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# Collaboration of governmental and local institutes to support MSMEs



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Director,

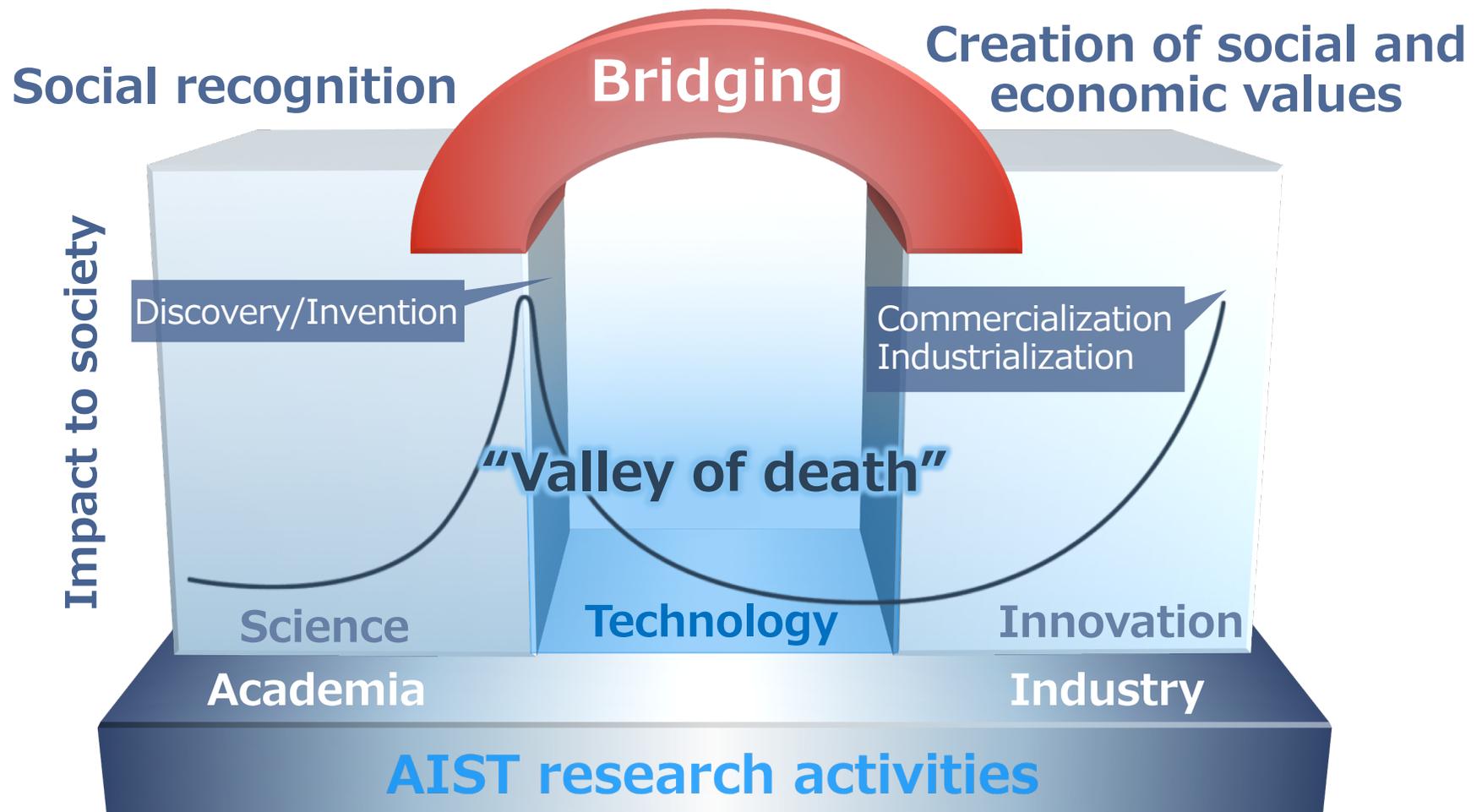
Research Institute for Engineering Measurement,

National Metrology Institute of Japan (NMIJ)

National Institute of Advanced Industrial Science and Technology (AIST)

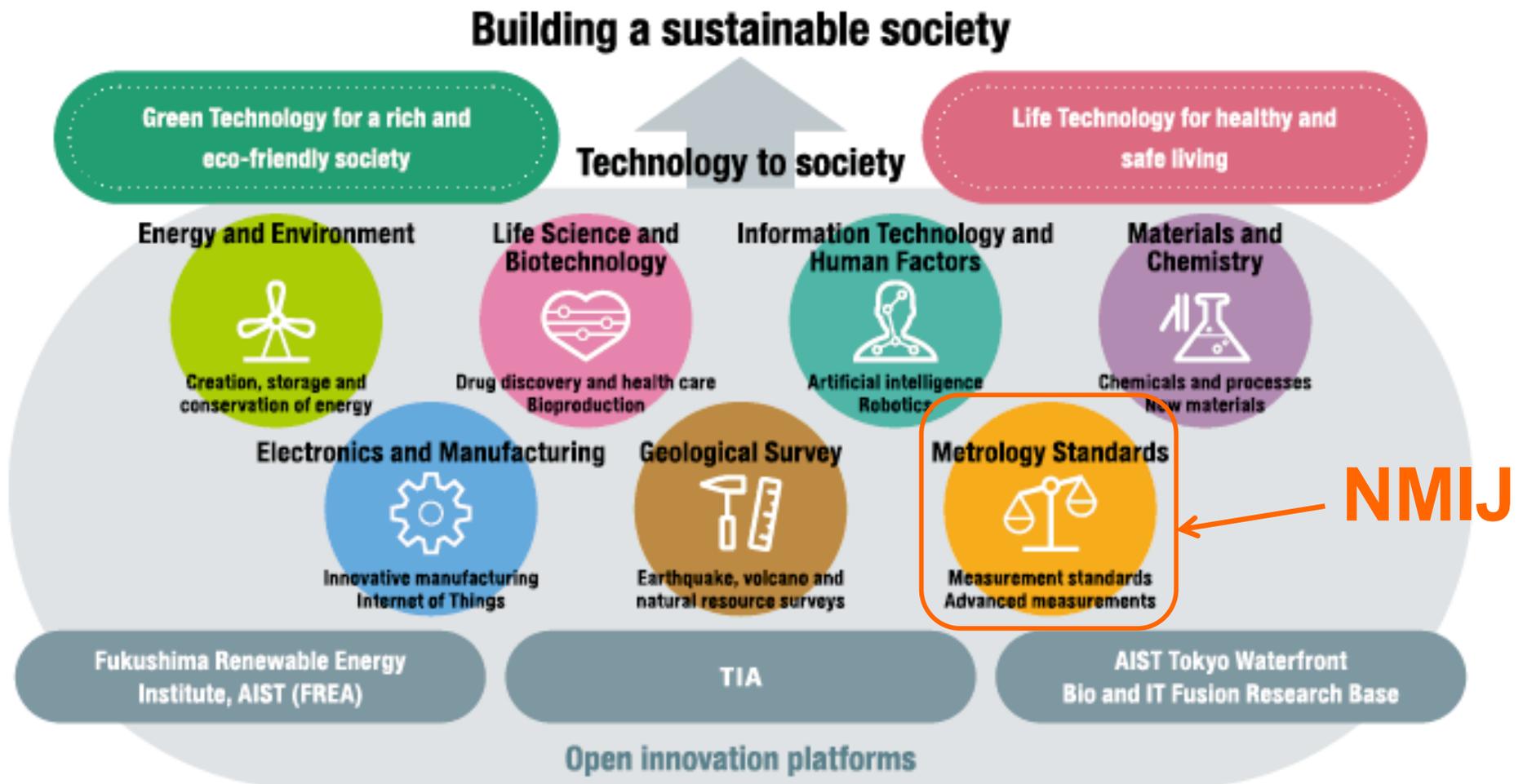
# AIST's Role : Bridging Research

AIST conducts continuous research from basic to commercialization to bring scientific findings to industry.

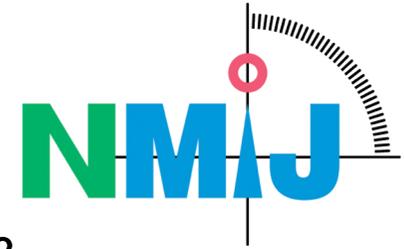


# Initiatives for building a sustainable society

We endeavor to achieve a rich and eco-friendly society through “Green Technology,” as well as healthy and safe living through “Life Technology,” with the hope of building a sustainable society.



# Roles of NMIJ



**Metrology** is an important social infrastructure for **science & technology** as well as to assure **safety & security** in life. It also serves to strengthen industrial **competitiveness** through a standardization.

Primary roles of NMIJ supporting the metrological infrastructure are:

1. Maintenance of national primary measurement standards based on the Measurement Law.
2. Development of new measurement standards / technologies.
3. Provide measurement standards, calibration services and certified reference materials (**CRMs**) for a traceability system.
4. Services in legal metrology (type approval and verification std.).
5. Cooperation with international organizations (**BIPM, OIML, APMP, etc.**) as well as other national institutes (**NMIs**) in metrology.
6. Provide trainings and consultations in metrology.
7. Development of database in metrology.

## 7 key words to collaborate with private sectors

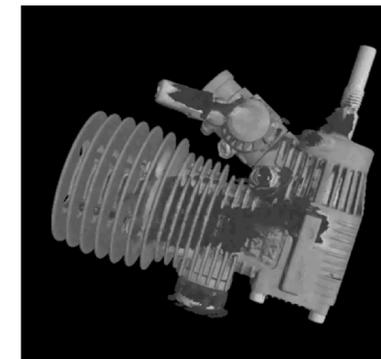
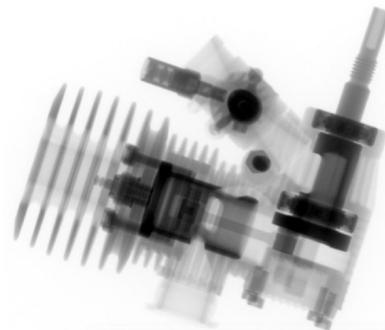
1. R & D of measuring instruments
2. Only-one (traceable) facilities
3. Conformity assessment
4. Consultation
5. Metrology clubs and consortiums
6. Industrial standardization
7. Support to MSMEs

# 1. R&D of measuring instruments

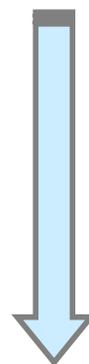
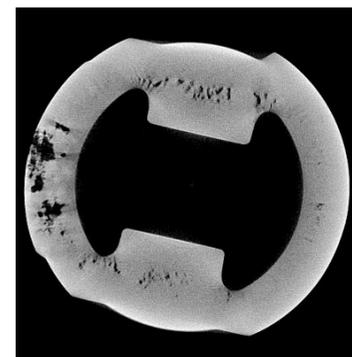
Dimensional X-ray CT



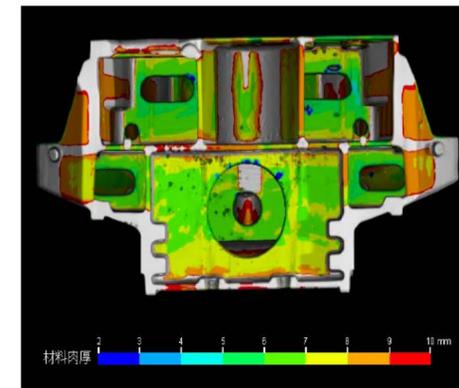
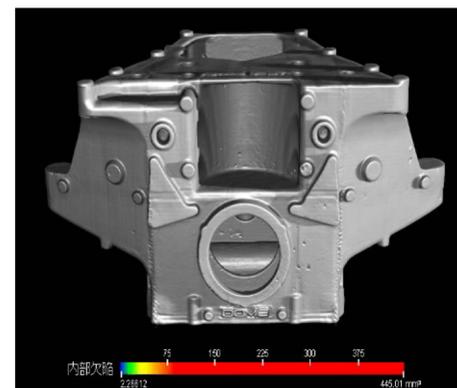
Shimazu (Japan)  
XDimensus 300



Non-destructive testing

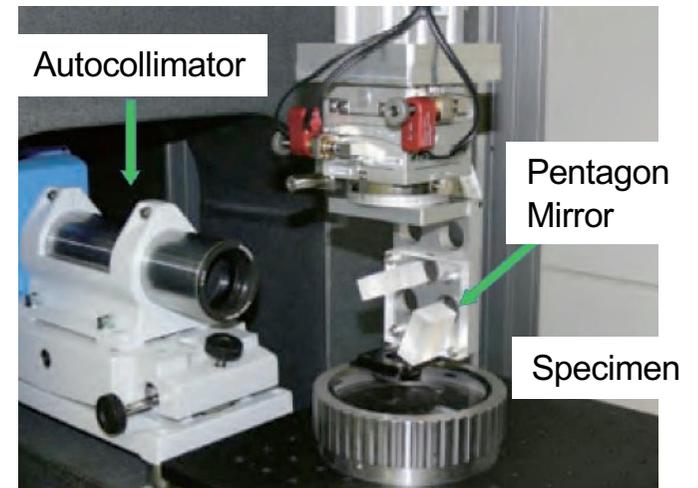
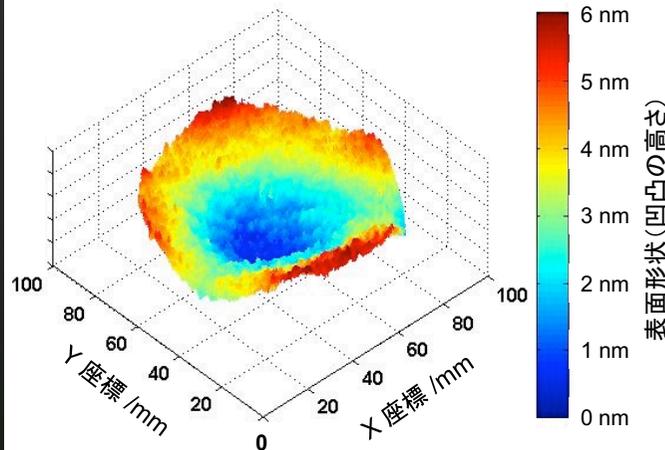
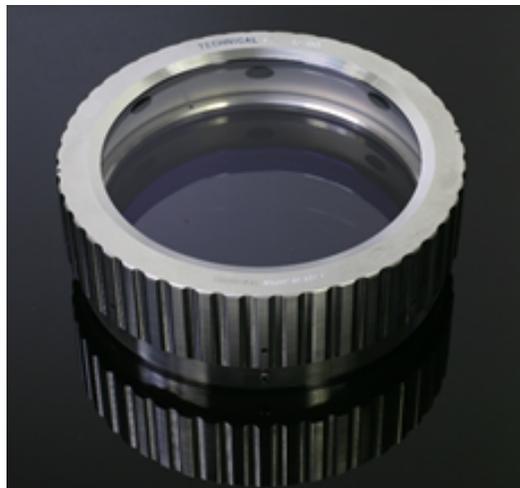
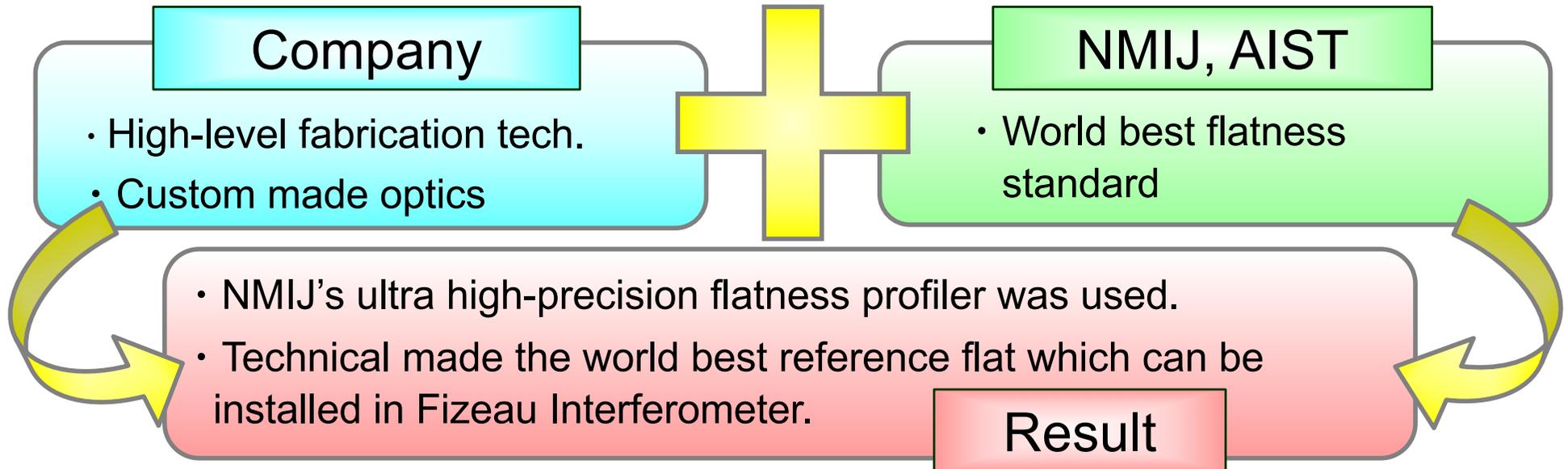


Metrology



# Joint development of ultra precision optical flat

‘Technical’ Company: in Aomori prefecture, 70 employees  
 NMIJ, AIST: in Tsukuba



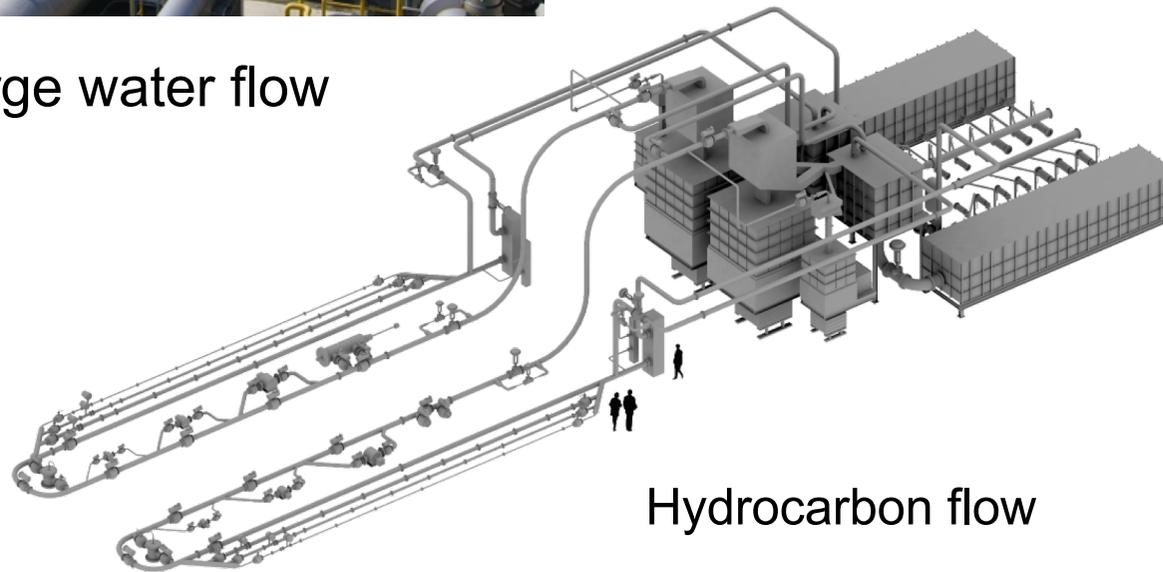
## 2. Only-one (traceable) facilities



Large water flow



Small water flow



Hydrocarbon flow

### 3. Conformity assessment

- Conformity to standards e.x. ISO 17025 is evaluated.

### 4. Consultation

- In addition to the routine calibration services, supplementary measurement or knowledge is provided.

### 5. Metrology clubs and consortiums

- Important channel to communicate with stakeholders

### 6. Industrial standardization

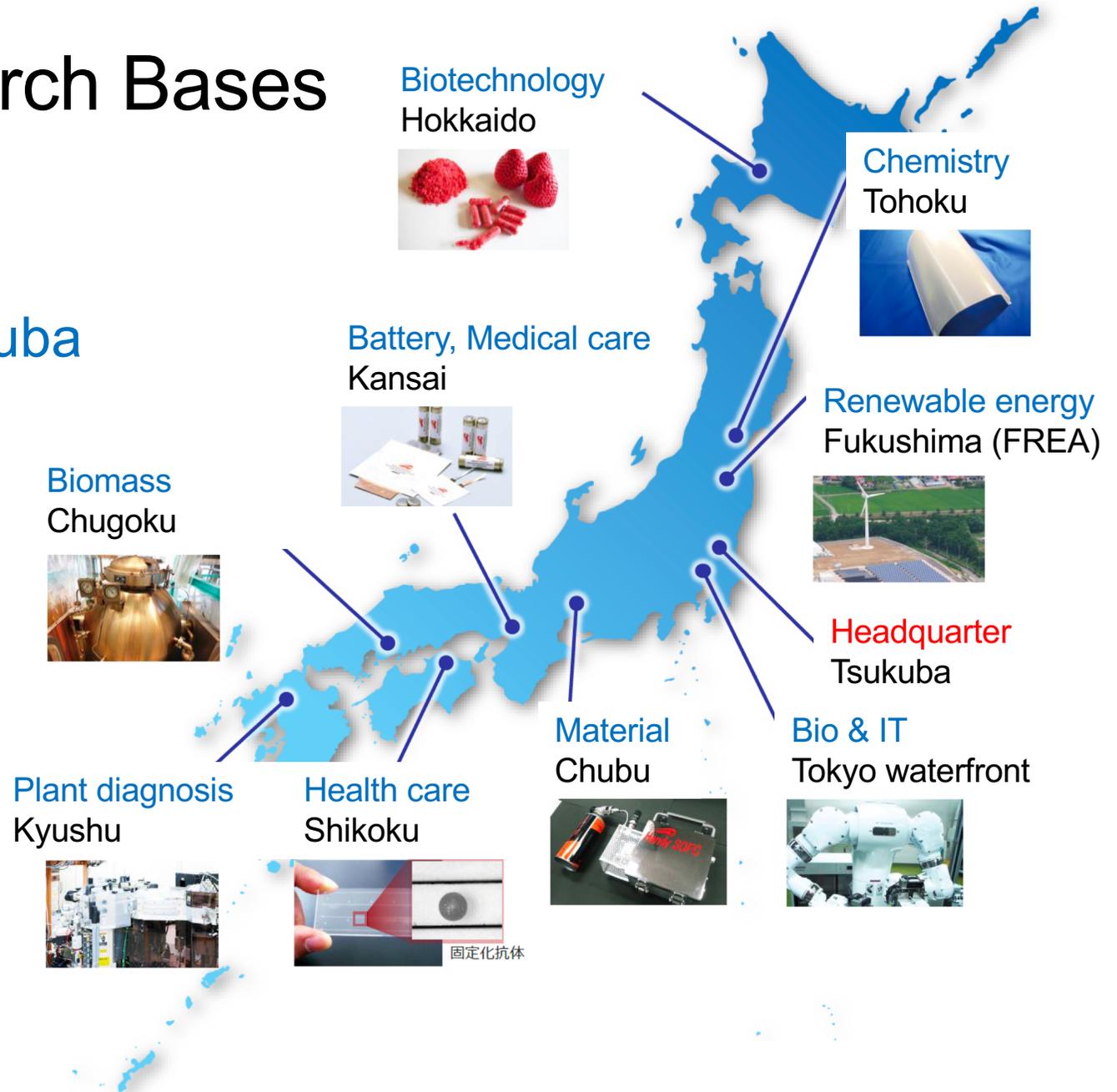
- Competitors can collaborate in the area of standardization.

### 7. Support to MSMEs

# Regional Research Bases

9 research bases

Headquarter in Tsukuba



# Two missions of the research bases

- Research base: To conduct state-of-the-art research and form a center of excellence
- Collaboration base: To contribute to local industries by making use of research results of whole AIST

# MSMEs in Japan

	Medium and small		Micro
Type	Capital or employee		Employee
Manufacturing	< 90	< 300	< 20
Whole sales	< 30	< 100	< 5
Service	< 15	< 100	< 5
Retail	< 15	< 50	< 5

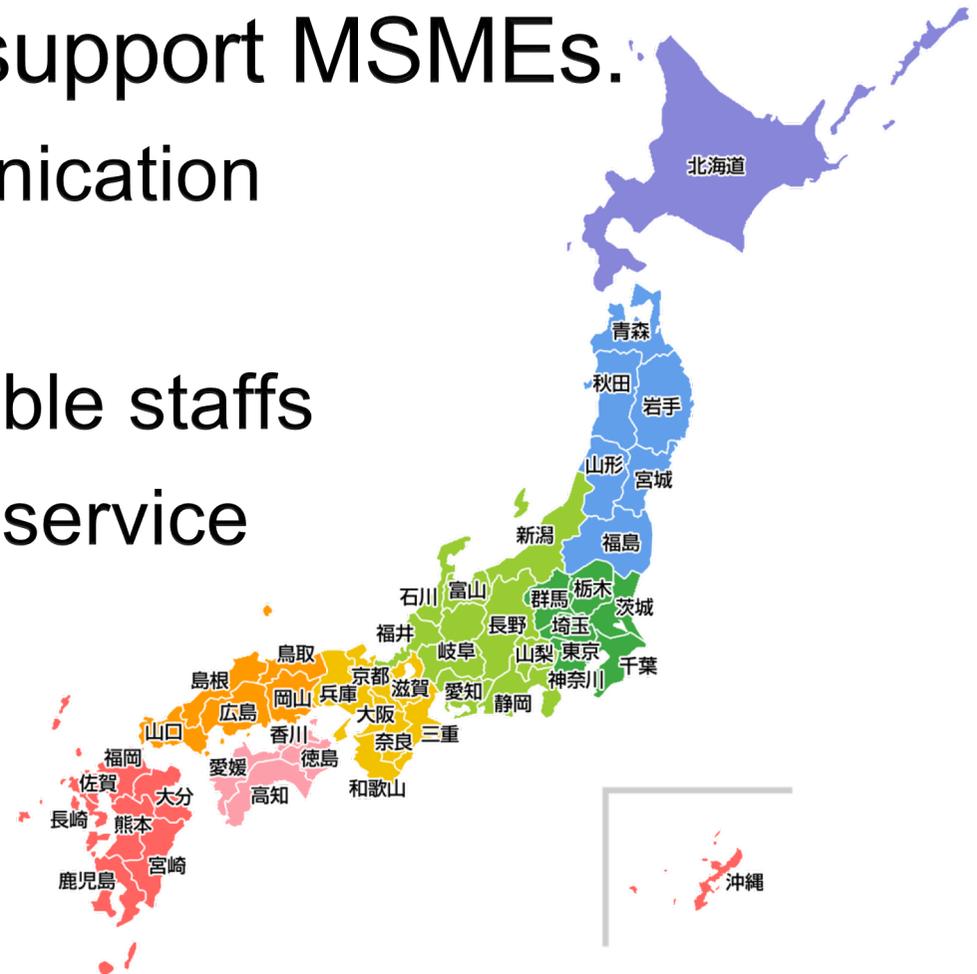
Unit: Million Baht

	Company	Employee
Large	11,000	14,330,000
M & S	3,809,000	33,610,000
(Micro)	(3,252,000)	11,270,000

# Local public institutes

All 51 prefectures and some large cities have public institutes to support MSMEs.

- Close and daily communication
- Good facilities
- Skilled and knowledgeable staffs
- Friendly and affordable service



 **Fraunhofer** (consists of 72 institutes)

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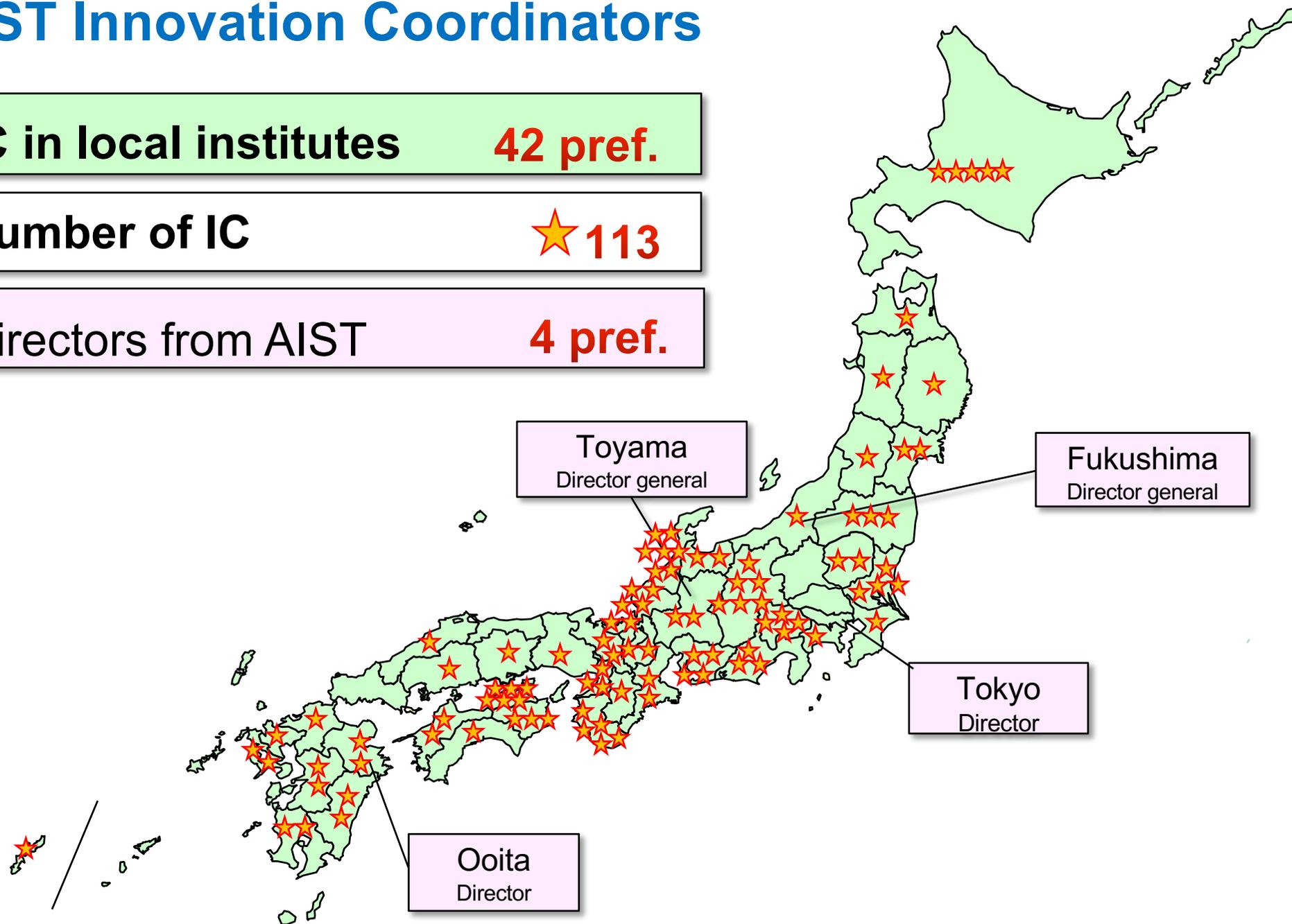
 **AIST** + 89 local public institutes

# AIST Innovation Coordinators

IC in local institutes **42 pref.**

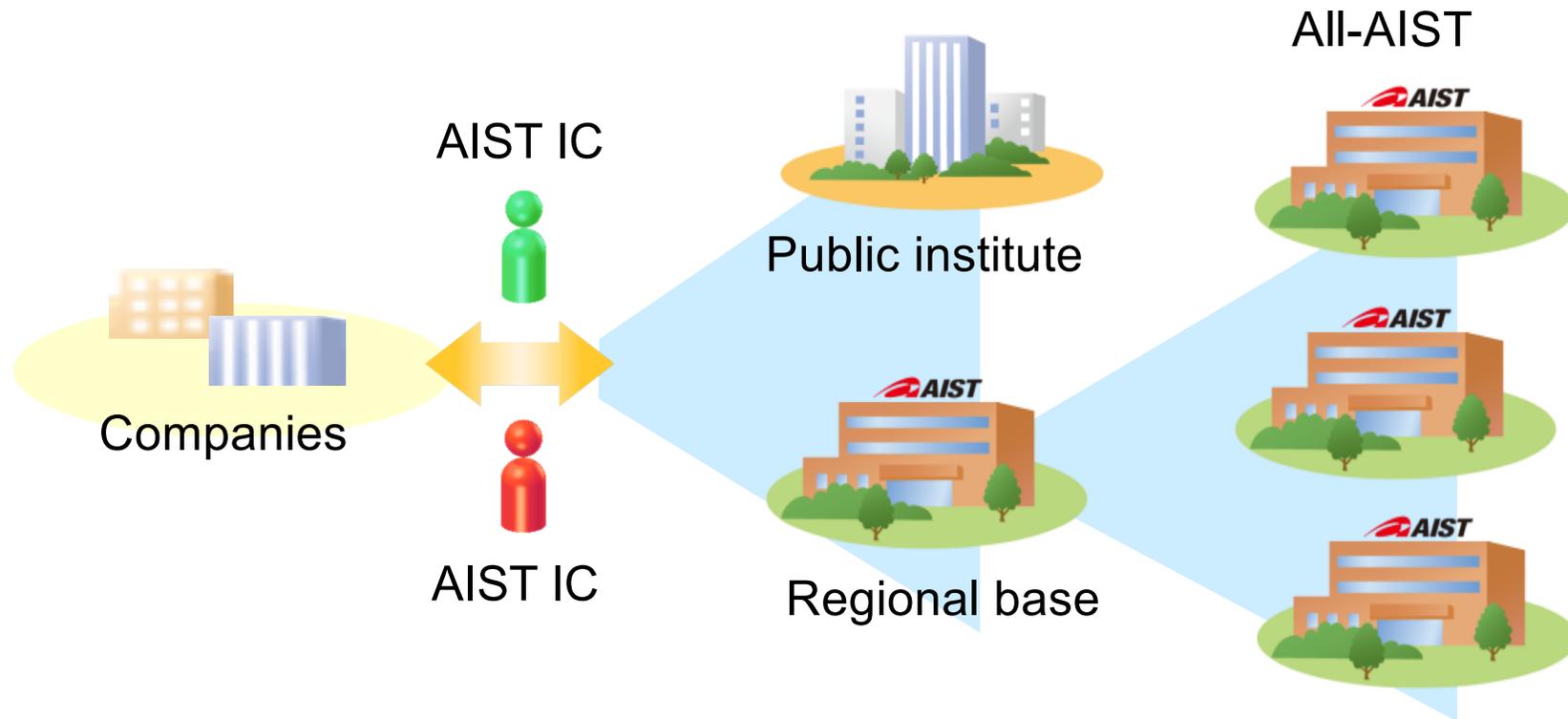
Number of IC **★ 113**

Directors from AIST **4 pref.**



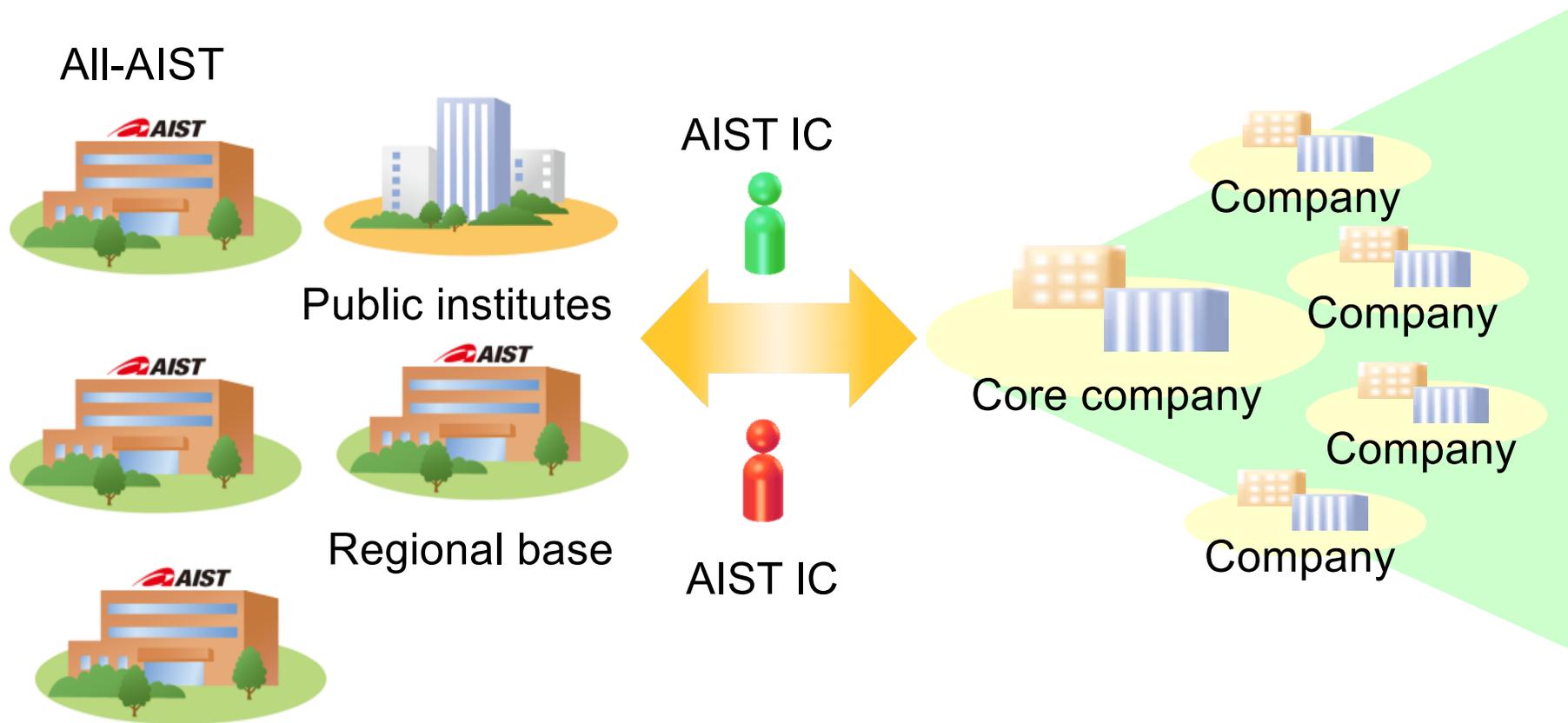
# 1. Seamless service by Innovation Coordinator

Single contact point from the companies  
One stop service



## 2. Reinforce cooperation with core company

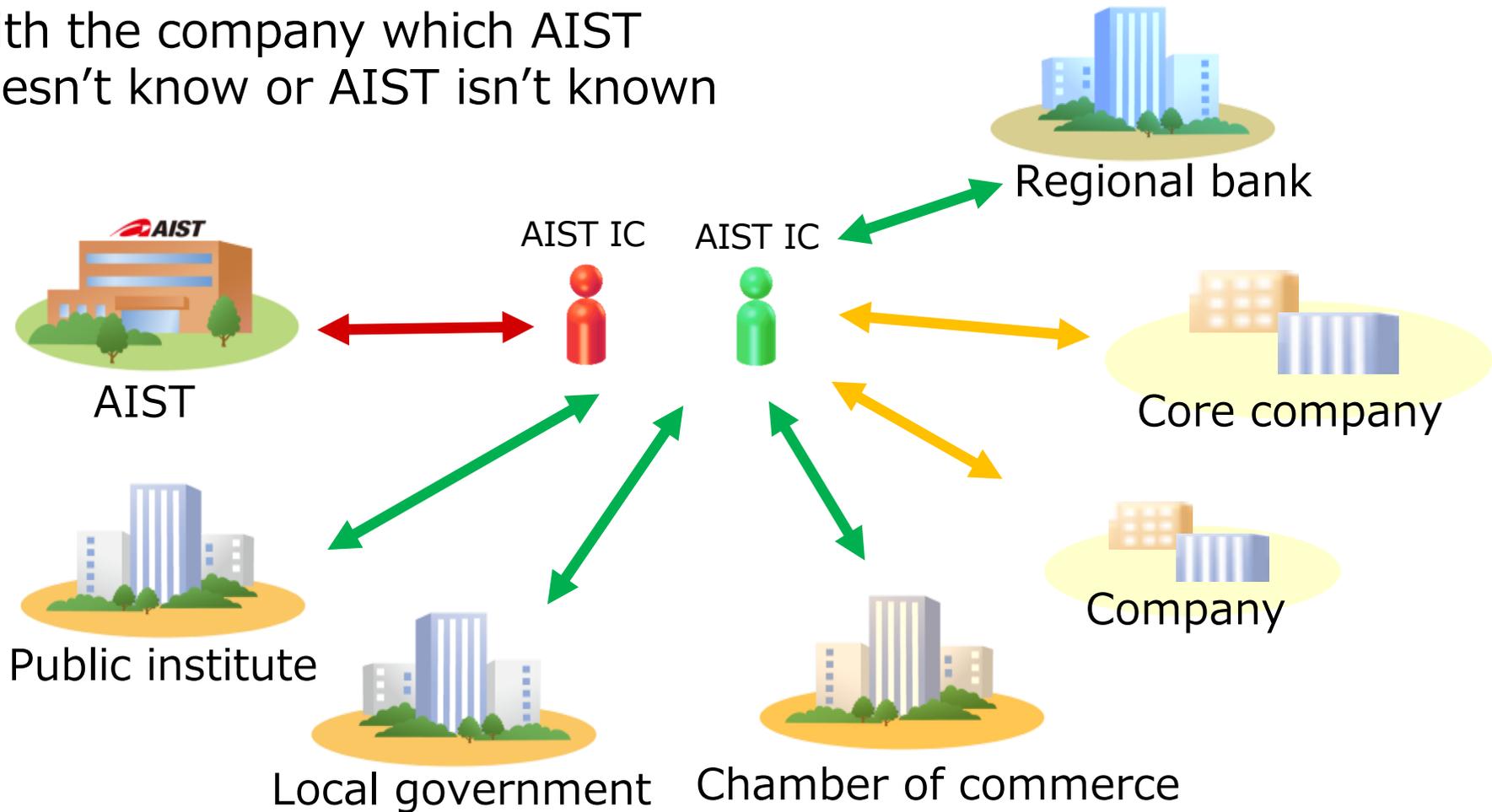
Provide support effectively and efficiently



# 3. Reinforce collaboration in region

Establish new channel with stakeholders

With the company which AIST doesn't know or AIST isn't known



## 4. Support for overseas expansion

Improve competitiveness

Protect intellectual property

Support of overseas manufacturing and sales

Level of globalization

	Manufacture	Sales
1	Domestic	Domestic
2	Domestic	Overseas
3	Overseas	Domestic
4	Overseas	Overseas
5	Overseas base and corporation	



Collaboration with The Japan External Trade Organization (JETRO)

# AIST ~~X~~ Local public institutes

Seamless and one stop service by AIST Innovation Coordinators



# AIST Startup Project for MSMEs

## <Background>

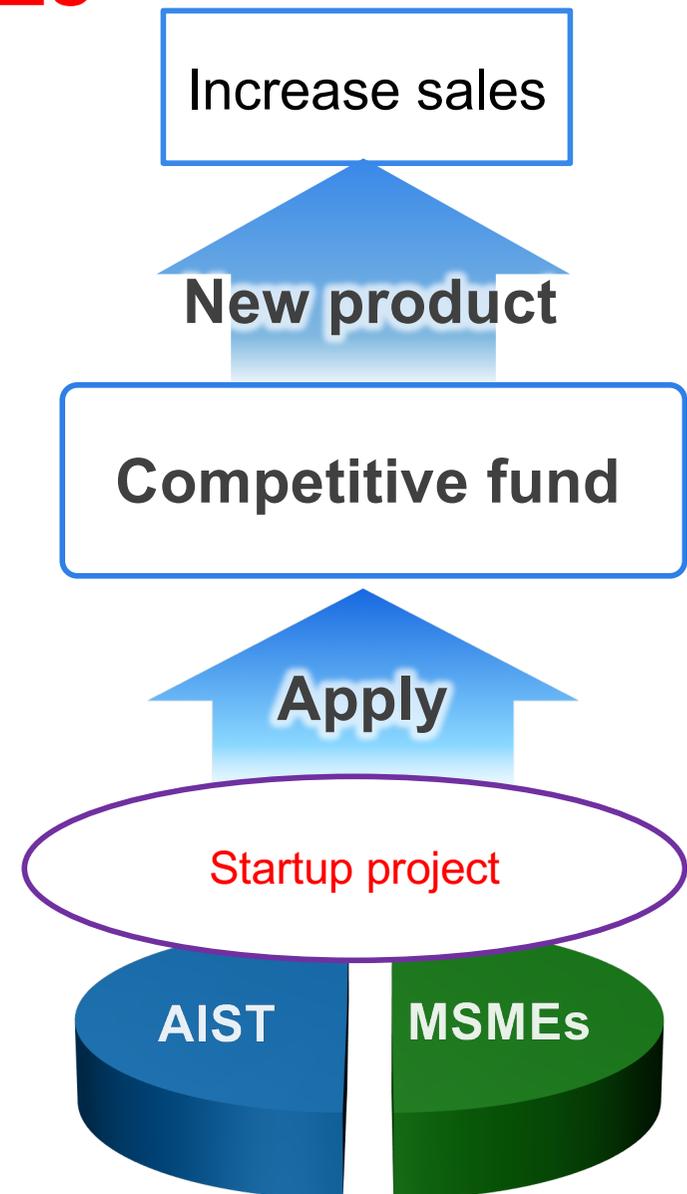
- Good proposal is necessary for competitive public fund.

## <Contents>

- Allocate budget
  - for preliminary research
  - Market survey, IP survey, etc

## < Result >

- Budget for 2013-2015: 40 Million Baht
- No. of competitive public funds obtained in 2014-2016: 25

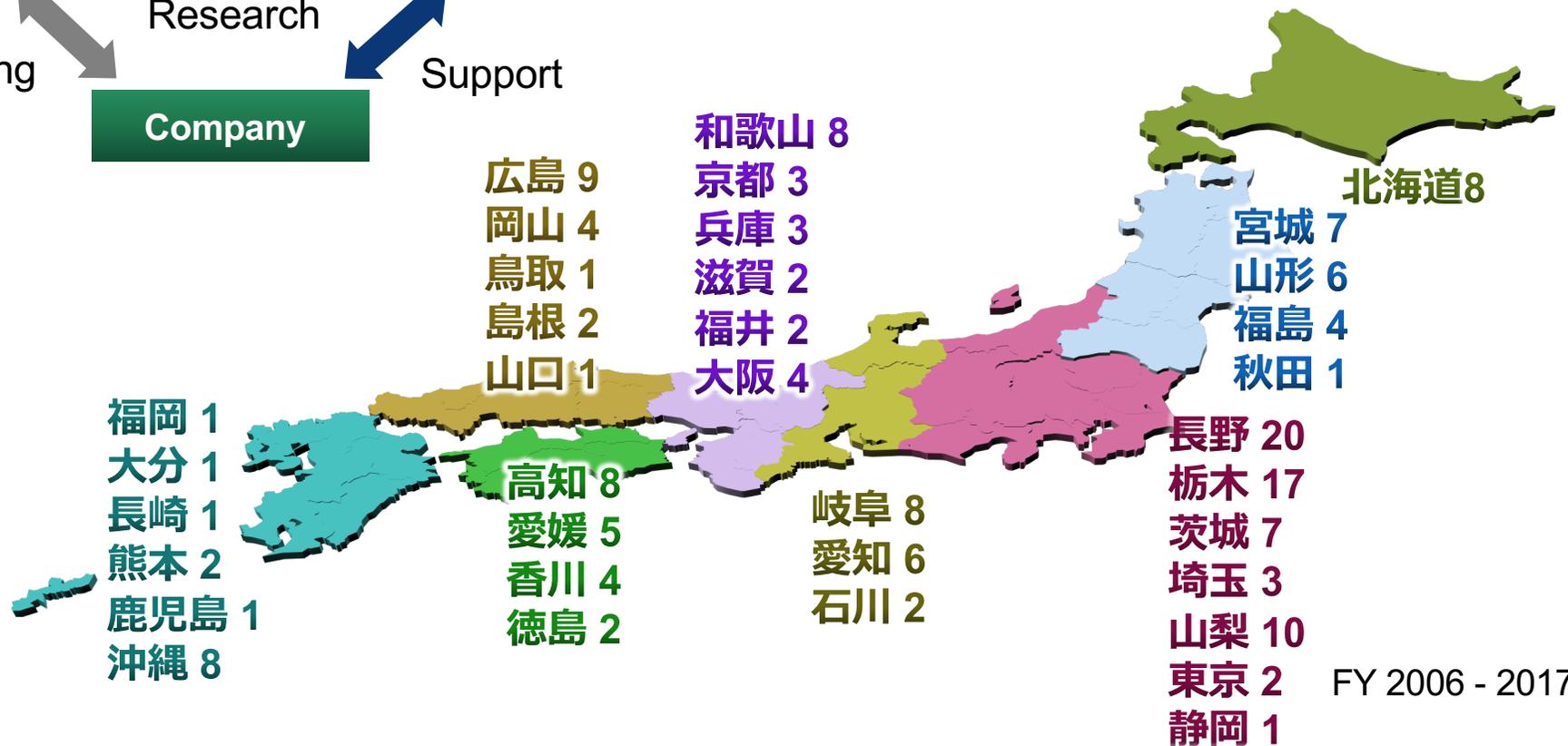


# Human resource development project

Find regional subject by AIST and local public institutes



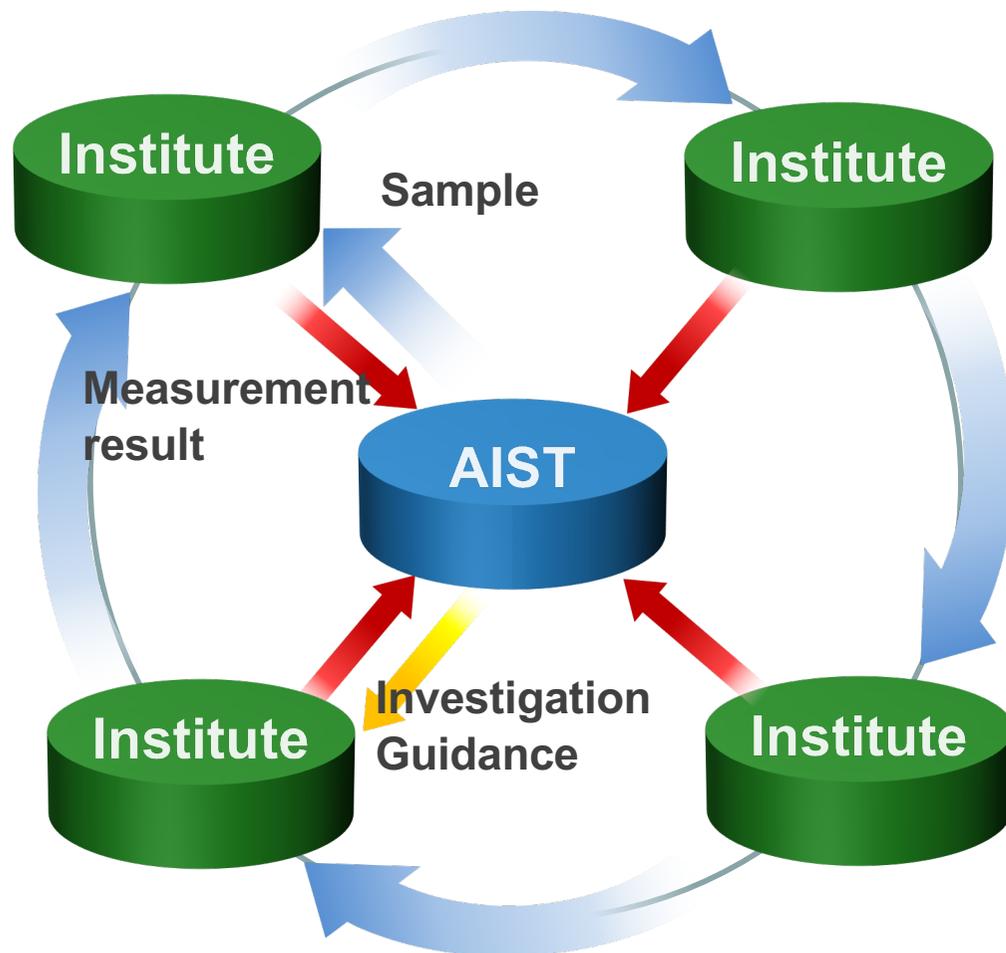
No. of visitors	
Person	<b>174</b>
Institutes	<b>50</b>



FY 2006 - 2017

# Improve technical competence of local institutes

Round robin tests in which multiple institutes participate  
 Improve measurement, analysis, evaluation capability

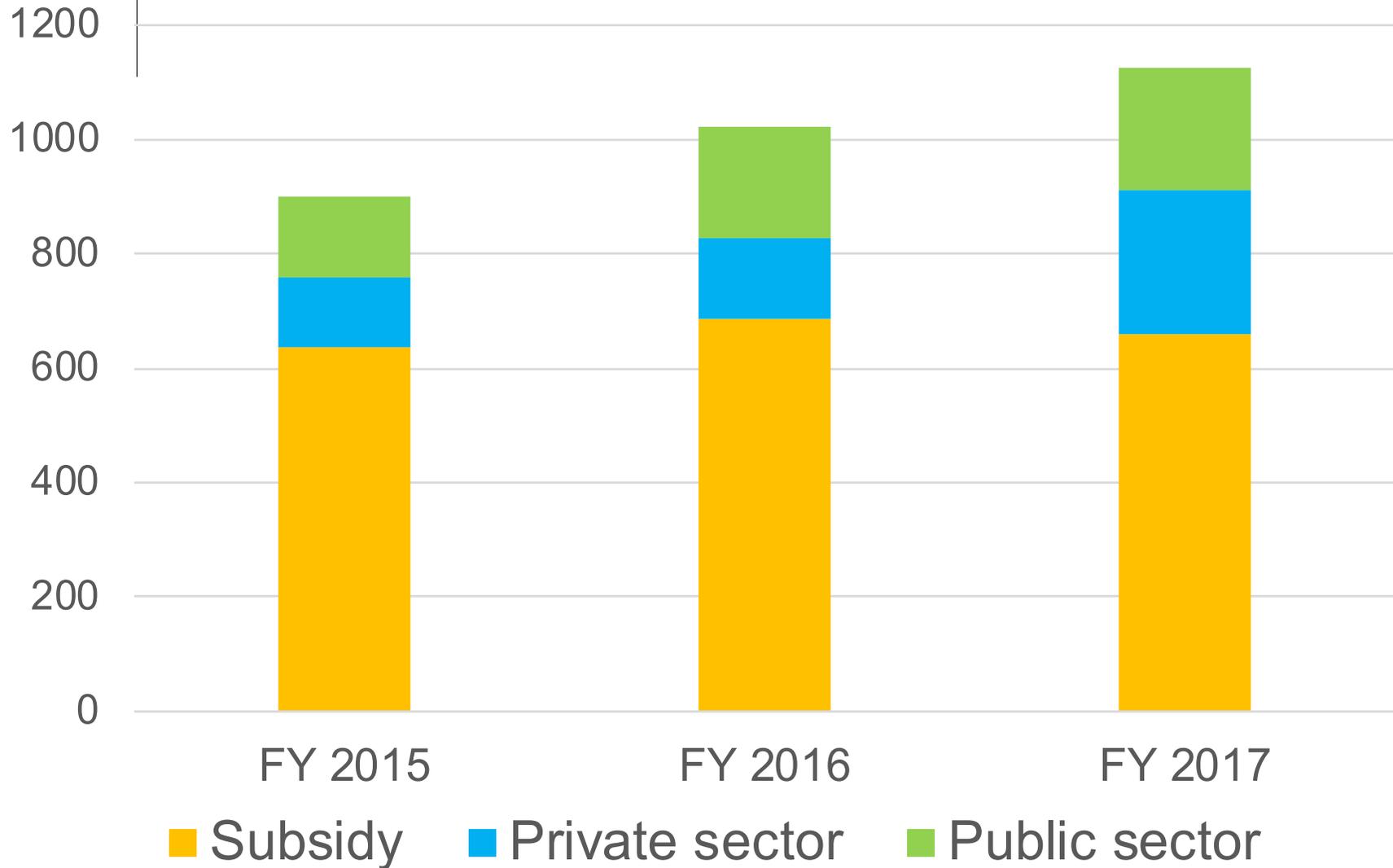


## 4 projects in 2017

- Nano dispersed polymer alloy
- No firing processing technology of inorganic material
- Diameter measurement of nano particles
- Self-testing of wide range antenna for EMI measurement

# Research budget of NMIJ

Million Baht



# 3D3 Project

- Joint project of AIST and local public institutes financially supported by AIST
- Combination of 3D printer and 3D scanner enables high quality production.

