ha

# Outline



- ✓ **JARI vision in 2020**  
**JARI will challenge advanced research, and contribute to motorized society in the world.**
  
- ✓ **Number of personnel: 345** (As of April 1, 2013)  
\*141 Researchers, including 47 PhD
  
- ✓ **Business scale in 2012**
  - **Income: USD 72 million** (JPY 7.2 billion, USD in JPY=100)
  - **Number of test & research projects: 389 in total**  
Public projects: 56, JAMA\* projects: 73  
\*Japan Automobile Manufactures Association  
Private projects: 237, Independent research projects: 23
  
- ✓ **Publications and presentations in 2012**
  - **Domestic: 127**
  - **International: 48**

# Organization



(As of April 2013)

# History



- ✓ **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 unified 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**

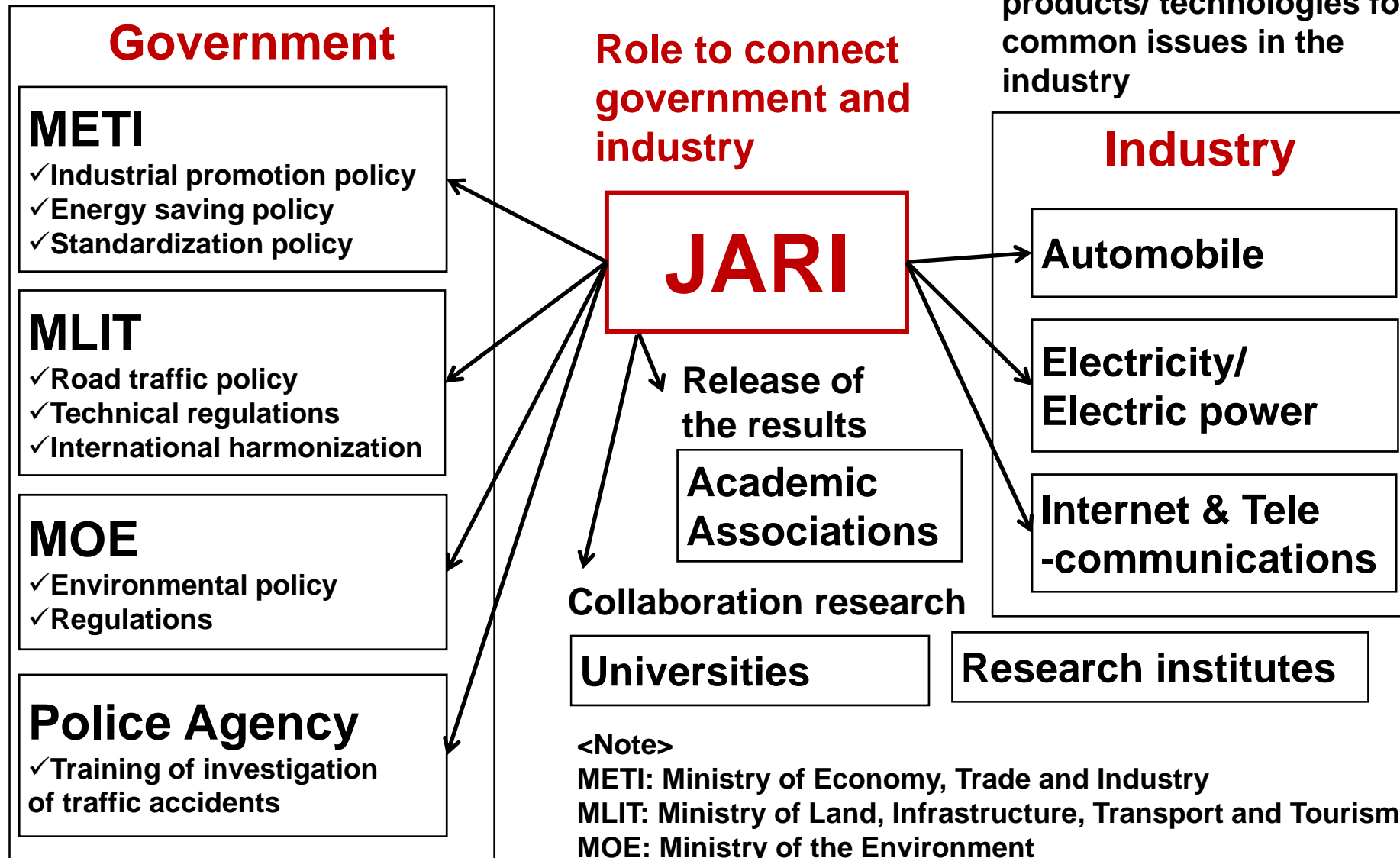


# JARI's Role & Responsibility - 1/4



Contribution to policy making

Assessment tests of new products/ technologies for common issues in the industry



# JARI's Role & Responsibility - 2/4



**For Government,**

**contribution to policy making with high reliability  
research results concerning vehicle technology:**

- 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 Hybrid Electric Vehicles
- 5) Standardization of fuel cells, EV, batteries and related issues
- 6) Evaluation methods of automotive safety
- 7) Safety evaluation methods of life support robots

# JARI's Role & Responsibility - 3/4



For automotive industries,  
**contribution to common problem solutions** such as  
technical standards, standardization, and test  
methods:

- 1) Promotion of Global Technical Regulations (GTR) of examination methods for emission, noise, safety, FCV, 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

# JARI's Role & Responsibility - 4/4



**With Asian countries**, JARI has been cooperating through the following activities:



Asia Automobile Institute Summit



Round table



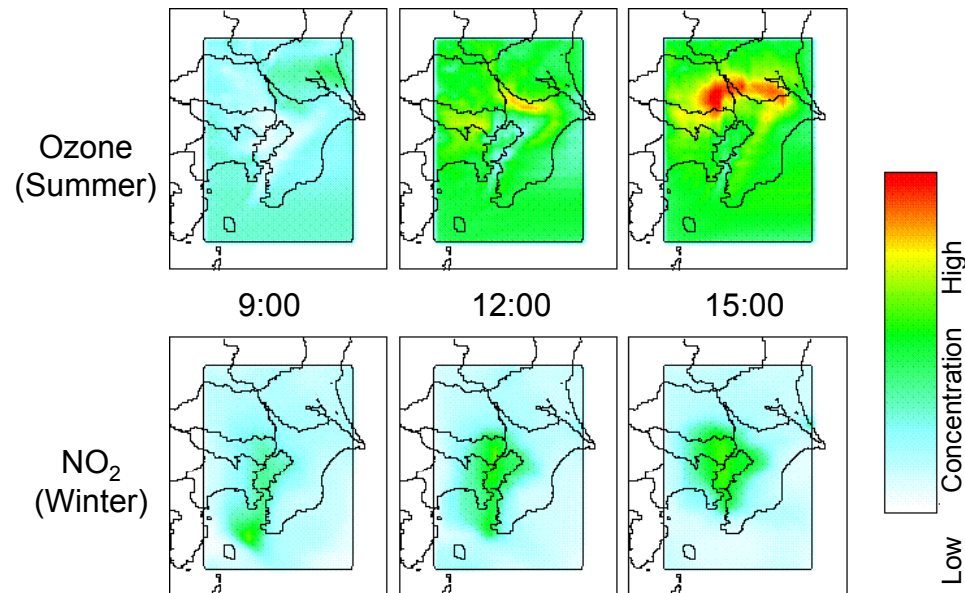
Seminar in Indonesia



JICA Group Training

## Environment and Energy

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



**Exhaust gas emission test**

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

# Research and Testing Activities - 2/7

## 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)**



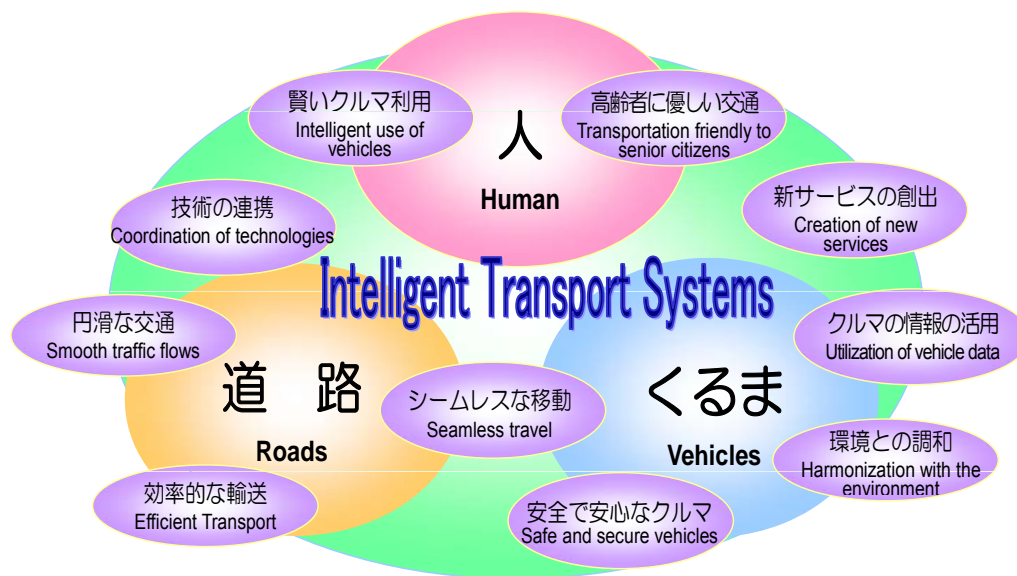
**JARI standard cell**



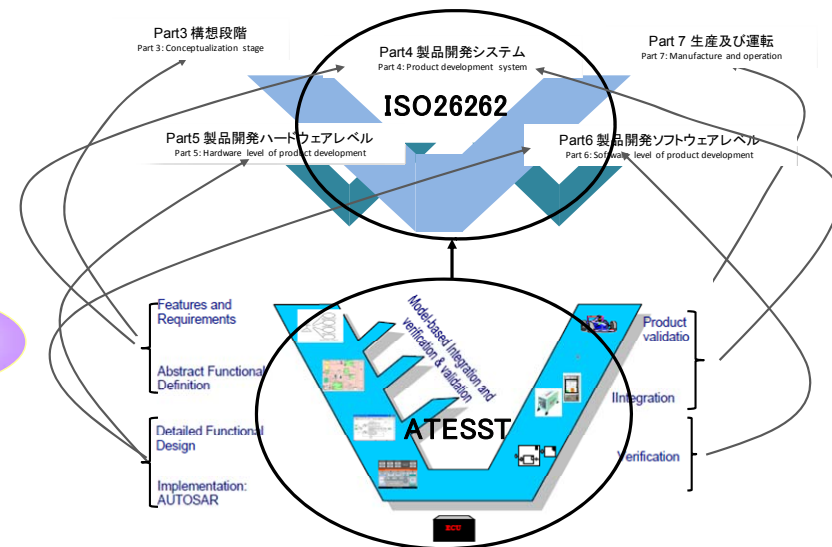
**Vehicle fire testing**

## ITS: Intelligent Transport Systems

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



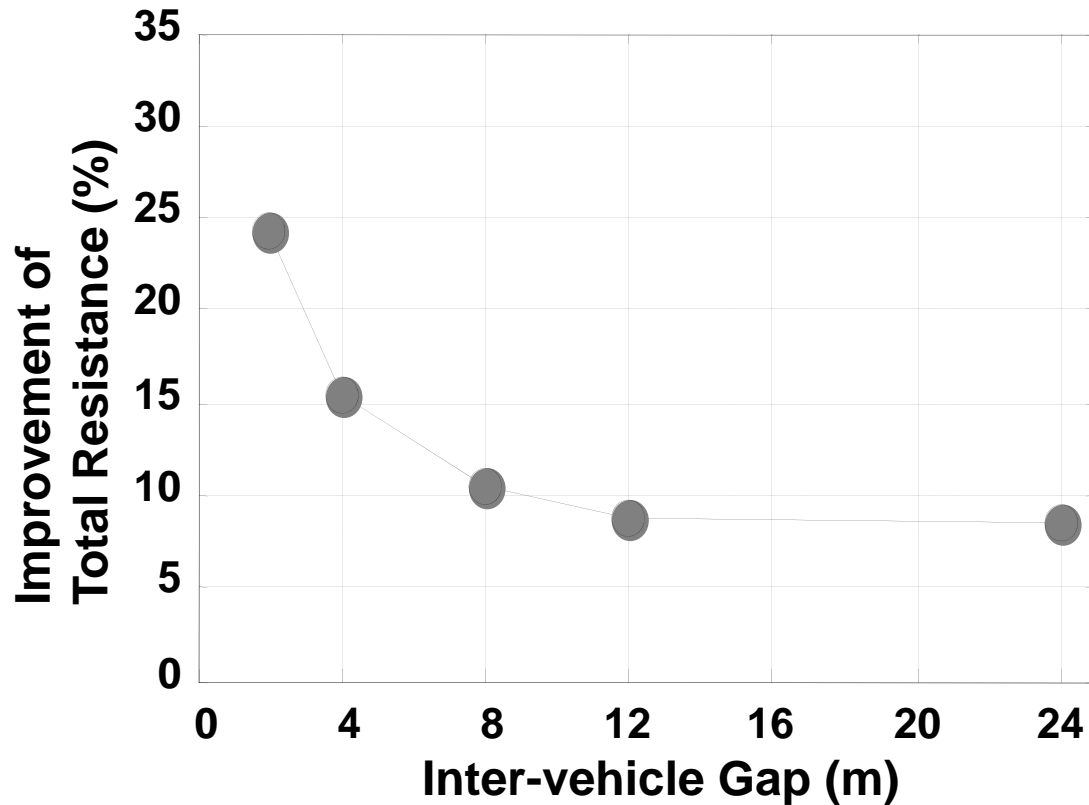
Areas of ITS research at JARI



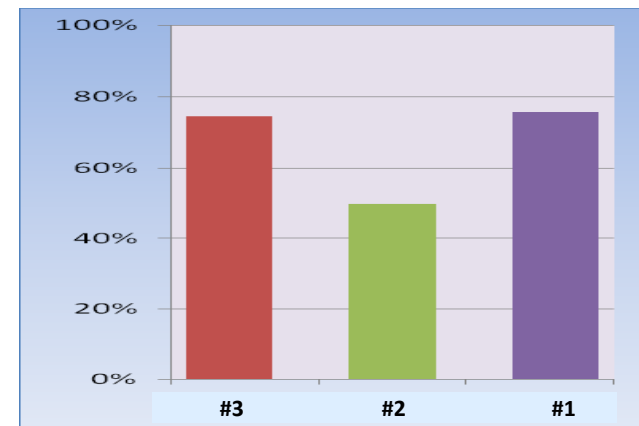
Development scenario for ISO 26262-compliant electronic systems

## Development of energy-saving ITS technologies

- R&D for autonomous driving and platooning



**Air Flow Simulation Result  
with 3 Trucks' Platooning**  
Condition: 80 km/h, Inter-vehicle gap: 4m-12m



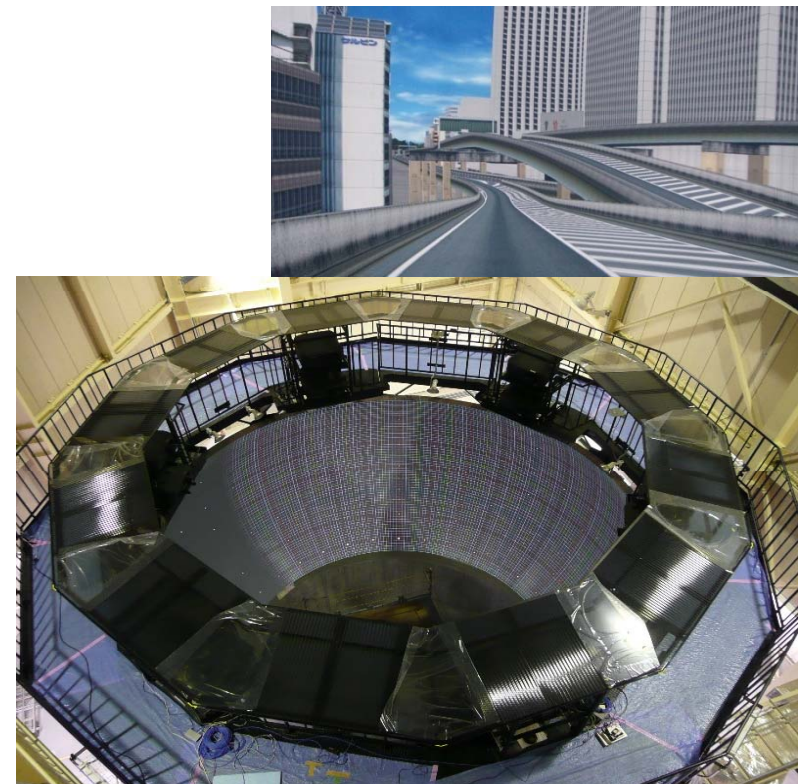
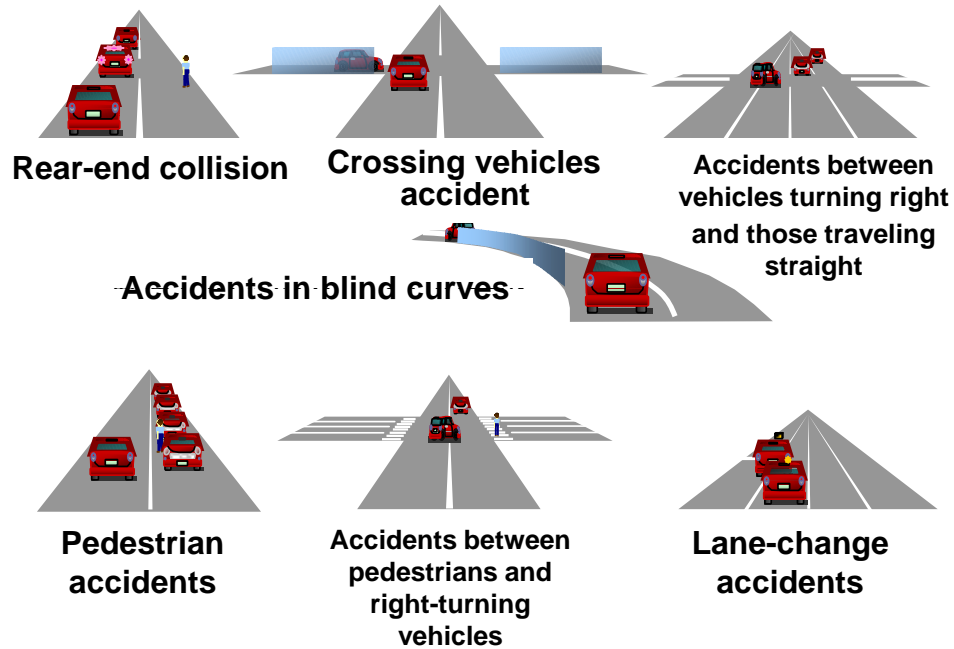
**Platooning Truck's CD Value  
vs. Stand-alone Truck: 100%**



# Research and Testing Activities - 5/7

## Active safety

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



Driving simulator

# Research and testing activities - 6/7

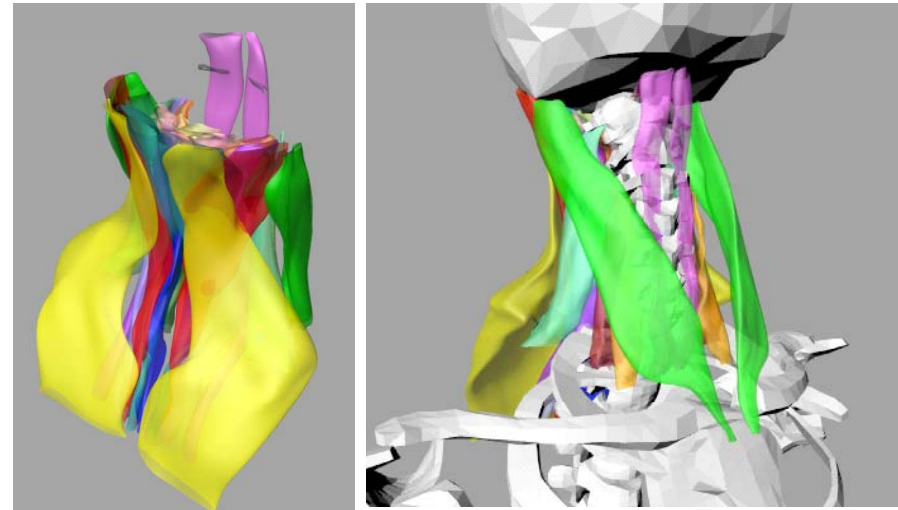
## Crash safety

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



### Collision Test

Upper: Frontal crash,  
Lower: Side impact crash

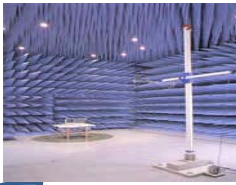


### Cervical muscle model for human neck

## 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

# The First AAI Summit's Review - 1/3



- ✓ Held in **Tokyo** on **26-27 November 2012**.
- ✓ Attendees (Total **36**):
  - **15** researchers from four countries: **India, Indonesia, Malaysia and Thailand**
  - President, 6 Directors and 14 managers from JARI
- ✓ Agenda:
  - Plenary/ Management/ Technical Session
  - Satisfaction rate of above researchers: **4.1 to 4.7 out of 5.0**.
- ✓ All participants agreed:
  - Continue to hold a summit **every year**.
  - #2 will be held **in Indonesia** in the autumn of 2013.
  - JARI members will support the Indonesian secretariat.



# The First AAI Summit's Review - 2/3



2nd. AAI Summit, 25-26 Nov. 2013, Bali

# The First AAI Summit's Review - 3/3



2nd. AAI Summit, 25-26 Nov. 2013, Bali

# Thank you for your attention.

**If you have any comments and questions,  
please feel free to contact Mr. Mitsuo Yonezawa.**

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