



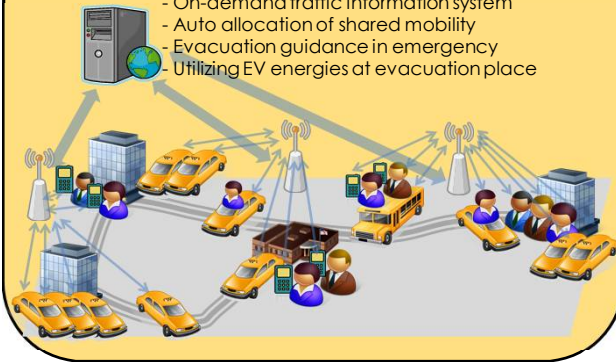
# Next-Generation “Regional” Transport using Automated Driving Technology and Special Ward for Field Practice

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## For Social Contribution

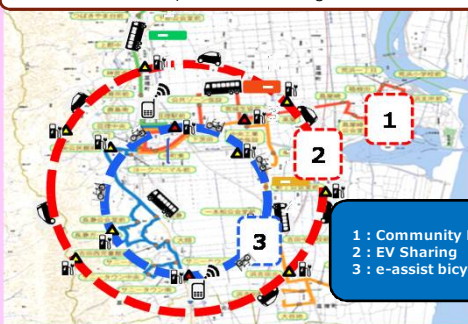
### Aobayama Campus Field Experiment

- Visualization of campus bus & EV locations
- On-demand traffic information system
- Auto allocation of shared mobility
- Evacuation guidance in emergency
- Utilizing EV energies at evacuation place



### Social Implementation to Tohoku Disaster Area

- Transport System supplementing existing community bus
- Multi-mode mobility with evacuation guidance function



- 1 : Community Bus
- 2 : EV Sharing
- 3 : e-assist bicycle

### Next-Generation Advanced Mobility System Research Group

Prototype Evaluation Base for Next-Generation Vehicles

### Miyagi Reconstruction Park NICHe TAGAJYO BASE

In the Sony Corporation Sendai Technology Center

- Early operation restarting of the suffered companies
- Creation of new industry and employments by advanced technologies

### Cross-cutting Integration for Advanced Technology Development



- EV Bus
- Wireless Charging
- In-Wheel Motor
- Head-Up Display
- Omnidirectional Camera



- Micro EV
- Autonomous Vehicle
- Lithium-ion Capacitor EV
- Dual-Mode EV (for emergency)



- Driving Simulator
- Traffic Simulation
- Virtual Space
- Driver Sensing

### Region-based Collaboration of Industry-Academia-Government

- Toyota Motor East Japan, Inc.  
Outdoor Un-manned Vehicle  
Next-Generation Distribution

- Kudo Electronics Corporation

Motor, Power Electronics

- Hikichiseiko Co.,Ltd.

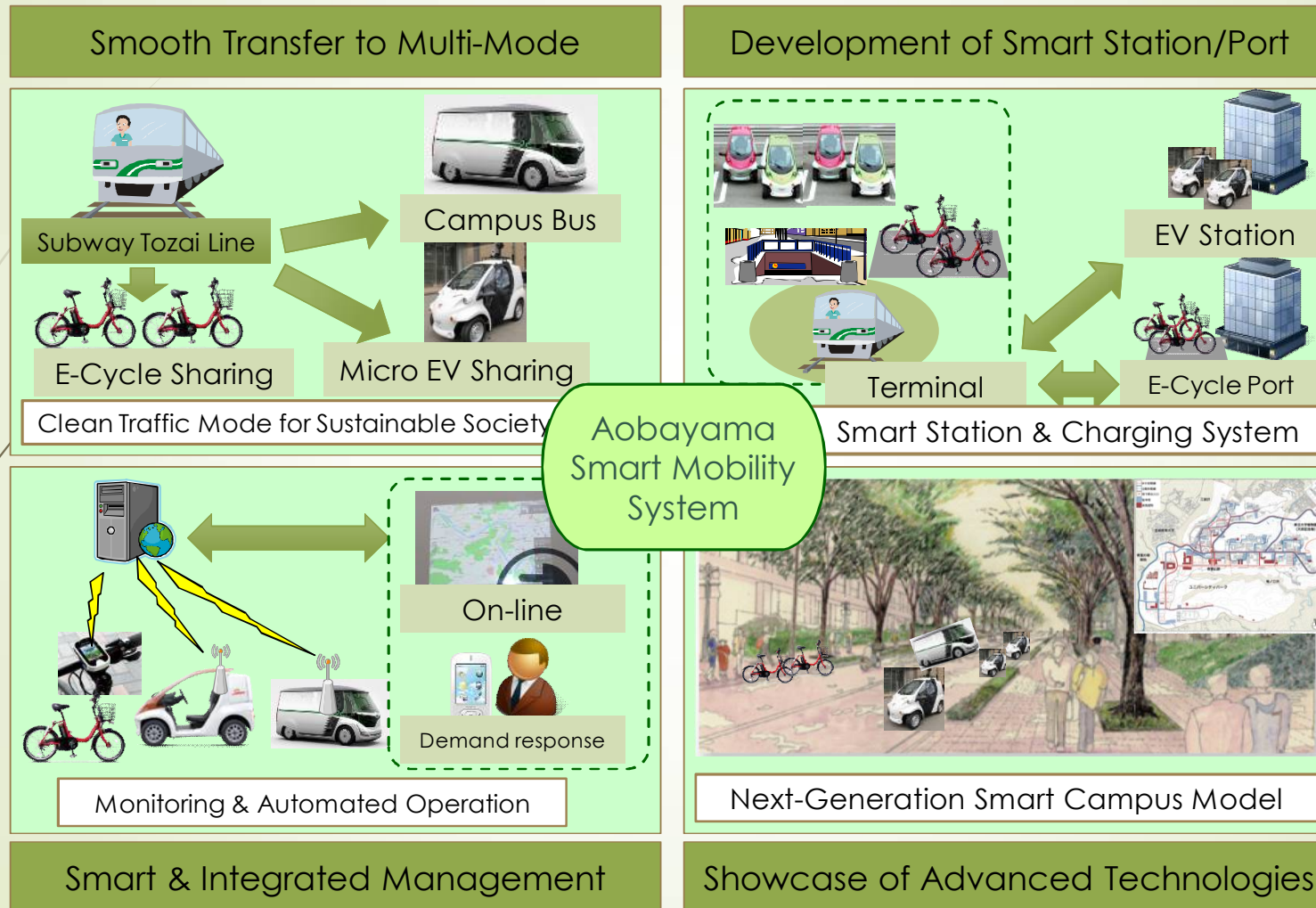
Wireless Charging Station

- Murakami Co.,Ltd.

EV Design & Manufacturing

under collaboration with  
Ministries, Prefectures, Cities & Towns

# Aobayama Campus Smart Mobility Vision (Planning)





# MEXT Tohoku reconstruction Next-Generation Energy R&D Project (2012-2016) "Creation of Energy-Mobility Integrated Management Systems (EMIMS)"



## Inspections inside and outside of the country to Miyagi Reconstruction Park (Tagajo city)



Shinzo Abe, Prime Minister  
(Dec. 2013)



T. Nemoto, Minister of  
Reconstruction Agency  
(Sep. 2013)



Shinziro Koizumi, Reconstruction  
Parliamentary Secretary  
(Aug. 2014)



Sadayuki Sakakibara,  
Chairman of Keidanren  
(Jul. 2014)



Shoichiro Toyota,  
President Emeritus of Toyota Motors  
(Nov. 2014)



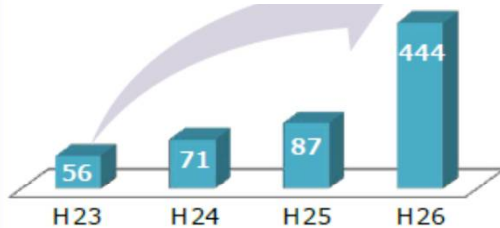
Mali Republic (Africa)  
(May, 2014)

## Sendai, Miyagi

## Social Innovation Creation Special Ward

### - Reformation Base for Promotion of Woman Activities & Social Business -

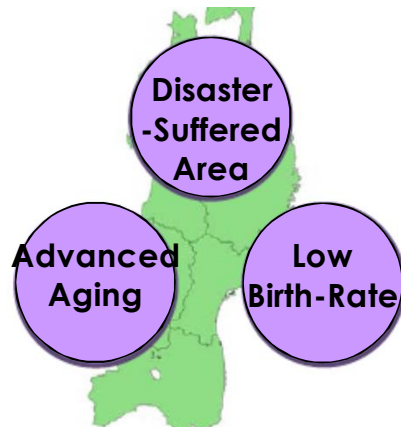
< Surroundings of Sendai city >  
Increasing women entrepreneurs



Entrepreneur mind changes greatly after disaster

	To utilize skill	To contribute to society
Before	20.6%	16.5%
After	15.2%	23.7%
Young Entrepreneur	8.8%	31.5%

Tohoku region is  
“Advanced Problem Area”



### Promotion of Social Business

- Shorten NPO startup procedures to a half etc.



### Promotion of Woman Social Participation

- Locally limited nursery examination
- Nursery in urban park etc.



### Field Practice of Advanced Technologies

New Innovation Creation by Field Tests of Automated Driving with Tohoku University





## Advanced Technology Field Practice Special Ward :

"Creation of Aobayama Campus Next-Generation Advanced Mobility System Practice Field"

=> Authorized as "Sendai Social Innovation Creation Special Ward" (2015)

### ○Outline:

Field practice of advanced technologies as automated driving or UAV are executed in Aobayama campus. Utilizing new & existing campus as special ward widely open to active researchers, their realization and deregulation can be quickly proceeded.

UAV(Drone)



Automated Driving



Platooning, Remote Drive



Unmanned Vehicle



Stage 2:  
Practical Operation  
in Existing Campus  
as Special Ward

Regional New Mobility

Law Reform  
Deregulation

Wireless Charge

Stage 1:  
Field Practice in  
New Campus Area



Stage 0 (Lab):  
R&D in Academia or Industry  
(Ex. Miyagi Reconstruction Park)

Open to other  
R&D sectors

Stage 3 (Regional Implementation):  
Model Development to Surrounding  
Area (Island, Remote Area, etc.)

Modeling  
Dispatch

Infra Inspection



Disaster Resilience



### ○Contributions:

- Quicker realization of technologies
- Active deregulation
- Promotion of field test research
- Attraction of interests
- Dissemination to public
- More attractive campus etc.

# Advanced Mobility System Practice Field Plan

## Advanced Mobility System Practice Field (Open Practice Field / Demonstration Field)

### For Researcher :

- Hatchery / Nursery / Practice Field
- Utilize Closed Park / Open Road
- **Verification of Social Receptivity**
- Dissemination to Public
- Advanced Marketing
- R&D considering Practical Needs

### For Users & General People :

- Attraction of Advanced Technology, **Experience of "Near-Future"**
- Improvement of Understanding
- Creation of Near-Future Image
- Participation to Near-Future R&D
- **Human Resource Creation**

University Research

Industry

Government

Step.0 Virtual Lab (Simulator)  
(Tagajo DS + Traffic simulation)

Step.1 Closed Park  
(New Campus)  
(Non-public road, not mixed)

**Deregulation** **Law reform**

Step.2 Special Ward  
(Old Campus)  
(Public road, Mixed(partly))

Step.3 Surrounding Areas  
(Tohoku Area)  
(Remote Islands, Mountainous Areas)



Conventional  
closed R&D Field

Globally develop from Tohoku Area

### R&D Support

- **Practice Field Operation**  
**Real & Virtual Proving Ground**
- **Open Lab (PJ Space)**  
widely open to other sectors
- **MICE function (seminars)**  
**Public Relations**
- **Global Cooperation Hub**  
Tele-Conference,  
Travel Support, Accommodation

### Supporting Dissemination

- **Showcase & Demonstration**  
cooperate w/ top researchers
- **Correspondence to Inspection**
- **Human Resource Development**
- **Experience Lab**

### Incubation

- **Support Industry-Academic Collaboration**
- **Industrialization Support**
- **VC**



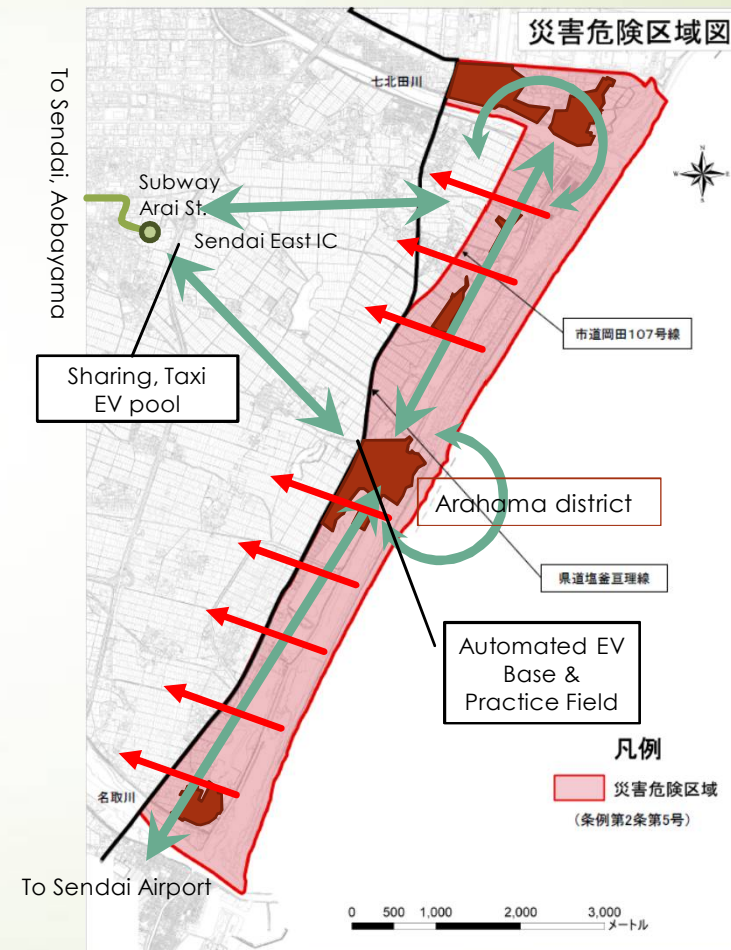
## Ex. Jeju Global Smart Grid Platform



# Field Practice in Disaster Damaged Area for Reconstruction

## Automated Driving Practice Field Plan

- Reform the coastal disaster-damaged area to a practice field for automated driving to solve problems of regional public transport
- Propose a model of “Last-One-Mile” new mobility system and demonstrate field practice
- Area : Arahama district (disaster-damaged area)
- Future Plan
  - Ordinary : Transport in area and connecting to transport hub  
(Last one mile, Robot taxi, etc.)  
=> making workable area in the district
  - In Emergency : Smooth evacuation to higher place
- Unmanned inspection, surveillance for evacuee  
(Utilize autonomous vehicle, drone, etc.)





## “Car-sharing” to create “community” (in Ishinomaki)

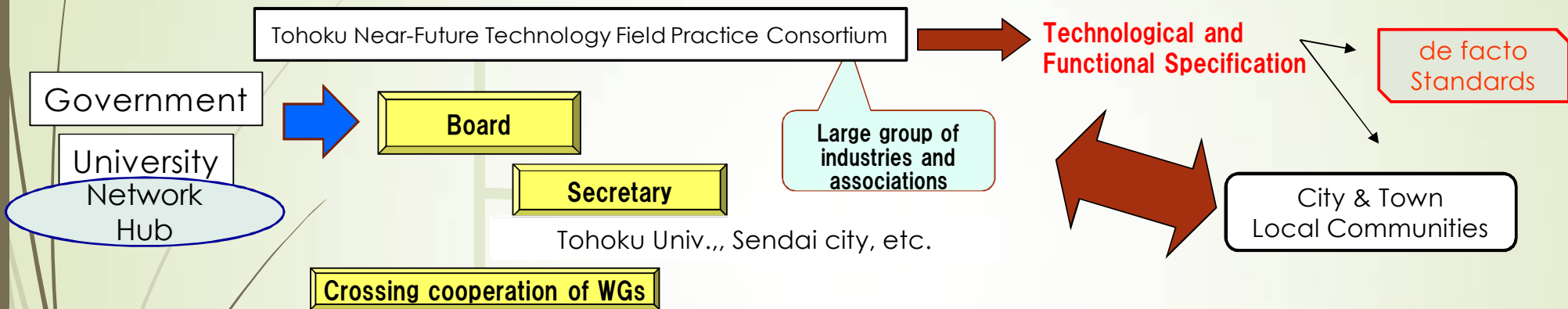


Japan Car-Sharing Association: <http://www.japan-csa.org/>



## "Tohoku Near-Future Technology Field Practice Consortium"

Target: Promote field practice research of near-future technologies as automated driving and UAV, and accelerate social implementation



- Workgroups for Automated Driving, UAV, or other technical fields
- Workgroup for legal and social issues (supporting law reformation and deregulation by national government) etc.

↓  
Now Preparing